R&S®ZVA
Vector Network Analyzers
Service Manual



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Service Manual

ROHDE&SCHWARZ

The Service Manual describes the following R&S®ZVA models and options:

- R&S® ZVA8, order no. 1145.1110.08/10 (2 or 4 test ports)
- R&S® ZVA24, order no. 1145.1110.24/26 (2 or 4 test ports)
- R&S® ZVA40, order no. 1145.1110.40/42/43/45 (2.92 mm, 2 or 4 test ports and 2.4 mm, 2 or 4 test ports)
- R&S® ZVA50, order no. 1145.1110.50/52 (2 or 4 test ports)
- R&S® ZVA67, order no. 1305.7002.02/04 (2 or 4 test ports)
- R&S® ZVA80BU, order no. 1312.6750K02. (50 GHz, 4test ports)

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81671 Munich, Germany
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The following abbreviations are used throughout this manual:
R&S®ZVA is abbreviated as R&S ZVA .

Basic Safety Instructions

Always read through and comply with the following safety instructions!

All plants and locations of the Rohde & Schwarz group of companies make every effort to keep the safety standards of our products up to date and to offer our customers the highest possible degree of safety. Our products and the auxiliary equipment they require are designed, built and tested in accordance with the safety standards that apply in each case. Compliance with these standards is continuously monitored by our quality assurance system. The product described here has been designed, built and tested in accordance with the EC Certificate of Conformity and has left the manufacturer's plant in a condition fully complying with safety standards. To maintain this condition and to ensure safe operation, you must observe all instructions and warnings provided in this manual. If you have any questions regarding these safety instructions, the Rohde & Schwarz group of companies will be happy to answer them.

Furthermore, it is your responsibility to use the product in an appropriate manner. This product is designed for use solely in industrial and laboratory environments or, if expressly permitted, also in the field and must not be used in any way that may cause personal injury or property damage. You are responsible if the product is used for any purpose other than its designated purpose or in disregard of the manufacturer's instructions. The manufacturer shall assume no responsibility for such use of the product.

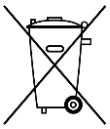
The product is used for its designated purpose if it is used in accordance with its product documentation and within its performance limits (see data sheet, documentation, the following safety instructions). Using the product requires technical skills and, in some cases, a basic knowledge of English. It is therefore essential that only skilled and specialized staff or thoroughly trained personnel with the required skills be allowed to use the product. If personal safety gear is required for using Rohde & Schwarz products, this will be indicated at the appropriate place in the product documentation. Keep the basic safety instructions and the product documentation in a safe place and pass them on to the subsequent users.

Observing the safety instructions will help prevent personal injury or damage of any kind caused by dangerous situations. Therefore, carefully read through and adhere to the following safety instructions before and when using the product. It is also absolutely essential to observe the additional safety instructions on personal safety, for example, that appear in relevant parts of the product documentation. In these safety instructions, the word "product" refers to all merchandise sold and distributed by the Rohde & Schwarz group of companies, including instruments, systems and all accessories. For product-specific information, see the data sheet and the product documentation.

Safety labels on products

The following safety labels are used on products to warn against risks and dangers.

Symbol	Meaning	Symbol	Meaning
	Notice, general danger location Observe product documentation		ON/OFF Power
	Caution when handling heavy equipment		Standby indication
	Danger of electric shock		Direct current (DC)

Symbol	Meaning	Symbol	Meaning
	Caution ! Hot surface		Alternating current (AC)
	Protective conductor terminal To identify any terminal which is intended for connection to an external conductor for protection against electric shock in case of a fault, or the terminal of a protective earth		Direct/alternating current (DC/AC)
	Earth (Ground)		Class II Equipment to identify equipment meeting the safety requirements specified for Class II equipment (device protected by double or reinforced insulation)
	Frame or chassis Ground terminal		EU labeling for batteries and accumulators For additional information, see section "Waste disposal/Environmental protection", item 1.
	Be careful when handling electrostatic sensitive devices		EU labeling for separate collection of electrical and electronic devices For additional information, see section "Waste disposal/Environmental protection", item 2.
	Warning! Laser radiation For additional information, see section "Operation", item 7.		

Signal words and their meaning

The following signal words are used in the product documentation in order to warn the reader about risks and dangers.

DANGER Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE Indicates information considered important, but not hazard-related, e.g. messages relating to property damage.
In the product documentation, the word ATTENTION is used synonymously.

These signal words are in accordance with the standard definition for civil applications in the European Economic Area. Definitions that deviate from the standard definition may also exist in other economic areas or military applications. It is therefore essential to make sure that the signal words described here are always used only in connection with the related product documentation and the related product. The use of signal words in connection with unrelated products or documentation can result in misinterpretation and in personal injury or material damage.

Operating states and operating positions

The product may be operated only under the operating conditions and in the positions specified by the manufacturer, without the product's ventilation being obstructed. If the manufacturer's specifications are not observed, this can result in electric shock, fire and/or serious personal injury or death. Applicable local or national safety regulations and rules for the prevention of accidents must be observed in all work performed.

1. Unless otherwise specified, the following requirements apply to Rohde & Schwarz products: predefined operating position is always with the housing floor facing down, IP protection 2X, use only indoors, max. operating altitude 2000 m above sea level, max. transport altitude 4500 m above sea level. A tolerance of ±10 % shall apply to the nominal voltage and ±5 % to the nominal frequency, overvoltage category 2, pollution degree 2.
2. Do not place the product on surfaces, vehicles, cabinets or tables that for reasons of weight or stability are unsuitable for this purpose. Always follow the manufacturer's installation instructions when installing the product and fastening it to objects or structures (e.g. walls and shelves). An installation that is not carried out as described in the product documentation could result in personal injury or even death.
3. Do not place the product on heat-generating devices such as radiators or fan heaters. The ambient temperature must not exceed the maximum temperature specified in the product documentation or in the data sheet. Product overheating can cause electric shock, fire and/or serious personal injury or even death.

Electrical safety

If the information on electrical safety is not observed either at all or to the extent necessary, electric shock, fire and/or serious personal injury or death may occur.

1. Prior to switching on the product, always ensure that the nominal voltage setting on the product matches the nominal voltage of the mains-supply network. If a different voltage is to be set, the power fuse of the product may have to be changed accordingly.
2. In the case of products of safety class I with movable power cord and connector, operation is permitted only on sockets with a protective conductor contact and protective conductor.
3. Intentionally breaking the protective conductor either in the feed line or in the product itself is not permitted. Doing so can result in the danger of an electric shock from the product. If extension cords or connector strips are implemented, they must be checked on a regular basis to ensure that they are safe to use.
4. If there is no power switch for disconnecting the product from the mains, or if the power switch is not suitable for this purpose, use the plug of the connecting cable to disconnect the product from the mains. In such cases, always ensure that the power plug is easily reachable and accessible at all times. For example, if the power plug is the disconnecting device, the length of the connecting cable must not exceed 3 m. Functional or electronic switches are not suitable for providing disconnection from the AC supply network. If products without power switches are integrated into racks or systems, the disconnecting device must be provided at the system level.
5. Never use the product if the power cable is damaged. Check the power cables on a regular basis to ensure that they are in proper operating condition. By taking appropriate safety measures and carefully laying the power cable, ensure that the cable cannot be damaged and that no one can be hurt by, for example, tripping over the cable or suffering an electric shock.

6. The product may be operated only from TN/TT supply networks fuse-protected with max. 16 A (higher fuse only after consulting with the Rohde & Schwarz group of companies).
7. Do not insert the plug into sockets that are dusty or dirty. Insert the plug firmly and all the way into the socket provided for this purpose. Otherwise, sparks that result in fire and/or injuries may occur.
8. Do not overload any sockets, extension cords or connector strips; doing so can cause fire or electric shocks.
9. For measurements in circuits with voltages V_{rms} > 30 V, suitable measures (e.g. appropriate measuring equipment, fuse protection, current limiting, electrical separation, insulation) should be taken to avoid any hazards.
10. Ensure that the connections with information technology equipment, e.g. PCs or other industrial computers, comply with the IEC 60950-1 / EN 60950-1 or IEC 61010-1 / EN 61010-1 standards that apply in each case.
11. Unless expressly permitted, never remove the cover or any part of the housing while the product is in operation. Doing so will expose circuits and components and can lead to injuries, fire or damage to the product.
12. If a product is to be permanently installed, the connection between the protective conductor terminal on site and the product's protective conductor must be made first before any other connection is made. The product may be installed and connected only by a licensed electrician.
13. For permanently installed equipment without built-in fuses, circuit breakers or similar protective devices, the supply circuit must be fuse-protected in such a way that anyone who has access to the product, as well as the product itself, is adequately protected from injury or damage.
14. Use suitable overvoltage protection to ensure that no overvoltage (such as that caused by a bolt of lightning) can reach the product. Otherwise, the person operating the product will be exposed to the danger of an electric shock.
15. Any object that is not designed to be placed in the openings of the housing must not be used for this purpose. Doing so can cause short circuits inside the product and/or electric shocks, fire or injuries.
16. Unless specified otherwise, products are not liquid-proof (see also section "Operating states and operating positions", item 1). Therefore, the equipment must be protected against penetration by liquids. If the necessary precautions are not taken, the user may suffer electric shock or the product itself may be damaged, which can also lead to personal injury.
17. Never use the product under conditions in which condensation has formed or can form in or on the product, e.g. if the product has been moved from a cold to a warm environment. Penetration by water increases the risk of electric shock.
18. Prior to cleaning the product, disconnect it completely from the power supply (e.g. AC supply network or battery). Use a soft, non-linting cloth to clean the product. Never use chemical cleaning agents such as alcohol, acetone or diluents for cellulose lacquers.

Operation

1. Operating the products requires special training and intense concentration. Make sure that persons who use the products are physically, mentally and emotionally fit enough to do so; otherwise, injuries or material damage may occur. It is the responsibility of the employer/operator to select suitable personnel for operating the products.

2. Before you move or transport the product, read and observe the section titled "Transport".
3. As with all industrially manufactured goods, the use of substances that induce an allergic reaction (allergens) such as nickel cannot be generally excluded. If you develop an allergic reaction (such as a skin rash, frequent sneezing, red eyes or respiratory difficulties) when using a Rohde & Schwarz product, consult a physician immediately to determine the cause and to prevent health problems or stress.
4. Before you start processing the product mechanically and/or thermally, or before you take it apart, be sure to read and pay special attention to the section titled "Waste disposal/Environmental protection", item 1.
5. Depending on the function, certain products such as RF radio equipment can produce an elevated level of electromagnetic radiation. Considering that unborn babies require increased protection, pregnant women must be protected by appropriate measures. Persons with pacemakers may also be exposed to risks from electromagnetic radiation. The employer/operator must evaluate workplaces where there is a special risk of exposure to radiation and, if necessary, take measures to avert the potential danger.
6. Should a fire occur, the product may release hazardous substances (gases, fluids, etc.) that can cause health problems. Therefore, suitable measures must be taken, e.g. protective masks and protective clothing must be worn.
7. Laser products are given warning labels that are standardized according to their laser class. Lasers can cause biological harm due to the properties of their radiation and due to their extremely concentrated electromagnetic power. If a laser product (e.g. a CD/DVD drive) is integrated into a Rohde & Schwarz product, absolutely no other settings or functions may be used as described in the product documentation. The objective is to prevent personal injury (e.g. due to laser beams).
8. EMC classes (in line with EN 55011/CISPR 11, and analogously with EN 55022/CISPR 22, EN 55032/CISPR 32)
   - Class A equipment:
     Equipment suitable for use in all environments except residential environments and environments that are directly connected to a low-voltage supply network that supplies residential buildings
     Note: Class A equipment is intended for use in an industrial environment. This equipment may cause radio disturbances in residential environments, due to possible conducted as well as radiated disturbances. In this case, the operator may be required to take appropriate measures to eliminate these disturbances.
   - Class B equipment:
     Equipment suitable for use in residential environments and environments that are directly connected to a low-voltage supply network that supplies residential buildings

Repair and service

1. The product may be opened only by authorized, specially trained personnel. Before any work is performed on the product or before the product is opened, it must be disconnected from the AC supply network. Otherwise, personnel will be exposed to the risk of an electric shock.

2. Adjustments, replacement of parts, maintenance and repair may be performed only by electrical experts authorized by Rohde & Schwarz. Only original parts may be used for replacing parts relevant to safety (e.g. power switches, power transformers, fuses). A safety test must always be performed after parts relevant to safety have been replaced (visual inspection, protective conductor test, insulation resistance measurement, leakage current measurement, functional test). This helps ensure the continued safety of the product.

Batteries and rechargeable batteries/cells

If the information regarding batteries and rechargeable batteries/cells is not observed either at all or to the extent necessary, product users may be exposed to the risk of explosions, fire and/or serious personal injury, and, in some cases, death. Batteries and rechargeable batteries with alkaline electrolytes (e.g. lithium cells) must be handled in accordance with the EN 62133 standard.

1. Cells must not be taken apart or crushed.
2. Cells or batteries must not be exposed to heat or fire. Storage in direct sunlight must be avoided. Keep cells and batteries clean and dry. Clean soiled connectors using a dry, clean cloth.
3. Cells or batteries must not be short-circuited. Cells or batteries must not be stored in a box or in a drawer where they can short-circuit each other, or where they can be short-circuited by other conductive materials. Cells and batteries must not be removed from their original packaging until they are ready to be used.
4. Cells and batteries must not be exposed to any mechanical shocks that are stronger than permitted.
5. If a cell develops a leak, the fluid must not be allowed to come into contact with the skin or eyes. If contact occurs, wash the affected area with plenty of water and seek medical aid.
6. Improperly replacing or charging cells or batteries that contain alkaline electrolytes (e.g. lithium cells) can cause explosions. Replace cells or batteries only with the matching Rohde & Schwarz type (see parts list) in order to ensure the safety of the product.
7. Cells and batteries must be recycled and kept separate from residual waste. Rechargeable batteries and normal batteries that contain lead, mercury or cadmium are hazardous waste. Observe the national regulations regarding waste disposal and recycling.
8. Follow the transport stipulations of the carrier (IATA-DGR, IMDG-Code, ADR, RID) when returning lithium batteries to Rohde & Schwarz subsidiaries.

Transport

1. The product may be very heavy. Therefore, the product must be handled with care. In some cases, the user may require a suitable means of lifting or moving the product (e.g. with a lift-truck) to avoid back or other physical injuries.
2. Handles on the products are designed exclusively to enable personnel to transport the product. It is therefore not permissible to use handles to fasten the product to or on transport equipment such as cranes, fork lifts, wagons, etc. The user is responsible for securely fastening the products to or on the means of transport or lifting. Observe the safety regulations of the manufacturer of the means of transport or lifting. Noncompliance can result in personal injury or material damage.

3. If you use the product in a vehicle, it is the sole responsibility of the driver to drive the vehicle safely and properly. The manufacturer assumes no responsibility for accidents or collisions. Never use the product in a moving vehicle if doing so could distract the driver of the vehicle. Adequately secure the product in the vehicle to prevent injuries or other damage in the event of an accident.

Waste disposal/Environmental protection

1. Specially marked equipment has a battery or accumulator that must not be disposed of with unsorted municipal waste, but must be collected separately. It may only be disposed of at a suitable collection point or via a Rohde & Schwarz customer service center.
2. Waste electrical and electronic equipment must not be disposed of with unsorted municipal waste, but must be collected separately.
   Rohde & Schwarz GmbH & Co. KG has developed a disposal concept and takes full responsibility for take-back obligations and disposal obligations for manufacturers within the EU. Contact your Rohde & Schwarz customer service center for environmentally responsible disposal of the product.
3. If products or their components are mechanically and/or thermally processed in a manner that goes beyond their intended use, hazardous substances (heavy-metal dust such as lead, beryllium, nickel) may be released. For this reason, the product may only be disassembled by specially trained personnel. Improper disassembly may be hazardous to your health. National waste disposal regulations must be observed.
4. If handling the product releases hazardous substances or fuels that must be disposed of in a special way, e.g. coolants or engine oils that must be replenished regularly, the safety instructions of the manufacturer of the hazardous substances or fuels and the applicable regional waste disposal regulations must be observed. Also observe the relevant safety instructions in the product documentation. The improper disposal of hazardous substances or fuels can cause health problems and lead to environmental damage.

For additional information about environmental protection, visit the Rohde & Schwarz website.

Instrucciones de seguridad elementales

¡Es imprescindible leer y cumplir las siguientes instrucciones e informaciones de seguridad!

El principio del grupo de empresas Rohde & Schwarz consiste en tener nuestros productos siempre al día con los estándares de seguridad y de ofrecer a nuestros clientes el máximo grado de seguridad. Nuestros productos y todos los equipos adicionales son siempre fabricados y examinados según las normas de seguridad vigentes. Nuestro sistema de garantía de calidad controla constantemente que sean cumplidas estas normas. El presente producto ha sido fabricado y examinado según el certificado de conformidad de la UE y ha salido de nuestra planta en estado impecable según los estándares técnicos de seguridad. Para poder preservar este estado y garantizar un funcionamiento libre de peligros, el usuario deberá atenerse a todas las indicaciones, informaciones de seguridad y notas de alerta. El grupo de empresas Rohde & Schwarz está siempre a su disposición en caso de que tengan preguntas referentes a estas informaciones de seguridad.

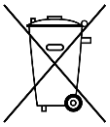
Además queda en la responsabilidad del usuario utilizar el producto en la forma debida. Este producto está destinado exclusivamente al uso en la industria y el laboratorio o, si ha sido expresamente autorizado, para aplicaciones de campo y de ninguna manera deberá ser utilizado de modo que alguna persona/cosa pueda sufrir daño. El uso del producto fuera de sus fines definidos o sin tener en cuenta las instrucciones del fabricante queda en la responsabilidad del usuario. El fabricante no se hace en ninguna forma responsable de consecuencias a causa del mal uso del producto.

Se parte del uso correcto del producto para los fines definidos si el producto es utilizado conforme a las indicaciones de la correspondiente documentación del producto y dentro del margen de rendimiento definido (ver hoja de datos, documentación, informaciones de seguridad que siguen). El uso del producto hace necesarios conocimientos técnicos y ciertos conocimientos del idioma inglés. Por eso se debe tener en cuenta que el producto solo pueda ser operado por personal especializado o personas instruidas en profundidad con las capacidades correspondientes. Si fuera necesaria indumentaria de seguridad para el uso de productos de Rohde & Schwarz, encontraría la información debida en la documentación del producto en el capítulo correspondiente. Guarde bien las informaciones de seguridad elementales, así como la documentación del producto, y entréguelas a usuarios posteriores.

Tener en cuenta las informaciones de seguridad sirve para evitar en lo posible lesiones o daños por peligros de toda clase. Por eso es imprescindible leer detalladamente y comprender por completo las siguientes informaciones de seguridad antes de usar el producto, y respetarlas durante el uso del producto. Deberán tenerse en cuenta todas las demás informaciones de seguridad, como p. ej. las referentes a la protección de personas, que encontrarán en el capítulo correspondiente de la documentación del producto y que también son de obligado cumplimiento. En las presentes informaciones de seguridad se recogen todos los objetos que distribuye el grupo de empresas Rohde & Schwarz bajo la denominación de "producto", entre ellos también aparatos, instalaciones así como toda clase de accesorios. Los datos específicos del producto figuran en la hoja de datos y en la documentación del producto.

Señalización de seguridad de los productos

Las siguientes señales de seguridad se utilizan en los productos para advertir sobre riesgos y peligros.

Símbolo	Significado	Símbolo	Significado
	Aviso: punto de peligro general Observar la documentación del producto		Tensión de alimentación de PUESTA EN MARCHA / PARADA
	Atención en el manejo de dispositivos de peso elevado		Indicación de estado de espera (standby)
	Peligro de choque eléctrico		Corriente continua (DC)
	Advertencia: superficie caliente		Corriente alterna (AC)
	Conexión a conductor de protección		Corriente continua / Corriente alterna (DC/AC)
	Conexión a tierra		El aparato está protegido en su totalidad por un aislamiento doble (reforzado)
	Conexión a masa		Distintivo de la UE para baterías y acumuladores Más información en la sección "Eliminación/protección del medio ambiente", punto 1.
	Aviso: Cuidado en el manejo de dispositivos sensibles a la electrostática (ESD)		Distintivo de la UE para la eliminación por separado de dispositivos eléctricos y electrónicos Más información en la sección "Eliminación/protección del medio ambiente", punto 2.
	Advertencia: rayo láser Más información en la sección "Funcionamiento", punto 7.		

Palabras de señal y su significado

En la documentación del producto se utilizan las siguientes palabras de señal con el fin de advertir contra riesgos y peligros.

PELIGRO	Indica una situación de peligro que, si no se evita, causa lesiones graves o incluso la muerte.
ADVERTENCIA	Indica una situación de peligro que, si no se evita, puede causar lesiones graves o incluso la muerte.
ATENCIÓN	Indica una situación de peligro que, si no se evita, puede causar lesiones leves o moderadas.
AVISO	Indica información que se considera importante, pero no en relación con situaciones de peligro; p. ej., avisos sobre posibles daños materiales. En la documentación del producto se emplea de forma sinónima el término CUIDADO.

Las palabras de señal corresponden a la definición habitual para aplicaciones civiles en el área económica europea. Pueden existir definiciones diferentes a esta definición en otras áreas económicas o en aplicaciones militares. Por eso se deberá tener en cuenta que las palabras de señal aquí descritas sean utilizadas siempre solamente en combinación con la correspondiente documentación del producto y solamente en combinación con el producto correspondiente. La utilización de las palabras de señal en combinación con productos o documentaciones que no les correspondan puede llevar a interpretaciones equivocadas y tener por consecuencia daños en personas u objetos.

Estados operativos y posiciones de funcionamiento

El producto solamente debe ser utilizado según lo indicado por el fabricante respecto a los estados operativos y posiciones de funcionamiento sin que se obstruya la ventilación. Si no se siguen las indicaciones del fabricante, pueden producirse choques eléctricos, incendios y/o lesiones graves con posible consecuencia de muerte. En todos los trabajos deberán ser tenidas en cuenta las normas nacionales y locales de seguridad del trabajo y de prevención de accidentes.

1. Si no se convino de otra manera, es para los productos Rohde & Schwarz válido lo que sigue: como posición de funcionamiento se define por principio la posición con el suelo de la caja para abajo, modo de protección IP 2X, uso solamente en estancias interiores, utilización hasta 2000 m sobre el nivel del mar, transporte hasta 4500 m sobre el nivel del mar. Se aplicará una tolerancia de ±10 % sobre el voltaje nominal y de ±5 % sobre la frecuencia nominal. Categoría de sobrecarga eléctrica 2, índice de suciedad 2.
2. No sitúe el producto encima de superficies, vehículos, estantes o mesas, que por sus características de peso o de estabilidad no sean aptos para él. Siga siempre las instrucciones de instalación del fabricante cuando instale y asegure el producto en objetos o estructuras (p. ej. paredes y estantes). Si se realiza la instalación de modo distinto al indicado en la documentación del producto, se pueden causar lesiones o, en determinadas circunstancias, incluso la muerte.
3. No ponga el producto sobre aparatos que generen calor (p. ej. radiadores o calefactores). La temperatura ambiente no debe superar la temperatura máxima especificada en la documentación del producto o en la hoja de datos. En caso de sobrecalentamiento del producto, pueden producirse choques eléctricos, incendios y/o lesiones graves con posible consecuencia de muerte.

Seguridad eléctrica

Si no se siguen (o se siguen de modo insuficiente) las indicaciones del fabricante en cuanto a seguridad eléctrica, pueden producirse choques eléctricos, incendios y/o lesiones graves con posible consecuencia de muerte.

1. Antes de la puesta en marcha del producto se deberá comprobar siempre que la tensión preseleccionada en el producto coincida con la de la red de alimentación eléctrica. Si es necesario modificar el ajuste de tensión, también se deberán cambiar en caso dado los fusibles correspondientes del producto.
2. Los productos de la clase de protección I con alimentación móvil y enchufe individual solamente podrán enchufarse a tomas de corriente con contacto de seguridad y con conductor de protección conectado.
3. Queda prohibida la interrupción intencionada del conductor de protección, tanto en la toma de corriente como en el mismo producto. La interrupción puede tener como consecuencia el riesgo de que el producto sea fuente de choques eléctricos. Si se utilizan cables alargadores o regletas de enchufe, deberá garantizarse la realización de un examen regular de los mismos en cuanto a su estado técnico de seguridad.
4. Si el producto no está equipado con un interruptor para desconectarlo de la red, o bien si el interruptor existente no resulta apropiado para la desconexión de la red, el enchufe del cable de conexión se deberá considerar como un dispositivo de desconexión.
   El dispositivo de desconexión se debe poder alcanzar fácilmente y debe estar siempre bien accesible. Si, p. ej., el enchufe de conexión a la red es el dispositivo de desconexión, la longitud del cable de conexión no debe superar 3 m).
   Los interruptores selectores o electrónicos no son aptos para el corte de la red eléctrica. Si se integran productos sin interruptor en bastidores o instalaciones, se deberá colocar el interruptor en el nivel de la instalación.
5. No utilice nunca el producto si está dañado el cable de conexión a red. Compruebe regularmente el correcto estado de los cables de conexión a red. Asegúrese, mediante las medidas de protección y de instalación adecuadas, de que el cable de conexión a red no pueda ser dañado o de que nadie pueda ser dañado por él, p. ej. al tropezar o por un choque eléctrico.
6. Solamente está permitido el funcionamiento en redes de alimentación TN/TT aseguradas con fusibles de 16 A como máximo (utilización de fusibles de mayor amperaje solo previa consulta con el grupo de empresas Rohde & Schwarz).
7. Nunca conecte el enchufe en tomas de corriente sucias o llenas de polvo. Introduzca el enchufe por completo y fuertemente en la toma de corriente. La no observación de estas medidas puede provocar chispas, fuego y/o lesiones.
8. No sobrecargue las tomas de corriente, los cables alargadores o las regletas de enchufe ya que esto podría causar fuego o choques eléctricos.
9. En las mediciones en circuitos de corriente con una tensión U_{eff} > 30 V se deberán tomar las medidas apropiadas para impedir cualquier peligro (p. ej. medios de medición adecuados, seguros, limitación de tensión, corte protector, aislamiento etc.).
10. Para la conexión con dispositivos informáticos como un PC o un ordenador industrial, debe comprobarse que éstos cumplan los estándares IEC60950-1/EN60950-1 o IEC61010-1/EN 61010-1 válidos en cada caso.

11. A menos que esté permitido expresamente, no retire nunca la tapa ni componentes de la carcasa mientras el producto esté en servicio. Esto pone a descubierto los cables y componentes eléctricos y puede causar lesiones, fuego o daños en el producto.
12. Si un producto se instala en un lugar fijo, se deberá primero conectar el conductor de protección fijo con el conductor de protección del producto antes de hacer cualquier otra conexión. La instalación y la conexión deberán ser efectuadas por un electricista especializado.
13. En el caso de dispositivos fijos que no estén provistos de fusibles, interruptor automático ni otros mecanismos de seguridad similares, el circuito de alimentación debe estar protegido de modo que todas las personas que puedan acceder al producto, así como el producto mismo, estén a salvo de posibles daños.
14. Todo producto debe estar protegido contra sobretensión (debida p. ej. a una caída del rayo) mediante los correspondientes sistemas de protección. Si no, el personal que lo utilice quedará expuesto al peligro de choque eléctrico.
15. No debe introducirse en los orificios de la caja del aparato ningún objeto que no esté destinado a ello. Esto puede producir cortocircuitos en el producto y/o puede causar choques eléctricos, fuego o lesiones.
16. Salvo indicación contraria, los productos no están impermeabilizados (ver también el capítulo "Estados operativos y posiciones de funcionamiento", punto 1). Por eso es necesario tomar las medidas necesarias para evitar la entrada de líquidos. En caso contrario, existe peligro de choque eléctrico para el usuario o de daños en el producto, que también pueden redundar en peligro para las personas.
17. No utilice el producto en condiciones en las que pueda producirse o ya se hayan producido condensaciones sobre el producto o en el interior de éste, como p. ej. al desplazarlo de un lugar frío a otro caliente. La entrada de agua aumenta el riesgo de choque eléctrico.
18. Antes de la limpieza, desconecte por completo el producto de la alimentación de tensión (p. ej. red de alimentación o batería). Realice la limpieza de los aparatos con un paño suave, que no se deshilache. No utilice bajo ningún concepto productos de limpieza químicos como alcohol, acetona o diluyentes para lacas nitrocelulósicas.

Funcionamiento

1. El uso del producto requiere instrucciones especiales y una alta concentración durante el manejo. Debe asegurarse que las personas que manejen el producto estén a la altura de los requerimientos necesarios en cuanto a aptitudes físicas, psíquicas y emocionales, ya que de otra manera no se pueden excluir lesiones o daños de objetos. El empresario u operador es responsable de seleccionar el personal usuario apto para el manejo del producto.
2. Antes de desplazar o transportar el producto, lea y tenga en cuenta el capítulo "Transporte".
3. Como con todo producto de fabricación industrial no puede quedar excluida en general la posibilidad de que se produzcan alergias provocadas por algunos materiales empleados —los llamados alérgenos (p. ej. el níquel)—. Si durante el manejo de productos Rohde & Schwarz se producen reacciones alérgicas, como p. ej. irritaciones cutáneas, estornudos continuos, enrojecimiento de la conjuntiva o dificultades respiratorias, debe avisarse inmediatamente a un médico para investigar las causas y evitar cualquier molestia o daño a la salud.
4. Antes de la manipulación mecánica y/o térmica o el desmontaje del producto, debe tenerse en cuenta imprescindiblemente el capítulo "Eliminación/protección del medio ambiente", punto 1.

5. Ciertos productos, como p. ej. las instalaciones de radiocomunicación RF, pueden a causa de su función natural, emitir una radiación electromagnética aumentada. Deben tomarse todas las medidas necesarias para la protección de las mujeres embarazadas. También las personas con marcapasos pueden correr peligro a causa de la radiación electromagnética. El empresario/operador tiene la obligación de evaluar y señalizar las áreas de trabajo en las que exista un riesgo elevado de exposición a radiaciones.
6. Tenga en cuenta que en caso de incendio pueden desprenderse del producto sustancias tóxicas (gases, líquidos etc.) que pueden generar daños a la salud. Por eso, en caso de incendio deben usarse medidas adecuadas, como p. ej. máscaras antigás e indumentaria de protección.
7. Los productos con láser están provistos de indicaciones de advertencia normalizadas en función de la clase de láser del que se trate. Los rayos láser pueden provocar daños de tipo biológico a causa de las propiedades de su radiación y debido a su concentración extrema de potencia electromagnética. En caso de que un producto Rohde & Schwarz contenga un producto láser (p. ej. un lector de CD/DVD), no debe usarse ninguna otra configuración o función aparte de las descritas en la documentación del producto, a fin de evitar lesiones (p. ej. debidas a irradiación láser).
8. Clases de compatibilidad electromagnética (conforme a EN 55011 / CISPR 11; y en analogía con EN 55022 / CISPR 22, EN 55032 / CISPR 32)
   - Aparato de clase A:
     Aparato adecuado para su uso en todos los entornos excepto en los residenciales y en aquellos conectados directamente a una red de distribución de baja tensión que suministra corriente a edificios residenciales.
     Nota: Los aparatos de clase A están destinados al uso en entornos industriales. Estos aparatos pueden causar perturbaciones radioeléctricas en entornos residenciales debido a posibles perturbaciones guiadas o radiadas. En este caso, se le podrá solicitar al operador que tome las medidas adecuadas para eliminar estas perturbaciones.
   - Aparato de clase B:
     Aparato adecuado para su uso en entornos residenciales, así como en aquellos conectados directamente a una red de distribución de baja tensión que suministra corriente a edificios residenciales.

Reparación y mantenimiento

1. El producto solamente debe ser abierto por personal especializado con autorización para ello. Antes de manipular el producto o abrirlo, es obligatorio desconectarlo de la tensión de alimentación, para evitar toda posibilidad de choque eléctrico.
2. El ajuste, el cambio de partes, el mantenimiento y la reparación deberán ser efectuadas solamente por electricistas autorizados por Rohde & Schwarz. Si se reponen partes con importancia para los aspectos de seguridad (p. ej. el enchufe, los transformadores o los fusibles), solamente podrán ser sustituidos por partes originales. Después de cada cambio de partes relevantes para la seguridad deberá realizarse un control de seguridad (control a primera vista, control del conductor de protección, medición de resistencia de aislamiento, medición de la corriente de fuga, control de funcionamiento). Con esto queda garantizada la seguridad del producto.

Baterías y acumuladores o celdas

Si no se siguen (o se siguen de modo insuficiente) las indicaciones en cuanto a las baterías y acumuladores o celdas, pueden producirse explosiones, incendios y/o lesiones graves con posible consecuencia de muerte. El manejo de baterías y acumuladores con electrolitos alcalinos (p. ej. celdas de litio) debe seguir el estándar EN 62133.

1. No deben desmontarse, abrirse ni triturarse las celdas.
2. Las celdas o baterías no deben someterse a calor ni fuego. Debe evitarse el almacenamiento a la luz directa del sol. Las celdas y baterías deben mantenerse limpias y secas. Limpiar las conexiones sucias con un paño seco y limpio.
3. Las celdas o baterías no deben cortocircuitarse. Es peligroso almacenar las celdas o baterías en estuches o cajones en cuyo interior puedan cortocircuitarse por contacto recíproco o por contacto con otros materiales conductores. No deben extraerse las celdas o baterías de sus embalajes originales hasta el momento en que vayan a utilizarse.
4. Las celdas o baterías no deben someterse a impactos mecánicos fuertes indebidos.
5. En caso de falta de estanqueidad de una celda, el líquido vertido no debe entrar en contacto con la piel ni los ojos. Si se produce contacto, lavar con agua abundante la zona afectada y avisar a un médico.
6. En caso de cambio o recarga inadecuados, las celdas o baterías que contienen electrolitos alcalinos (p. ej. las celdas de litio) pueden explotar. Para garantizar la seguridad del producto, las celdas o baterías solo deben ser sustituidas por el tipo Rohde & Schwarz correspondiente (ver lista de recambios).
7. Las baterías y celdas deben reciclarse y no deben tirarse a la basura doméstica. Las baterías o acumuladores que contienen plomo, mercurio o cadmio deben tratarse como residuos especiales. Respete en esta relación las normas nacionales de eliminación y reciclaje.
8. En caso de devolver baterías de litio a las filiales de Rohde & Schwarz, debe cumplirse las normativas sobre los modos de transporte (IATA-DGR, código IMDG, ADR, RID).

Transporte

1. El producto puede tener un peso elevado. Por eso es necesario desplazarlo o transportarlo con precaución y, si es necesario, usando un sistema de elevación adecuado (p. ej. una carretilla elevadora), a fin de evitar lesiones en la espalda u otros daños personales.
2. Las asas instaladas en los productos sirven solamente de ayuda para el transporte del producto por personas. Por eso no está permitido utilizar las asas para la sujeción en o sobre medios de transporte como p. ej. grúas, carretillas elevadoras de horquilla, carros etc. Es responsabilidad suya fijar los productos de manera segura a los medios de transporte o elevación. Para evitar daños personales o daños en el producto, siga las instrucciones de seguridad del fabricante del medio de transporte o elevación utilizado.
3. Si se utiliza el producto dentro de un vehículo, recae de manera exclusiva en el conductor la responsabilidad de conducir el vehículo de manera segura y adecuada. El fabricante no asumirá ninguna responsabilidad por accidentes o colisiones. No utilice nunca el producto dentro de un vehículo en movimiento si esto pudiera distraer al conductor. Asegure el producto dentro del vehículo debidamente para evitar, en caso de un accidente, lesiones u otra clase de daños.

Eliminación/protección del medio ambiente

1. Los dispositivos marcados contienen una batería o un acumulador que no se debe desechar con los residuos domésticos sin clasificar, sino que debe ser recogido por separado. La eliminación se debe efectuar exclusivamente a través de un punto de recogida apropiado o del servicio de atención al cliente de Rohde & Schwarz.
2. Los dispositivos eléctricos usados no se deben desechar con los residuos domésticos sin clasificar, sino que deben ser recogidos por separado.
   Rohde & Schwarz GmbH & Co.KG ha elaborado un concepto de eliminación de residuos y asume plenamente los deberes de recogida y eliminación para los fabricantes dentro de la UE. Para desechar el producto de manera respetuosa con el medio ambiente, diríjase a su servicio de atención al cliente de Rohde & Schwarz.
3. Si se trabaja de manera mecánica y/o térmica cualquier producto o componente más allá del funcionamiento previsto, pueden liberarse sustancias peligrosas (polvos con contenido de metales pesados como p. ej. plomo, berilio o níquel). Por eso el producto solo debe ser desmontado por personal especializado con formación adecuada. Un desmontaje inadecuado puede ocasionar daños para la salud. Se deben tener en cuenta las directivas nacionales referentes a la eliminación de residuos.
4. En caso de que durante el trato del producto se formen sustancias peligrosas o combustibles que deban tratarse como residuos especiales (p. ej. refrigerantes o aceites de motor con intervalos de cambio definidos), deben tenerse en cuenta las indicaciones de seguridad del fabricante de dichas sustancias y las normas regionales de eliminación de residuos. Tenga en cuenta también en caso necesario las indicaciones de seguridad especiales contenidas en la documentación del producto. La eliminación incorrecta de sustancias peligrosas o combustibles puede causar daños a la salud o daños al medio ambiente.

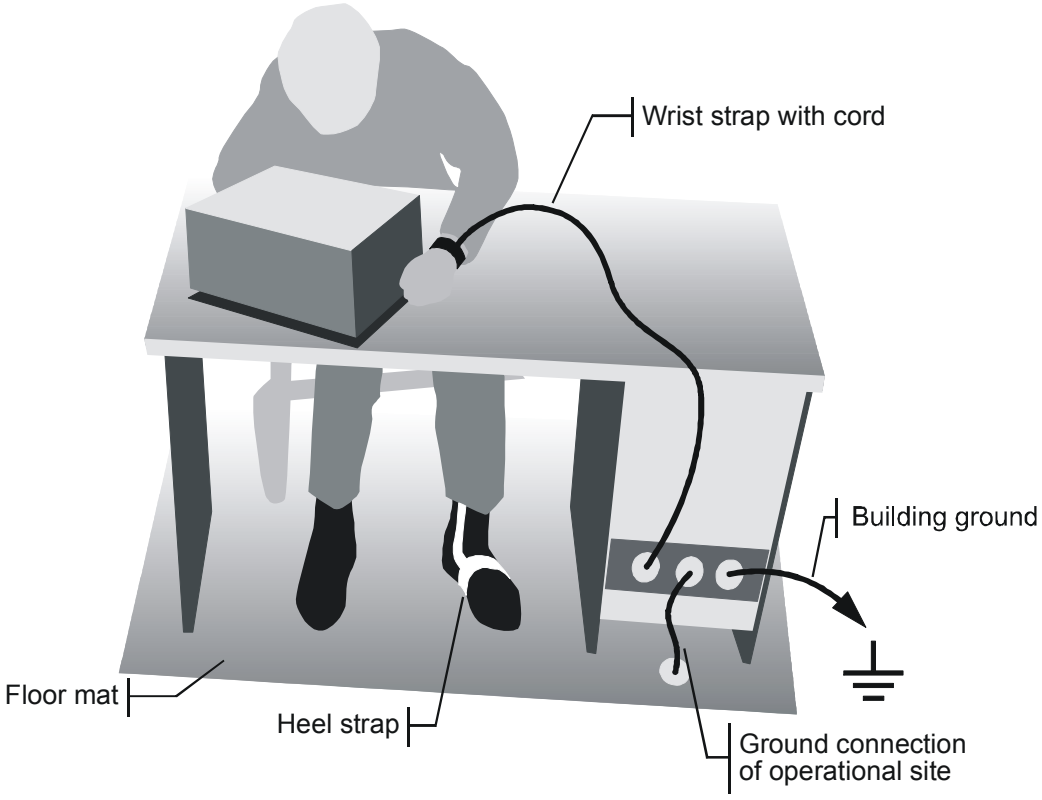
Se puede encontrar más información sobre la protección del medio ambiente en la página web de Rohde & Schwarz.

Instructions for Electrostatic Discharge Protection

NOTICE

Risk of damaging electronic components

To avoid damage of electronic components, the operational site must be protected against electrostatic discharge (ESD).



The following two methods of ESD protection may be used together or separately:

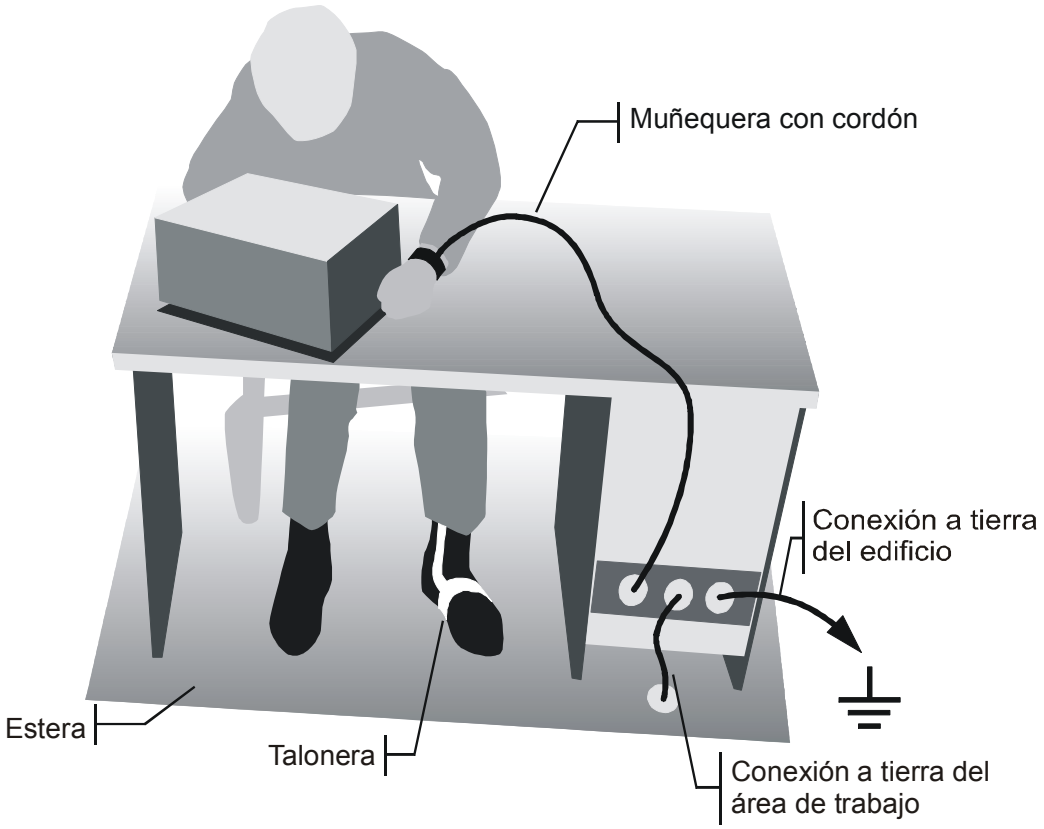
- Wrist strap with cord to ground connection
- Conductive floor mat and heel strap combination

Instrucciones para la protección contra descargas electroestáticas

AVISO

Riesgo de avería de los componentes electrónicos

Para evitar averías en los componentes electrónicos, el área de trabajo tiene que estar protegido contra descargas electroestáticas ESD (electrostatic discharge).



Los siguientes dos métodos de protección ESD pueden ser usados juntos o separados:

- Muñequera con cordón para conexión a tierra
- Combinación de estera antiestática y talonera

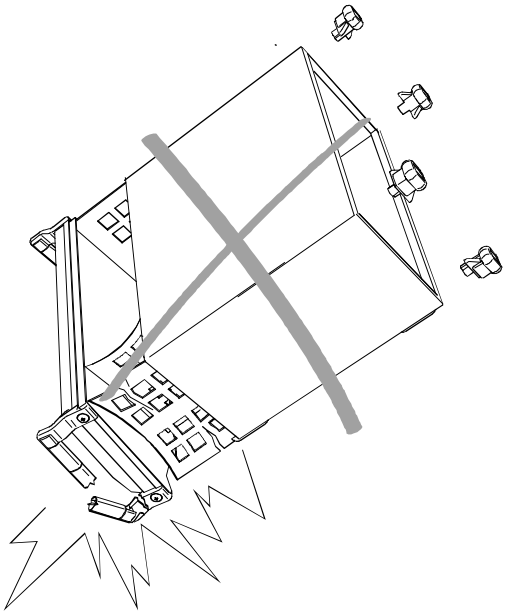
Safety Instructions for Units with Removable Cabinet

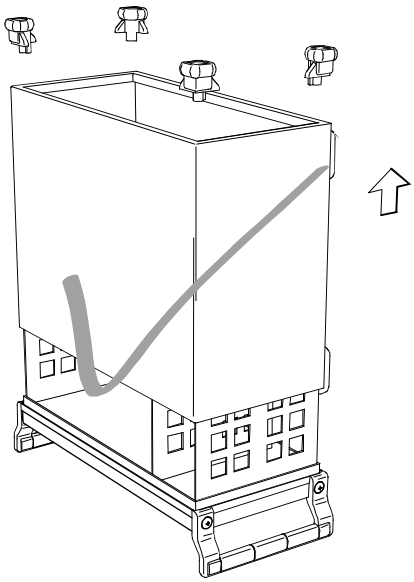
⚠ WARNING

Danger of injuries

When removing the rear feet, the unit can slip out of the cabinet.

Put the unit onto the front handles, before removing the rear feet and taking off the cabinet. Thus the risk of personal injuries and damages to the unit is avoided.





When mounting the cabinet take care not to pen in the fingers. Also pay attention not to damage or pull off cables. Screw the rear feet back on immediately after mounting the cabinet. Do not move the unit with the rear feet missing.

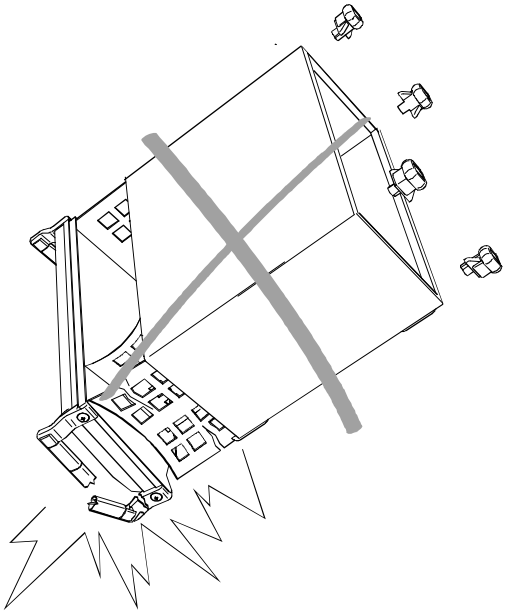
Informaciones de seguridad para aparatos con tubo de quita y pon

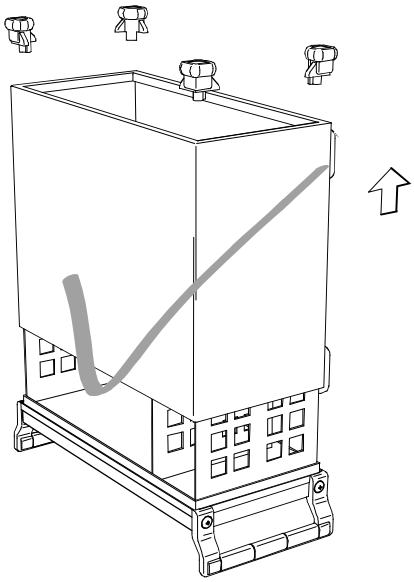
⚠ ADVERTENCIA

Peligro de heridas

Al sacar los piés de la pared posterior puede deslizarse el aparato fuera de la caja.

Posicionar el aparato de manera segura sobre las asas delanteras, antes de sacar los piés de la pared posterior y entonces sacar la caja. De esta manera evitarán el riesgo de daños en personas y daños en el aparato.





Existe el riesgo de heridas en el momento de poner otra vez la caja, como por ejemplo posiblemente engancharse los dedos. Por favor tengan además en cuenta de que no se enganchen o desconecten cables. Por favor atornillen los piés de la pared posterior directamente despues de poner la caja. No muevan el aparato nunca sin que los piés de la pared posterior estén atornillados.

Procedure for servicing and repairs

This section contains information on shipping an instrument or module to your service center.

Please contact your local Rohde & Schwarz service center if your equipment needs to be serviced or repaired. You can find the current address of your representative at www.rohde-schwarz.com.

Shipping the instrument or module

We require the following information in order to answer your inquiry quickly and correctly and to determine whether the warranty is still valid for your product:

- Instrument model
- Serial number
- Firmware version
- Does the instrument have to be returned with this firmware?
- Detailed error description in case of repair
- Indication of desired calibration
- Contact person for questions

In many countries, an RMA process is available (pickup and delivery of your product). For details, contact your local representative.

When shipping the product, ensure that there is sufficient mechanical and antistatic protection.

- Where possible, use the original packaging to transport or ship the product. The front and rear protective covers prevent damage to the operating elements and the connectors.
- If you do not use the original packaging, ensure sufficient padding to prevent the product from moving around inside the box. Wrap antistatic film around the product to protect it from electrostatic charging.
- Comply with the relevant safety and security measures for products with batteries.

As the manufacturer, Rohde & Schwarz can ensure that your instruments perform optimally throughout their service life by regularly calibrating them on its own measurement systems. Rohde & Schwarz calibration includes preventative measures such as adjustments. The calibration documentation fulfills ISO 17025 requirements.

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1 Performance Test

Preliminary Remarks

- The required characteristics of the network analyzer are checked after a warm-up time of at least 60 minutes; this ensures that the guaranteed data is met.
- The values stated in the following sections are not guaranteed data; only the specifications in the data sheet are binding.
- The values in the data sheet are guaranteed limits. Because of the measurement errors that arise, these limits must be increased to encompass the tolerances of the measuring equipment used for the performance test.
- Entries for the measurement are represented in the following way:

  [**<KEY>**] Press a front-panel key, e.g. [**SPAN**]

  [<SOFTKEY>] Press a softkey, e.g. [MARKER -> PEAK]

  [<**nn unit**>] Enter a value + terminate the entry with a unit, e.g. [**12 kHz**]

  # Represents the number of the PORT under test, e.g. **1** for PORT 1.

  Consecutive entries are separated with a [:], e.g. [**Meas Bandwidth** : 1 kHz]

- **The sequence of test measurements must be followed because on some measurements the ZVA under test is used as test equipment. Because of this procedure no spectrum analyzer FSU40, FSU50, or FSU67 is necessary.**

Test measurement	**Successful test provided**
Harmonics	Accuracy of output power Power measurement accuracy Input linearity
Output linearity	Accuracy of output power Power measurement accuracy Input linearity

Test Equipment and Accessories

Item	Type of equipment	Recommended characteristics or features	Recommended model	R&S Order No.	Application
1	Spectrum analyzer	a) Counter mode: Min. resolution: 0.1 Hz	R&S FSU xx		Frequency Accuracy
2	Power meter		R&S NRP + Sensor		Accuracy of output power Power measurement accuracy
3	Power sensor	300 kHz to 8 GHz	R&S NRP-Z51	1138.0005.02	Accuracy of output power Power measurement accuracy on R&S ZVA8
3	Power sensor	10 MHz to 40 GHz	R&S NRP-Z55	1138.2008.02	Accuracy of output power Power measurement accuracy on R&S ZVA24 and R&S ZVA40
3	Power sensor	10 MHz to 50 GHz	R&S NRP-Z56	1171.8201.02	Accuracy of output power Power measurement accuracy on R&S ZVA50
3	Power sensor	10 MHz to 67 GHz	R&S NRP-Z57	1171.8401.02	Accuracy of output power Power measurement accuracy on R&S ZVA67
4	Calibration kit	N, 50 Ω, DC to 18 GHz	R&S ZV-Z270	5011.6536.02	Input linearity Matching port 1 to port 4 Input noise level on R&S ZVA8
4	Calibration kit	3.5mm, 50 Ω, DC to 26.5 GHz	R&S ZV-Z235	5011.6542.02	Input linearity Matching port 1 to port 4 Input noise level on R&S ZVA24
4	Calibration kit	2.92 mm, 50 Ω, DC to 40 GHz	R&S ZV-Z229	5011.6559.02	Input linearity Matching port 1 to port 4 Input noise level on R&S ZVA40
4	Calibration kit	2.4 mm, 50 Ω, DC to 50 GHz	R&S ZV-Z224	5011.6565.02	Input linearity Matching port 1 to port 4 Input noise level on R&S ZVA40 and R&S ZVA50
4	Calibration kit	1.85 mm, 50 Ω, 10 MHz to 67 GHz	R&S ZV-Z218	5011.6571.02	Input linearity Matching port 1 to port 4 Input noise level on R&S ZVA67
5	Signal generator	300 kHz to 40 GHz, Power = -40 dBm to 10 dBm	R&S SML01 R&S SMR40 with Option R&S SMR-B17	1090.3000.11 1104.0002.40 1104.5233.02	Power measurement a on R&S ZVA8, R&S ZVA24 and R&S ZVA40
5	Signal generator	40 GHz to 67 GHz, Power = -40 dBm to 0 dBm	SMR50 with Adapter FSU/ZVA67	1134.9008.50 5009.5507.02	Power measurement accuracy on R&S ZVA50 and R&S ZVA67
6	Power splitter	N, 50 Ohm, Γ_{eq} < 0.05 (50 MHz to 8 GHz) Output tracking < 0.15 dB	Weinschel 1870A	-	Power measurement accuracy
6	Power splitter	3.5mm, 50 Ohm, Output tracking < 0.25 dB	Weinschel 1593	-	Recording correction values on R&S ZVA24

Item	Type of equipment	Recommended characteristics or features	Recommended model	R&S Order No.	Application
6	Power splitter	2.92mm, 50 Ohm, Output tracking < 0.5 dB	Weinschel 1534	-	Power measurement accuracy on R&S ZVA40
6	Power splitter	1.85mm, 50 Ohm, Output tracking < 0.5 dB	Anritsu SC6778	-	Power measurement accuracy on R&S ZVA50
7	Test cable	Test cable N (m) to N (m).	R&S ZV-Z191	1306.4507.24	Frequency uncertainty Harmonics Matching port 1 to port 4 Power measurement accuracy on R&S ZVA8
7	Test cable	Test cable 2.92 mm (m) to 2.92mm (f)	R&S ZV-Z195	1306.4536.24	Frequency uncertainty Harmonics Matching port 1 to port 4 Power measurement accuracy on R&S ZVA24 and R&S ZVA40
7	Test cable	Test cable 1.85 mm (m) to 1.85mm (f)	R&S ZV-Z196	1306.4559.24	Frequency uncertainty Harmonics Matching port 1 to port 4 Power measurement accuracy on R&S ZVA50 and R&S ZVA67
8	Attenuator	20 dB attenuator, N (f), N (m)	R&S DNF	0272.4310.50	Harmonics Output linearity on R&S ZVA8
8	Attenuator	20 dB attenuator, 2.92 mm (f), 2.92mm (m)	Anritsu 41KC-20		Harmonics Output linearity on R&S ZVA24 and R&S ZVA40
8	Attenuator	20 dB attenuator, 1.85 mm (f), 1.85 mm (m)	Anritsu 41V-20		Harmonics Output linearity on R&S ZVA50 and R&S ZVA67
9	BNC cable	Male – male, approx. 1.5 m			General: Device synchronisation
10	DC power supply	-12 V to +12 V	R&S NGSM 32/10	0192.0810.31	DC meas inputs
11	Multimeter	MU < 0.2%, DC range 1 V, 10 V	R&S URE3	0350.5315.03	DC meas inputs
12	Conn. Cables for DC inputs		R&S ZV-Z71	1164.1005.02	DC meas inputs

Performance Test

Compare with data sheet

Checking the Frequency Accuracy

Instrument:	Spectrum analyzer (see Chapter “Test Equipment“, Item1)
	Test cable (see Chapter “Test Equipment“, Item7)
Test setup:	Connect the spectrum analyzer to port 1 Syncronize spectrum analyzer with ext. normal frequency 10MHz
Spectrum analyzer settings:	- [**PRESET**] - [**FREQ** : **1 GHz**] - [**SPAN** : **100 kHz**] - [**BW** : MANUAL RES BW : **2 kHz**] - [**MARKER** : MARKER MODE : FREQ COUNT] - [**AMPT** : REF LEVEL : **10 dBm**]
R&S® ZVA settings	- [**Preset**] - [**Meas** :Wave Quantities: a1 Src Port 1] - [**Sweep** : Sweep Type : CW Mode : CW Frequency : **1 GHz**; Power : **0 dBm**] - [**Sweep** : Single : **Restart**]
Measurement:	Read off the frequency indicated by the marker.
	Frequency deviation = marker value – 1 GHz
	Max. frequency deviation ..... see Performance Test Report

Checking the Maximum Output Power

Test equipment:	Power sensor (item 3) *ZVA24, ZVA40, ZVA50, ZVA67, ZVB14, ZVB20 only:* Calibration kit (item 4)
Test setup:	Connect power sensor to test port # of DUT, (*ZVA24, ZVA40, ZVA50, ZVA67, ZVB14, ZVB20 only:* using the ff adapter from the calibration kit)
Power sensor settings:	Set frequency to f_{Gen}
ZVA/B settings:	- [**PRESET**] - [**SYSTEM CONFIG** : Internal Reference] - [**SWEEP** : Sweep Type : CW Mode] - [**POWER BW AVG** : Power : 99 dBm] - [**MEAS** : Wave Quantities: a1 Src Port 1 (a2 Src Port 2; More Wave Quantities: Wave Quantity: a3, Source Port: Port 3…)] - [**START CENTER** : CW Frequency : {f_{Gen}*}] * For measurement frequencies, see Performance Test Report {f_{GEN}}.
Measurement:	Read off the indicated power value. Min output power ..... see Performance Test Report

Checking the Accuracy of Output Power

Instrument:	Power sensor or Power meter with power sensor (see Chapter “Test Equipment“, Item2)
Test setup:	Connect the power sensor to port #
Power sensor settings:	For measurement frequencies, see Performance Test Report {f_{GEN}*}.
R&S®ZVA settings:	- [**Preset**] - [**Meas** :Wave Quantities: a# Src Port #] - [**Sweep** : Sweep Type : CW Mode : CW Frequency : **{f_{GEN}*}** ; Power : **-10 dBm**] - [**Mode** : ALC : **On**] - [**Sweep** : Single : **Restart**] * For measurement frequencies, see Performance Test Report {f_{GEN}}.
Measurement:	Read off the levels indicated by the power sensor Level deviation = L_{SENSOR} – (-10 dBm)

Checking the Power Measurement Accuracy

Instrument:	Power sensor or Power meter with power sensor (see Chapter “Test Equipment“, Item2) Signal generator (see Chapter “Test Equipment“, Item5) Power splitter (see Chapter “Test Equipment“, Item6) Calibration kit (see Chapter “Test Equipment“, Item4) Test cable (see Chapter “Test Equipment“, Item7)
Preparation/ test setup:	Connect the signal generator to the power splitter input using the test cable. Connect the power sensor to a power splitter output Connect the other power splitter output to port# using an adapter from the calibration kit The reference oscillators in the signal generator and in the ZVA must be synchronized.
R&S®ZVA settings:	- [**Preset**] - [**Meas** : Wave Quantities: b# Src Port #] - [**Power** : RF Off] - [**Meas Bandwidth** : 100 Hz] - [**Marker**] - [**Sweep** : Sweep Type : CW Mode : CW Frequency : **{f_{GEN}*}**] - [**Sweep** : Single : **Restart**] * For the measurement frequencies, see Performance Test Report {fGEN}.
Measurement:	Signal generator : CW Mode, Frequency: f_{gen} Signal-generator level: -5 dBm Adjust the signal-generator level so that the power meter reads 0 dB +/- 0.2 dB Read off the power meter display and the ZVA marker values. Level error = $L_{ZVA} – L_{PS}$
In case of optional receiver step attenuators further R&S® ZVAB settings:	- [**PRESET**] - [**MEAS** : WAVE QUANTITIES : b# SRC PORT # - [**TRACE FUNCT**: DATA → MEM : MATH = DATA / MEM] - [**POWER**: STEP ATTENUATORS: b#: 5 dB] - [**POWER**: STEP ATTENUATORS: b#: 15 dB] - [**POWER**: STEP ATTENUATORS: b#: 35 dB]
In case of optional receiver step attenuators further measurement:	Read out math trace.

Checking the Input Linearity

Instrument: Calibration kit (see Chapter “Test Equipment“, Item4)

R&S®ZVA settings:
- [**Preset**]
- [**Meas** : Ratios: b#/a# Src Port #]
- [**Meas Bandwidth** : 10 Hz]
- [**Marker**]
- [**Sweep** : Sweep Type : Power : Start -40dBm : Stop 10dBm : CW Frequency : **{f_{GEN}*}**]
- [**Sweep** : Single : **Restart**]

* For measurement frequencies, see Performance Test Report {fGEN}

1. Test setup: Connect an open male to port #

1. Measurement:
- [**Trace Funct**]
- [**Data -> Mem**]
- [**Show Mem** : off]

2. Test setup: Connect a short male to port #

2. Measurement:
- [**Math = Data/Mem** : on]

Set **Ref Marker** to -10dBm
Select **Delta Mode**
Set **Marker1** to -40dBm up to +10dBm by 5dB steps

Read off the differences of the Marker Values displayed by the ZVA

Checking the Harmonics

Instrument:	Test cable (see Chapter “Test Equipment", Item7) 20dB attenuator (see Chapter “Test Equipment", Item7)
Test setup:	Connect the attenuator to one of the other ports (portx) Connect one end of the test cable to the attenuator
Calibration:	Perform a power calibration (with test cable and attenuator, for power settings see Performance Test Report). If there are different power settings, depending on the frequency range, for each power setting a calibration must be performed.
R&S® ZVA settings:	- [**Preset**] With option K4: - [**Mode** : Harmonics : 2nd Harmonic (Port# to Portx) : Relative Measurement] - [**Mode** : Harmonics : 3nd Harmonic (Port# to Portx) : Relative Measurement] Without option K4: - Service Function 1.0.0.0.1 (see chapter 3 ‘Service Functions’, Service Level 2) - [**Stop** : **fmax/2**] (2nd Harmonic) - [**Stop** : **fmax/3**] (3nd Harmonic) - [**Pwr BW AVG** : **{p_{GEN}*}**] - [**Marker** : **{f_{GEN}*}**] * For marker frequencies and power settings, see Performance Test Report.
Measurement:	Read off the marker values

Checking the Output Linearity

Instrument:
Test cable (see Chapter “Test Equipment“, Item7)
20dB attenuator (see Chapter “Test Equipment", Item7)

Test setup:
Connect the attenuator to port#
Connect the test cable to the attenuator and to one of the other ports (portx)

R&S®ZVA settings:
- [**Preset**]
- [**Meas** : Wave Quantities: bx Src Port #]
- [**Mode** : ALC : **On**]
- [**Sweep** : Sweep Type : CW Mode :
  CW Frequency : **{f_{GEN}*}**]
- [**Marker** : **{f_{GEN}*}**]
- [**Pwr BW AVG** : **-10 dBm**]
- [**Trace Funct** : **Data -> Mem**]
- [**Show Mem** : off]
- [**Math = Data/Mem** : on]
- [**Pwr BW AVG** : **{p_{GEN}*}**]
- [**Sweep** : Single : **Restart**]

* For measurement frequencies {fGEN} and levels {p_{GEN}}, see Performance Test Report

Measurement:
Read off the marker values
Linearity deviation = (marker value – pwr setting – 10) dB

Checking the Input Noise Level

Test equipment:	Calibration kit (see Chapter “Test Equipment“, Item4)
Test setup:	Connect the Match Male from the calibration kit to port #
R&S®ZVA settings:	- [**Preset**] - [**Meas** : Wave Quantities: b# Src Port #] - [**System Config** : RF Off Behaviour: Slow, Lower Broadband Noise] - [**Power** : RF Off] - [**Meas Bandwidth** : 10 Hz] - [**Marker**] - [**Sweep** : Sweep Type : CW Mode : CW Frequency : **{f_{GEN}*}**] - Service Function 1.0.0.1.1 (see chapter 3 ‘Service Functions’, Service Level 2) - [**Measure** : Wave Quantities : More Wave Quantities… : Properties : Detector : **RMS** : Meas. Time: 500ms] - [**Sweep** : Single : **Restart**] * For measurement frequencies, see Performance Test Report {fGEN}.
Measurement:	Read off the noise level indicated by the markers on the DUT.

Checking the Matching (raw)

Instrument:	Calibration kit (see Chapter “Test Equipment“, Item4) Test cable (see Chapter “Test Equipment“, Item7)
R&S®ZVA settings:	- [**Preset**] - [**Power** : 0 dBm]
1. Preparation/ test setup:	Connect the test cable to port x on the R&S®ZVA and perform a 1-port calibration at the end of the cable. Connect the end of the test cable to port # on the R&S®ZVA.
R&S®ZVA settings:	- [**Meas** : Sxx] - [**Marker**]
Measurement	Read off the network analyzer’s marker values (for marker frequencies see Performance Test Report)

Checking the Dynamic Range

Test equipment:
Calibration kit N
(see Chapter “Test Equipment“, Item4)

Test setup:
Connect Short Male to port1 and port 2 (port 3 and port 4)
(use Short Female with Through Male as a second Short Male)

R&S®ZVA settings:
- [**Preset**]
- [**Meas** : Ratios : b1/a2 Src Port 2]
  [**Meas** : Ratios : b2/a1 Src Port 1]
  [**Meas** : Ratios : b3/a4 Src Port 4] *
  [**Meas** : Ratios : b4/a3 Src Port 3] *
- [**Power** : Max. specified power]
- [**Meas Bandwidth** : 10 Hz]
- [**Marker**]
- [**SWEEP** : NUMBER OF POINTS : 201 (ZVA8)]
  351 (ZVA24)]
  701 (ZVA40)]
  851 (ZVA50, ZVA80BU)]
  1001 (ZVA67)]
- [**Sweep** : Sweep Type : CW Mode : CW Frequency : **{f_{GEN}**}**]
- [**Measure** : Wave Quantities : More Wave Quantities… : Properties :
  Detector : **RMS** Meas Time: 1 s (ZVA8), 0.5 s (ZVA24, ZVA40, ZVA50, ZVA67, ZVA80BU)]
- [**Sweep** : Single : **Restart**]

* Not valid with ZVA80BU
** For measurement frequencies, see Performance Test Report {fGEN}.

Measurement:
Read off marker value

Calculation:
Dynamic range = Marker value + Power value

Checking the Receiver Attenuator **(only with Option Receiver Attenuator)**

Test equipment:	Calibration kit N (see Chapter “Test Equipment“, Item4)
Test setup:	Connect Short Male to port#
R&S®ZVA settings:	- [**Preset**] - [**Meas** : Wave Quantities : b#/ Src Port #] - [**Power** : 0 dBm] - [**Meas Bandwidth** : 100 Hz] - [**Trace Funct** : Data -> Mem : Math = Data/Mem : Show Mem off] - [**Pwr BW AVG** : Receiver Step Atten : Port # {a Rec Att}*] - [**Trace Funct** : Shift Response Value : Magnitude { -a Rec Att}] - [**Marker**] * For attenuator settings {a Rec Att}, see Performance Test Report.
Measurement:	Read off the network analyzer’s marker values (for marker frequencies see Performance Test Report)

Checking the DC Measurement Inputs

Test equipment:	DC Power Supply NGSM 32/10 (see Chapter “Test Equipment“, Item 10) Multimeter URE3 (see Chapter “Test Equipment“, Item11) DC cable (see Chapter “Test Equipment“, Item12)
Test setup:	Connect the Power Supply to the Input DC MEAS 1V (DC MEAS 10V) of the ZVA using the DC cable
R&S®ZVA settings:	- [**Preset**] For DC Meas 1 V: - [**Meas** : More : DC Inputs : DC Meas ±1 V] - [**Format** : Real] - [**Scale** : Scale/Div : .25 x1] - [**Marker**] For DC Meas 10 V: - [**Meas** : More : DC Inputs : DC Meas ±10 V] - [**Format** : Real] - [**Scale** : Scale/Div : 2.5 x1] - [**Marker**]
Measurement:	Set Power Supply to DC values U_{DC} using Multimeter URE (DC values see Performance Test Report) and connect it to pos. and neg. input Read off the DC level $U_{DC\ ZVA}$ indicated by the marker.
Calculation:	Deviation = U_{DC} - $U_{DC\ ZVA}$

Performance Test Report R&S® ZVA8

ROHDE&SCHWARZ	**Vector Network Analyzer 8 GHz, _ ports 1145.1110K__** **R&S® ZVA8**
Serial number:	
Date:	
Person responsible:	
Signature:	

Parameter	**Reference**	**Min. value**	**Actual value**	**Max. value**	**Unit**	**Measurement uncertainty**
Frequency deviation @ 1 GHz	Page 1.4	- 8000	_____	+ 8000	Hz	1 Hz
With Option ZVAB-B4		- 100	_____	+ 100		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +8dBm**	Page 1.5				dBc	
Freq. **Harmonics**						
50 MHz 100 MHz			_____	-20		0.6 dB
150 MHz			_____	-20		0.6 dB
100 MHz 200 MHz			_____	-20		0.6 dB
300 MHz			_____	-20		0.6 dB
200 MHz 400 MHz			_____	-20		0.6 dB
600 MHz			_____	-20		0.6 dB
500 MHz 1000 MHz			_____	-20		0.6 dB
1500 MHz			_____	-20		0.6 dB
750 MHz 1500 MHz			_____	-20		0.6 dB
2250 MHz			_____	-20		0.6 dB
1 GHz 2 GHz			_____	-20		0.6 dB
3 GHz			_____	-20		0.6 dB
1.5 GHz 3 GHz			_____	-20		0.6 dB
4.5 GHz			_____	-20		0.6 dB
2 GHz 4 GHz			_____	-20		0.6 dB
6 GHz			_____	-20		0.6 dB
2.1 GHz 4.2 GHz			_____	-20		0.9 dB
6.3 GHz			_____	-20		0.9 dB
2.5 GHz 5.0 GHz			_____	-20		0.9 dB
7.5 GHz			_____	-20		0.9 dB
3.0 GHz 6.0 GHz			_____	-20		0.9 dB
3.5 GHz 7 GHz			_____	-20		0.9 dB
4.0 GHz 8.0 GHz			_____	-20		0.9 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (without opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
300 kHz		10	_____			
1 MHz		10	_____			
2 MHz		10	_____			
5 MHz		10	_____			
10 MHz		10	_____			
20 MHz		10	_____			
50 MHz		10	_____			
100 MHz		10	_____			
200 MHz		10	_____			
500 MHz		10	_____			
750 MHz		10	_____			
1 GHz		10	_____			
1.5 GHz		10	_____			
2 GHz		10	_____			
2.1 GHz		10	_____			
2.5 GHz		10	_____			
3 GHz		10	_____			
3.5 GHz		10	_____			
4 GHz		10	_____			
4.1 GHz		10	_____			
4.5 GHz		10	_____			
5 GHz		10	_____			
5.05 GHz		10	_____			
5.7 GHz		10	_____			
6 GHz		10	_____			
6.35 GHz		10	_____			
6.36 GHz		10	_____			
7 GHz		10	_____			
7.5 GHz		8	_____			
8 GHz		8	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. or dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
300 kHz		9	_____			
1 MHz		9	_____			
2 MHz		9	_____			
5 MHz		9	_____			
10 MHz		9	_____			
20 MHz		9	_____			
50 MHz		9	_____			
100 MHz		9	_____			
200 MHz		9	_____			
500 MHz		9	_____			
750 MHz		9	_____			
1 GHz		9	_____			
1.5 GHz		9	_____			
2 GHz		9	_____			
2.1 GHz		9	_____			
2.5 GHz		9	_____			
3 GHz		9	_____			
3.5 GHz		9	_____			
4 GHz		9	_____			
4.1 GHz		9	_____			
4.5 GHz		9	_____			
5 GHz		9	_____			
5.05 GHz		9	_____			
5.7 GHz		9	_____			
6 GHz		9	_____			
6.35 GHz		9	_____			
6.36 GHz		9	_____			
7 GHz		9	_____			
7.5 GHz		7	_____			
8 GHz		7	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
300 kHz		8	_____			
1 MHz		8	_____			
2 MHz		8	_____			
5 MHz		8	_____			
10 MHz		8	_____			
20 MHz		8	_____			
50 MHz		8	_____			
100 MHz		8	_____			
200 MHz		8	_____			
500 MHz		8	_____			
750 MHz		8	_____			
1 GHz		8	_____			
1.5 GHz		8	_____			
2 GHz		8	_____			
2.1 GHz		8	_____			
2.5 GHz		8	_____			
3 GHz		8	_____			
3.5 GHz		8	_____			
4 GHz		8	_____			
4.1 GHz		8	_____			
4.5 GHz		8	_____			
5 GHz		8	_____			
5.05 GHz		8	_____			
5.7 GHz		8	_____			
6 GHz		8	_____			
6.35 GHz		8	_____			
6.36 GHz		8	_____			
7 GHz		8	_____			
7.5 GHz		6	_____			
8 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power Accuracy** **Output power -10 dBm** **Test frequency:**	Page 1.7				dB	0.2 dB
300 kHz		- 2	_____	2		
1 MHz		- 2	_____	2		
2 MHz		- 2	_____	2		
5 MHz		- 2	_____	2		
10 MHz		- 2	_____	2		
20 MHz		- 2	_____	2		
50 MHz		- 0.8	_____	0.8		
100 MHz		- 0.8	_____	0.8		
200 MHz		- 0.8	_____	0.8		
500 MHz		- 0.8	_____	0.8		
750 MHz		- 0.8	_____	0.8		
1.0 GHz		- 0.8	_____	0.8		
1.5 GHz		- 0.8	_____	0.8		
2.0 GHz		- 0.8	_____	0.8		
2.1 GHz		- 0.8	_____	0.8		
2.5 GHz		- 0.8	_____	0.8		
3.0 GHz		- 0.8	_____	0.8		
3.5 GHz		- 0.8	_____	0.8		
4.0 GHz		- 0.8	_____	0.8		
4.1 GHz		- 0.8	_____	0.8		
4.5 GHz		- 0.8	_____	0.8		
5.0 GHz		- 0.8	_____	0.8		
5.05 GHz		- 0.8	_____	0.8		
5.7 GHz		- 0.8	_____	0.8		
6.0 GHz		- 0.8	_____	0.8		
6.35 GHz		- 0.8	_____	0.8		
6.36 GHz		- 0.8	_____	0.8		
7.0 GHz		- 0.8	_____	0.8		
7.5 GHz		- 0.8	_____	0.8		
8.0 GHz		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(without Opt. Gen Att)							
Reference –10 dBm							
Freq.	**Level**						
51 MHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		
500MHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		
1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		
2 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(without Opt. Gen Att)							
Reference –10 dBm							
Freq.	**Level**						
2.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		
3 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		
4 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		
4.1 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(without Opt. Gen Att)							
Reference –10 dBm							
Freq.	**Level**						
6 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		
8 GHz	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
	-25 dB		- 0.8	_____	0.8		
	-30 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
51 MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
500MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
1 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
2 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
2.1 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
3 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
4 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
4.1 GHz	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
6 GHz	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
8 GHz	17 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Test frequency:**	Page 1.9				dB	0.2 dB
10 MHz		- 1	_____	1		
20 MHz		- 1	_____	1		
50 MHz		- 1	_____	1		
100 MHz		- 1	_____	1		
200 MHz		- 1	_____	1		
500 MHz		- 1	_____	1		
750 MHz		- 1	_____	1		
1 GHz		- 1	_____	1		
1.5 GHz		- 1	_____	1		
2 GHz		- 1	_____	1		
2.1 GHz		- 1	_____	1		
2.5 GHz		- 1	_____	1		
3 GHz		- 1	_____	1		
3.5 GHz		- 1	_____	1		
4 GHz		- 1	_____	1		
4.1 GHz		- 1	_____	1		
4.5 GHz		- 1	_____	1		
5.0 GHz		- 1	_____	1		
5.05 GHz		- 1	_____	1		
5.7 GHz		- 1	_____	1		
6.0 GHz		- 1	_____	1		
6.35 GHz		- 1	_____	1		
6.36 GHz		- 1	_____	1		
7.0 GHz		- 1	_____	1		
7.5 GHz		- 1	_____	1		
8.0 GHz		- 1	_____	1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.10				dB	0.01 dB
Input linearity							
Reference –10 dBm							
Frequ.	**Level**						
50 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
500 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
4 GHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
4.1 GHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.10				dB	0.01 dB
Input linearity							
Reference –10 dBm							
Frequ.	**Level**						
8 GHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (without opt. rec atten. and dir. gen/rec access **Test frequency:**	Page 1.11				dBm	
423 kHz			_____	–100		–
1.12 MHz			_____	–100		–
2.12 MHz			_____	–100		–
5.12 MHz			_____	–100		–
10.12 MHz			_____	–100		–
20.12 MHz			_____	–100		–
50.12 MHz			_____	–100		–
100.12 MHz			_____	–115		–
200.12 MHz			_____	–115		–
500.12 MHz			_____	–115		–
700.12 MHz			_____	–115		–
750.12 MHz			_____	–115		–
1.00012 GHz			_____	–115		–
1.50012 GHz			_____	–115		–
2.00012 GHz			_____	–115		–
2.10012 GHz			_____	–115		–
2.50012 GHz			_____	–115		–
3.00012 GHz			_____	–115		–
3.50012 GHz			_____	–115		–
4.00012 GMz			_____	–115		–
4.10012 GHz			_____	–115		–
4.50012 GHz			_____	–115		–
5.00012 GHz			_____	–115		–
5.05012 GHz			_____	–115		–
5.70012 GHz			_____	–115		–
6.00012 GHz			_____	–115		–
6.35012 GHz			_____	–115		–
6.36012 GHz			_____	–115		–
7.00012 GHz			_____	–115		–
7.50012 GHz			_____	–115		–
7.99988 GHz			_____	–115		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec attenuator**)**	Page 1.11				dBm	
Test frequency:						
423 kHz			_____	–99		–
1.12 MHz			_____	–99		–
2.12 MHz			_____	–99		–
5.12 MHz			_____	–99		–
10.12 MHz			_____	–99		–
20.12 MHz			_____	–99		–
50.12 MHz			_____	–99		–
100.12 MHz			_____	–114		–
200.12 MHz			_____	–114		–
500.12 MHz			_____	–114		–
700.12 MHz			_____	–114		–
750.12 MHz			_____	–114		–
1.00012 GHz			_____	–114		–
1.50012 GHz			_____	–114		–
2.00012 GHz			_____	–114		–
2.10012 GHz			_____	–114		–
2.50012 GHz			_____	–114		–
3.00012 GHz			_____	–114		–
3.50012 GHz			_____	–114		–
4.00012 GMz			_____	–114		–
4.10012 GHz			_____	–114		–
4.50012 GHz			_____	–114		–
5.00012 GHz			_____	–114		–
5.05012 GHz			_____	–114		–
5.70012 GHz			_____	–114		–
6.00012 GHz			_____	–114		–
6.35012 GHz			_____	–114		–
6.36012 GHz			_____	–114		–
7.00012 GHz			_____	–114		–
7.50012 GHz			_____	–114		–
7.99988 GHz			_____	–114		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. dir. gen/rec access) **Test frequency:**	Page 1.11				dBm	
423 kHz			_____	–99		–
1.12 MHz			_____	–99		–
2.12 MHz			_____	–99		–
5.12 MHz			_____	–99		–
10.12 MHz			_____	–99		–
20.12 MHz			_____	–99		–
50.12 MHz			_____	–99		–
100.12 MHz			_____	–114		–
200.12 MHz			_____	–114		–
500.12 MHz			_____	–114		–
700.12 MHz			_____	–114		–
750.12 MHz			_____	–114		–
1.00012 GHz			_____	–114		–
1.50012 GHz			_____	–114		–
2.00012 GHz			_____	–114		–
2.10012 GHz			_____	–114		–
2.50012 GHz			_____	–114		–
3.00012 GHz			_____	–114		–
3.50012 GHz			_____	–114		–
4.00012 GMz			_____	–114		–
4.10012 GHz			_____	–114		–
4.50012 GHz			_____	–114		–
5.00012 GHz			_____	–114		–
5.05012 GHz			_____	–114		–
5.70012 GHz			_____	–114		–
6.00012 GHz			_____	–114		–
6.35012 GHz			_____	–114		–
6.36012 GHz			_____	–114		–
7.00012 GHz			_____	–114		–
7.50012 GHz			_____	–114		–
7.99988 GHz			_____	–114		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. rec. atten. and opt. dir. gen/rec access) **Test frequency:**	Page 1.11				dBm	
423 kHz			_____	–98		–
1.12 MHz			_____	–98		–
2.12 MHz			_____	–98		–
5.12 MHz			_____	–98		–
10.12 MHz			_____	–98		–
20.12 MHz			_____	–98		–
50.12 MHz			_____	–98		–
100.12 MHz			_____	–113		–
200.12 MHz			_____	–113		–
500.12 MHz			_____	–113		–
700.12 MHz			_____	–113		–
750.12 MHz			_____	–113		–
1.00012 GHz			_____	–113		–
1.50012 GHz			_____	–113		–
2.00012 GHz			_____	–113		–
2.10012 GHz			_____	–113		–
2.50012 GHz			_____	–113		–
3.00012 GHz			_____	–113		–
3.50012 GHz			_____	–113		–
4.00012 GMz			_____	–113		–
4.10012 GHz			_____	–113		–
4.50012 GHz			_____	–113		–
5.00012 GHz			_____	–113		–
5.05012 GHz			_____	–113		–
5.70012 GHz			_____	–113		–
6.00012 GHz			_____	–113		–
6.35012 GHz			_____	–113		–
6.36012 GHz			_____	–113		–
7.00012 GHz			_____	–113		–
7.50012 GHz			_____	–113		–
7.99988 GHz			_____	–113		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **Test frequency:**	Page 1.12				dB	1 dB
300 kHz		16	_____			
1 MHz		16	_____			
2 MHz		16	_____			
5 MHz		16	_____			
10 MHz		16	_____			
20 MHz		16	_____			
50 MHz		16	_____			
100 MHz		16	_____			
200 MHz		16	_____			
500 MHz		16	_____			
750 MHz		16	_____			
1.0 GHz		16	_____			
1.5 GHz		16	_____			
2.0 GHz		16	_____			
2.5 GHz		16	_____			
3.0 GHz		16	_____			
3.5 GHz		16	_____			
4.0 GHz		16	_____			
4.5 GHz		16	_____			
5.0 GHz		16	_____			
5.5 GHz		16	_____			
6.0 GHz		16	_____			
6.5 GHz		16	_____			
7.0 GHz		16	_____			
7.5 GHz		14	_____			
8.0 GHz		14	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port __ **Dynamic range** (without options step attenuator and direct generator/receiver access) **Test frequency:**	Page 1.13				dB	
303 kHz		100	_____			_
1.12 MHz		100	_____			_
2.12 MHz		100	_____			_
5.12 MHz		100	_____			_
10.12 MHz		100	_____			_
20.12 MHz		100	_____			_
50.12 MHz		120	_____			_
100.12 MHz		130	_____			_
200.12 MHz		130	_____			_
500.12 MHz		130	_____			_
700.12 MHz		130	_____			_
750.12 MHz		130	_____			_
1.00012 GHz		130	_____			_
1.50012 GHz		130	_____			_
2.00012 GHz		130	_____			_
2.10012 GHz		130	_____			_
2.50012 GHz		130	_____			_
3.00012 GHz		130	_____			_
3.50012 GHz		130	_____			_
3.99988 GHz		130	_____			_
4.10012 GHz		125	_____			_
4.50012 GHz		125	_____			_
5.00012 GHz		125	_____			_
5.05012 GHz		125	_____			_
5.70012 GHz		125	_____			_
6.00012 GHz		125	_____			_
6.35012 GHz		125	_____			_
6.36012 GHz		125	_____			_
6.99988 GHz		125	_____			_
7.50012 GHz		120	_____			_
7.99988 GHz		120	_____			_

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port __ **Dynamic range** (with option generator or receiver attenuator)	Page 1.13				dB	
Test frequency:						
303 kHz		99	_____			_
1.12 MHz		99	_____			_
2.12 MHz		99	_____			_
5.12 MHz		99	_____			_
10.12 MHz		99	_____			_
20.12 MHz		99	_____			_
50.12 MHz		119	_____			_
100.12 MHz		129	_____			_
200.12 MHz		129	_____			_
500.12 MHz		129	_____			_
700.12 MHz		129	_____			_
750.12 MHz		129	_____			_
1.00012 GHz		129	_____			_
1.50012 GHz		129	_____			_
2.00012 GHz		129	_____			_
2.10012 GHz		129	_____			_
2.50012 GHz		129	_____			_
3.00012 GHz		129	_____			_
3.50012 GHz		129	_____			_
3.99988 GHz		129	_____			_
4.10012 GHz		124	_____			_
4.50012 GHz		124	_____			_
5.00012 GHz		124	_____			_
5.05012 GHz		124	_____			_
5.70012 GHz		124	_____			_
6.00012 GHz		124	_____			_
6.35012 GHz		124	_____			_
6.36012 GHz		124	_____			_
6.99988 GHz		124	_____			_
7.50012 GHz		119	_____			_
7.99988 GHz		119	_____			_

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port __ **Dynamic range** (with option generator and receiver attenuator or with option direct generator/receiver access) **Test frequency**:	Page 1.13				dB	
303 kHz		98	_____			_
1.12 MHz		98	_____			_
2.12 MHz		98	_____			_
5.12 MHz		98	_____			_
10.12 MHz		98	_____			_
20.12 MHz		98	_____			_
50.12 MHz		118	_____			_
100.12 MHz		128	_____			_
200.12 MHz		128	_____			_
500.12 MHz		128	_____			_
700.12 MHz		128	_____			_
750.12 MHz		128	_____			_
1.00012 GHz		128	_____			_
1.50012 GHz		128	_____			_
2.00012 GHz		128	_____			_
2.10012 GHz		128	_____			_
2.50012 GHz		128	_____			_
3.00012 GHz		128	_____			_
3.50012 GHz		128	_____			_
3.99988 GHz		128	_____			_
4.10012 GHz		123	_____			_
4.50012 GHz		123	_____			_
5.00012 GHz		123	_____			_
5.05012 GHz		123	_____			_
5.70012 GHz		123	_____			_
6.00012 GHz		123	_____			_
6.35012 GHz		123	_____			_
6.36012 GHz		123	_____			_
6.99988 GHz		123	_____			_
7.50012 GHz		118	_____			_
7.99988 GHz		118	_____			_

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port __ **Dynamic range** (with options generator attenuator or receiver attenuator and option direct generator/receiver access) **Test frequency**:	Page 1.13				dB	
303 kHz		97	_____			_
1.12 MHz		97	_____			_
2.12 MHz		97	_____			_
5.12 MHz		97	_____			_
10.12 MHz		97	_____			_
20.12 MHz		97	_____			_
50.12 MHz		117	_____			_
100.12 MHz		127	_____			_
200.12 MHz		127	_____			_
500.12 MHz		127	_____			_
700.12 MHz		127	_____			_
750.12 MHz		127	_____			_
1.00012 GHz		127	_____			_
1.50012 GHz		127	_____			_
2.00012 GHz		127	_____			_
2.10012 GHz		127	_____			_
2.50012 GHz		127	_____			_
3.00012 GHz		127	_____			_
3.50012 GHz		127	_____			_
3.99988 GHz		127	_____			_
4.10012 GHz		122	_____			_
4.50012 GHz		122	_____			_
5.00012 GHz		122	_____			_
5.05012 GHz		122	_____			_
5.70012 GHz		122	_____			_
6.00012 GHz		122	_____			_
6.35012 GHz		122	_____			_
6.36012 GHz		122	_____			_
6.99988 GHz		122	_____			_
7.50012 GHz		117	_____			_
7.99988 GHz		117	_____			_

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port __ **Dynamic range** (with options generator attenuator and receiver attenuator and direct generator/receiver access) **Test frequency**:	Page 1.13				dB	
303 kHz		96	_____			_
1.12 MHz		96	_____			_
2.12 MHz		96	_____			_
5.12 MHz		96	_____			_
10.12 MHz		96	_____			_
20.12 MHz		96	_____			_
50.12 MHz		116	_____			_
100.12 MHz		126	_____			_
200.12 MHz		126	_____			_
500.12 MHz		126	_____			_
700.12 MHz		126	_____			_
750.12 MHz		126	_____			_
1.00012 GHz		126	_____			_
1.50012 GHz		126	_____			_
2.00012 GHz		126	_____			_
2.10012 GHz		126	_____			_
2.50012 GHz		126	_____			_
3.00012 GHz		126	_____			_
3.50012 GHz		126	_____			_
3.99988 GHz		126	_____			_
4.10012 GHz		121	_____			_
4.50012 GHz		121	_____			_
5.00012 GHz		121	_____			_
5.05012 GHz		121	_____			_
5.70012 GHz		121	_____			_
6.00012 GHz		121	_____			_
6.35012 GHz		121	_____			_
6.36012 GHz		121	_____			_
6.99988 GHz		121	_____			_
7.50012 GHz		116	_____			_
7.99988 GHz		116	_____			_

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
5 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
10 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
20 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
35 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Accuracy **DC meas 1 V**	Page 1.15				mV	1 mV
Pos. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Neg. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Accuracy **DC meas 10 V**	Page 1.15				V	0.01 V
Pos. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		
Neg. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		

Performance Test Report R&S® ZVA24

ROHDE&SCHWARZ	**Vector Network Analyzer, 24 GHz, _ ports 1145.1110K__** **R&S® ZVA24**
Serial number:	
Date:	
Person responsible:	
Signature:	

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Frequency deviation @ 1 GHz	Page 1.4	- 8000	_____	+ 8000	Hz	1 Hz
With Option ZVAB-B4		- 100	_____	+ 100		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +10dBm** **Freq. Harmonics**	Page 1.5				dBc	
50 MHz 100 MHz			_____	-20		0.6 dB
150 MHz			_____	-20		0.6 dB
100 MHz 200 MHz			_____	-20		0.6 dB
300 MHz			_____	-20		0.6 dB
200 MHz 400 MHz			_____	-20		0.6 dB
600 MHz			_____	-20		0.6 dB
500 MHz 1000 MHz			_____	-20		0.6 dB
1500 MHz			_____	-20		0.6 dB
750 MHz 1500 MHz			_____	-20		0.6 dB
2250 MHz			_____	-20		0.6 dB
1 GHz 2 GHz			_____	-20		0.6 dB
3 GHz			_____	-20		0.6 dB
1.5 GHz 3 GHz			_____	-20		0.6 dB
4.5 GHz			_____	-20		0.6 dB
2 GHz 4 GHz			_____	-20		0.6 dB
6 GHz			_____	-20		0.6 dB
2.1 GHz 4.2 GHz			_____	-20		0.9 dB
6.3 GHz			_____	-20		0.9 dB
2.5 GHz 5.0 GHz			_____	-20		0.9 dB
7.5 GHz			_____	-20		0.9 dB
3.0 GHz 6.0 GHz			_____	-20		0.9 dB
9.0 GHz			_____	-20		0.9 dB
3.5 GHz 7 GHz			_____	-20		0.9 dB
10.5 GHz			_____	-20		0.9 dB
4.0 GHz 8.0 GHz			_____	-20		0.9 dB
12.0 GHz			_____	-20		0.9 dB
4.1 GHz 8.2 GHz			_____	-20		1.1 dB
12.3 GHz			_____	-20		1.1 dB
5.0 GHz 10.0 GHz			_____	-20		1.1 dB
15.0 GHz			_____	-20		1.1 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Freq. Harmonics**	Page 1.5				dBc	
5.04 GHz 10.08 GHz			_____	-20		1.1 dB
15.12 GHz			_____	-20		1.1 dB
5.05 GHz 10.10 GHz			_____	-20		1.1 dB
15.15 GHz			_____	-20		1.1 dB
5.5 GHz 11.0 GHz			_____	-20		1.1 dB
16.5 GHz			_____	-20		1.1 dB
6.0 GHz 12.0 GHz			_____	-20		1.1 dB
18.0 GHz			_____	-20		1.1 dB
6.35 GHz 12.70 GHz			_____	-20		1.3 dB
19.05 GHz			_____	-20		1.3 dB
7.0 GHz 14.0 GHz			_____	-20		1.3 dB
21.0 GHz			_____	-20		1.3 dB
8.0 GHz 16.0 GHz			_____	-20		1.3 dB
24.0 GHz			_____	-20		1.3 dB
8.1 GHz 16.2 GHz			_____	-20		1.3 dB
9.0 GHz 18.0 GHz			_____	-20		1.3 dB
10.0 GHz 20.0 GHz			_____	-20		1.3 dB
10.2 GHz 20.4 GHz			_____	-20		1.4 dB
11.0 GHz 22.0 GHz			_____	-20		1.4 dB
12.0 GHz 24.0 GHz			_____	-20		1.4 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (without opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		13	_____			
20 MHz		13	_____			
50 MHz		13	_____			
100 MHz		13	_____			
200 MHz		13	_____			
500 MHz		13	_____			
750 MHz		13	_____			
1 GHz		13	_____			
1.5 GHz		13	_____			
2 GHz		13	_____			
2.1 GHz		13	_____			
2.5 GHz		13	_____			
3 GHz		13	_____			
3.5 GHz		13	_____			
4 GHz		13	_____			
4.1 GHz		13	_____			
4.5 GHz		13	_____			
5 GHz		13	_____			
5.05 GHz		13	_____			
5.7 GHz		13	_____			
6 GHz		13	_____			
6.35 GHz		13	_____			
6.36 GHz		13	_____			
7 GHz		13	_____			
7.5 GHz		13	_____			
8 GHz		13	_____			
8.1 GHz		13	_____			
9 GHz		13	_____			
10 GHz		13	_____			
10.2 GHz		13	_____			
11 GHz		13	_____			
12 GHz		13	_____			
12.7 GHz		13	_____			
12.8 GHz		13	_____			
13 GHz		13	_____			
15 GHz		10	_____			
16 GHz		10	_____			
16.1 GHz		10	_____			
17 GHz		10	_____			
18 GHz		10	_____			
19 GHz		10	_____			
20 GHz		10	_____			
21 GHz		10	_____			
22 GHz		10	_____			
23 GHz		10	_____			
24 GHz		10	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. or dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		12	_____			
20 MHz		12	_____			
50 MHz		12	_____			
100 MHz		12	_____			
200 MHz		12	_____			
500 MHz		12	_____			
750 MHz		12	_____			
1 GHz		12	_____			
1.5 GHz		12	_____			
2 GHz		12	_____			
2.1 GHz		12	_____			
2.5 GHz		12	_____			
3 GHz		12	_____			
3.5 GHz		12	_____			
4 GHz		12	_____			
4.1 GHz		12	_____			
4.5 GHz		12	_____			
5 GHz		12	_____			
5.05 GHz		12	_____			
5.7 GHz		12	_____			
6 GHz		12	_____			
6.35 GHz		12	_____			
6.36 GHz		12	_____			
7 GHz		12	_____			
7.5 GHz		12	_____			
8 GHz		12	_____			
8.1 GHz		12	_____			
9 GHz		12	_____			
10 GHz		12	_____			
10.2 GHz		12	_____			
11 GHz		12	_____			
12 GHz		12	_____			
12.7 GHz		12	_____			
12.8 GHz		12	_____			
13 GHz		12	_____			
15 GHz		12	_____			
16 GHz		8	_____			
16.1 GHz		8	_____			
17 GHz		8	_____			
18 GHz		8	_____			
19 GHz		8	_____			
20 GHz		8	_____			
21 GHz		8	_____			
22 GHz		8	_____			
23 GHz		8	_____			
24 GHz		8	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		11	_____			
20 MHz		11	_____			
50 MHz		11	_____			
100 MHz		11	_____			
200 MHz		11	_____			
500 MHz		11	_____			
750 MHz		11	_____			
1 GHz		11	_____			
1.5 GHz		11	_____			
2 GHz		11	_____			
2.1 GHz		11	_____			
2.5 GHz		11	_____			
3 GHz		11	_____			
3.5 GHz		11	_____			
4 GHz		11	_____			
4.1 GHz		11	_____			
4.5 GHz		11	_____			
5 GHz		11	_____			
5.05 GHz		11	_____			
5.7 GHz		11	_____			
6 GHz		11	_____			
6.35 GHz		11	_____			
6.36 GHz		11	_____			
7 GHz		11	_____			
7.5 GHz		11	_____			
8 GHz		11	_____			
8.1 GHz		11	_____			
9 GHz		11	_____			
10 GHz		11	_____			
10.2 GHz		11	_____			
11 GHz		11	_____			
12 GHz		11	_____			
12.7 GHz		11	_____			
12.8 GHz		11	_____			
13 GHz		11	_____			
15 GHz		6	_____			
16 GHz		6	_____			
16.1 GHz		6	_____			
17 GHz		6	_____			
18 GHz		6	_____			
19 GHz		6	_____			
20 GHz		6	_____			
21 GHz		6	_____			
22 GHz		6	_____			
23 GHz		6	_____			
24 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __	Page 1.7				dB	0.2 dB
Power Accuracy						
Output power -10 dBm						
Test frequency:						
10 MHz		- 3	_____	3		
20 MHz		- 3	_____	3		
50 MHz		- 3	_____	3		
100 MHz		- 3	_____	3		
200 MHz		- 3	_____	3		
500 MHz		- 0.8	_____	0.8		
750 MHz		- 0.8	_____	0.8		
1.0 GHz		- 0.8	_____	0.8		
1.5 GHz		- 0.8	_____	0.8		
2.0 GHz		- 0.8	_____	0.8		
2.1 GHz		- 0.8	_____	0.8		
2.5 GHz		- 0.8	_____	0.8		
3.0 GHz		- 0.8	_____	0.8		
3.5 GHz		- 0.8	_____	0.8		
4.0 GHz		- 0.8	_____	0.8		
4.1 GHz		- 0.8	_____	0.8		
4.5 GHz		- 0.8	_____	0.8		
5.0 GHz		- 0.8	_____	0.8		
5.05 GHz		- 0.8	_____	0.8		
5.7 GHz		- 0.8	_____	0.8		
6.0 GHz		- 0.8	_____	0.8		
6.35 GHz		- 0.8	_____	0.8		
6.36 GHz		- 0.8	_____	0.8		
7.0 GHz		- 0.8	_____	0.8		
7.5 GHz		- 0.8	_____	0.8		
8.0 GHz		- 0.8	_____	0.8		
8.1 GHz		- 0.8	_____	0.8		
9.0 GHz		- 0.8	_____	0.8		
10.0 GHz		- 0.8	_____	0.8		
10.1 GHz		- 0.8	_____	0.8		
11.0 GHz		- 0.8	_____	0.8		
12.0 GHz		- 0.8	_____	0.8		
12.6 GHz		- 0.8	_____	0.8		
12.7 GHz		- 0.8	_____	0.8		
13.0 GHz		- 0.8	_____	0.8		
14.0 GHz		- 0.8	_____	0.8		
15.0 GHz		- 0.8	_____	0.8		
16.0 GHz		- 0.8	_____	0.8		
16.1 GHz		- 0.8	_____	0.8		
17.0 GHz		- 0.8	_____	0.8		
18.0 GHz		- 0.8	_____	0.8		
19.0 GHz		- 0.8	_____	0.8		
20.0 GHz		- 0.8	_____	0.8		
21.0 GHz		- 0.8	_____	0.8		
22.0 GHz		- 0.8	_____	0.8		
23.0 GHz		- 0.8	_____	0.8		
24.0 GHz		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(without Opt. Gen Att)							
Reference –10 dBm							
Freq.	Level						
51 MHz	23 dB		-2	_____	2		
	20 dB		-2	_____	2		
	15 dB		-2	_____	2		
	10 dB		-2	_____	2		
	5 dB		-2	_____	2		
	-5 dB		-2	_____	2		
	-10 dB		-2	_____	2		
	-15 dB		-2	_____	2		
	-20 dB		-2	_____	2		
500MHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
2 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm** Freq. Level		Page 1.8				dB	0.1 dB
2.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
3 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(without Opt. Gen Att)							
Reference –10 dBm							
Freq.	Level						
6 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
8 GHz	23 dB		- 0.8	_____	0.8		
	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
10 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
13 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
16 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
20 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
24 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
51 MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
500MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
1 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
2 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
2.1 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
3 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
4 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
4.1 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
6 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
8 GHz	22 dB		- 2	_____	2		
	17 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
10 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
13 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
16 GHz	18 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
20 GHz	18 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**	Page 1.8				dB	0.1 dB
Freq. **Level**						
24 GHz 18 dB		- 2	_____	2		
15 dB		- 2	_____	2		
10 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 2	_____	2		
-45 dB		- 2	_____	2		
-50 dB		- 2	_____	2		
-55 dB		- 2	_____	2		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		
-75 dB		- 3	_____	3		
-80 dB		- 3	_____	3		
-85 dB		- 3	_____	3		
-90 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Test frequency:**	Page 1.9				dB	0.3 dB
10 MHz		- 2	_____	2		
20 MHz		- 2	_____	2		
50 MHz		- 1	_____	1		
100 MHz		- 1	_____	1		
200 MHz		- 1	_____	1		
500 MHz		- 1	_____	1		
750 MHz		- 1	_____	1		
1 GHz		- 1	_____	1		
1.5 GHz		- 1	_____	1		
2 GHz		- 1	_____	1		
2.1 GHz		- 1	_____	1		
2.5 GHz		- 1	_____	1		
3 GHz		- 1	_____	1		
3.5 GHz		- 1	_____	1		
4 GHz		- 1	_____	1		
4.1 GHz		- 1	_____	1		
4.5 GHz		- 1	_____	1		
5.0 GHz		- 1	_____	1		
5.05 GHz		- 1	_____	1		
5.7 GHz		- 1	_____	1		
6.0 GHz		- 1	_____	1		
6.35 GHz		- 1	_____	1		
6.36 GHz		- 1	_____	1		
7.0 GHz		- 1	_____	1		
7.5 GHz		- 1	_____	1		
8.0 GHz		- 1	_____	1		
8.1 GHz		- 1	_____	1		
9.0 GHz		- 1	_____	1		
10.0 GHz		- 1	_____	1		
10.2 GHz		- 1	_____	1		
11.0 GHz		- 1	_____	1		
12.0 GHz		- 1	_____	1		
12.7 GHz		- 1	_____	1		
12.8 GHz		- 1	_____	1		
13.0 GHz		- 1	_____	1		
14.0 GHz		- 2	_____	2		
15.0 GHz		- 2	_____	2		
16.0 GHz		- 2	_____	2		
16.1 GHz		- 2	_____	2		
17.0 GHz		- 2	_____	2		
18.0 GHz		- 2	_____	2		
19.0 GHz		- 2	_____	2		
20.0 GHz		- 2	_____	2		
21.0 GHz		- 2	_____	2		
22.0 GHz		- 2	_____	2		
23.0 GHz		- 2	_____	2		
24.0 GHz		- 2	_____	2		

Parameter		Reference	**Min. value**	**Actual value**	**Max. value**	Unit	Measurement uncertainty
Port __ **Input linearity** **Reference –10 dBm**		Page 1.10				dB	0.01 dB
Freq.	**Level**						
50 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
700 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
2 GHz	20 dB		-0.3	_____	0.3		
	15 dB		-0.3	_____	0.3		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
8 GHz	20 dB		-0.3	_____	0.3		
	15 dB		-0.3	_____	0.3		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter		Reference	**Min. value**	**Actual value**	**Max. value**	Unit	Measurement uncertainty
Port __ **Input linearity** **Reference –10 dBm**		Page 1.10				dB	0.01 dB
Freq.	**Level**						
20 GHz	20 dB		-0.3	_____	0.3		
	15 dB		-0.3	_____	0.3		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
24 GHz	20 dB		-0.3	_____	0.3		
	15 dB		-0.3	_____	0.3		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (without opt. gen/rec atten. and dir. gen/rec access) **Test frequency**	Page 1.11				dBm	
100.12 MHz			_____	–80		–
200.12 MHz			_____	–80		–
500.12 MHz			_____	–80		–
700.12 MHz			_____	–110		–
750.12 MHz			_____	–110		–
1.00012 GHz			_____	–110		–
1.50012 GHz			_____	–110		–
2.00012 GHz			_____	–115		–
2.10012 GHz			_____	–115		–
2.50012 GHz			_____	–115		–
3.00012 GHz			_____	–115		–
3.50012 GHz			_____	–115		–
4.00012 GMz			_____	–115		–
4.10012 GHz			_____	–115		–
4.50012 GHz			_____	–115		–
5.00012 GHz			_____	–115		–
5.05012 GHz			_____	–115		–
5.70012 GHz			_____	–115		–
6.00012 GHz			_____	–115		–
6.35012 GHz			_____	–115		–
6.36012 GHz			_____	–115		–
7.00012 GHz			_____	–115		–
7.50012 GHz			_____	–115		–
7.99988 GHz			_____	–115		–
8.10012 GHz			_____	–115		–
9.00012 GHz			_____	–115		–
10.00012 GHz			_____	–115		–
10.20012 GHz			_____	–115		–
11.00012 GHz			_____	–115		–
12.00012 GHz			_____	–115		–
12.70012 GHz			_____	–115		–
12.80012 GHz			_____	–115		–
12.99988 GHz			_____	–115		–
14.00012 GHz			_____	–110		–
15.00012 GHz			_____	–110		–
16.00012 GHz			_____	–110		–
16.10012 GHz			_____	–110		–
18.00012 GHz			_____	–110		–
19.00012 GHz			_____	–110		–
20.00012 GHz			_____	–110		–
21.00012 GHz			_____	–110		–
22.00012 GHz			_____	–110		–
23.00012 GHz			_____	–110		–
23.99988 GHz			_____	–110		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec attenuator**)** **Test frequency:**	Page 1.11				dBm	
100.12 MHz			_____	–79		–
200.12 MHz			_____	–79		–
500.12 MHz			_____	–79		–
700.12 MHz			_____	–109		–
750.12 MHz			_____	–109		–
1.00012 GHz			_____	–109		–
1.50012 GHz			_____	–109		–
2.00012 GHz			_____	–114		–
2.10012 GHz			_____	–114		–
2.50012 GHz			_____	–114		–
3.00012 GHz			_____	–114		–
3.50012 GHz			_____	–114		–
4.00012 GMz			_____	–114		–
4.10012 GHz			_____	–114		–
4.50012 GHz			_____	–114		–
5.00012 GHz			_____	–114		–
5.05012 GHz			_____	–114		–
5.70012 GHz			_____	–114		–
6.00012 GHz			_____	–114		–
6.35012 GHz			_____	–114		–
6.36012 GHz			_____	–114		–
7.00012 GHz			_____	–114		–
7.50012 GHz			_____	–114		–
7.99988 GHz			_____	–114		–
8.10012 GHz			_____	–114		–
9.00012 GHz			_____	–114		–
10.00012 GHz			_____	–114		–
10.20012 GHz			_____	–114		–
11.00012 GHz			_____	–114		–
12.00012 GHz			_____	–114		–
12.70012 GHz			_____	–114		–
12.80012 GHz			_____	–114		–
12.99988 GHz			_____	–114		–
14.00012 GHz			_____	–108		–
15.00012 GHz			_____	–108		–
16.00012 GHz			_____	–108		–
16.10012 GHz			_____	–108		–
18.00012 GHz			_____	–108		–
19.00012 GHz			_____	–108		–
20.00012 GHz			_____	–108		–
21.00012 GHz			_____	–108		–
22.00012 GHz			_____	–108		–
23.00012 GHz			_____	–108		–
23.99988 GHz			_____	–108		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. direct gen/rec access) **Test frequency:**	Page 1.11				dBm	
100.12 MHz			_____	–79		–
200.12 MHz			_____	–79		–
500.12 MHz			_____	–79		–
700.12 MHz			_____	–109		–
750.12 MHz			_____	–109		–
1.00012 GHz			_____	–109		–
1.50012 GHz			_____	–109		–
2.00012 GHz			_____	–114		–
2.10012 GHz			_____	–114		–
2.50012 GHz			_____	–114		–
3.00012 GHz			_____	–114		–
3.50012 GHz			_____	–114		–
4.00012 GMz			_____	–114		–
4.10012 GHz			_____	–114		–
4.50012 GHz			_____	–114		–
5.00012 GHz			_____	–114		–
5.05012 GHz			_____	–114		–
5.70012 GHz			_____	–114		–
6.00012 GHz			_____	–114		–
6.35012 GHz			_____	–114		–
6.36012 GHz			_____	–114		–
7.00012 GHz			_____	–114		–
7.50012 GHz			_____	–114		–
7.99988 GHz			_____	–114		–
8.10012 GHz			_____	–114		–
9.00012 GHz			_____	–114		–
10.00012 GHz			_____	–114		–
10.20012 GHz			_____	–114		–
11.00012 GHz			_____	–114		–
12.00012 GHz			_____	–114		–
12.70012 GHz			_____	–114		–
12.80012 GHz			_____	–114		–
12.99988 GHz			_____	–114		–
14.00012 GHz			_____	–108		–
15.00012 GHz			_____	–108		–
16.00012 GHz			_____	–108		–
16.10012 GHz			_____	–108		–
18.00012 GHz			_____	–108		–
19.00012 GHz			_____	–108		–
20.00012 GHz			_____	–108		–
21.00012 GHz			_____	–108		–
22.00012 GHz			_____	–108		–
23.00012 GHz			_____	–108		–
23.99988 GHz			_____	–108		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. rec. attenuator and opt. direct gen/rec access) **Test frequency:**	Page 1.11				dBm	
100.12 MHz			_____	–78		–
200.12 MHz			_____	–78		–
500.12 MHz			_____	–78		–
700.12 MHz			_____	–108		–
750.12 MHz			_____	–108		–
1.00012 GHz			_____	–108		–
1.50012 GHz			_____	–108		–
2.00012 GHz			_____	–113		–
2.10012 GHz			_____	–113		–
2.50012 GHz			_____	–113		–
3.00012 GHz			_____	–113		–
3.50012 GHz			_____	–113		–
4.00012 GMz			_____	–113		–
4.10012 GHz			_____	–113		–
4.50012 GHz			_____	–113		–
5.00012 GHz			_____	–113		–
5.05012 GHz			_____	–113		–
5.70012 GHz			_____	–113		–
6.00012 GHz			_____	–113		–
6.35012 GHz			_____	–113		–
6.36012 GHz			_____	–113		–
7.00012 GHz			_____	–113		–
7.50012 GHz			_____	–113		–
7.99988 GHz			_____	–113		–
8.10012 GHz			_____	–113		–
9.00012 GHz			_____	–113		–
10.00012 GHz			_____	–113		–
10.20012 GHz			_____	–113		–
11.00012 GHz			_____	–113		–
12.00012 GHz			_____	–113		–
12.70012 GHz			_____	–113		–
12.80012 GHz			_____	–113		–
12.99988 GHz			_____	–113		–
14.00012 GHz			_____	–106		–
15.00012 GHz			_____	–106		–
16.00012 GHz			_____	–106		–
16.10012 GHz			_____	–106		–
18.00012 GHz			_____	–106		–
19.00012 GHz			_____	–106		–
20.00012 GHz			_____	–106		–
21.00012 GHz			_____	–106		–
22.00012 GHz			_____	–106		–
23.00012 GHz			_____	–106		–
23.99988 GHz			_____	–106		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **Test frequency:**	Page 1.12				dB	1 dB
10 MHz		10	_____			
20 MHz		10	_____			
50 MHz		12	_____			
100 MHz		12	_____			
200 MHz		12	_____			
500 MHz		12	_____			
750 MHz		12	_____			
1.0 GHz		12	_____			
1.5 GHz		12	_____			
2.0 GHz		12	_____			
2.5 GHz		8	_____			
3.0 GHz		8	_____			
3.5 GHz		8	_____			
4.0 GHz		8	_____			
4.5 GHz		8	_____			
5.0 GHz		8	_____			
5.5 GHz		8	_____			
6.0 GHz		8	_____			
6.5 GHz		8	_____			
7.0 GHz		8	_____			
7.5 GHz		8	_____			
8.0 GHz		8	_____			
9.0 GHz		8	_____			
10.0 GHz		8	_____			
11.0 GHz		8	_____			
12.0 GHz		8	_____			
13.0 GHz		8	_____			
14.0 GHz		8	_____			
15.0 GHz		8	_____			
16.0 GHz		8	_____			
17.0 GHz		8	_____			
18.0 GHz		8	_____			
19.0 GHz		8	_____			
20.0 GHz		8	_____			
21.0 GHz		8	_____			
22.0 GHz		8	_____			
23.0 GHz		8	_____			
24.0 GHz		8	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
(without options step atten.						
and direct gen./rec. access)						
Test frequency:						
10.12 MHz		90	_____			_
20.12 MHz		90	_____			_
50.12 MHz		90	_____			_
100.12 MHz		105	_____			_
200.12 MHz		105	_____			_
500.12 MHz		105	_____			_
700.12 MHz		125	_____			_
750.12 MHz		125	_____			_
1.00012 GHz		125	_____			_
1.50012 GHz		125	_____			_
2.00012 GHz		130	_____			_
2.10012 GHz		130	_____			_
2.50012 GHz		130	_____			_
3.00012 GHz		130	_____			_
3.50012 GHz		130	_____			_
4.00012 GHz		130	_____			_
4.10012 GHz		130	_____			_
4.50012 GHz		130	_____			_
5.00012 GHz		130	_____			_
5.05012 GHz		130	_____			_
5.70012 GHz		130	_____			_
6.00012 GHz		130	_____			_
6.35012 GHz		130	_____			_
6.36012 GHz		130	_____			_
7.00012 GHz		130	_____			_
7.50012 GHz		130	_____			_
7.99988 GHz		130	_____			_
8.10012 GHz		130	_____			_
9.00012 GHz		130	_____			_
10.00012 GHz		130	_____			_
10.20012 GHz		130	_____			_
11.00012 GHz		130	_____			_
12.00012 GHz		130	_____			_
12.70012 GHz		130	_____			_
12.80012 GHz		130	_____			_
12.99988 GHz		130	_____			_
14.00012 GHz		125	_____			_
15.00012 GHz		125	_____			_
16.00012 GHz		125	_____			_
16.10012 GHz		125	_____			_
18.00012 GHz		125	_____			_
19.00012 GHz		125	_____			_
20.00012 GHz		125	_____			_
21.00012 GHz		125	_____			_
22.00012 GHz		125	_____			_
23.00012 GHz		125	_____			_
23.99988 GHz		125	_____			_

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. gen. or rec. atten.) **Test frequency**:	Page 1.13				dB	
10.12 MHz		89	_____			_
20.12 MHz		89	_____			_
50.12 MHz		89	_____			_
100.12 MHz		104	_____			_
200.12 MHz		104	_____			_
500.12 MHz		104	_____			_
700.12 MHz		104	_____			_
750.12 MHz		124	_____			_
1.00012 GHz		124	_____			_
1.50012 GHz		124	_____			_
2.00012 GHz		129	_____			_
2.10012 GHz		129	_____			_
2.50012 GHz		129	_____			_
3.00012 GHz		129	_____			_
3.50012 GHz		129	_____			_
4.00012 GHz		129	_____			_
4.10012 GHz		129	_____			_
4.50012 GHz		129	_____			_
5.00012 GHz		129	_____			_
5.05012 GHz		129	_____			_
5.70012 GHz		129	_____			_
6.00012 GHz		129	_____			_
6.35012 GHz		129	_____			_
6.36012 GHz		129	_____			_
7.00012 GHz		129	_____			_
7.50012 GHz		129	_____			_
7.99988 GHz		129	_____			_
8.10012 GHz		129	_____			_
9.00012 GHz		129	_____			_
10.00012 GHz		129	_____			_
10.20012 GHz		129	_____			_
11.00012 GHz		129	_____			_
12.00012 GHz		129	_____			_
12.70012 GHz		129	_____			_
12.80012 GHz		129	_____			_
12.99988 GHz		129	_____			_
14.00012 GHz		123	_____			_
15.00012 GHz		123	_____			_
16.00012 GHz		123	_____			_
16.10012 GHz		123	_____			_
18.00012 GHz		123	_____			_
19.00012 GHz		123	_____			_
20.00012 GHz		123	_____			_
21.00012 GHz		123	_____			_
22.00012 GHz		123	_____			_
23.00012 GHz		123	_____			_
23.99988 GHz		123	_____			_

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
(with opt. gen. and rec. atten. or with opt. direct gen./rec. access)						
Test frequency:						
10.12 MHz		88	_____			_
20.12 MHz		88	_____			_
50.12 MHz		88	_____			_
100.12 MHz		103	_____			_
200.12 MHz		103	_____			_
500.12 MHz		103	_____			_
700.12 MHz		103	_____			_
750.12 MHz		123	_____			_
1.00012 GHz		123	_____			_
1.50012 GHz		123	_____			_
2.00012 GHz		128	_____			_
2.10012 GHz		128	_____			_
2.50012 GHz		128	_____			_
3.00012 GHz		128	_____			_
3.50012 GHz		128	_____			_
4.00012 GHz		128	_____			_
4.10012 GHz		128	_____			_
4.50012 GHz		128	_____			_
5.00012 GHz		128	_____			_
5.05012 GHz		128	_____			_
5.70012 GHz		128	_____			_
6.00012 GHz		128	_____			_
6.35012 GHz		128	_____			_
6.36012 GHz		128	_____			_
7.00012 GHz		128	_____			_
7.50012 GHz		128	_____			_
7.99988 GHz		128	_____			_
8.10012 GHz		128	_____			_
9.00012 GHz		128	_____			_
10.00012 GHz		128	_____			_
10.20012 GHz		128	_____			_
11.00012 GHz		128	_____			_
12.00012 GHz		128	_____			_
12.70012 GHz		128	_____			_
12.80012 GHz		128	_____			_
12.99988 GHz		128	_____			_
14.00012 GHz		121	_____			_
15.00012 GHz		121	_____			_
16.00012 GHz		121	_____			_
16.10012 GHz		121	_____			_
18.00012 GHz		121	_____			_
19.00012 GHz		121	_____			_
20.00012 GHz		121	_____			_
21.00012 GHz		121	_____			_
22.00012 GHz		121	_____			_
23.00012 GHz		121	_____			_
23.99988 GHz		121	_____			_

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. gen. or rec. atten. and with opt. direct gen./rec. access) **Test frequency**:	Page 1.13				dB	
10.12 MHz		87	_____			_
20.12 MHz		87	_____			_
50.12 MHz		87	_____			_
100.12 MHz		102	_____			_
200.12 MHz		102	_____			_
500.12 MHz		102	_____			_
700.12 MHz		102	_____			_
750.12 MHz		122	_____			_
1.00012 GHz		122	_____			_
1.50012 GHz		122	_____			_
2.00012 GHz		127	_____			_
2.10012 GHz		127	_____			_
2.50012 GHz		127	_____			_
3.00012 GHz		127	_____			_
3.50012 GHz		127	_____			_
4.00012 GHz		127	_____			_
4.10012 GHz		127	_____			_
4.50012 GHz		127	_____			_
5.00012 GHz		127	_____			_
5.05012 GHz		127	_____			_
5.70012 GHz		127	_____			_
6.00012 GHz		127	_____			_
6.35012 GHz		127	_____			_
6.36012 GHz		127	_____			_
7.00012 GHz		127	_____			_
7.50012 GHz		127	_____			_
7.99988 GHz		127	_____			_
8.10012 GHz		127	_____			_
9.00012 GHz		127	_____			_
10.00012 GHz		127	_____			_
10.20012 GHz		127	_____			_
11.00012 GHz		127	_____			_
12.00012 GHz		127	_____			_
12.70012 GHz		127	_____			_
12.80012 GHz		127	_____			_
12.99988 GHz		127	_____			_
14.00012 GHz		119	_____			_
15.00012 GHz		119	_____			_
16.00012 GHz		119	_____			_
16.10012 GHz		119	_____			_
18.00012 GHz		119	_____			_
19.00012 GHz		119	_____			_
20.00012 GHz		119	_____			_
21.00012 GHz		119	_____			_
22.00012 GHz		119	_____			_
23.00012 GHz		119	_____			_
23.99988 GHz		119	_____			_

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
(with opt. gen. and rec. atten.						
and w. opt. dir. gen./rec. acc.)						
Test frequency:						
10.12 MHz		86	_____			
20.12 MHz		86	_____			–
50.12 MHz		86	_____			–
100.12 MHz		101	_____			–
200.12 MHz		101	_____			–
500.12 MHz		101	_____			–
700.12 MHz		101	_____			–
750.12 MHz		121	_____			–
1.00012 GHz		121	_____			–
1.50012 GHz		121	_____			–
2.00012 GHz		126	_____			–
2.10012 GHz		126	_____			–
2.50012 GHz		126	_____			–
3.00012 GHz		126	_____			–
3.50012 GHz		126	_____			–
4.00012 GHz		126	_____			–
4.10012 GHz		126	_____			–
4.50012 GHz		126	_____			–
5.00012 GHz		126	_____			–
5.05012 GHz		126	_____			–
5.70012 GHz		126	_____			–
6.00012 GHz		126	_____			–
6.35012 GHz		126	_____			–
6.36012 GHz		126	_____			–
7.00012 GHz		126	_____			–
7.50012 GHz		126	_____			–
7.99988 GHz		126	_____			–
8.10012 GHz		126	_____			–
9.00012 GHz		126	_____			–
10.00012 GHz		126	_____			–
10.20012 GHz		126	_____			–
11.00012 GHz		126	_____			–
12.00012 GHz		126	_____			–
12.70012 GHz		126	_____			–
12.80012 GHz		126	_____			–
12.99988 GHz		126	_____			–
14.00012 GHz		117	_____			–
15.00012 GHz		117	_____			–
16.00012 GHz		117	_____			–
16.10012 GHz		117	_____			–
18.00012 GHz		117	_____			–
19.00012 GHz		117	_____			–
20.00012 GHz		117	_____			–
21.00012 GHz		117	_____			–
22.00012 GHz		117	_____			–
23.00012 GHz		117	_____			–
23.99988 GHz		117	_____			–

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
5 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
10 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
20 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
35 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Accuracy **DC meas 1 V**	Page 1.15				mV	1 mV
Pos. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Neg. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Accuracy **DC meas 10 V**	Page 1.15				V	0.01 V
Pos. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		
Neg. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		

Performance Test Report R&S® ZVA40

ROHDE&SCHWARZ	**Vector Network Analyzer, 40 GHz, _ ports 1145.1110K__** **R&S® ZVA40**
Serial number:	
Date:	
Person responsible:	
Signature:	

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Frequency deviation @ 1 GHz	Page 1.4	- 8000	_____	+ 8000	Hz	1 Hz
With Option ZVAB-B4		- 100	_____	+ 100		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +10dBm**	Page 1.5				dBc	
Freq. **Harmonics**						
50 MHz 100 MHz			_____	-20		0.6 dB
150 MHz			_____	-20		0.6 dB
100 MHz 200 MHz			_____	-20		0.6 dB
300 MHz			_____	-20		0.6 dB
200 MHz 400 MHz			_____	-20		0.6 dB
600 MHz			_____	-20		0.6 dB
500 MHz 1000 MHz			_____	-20		0.6 dB
1500 MHz			_____	-20		0.6 dB
750 MHz 1500 MHz			_____	-20		0.6 dB
2250 MHz			_____	-20		0.6 dB
1 GHz 2 GHz			_____	-20		0.6 dB
3 GHz			_____	-20		0.6 dB
1.5 GHz 3 GHz			_____	-20		0.6 dB
4.5 GHz			_____	-20		0.6 dB
2 GHz 4 GHz			_____	-20		0.6 dB
6 GHz			_____	-20		0.6 dB
2.1 GHz 4.2 GHz			_____	-20		0.9 dB
6.3 GHz			_____	-20		0.9 dB
2.5 GHz 5.0 GHz			_____	-20		0.9 dB
7.5 GHz			_____	-20		0.9 dB
3.0 GHz 6.0 GHz			_____	-20		0.9 dB
9.0 GHz			_____	-20		0.9 dB
3.5 GHz 7 GHz			_____	-20		0.9 dB
10.5 GHz			_____	-20		0.9 dB
4.0 GHz 8.0 GHz			_____	-20		0.9 dB
12.0 GHz			_____	-20		0.9 dB
4.1 GHz 8.2 GHz			_____	-20		1.1 dB
12.3 GHz			_____	-20		1.1 dB
5.0 GHz 10.0 GHz			_____	-20		1.1 dB
15.0 GHz			_____	-20		1.1 dB
5.04 GHz 10.08 GHz			_____	-20		1.1 dB
15.12 GHz			_____	-20		1.1 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __	Page 1.5				dBc	
Harmonics						
Freq. Harmonics						
5.05 GHz 10.10 GHz			_____	-20		1.1 dB
15.15 GHz			_____	-20		1.1 dB
5.5 GHz 11.0 GHz			_____	-20		1.1 dB
16.5 GHz			_____	-20		1.1 dB
6.0 GHz 12.0 GHz			_____	-20		1.1 dB
18.0 GHz			_____	-20		1.1 dB
6.35 GHz 12.70 GHz			_____	-20		1.3 dB
19.05 GHz			_____	-20		1.3 dB
7.0 GHz 14.0 GHz			_____	-20		1.3 dB
21.0 GHz			_____	-20		1.3 dB
8.0 GHz 16.0 GHz			_____	-20		1.3 dB
24.0 GHz			_____	-20		1.3 dB
8.1 GHz 16.2 GHz			_____	-20		1.3 dB
24.3 GHz			_____	-20		1.3 dB
9.0 GHz 18.0 GHz			_____	-20		1.3 dB
27.0 GHz			_____	-20		1.3 dB
10.0 GHz 20.0 GHz			_____	-20		1.3 dB
30.0 GHz			_____	-20		1.3 dB
10.2 GHz 20.4 GHz			_____	-20		1.4 dB
30.6 GHz			_____	-20		1.4 dB
11.0 GHz 22.0 GHz			_____	-20		1.4 dB
33.0 GHz			_____	-20		1.4 dB
12.7 GHz 25.4 GHz			_____	-20		1.6 dB
38.1 GHz			_____	-20		1.6 dB
13.0 GHz 26.0 GHz			_____	-20		1.6 dB
39.0 GHz			_____	-20		1.6 dB
14.0 GHz 28.0 GHz			_____	-20		1.7 dB
14.6 GHz 29.2 GHz			_____	-20		1.7 dB
15.0 GHz 30.0 GHz			_____	-20		1.7 dB
16.0 GHz 32.0 GHz			_____	-20		1.7 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +10 dBm** **Freq. Harmonics**	Page 1.5				dBc	
17.0 GHz 34.0 GHz			_____	-20		1.7 dB
18.0 GHz 36.0 GHz			_____	-20		1.7 dB
19.0 GHz 38.0 GHz			_____	-20		1.8 dB
20.0 GHz 40.0 GHz			_____	-20		1.8 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (without opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		10	_____			
20 MHz		10	_____			
50 MHz		13	_____			
100 MHz		13	_____			
200 MHz		13	_____			
500 MHz		13	_____			
750 MHz		13	_____			
1 GHz		13	_____			
1.5 GHz		13	_____			
2 GHz		13	_____			
2.1 GHz		13	_____			
2.5 GHz		13	_____			
3 GHz		13	_____			
3.5 GHz		13	_____			
4 GHz		13	_____			
4.1 GHz		13	_____			
4.5 GHz		13	_____			
5 GHz		13	_____			
5.05 GHz		13	_____			
5.7 GHz		13	_____			
6 GHz		13	_____			
6.35 GHz		13	_____			
6.36 GHz		13	_____			
7 GHz		13	_____			
7.5 GHz		13	_____			
8 GHz		13	_____			
8.1 GHz		13	_____			
9 GHz		13	_____			
10 GHz		13	_____			
10.2 GHz		13	_____			
11 GHz		13	_____			
12 GHz		13	_____			
12.7 GHz		13	_____			
12.8 GHz		13	_____			
13 GHz		13	_____			
15 GHz		13	_____			
16 GHz		13	_____			
16.1 GHz		13	_____			
17 GHz		13	_____			
18 GHz		13	_____			
19 GHz		13	_____			
20 GHz		13	_____			
21 GHz		10	_____			
22 GHz		10	_____			
23 GHz		10	_____			
24 GHz		10	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		10	_____			
26 GHz		10	_____			
27 GHz		10	_____			
28 GHz		10	_____			
29 GHz		10	_____			
30 GHz		10	_____			
31 GHz		10	_____			
32 GHz		10	_____			
33 GHz		9	_____			
34 GHz		9	_____			
35 GHz		9	_____			
36 GHz		9	_____			
37 GHz		9	_____			
38 GHz		9	_____			
39 GHz		9	_____			
40 GHz		9	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. or dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		9	_____			
20 MHz		9	_____			
50 MHz		12	_____			
100 MHz		12	_____			
200 MHz		12	_____			
500 MHz		12	_____			
750 MHz		12	_____			
1 GHz		12	_____			
1.5 GHz		12	_____			
2 GHz		12	_____			
2.1 GHz		12	_____			
2.5 GHz		12	_____			
3 GHz		12	_____			
3.5 GHz		12	_____			
4 GHz		12	_____			
4.1 GHz		12	_____			
4.5 GHz		12	_____			
5 GHz		12	_____			
5.05 GHz		12	_____			
5.7 GHz		12	_____			
6 GHz		12	_____			
6.35 GHz		12	_____			
6.36 GHz		12	_____			
7 GHz		12	_____			
7.5 GHz		12	_____			
8 GHz		12	_____			
8.1 GHz		12	_____			
9 GHz		12	_____			
10 GHz		12	_____			
10.2 GHz		12	_____			
11 GHz		12	_____			
12 GHz		12	_____			
12.7 GHz		12	_____			
12.8 GHz		12	_____			
13 GHz		12	_____			
15 GHz		11	_____			
16 GHz		11	_____			
16.1 GHz		11	_____			
17 GHz		11	_____			
18 GHz		11	_____			
19 GHz		11	_____			
20 GHz		11	_____			
21 GHz		8	_____			
22 GHz		8	_____			
23 GHz		8	_____			
24 GHz		8	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		7	_____			
26 GHz		7	_____			
27 GHz		7	_____			
28 GHz		7	_____			
29 GHz		7	_____			
30 GHz		7	_____			
31 GHz		7	_____			
32 GHz		7	_____			
33 GHz		6	_____			
34 GHz		6	_____			
35 GHz		6	_____			
36 GHz		6	_____			
37 GHz		6	_____			
38 GHz		6	_____			
39 GHz		6	_____			
40 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		8	_____			
20 MHz		8	_____			
50 MHz		11	_____			
100 MHz		11	_____			
200 MHz		11	_____			
500 MHz		11	_____			
750 MHz		11	_____			
1 GHz		11	_____			
1.5 GHz		11	_____			
2 GHz		11	_____			
2.1 GHz		11	_____			
2.5 GHz		11	_____			
3 GHz		11	_____			
3.5 GHz		11	_____			
4 GHz		11	_____			
4.1 GHz		11	_____			
4.5 GHz		11	_____			
5 GHz		11	_____			
5.05 GHz		11	_____			
5.7 GHz		11	_____			
6 GHz		11	_____			
6.35 GHz		11	_____			
6.36 GHz		11	_____			
7 GHz		11	_____			
7.5 GHz		11	_____			
8 GHz		11	_____			
8.1 GHz		11	_____			
9 GHz		11	_____			
10 GHz		11	_____			
10.2 GHz		11	_____			
11 GHz		11	_____			
12 GHz		11	_____			
12.7 GHz		11	_____			
12.8 GHz		11	_____			
13 GHz		11	_____			
15 GHz		9	_____			
16 GHz		9	_____			
16.1 GHz		9	_____			
17 GHz		9	_____			
18 GHz		9	_____			
19 GHz		9	_____			
20 GHz		9	_____			
21 GHz		6	_____			
22 GHz		6	_____			
23 GHz		6	_____			
24 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		4	_____			
26 GHz		4	_____			
27 GHz		4	_____			
28 GHz		4	_____			
29 GHz		4	_____			
30 GHz		4	_____			
31 GHz		4	_____			
32 GHz		4	_____			
33 GHz		3	_____			
34 GHz		3	_____			
35 GHz		3	_____			
36 GHz		3	_____			
37 GHz		3	_____			
38 GHz		3	_____			
39 GHz		3	_____			
40 GHz		3	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power Accuracy** **Output power -10 dBm** **Test frequency:**	Page 1.7				dB	0.2 dB
10 MHz		- 3	_____	3		
20 MHz		- 3	_____	3		
50 MHz		- 3	_____	3		
100 MHz		- 3	_____	3		
200 MHz		- 3	_____	3		
500 MHz		- 0.8	_____	0.8		
750 MHz		- 0.8	_____	0.8		
1.0 GHz		- 0.8	_____	0.8		
1.5 GHz		- 0.8	_____	0.8		
2.0 GHz		- 0.8	_____	0.8		
2.1 GHz		- 0.8	_____	0.8		
2.5 GHz		- 0.8	_____	0.8		
3.0 GHz		- 0.8	_____	0.8		
3.5 GHz		- 0.8	_____	0.8		
4.0 GHz		- 0.8	_____	0.8		
4.1 GHz		- 0.8	_____	0.8		
4.5 GHz		- 0.8	_____	0.8		
5.0 GHz		- 0.8	_____	0.8		
5.05 GHz		- 0.8	_____	0.8		
5.7 GHz		- 0.8	_____	0.8		
6.0 GHz		- 0.8	_____	0.8		
6.35 GHz		- 0.8	_____	0.8		
6.36 GHz		- 0.8	_____	0.8		
7.0 GHz		- 0.8	_____	0.8		
7.5 GHz		- 0.8	_____	0.8		
8.0 GHz		- 0.8	_____	0.8		
8.1 GHz		- 0.8	_____	0.8		
9.0 GHz		- 0.8	_____	0.8		
10.0 GHz		- 0.8	_____	0.8		
10.1 GHz		- 0.8	_____	0.8		
11.0 GHz		- 0.8	_____	0.8		
12.0 GHz		- 0.8	_____	0.8		
12.6 GHz		- 0.8	_____	0.8		
12.7 GHz		- 0.8	_____	0.8		
13.0 GHz		- 0.8	_____	0.8		
14.0 GHz		- 0.8	_____	0.8		
15.0 GHz		- 0.8	_____	0.8		
16.0 GHz		- 0.8	_____	0.8		
16.1 GHz		- 0.8	_____	0.8		
17.0 GHz		- 0.8	_____	0.8		
18.0 GHz		- 0.8	_____	0.8		
19.0 GHz		- 0.8	_____	0.8		
20.0 GHz		- 0.8	_____	0.8		
21.0 GHz		- 0.8	_____	0.8		
22.0 GHz		- 0.8	_____	0.8		
23.0 GHz		- 0.8	_____	0.8		
24.0 GHz		- 0.8	_____	0.8		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power Accuracy** **Output power -10 dBm** **Test frequency:**	Page 1.7				dB	0.3 dB
25 GHz		-2	_____	2		
26 GHz		-2	_____	2		
27 GHz		-2	_____	2		
28 GHz		-2	_____	2		
29 GHz		-2	_____	2		
30 GHz		-2	_____	2		
31 GHz		-2	_____	2		
32 GHz		-2	_____	2		
33 GHz		-2	_____	2		
34 GHz		-2	_____	2		
35 GHz		-2	_____	2		
36 GHz		-2	_____	2		
37 GHz		-2	_____	2		
38 GHz		-2	_____	2		
39 GHz		-2	_____	2		
40 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
51 MHz	23 dB		-2	_____	2		
	20 dB		-2	_____	2		
	15 dB		-2	_____	2		
	10 dB		-2	_____	2		
	5 dB		-2	_____	2		
	-5 dB		-2	_____	2		
	-10 dB		-2	_____	2		
	-15 dB		-2	_____	2		
	-20 dB		-2	_____	2		
500MHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
2 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
2.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
3 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
6 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
8 GHz	23 dB		- 0.8	_____	0.8		
	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
10 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
13 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
16 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		-0.8	_____	0.8		
20 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		-0.8	_____	0.8		
24 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
28 GHz	19 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
35 GHz	19 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**	Page 1.8				dB	0.1 dB
Freq. **Level**						
40 GHz 19 dB		- 0.8	_____	0.8		
15 dB		- 0.8	_____	0.8		
10 dB		- 0.8	_____	0.8		
5 dB		- 0.8	_____	0.8		
-5 dB		- 0.8	_____	0.8		
-10 dB		- 0.8	_____	0.8		
-15 dB		- 0.8	_____	0.8		
-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
51 MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
500MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
1 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
2 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
2.1 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
3 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
4 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
4.1 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**	Page 1.8				dB	0.1 dB
Freq. **Level**						
6 GHz 22 dB		- 2	_____	2		
19 dB		- 2	_____	2		
15 dB		- 2	_____	2		
10 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 2	_____	2		
-45 dB		- 2	_____	2		
-50 dB		- 2	_____	2		
-55 dB		- 2	_____	2		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		
-75 dB		- 3	_____	3		
-80 dB		- 3	_____	3		
-85 dB		- 3	_____	3		
-90 dB		- 3	_____	3		
8 GHz 22 dB		- 2	_____	2		
17 dB		- 2	_____	2		
15 dB		- 2	_____	2		
10 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 2	_____	2		
-45 dB		- 2	_____	2		
-50 dB		- 2	_____	2		
-55 dB		- 2	_____	2		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		
-75 dB		- 3	_____	3		
-80 dB		- 3	_____	3		
-85 dB		- 3	_____	3		
-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
10 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
13 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
16 GHz	18 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
20 GHz	18 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
24 GHz	18 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
28 GHz	17 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
32 GHz	17 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		
40 GHz	16 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 2	_____	2		
	-45 dB		- 2	_____	2		
	-50 dB		- 2	_____	2		
	-55 dB		- 2	_____	2		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
	-75 dB		- 3	_____	3		
	-80 dB		- 3	_____	3		
	-85 dB		- 3	_____	3		
	-90 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty**	Page 1.9				dB	0.2 dB ↓
Test frequency:						
10 MHz		- 2	_____	2		
20 MHz		- 2	_____	2		
50 MHz		- 1	_____	1		
100 MHz		- 1	_____	1		
200 MHz		- 1	_____	1		
500 MHz		- 1	_____	1		
750 MHz		- 1	_____	1		
1 GHz		- 1	_____	1		
1.5 GHz		- 1	_____	1		
2 GHz		- 1	_____	1		
2.1 GHz		- 1	_____	1		
2.5 GHz		- 1	_____	1		
3 GHz		- 1	_____	1		
3.5 GHz		- 1	_____	1		
4 GHz		- 1	_____	1		
4.1 GHz		- 1	_____	1		
4.5 GHz		- 1	_____	1		
5.0 GHz		- 1	_____	1		
5.05 GHz		- 1	_____	1		
5.7 GHz		- 1	_____	1		
6.0 GHz		- 1	_____	1		
6.35 GHz		- 1	_____	1		
6.36 GHz		- 1	_____	1		
7.0 GHz		- 1	_____	1		
7.5 GHz		- 1	_____	1		
8.0 GHz		- 1	_____	1		
8.1 GHz		- 1	_____	1		0.3 dB
9.0 GHz		- 1	_____	1		↓
10.0 GHz		- 1	_____	1		
10.2 GHz		- 1	_____	1		
11.0 GHz		- 1	_____	1		
12.0 GHz		- 1	_____	1		
12.7 GHz		- 1	_____	1		
12.8 GHz		- 1	_____	1		
13.0 GHz		- 1	_____	1		
14.0 GHz		- 2	_____	2		
15.0 GHz		- 2	_____	2		
16.0 GHz		- 2	_____	2		
16.1 GHz		- 2	_____	2		
17.0 GHz		- 2	_____	2		
18.0 GHz		- 2	_____	2		
19.0 GHz		- 2	_____	2		
20.0 GHz		- 2	_____	2		
21.0 GHz		- 2	_____	2		
22.0 GHz		- 2	_____	2		
23.0 GHz		- 2	_____	2		
24.0 GHz		- 2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Test frequency:**	Page 1.9				dB	0.4 dB
25.0 GHz		- 3	_____	3		
26.0 GHz		- 3	_____	3		
27.0 GHz		- 3	_____	3		
28.0 GHz		- 3	_____	3		
29.0 GHz		- 3	_____	3		
30.0 GHz		- 3	_____	3		
31.0 GHz		- 3	_____	3		
32.0 GHz		- 3	_____	3		
33.0 GHz		- 3	_____	3		
34.0 GHz		- 3	_____	3		
35.0 GHz		- 3	_____	3		
36.0 GHz		- 3	_____	3		
37.0 GHz		- 3	_____	3		
38.0 GHz		- 3	_____	3		
39.0 GHz		- 3	_____	3		
40.0 GHz		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input linearity** **Reference –10 dBm**		Page 1.10				dB	0.01 dB
50 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
1 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
4 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
8 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
16 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.3	_____	0.3		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input linearity** **Reference –10 dBm**		Page 1.10				dB	0.01 dB
24 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
40 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (without opt. gen/rec atten. and dir. gen/rec access **Test frequency:**	Page 1.11				dBm	
100.12 MHz			_____	–80		–
200.12 MHz			_____	–80		–
500.12 MHz			_____	–110		–
700.12 MHz			_____	–110		–
750.12 MHz			_____	–110		–
1.00012 GHz			_____	–110		–
1.50012 GHz			_____	–110		–
2.00012 GHz			_____	–115		–
2.10012 GHz			_____	–115		–
2.50012 GHz			_____	–115		–
3.00012 GHz			_____	–115		–
3.50012 GHz			_____	–115		–
4.00012 GMz			_____	–115		–
4.10012 GHz			_____	–115		–
4.50012 GHz			_____	–115		–
5.00012 GHz			_____	–115		–
5.05012 GHz			_____	–115		–
5.70012 GHz			_____	–115		–
6.00012 GHz			_____	–115		–
6.35012 GHz			_____	–115		–
6.36012 GHz			_____	–115		–
7.00012 GHz			_____	–115		–
7.50012 GHz			_____	–115		–
7.99988 GHz			_____	–115		–
8.10012 GHz			_____	–115		–
9.00012 GHz			_____	–115		–
10.00012 GHz			_____	–115		–
10.20012 GHz			_____	–115		–
11.00012 GHz			_____	–115		–
12.00012 GHz			_____	–115		–
12.70012 GHz			_____	–115		–
12.80012 GHz			_____	–115		–
12.99988 GHz			_____	–115		–
14.00012 GHz			_____	–115		–
15.00012 GHz			_____	–115		–
16.00012 GHz			_____	–115		–
16.10012 GHz			_____	–115		–
18.00012 GHz			_____	–115		–
19.00012 GHz			_____	–115		–
20.00012 GHz			_____	–110		–
21.00012 GHz			_____	–110		–
22.00012 GHz			_____	–110		–
23.00012 GHz			_____	–110		–
23.99988 GHz			_____	–110		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**without opt. gen/rec atten. and dir. gen/rec access **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–105		–
26.0 GHz			_____	–105		–
27.0 GHz			_____	–105		–
28.0 GHz			_____	–105		–
29.0 GHz			_____	–105		–
30.0 GHz			_____	–105		–
31.0 GHz			_____	–105		–
32.0 GHz			_____	–105		–
33.0 GHz			_____	–100		–
34.0 GHz			_____	–100		–
35.0 GHz			_____	–100		–
36.0 GHz			_____	–100		–
37.0 GHz			_____	–100		–
38.0 GHz			_____	–100		–
39.0 GHz			_____	–100		–
40.0 GHz			_____	–100		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec atten.**)** **Test frequency:**	Page 1.11				dBm	
100.12 MHz			_____	–79		–
200.12 MHz			_____	–79		–
500.12 MHz			_____	–109		–
700.12 MHz			_____	–109		–
750.12 MHz			_____	–109		–
1.00012 GHz			_____	–109		–
1.50012 GHz			_____	–109		–
2.00012 GHz			_____	–114		–
2.10012 GHz			_____	–114		–
2.50012 GHz			_____	–114		–
3.00012 GHz			_____	–114		–
3.50012 GHz			_____	–114		–
4.00012 GMz			_____	–114		–
4.10012 GHz			_____	–114		–
4.50012 GHz			_____	–114		–
5.00012 GHz			_____	–114		–
5.05012 GHz			_____	–114		–
5.70012 GHz			_____	–114		–
6.00012 GHz			_____	–114		–
6.35012 GHz			_____	–114		–
6.36012 GHz			_____	–114		–
7.00012 GHz			_____	–114		–
7.50012 GHz			_____	–114		–
7.99988 GHz			_____	–114		–
8.10012 GHz			_____	–114		–
9.00012 GHz			_____	–114		–
10.00012 GHz			_____	–114		–
10.20012 GHz			_____	–114		–
11.00012 GHz			_____	–114		–
12.00012 GHz			_____	–114		–
12.70012 GHz			_____	–114		–
12.80012 GHz			_____	–114		–
12.99988 GHz			_____	–114		–
14.00012 GHz			_____	–113		–
15.00012 GHz			_____	–113		–
16.00012 GHz			_____	–113		–
16.10012 GHz			_____	–113		–
18.00012 GHz			_____	–113		–
19.00012 GHz			_____	–113		–
20.00012 GHz			_____	–113		–
21.00012 GHz			_____	–108		–
22.00012 GHz			_____	–108		–
23.00012 GHz			_____	–108		–
23.99988 GHz			_____	–108		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. rec atten.) **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–102		–
26.0 GHz			_____	–102		–
27.0 GHz			_____	–102		–
28.0 GHz			_____	–102		–
29.0 GHz			_____	–102		–
30.0 GHz			_____	–102		–
31.0 GHz			_____	–102		–
32.0 GHz			_____	–102		–
33.0 GHz			_____	–97		–
34.0 GHz			_____	–97		–
35.0 GHz			_____	–97		–
36.0 GHz			_____	–97		–
37.0 GHz			_____	–97		–
38.0 GHz			_____	–97		–
39.0 GHz			_____	–97		–
40.0 GHz			_____	–97		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. dir. gen/rec access) **Test frequency:**	Page 1.11				dBm	
100.12 MHz			_____	–79		–
200.12 MHz			_____	–79		–
500.12 MHz			_____	–109		–
700.12 MHz			_____	–109		–
750.12 MHz			_____	–109		–
1.00012 GHz			_____	–109		–
1.50012 GHz			_____	–109		–
2.00012 GHz			_____	–114		–
2.10012 GHz			_____	–114		–
2.50012 GHz			_____	–114		–
3.00012 GHz			_____	–114		–
3.50012 GHz			_____	–114		–
4.00012 GMz			_____	–114		–
4.10012 GHz			_____	–114		–
4.50012 GHz			_____	–114		–
5.00012 GHz			_____	–114		–
5.05012 GHz			_____	–114		–
5.70012 GHz			_____	–114		–
6.00012 GHz			_____	–114		–
6.35012 GHz			_____	–114		–
6.36012 GHz			_____	–114		–
7.00012 GHz			_____	–114		–
7.50012 GHz			_____	–114		–
7.99988 GHz			_____	–114		–
8.10012 GHz			_____	–114		–
9.00012 GHz			_____	–114		–
10.00012 GHz			_____	–114		–
10.20012 GHz			_____	–114		–
11.00012 GHz			_____	–114		–
12.00012 GHz			_____	–114		–
12.70012 GHz			_____	–114		–
12.80012 GHz			_____	–114		–
12.99988 GHz			_____	–114		–
14.00012 GHz			_____	–113		–
15.00012 GHz			_____	–113		–
16.00012 GHz			_____	–113		–
16.10012 GHz			_____	–113		–
18.00012 GHz			_____	–113		–
19.00012 GHz			_____	–113		–
20.00012 GHz			_____	–113		–
21.00012 GHz			_____	–108		–
22.00012 GHz			_____	–108		–
23.00012 GHz			_____	–108		–
23.99988 GHz			_____	–108		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. dir. gen/rec access) **Test frequency:**	Page 1.11				dBm	
25.0 GHz			_____	–102		–
26.0 GHz			_____	–102		–
27.0 GHz			_____	–102		–
28.0 GHz			_____	–102		–
29.0 GHz			_____	–102		–
30.0 GHz			_____	–102		–
31.0 GHz			_____	–102		–
32.0 GHz			_____	–102		–
33.0 GHz			_____	–97		–
34.0 GHz			_____	–97		–
35.0 GHz			_____	–97		–
36.0 GHz			_____	–97		–
37.0 GHz			_____	–97		–
38.0 GHz			_____	–97		–
39.0 GHz			_____	–97		–
40.0 GHz			_____	–97		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec. atten. and opt. dir. gen/rec access) **Test frequency:**	Page 1.11				dBm	
100.12 MHz			_____	–78		–
200.12 MHz			_____	–78		–
500.12 MHz			_____	–108		–
700.12 MHz			_____	–108		–
750.12 MHz			_____	–108		–
1.00012 GHz			_____	–108		–
1.50012 GHz			_____	–108		–
2.00012 GHz			_____	–113		–
2.10012 GHz			_____	–113		–
2.50012 GHz			_____	–113		–
3.00012 GHz			_____	–113		–
3.50012 GHz			_____	–113		–
4.00012 GMz			_____	–113		–
4.10012 GHz			_____	–113		–
4.50012 GHz			_____	–113		–
5.00012 GHz			_____	–113		–
5.05012 GHz			_____	–113		–
5.70012 GHz			_____	–113		–
6.00012 GHz			_____	–113		–
6.35012 GHz			_____	–113		–
6.36012 GHz			_____	–113		–
7.00012 GHz			_____	–113		–
7.50012 GHz			_____	–113		–
7.99988 GHz			_____	–113		–
8.10012 GHz			_____	–113		–
9.00012 GHz			_____	–113		–
10.00012 GHz			_____	–113		–
10.20012 GHz			_____	–113		–
11.00012 GHz			_____	–113		–
12.00012 GHz			_____	–113		–
12.70012 GHz			_____	–113		–
12.80012 GHz			_____	–113		–
12.99988 GHz			_____	–113		–
14.00012 GHz			_____	–111		–
15.00012 GHz			_____	–111		–
16.00012 GHz			_____	–111		–
16.10012 GHz			_____	–111		–
18.00012 GHz			_____	–111		–
19.00012 GHz			_____	–111		–
20.00012 GHz			_____	–111		–
21.00012 GHz			_____	–106		–
22.00012 GHz			_____	–106		–
23.00012 GHz			_____	–106		–
23.99988 GHz			_____	–106		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec. atten. and opt. dir. gen/rec access) **Test frequency:**	Page 1.11				dBm	
25.0 GHz			_____	–99		–
26.0 GHz			_____	–99		–
27.0 GHz			_____	–99		–
28.0 GHz			_____	–99		–
29.0 GHz			_____	–99		–
30.0 GHz			_____	–99		–
31.0 GHz			_____	–99		–
32.0 GHz			_____	–99		–
33.0 GHz			_____	–94		–
34.0 GHz			_____	–94		–
35.0 GHz			_____	–94		–
36.0 GHz			_____	–94		–
37.0 GHz			_____	–94		–
38.0 GHz			_____	–94		–
39.0 GHz			_____	–94		–
40.0 GHz			_____	–94		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **(**without opt. dir. gen/rec access) **Test frequency:**	Page 1.12				dB	
10 MHz		12	_____			1 dB
20 MHz		12	_____			1 dB
50 MHz		12	_____			1 dB
100 MHz		12	_____			0.5 dB
200 MHz		12	_____			↓
500 MHz		12	_____			
750 MHz		12	_____			
1.0 GHz		12	_____			
1.5 GHz		12	_____			
2.0 GHz		12	_____			
2.5 GHz		12	_____			
3.0 GHz		12	_____			
3.5 GHz		12	_____			
4.0 GHz		12	_____			
4.5 GHz		8	_____			
5.0 GHz		8	_____			
5.5 GHz		8	_____			
6.0 GHz		8	_____			
6.5 GHz		8	_____			
7.0 GHz		8	_____			
7.5 GHz		8	_____			
8.0 GHz		8	_____			
9.0 GHz		8	_____			
10.0 GHz		8	_____			
11.0 GHz		8	_____			
12.0 GHz		8	_____			
13.0 GHz		8	_____			
14.0 GHz		8	_____			
15.0 GHz		8	_____			
16.0 GHz		8	_____			
17.0 GHz		8	_____			
18.0 GHz		8	_____			
19.0 GHz		8	_____			
20.0 GHz		8	_____			
21.0 GHz		6	_____			
22.0 GHz		6	_____			
23.0 GHz		6	_____			
24.0 GHz		6	_____			
25.0 GHz		6	_____			
26.0 GHz		6	_____			
27.0 GHz		6	_____			
28.0 GHz		6	_____			
29.0 GHz		6	_____			
30.0 GHz		6	_____			
31.0 GHz		6	_____			
32.0 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **(**without opt. dir. gen/rec access) **Test frequency:**	Page 1.12				dB	0.5 dB
33.0 GHz		6	_____			
34.0 GHz		6	_____			
35.0 GHz		6	_____			
36.0 GHz		6	_____			
37.0 GHz		6	_____			
38.0 GHz		6	_____			
39.0 GHz		6	_____			
40.0 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __	Page 1.12				dB	
Matching (raw)						
(with opt. dir. gen/rec access)						
Test frequency:						
10 MHz		10	_____			1 dB
20 MHz		10	_____			1 dB
50 MHz		10	_____			1 dB
100 MHz		10	_____			0.5 dB
200 MHz		10	_____			↓
500 MHz		10	_____			
750 MHz		10	_____			
1.0 GHz		10	_____			
1.5 GHz		10	_____			
2.0 GHz		10	_____			
2.5 GHz		10	_____			
3.0 GHz		10	_____			
3.5 GHz		10	_____			
4.0 GHz		10	_____			
4.5 GHz		8	_____			
5.0 GHz		8	_____			
5.5 GHz		8	_____			
6.0 GHz		8	_____			
6.5 GHz		8	_____			
7.0 GHz		8	_____			
7.5 GHz		8	_____			
8.0 GHz		8	_____			
9.0 GHz		8	_____			
10.0 GHz		8	_____			
11.0 GHz		8	_____			
12.0 GHz		8	_____			
13.0 GHz		8	_____			
14.0 GHz		8	_____			
15.0 GHz		8	_____			
16.0 GHz		8	_____			
17.0 GHz		8	_____			
18.0 GHz		8	_____			
19.0 GHz		8	_____			
20.0 GHz		8	_____			
21.0 GHz		6	_____			
22.0 GHz		6	_____			
23.0 GHz		6	_____			
24.0 GHz		6	_____			
25.0 GHz		6	_____			
26.0 GHz		6	_____			
27.0 GHz		6	_____			
28.0 GHz		6	_____			
29.0 GHz		6	_____			
30.0 GHz		6	_____			
31.0 GHz		6	_____			
32.0 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **(**with opt. dir. gen/rec access) **Test frequency:**	Page 1.12				dB	0.5 dB
33.0 GHz		6	_____			
34.0 GHz		6	_____			
35.0 GHz		6	_____			
36.0 GHz		6	_____			
37.0 GHz		6	_____			
38.0 GHz		6	_____			
39.0 GHz		6	_____			
40.0 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (without opt. step attenuator and without opt. direct generator/receiver access) **Test frequency:**	Page 1.13				dB	
10.0 MHz		90	_____			–
20.0 MHz		90	_____			–
50.0 MHz		105	_____			–
100.0 MHz		105	_____			–
200.0 MHz		105	_____			–
500.0 MHz		125	_____			–
700.0 MHz		125	_____			–
750.0 MHz		125	_____			–
1.0 GHz		125	_____			–
1.5 GHz		125	_____			–
2.0 GHz		130	_____			–
2.1 GHz		130	_____			–
2.5 GHz		130	_____			–
3.0 GHz		130	_____			–
3.5 GHz		130	_____			–
4.0 GHz		130	_____			–
4.1 GHz		130	_____			–
4.5 GHz		130	_____			–
5.0 GHz		130	_____			–
5.05 GHz		130	_____			–
5.7 GHz		130	_____			–
6.0 GHz		130	_____			–
6.35 GHz		130	_____			–
6.36 GHz		130	_____			–
7.0 GHz		130	_____			–
7.5 GHz		130	_____			–
8.0 GHz		130	_____			–
8.1 GHz		130	_____			–
9.0 GHz		130	_____			–
10.0 GHz		130	_____			–
10.2 GHz		130	_____			–
11.0 GHz		130	_____			–
12.0 GHz		130	_____			–
12.7 GHz		130	_____			–
12.8 GHz		130	_____			–
13.0 GHz		130	_____			–
14.0 GHz		130	_____			–
15.0 GHz		130	_____			–
16.0 GHz		130	_____			–
16.1 GHz		130	_____			–
18.0 GHz		130	_____			–
19.0 GHz		130	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range (without opt. step attenuator and without opt. direct generator/receiver access)						
Test frequency:						
20.0 GHz		130	_____			–
21.0 GHz		125	_____			–
22.0 GHz		125	_____			–
23.0 GHz		125	_____			–
24.0 GHz		125	_____			–
25.0 GHz		120	_____			–
26.0 GHz		120	_____			–
27.0 GHz		120	_____			–
28.0 GHz		120	_____			–
29.0 GHz		120	_____			–
30.0 GHz		120	_____			–
31.0 GHz		120	_____			–
32.0 GHz		120	_____			–
33.0 GHz		118	_____			–
34.0 GHz		118	_____			–
35.0 GHz		118	_____			–
36.0 GHz		118	_____			–
37.0 GHz		118	_____			–
38.0 GHz		118	_____			–
39.0 GHz		118	_____			–
40.0 GHz		118	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. generator or receiver attenuator)	Page 1.13				dB	
Test frequency:						
10.0 MHz		89	_____			–
20.0 MHz		89	_____			–
50.0 MHz		104	_____			–
100.0 MHz		104	_____			–
200.0 MHz		104	_____			–
500.0 MHz		124	_____			–
700.0 MHz		124	_____			–
750.0 MHz		124	_____			–
1.0 GHz		124	_____			–
1.5 GHz		124	_____			–
2.0 GHz		129	_____			–
2.1 GHz		129	_____			–
2.5 GHz		129	_____			–
3.0 GHz		129	_____			–
3.5 GHz		129	_____			–
4.0 GHz		129	_____			–
4.1 GHz		129	_____			–
4.5 GHz		129	_____			–
5.0 GHz		129	_____			–
5.05 GHz		129	_____			–
5.7 GHz		129	_____			–
6.0 GHz		129	_____			–
6.35 GHz		129	_____			–
6.36 GHz		129	_____			–
7.0 GHz		129	_____			–
7.5 GHz		129	_____			–
8.0 GHz		129	_____			–
8.1 GHz		129	_____			–
9.0 GHz		129	_____			–
10.0 GHz		129	_____			–
10.2 GHz		129	_____			–
11.0 GHz		129	_____			–
12.0 GHz		129	_____			–
12.7 GHz		129	_____			–
12.8 GHz		129	_____			–
13.0 GHz		129	_____			–
14.0 GHz		128	_____			–
15.0 GHz		128	_____			–
16.0 GHz		128	_____			–
16.1 GHz		128	_____			–
18.0 GHz		128	_____			–
19.0 GHz		128	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. generator or receiver attenuator)	Page 1.13				dB	
Test frequency:						
20.0 GHz		128	_____			–
21.0 GHz		123	_____			–
22.0 GHz		123	_____			–
23.0 GHz		123	_____			–
24.0 GHz		123	_____			–
25.0 GHz		117	_____			–
26.0 GHz		117	_____			–
27.0 GHz		117	_____			–
28.0 GHz		117	_____			–
29.0 GHz		117	_____			–
30.0 GHz		117	_____			–
31.0 GHz		117	_____			–
32.0 GHz		117	_____			–
33.0 GHz		115	_____			–
34.0 GHz		115	_____			–
35.0 GHz		115	_____			–
36.0 GHz		115	_____			–
37.0 GHz		115	_____			–
38.0 GHz		115	_____			–
39.0 GHz		115	_____			–
40.0 GHz		115	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. generator and receiver attenuator or with opt. direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
10.0 MHz		88	_____			–
20.0 MHz		88	_____			–
50.0 MHz		103	_____			–
100.0 MHz		103	_____			–
200.0 MHz		103	_____			–
500.0 MHz		123	_____			–
700.0 MHz		123	_____			–
750.0 MHz		123	_____			–
1.0 GHz		123	_____			–
1.5 GHz		123	_____			–
2.0 GHz		123	_____			–
2.1 GHz		128	_____			–
2.5 GHz		128	_____			–
3.0 GHz		128	_____			–
3.5 GHz		128	_____			–
4.0 GHz		128	_____			–
4.1 GHz		128	_____			–
4.5 GHz		128	_____			–
5.0 GHz		128	_____			–
5.05 GHz		128	_____			–
5.7 GHz		128	_____			–
6.0 GHz		128	_____			–
6.35 GHz		128	_____			–
6.36 GHz		128	_____			–
7.0 GHz		128	_____			–
7.5 GHz		128	_____			–
8.0 GHz		128	_____			–
8.1 GHz		128	_____			–
9.0 GHz		128	_____			–
10.0 GHz		128	_____			–
10.2 GHz		128	_____			–
11.0 GHz		128	_____			–
12.0 GHz		128	_____			–
12.7 GHz		128	_____			–
12.8 GHz		128	_____			–
13.0 GHz		128	_____			–
14.0 GHz		126	_____			–
15.0 GHz		126	_____			–
16.0 GHz		126	_____			–
16.1 GHz		126	_____			–
18.0 GHz		126	_____			–
19.0 GHz		126	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. generator and receiver attenuator or with opt. direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
20.0 GHz		126	_____			–
21.0 GHz		121	_____			–
22.0 GHz		121	_____			–
23.0 GHz		121	_____			–
24.0 GHz		121	_____			–
25.0 GHz		114	_____			–
26.0 GHz		114	_____			–
27.0 GHz		114	_____			–
28.0 GHz		114	_____			–
29.0 GHz		114	_____			–
30.0 GHz		114	_____			–
31.0 GHz		114	_____			–
32.0 GHz		114	_____			–
33.0 GHz		112	_____			–
34.0 GHz		112	_____			–
35.0 GHz		112	_____			–
36.0 GHz		112	_____			–
37.0 GHz		112	_____			–
38.0 GHz		112	_____			–
39.0 GHz		112	_____			–
40.0 GHz		112	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. generator or receiver attenuator and with opt. direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
10.0 MHz		87	_____			–
20.0 MHz		87	_____			–
50.0 MHz		102	_____			–
100.0 MHz		102	_____			–
200.0 MHz		102	_____			–
500.0 MHz		122	_____			–
700.0 MHz		122	_____			–
750.0 MHz		122	_____			–
1.0 GHz		122	_____			–
1.5 GHz		122	_____			–
2.0 GHz		122	_____			–
2.1 GHz		127	_____			–
2.5 GHz		127	_____			–
3.0 GHz		127	_____			–
3.5 GHz		127	_____			–
4.0 GHz		127	_____			–
4.1 GHz		127	_____			–
4.5 GHz		127	_____			–
5.0 GHz		127	_____			–
5.05 GHz		127	_____			–
5.7 GHz		127	_____			–
6.0 GHz		127	_____			–
6.35 GHz		127	_____			–
6.36 GHz		127	_____			–
7.0 GHz		127	_____			–
7.5 GHz		127	_____			–
8.0 GHz		127	_____			–
8.1 GHz		127	_____			–
9.0 GHz		127	_____			–
10.0 GHz		127	_____			–
10.2 GHz		127	_____			–
11.0 GHz		127	_____			–
12.0 GHz		127	_____			–
12.7 GHz		127	_____			–
12.8 GHz		127	_____			–
13.0 GHz		127	_____			–
14.0 GHz		124	_____			–
15.0 GHz		124	_____			–
16.0 GHz		124	_____			–
16.1 GHz		124	_____			–
18.0 GHz		124	_____			–
19.0 GHz		124	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. generator or receiver attenuator and with opt. direct generator/receiver access) **Test frequency:**	Page 1.13				dB	
20.0 GHz		124	_____			–
21.0 GHz		119	_____			–
22.0 GHz		119	_____			–
23.0 GHz		119	_____			–
24.0 GHz		119	_____			–
25.0 GHz		111	_____			–
26.0 GHz		111	_____			–
27.0 GHz		111	_____			–
28.0 GHz		111	_____			–
29.0 GHz		111	_____			–
30.0 GHz		111	_____			–
31.0 GHz		111	_____			–
32.0 GHz		111	_____			–
33.0 GHz		109	_____			–
34.0 GHz		109	_____			–
35.0 GHz		109	_____			–
36.0 GHz		109	_____			–
37.0 GHz		109	_____			–
38.0 GHz		109	_____			–
39.0 GHz		109	_____			–
40.0 GHz		109	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. generator and receiver attenuator and with opt. direct generator/receiver access) **Test frequency:**	Page 1.13				dB	
10.0 MHz		86	_____			–
20.0 MHz		86	_____			–
50.0 MHz		101	_____			–
100.0 MHz		101	_____			–
200.0 MHz		101	_____			–
500.0 MHz		121	_____			–
700.0 MHz		121	_____			–
750.0 MHz		121	_____			–
1.0 GHz		121	_____			–
1.5 GHz		121	_____			–
2.0 GHz		121	_____			–
2.1 GHz		126	_____			–
2.5 GHz		126	_____			–
3.0 GHz		126	_____			–
3.5 GHz		126	_____			–
4.0 GHz		126	_____			–
4.1 GHz		126	_____			–
4.5 GHz		126	_____			–
5.0 GHz		126	_____			–
5.05 GHz		126	_____			–
5.7 GHz		126	_____			–
6.0 GHz		126	_____			–
6.35 GHz		126	_____			–
6.36 GHz		126	_____			–
7.0 GHz		126	_____			–
7.5 GHz		126	_____			–
8.0 GHz		126	_____			–
8.1 GHz		126	_____			–
9.0 GHz		126	_____			–
10.0 GHz		126	_____			–
10.2 GHz		126	_____			–
11.0 GHz		126	_____			–
12.0 GHz		126	_____			–
12.7 GHz		126	_____			–
12.8 GHz		126	_____			–
13.0 GHz		126	_____			–
14.0 GHz		122	_____			–
15.0 GHz		122	_____			–
16.0 GHz		122	_____			–
16.1 GHz		122	_____			–
18.0 GHz		122	_____			–
19.0 GHz		122	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with opt. generator and receiver attenuator and with opt. direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
20.0 GHz		122	_____			–
21.0 GHz		117	_____			–
22.0 GHz		117	_____			–
23.0 GHz		117	_____			–
24.0 GHz		117	_____			–
25.0 GHz		108	_____			–
26.0 GHz		108	_____			–
27.0 GHz		108	_____			–
28.0 GHz		108	_____			–
29.0 GHz		108	_____			–
30.0 GHz		108	_____			–
31.0 GHz		108	_____			–
32.0 GHz		108	_____			–
33.0 GHz		106	_____			–
34.0 GHz		106	_____			–
35.0 GHz		106	_____			–
36.0 GHz		106	_____			–
37.0 GHz		106	_____			–
38.0 GHz		106	_____			–
39.0 GHz		106	_____			–
40.0 GHz		106	_____			–

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
5 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
10 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
20 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
35 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Accuracy DC meas 1 V	Page 1.15				mV	1 mV
Pos. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Neg. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Accuracy DC meas 10 V	Page 1.15				V	0.01 V
Pos. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		
Neg. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		

Performance Test Report R&S® ZVA50

ROHDE&SCHWARZ	**Vector Network Analyzer, 50 GHz, _ ports 1145.1110K__** **R&S® ZVA50**
Serial number:	
Date:	
Person responsible:	
Signature:	

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Frequency deviation @ 1 GHz	Page 1.4	- 8000	_____	+ 8000	Hz	1 Hz
With Option ZVAB-B4		- 100	_____	+ 100		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +10dBm**	Page 1.5				dBc	
Freq. **Harmonics**						
50 MHz 100 MHz			_____	-20		0.6 dB
150 MHz			_____	-20		0.6 dB
100 MHz 200 MHz			_____	-20		0.6 dB
300 MHz			_____	-20		0.6 dB
200 MHz 400 MHz			_____	-20		0.6 dB
600 MHz			_____	-20		0.6 dB
500 MHz 1000 MHz			_____	-20		0.6 dB
1500 MHz			_____	-20		0.6 dB
750 MHz 1500 MHz			_____	-20		0.6 dB
2250 MHz			_____	-20		0.6 dB
1 GHz 2 GHz			_____	-20		0.6 dB
3 GHz			_____	-20		0.6 dB
1.5 GHz 3 GHz			_____	-20		0.8 dB
4.5 GHz			_____	-20		0.8 dB
2 GHz 4 GHz			_____	-20		0.8 dB
6 GHz			_____	-20		0.8 dB
2.1 GHz 4.2 GHz			_____	-20		0.9 dB
6.3 GHz			_____	-20		0.9 dB
2.5 GHz 5.0 GHz			_____	-20		0.9 dB
7.5 GHz			_____	-20		0.9 dB
3.0 GHz 6.0 GHz			_____	-20		0.9 dB
9.0 GHz			_____	-20		0.9 dB
3.5 GHz 7 GHz			_____	-20		0.9 dB
10.5 GHz			_____	-20		0.9 dB
4.0 GHz 8.0 GHz			_____	-20		0.9 dB
12.0 GHz			_____	-20		0.9 dB
4.1 GHz 8.2 GHz			_____	-20		0.9 dB
12.3 GHz			_____	-20		0.9 dB
5.0 GHz 10.0 GHz			_____	-20		0.9 dB
15.0 GHz			_____	-20		0.9 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Freq. Harmonics**	Page 1.5				dBc	
5.04 GHz 10.08 GHz			_____	-20		1.0 dB
15.12 GHz			_____	-20		1.0 dB
5.05 GHz 10.10 GHz			_____	-20		1.0 dB
15.15 GHz			_____	-20		1.0 dB
5.5 GHz 11.0 GHz			_____	-20		1.0 dB
16.5 GHz			_____	-20		1.0 dB
6.0 GHz 12.0 GHz			_____	-20		1.0 dB
18.0 GHz			_____	-20		1.0 dB
6.35 GHz 12.70 GHz			_____	-20		1.0 dB
19.05 GHz			_____	-20		1.0 dB
7.0 GHz 14.0 GHz			_____	-20		1.0 dB
21.0 GHz			_____	-20		1.0 dB
8.0 GHz 16.0 GHz			_____	-20		1.0 dB
24.0 GHz			_____	-20		1.0 dB
8.1 GHz 16.2 GHz			_____	-20		1.1 dB
24.3 GHz			_____	-20		1.1 dB
9.0 GHz 18.0 GHz			_____	-20		1.1 dB
27.0 GHz			_____	-20		1.1 dB
10.0 GHz 20.0 GHz			_____	-20		1.2 dB
30.0 GHz			_____	-20		1.2 dB
10.2 GHz 20.4 GHz			_____	-20		1.3 dB
30.6 GHz			_____	-20		1.3 dB
11.0 GHz 22.0 GHz			_____	-20		1.3 dB
33.0 GHz			_____	-20		1.3 dB
12.7 GHz 25.4 GHz			_____	-20		1.4 dB
38.1 GHz			_____	-20		1.4 dB
13.0 GHz 26.0 GHz			_____	-20		1.4 dB
39.0 GHz			_____	-20		1.4 dB
14.0 GHz 28.0 GHz			_____	-20		1.6 dB
42.0 GHz			_____	-20		1.6 dB
14.6 GHz 29.2 GHz			_____	-20		1.6 dB
43.8 GHz			_____	-20		1.6 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +10 dBm** **Freq. Harmonics**	Page 1.5				dBc	
15.0 GHz 30.0 GHz			_____	-20		1.6 dB
45.0 GHz			_____	-20		1.6 dB
16.0 GHz 32.0 GHz			_____	-20		1.6 dB
17.0 GHz 34.0 GHz			_____	-20		1.6 dB
18.0 GHz 36.0 GHz			_____	-20		1.6 dB
19.0 GHz 38.0 GHz			_____	-20		1.8 dB
20.0 GHz 40.0 GHz			_____	-20		1.8 dB
Source power +7dBm						
20.1 GHz 40.2 GHz			_____	-20		1.8 dB
21.0 GHz 42.0 GHz			_____	-20		1.8 dB
21.75 GHz 43.5 GHz			_____	-20		1.8 dB
22.0 GHz 44.0 GHz			_____	-20		1.8 dB
23.0 GHz 46.0 GHz			_____	-20		1.8 dB
24.0 GHz 48.0 GHz			_____	-20		1.8 dB
25.0 GHz 50.0 GHz			_____	-20		1.8 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (without opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		10	_____			
20 MHz		10	_____			
50 MHz		13	_____			
100 MHz		13	_____			
200 MHz		13	_____			
500 MHz		13	_____			
750 MHz		13	_____			
1 GHz		13	_____			
1.5 GHz		13	_____			
2 GHz		13	_____			
2.1 GHz		13	_____			
2.5 GHz		13	_____			
3 GHz		13	_____			
3.5 GHz		13	_____			
4 GHz		13	_____			
4.1 GHz		13	_____			
4.5 GHz		13	_____			
5 GHz		13	_____			
5.05 GHz		13	_____			
5.7 GHz		13	_____			
6 GHz		13	_____			
6.35 GHz		13	_____			
6.36 GHz		13	_____			
7 GHz		13	_____			
7.5 GHz		13	_____			
8 GHz		13	_____			
8.1 GHz		13	_____			
9 GHz		13	_____			
10 GHz		13	_____			
10.2 GHz		13	_____			
11 GHz		13	_____			
12 GHz		13	_____			
12.7 GHz		13	_____			
12.8 GHz		13	_____			
13 GHz		13	_____			
15 GHz		13	_____			
16 GHz		13	_____			
16.1 GHz		13	_____			
17 GHz		13	_____			
18 GHz		13	_____			
19 GHz		13	_____			
20 GHz		13	_____			
21 GHz		12	_____			
22 GHz		12	_____			
23 GHz		12	_____			
24 GHz		12	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		12	_____			↓
26 GHz		12	_____			
27 GHz		12	_____			
28 GHz		12	_____			
29 GHz		12	_____			
30 GHz		12	_____			
31 GHz		12	_____			
32 GHz		12	_____			
33 GHz		12	_____			
34 GHz		12	_____			
35 GHz		12	_____			
36 GHz		10	_____			
37 GHz		10	_____			
38 GHz		10	_____			
39 GHz		10	_____			
40 GHz		10	_____			0.4 dB
41 GHz		10	_____			↓
42 GHz		10	_____			
43 GHz		10	_____			
44 GHz		10	_____			
45 GHz		10	_____			
46 GHz		10	_____			
47 GHz		10	_____			
48 GHz		10	_____			
49 GHz		10	_____			
50 GHz		10	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. or dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		9	_____			
20 MHz		9	_____			
50 MHz		12	_____			
100 MHz		12	_____			
200 MHz		12	_____			
500 MHz		12	_____			
750 MHz		12	_____			
1 GHz		12	_____			
1.5 GHz		12	_____			
2 GHz		12	_____			
2.1 GHz		12	_____			
2.5 GHz		12	_____			
3 GHz		12	_____			
3.5 GHz		12	_____			
4 GHz		12	_____			
4.1 GHz		12	_____			
4.5 GHz		12	_____			
5 GHz		12	_____			
5.05 GHz		12	_____			
5.7 GHz		12	_____			
6 GHz		12	_____			
6.35 GHz		12	_____			
6.36 GHz		12	_____			
7 GHz		12	_____			
7.5 GHz		12	_____			
8 GHz		12	_____			
8.1 GHz		12	_____			
9 GHz		12	_____			
10 GHz		12	_____			
10.2 GHz		12	_____			
11 GHz		12	_____			
12 GHz		12	_____			
12.7 GHz		12	_____			
12.8 GHz		12	_____			
13 GHz		12	_____			
15 GHz		11	_____			
16 GHz		11	_____			
16.1 GHz		11	_____			
17 GHz		11	_____			
18 GHz		11	_____			
19 GHz		11	_____			
20 GHz		11	_____			
21 GHz		10	_____			
22 GHz		10	_____			
23 GHz		10	_____			
24 GHz		10	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		9	_____			↓
26 GHz		9	_____			
27 GHz		9	_____			
28 GHz		9	_____			
29 GHz		9	_____			
30 GHz		9	_____			
31 GHz		9	_____			
32 GHz		9	_____			
33 GHz		9	_____			
34 GHz		9	_____			
35 GHz		9	_____			
36 GHz		7	_____			
37 GHz		7	_____			
38 GHz		7	_____			
39 GHz		7	_____			
40 GHz		7	_____			0.4 dB
41 GHz		7	_____			↓
42 GHz		7	_____			
43 GHz		7	_____			
44 GHz		7	_____			
45 GHz		7	_____			
46 GHz		7	_____			
47 GHz		7	_____			
48 GHz		7	_____			
49 GHz		7	_____			
50 GHz		7	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		8	_____			
20 MHz		8	_____			
50 MHz		11	_____			
100 MHz		11	_____			
200 MHz		11	_____			
500 MHz		11	_____			
750 MHz		11	_____			
1 GHz		11	_____			
1.5 GHz		11	_____			
2 GHz		11	_____			
2.1 GHz		11	_____			
2.5 GHz		11	_____			
3 GHz		11	_____			
3.5 GHz		11	_____			
4 GHz		11	_____			
4.1 GHz		11	_____			
4.5 GHz		11	_____			
5 GHz		11	_____			
5.05 GHz		11	_____			
5.7 GHz		11	_____			
6 GHz		11	_____			
6.35 GHz		11	_____			
6.36 GHz		11	_____			
7 GHz		11	_____			
7.5 GHz		11	_____			
8 GHz		11	_____			
8.1 GHz		11	_____			
9 GHz		11	_____			
10 GHz		11	_____			
10.2 GHz		11	_____			
11 GHz		11	_____			
12 GHz		11	_____			
12.7 GHz		11	_____			
12.8 GHz		11	_____			
13 GHz		11	_____			
15 GHz		9	_____			
16 GHz		9	_____			
16.1 GHz		9	_____			
17 GHz		9	_____			
18 GHz		9	_____			
19 GHz		9	_____			
20 GHz		9	_____			
21 GHz		9	_____			
22 GHz		9	_____			
23 GHz		9	_____			
24 GHz		9	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		6	_____			↓
26 GHz		6	_____			
27 GHz		6	_____			
28 GHz		6	_____			
29 GHz		6	_____			
30 GHz		6	_____			
31 GHz		6	_____			
32 GHz		6	_____			
33 GHz		6	_____			
34 GHz		6	_____			
35 GHz		6	_____			
36 GHz		4	_____			
37 GHz		4	_____			
38 GHz		4	_____			
39 GHz		4	_____			
40 GHz		4	_____			0.4 dB
41 GHz		4	_____			↓
42 GHz		4	_____			
43 GHz		4	_____			
44 GHz		4	_____			
45 GHz		4	_____			
46 GHz		4	_____			
47 GHz		4	_____			
48 GHz		4	_____			
49 GHz		4	_____			
50 GHz		4	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power Accuracy** **Output power -10 dBm** **Test frequency**	Page 1.7				dB	0.2 dB
10 MHz		- 3	_____	3		
20 MHz		- 3	_____	3		
50 MHz		- 3	_____	3		
100 MHz		- 3	_____	3		
200 MHz		- 3	_____	3		
500 MHz		- 0.8	_____	0.8		
750 MHz		- 0.8	_____	0.8		
1.0 GHz		- 0.8	_____	0.8		
1.5 GHz		- 0.8	_____	0.8		
2.0 GHz		- 0.8	_____	0.8		
2.1 GHz		- 0.8	_____	0.8		
2.5 GHz		- 0.8	_____	0.8		
3.0 GHz		- 0.8	_____	0.8		
3.5 GHz		- 0.8	_____	0.8		
4.0 GHz		- 0.8	_____	0.8		
4.1 GHz		- 0.8	_____	0.8		
4.5 GHz		- 0.8	_____	0.8		
5.0 GHz		- 0.8	_____	0.8		
5.05 GHz		- 0.8	_____	0.8		
5.7 GHz		- 0.8	_____	0.8		
6.0 GHz		- 0.8	_____	0.8		
6.35 GHz		- 0.8	_____	0.8		
6.36 GHz		- 0.8	_____	0.8		
7.0 GHz		- 0.8	_____	0.8		
7.5 GHz		- 0.8	_____	0.8		
8.0 GHz		- 0.8	_____	0.8		
8.1 GHz		- 0.8	_____	0.8		
9.0 GHz		- 0.8	_____	0.8		
10.0 GHz		- 0.8	_____	0.8		
10.1 GHz		- 0.8	_____	0.8		
11.0 GHz		- 0.8	_____	0.8		
12.0 GHz		- 0.8	_____	0.8		
12.6 GHz		- 0.8	_____	0.8		
12.7 GHz		- 0.8	_____	0.8		
13.0 GHz		- 0.8	_____	0.8		
14.0 GHz		- 0.8	_____	0.8		
15.0 GHz		- 0.8	_____	0.8		
16.0 GHz		- 0.8	_____	0.8		
16.1 GHz		- 0.8	_____	0.8		
17.0 GHz		- 0.8	_____	0.8		
18.0 GHz		- 0.8	_____	0.8		
19.0 GHz		- 0.8	_____	0.8		
20.0 GHz		- 0.8	_____	0.8		
21.0 GHz		- 0.8	_____	0.8		
22.0 GHz		- 0.8	_____	0.8		
23.0 GHz		- 0.8	_____	0.8		
24.0 GHz		- 0.8	_____	0.8		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __	Page 1.7				dB	0.3 dB
Power Accuracy						↓
Output power -10 dBm						
Test frequency						
25 GHz		-2	_____	2		
26 GHz		-2	_____	2		
27 GHz		-2	_____	2		
28 GHz		-2	_____	2		
29 GHz		-2	_____	2		
30 GHz		-2	_____	2		
31 GHz		-2	_____	2		
32 GHz		-2	_____	2		
33 GHz		-2	_____	2		
34 GHz		-2	_____	2		
35 GHz		-2	_____	2		
36 GHz		-2	_____	2		
37 GHz		-2	_____	2		
38 GHz		-2	_____	2		
39 GHz		-2	_____	2		
40 GHz		-2	_____	2		0.4 dB
41 GHz		-2	_____	2		↓
42 GHz		-2	_____	2		
43 GHz		-2	_____	2		
44 GHz		-2	_____	2		
45 GHz		-2	_____	2		
46 GHz		-2	_____	2		
47 GHz		-2	_____	2		
48 GHz		-2	_____	2		
49 GHz		-2	_____	2		
50 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(without Opt. Gen Att)							
Reference –10 dBm							
Freq.	**Level**						
51 MHz	23 dB		-2	_____	2		
	20 dB		-2	_____	2		
	15 dB		-2	_____	2		
	10 dB		-2	_____	2		
	5 dB		-2	_____	2		
	-5 dB		-2	_____	2		
	-10 dB		-2	_____	2		
	-15 dB		-2	_____	2		
	-20 dB		-2	_____	2		
500MHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
2 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
2.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
3 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
6 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
8 GHz	23 dB		- 0.8	_____	0.8		
	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
10 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
13 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
16 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
20 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
24 GHz	22 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
28 GHz	22 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
35 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
35 GHz	-20 dB		- 0.8	_____	0.8		
40 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
45 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
50 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
51 MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
500MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**	Page 1.8				dB	0.1 dB
Freq. **Level**						
1 GHz 22 dB		- 2	_____	2		
20 dB		- 2	_____	2		
15 dB		- 2	_____	2		
10 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 3	_____	3		
-45 dB		- 3	_____	3		
-50 dB		- 3	_____	3		
-55 dB		- 3	_____	3		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		
2 GHz 22 dB		- 2	_____	2		
20 dB		- 2	_____	2		
15 dB		- 2	_____	2		
10 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 3	_____	3		
-45 dB		- 3	_____	3		
-50 dB		- 3	_____	3		
-55 dB		- 3	_____	3		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	Level						
2.1 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
3 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
4 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
4.1 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
6 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
8 GHz	22 dB		- 2	_____	2		
	17 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
10 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
13 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
16 GHz	21 dB		- 2	_____	2		
	18 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
20 GHz	21 dB		- 2	_____	2		
	18 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
24 GHz	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
28 GHz	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
32 GHz	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
40 GHz	17 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
45 GHz	17 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
50 GHz	17 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Test frequency:**	Page 1.9				dB	0.2 dB
10 MHz		- 2	_____	2		
20 MHz		- 2	_____	2		
50 MHz		- 1	_____	1		
100 MHz		- 1	_____	1		
200 MHz		- 1	_____	1		
500 MHz		- 1	_____	1		
750 MHz		- 1	_____	1		
1 GHz		- 1	_____	1		
1.5 GHz		- 1	_____	1		
2 GHz		- 1	_____	1		
2.1 GHz		- 1	_____	1		
2.5 GHz		- 1	_____	1		
3 GHz		- 1	_____	1		
3.5 GHz		- 1	_____	1		
4 GHz		- 1	_____	1		
4.1 GHz		- 1	_____	1		
4.5 GHz		- 1	_____	1		
5.0 GHz		- 1	_____	1		
5.05 GHz		- 1	_____	1		
5.7 GHz		- 1	_____	1		
6.0 GHz		- 1	_____	1		
6.35 GHz		- 1	_____	1		
6.36 GHz		- 1	_____	1		
7.0 GHz		- 1	_____	1		
7.5 GHz		- 1	_____	1		
8.0 GHz		- 1	_____	1		
8.1 GHz		- 1	_____	1		
9.0 GHz		- 1	_____	1		
10.0 GHz		- 1	_____	1		
10.2 GHz		- 1	_____	1		
11.0 GHz		- 1	_____	1		
12.0 GHz		- 1	_____	1		
12.7 GHz		- 1	_____	1		
12.8 GHz		- 1	_____	1		
13.0 GHz		- 1	_____	1		
14.0 GHz		- 2	_____	2		
15.0 GHz		- 2	_____	2		
16.0 GHz		- 2	_____	2		
16.1 GHz		- 2	_____	2		
17.0 GHz		- 2	_____	2		
18.0 GHz		- 2	_____	2		
19.0 GHz		- 2	_____	2		
20.0 GHz		- 2	_____	2		
21.0 GHz		- 2	_____	2		
22.0 GHz		- 2	_____	2		
23.0 GHz		- 2	_____	2		
24.0 GHz		- 2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Test frequency:**	Page 1.9				dB	
25.0 GHz		- 3	_____	3		0.3 dB
26.0 GHz		- 3	_____	3		↓
27.0 GHz		- 3	_____	3		
28.0 GHz		- 3	_____	3		
29.0 GHz		- 3	_____	3		
30.0 GHz		- 3	_____	3		
31.0 GHz		- 3	_____	3		
32.0 GHz		- 3	_____	3		
33.0 GHz		- 3	_____	3		
34.0 GHz		- 3	_____	3		
35.0 GHz		- 3	_____	3		
36.0 GHz		- 3	_____	3		
37.0 GHz		- 3	_____	3		
38.0 GHz		- 3	_____	3		
39.0 GHz		- 3	_____	3		
40.0 GHz		- 3	_____	3		
41.0 GHz		- 3	_____	3		0.4 dB
42.0 GHz		- 3	_____	3		↓
43.0 GHz		- 3	_____	3		
44.0 GHz		- 3	_____	3		
45.0 GHz		- 3	_____	3		
46.0 GHz		- 3	_____	3		
47.0 GHz		- 3	_____	3		
48.0 GHz		- 3	_____	3		
49.0 GHz		- 3	_____	3		
50.0 GHz		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input linearity** **Reference –10 dBm**		Page 1.10				dB	0.01 dB
Freq.	Level						
50 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
1 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
4 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
8 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
16 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.3	_____	0.3		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input linearity** **Reference –10 dBm**		Page 1.10				dB	0.01 dB
Freq.	Level						
24 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
40 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
50 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter	Reference	**Min. value**	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (without opt. gen/rec atten. and dir. gen/rec access **Test frequency**	Page 1.11				dBm	
100.12 MHz			_____	–100		–
200.12 MHz			_____	–100		–
500.12 MHz			_____	–115		–
700.12 MHz			_____	–115		–
750.12 MHz			_____	–115		–
1.00012 GHz			_____	–115		–
1.50012 GH			_____	–115		–
2.00012 GHz			_____	–115		–
2.10012 GHz			_____	–115		–
2.50012 GHz			_____	–115		–
3.00012 GHz			_____	–115		–
3.50012 GHz			_____	–115		–
4.00012 GMz			_____	–115		–
4.10012 GHz			_____	–115		–
4.50012 GHz			_____	–115		–
5.00012 GHz			_____	–115		–
5.05012 GHz			_____	–115		–
5.70012 GHz			_____	–115		–
6.00012 GHz			_____	–115		–
6.35012 GHz			_____	–115		–
6.36012 GHz			_____	–115		–
7.00012 GHz			_____	–115		–
7.50012 GHz			_____	–115		–
7.99988 GHz			_____	–115		–
8.10012 GHz			_____	–115		–
9.00012 GHz			_____	–115		–
10.00012 GHz			_____	–115		–
10.20012 GHz			_____	–115		–
11.00012 GHz			_____	–115		–
12.00012 GHz			_____	–115		–
12.70012 GHz			_____	–115		–
12.80012 GHz			_____	–115		–
12.99988 GHz			_____	–115		–
14.00012 GHz			_____	–115		–
15.00012 GHz			_____	–115		–
16.00012 GHz			_____	–115		–
16.10012 GHz			_____	–115		–
18.00012 GHz			_____	–115		–
19.00012 GHz			_____	–115		–
20.00012 GHz			_____	–115		–
21.00012 GHz			_____	–115		–
22.00012 GHz			_____	–115		–
23.00012 GHz			_____	–115		–
23.99988 GHz			_____	–115		–

Parameter	Reference	**Min. value**	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**without opt. gen/rec atten. and dir. gen/rec access **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–110		–
26.0 GHz			_____	–110		–
27.0 GHz			_____	–110		–
28.0 GHz			_____	–110		–
29.0 GHz			_____	–110		–
30.0 GHz			_____	–110		–
31.0 GHz			_____	–110		–
32.0 GHz			_____	–110		–
33.0 GHz			_____	–110		–
34.0 GHz			_____	–110		–
35.0 GHz			_____	–110		–
36.0 GHz			_____	–110		–
37.0 GHz			_____	–110		–
38.0 GHz			_____	–110		–
39.0 GHz			_____	–110		–
40.0 GHz			_____	–110		–
41.0 GHz			_____	–100		–
42.0 GHz			_____	–100		–
43.0 GHz			_____	–100		–
44.0 GHz			_____	–100		–
45.0 GHz			_____	–100		–
46.0 GHz			_____	–100		–
47.0 GHz			_____	–100		–
48.0 GHz			_____	–100		–
49.0 GHz			_____	–100		–
50.0 GHz			_____	–100		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. receiver atten.)	Page 1.11				dBm	
Test frequency						
100.12 MHz			_____	–99		–
200.12 MHz			_____	–99		–
500.12 MHz			_____	–114		–
700.12 MHz			_____	–114		–
750.12 MHz			_____	–114		–
1.00012 GHz			_____	–114		–
1.50012 GH			_____	–114		–
2.00012 GHz			_____	–114		–
2.10012 GHz			_____	–114		–
2.50012 GHz			_____	–114		–
3.00012 GHz			_____	–114		–
3.50012 GHz			_____	–114		–
4.00012 GMz			_____	–114		–
4.10012 GHz			_____	–114		–
4.50012 GHz			_____	–114		–
5.00012 GHz			_____	–114		–
5.05012 GHz			_____	–114		–
5.70012 GHz			_____	–114		–
6.00012 GHz			_____	–114		–
6.35012 GHz			_____	–114		–
6.36012 GHz			_____	–114		–
7.00012 GHz			_____	–114		–
7.50012 GHz			_____	–114		–
7.99988 GHz			_____	–114		–
8.10012 GHz			_____	–114		–
9.00012 GHz			_____	–114		–
10.00012 GHz			_____	–114		–
10.20012 GHz			_____	–114		–
11.00012 GHz			_____	–114		–
12.00012 GHz			_____	–114		–
12.70012 GHz			_____	–114		–
12.80012 GHz			_____	–114		–
12.99988 GHz			_____	–114		–
14.00012 GHz			_____	–113		–
15.00012 GHz			_____	–113		–
16.00012 GHz			_____	–113		–
16.10012 GHz			_____	–113		–
18.00012 GHz			_____	–113		–
19.00012 GHz			_____	–113		–
20.00012 GHz			_____	–113		–
21.00012 GHz			_____	–113		–
22.00012 GHz			_____	–113		–
23.00012 GHz			_____	–113		–
23.99988 GHz			_____	–113		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. receiver atten.) **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–107		–
26.0 GHz			_____	–107		–
27.0 GHz			_____	–107		–
28.0 GHz			_____	–107		–
29.0 GHz			_____	–107		–
30.0 GHz			_____	–107		–
31.0 GHz			_____	–107		–
32.0 GHz			_____	–107		–
33.0 GHz			_____	–107		–
34.0 GHz			_____	–107		–
35.0 GHz			_____	–107		–
36.0 GHz			_____	–107		–
37.0 GHz			_____	–107		–
38.0 GHz			_____	–107		–
39.0 GHz			_____	–107		–
40.0 GHz			_____	–107		–
41.0 GHz			_____	–97		–
42.0 GHz			_____	–97		–
43.0 GHz			_____	–97		–
44.0 GHz			_____	–97		–
45.0 GHz			_____	–97		–
46.0 GHz			_____	–97		–
47.0 GHz			_____	–97		–
48.0 GHz			_____	–97		–
49.0 GHz			_____	–97		–
50.0 GHz			_____	–97		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. dir. gen/rec access)	Page 1.11				dBm	
Test frequency						
100.12 MHz			_____	–99		–
200.12 MHz			_____	–99		–
500.12 MHz			_____	–114		–
700.12 MHz			_____	–114		–
750.12 MHz			_____	–114		–
1.00012 GHz			_____	–114		–
1.50012 GH			_____	–114		–
2.00012 GHz			_____	–114		–
2.10012 GHz			_____	–114		–
2.50012 GHz			_____	–114		–
3.00012 GHz			_____	–114		–
3.50012 GHz			_____	–114		–
4.00012 GMz			_____	–114		–
4.10012 GHz			_____	–114		–
4.50012 GHz			_____	–114		–
5.00012 GHz			_____	–114		–
5.05012 GHz			_____	–114		–
5.70012 GHz			_____	–114		–
6.00012 GHz			_____	–114		–
6.35012 GHz			_____	–114		–
6.36012 GHz			_____	–114		–
7.00012 GHz			_____	–114		–
7.50012 GHz			_____	–114		–
7.99988 GHz			_____	–114		–
8.10012 GHz			_____	–114		–
9.00012 GHz			_____	–114		–
10.00012 GHz			_____	–114		–
10.20012 GHz			_____	–114		–
11.00012 GHz			_____	–114		–
12.00012 GHz			_____	–114		–
12.70012 GHz			_____	–114		–
12.80012 GHz			_____	–114		–
12.99988 GHz			_____	–114		–
14.00012 GHz			_____	–113		–
15.00012 GHz			_____	–113		–
16.00012 GHz			_____	–113		–
16.10012 GHz			_____	–113		–
18.00012 GHz			_____	–113		–
19.00012 GHz			_____	–113		–
20.00012 GHz			_____	–113		–
21.00012 GHz			_____	–113		–
22.00012 GHz			_____	–113		–
23.00012 GHz			_____	–113		–
23.99988 GHz			_____	–113		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. dir. gen/rec access) **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–107		–
26.0 GHz			_____	–107		–
27.0 GHz			_____	–107		–
28.0 GHz			_____	–107		–
29.0 GHz			_____	–107		–
30.0 GHz			_____	–107		–
31.0 GHz			_____	–107		–
32.0 GHz			_____	–107		–
33.0 GHz			_____	–107		–
34.0 GHz			_____	–107		–
35.0 GHz			_____	–107		–
36.0 GHz			_____	–107		–
37.0 GHz			_____	–107		–
38.0 GHz			_____	–107		–
39.0 GHz			_____	–107		–
40.0 GHz			_____	–107		–
41.0 GHz			_____	–97		–
42.0 GHz			_____	–97		–
43.0 GHz			_____	–97		–
44.0 GHz			_____	–97		–
45.0 GHz			_____	–97		–
46.0 GHz			_____	–97		–
47.0 GHz			_____	–97		–
48.0 GHz			_____	–97		–
49.0 GHz			_____	–97		–
50.0 GHz			_____	–97		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec atten. and dir. gen/rec access) **Test frequency**	Page 1.11				dBm	
100.12 MHz			_____	–98		–
200.12 MHz			_____	–98		–
500.12 MHz			_____	–113		–
700.12 MHz			_____	–113		–
750.12 MHz			_____	–113		–
1.00012 GHz			_____	–113		–
1.50012 GH			_____	–113		–
2.00012 GHz			_____	–113		–
2.10012 GHz			_____	–113		–
2.50012 GHz			_____	–113		–
3.00012 GHz			_____	–113		–
3.50012 GHz			_____	–113		–
4.00012 GMz			_____	–113		–
4.10012 GHz			_____	–113		–
4.50012 GHz			_____	–113		–
5.00012 GHz			_____	–113		–
5.05012 GHz			_____	–113		–
5.70012 GHz			_____	–113		–
6.00012 GHz			_____	–113		–
6.35012 GHz			_____	–113		–
6.36012 GHz			_____	–113		–
7.00012 GHz			_____	–113		–
7.50012 GHz			_____	–113		–
7.99988 GHz			_____	–113		–
8.10012 GHz			_____	–113		–
9.00012 GHz			_____	–113		–
10.00012 GHz			_____	–113		–
10.20012 GHz			_____	–113		–
11.00012 GHz			_____	–113		–
12.00012 GHz			_____	–113		–
12.70012 GHz			_____	–113		–
12.80012 GHz			_____	–113		–
12.99988 GHz			_____	–113		–
14.00012 GHz			_____	–111		–
15.00012 GHz			_____	–111		–
16.00012 GHz			_____	–111		–
16.10012 GHz			_____	–111		–
18.00012 GHz			_____	–111		–
19.00012 GHz			_____	–111		–
20.00012 GHz			_____	–111		–
21.00012 GHz			_____	–111		–
22.00012 GHz			_____	–111		–
23.00012 GHz			_____	–111		–
23.99988 GHz			_____	–111		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec atten. and dir. gen/rec access) **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–104		–
26.0 GHz			_____	–104		–
27.0 GHz			_____	–104		–
28.0 GHz			_____	–104		–
29.0 GHz			_____	–104		–
30.0 GHz			_____	–104		–
31.0 GHz			_____	–104		–
32.0 GHz			_____	–104		–
33.0 GHz			_____	–104		–
34.0 GHz			_____	–104		–
35.0 GHz			_____	–104		–
36.0 GHz			_____	–104		–
37.0 GHz			_____	–104		–
38.0 GHz			_____	–104		–
39.0 GHz			_____	–104		–
40.0 GHz			_____	–104		–
41.0 GHz			_____	–94		–
42.0 GHz			_____	–94		–
43.0 GHz			_____	–94		–
44.0 GHz			_____	–94		–
45.0 GHz			_____	–94		–
46.0 GHz			_____	–94		–
47.0 GHz			_____	–94		–
48.0 GHz			_____	–94		–
49.0 GHz			_____	–94		–
50.0 GHz			_____	–94		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **Test frequency**	Page 1.12				dB	
10 MHz		8	_____			1 dB
20 MHz		8	_____			1 dB
50 MHz		10	_____			1 dB
100 MHz		10	_____			0.4 dB
200 MHz		10	_____			↓
500 MHz		10	_____			
750 MHz		10	_____			
1.0 GHz		10	_____			
1.5 GHz		10	_____			
2.0 GHz		10	_____			
2.5 GHz		10	_____			
3.0 GHz		10	_____			
3.5 GHz		10	_____			
4.0 GHz		10	_____			
4.5 GHz		10	_____			
5.0 GHz		10	_____			
5.5 GHz		10	_____			
6.0 GHz		10	_____			
6.5 GHz		10	_____			
7.0 GHz		10	_____			
7.5 GHz		10	_____			
8.0 GHz		10	_____			
9.0 GHz		10	_____			
10.0 GHz		10	_____			
11.0 GHz		8	_____			
12.0 GHz		8	_____			
13.0 GHz		8	_____			
14.0 GHz		8	_____			
15.0 GHz		8	_____			
16.0 GHz		8	_____			
17.0 GHz		8	_____			
18.0 GHz		8	_____			
19.0 GHz		8	_____			
20.0 GHz		8	_____			
21.0 GHz		6	_____			
22.0 GHz		6	_____			
23.0 GHz		6	_____			
24.0 GHz		6	_____			
25.0 GHz		6	_____			
26.0 GHz		6	_____			
27.0 GHz		6	_____			
28.0 GHz		6	_____			
29.0 GHz		6	_____			
30.0 GHz		6	_____			
31.0 GHz		6	_____			
32.0 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **Test frequency**	Page 1.12				dB	0.4 dB
33.0 GHz		6	_____			
34.0 GHz		6	_____			
35.0 GHz		6	_____			
36.0 GHz		6	_____			
37.0 GHz		6	_____			
38.0 GHz		6	_____			
39.0 GHz		6	_____			
40.0 GHz		6	_____			
41.0 GHz		5	_____			
42.0 GHz		5	_____			
43.0 GHz		5	_____			
44.0 GHz		5	_____			
45.0 GHz		5	_____			
46.0 GHz		5	_____			
47.0 GHz		5	_____			
48.0 GHz		5	_____			
49.0 GHz		5	_____			
50.0 GHz		5	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (without option step attenuator and without option direct generator/receiver access) **Test frequency:**	Page 1.13				dB	
10.0 MHz		90	_____			–
20.0 MHz		90	_____			–
50.0 MHz		105	_____			–
100.0 MHz		105	_____			–
200.0 MHz		105	_____			–
500.0 MHz		125	_____			–
700.0 MHz		125	_____			–
750.0 MHz		125	_____			–
1.0 GHz		125	_____			–
1.5 GHz		125	_____			–
2.0 GHz		130	_____			–
2.1 GHz		130	_____			–
2.5 GHz		130	_____			–
3.0 GHz		130	_____			–
3.5 GHz		130	_____			–
4.0 GHz		130	_____			–
4.1 GHz		130	_____			–
4.5 GHz		130	_____			–
5.0 GHz		130	_____			–
5.05 GHz		130	_____			–
5.7 GHz		130	_____			–
6.0 GHz		130	_____			–
6.35 GHz		130	_____			–
6.36 GHz		130	_____			–
7.0 GHz		130	_____			–
7.5 GHz		130	_____			–
8.0 GHz		130	_____			–
8.1 GHz		130	_____			–
9.0 GHz		130	_____			–
10.0 GHz		130	_____			–
10.2 GHz		130	_____			–
11.0 GHz		130	_____			–
12.0 GHz		130	_____			–
12.7 GHz		130	_____			–
12.8 GHz		130	_____			–
13.0 GHz		130	_____			–
14.0 GHz		130	_____			–
15.0 GHz		130	_____			–
16.0 GHz		130	_____			–
16.1 GHz		130	_____			–
18.0 GHz		130	_____			–
19.0 GHz		130	_____			–
20.0 GHz		130	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (without option step attenuator and without option direct generator/receiver access) **Test frequency:**	Page 1.13				dB	
21.0 GHz		125	_____			–
22.0 GHz		125	_____			–
23.0 GHz		125	_____			–
24.0 GHz		125	_____			–
25.0 GHz		120	_____			–
26.0 GHz		120	_____			–
27.0 GHz		120	_____			–
28.0 GHz		120	_____			–
29.0 GHz		120	_____			–
30.0 GHz		120	_____			–
31.0 GHz		120	_____			–
32.0 GHz		120	_____			–
33.0 GHz		120	_____			–
34.0 GHz		120	_____			–
35.0 GHz		120	_____			–
36.0 GHz		120	_____			–
37.0 GHz		120	_____			–
38.0 GHz		120	_____			–
39.0 GHz		120	_____			–
40.0 GHz		120	_____			–
41.0 GHz		115	_____			–
42.0 GHz		115	_____			–
43.0 GHz		115	_____			–
44.0 GHz		115	_____			–
45.0 GHz		115	_____			–
46.0 GHz		110	_____			–
47.0 GHz		110	_____			–
48.0 GHz		110	_____			–
49.0 GHz		110	_____			–
50.0 GHz		110	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with option generator or receiver attenuator) **Test frequency:**	Page 1.13				dB	
10.0 MHz		89	_____			–
20.0 MHz		89	_____			–
50.0 MHz		104	_____			–
100.0 MHz		104	_____			–
200.0 MHz		104	_____			–
500.0 MHz		124	_____			–
700.0 MHz		124	_____			–
750.0 MHz		124	_____			–
1.0 GHz		124	_____			–
1.5 GHz		124	_____			–
2.0 GHz		129	_____			–
2.1 GHz		129	_____			–
2.5 GHz		129	_____			–
3.0 GHz		129	_____			–
3.5 GHz		129	_____			–
4.0 GHz		129	_____			–
4.1 GHz		129	_____			–
4.5 GHz		129	_____			–
5.0 GHz		129	_____			–
5.05 GHz		129	_____			–
5.7 GHz		129	_____			–
6.0 GHz		129	_____			–
6.35 GHz		129	_____			–
6.36 GHz		129	_____			–
7.0 GHz		129	_____			–
7.5 GHz		129	_____			–
8.0 GHz		129	_____			–
8.1 GHz		129	_____			–
9.0 GHz		129	_____			–
10.0 GHz		129	_____			–
10.2 GHz		129	_____			–
11.0 GHz		129	_____			–
12.0 GHz		129	_____			–
12.7 GHz		129	_____			–
12.8 GHz		129	_____			–
13.0 GHz		129	_____			–
14.0 GHz		128	_____			–
15.0 GHz		128	_____			–
16.0 GHz		128	_____			–
16.1 GHz		128	_____			–
18.0 GHz		128	_____			–
19.0 GHz		128	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with option generator or receiver attenuator)	Page 1.13				dB	
Test frequency:						
20.0 GHz		128	_____			–
21.0 GHz		123	_____			–
22.0 GHz		123	_____			–
23.0 GHz		123	_____			–
24.0 GHz		123	_____			–
25.0 GHz		117	_____			–
26.0 GHz		117	_____			–
27.0 GHz		117	_____			–
28.0 GHz		117	_____			–
29.0 GHz		117	_____			–
30.0 GHz		117	_____			–
31.0 GHz		117	_____			–
32.0 GHz		117	_____			–
33.0 GHz		117	_____			–
34.0 GHz		117	_____			–
35.0 GHz		117	_____			–
36.0 GHz		117	_____			–
37.0 GHz		117	_____			–
38.0 GHz		117	_____			–
39.0 GHz		117	_____			–
40.0 GHz		117	_____			–
41.0 GHz		112	_____			–
42.0 GHz		112	_____			–
43.0 GHz		112	_____			–
44.0 GHz		112	_____			–
45.0 GHz		112	_____			–
46.0 GHz		107	_____			–
47.0 GHz		107	_____			–
48.0 GHz		107	_____			–
49.0 GHz		107	_____			–
50.0 GHz		107	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with option generator and receiver attenuator or with option direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
10.0 MHz		88	_____			–
20.0 MHz		88	_____			–
50.0 MHz		103	_____			–
100.0 MHz		103	_____			–
200.0 MHz		103	_____			–
500.0 MHz		123	_____			–
700.0 MHz		123	_____			–
750.0 MHz		123	_____			–
1.0 GHz		123	_____			–
1.5 GHz		123	_____			–
2.0 GHz		123	_____			–
2.1 GHz		128	_____			–
2.5 GHz		128	_____			–
3.0 GHz		128	_____			–
3.5 GHz		128	_____			–
4.0 GHz		128	_____			–
4.1 GHz		128	_____			–
4.5 GHz		128	_____			–
5.0 GHz		128	_____			–
5.05 GHz		128	_____			–
5.7 GHz		128	_____			–
6.0 GHz		128	_____			–
6.35 GHz		128	_____			–
6.36 GHz		128	_____			–
7.0 GHz		128	_____			–
7.5 GHz		128	_____			–
8.0 GHz		128	_____			–
8.1 GHz		128	_____			–
9.0 GHz		128	_____			–
10.0 GHz		128	_____			–
10.2 GHz		128	_____			–
11.0 GHz		128	_____			–
12.0 GHz		128	_____			–
12.7 GHz		128	_____			–
12.8 GHz		128	_____			–
13.0 GHz		128	_____			–
14.0 GHz		126	_____			–
15.0 GHz		126	_____			–
16.0 GHz		126	_____			–
16.1 GHz		126	_____			–
18.0 GHz		126	_____			–
19.0 GHz		126	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** **ZVA440, ZVA50** (with option generator and receiver attenuator or with option direct generator/receiver access) **Test frequency:**	Page 1.13				dB	
20.0 GHz		126	_____			–
21.0 GHz		121	_____			–
22.0 GHz		121	_____			–
23.0 GHz		121	_____			–
24.0 GHz		121	_____			–
25.0 GHz		114	_____			–
26.0 GHz		114	_____			–
27.0 GHz		114	_____			–
28.0 GHz		114	_____			–
29.0 GHz		114	_____			–
30.0 GHz		114	_____			–
31.0 GHz		114	_____			–
32.0 GHz		114	_____			–
33.0 GHz		114	_____			–
34.0 GHz		114	_____			–
35.0 GHz		114	_____			–
36.0 GHz		114	_____			–
37.0 GHz		114	_____			–
38.0 GHz		114	_____			–
39.0 GHz		114	_____			–
40.0 GHz		114	_____			–
41.0 GHz		109	_____			–
42.0 GHz		109	_____			–
43.0 GHz		109	_____			–
44.0 GHz		109	_____			–
45.0 GHz		109	_____			–
46.0 GHz		104	_____			–
47.0 GHz		104	_____			–
48.0 GHz		104	_____			–
49.0 GHz		104	_____			–
50.0 GHz		104	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with option generator or receiver attenuator and with option direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
10.0 MHz		87	_____			–
20.0 MHz		87	_____			–
50.0 MHz		102	_____			–
100.0 MHz		102	_____			–
200.0 MHz		102	_____			–
500.0 MHz		122	_____			–
700.0 MHz		122	_____			–
750.0 MHz		122	_____			–
1.0 GHz		122	_____			–
1.5 GHz		122	_____			–
2.0 GHz		122	_____			–
2.1 GHz		127	_____			–
2.5 GHz		127	_____			–
3.0 GHz		127	_____			–
3.5 GHz		127	_____			–
4.0 GHz		127	_____			–
4.1 GHz		127	_____			–
4.5 GHz		127	_____			–
5.0 GHz		127	_____			–
5.05 GHz		127	_____			–
5.7 GHz		127	_____			–
6.0 GHz		127	_____			–
6.35 GHz		127	_____			–
6.36 GHz		127	_____			–
7.0 GHz		127	_____			–
7.5 GHz		127	_____			–
8.0 GHz		127	_____			–
8.1 GHz		127	_____			–
9.0 GHz		127	_____			–
10.0 GHz		127	_____			–
10.2 GHz		127	_____			–
11.0 GHz		127	_____			–
12.0 GHz		127	_____			–
12.7 GHz		127	_____			–
12.8 GHz		127	_____			–
13.0 GHz		127	_____			–
14.0 GHz		124	_____			–
15.0 GHz		124	_____			–
16.0 GHz		124	_____			–
16.1 GHz		124	_____			–
18.0 GHz		124	_____			–
19.0 GHz		124	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** **ZVA440, ZVA50** (with option generator or receiver attenuator and with option direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
20.0 GHz		124	_____			–
21.0 GHz		119	_____			–
22.0 GHz		119	_____			–
23.0 GHz		119	_____			–
24.0 GHz		119	_____			–
25.0 GHz		111	_____			–
26.0 GHz		111	_____			–
27.0 GHz		111	_____			–
28.0 GHz		111	_____			–
29.0 GHz		111	_____			–
30.0 GHz		111	_____			–
31.0 GHz		111	_____			–
32.0 GHz		111	_____			–
33.0 GHz		111	_____			–
34.0 GHz		111	_____			–
35.0 GHz		111	_____			–
36.0 GHz		111	_____			–
37.0 GHz		111	_____			–
38.0 GHz		111	_____			–
39.0 GHz		111	_____			–
40.0 GHz		111	_____			–
41.0 GHz		106	_____			–
42.0 GHz		106	_____			–
43.0 GHz		106	_____			–
44.0 GHz		106	_____			–
45.0 GHz		106	_____			–
46.0 GHz		101	_____			–
47.0 GHz		101	_____			–
48.0 GHz		101	_____			–
49.0 GHz		101	_____			–
50.0 GHz		101	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with option generator and receiver attenuator and with option direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
10.0 MHz		86	_____			–
20.0 MHz		86	_____			–
50.0 MHz		101	_____			–
100.0 MHz		101	_____			–
200.0 MHz		101	_____			–
500.0 MHz		121	_____			–
700.0 MHz		121	_____			–
750.0 MHz		121	_____			–
1.0 GHz		121	_____			–
1.5 GHz		121	_____			–
2.0 GHz		126	_____			–
2.1 GHz		126	_____			–
2.5 GHz		126	_____			–
3.0 GHz		126	_____			–
3.5 GHz		126	_____			–
4.0 GHz		126	_____			–
4.1 GHz		126	_____			–
4.5 GHz		126	_____			–
5.0 GHz		126	_____			–
5.05 GHz		126	_____			–
5.7 GHz		126	_____			–
6.0 GHz		126	_____			–
6.35 GHz		126	_____			–
6.36 GHz		126	_____			–
7.0 GHz		126	_____			–
7.5 GHz		126	_____			–
8.0 GHz		126	_____			–
8.1 GHz		126	_____			–
9.0 GHz		126	_____			–
10.0 GHz		126	_____			–
10.2 GHz		126	_____			–
11.0 GHz		126	_____			–
12.0 GHz		126	_____			–
12.7 GHz		126	_____			–
12.8 GHz		126	_____			–
13.0 GHz		126	_____			–
14.0 GHz		122	_____			–
15.0 GHz		122	_____			–
16.0 GHz		122	_____			–
16.1 GHz		122	_____			–
18.0 GHz		122	_____			–
19.0 GHz		122	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with option generator and receiver attenuator and with option direct generator/receiver access)	Page 1.13				dB	
Test frequency:						
20.0 GHz		122	_____			–
21.0 GHz		117	_____			–
22.0 GHz		117	_____			–
23.0 GHz		117	_____			–
24.0 GHz		117	_____			–
25.0 GHz		108	_____			–
26.0 GHz		108	_____			–
27.0 GHz		108	_____			–
28.0 GHz		108	_____			–
29.0 GHz		108	_____			–
30.0 GHz		108	_____			–
31.0 GHz		108	_____			–
32.0 GHz		108	_____			–
33.0 GHz		108	_____			–
34.0 GHz		108	_____			–
35.0 GHz		108	_____			–
36.0 GHz		108	_____			–
37.0 GHz		108	_____			–
38.0 GHz		108	_____			–
39.0 GHz		108	_____			–
40.0 GHz		108	_____			–
41.0 GHz		103	_____			–
42.0 GHz		103	_____			–
43.0 GHz		103	_____			–
44.0 GHz		103	_____			–
45.0 GHz		103	_____			–
46.0 GHz		98	_____			–
47.0 GHz		98	_____			–
48.0 GHz		98	_____			–
49.0 GHz		98	_____			–
50.0 GHz		98	_____			–

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
5 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
	42.0 GHz		-2	_____	2		
	44.0 GHz		-2	_____	2		
	46.0 GHz		-2	_____	2		
	48.0 GHz		-2	_____	2		
	50.0 GHz		-2	_____	2		
10 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
10 dB	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
	42.0 GHz		-2	_____	2		
	44.0 GHz		-2	_____	2		
	46.0 GHz		-2	_____	2		
	48.0 GHz		-2	_____	2		
	50.0 GHz		-2	_____	2		
20 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
	42.0 GHz		-2	_____	2		
	44.0 GHz		-2	_____	2		
	46.0 GHz		-2	_____	2		
	48.0 GHz		-2	_____	2		
	50.0 GHz		-2	_____	2		
35 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
35 dB	18.0GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
	42.0 GHz		-2	_____	2		
	44.0 GHz		-2	_____	2		
	46.0 GHz		-2	_____	2		
	48.0 GHz		-2	_____	2		
	50.0 GHz		-2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Accuracy **DC meas 1 V**	Page 1.15				mV	1 mV
Pos. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Neg. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Accuracy **DC meas 10 V**	Page 1.15				V	0.01 V
Pos. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		
Neg. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		

Performance Test Report R&S® ZVA67

ROHDE&SCHWARZ	**Vector Network Analyzer, 67 GHz, _ ports 1145.1110K__** **R&S® ZVA67**
Serial number:	
Date:	
Person responsible:	
Signature:	

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Frequency deviation @ 1 GHz	Page 1.4	- 8000	_____	+ 8000	Hz	1 Hz
With Option ZVAB-B4		- 100	_____	+ 100		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics**	Page 1.5				dBc	
Source power +10dBm						
Freq. **Harmonics**						
50 MHz 100 MHz			_____	-15		0.6 dB
150 MHz			_____	-15		0.6 dB
100 MHz 200 MHz			_____	-15		0.6 dB
300 MHz			_____	-15		0.6 dB
200 MHz 400 MHz			_____	-15		0.6 dB
600 MHz			_____	-15		0.6 dB
500 MHz 1000 MHz			_____	-15		0.6 dB
1500 MHz			_____	-15		0.6 dB
750 MHz 1500 MHz			_____	-15		0.6 dB
2250 MHz			_____	-15		0.6 dB
1 GHz 2 GHz			_____	-15		0.6 dB
3 GHz			_____	-15		0.6 dB
1.5 GHz 3 GHz			_____	-15		0.8 dB
4.5 GHz			_____	-15		0.8 dB
2 GHz 4 GHz			_____	-15		0.8 dB
6 GHz			_____	-15		0.8 dB
2.1 GHz 4.2 GHz			_____	-15		0.9 dB
6.3 GHz			_____	-15		0.9 dB
2.5 GHz 5.0 GHz			_____	-15		0.9 dB
7.5 GHz			_____	-15		0.9 dB
3.0 GHz 6.0 GHz			_____	-15		0.9 dB
9.0 GHz			_____	-15		0.9 dB
3.5 GHz 7 GHz			_____	-15		0.9 dB
10.5 GHz			_____	-15		0.9 dB
4.0 GHz 8.0 GHz			_____	-15		0.9 dB
12.0 GHz			_____	-15		0.9 dB
4.1 GHz 8.2 GHz			_____	-15		0.9 dB
12.3 GHz			_____	-15		0.9 dB
5.0 GHz 10.0 GHz			_____	-20		0.9 dB
15.0 GHz			_____	-20		0.9 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +7dBm** **Freq. Harmonics**	Page 1.5				dBc	
5.04 GHz 10.08 GHz			_____	-20		1.0 dB
15.12 GHz			_____	-20		1.0 dB
5.05 GHz 10.10 GHz			_____	-20		1.0 dB
15.15 GHz			_____	-20		1.0 dB
5.5 GHz 11.0 GHz			_____	-20		1.0 dB
16.5 GHz			_____	-20		1.0 dB
6.0 GHz 12.0 GHz			_____	-20		1.0 dB
18.0 GHz			_____	-20		1.0 dB
6.35 GHz 12.70 GHz			_____	-20		1.0 dB
19.05 GHz			_____	-20		1.0 dB
7.0 GHz 14.0 GHz			_____	-20		1.0 dB
21.0 GHz			_____	-20		1.0 dB
8.0 GHz 16.0 GHz			_____	-20		1.0 dB
24.0 GHz			_____	-20		1.0 dB
8.1 GHz 16.2 GHz			_____	-20		1.1 dB
24.3 GHz			_____	-20		1.1 dB
9.0 GHz 18.0 GHz			_____	-20		1.1 dB
27.0 GHz			_____	-20		1.1 dB
10.0 GHz 20.0 GHz			_____	-20		1.2 dB
30.0 GHz			_____	-20		1.2 dB
10.2 GHz 20.4 GHz			_____	-20		1.3 dB
30.6 GHz			_____	-20		1.3 dB
11.0 GHz 22.0 GHz			_____	-20		1.3 dB
33.0 GHz			_____	-20		1.3 dB
12.7 GHz 25.4 GHz			_____	-20		1.4 dB
38.1 GHz			_____	-20		1.4 dB
13.0 GHz 26.0 GHz			_____	-20		1.4 dB
39.0 GHz			_____	-20		1.4 dB
14.0 GHz 28.0 GHz			_____	-20		1.6 dB
42.0 GHz			_____	-20		1.6 dB
14.6 GHz 29.2 GHz			_____	-20		1.6 dB
43.8 GHz			_____	-20		1.6 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +10 dBm** **Freq. Harmonics**	Page 1.5				dBc	
15.0 GHz 30.0 GHz			_____	-20		1.6 dB
45.0 GHz			_____	-20		1.6 dB
16.0 GHz 32.0 GHz			_____	-20		1.6 dB
17.0 GHz 34.0 GHz			_____	-20		1.6 dB
18.0 GHz 36.0 GHz			_____	-20		1.6 dB
19.0 GHz 38.0 GHz			_____	-20		1.8 dB
20.0 GHz 40.0 GHz			_____	-20		1.8 dB
Source power +7dBm						
20.1 GHz 40.2 GHz			_____	-20		1.8 dB
21.0 GHz 42.0 GHz			_____	-20		1.8 dB
21.75 GHz 43.5 GHz			_____	-20		1.8 dB
22.0 GHz 44.0 GHz			_____	-20		1.8 dB
23.0 GHz 46.0 GHz			_____	-20		1.8 dB
24.0 GHz 48.0 GHz			_____	-20		1.8 dB
25.0 GHz 50.0 GHz			_____	-20		1.8 dB
26.0 GHz 52.0 GHz			_____	-20		1.8 dB
27.0 GHz 54.0 GHz			_____	-20		1.8 dB
28.0 GHz 56.0 GHz			_____	-20		1.8 dB
29.0 GHz 58.0 GHz			_____	-20		1.8 dB
30.0 GHz 60.0 GHz			_____	-20		1.8 dB
31.0 GHz 62.0 GHz			_____	-20		1.8 dB
32.0 GHz 64.0 GHz			_____	-20		1.8 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (without opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		10	_____			
20 MHz		10	_____			
50 MHz		13	_____			
100 MHz		13	_____			
200 MHz		13	_____			
500 MHz		13	_____			
750 MHz		13	_____			
1 GHz		13	_____			
1.5 GHz		13	_____			
2 GHz		13	_____			
2.1 GHz		13	_____			
2.5 GHz		13	_____			
3 GHz		13	_____			
3.5 GHz		13	_____			
4 GHz		13	_____			
4.1 GHz		13	_____			
4.5 GHz		13	_____			
5 GHz		13	_____			
5.05 GHz		13	_____			
5.7 GHz		13	_____			
6 GHz		13	_____			
6.35 GHz		13	_____			
6.36 GHz		13	_____			
7 GHz		13	_____			
7.5 GHz		13	_____			
8 GHz		13	_____			
8.1 GHz		13	_____			
9 GHz		13	_____			
10 GHz		13	_____			
10.2 GHz		13	_____			
11 GHz		13	_____			
12 GHz		13	_____			
12.7 GHz		13	_____			
12.8 GHz		13	_____			
13 GHz		13	_____			
15 GHz		13	_____			
16 GHz		13	_____			
16.1 GHz		13	_____			
17 GHz		13	_____			
18 GHz		13	_____			
19 GHz		13	_____			
20 GHz		13	_____			
21 GHz		10	_____			
22 GHz		10	_____			
23 GHz		10	_____			
24 GHz		10	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		10	_____			↓
26 GHz		10	_____			
27 GHz		10	_____			
28 GHz		10	_____			
29 GHz		10	_____			
30 GHz		10	_____			
31 GHz		10	_____			
32 GHz		10	_____			
33 GHz		8	_____			
34 GHz		8	_____			
35 GHz		8	_____			
36 GHz		8	_____			
37 GHz		8	_____			
38 GHz		8	_____			
39 GHz		8	_____			
40 GHz		8	_____			0.4 dB
41 GHz		8	_____			↓
42 GHz		8	_____			
43 GHz		8	_____			
44 GHz		8	_____			
45 GHz		8	_____			
46 GHz		8	_____			
47 GHz		8	_____			
48 GHz		8	_____			
49 GHz		8	_____			
50 GHz		8	_____			
51 GHz		5	_____			
52 GHz		5	_____			
53 GHz		5	_____			
54 GHz		5	_____			
55 GHz		5	_____			
56 GHz		5	_____			
57 GHz		5	_____			
58 GHz		5	_____			
59 GHz		5	_____			
60 GHz		5	_____			
61 GHz		4	_____			
62 GHz		4	_____			
63 GHz		4	_____			
64 GHz		4	_____			
65 GHz		2	_____			
66 GHz		2	_____			
67 GHz		2	_____			
with option ZVA67-B72						
68 GHz		-3	_____			
69 GHz		-3	_____			
70 GHz		-3	_____			
71 GHz		-3	_____			
72 GHz		-3	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. or dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		9	_____			
20 MHz		9	_____			
50 MHz		12	_____			
100 MHz		12	_____			
200 MHz		12	_____			
500 MHz		12	_____			
750 MHz		12	_____			
1 GHz		12	_____			
1.5 GHz		12	_____			
2 GHz		12	_____			
2.1 GHz		12	_____			
2.5 GHz		12	_____			
3 GHz		12	_____			
3.5 GHz		12	_____			
4 GHz		12	_____			
4.1 GHz		12	_____			
4.5 GHz		12	_____			
5 GHz		12	_____			
5.05 GHz		12	_____			
5.7 GHz		12	_____			
6 GHz		12	_____			
6.35 GHz		12	_____			
6.36 GHz		12	_____			
7 GHz		12	_____			
7.5 GHz		12	_____			
8 GHz		12	_____			
8.1 GHz		12	_____			
9 GHz		12	_____			
10 GHz		12	_____			
10.2 GHz		12	_____			
11 GHz		12	_____			
12 GHz		12	_____			
12.7 GHz		12	_____			
12.8 GHz		12	_____			
13 GHz		12	_____			
15 GHz		11	_____			
16 GHz		11	_____			
16.1 GHz		11	_____			
17 GHz		11	_____			
18 GHz		11	_____			
19 GHz		11	_____			
20 GHz		11	_____			
21 GHz		8	_____			
22 GHz		8	_____			
23 GHz		8	_____			
24 GHz		8	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		7	_____			↓
26 GHz		7	_____			
27 GHz		7	_____			
28 GHz		7	_____			
29 GHz		7	_____			
30 GHz		7	_____			
31 GHz		7	_____			
32 GHz		7	_____			
33 GHz		5	_____			
34 GHz		5	_____			
35 GHz		5	_____			
36 GHz		5	_____			
37 GHz		5	_____			
38 GHz		5	_____			
39 GHz		5	_____			
40 GHz		5	_____			0.4 dB
41 GHz		5	_____			↓
42 GHz		5	_____			
43 GHz		5	_____			
44 GHz		5	_____			
45 GHz		5	_____			
46 GHz		5	_____			
47 GHz		5	_____			
48 GHz		5	_____			
49 GHz		5	_____			
50 GHz		5	_____			
51 GHz		2	_____			
52 GHz		2	_____			
53 GHz		2	_____			
54 GHz		2	_____			
55 GHz		2	_____			
56 GHz		2	_____			
57 GHz		2	_____			
58 GHz		2	_____			
59 GHz		2	_____			
60 GHz		2	_____			
61 GHz		1	_____			
62 GHz		1	_____			
63 GHz		1	_____			
64 GHz		1	_____			
65 GHz		-1	_____			
66 GHz		-1	_____			
67 GHz		-1	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Maximum** **Output power** (with opt. gen atten. and dir. gen/rec access) **Test frequency:**	Page 1.7				dBm	0.2 dB
10 MHz		8	_____			
20 MHz		8	_____			
50 MHz		11	_____			
100 MHz		11	_____			
200 MHz		11	_____			
500 MHz		11	_____			
750 MHz		11	_____			
1 GHz		11	_____			
1.5 GHz		11	_____			
2 GHz		11	_____			
2.1 GHz		11	_____			
2.5 GHz		11	_____			
3 GHz		11	_____			
3.5 GHz		11	_____			
4 GHz		11	_____			
4.1 GHz		11	_____			
4.5 GHz		11	_____			
5 GHz		11	_____			
5.05 GHz		11	_____			
5.7 GHz		11	_____			
6 GHz		11	_____			
6.35 GHz		11	_____			
6.36 GHz		11	_____			
7 GHz		11	_____			
7.5 GHz		11	_____			
8 GHz		11	_____			
8.1 GHz		11	_____			
9 GHz		11	_____			
10 GHz		11	_____			
10.2 GHz		11	_____			
11 GHz		11	_____			
12 GHz		11	_____			
12.7 GHz		11	_____			
12.8 GHz		11	_____			
13 GHz		11	_____			
15 GHz		9	_____			
16 GHz		9	_____			
16.1 GHz		9	_____			
17 GHz		9	_____			
18 GHz		9	_____			
19 GHz		9	_____			
20 GHz		9	_____			
21 GHz		6	_____			
22 GHz		6	_____			
23 GHz		6	_____			
24 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
					dBm	0.3 dB
25 GHz		4	_____			↓
26 GHz		4	_____			
27 GHz		4	_____			
28 GHz		4	_____			
29 GHz		4	_____			
30 GHz		4	_____			
31 GHz		4	_____			
32 GHz		4	_____			
33 GHz		2	_____			
34 GHz		2	_____			
35 GHz		2	_____			
36 GHz		2	_____			
37 GHz		2	_____			
38 GHz		2	_____			
39 GHz		2	_____			
40 GHz		2	_____			0.4 dB
41 GHz		2	_____			↓
42 GHz		2	_____			
43 GHz		2	_____			
44 GHz		2	_____			
45 GHz		2	_____			
46 GHz		2	_____			
47 GHz		2	_____			
48 GHz		2	_____			
49 GHz		2	_____			
50 GHz		2	_____			
51 GHz		-1	_____			
52 GHz		-1	_____			
53 GHz		-1	_____			
54 GHz		-1	_____			
55 GHz		-1	_____			
56 GHz		-1	_____			
57 GHz		-1	_____			
58 GHz		-1	_____			
59 GHz		-1	_____			
60 GHz		-1	_____			
61 GHz		-2	_____			
62 GHz		-2	_____			
63 GHz		-2	_____			
64 GHz		-2	_____			
65 GHz		-4	_____			
66 GHz		-4	_____			
67 GHz		-4	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power Accuracy** **Output power -10 dBm** **Test frequency**	Page 1.7				dB	0.2 dB
10 MHz		- 3	_____	3		
20 MHz		- 3	_____	3		
50 MHz		- 3	_____	3		
100 MHz		- 3	_____	3		
200 MHz		- 3	_____	3		
500 MHz		- 0.8	_____	0.8		
750 MHz		- 0.8	_____	0.8		
1.0 GHz		- 0.8	_____	0.8		
1.5 GHz		- 0.8	_____	0.8		
2.0 GHz		- 0.8	_____	0.8		
2.1 GHz		- 0.8	_____	0.8		
2.5 GHz		- 0.8	_____	0.8		
3.0 GHz		- 0.8	_____	0.8		
3.5 GHz		- 0.8	_____	0.8		
4.0 GHz		- 0.8	_____	0.8		
4.1 GHz		- 0.8	_____	0.8		
4.5 GHz		- 0.8	_____	0.8		
5.0 GHz		- 0.8	_____	0.8		
5.05 GHz		- 0.8	_____	0.8		
5.7 GHz		- 0.8	_____	0.8		
6.0 GHz		- 0.8	_____	0.8		
6.35 GHz		- 0.8	_____	0.8		
6.36 GHz		- 0.8	_____	0.8		
7.0 GHz		- 0.8	_____	0.8		
7.5 GHz		- 0.8	_____	0.8		
8.0 GHz		- 0.8	_____	0.8		
8.1 GHz		- 0.8	_____	0.8		
9.0 GHz		- 0.8	_____	0.8		
10.0 GHz		- 0.8	_____	0.8		
10.1 GHz		- 0.8	_____	0.8		
11.0 GHz		- 0.8	_____	0.8		
12.0 GHz		- 0.8	_____	0.8		
12.6 GHz		- 0.8	_____	0.8		
12.7 GHz		- 0.8	_____	0.8		
13.0 GHz		- 0.8	_____	0.8		
14.0 GHz		- 0.8	_____	0.8		
15.0 GHz		- 0.8	_____	0.8		
16.0 GHz		- 0.8	_____	0.8		
16.1 GHz		- 0.8	_____	0.8		
17.0 GHz		- 0.8	_____	0.8		
18.0 GHz		- 0.8	_____	0.8		
19.0 GHz		- 0.8	_____	0.8		
20.0 GHz		- 0.8	_____	0.8		
21.0 GHz		- 0.8	_____	0.8		
22.0 GHz		- 0.8	_____	0.8		
23.0 GHz		- 0.8	_____	0.8		
24.0 GHz		- 0.8	_____	0.8		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __	Page 1.7				dB	
Power Accuracy						
Output power -10 dBm						
Test frequency						
25 GHz		-2	_____	2		0.3 dB
26 GHz		-2	_____	2		↓
27 GHz		-2	_____	2		
28 GHz		-2	_____	2		
29 GHz		-2	_____	2		
30 GHz		-2	_____	2		
31 GHz		-2	_____	2		
32 GHz		-2	_____	2		
33 GHz		-2	_____	2		
34 GHz		-2	_____	2		
35 GHz		-2	_____	2		
36 GHz		-2	_____	2		
37 GHz		-2	_____	2		
38 GHz		-2	_____	2		
39 GHz		-2	_____	2		
40 GHz		-2	_____	2		
41 GHz		-2	_____	2		0.4 dB
42 GHz		-2	_____	2		↓
43 GHz		-2	_____	2		
44 GHz		-2	_____	2		
45 GHz		-2	_____	2		
46 GHz		-2	_____	2		
47 GHz		-2	_____	2		
48 GHz		-2	_____	2		
49 GHz		-2	_____	2		
50 GHz		-2	_____	2		
52 GHz		-2	_____	2		
54 GHz		-2	_____	2		
56 GHz		-2	_____	2		
58 GHz		-2	_____	2		
60 GHz		-2	_____	2		
62 GHz		-2	_____	2		
64 GHz		-2	_____	2		
66 GHz		-2	_____	2		
67 GHz		-2	_____	2		
with option ZVA67-B72						
68 GHz		-3	_____	3		
69 GHz		-3	_____	3		
70 GHz		-3	_____	3		
71 GHz		-3	_____	3		
72 GHz		-3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
51 MHz	23 dB		-2	_____	2		
	20 dB		-2	_____	2		
	15 dB		-2	_____	2		
	10 dB		-2	_____	2		
	5 dB		-2	_____	2		
	-5 dB		-2	_____	2		
	-10 dB		-2	_____	2		
	-15 dB		-2	_____	2		
	-20 dB		-2	_____	2		
500MHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
2 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(without Opt. Gen Att)							
Reference –10 dBm							
Freq.	**Level**						
2.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
3 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4.1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
6 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
8 GHz	23 dB		- 0.8	_____	0.8		
	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
10 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
13 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
16 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
20 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
24 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
28 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
35 GHz	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
40 GHz	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
45 GHz	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
50 GHz	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
55 GHz	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
60 GHz	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (without Opt. Gen Att) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
64 GHz	14 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
67 GHz	12 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
51 MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
500MHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**	Page 1.8				dB	0.1 dB
Freq. **Level**						
1 GHz 22 dB		- 2	_____	2		
20 dB		- 2	_____	2		
15 dB		- 2	_____	2		
10 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 3	_____	3		
-45 dB		- 3	_____	3		
-50 dB		- 3	_____	3		
-55 dB		- 3	_____	3		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		
2 GHz 22 dB		- 2	_____	2		
20 dB		- 2	_____	2		
15 dB		- 2	_____	2		
10 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 3	_____	3		
-45 dB		- 3	_____	3		
-50 dB		- 3	_____	3		
-55 dB		- 3	_____	3		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
2.1 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
3 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
4 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
4.1 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
6 GHz	22 dB		- 2	_____	2		
	19 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
8 GHz	22 dB		- 2	_____	2		
	17 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
10 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
13 GHz	22 dB		- 2	_____	2		
	20 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
16 GHz	21 dB		- 2	_____	2		
	18 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
20 GHz	21 dB		- 2	_____	2		
	18 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
24 GHz	18 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
28 GHz	17 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
32 GHz	17 dB		- 2	_____	2		
	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
40 GHz	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
45 GHz	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
50 GHz	15 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	3		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
(with Opt. Gen Atten)							
Reference –10 dBm							
Freq.	**Level**						
55 GHz	12 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	2		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		
60 GHz	12 dB		- 2	_____	2		
	10 dB		- 2	_____	2		
	5 dB		- 2	_____	2		
	-5 dB		- 2	_____	2		
	-10 dB		- 2	_____	2		
	-15 dB		- 2	_____	2		
	-20 dB		- 2	_____	2		
	-25 dB		- 2	_____	2		
	-30 dB		- 2	_____	2		
	-35 dB		- 2	_____	2		
	-40 dB		- 3	_____	2		
	-45 dB		- 3	_____	3		
	-50 dB		- 3	_____	3		
	-55 dB		- 3	_____	3		
	-60 dB		- 3	_____	3		
	-65 dB		- 3	_____	3		
	-70 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** (with Opt. Gen Atten) **Reference –10 dBm**	Page 1.8				dB	0.1 dB
64 GHz 11 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 3	_____	2		
-45 dB		- 3	_____	3		
-50 dB		- 3	_____	3		
-55 dB		- 3	_____	3		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		
67 GHz 9 dB		- 2	_____	2		
5 dB		- 2	_____	2		
-5 dB		- 2	_____	2		
-10 dB		- 2	_____	2		
-15 dB		- 2	_____	2		
-20 dB		- 2	_____	2		
-25 dB		- 2	_____	2		
-30 dB		- 2	_____	2		
-35 dB		- 2	_____	2		
-40 dB		- 3	_____	2		
-45 dB		- 3	_____	3		
-50 dB		- 3	_____	3		
-55 dB		- 3	_____	3		
-60 dB		- 3	_____	3		
-65 dB		- 3	_____	3		
-70 dB		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Test frequency:**	Page 1.9				dB	0.2 dB
10 MHz		- 2	_____	2		
20 MHz		- 2	_____	2		
50 MHz		- 1	_____	1		
100 MHz		- 1	_____	1		
200 MHz		- 1	_____	1		
500 MHz		- 1	_____	1		
750 MHz		- 1	_____	1		
1 GHz		- 1	_____	1		
1.5 GHz		- 1	_____	1		
2 GHz		- 1	_____	1		
2.1 GHz		- 1	_____	1		
2.5 GHz		- 1	_____	1		
3 GHz		- 1	_____	1		
3.5 GHz		- 1	_____	1		
4 GHz		- 1	_____	1		
4.1 GHz		- 1	_____	1		
4.5 GHz		- 1	_____	1		
5.0 GHz		- 1	_____	1		
5.05 GHz		- 1	_____	1		
5.7 GHz		- 1	_____	1		
6.0 GHz		- 1	_____	1		
6.35 GHz		- 1	_____	1		
6.36 GHz		- 1	_____	1		
7.0 GHz		- 1	_____	1		
7.5 GHz		- 1	_____	1		
8.0 GHz		- 1	_____	1		
8.1 GHz		- 1	_____	1		
9.0 GHz		- 1	_____	1		
10.0 GHz		- 1	_____	1		
10.2 GHz		- 1	_____	1		
11.0 GHz		- 1	_____	1		
12.0 GHz		- 1	_____	1		
12.7 GHz		- 1	_____	1		
12.8 GHz		- 1	_____	1		
13.0 GHz		- 1	_____	1		
14.0 GHz		- 2	_____	2		
15.0 GHz		- 2	_____	2		
16.0 GHz		- 2	_____	2		
16.1 GHz		- 2	_____	2		
17.0 GHz		- 2	_____	2		
18.0 GHz		- 2	_____	2		
19.0 GHz		- 2	_____	2		
20.0 GHz		- 2	_____	2		
21.0 GHz		- 2	_____	2		
22.0 GHz		- 2	_____	2		
23.0 GHz		- 2	_____	2		
24.0 GHz		- 2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Test frequency:**	Page 1.9				dB	0.3 dB
25.0 GHz		- 3	_____	3		
26.0 GHz		- 3	_____	3		
27.0 GHz		- 3	_____	3		
28.0 GHz		- 3	_____	3		
29.0 GHz		- 3	_____	3		
30.0 GHz		- 3	_____	3		
31.0 GHz		- 3	_____	3		
32.0 GHz		- 3	_____	3		
33.0 GHz		- 3	_____	3		
34.0 GHz		- 3	_____	3		
35.0 GHz		- 3	_____	3		
36.0 GHz		- 3	_____	3		
37.0 GHz		- 3	_____	3		
38.0 GHz		- 3	_____	3		
39.0 GHz		- 3	_____	3		
40.0 GHz		- 3	_____	3		
41.0 GHz		- 3	_____	4		0.4 dB
42.0 GHz		- 3	_____	4		↓
43.0 GHz		- 3	_____	4		
44.0 GHz		- 3	_____	4		
45.0 GHz		- 3	_____	4		
46.0 GHz		- 3	_____	4		
47.0 GHz		- 3	_____	4		
48.0 GHz		- 3	_____	4		
49.0 GHz		- 3	_____	4		
50.0 GHz		- 3	_____	4		
51.0 GHz		- 4	_____	4		
52.0 GHz		- 4	_____	4		
53.0 GHz		- 4	_____	4		
54.0 GHz		- 4	_____	4		
55.0 GHz		- 4	_____	4		
56.0 GHz		- 4	_____	4		
57.0 GHz		- 4	_____	4		
58.0 GHz		- 4	_____	4		
59.0 GHz		- 4	_____	4		
60.0 GHz		- 4	_____	4		
61.0 GHz		- 4	_____	4		
62.0 GHz		- 4	_____	4		
63.0 GHz		- 4	_____	4		
64.0 GHz		- 4	_____	4		
65.0 GHz		- 4	_____	4		
66.0 GHz		- 4	_____	4		
67.0 GHz		- 4	_____	4		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input linearity** **Reference –10 dBm**		Page 1.10				dB	0.01 dB
Freq.	**Level**						
50 MHz	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
1 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
4 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
8 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
16 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.3	_____	0.3		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input linearity** **Reference –10 dBm**		Page 1.10				dB	0.01 dB
Freq.	**Level**						
24 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
40 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
50 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
60 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
67 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (without opt. gen/rec atten. and dir. gen/rec access	Page 1.11				dBm	
Test frequency						
100.12 MHz			_____	–105		–
200.12 MHz			_____	–105		–
500.12 MHz			_____	–110		–
700.12 MHz			_____	–110		–
750.12 MHz			_____	–110		–
1.00012 GHz			_____	–110		–
1.50012 GHz			_____	–110		–
2.00012 GHz			_____	–118		–
2.10012 GHz			_____	–118		–
2.50012 GHz			_____	–118		–
3.00012 GHz			_____	–118		–
3.50012 GHz			_____	–118		–
4.00012 GMz			_____	–118		–
4.10012 GHz			_____	–118		–
4.50012 GHz			_____	–118		–
5.00012 GHz			_____	–118		–
5.05012 GHz			_____	–118		–
5.70012 GHz			_____	–118		–
6.00012 GHz			_____	–118		–
6.35012 GHz			_____	–118		–
6.36012 GHz			_____	–118		–
7.00012 GHz			_____	–118		–
7.50012 GHz			_____	–118		–
7.99988 GHz			_____	–118		–
8.10012 GHz			_____	–118		–
9.00012 GHz			_____	–118		–
10.00012 GHz			_____	–118		–
10.20012 GHz			_____	–118		–
11.00012 GHz			_____	–118		–
12.00012 GHz			_____	–118		–
12.70012 GHz			_____	–118		–
12.80012 GHz			_____	–118		–
12.99988 GHz			_____	–118		–
14.00012 GHz			_____	–118		–
15.00012 GHz			_____	–118		–
16.00012 GHz			_____	–118		–
16.10012 GHz			_____	–118		–
18.00012 GHz			_____	–118		–
19.00012 GHz			_____	–118		–
20.00012 GHz			_____	–118		–
21.00012 GHz			_____	–118		–
22.00012 GHz			_____	–118		–
23.00012 GHz			_____	–118		–
23.99988 GHz			_____	–118		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**without opt. gen/rec atten. and dir. gen/rec access **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–105		
26.0 GHz			_____	–105		–
27.0 GHz			_____	–105		–
28.0 GHz			_____	–105		–
29.0 GHz			_____	–105		–
30.0 GHz			_____	–105		–
31.0 GHz			_____	–105		–
32.0 GHz			_____	–105		–
33.0 GHz			_____	–105		–
34.0 GHz			_____	–105		–
35.0 GHz			_____	–105		–
36.0 GHz			_____	–105		–
37.0 GHz			_____	–105		–
38.0 GHz			_____	–105		–
39.0 GHz			_____	–105		–
40.0 GHz			_____	–105		–
41.0 GHz			_____	–102		–
42.0 GHz			_____	–102		–
43.0 GHz			_____	–102		–
44.0 GHz			_____	–102		–
45.0 GHz			_____	–102		–
46.0 GHz			_____	–102		–
47.0 GHz			_____	–102		–
48.0 GHz			_____	–102		–
49.0 GHz			_____	–102		–
50.0 GHz			_____	–102		–
51.0 GHz			_____	–100		–
52.0 GHz			_____	–100		–
53.0 GHz			_____	–100		–
54.0 GHz			_____	–100		–
55.0 GHz			_____	–100		–
56.0 GHz			_____	–100		–
57.0 GHz			_____	–100		–
58.0 GHz			_____	–100		–
59.0 GHz			_____	–100		–
60.0 GHz			_____	–100		–
61.0 GHz			_____	–100		–
62.0 GHz			_____	–100		–
63.0 GHz			_____	–100		–
64.0 GHz			_____	–100		–
65.0 GHz			_____	–100		–
66.0 GHz			_____	–100		–
67.0 GHz			_____	–100		–
with option ZVA67-B72						
68 GHz			_____	-90		–
69 GHz			_____	-90		–
70 GHz			_____	-90		–
71 GHz			_____	-90		–
72 GHz			_____	-90		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec atten.) **Test frequency**	Page 1.11				dBm	
100.12 MHz			_____	–104		–
200.12 MHz			_____	–104		–
500.12 MHz			_____	–109		–
700.12 MHz			_____	–109		–
750.12 MHz			_____	–109		–
1.00012 GHz			_____	–109		–
1.50012 GH			_____	–109		–
2.00012 GHz			_____	–117		–
2.10012 GHz			_____	–117		–
2.50012 GHz			_____	–117		–
3.00012 GHz			_____	–117		–
3.50012 GHz			_____	–117		–
4.00012 GMz			_____	–117		–
4.10012 GHz			_____	–117		–
4.50012 GHz			_____	–117		–
5.00012 GHz			_____	–117		–
5.05012 GHz			_____	–117		–
5.70012 GHz			_____	–117		–
6.00012 GHz			_____	–117		–
6.35012 GHz			_____	–117		–
6.36012 GHz			_____	–117		–
7.00012 GHz			_____	–117		–
7.50012 GHz			_____	–117		–
7.99988 GHz			_____	–117		–
8.10012 GHz			_____	–117		–
9.00012 GHz			_____	–117		–
10.00012 GHz			_____	–117		–
10.20012 GHz			_____	–117		–
11.00012 GHz			_____	–117		–
12.00012 GHz			_____	–117		–
12.70012 GHz			_____	–117		–
12.80012 GHz			_____	–117		–
12.99988 GHz			_____	–117		–
14.00012 GHz			_____	–116		–
15.00012 GHz			_____	–116		–
16.00012 GHz			_____	–116		–
16.10012 GHz			_____	–116		–
18.00012 GHz			_____	–116		–
19.00012 GHz			_____	–116		–
20.00012 GHz			_____	–116		–
21.00012 GHz			_____	–116		–
22.00012 GHz			_____	–116		–
23.00012 GHz			_____	–116		–
23.99988 GHz			_____	–116		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. rec atten.) **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–102		–
26.0 GHz			_____	–102		–
27.0 GHz			_____	–102		–
28.0 GHz			_____	–102		–
29.0 GHz			_____	–102		–
30.0 GHz			_____	–102		–
31.0 GHz			_____	–102		–
32.0 GHz			_____	–102		–
33.0 GHz			_____	–102		–
34.0 GHz			_____	–102		–
35.0 GHz			_____	–102		–
36.0 GHz			_____	–102		–
37.0 GHz			_____	–102		–
38.0 GHz			_____	–102		–
39.0 GHz			_____	–102		–
40.0 GHz			_____	–102		–
41.0 GHz			_____	–99		–
42.0 GHz			_____	–99		–
43.0 GHz			_____	–99		–
44.0 GHz			_____	–99		–
45.0 GHz			_____	–99		–
46.0 GHz			_____	–99		–
47.0 GHz			_____	–99		–
48.0 GHz			_____	–99		–
49.0 GHz			_____	–99		–
50.0 GHz			_____	–99		–
51.0 GHz			_____	–97		–
52.0 GHz			_____	–97		–
53.0 GHz			_____	–97		–
54.0 GHz			_____	–97		–
55.0 GHz			_____	–97		–
56.0 GHz			_____	–97		–
57.0 GHz			_____	–97		–
58.0 GHz			_____	–97		–
59.0 GHz			_____	–97		–
60.0 GHz			_____	–97		–
61.0 GHz			_____	–97		–
62.0 GHz			_____	–97		–
63.0 GHz			_____	–97		–
64.0 GHz			_____	–97		–
65.0 GHz			_____	–97		–
66.0 GHz			_____	–97		–
67.0 GHz			_____	–97		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. dir. gen/rec access) **Test frequency**	Page 1.11				dBm	
100.12 MHz			_____	–104		–
200.12 MHz			_____	–104		–
500.12 MHz			_____	–109		–
700.12 MHz			_____	–109		–
750.12 MHz			_____	–109		–
1.00012 GHz			_____	–109		–
1.50012 GH			_____	–109		–
2.00012 GHz			_____	–117		–
2.10012 GHz			_____	–117		–
2.50012 GHz			_____	–117		–
3.00012 GHz			_____	–117		–
3.50012 GHz			_____	–117		–
4.00012 GMz			_____	–117		–
4.10012 GHz			_____	–117		–
4.50012 GHz			_____	–117		–
5.00012 GHz			_____	–117		–
5.05012 GHz			_____	–117		–
5.70012 GHz			_____	–117		–
6.00012 GHz			_____	–117		–
6.35012 GHz			_____	–117		–
6.36012 GHz			_____	–117		–
7.00012 GHz			_____	–117		–
7.50012 GHz			_____	–117		–
7.99988 GHz			_____	–117		–
8.10012 GHz			_____	–117		–
9.00012 GHz			_____	–117		–
10.00012 GHz			_____	–117		–
10.20012 GHz			_____	–117		–
11.00012 GHz			_____	–117		–
12.00012 GHz			_____	–117		–
12.70012 GHz			_____	–117		–
12.80012 GHz			_____	–117		–
12.99988 GHz			_____	–117		–
14.00012 GHz			_____	–116		–
15.00012 GHz			_____	–116		–
16.00012 GHz			_____	–116		–
16.10012 GHz			_____	–116		–
18.00012 GHz			_____	–116		–
19.00012 GHz			_____	–116		–
20.00012 GHz			_____	–116		–
21.00012 GHz			_____	–116		–
22.00012 GHz			_____	–116		–
23.00012 GHz			_____	–116		–
23.99988 GHz			_____	–116		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **(**with opt. dir. gen/rec access) **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–102		–
26.0 GHz			_____	–102		–
27.0 GHz			_____	–102		–
28.0 GHz			_____	–102		–
29.0 GHz			_____	–102		–
30.0 GHz			_____	–102		–
31.0 GHz			_____	–102		–
32.0 GHz			_____	–102		–
33.0 GHz			_____	–102		–
34.0 GHz			_____	–102		–
35.0 GHz			_____	–102		–
36.0 GHz			_____	–102		–
37.0 GHz			_____	–102		–
38.0 GHz			_____	–102		–
39.0 GHz			_____	–102		–
40.0 GHz			_____	–102		–
41.0 GHz			_____	–99		–
42.0 GHz			_____	–99		–
43.0 GHz			_____	–99		–
44.0 GHz			_____	–99		–
45.0 GHz			_____	–99		–
46.0 GHz			_____	–99		–
47.0 GHz			_____	–99		–
48.0 GHz			_____	–99		–
49.0 GHz			_____	–99		–
50.0 GHz			_____	–99		–
51.0 GHz			_____	–97		–
52.0 GHz			_____	–97		–
53.0 GHz			_____	–97		–
54.0 GHz			_____	–97		–
55.0 GHz			_____	–97		–
56.0 GHz			_____	–97		–
57.0 GHz			_____	–97		–
58.0 GHz			_____	–97		–
59.0 GHz			_____	–97		–
60.0 GHz			_____	–97		–
61.0 GHz			_____	–97		–
62.0 GHz			_____	–97		–
63.0 GHz			_____	–97		–
64.0 GHz			_____	–97		–
65.0 GHz			_____	–97		–
66.0 GHz			_____	–97		–
67.0 GHz			_____	–97		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec atten. and dir. gen/rec access)	Page 1.11				dBm	
Test frequency						
100.12 MHz			_____	–103		–
200.12 MHz			_____	–103		–
500.12 MHz			_____	–108		–
700.12 MHz			_____	–108		–
750.12 MHz			_____	–108		–
1.00012 GHz			_____	–108		–
1.50012 GH			_____	–108		–
2.00012 GHz			_____	–116		–
2.10012 GHz			_____	–116		–
2.50012 GHz			_____	–116		–
3.00012 GHz			_____	–116		–
3.50012 GHz			_____	–116		–
4.00012 GMz			_____	–116		–
4.10012 GHz			_____	–116		–
4.50012 GHz			_____	–116		–
5.00012 GHz			_____	–116		–
5.05012 GHz			_____	–116		–
5.70012 GHz			_____	–116		–
6.00012 GHz			_____	–116		–
6.35012 GHz			_____	–116		–
6.36012 GHz			_____	–116		–
7.00012 GHz			_____	–116		–
7.50012 GHz			_____	–116		–
7.99988 GHz			_____	–116		–
8.10012 GHz			_____	–116		–
9.00012 GHz			_____	–116		–
10.00012 GHz			_____	–116		–
10.20012 GHz			_____	–116		–
11.00012 GHz			_____	–116		–
12.00012 GHz			_____	–116		–
12.70012 GHz			_____	–116		–
12.80012 GHz			_____	–116		–
12.99988 GHz			_____	–116		–
14.00012 GHz			_____	–114		–
15.00012 GHz			_____	–114		–
16.00012 GHz			_____	–114		–
16.10012 GHz			_____	–114		–
18.00012 GHz			_____	–114		–
19.00012 GHz			_____	–114		–
20.00012 GHz			_____	–114		–
21.00012 GHz			_____	–114		–
22.00012 GHz			_____	–114		–
23.00012 GHz			_____	–114		–
23.99988 GHz			_____	–114		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** (with opt. rec atten. and dir. gen/rec access) **Test frequency**	Page 1.11				dBm	
25.0 GHz			_____	–99		–
26.0 GHz			_____	–99		–
27.0 GHz			_____	–99		–
28.0 GHz			_____	–99		–
29.0 GHz			_____	–99		–
30.0 GHz			_____	–99		–
31.0 GHz			_____	–99		–
32.0 GHz			_____	–99		–
33.0 GHz			_____	–99		–
34.0 GHz			_____	–99		–
35.0 GHz			_____	–99		–
36.0 GHz			_____	–99		–
37.0 GHz			_____	–99		–
38.0 GHz			_____	–99		–
39.0 GHz			_____	–99		–
40.0 GHz			_____	–99		–
41.0 GHz			_____	–96		–
42.0 GHz			_____	–96		–
43.0 GHz			_____	–96		–
44.0 GHz			_____	–96		–
45.0 GHz			_____	–96		–
46.0 GHz			_____	–96		–
47.0 GHz			_____	–96		–
48.0 GHz			_____	–96		–
49.0 GHz			_____	–96		–
50.0 GHz			_____	–96		–
51.0 GHz			_____	–94		–
52.0 GHz			_____	–94		–
53.0 GHz			_____	–94		–
54.0 GHz			_____	–94		–
55.0 GHz			_____	–94		–
56.0 GHz			_____	–94		–
57.0 GHz			_____	–94		–
58.0 GHz			_____	–94		–
59.0 GHz			_____	–94		–
60.0 GHz			_____	–94		–
61.0 GHz			_____	–94		–
62.0 GHz			_____	–94		–
63.0 GHz			_____	–94		–
64.0 GHz			_____	–94		–
65.0 GHz			_____	–94		–
66.0 GHz			_____	–94		–
67.0 GHz			_____	–94		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **Test frequency**	Page 1.12				dB	
10 MHz		8	_____			1 dB
20 MHz		8	_____			1 dB
50 MHz		10	_____			1 dB
100 MHz		10	_____			0.4 dB
200 MHz		10	_____			↓
500 MHz		10	_____			
750 MHz		10	_____			
1.0 GHz		10	_____			
1.5 GHz		10	_____			
2.0 GHz		10	_____			
2.5 GHz		10	_____			
3.0 GHz		10	_____			
3.5 GHz		10	_____			
4.0 GHz		10	_____			
4.5 GHz		10	_____			
5.0 GHz		10	_____			
5.5 GHz		10	_____			
6.0 GHz		10	_____			
6.5 GHz		10	_____			
7.0 GHz		10	_____			
7.5 GHz		10	_____			
8.0 GHz		10	_____			
9.0 GHz		10	_____			
10.0 GHz		10	_____			
11.0 GHz		9	_____			
12.0 GHz		9	_____			
13.0 GHz		9	_____			
14.0 GHz		9	_____			
15.0 GHz		9	_____			
16.0 GHz		9	_____			
17.0 GHz		9	_____			
18.0 GHz		9	_____			
19.0 GHz		9	_____			
20.0 GHz		9	_____			
21.0 GHz		8	_____			
22.0 GHz		8	_____			
23.0 GHz		8	_____			
24.0 GHz		8	_____			
25.0 GHz		8	_____			
26.0 GHz		8	_____			
27.0 GHz		8	_____			
28.0 GHz		8	_____			
29.0 GHz		8	_____			
30.0 GHz		8	_____			
31.0 GHz		8	_____			
32.0 GHz		8	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **Test frequency**	Page 1.12				dB	0.4 dB
33.0 GHz		8	_____			
34.0 GHz		8	_____			
35.0 GHz		8	_____			
36.0 GHz		8	_____			
37.0 GHz		8	_____			
38.0 GHz		8	_____			
39.0 GHz		8	_____			
40.0 GHz		8	_____			
41.0 GHz		6	_____			
42.0 GHz		6	_____			
43.0 GHz		6	_____			
44.0 GHz		6	_____			
45.0 GHz		6	_____			
46.0 GHz		6	_____			
47.0 GHz		6	_____			
48.0 GHz		6	_____			
49.0 GHz		6	_____			
50.0 GHz		6	_____			
51.0 GHz		6	_____			
52.0 GHz		6	_____			
53.0 GHz		6	_____			
54.0 GHz		6	_____			
55.0 GHz		6	_____			
56.0 GHz		6	_____			
57.0 GHz		6	_____			
58.0 GHz		6	_____			
59.0 GHz		6	_____			
60.0 GHz		6	_____			
61.0 GHz		6	_____			
62.0 GHz		6	_____			
63.0 GHz		6	_____			
64.0 GHz		6	_____			
65.0 GHz		6	_____			
66.0 GHz		6	_____			
67.0 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range (without option step attenuator and without option direct generator/receiver access)						
Test frequency:						
10.0 MHz		70	_____			–
20.0 MHz		70	_____			–
50.0 MHz		110	_____			–
100.0 MHz		110	_____			–
200.0 MHz		110	_____			–
500.0 MHz		125	_____			–
700.0 MHz		125	_____			–
750.0 MHz		125	_____			–
1.0 GHz		125	_____			–
1.5 GHz		125	_____			–
2.0 GHz		130	_____			–
2.1 GHz		130	_____			–
2.5 GHz		130	_____			–
3.0 GHz		130	_____			–
3.5 GHz		130	_____			–
4.0 GHz		130	_____			–
4.1 GHz		130	_____			–
4.5 GHz		130	_____			–
5.0 GHz		130	_____			–
5.05 GHz		130	_____			–
5.7 GHz		130	_____			–
6.0 GHz		130	_____			–
6.35 GHz		130	_____			–
6.36 GHz		130	_____			–
7.0 GHz		130	_____			–
7.5 GHz		130	_____			–
8.0 GHz		130	_____			–
8.1 GHz		130	_____			–
9.0 GHz		130	_____			–
10.0 GHz		130	_____			–
10.2 GHz		130	_____			–
11.0 GHz		130	_____			–
12.0 GHz		130	_____			–
12.7 GHz		130	_____			–
12.8 GHz		130	_____			–
13.0 GHz		130	_____			–
14.0 GHz		130	_____			–
15.0 GHz		130	_____			–
16.0 GHz		130	_____			–
16.1 GHz		130	_____			–
18.0 GHz		130	_____			–
19.0 GHz		130	_____			–
20.0 GHz		130	_____			–
21.0 GHz		130	_____			–
22.0 GHz		130	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range (without option step attenuator and without option direct generator/receiver access)						
Test frequency:						
23.0 GHz		130	_____			–
24.0 GHz		130	_____			–
25.0 GHz		120	_____			–
26.0 GHz		120	_____			–
27.0 GHz		120	_____			–
28.0 GHz		120	_____			–
29.0 GHz		120	_____			–
30.0 GHz		120	_____			–
31.0 GHz		120	_____			–
32.0 GHz		120	_____			–
33.0 GHz		115	_____			–
34.0 GHz		115	_____			–
35.0 GHz		115	_____			–
36.0 GHz		115	_____			–
37.0 GHz		115	_____			–
38.0 GHz		115	_____			–
39.0 GHz		115	_____			–
40.0 GHz		115	_____			–
41.0 GHz		115	_____			–
42.0 GHz		115	_____			–
43.0 GHz		115	_____			–
44.0 GHz		115	_____			–
45.0 GHz		115	_____			–
46.0 GHz		115	_____			–
47.0 GHz		115	_____			–
48.0 GHz		115	_____			–
49.0 GHz		115	_____			–
50.0 GHz		115	_____			–
51.0 GHz		107	_____			–
52.0 GHz		107	_____			–
53.0 GHz		107	_____			–
54.0 GHz		107	_____			–
55.0 GHz		107	_____			–
56.0 GHz		107	_____			–
57.0 GHz		107	_____			–
58.0 GHz		107	_____			–
59.0 GHz		107	_____			–
60.0 GHz		107	_____			–
61.0 GHz		107	_____			–
62.0 GHz		107	_____			–
63.0 GHz		107	_____			–
64.0 GHz		107	_____			–
65.0 GHz		107	_____			–
66.0 GHz		105	_____			–
67.0 GHz		105	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with option generator or receiver step attenuator)	Page 1.13				dB	
Test frequency:						
10.0 MHz		69	_____			–
20.0 MHz		69	_____			–
50.0 MHz		109	_____			–
100.0 MHz		109	_____			–
200.0 MHz		109	_____			–
500.0 MHz		119	_____			–
700.0 MHz		119	_____			–
750.0 MHz		119	_____			–
1.0 GHz		119	_____			–
1.5 GHz		119	_____			–
2.0 GHz		129	_____			–
2.1 GHz		129	_____			–
2.5 GHz		129	_____			–
3.0 GHz		129	_____			–
3.5 GHz		129	_____			–
4.0 GHz		129	_____			–
4.1 GHz		129	_____			–
4.5 GHz		129	_____			–
5.0 GHz		129	_____			–
5.05 GHz		129	_____			–
5.7 GHz		129	_____			–
6.0 GHz		129	_____			–
6.35 GHz		129	_____			–
6.36 GHz		129	_____			–
7.0 GHz		129	_____			–
7.5 GHz		129	_____			–
8.0 GHz		129	_____			–
8.1 GHz		129	_____			–
9.0 GHz		129	_____			–
10.0 GHz		129	_____			–
10.2 GHz		129	_____			–
11.0 GHz		129	_____			–
12.0 GHz		129	_____			–
12.7 GHz		129	_____			–
12.8 GHz		129	_____			–
13.0 GHz		129	_____			–
14.0 GHz		128	_____			–
15.0 GHz		128	_____			–
16.0 GHz		128	_____			–
16.1 GHz		128	_____			–
18.0 GHz		128	_____			–
19.0 GHz		128	_____			–
20.0 GHz		128	_____			–
21.0 GHz		128	_____			–
22.0 GHz		128	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
(with option generator or receiver step attenuator)						
Test frequency:						
23.0 GHz		128	_____			–
24.0 GHz		128	_____			–
25.0 GHz		117	_____			–
26.0 GHz		117	_____			–
27.0 GHz		117	_____			–
28.0 GHz		117	_____			–
29.0 GHz		117	_____			–
30.0 GHz		117	_____			–
31.0 GHz		117	_____			–
32.0 GHz		117	_____			–
33.0 GHz		112	_____			–
34.0 GHz		112	_____			–
35.0 GHz		112	_____			–
36.0 GHz		112	_____			–
37.0 GHz		112	_____			–
38.0 GHz		112	_____			–
39.0 GHz		112	_____			–
40.0 GHz		112	_____			–
41.0 GHz		112	_____			–
42.0 GHz		112	_____			–
43.0 GHz		112	_____			–
44.0 GHz		112	_____			–
45.0 GHz		112	_____			–
46.0 GHz		112	_____			–
47.0 GHz		112	_____			–
48.0 GHz		112	_____			–
49.0 GHz		112	_____			–
50.0 GHz		112	_____			–
51.0 GHz		104	_____			–
52.0 GHz		104	_____			–
53.0 GHz		104	_____			–
54.0 GHz		104	_____			–
55.0 GHz		104	_____			–
56.0 GHz		104	_____			–
57.0 GHz		104	_____			–
58.0 GHz		104	_____			–
59.0 GHz		104	_____			–
60.0 GHz		104	_____			–
61.0 GHz		104	_____			–
62.0 GHz		104	_____			–
63.0 GHz		104	_____			–
64.0 GHz		104	_____			–
65.0 GHz		104	_____			–
66.0 GHz		102	_____			–
67.0 GHz		102	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with options gen. and rec. step attenuator or with opt. direct gen./rec. access)	Page 1.13				dB	
Test frequency:						
10.0 MHz		68	_____			–
20.0 MHz		68	_____			–
50.0 MHz		108	_____			–
100.0 MHz		108	_____			–
200.0 MHz		108	_____			–
500.0 MHz		118	_____			–
700.0 MHz		118	_____			–
750.0 MHz		118	_____			–
1.0 GHz		118	_____			–
1.5 GHz		118	_____			–
2.0 GHz		128	_____			–
2.1 GHz		128	_____			–
2.5 GHz		128	_____			–
3.0 GHz		128	_____			–
3.5 GHz		128	_____			–
4.0 GHz		128	_____			–
4.1 GHz		128	_____			–
4.5 GHz		128	_____			–
5.0 GHz		128	_____			–
5.05 GHz		128	_____			–
5.7 GHz		128	_____			–
6.0 GHz		128	_____			–
6.35 GHz		128	_____			–
6.36 GHz		128	_____			–
7.0 GHz		128	_____			–
7.5 GHz		128	_____			–
8.0 GHz		128	_____			–
8.1 GHz		128	_____			–
9.0 GHz		128	_____			–
10.0 GHz		128	_____			–
10.2 GHz		128	_____			–
11.0 GHz		128	_____			–
12.0 GHz		128	_____			–
12.7 GHz		128	_____			–
12.8 GHz		128	_____			–
13.0 GHz		128	_____			–
14.0 GHz		126	_____			–
15.0 GHz		126	_____			–
16.0 GHz		126	_____			–
16.1 GHz		126	_____			–
18.0 GHz		126	_____			–
19.0 GHz		126	_____			–
20.0 GHz		126	_____			–
21.0 GHz		126	_____			–
22.0 GHz		126	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
(with options gen. and rec. step attenuator or with opt. direct gen./rec. access)						
Test frequency:						
23.0 GHz		126	_____			–
24.0 GHz		126	_____			–
25.0 GHz		114	_____			–
26.0 GHz		114	_____			–
27.0 GHz		114	_____			–
28.0 GHz		114	_____			–
29.0 GHz		114	_____			–
30.0 GHz		114	_____			–
31.0 GHz		114	_____			–
32.0 GHz		114	_____			–
33.0 GHz		109	_____			–
34.0 GHz		109	_____			–
35.0 GHz		109	_____			–
36.0 GHz		109	_____			–
37.0 GHz		109	_____			–
38.0 GHz		109	_____			–
39.0 GHz		109	_____			–
40.0 GHz		109	_____			–
41.0 GHz		109	_____			–
42.0 GHz		109	_____			–
43.0 GHz		109	_____			–
44.0 GHz		109	_____			–
45.0 GHz		109	_____			–
46.0 GHz		109	_____			–
47.0 GHz		109	_____			–
48.0 GHz		109	_____			–
49.0 GHz		109	_____			–
50.0 GHz		109	_____			–
51.0 GHz		101	_____			–
52.0 GHz		101	_____			–
53.0 GHz		101	_____			–
54.0 GHz		101	_____			–
55.0 GHz		101	_____			–
56.0 GHz		101	_____			–
57.0 GHz		101	_____			–
58.0 GHz		101	_____			–
59.0 GHz		101	_____			–
60.0 GHz		101	_____			–
61.0 GHz		101	_____			–
62.0 GHz		101	_____			–
63.0 GHz		101	_____			–
64.0 GHz		101	_____			–
65.0 GHz		101	_____			–
66.0 GHz		99	_____			–
67.0 GHz		99	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with option gen. or rec. step attenuator and with opt. direct gen./rec. access) **Test frequency:**	Page 1.13				dB	
10.0 MHz		67	_____			–
20.0 MHz		67	_____			–
50.0 MHz		107	_____			–
100.0 MHz		107	_____			–
200.0 MHz		107	_____			–
500.0 MHz		117	_____			–
700.0 MHz		117	_____			–
750.0 MHz		117	_____			–
1.0 GHz		117	_____			–
1.5 GHz		117	_____			–
2.0 GHz		127	_____			–
2.1 GHz		127	_____			–
2.5 GHz		127	_____			–
3.0 GHz		127	_____			–
3.5 GHz		127	_____			–
4.0 GHz		127	_____			–
4.1 GHz		127	_____			–
4.5 GHz		127	_____			–
5.0 GHz		127	_____			–
5.05 GHz		127	_____			–
5.7 GHz		127	_____			–
6.0 GHz		127	_____			–
6.35 GHz		127	_____			–
6.36 GHz		127	_____			–
7.0 GHz		127	_____			–
7.5 GHz		127	_____			–
8.0 GHz		127	_____			–
8.1 GHz		127	_____			–
9.0 GHz		127	_____			–
10.0 GHz		127	_____			–
10.2 GHz		127	_____			–
11.0 GHz		127	_____			–
12.0 GHz		127	_____			–
12.7 GHz		127	_____			–
12.8 GHz		127	_____			–
13.0 GHz		127	_____			–
14.0 GHz		124	_____			–
15.0 GHz		124	_____			–
16.0 GHz		124	_____			–
16.1 GHz		124	_____			–
18.0 GHz		124	_____			–
19.0 GHz		124	_____			–
20.0 GHz		124	_____			–
21.0 GHz		124	_____			–
22.0 GHz		124	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
(with options gen. or rec. step attenuator and with opt. direct gen./rec. access)						
Test frequency:						
23.0 GHz		124	_____			–
24.0 GHz		124	_____			–
25.0 GHz		111	_____			–
26.0 GHz		111	_____			–
27.0 GHz		111	_____			–
28.0 GHz		111	_____			–
29.0 GHz		111	_____			–
30.0 GHz		111	_____			–
31.0 GHz		111	_____			–
32.0 GHz		111	_____			–
33.0 GHz		106	_____			–
34.0 GHz		106	_____			–
35.0 GHz		106	_____			–
36.0 GHz		106	_____			–
37.0 GHz		106	_____			–
38.0 GHz		109	_____			–
39.0 GHz		106	_____			–
40.0 GHz		106	_____			–
41.0 GHz		106	_____			–
42.0 GHz		106	_____			–
43.0 GHz		106	_____			–
44.0 GHz		106	_____			–
45.0 GHz		106	_____			–
46.0 GHz		106	_____			–
47.0 GHz		106	_____			–
48.0 GHz		106	_____			–
49.0 GHz		106	_____			–
50.0 GHz		106	_____			–
51.0 GHz		98	_____			–
52.0 GHz		98	_____			–
53.0 GHz		98	_____			–
54.0 GHz		98	_____			–
55.0 GHz		98	_____			–
56.0 GHz		98	_____			–
57.0 GHz		98	_____			–
58.0 GHz		98	_____			–
59.0 GHz		98	_____			–
60.0 GHz		98	_____			–
61.0 GHz		98	_____			–
62.0 GHz		98	_____			–
63.0 GHz		98	_____			–
64.0 GHz		98	_____			–
65.0 GHz		98	_____			–
66.0 GHz		96	_____			–
67.0 GHz		96	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___ **Dynamic range** (with options gen. and rec. step attenuator and with opt. direct gen./rec. access) **Test frequency:**	Page 1.13				dB	
10.0 MHz		66	_____			–
20.0 MHz		66	_____			–
50.0 MHz		106	_____			–
100.0 MHz		106	_____			–
200.0 MHz		106	_____			–
500.0 MHz		116	_____			–
700.0 MHz		116	_____			–
750.0 MHz		116	_____			–
1.0 GHz		116	_____			–
1.5 GHz		116	_____			–
2.0 GHz		126	_____			–
2.1 GHz		126	_____			–
2.5 GHz		126	_____			–
3.0 GHz		126	_____			–
3.5 GHz		126	_____			–
4.0 GHz		126	_____			–
4.1 GHz		126	_____			–
4.5 GHz		126	_____			–
5.0 GHz		126	_____			–
5.05 GHz		126	_____			–
5.7 GHz		126	_____			–
6.0 GHz		126	_____			–
6.35 GHz		126	_____			–
6.36 GHz		126	_____			–
7.0 GHz		126	_____			–
7.5 GHz		126	_____			–
8.0 GHz		126	_____			–
8.1 GHz		126	_____			–
9.0 GHz		126	_____			–
10.0 GHz		126	_____			–
10.2 GHz		126	_____			–
11.0 GHz		126	_____			–
12.0 GHz		126	_____			–
12.7 GHz		126	_____			–
12.8 GHz		126	_____			–
13.0 GHz		126	_____			–
14.0 GHz		122	_____			–
15.0 GHz		122	_____			–
16.0 GHz		122	_____			–
16.1 GHz		122	_____			–
18.0 GHz		122	_____			–
19.0 GHz		122	_____			–
20.0 GHz		122	_____			–
21.0 GHz		122	_____			–
22.0 GHz		122	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
(with options gen. and rec. step attenuator and with opt. direct gen./rec. access)						
Test frequency:						
23.0 GHz		122	_____			–
24.0 GHz		122	_____			–
25.0 GHz		108	_____			–
26.0 GHz		108	_____			–
27.0 GHz		108	_____			–
28.0 GHz		108	_____			–
29.0 GHz		108	_____			–
30.0 GHz		108	_____			–
31.0 GHz		108	_____			–
32.0 GHz		108	_____			–
33.0 GHz		103	_____			–
34.0 GHz		103	_____			–
35.0 GHz		103	_____			–
36.0 GHz		103	_____			–
37.0 GHz		103	_____			–
38.0 GHz		103	_____			–
39.0 GHz		103	_____			–
40.0 GHz		103	_____			–
41.0 GHz		103	_____			–
42.0 GHz		103	_____			–
43.0 GHz		103	_____			–
44.0 GHz		103	_____			–
45.0 GHz		103	_____			–
46.0 GHz		103	_____			–
47.0 GHz		103	_____			–
48.0 GHz		103	_____			–
49.0 GHz		103	_____			–
50.0 GHz		103	_____			–
51.0 GHz		95	_____			–
52.0 GHz		95	_____			–
53.0 GHz		95	_____			–
54.0 GHz		95	_____			–
55.0 GHz		95	_____			–
56.0 GHz		95	_____			–
57.0 GHz		95	_____			–
58.0 GHz		95	_____			–
59.0 GHz		95	_____			–
60.0 GHz		95	_____			–
61.0 GHz		95	_____			–
62.0 GHz		95	_____			–
63.0 GHz		95	_____			–
64.0 GHz		95	_____			–
65.0 GHz		95	_____			–
66.0 GHz		93	_____			–
67.0 GHz		93	_____			–

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.14				dB	0.1 dB
Receiver Step Atten.							
Attenuation Accuracy							
Reference 0 dB							
Atten.	**Frequ.**						
5 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
	42.0 GHz		-2	_____	2		
	44.0 GHz		-2	_____	2		
	46.0 GHz		-2	_____	2		
	48.0 GHz		-2	_____	2		
	50.0 GHz		-2	_____	2		
	52.0 GHz		-2	_____	2		
	54.0 GHz		-2	_____	2		
	56.0 GHz		-2	_____	2		
	58.0 GHz		-2	_____	2		
	60.0 GHz		-2	_____	2		
	62.0 GHz		-2	_____	2		
	64.0 GHz		-2	_____	2		
	66.0 GHz		-2	_____	2		
	67.0 GHz		-2	_____	2		
10 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
10 dB	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
	42.0 GHz		-2	_____	2		
	44.0 GHz		-2	_____	2		
	46.0 GHz		-2	_____	2		
	48.0 GHz		-2	_____	2		
	50.0 GHz		-2	_____	2		
	52.0 GHz		-2	_____	2		
	54.0 GHz		-2	_____	2		
	56.0 GHz		-2	_____	2		
	58.0 GHz		-2	_____	2		
	60.0 GHz		-2	_____	2		
	62.0 GHz		-2	_____	2		
	64.0 GHz		-2	_____	2		
	66.0 GHz		-2	_____	2		
	67.0 GHz		-2	_____	2		
20 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0 GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
20 dB	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
	42.0 GHz		-2	_____	2		
	44.0 GHz		-2	_____	2		
	46.0 GHz		-2	_____	2		
	48.0 GHz		-2	_____	2		
	50.0 GHz		-2	_____	2		
	52.0 GHz		-2	_____	2		
	54.0 GHz		-2	_____	2		
	56.0 GHz		-2	_____	2		
	58.0 GHz		-2	_____	2		
	60.0 GHz		-2	_____	2		
	62.0 GHz		-2	_____	2		
	64.0 GHz		-2	_____	2		
	66.0 GHz		-2	_____	2		
	67.0 GHz		-2	_____	2		
35 dB	10 MHz		-2	_____	2		
	1.0 GHz		-2	_____	2		
	2.0 GHz		-2	_____	2		
	4.0 GHz		-2	_____	2		
	5.8 GHz		-2	_____	2		
	8.0 GHz		-2	_____	2		
	10.0 GHz		-2	_____	2		
	12.0 GHz		-2	_____	2		
	14.0 GHz		-2	_____	2		
	16.0 GHz		-2	_____	2		
	18.0GHz		-2	_____	2		
	20.0 GHz		-2	_____	2		
	22.0 GHz		-2	_____	2		
	24.0 GHz		-2	_____	2		
	26.0 GHz		-2	_____	2		
	28.0 GHz		-2	_____	2		
	30.0 GHz		-2	_____	2		
	32.0 GHz		-2	_____	2		
	34.0 GHz		-2	_____	2		
	36.0 GHz		-2	_____	2		
	38.0 GHz		-2	_____	2		
	40.0 GHz		-2	_____	2		
	42.0 GHz		-2	_____	2		
	44.0 GHz		-2	_____	2		
	46.0 GHz		-2	_____	2		
	48.0 GHz		-2	_____	2		
	50.0 GHz		-2	_____	2		
	52.0 GHz		-2	_____	2		
	54.0 GHz		-2	_____	2		
	56.0 GHz		-2	_____	2		
	58.0 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Receiver Step Atten.** **Attenuation Accuracy** **Reference 0 dB**		Page 1.14				dB	0.1 dB
Atten.	**Frequ.**						
35 dB	60.0 GHz		-2	_____	2		
	62.0 GHz		-2	_____	2		
	64.0 GHz		-2	_____	2		
	66.0 GHz		-2	_____	2		
	67.0 GHz		-2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Accuracy **DC meas 1 V**	Page 1.15				mV	1 mV
Pos. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Neg. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Accuracy **DC meas 10 V**	Page 1.15				V	0.01 V
Pos. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		
Neg. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		

Performance Test Report R&S® ZVA80BU

ROHDE&SCHWARZ	**Vector Network Analyzer, 50 GHz, 4 ports** **R&S® ZVA80BU**	**1312.6508K02**
Serial number:		
Date:		
Person responsible:		
Signature:		

Parameter	**Reference**	**Min. value**	**Actual value**	**Max. value**	**Unit**	**Measurement uncertainty**
Frequency deviation @ 1 GHz	Page 1.4	- 8000	_____	+ 8000	Hz	1 Hz
With Option ZVAB-B4		- 100	_____	+ 100		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Source power +10dBm** **Freq. Harmonics**	Page 1.5				dBc	1 dB
50 MHz 100 MHz			_____	-20		
150 MHz			_____	-20		
100 MHz 200 MHz			_____	-20		
300 MHz			_____	-20		
200 MHz 400 MHz			_____	-20		
600 MHz			_____	-20		
500 MHz 1000 MHz			_____	-20		
1500 MHz			_____	-20		
750 MHz 1500 MHz			_____	-20		
2250 MHz			_____	-20		
1 GHz 2 GHz			_____	-20		
3 GHz			_____	-20		
1.5 GHz 3 GHz			_____	-20		
4.5 GHz			_____	-20		
2 GHz 4 GHz			_____	-20		
6 GHz			_____	-20		
2.1 GHz 4.2 GHz			_____	-20		
6.3 GHz			_____	-20		
2.5 GHz 5.0 GHz			_____	-20		
7.5 GHz			_____	-20		
3.0 GHz 6.0 GHz			_____	-20		
9.0 GHz			_____	-20		
3.5 GHz 7 GHz			_____	-20		
10.5 GHz			_____	-20		
4.0 GHz 8.0 GHz			_____	-20		
12.0 GHz			_____	-20		
4.1 GHz 8.2 GHz			_____	-20		
12.3 GHz			_____	-20		
5.0 GHz 10.0 GHz			_____	-20		
15.0 GHz			_____	-20		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Harmonics** **Freq. Harmonics**	Page 1.5				dBc	2 dB
5.04 GHz 10.08 GHz			_____	-20		
15.12 GHz			_____	-20		
5.05 GHz 10.10 GHz			_____	-20		
15.15 GHz			_____	-20		
5.5 GHz 11.0 GHz			_____	-20		
16.5 GHz			_____	-20		
6.0 GHz 12.0 GHz			_____	-20		
18.0 GHz			_____	-20		
6.35 GHz 12.70 GHz			_____	-20		
6.36 GHz 12.72 GHz			_____	-20		
7.0 GHz 14.0 GHz			_____	-20		
8.0 GHz 16.0 GHz			_____	-20		
24.0 GHz			_____	-20		
9.0 GHz 18.0 GHz			_____	-20		
11.0 GHz 22.0 GHz			_____	-20		
13.0 GHz 26.0 GHz			_____	-20		
15.0 GHz 30.0 GHz			_____	-20		
17.0 GHz 34.0 GHz			_____	-20		
19.0 GHz 38.0 GHz			_____	-20		
Source power +5 dBm **Port1 and port2 only:** **Freq. Harmonics**						
21.0 GHz 42.0 GHz			_____	-20		
23.0 GHz 46.0 GHz			_____	-20		
25.0 GHz 50.0 GHz			_____	-20		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power Accuracy** **Output power -10 dBm** **Test frequency**	Page 1.7				dB	0.2 dB
10 MHz		- 3	_____	3		
20 MHz		- 3	_____	3		
50 MHz		- 3	_____	3		
100 MHz		- 3	_____	3		
200 MHz		- 3	_____	3		
500 MHz		- 0.8	_____	0.8		
750 MHz		- 0.8	_____	0.8		
1.0 GHz		- 0.8	_____	0.8		
1.5 GHz		- 0.8	_____	0.8		
2.0 GHz		- 0.8	_____	0.8		
2.1 GHz		- 0.8	_____	0.8		
2.5 GHz		- 0.8	_____	0.8		
3.0 GHz		- 0.8	_____	0.8		
3.5 GHz		- 0.8	_____	0.8		
4.0 GHz		- 0.8	_____	0.8		
4.1 GHz		- 0.8	_____	0.8		
4.5 GHz		- 0.8	_____	0.8		
5.0 GHz		- 0.8	_____	0.8		
5.05 GHz		- 0.8	_____	0.8		
5.7 GHz		- 0.8	_____	0.8		
6.0 GHz		- 0.8	_____	0.8		
6.35 GHz		- 0.8	_____	0.8		
6.36 GHz		- 0.8	_____	0.8		
7.0 GHz		- 0.8	_____	0.8		
7.5 GHz		- 0.8	_____	0.8		
8.0 GHz		- 0.8	_____	0.8		
8.1 GHz		- 0.8	_____	0.8		
9.0 GHz		- 0.8	_____	0.8		
10.0 GHz		- 0.8	_____	0.8		
10.1 GHz		- 0.8	_____	0.8		
11.0 GHz		- 0.8	_____	0.8		
12.0 GHz		- 0.8	_____	0.8		
12.6 GHz		- 0.8	_____	0.8		
12.7 GHz		- 0.8	_____	0.8		
13.0 GHz		- 0.8	_____	0.8		
14.0 GHz		- 0.8	_____	0.8		
15.0 GHz		- 0.8	_____	0.8		
16.0 GHz		- 0.8	_____	0.8		
16.1 GHz		- 0.8	_____	0.8		
17.0 GHz		- 0.8	_____	0.8		
18.0 GHz		- 0.8	_____	0.8		
19.0 GHz		- 0.8	_____	0.8		
20.0 GHz		- 0.8	_____	0.8		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __	Page 1.7				dB	0.2 dB
Power Accuracy						
Output power -10 dBm						
Port1 and port2 only						
Test frequency						
21 GHz		- 0.8	_____	0.8		
22 GHz		- 0.8	_____	0.8		
23 GHz		- 0.8	_____	0.8		
24 GHz		- 0.8	_____	0.8		
25 GHz		-2	_____	2		
26 GHz		-2	_____	2		
27 GHz		-2	_____	2		
28 GHz		-2	_____	2		
29 GHz		-2	_____	2		
30 GHz		-2	_____	2		
31 GHz		-2	_____	2		
32 GHz		-2	_____	2		
33 GHz		-2	_____	2		
34 GHz		-2	_____	2		
35 GHz		-2	_____	2		
36 GHz		-2	_____	2		
37 GHz		-2	_____	2		
38 GHz		-2	_____	2		
39 GHz		-2	_____	2		
40 GHz		-2	_____	2		
41 GHz		-2	_____	2		
42 GHz		-2	_____	2		
43 GHz		-2	_____	2		
44 GHz		-2	_____	2		
45 GHz		-2	_____	2		
46 GHz		-2	_____	2		
47 GHz		-2	_____	2		
48 GHz		-2	_____	2		
49 GHz		-2	_____	2		
50 GHz		-2	_____	2		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** **Reference –10 dBm**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
50 MHz	23 dB		-2	_____	2		
	20 dB		-2	_____	2		
	15 dB		-2	_____	2		
	10 dB		-2	_____	2		
	5 dB		-2	_____	2		
	-5 dB		-2	_____	2		
	-10 dB		-2	_____	2		
	-15 dB		-2	_____	2		
	-20 dB		-2	_____	2		
501MHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
1 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
2 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
Reference –10 dBm							
Freq.	**Level**						
3 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
4 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
6 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
8 GHz	23 dB		- 0.8	_____	0.8		
	18 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.8				dB	0.1 dB
Power linearity							
Reference –10 dBm							
Freq.	**Level**						
10 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
13 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
16 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
20 GHz	23 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** **Reference –10 dBm** **Port1 and port2 only**		Page 1.8				dB	0.1 dB
Freq.	**Level**						
24 GHz	30 dB		- 0.8	_____	0.8		
	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
28 GHz	20 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
35 GHz	16 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
40 GHz	16 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		
45 GHz	16 dB		- 0.8	_____	0.8		
	15 dB		- 0.8	_____	0.8		
	10 dB		- 0.8	_____	0.8		
	5 dB		- 0.8	_____	0.8		
	-5 dB		- 0.8	_____	0.8		
	-10 dB		- 0.8	_____	0.8		
	-15 dB		- 0.8	_____	0.8		
	-20 dB		- 0.8	_____	0.8		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power linearity** **Reference –10 dBm** **Freq. Level** 50 GHz 16 dB 15 dB 10 dB 5 dB -5 dB -10 dB -15 dB -20 dB	Page 1.8	 - 0.8 - 0.8 - 0.8 - 0.8 - 0.8 - 0.8 - 0.8 - 0.8	 _____ _____ _____ _____ _____ _____ _____ _____	 0.8 0.8 0.8 0.8 0.8 0.8 0.8 0.8	dB	0.1 dB

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Output power -10 dBm** **Port1 and Port2 only** **Test frequency:**	Page 1.9				dB	0.3 dB
10 MHz		- 2	_____	2		
20 MHz		- 2	_____	2		
50 MHz		- 1	_____	1		
100 MHz		- 1	_____	1		
200 MHz		- 1	_____	1		
500 MHz		- 1	_____	1		
750 MHz		- 1	_____	1		
1 GHz		- 1	_____	1		
1.5 GHz		- 1	_____	1		
2 GHz		- 1	_____	1		
2.1 GHz		- 1	_____	1		
2.5 GHz		- 1	_____	1		
3 GHz		- 1	_____	1		
3.5 GHz		- 1	_____	1		
4 GHz		- 1	_____	1		
4.1 GHz		- 1	_____	1		
4.5 GHz		- 1	_____	1		
5.0 GHz		- 1	_____	1		
5.05 GHz		- 1	_____	1		
5.7 GHz		- 1	_____	1		
6.0 GHz		- 1	_____	1		
6.35 GHz		- 1	_____	1		
6.36 GHz		- 1	_____	1		
7.0 GHz		- 1	_____	1		
7.5 GHz		- 1	_____	1		
8.0 GHz		- 1	_____	1		
8.1 GHz		- 1	_____	1		
9.0 GHz		- 1	_____	1		
10.0 GHz		- 1	_____	1		
10.2 GHz		- 1	_____	1		
11.0 GHz		- 1	_____	1		
12.0 GHz		- 1	_____	1		
12.7 GHz		- 1	_____	1		
12.8 GHz		- 1	_____	1		
13.0 GHz		- 1	_____	1		
14.0 GHz		- 2	_____	2		
15.0 GHz		- 2	_____	2		
16.0 GHz		- 2	_____	2		
16.1 GHz		- 2	_____	2		
17.0 GHz		- 2	_____	2		
18.0 GHz		- 2	_____	2		
19.0 GHz		- 2	_____	2		
20.0 GHz		- 2	_____	2		
21.0 GHz		- 2	_____	2		
22.0 GHz		- 2	_____	2		
23.0 GHz		- 2	_____	2		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Power measurement uncertainty** **Output power -10 dBm** **Port1 and Port2 only** **Test frequency:**	Page 1.9				dB	0.3 dB
24.0 GHz		- 2	_____	2		
25.0 GHz		- 3	_____	3		
26.0 GHz		- 3	_____	3		
27.0 GHz		- 3	_____	3		
28.0 GHz		- 3	_____	3		
29.0 GHz		- 3	_____	3		
30.0 GHz		- 3	_____	3		
31.0 GHz		- 3	_____	3		
32.0 GHz		- 3	_____	3		
33.0 GHz		- 3	_____	3		
34.0 GHz		- 3	_____	3		
35.0 GHz		- 3	_____	3		
36.0 GHz		- 3	_____	3		
37.0 GHz		- 3	_____	3		
38.0 GHz		- 3	_____	3		
39.0 GHz		- 3	_____	3		
40.0 GHz		- 3	_____	3		
41.0 GHz		- 3	_____	3		
42.0 GHz		- 3	_____	3		
43.0 GHz		- 3	_____	3		
44.0 GHz		- 3	_____	3		
45.0 GHz		- 3	_____	3		
46.0 GHz		- 3	_____	3		
47.0 GHz		- 3	_____	3		
48.0 GHz		- 3	_____	3		
49.0 GHz		- 3	_____	3		
50.0 GHz		- 3	_____	3		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port__ (REF IN) **Power measurement uncertainty** **Output power -10 dBm** **Port3 and Port4 only** **Test frequency:**	Page 1.9				dB	0.3 dB
50 MHz		- 1	_____	1		
100 MHz		- 1	_____	1		
200 MHz		- 1	_____	1		
500 MHz		- 1	_____	1		
750 MHz		- 1	_____	1		
1 GHz		- 1	_____	1		
1.5 GHz		- 1	_____	1		
2 GHz		- 1	_____	1		
2.1 GHz		- 1	_____	1		
2.5 GHz		- 1	_____	1		
3 GHz		- 1	_____	1		
3.5 GHz		- 1	_____	1		
4 GHz		- 1	_____	1		
4.1 GHz		- 1	_____	1		
4.5 GHz		- 1	_____	1		
5.0 GHz		- 1	_____	1		
5.05 GHz		- 1	_____	1		
5.7 GHz		- 1	_____	1		
6.0 GHz		- 1	_____	1		
6.35 GHz		- 1	_____	1		
6.36 GHz		- 1	_____	1		
7.0 GHz		- 1	_____	1		
7.5 GHz		- 1	_____	1		
8.0 GHz		- 1	_____	1		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port__ (MEAS IN) **Power measurement uncertainty** **Output power -20 dBm** **Port3 and Port4 only** **Test frequency:**	Page 1.9				dB	0.3 dB
50 MHz		- 1	_____	1		
100 MHz		- 1	_____	1		
200 MHz		- 1	_____	1		
500 MHz		- 1	_____	1		
750 MHz		- 1	_____	1		
1 GHz		- 1	_____	1		
1.5 GHz		- 1	_____	1		
2 GHz		- 1	_____	1		
2.1 GHz		- 1	_____	1		
2.5 GHz		- 1	_____	1		
3 GHz		- 1	_____	1		
3.5 GHz		- 1	_____	1		
4 GHz		- 1	_____	1		
4.1 GHz		- 1	_____	1		
4.5 GHz		- 1	_____	1		
5.0 GHz		- 1	_____	1		
5.05 GHz		- 1	_____	1		
5.7 GHz		- 1	_____	1		
6.0 GHz		- 1	_____	1		
6.35 GHz		- 1	_____	1		
6.36 GHz		- 1	_____	1		
7.0 GHz		- 1	_____	1		
7.5 GHz		- 1	_____	1		
8.0 GHz		- 1	_____	1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.10				dB	0.01 dB
Input linearity							
Reference –10 dBm							
Port1 and Port2 only							
Freq.	Level						
50 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
1 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
4 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
8 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
16 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __		Page 1.10				dB	0.01 dB
Input linearity							
Reference –10 dBm							
Port1 and Port2 only							
Freq.	Level						
24 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
40 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
50 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0. 1	_____	0.1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ (REF IN)		Page 1.10				dB	0.01 dB
Input linearity							
Reference –20 dBm							
Port3 and Port4 only							
Freq.	Level						
50 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
1 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
4 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
8 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter		Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ (MEAS IN)		Page 1.10				dB	0.01 dB
Input linearity							
Reference –30 dBm							
Port3 and Port4 only							
Freq.	Level						
50 MHz	20 dB		-0.1	_____	0.1		
	15 dB		-0.1	_____	0.1		
	10 dB		-0.1	_____	0.1		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
1 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
4 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		
8 GHz	10 dB		-0.3	_____	0.3		
	5 dB		-0.1	_____	0.1		
	-5 dB		-0.1	_____	0.1		
	-10 dB		-0.1	_____	0.1		
	-15 dB		-0.1	_____	0.1		
	-20 dB		-0.1	_____	0.1		
	-25 dB		-0.1	_____	0.1		
	-30 dB		-0.1	_____	0.1		

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **Test frequency**	Page 1.11				dBm	
100.0 MHz			_____	–100		–
200.0 MHz			_____	–100		–
500.0 MHz			_____	–115		–
700.0 MHz			_____	–115		–
750.0 MHz			_____	–115		–
1.0 GHz			_____	–115		–
1.5 GHz			_____	–115		–
2.0 GHz			_____	–115		–
2.1 GHz			_____	–115		–
2.5 GHz			_____	–115		–
3.0 GHz			_____	–115		–
3.5 GHz			_____	–115		–
4.0 GMz			_____	–115		–
4.1 GHz			_____	–115		–
4.5 GHz			_____	–115		–
5.0 GHz			_____	–115		–
5.05 GHz			_____	–115		–
5.7 GHz			_____	–115		–
6.0 GHz			_____	–115		–
6.35 GHz			_____	–115		–
6.36 GHz			_____	–115		–
7.0 GHz			_____	–115		–
7.5 GHz			_____	–115		–
8.0 GHz			_____	–115		–
8.1 GHz			_____	–115		–
9.0 GHz			_____	–115		–
10.0 GHz			_____	–115		–
10.2 GHz			_____	–115		–
11.0 GHz			_____	–115		–
12.0 GHz			_____	–115		–
12.7 GHz			_____	–115		–
12.8 GHz			_____	–115		–
13.0 GHz			_____	–115		–
14.0 GHz			_____	–115		–
15.0 GHz			_____	–115		–
16.0 GHz			_____	–115		–
16.1 GHz			_____	–115		–
18.0 GHz			_____	–115		–
19.0 GHz			_____	–115		–
20.0 GHz			_____	–115		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Input noise level** **Port1 and port2 only** **Test frequency**	Page 1.11				dBm	
21.0 GHz			_____	–115		–
22.0 GHz			_____	–115		–
23.0 GHz			_____	–115		–
24.0 GHz			_____	–115		–
25.0 GHz			_____	–110		–
26.0 GHz			_____	–110		–
27.0 GHz			_____	–110		–
28.0 GHz			_____	–110		–
29.0 GHz			_____	–110		–
30.0 GHz			_____	–110		–
31.0 GHz			_____	–110		–
32.0 GHz			_____	–110		–
33.0 GHz			_____	–110		–
34.0 GHz			_____	–110		–
35.0 GHz			_____	–110		–
36.0 GHz			_____	–110		–
37.0 GHz			_____	–110		–
38.0 GHz			_____	–110		–
39.0 GHz			_____	–110		–
40.0 GHz			_____	–110		–
41.0 GHz			_____	–100		–
42.0 GHz			_____	–100		–
43.0 GHz			_____	–100		–
44.0 GHz			_____	–100		–
45.0 GHz			_____	–100		–
46.0 GHz			_____	–100		–
47.0 GHz			_____	–100		–
48.0 GHz			_____	–100		–
49.0 GHz			_____	–100		–
50.0 GHz			_____	–100		–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)**	Page 1.12				dB	1 dB
Test frequency						
10 MHz		8	_____			
20 MHz		8	_____			
50 MHz		10	_____			
100 MHz		10	_____			
200 MHz		10	_____			
500 MHz		10	_____			
750 MHz		10	_____			
1.0 GHz		10	_____			
1.5 GHz		10	_____			
2.0 GHz		10	_____			
2.5 GHz		10	_____			
3.0 GHz		10	_____			
3.5 GHz		10	_____			
4.0 GHz		10	_____			
4.5 GHz		10	_____			
5.0 GHz		10	_____			
5.5 GHz		10	_____			
6.0 GHz		10	_____			
6.5 GHz		10	_____			
7.0 GHz		10	_____			
7.5 GHz		10	_____			
8.0 GHz		10	_____			
9.0 GHz		10	_____			
10.0 GHz		10	_____			
11.0 GHz		8	_____			
12.0 GHz		8	_____			
13.0 GHz		8	_____			
14.0 GHz		8	_____			
15.0 GHz		8	_____			
16.0 GHz		8	_____			
17.0 GHz		8	_____			
18.0 GHz		8	_____			
19.0 GHz		8	_____			
20.0 GHz		8	_____			
Port1 and port2 only:						
21.0 GHz		6	_____			
22.0 GHz		6	_____			
23.0 GHz		6	_____			
24.0 GHz		6	_____			
25.0 GHz		6	_____			
26.0 GHz		6	_____			
27.0 GHz		6	_____			
28.0 GHz		6	_____			
29.0 GHz		6	_____			
30.0 GHz		6	_____			
31.0 GHz		6	_____			
32.0 GHz		6	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ **Matching (raw)** **Test frequency**	Page 1.12				dB	1 dB
33.0 GHz		6	_____			
34.0 GHz		6	_____			
35.0 GHz		6	_____			
36.0 GHz		6	_____			
37.0 GHz		6	_____			
38.0 GHz		6	_____			
39.0 GHz		6	_____			
40.0 GHz		6	_____			
41.0 GHz		5	_____			
42.0 GHz		5	_____			
43.0 GHz		5	_____			
44.0 GHz		5	_____			
45.0 GHz		5	_____			
46.0 GHz		5	_____			
47.0 GHz		5	_____			
48.0 GHz		5	_____			
49.0 GHz		5	_____			
50.0 GHz		5	_____			

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
Port1 and port2 only						
Test frequency:						
10.0 MHz		90	_____			–
20.0 MHz		90	_____			–
50.0 MHz		105	_____			–
100.0 MHz		105	_____			–
200.0 MHz		105	_____			–
500.0 MHz		125	_____			–
700.0 MHz		125	_____			–
750.0 MHz		125	_____			–
1.0 GHz		125	_____			–
1.5 GHz		125	_____			–
2.0 GHz		130	_____			–
2.1 GHz		130	_____			–
2.5 GHz		130	_____			–
3.0 GHz		130	_____			–
3.5 GHz		130	_____			–
4.0 GHz		130	_____			–
4.1 GHz		130	_____			–
4.5 GHz		130	_____			–
5.0 GHz		130	_____			–
5.05 GHz		130	_____			–
5.7 GHz		130	_____			–
6.0 GHz		130	_____			–
6.35 GHz		130	_____			–
6.36 GHz		130	_____			–
7.0 GHz		130	_____			–
7.5 GHz		130	_____			–
8.0 GHz		130	_____			–
8.1 GHz		130	_____			–
9.0 GHz		130	_____			–
10.0 GHz		130	_____			–
10.2 GHz		130	_____			–
11.0 GHz		130	_____			–
12.0 GHz		130	_____			–
12.7 GHz		130	_____			–
12.8 GHz		130	_____			–
13.0 GHz		130	_____			–
14.0 GHz		130	_____			–
15.0 GHz		130	_____			–
16.0 GHz		130	_____			–
16.1 GHz		130	_____			–
18.0 GHz		130	_____			–
19.0 GHz		130	_____			–
20.0 GHz		130	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Port __ to Port ___	Page 1.13				dB	
Dynamic range						
Port1 and port2 only						
Test frequency:						
21.0 GHz		125	_____			–
22.0 GHz		125	_____			–
23.0 GHz		125	_____			–
24.0 GHz		125	_____			–
25.0 GHz		120	_____			–
26.0 GHz		120	_____			–
27.0 GHz		120	_____			–
28.0 GHz		120	_____			–
29.0 GHz		120	_____			–
30.0 GHz		120	_____			–
31.0 GHz		120	_____			–
32.0 GHz		120	_____			–
33.0 GHz		120	_____			–
34.0 GHz		120	_____			–
35.0 GHz		120	_____			–
36.0 GHz		120	_____			–
37.0 GHz		120	_____			–
38.0 GHz		120	_____			–
39.0 GHz		120	_____			–
40.0 GHz		120	_____			–
41.0 GHz		115	_____			–
42.0 GHz		115	_____			–
43.0 GHz		115	_____			–
44.0 GHz		115	_____			–
45.0 GHz		115	_____			–
46.0 GHz		110	_____			–
47.0 GHz		110	_____			–
48.0 GHz		110	_____			–
49.0 GHz		110	_____			–
50.0 GHz		110	_____			–

Parameter	Reference	Min. value	Actual value	Max. value	Unit	Measurement uncertainty
Accuracy **DC meas 1 V**	Page 1.15				mV	1 mV
Pos. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Neg. Input						
-1000 m V		- 27.5	_____	+ 27.5		
-300 mV		- 10.0	_____	+ 10.0		
-10 mV		- 2.75	_____	+ 2.75		
10 mV		- 2.75	_____	+ 2.75		
300 mV		- 10.0	_____	+ 10.0		
1000 m V		- 27.5	_____	+ 27.5		
Accuracy **DC meas 10 V**	Page 1.15				V	0.01 V
Pos. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		
Neg. Input						
-10.0 V		- 0.275	_____	+ 0.275		
-3.0 V		- 0.10	_____	+ 0.10		
-0.1 V		- 0.0275	_____	+ 0.0275		
0.1 V		- 0.0275	_____	+ 0.0275		
3.0 V		- 0.10	_____	+ 0.10		
10.0 V		- 0.275	_____	+ 0.275		

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2 Alignment

This chapter describes the alignment of the frequency reference and the recording of correction data after a board has been replaced.

The following manual alignments or corrections can be performed on the ZVA:

- Alignment of the 10-MHz reference oscillator which determines the frequency accuracy of the ZVA .
- Alignment of the DC inputs.
- Recording the correction values for the generators and the receivers which determine the measurement accuracy of the ZVA's absolute values.

By performing the alignment and recording the correction values, it is possible to ensure that the ZVA is meeting its specifications by correcting any deviations.

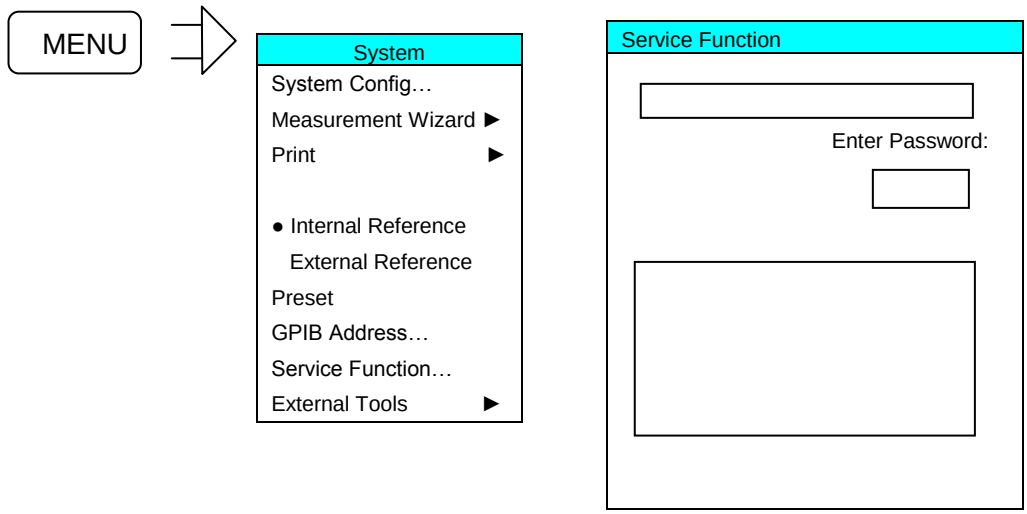
The alignments must be performed within an ambient temperature range of +22 °C to +24 °C after the appropriate warm-up time.

The ZVA meets its specs and is ready for operation when the alignment has been performed and/or correction values have been recorded and a system error calibration carried out.

Service Menu

Access to the board-alignment functions is password-protected to prevent unintentional changes to settings.

Entering the password



- Enter password 30473035.

⚠ CAUTION

The alignment shall be performed only by appropriately trained personnel because any changes made have a profound effect on the measurement accuracy of the instrument.

Manual Alignment and Recording Correction Values

In the sequel, the test equipment and the instrument preparations required to manually align the ZVA and each of the alignments are described.

Preliminary remarks

The analyzer must be allowed to warm up for at least 30 minutes before alignment. This is the only way of ensuring that the guaranteed data are met.

Test Equipment

Table 2-1 Test equipment for manually aligning the ZVA

Item	Type of equipment	Recommended specifications	Recommended model	R&S Order No.	Application
1	Spectrum analyzer	Counter mode: Min. resolution: 100 Hz	FSUxx		Frequency accuracy of the reference oscillator
2	Signal generator	300 kHz to 40 GHz, Power = -40 dBm to 10 dBm	R&S SML01 R&S SMR40 with Option R&S SMR-B17	1090.3000.11 1104.0002.40 1104.5233.02	Recording correction values on R&S ZVA8, R&S ZVA24 and R&S ZVA40
2	Signal generator	40 GHz to 67 GHz, Power = -40 dBm to 0 dBm	SMR50 with Adapter FSU/ZVA67	1134.9008.50 5009.5507.02	Recording correction values on R&S ZVA50 and R&S ZVA67
3	Power meter		R&S NRP + Sensor		Recording correction values
4	Power sensor	300 kHz to 8 GHz	R&S NRP-Z51	1138.0005.02	Recording correction values on R&S ZVA8
4	Power sensor	10 MHz to 40 GHz	R&S NRP-Z55	1138.2008.02	Recording correction values on R&S ZVA24 and R&S ZVA40
4	Power sensor	10 MHz to 67 GHz	R&S NRP-Z57	1171.8401.02	Recording correction values on R&S ZVA67
4	Power sensor	10 MHz to 50 GHz	R&S NRP-Z56	1171.8201.02	Recording correction values on R&S ZVA50
5	Power splitter	N, 50 Ohm, Γ_{eq} < 0.05 (50 MHz to 8 GHz) Output tracking < 0.15 dB	Weinschel 1870A	-	Recording correction values
5	Power splitter	3.5mm, 50 Ohm, Output tracking < 0.25 dB	Weinschel 1593	-	Recording correction values on R&S ZVA24
5	Power splitter	2.92mm, 50 Ohm, Output tracking < 0.5 dB	Weinschel 1534	-	Recording correction values on R&S ZVA40

Item	Type of equipment	Recommended specifications	Recommended model	R&S Order No.	Application
5	Power splitter	1.85mm, 50 Ohm, Output tracking < 0.5 dB	Anritsu SC6778	-	Recording correction values on R&S ZVA50
6	PC with GPIB-Interface	Pentium, WinXP, WinNT GR AT-GPIB IEEE4888 IF PCI National Instruments	 NI-488 PCI-GPIB	 1072.6101.00	Recording correction values
7	Alignment Software	ZVAB-Service		1302.4460.00	Recording correction values
8	Power supply	2x 0 to 10 V			Aligning the DC inputs
9	DC meter		URE	0350.5315.03	Aligning the DC inputs
10	Calibration kit	N, 50 Ω, DC to 18 GHz	R&S ZV-Z270	5011.6536.02	Input linearity Matching port 1 to port 4 Input noise level on R&S ZVA8
10	Calibration kit	3.5mm, 50 Ω, DC to 26.5 GHz	R&S ZV-Z235	5011.6542.02	Recording correction values on R&S ZVA24
10	Calibration kit	2.92 mm, 50 Ω, DC to 40 GHz	R&S ZV-Z229	5011.6559.02	Recording correction values on R&S ZVA40
10	Calibration kit	2.4 mm, 50 Ω, DC to 50 GHz	R&S ZV-Z224	5011.6565.02	Recording correction values on R&S ZVA40 and R&S ZVA50
10	Calibration kit	1.85 mm, 50 Ω, 10 MHz to 67 GHz	R&S ZV-Z218	5011.6571.02	Recording correction values on R&S ZVA67
11	Test cable	Test cable N (m) to N (m).	R&S ZV-Z191	1306.4507.24	Recording correction values on R&S ZVA8
11	Test cable	Test cable 2.92 mm (m) to 2.92mm (f)	R&S ZV-Z195	1306.4536.24	Recording correction values on R&S ZVA24 and R&S ZVA40
11	Test cable	Test cable 1.85 mm (m) to 1.85mm (f)	R&S ZV-Z196	1306.4559.24	Recording correction values on R&S ZVA50 and R&S ZVA67
12	Conn. Cables for DC Inputs	4-pin mini-DIN plug	ZV-Z71	1164.1005.02	Aligning the DC inputs

Aligning the Frequency Accuracy

Test equipment	Spectrum analyzer (section "Test Equipment", item 1): Error <$1x10^{-9}$
Test setup:	Connect the spectrum analyzer to the 10-MHz reference output at the rear of the ZVA.
ZVA settings:	Select internal reference MENU : System: Reference Internal
Spectrum analyzer settings:	Center frequency: 10 MHz Span: 200 Hz
Note:	*Before the following measurement is performed, the ZVA must have been switched on for at least 30 minutes to give the reference oscillator time to warm up.*
Measurement:	Measure the frequency with the spectrum analyzer: Nominal frequency: Model **without** OCXO (Option B4) 10 MHz ± 80 Hz Model **with** OCXO (Option B4) 10 MHz ± 1 Hz

Alignment without Option ZVAB-B4:

- Enter Service Function 2.1.1.6.209.0x000**000**
- Read off the frequency, e.g. 10.000050 MHz.
- Change the **right-hand segment** (corresponding to bit 0 to bit 11) of the data word - e.g. to 000**400** - instead of 000**000**.
- Read off the frequency again, e.g. 10.000010 MHz.
- Change the left-hand segment of the data word, until the counter indicates precisely 10.000000 MHz.

Alignment with Option ZVAB-B4:

- Enter Service Function 2.1.1.6.209.0x**800**000.
- Read off the frequency, e.g. 10.000005 MHz.
- Change the **left-hand segment** (corresponding to bit 12 to bit 23) of the data word - e.g. to **400**000 - instead of **800**000.
- Read off the frequency again, e.g. 10.000001 MHz.
- Change the left-hand segment of the data word, until the counter indicates precisely 10.000000 MHz.

Writing data to the hard disk:

- Change to computer application
  Note: Do not terminate the NWA application!
- Select path
  C:\Documents and Settings\AllUsers\ApplicationData\Rohde&Schwarz\NWA\data\eeprom\FR\config.ini
- Transform data format to decimal
- Write decimal data to [TUNE] 128_PRETUNE = … (without option ZVAB-B4)
  OCXO_TUNE = … (with option ZVAB-B4)

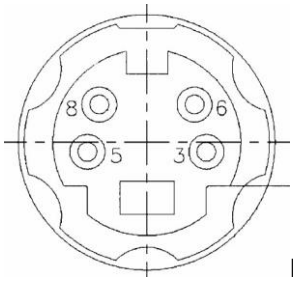
Writing to Eprom:

- Select Service Level 2 (see Service Functions)
- Set Service Function 3.9.0.2

Aligning the DC Inputs

At the outset, ensure that the correction parameters "Multiplier" M and "Offset" F have been preset to M=1 and F=0 for both inputs. This can be done using the Service Functions 3.1.2.5 and 3.1.2.2 which are described below under ***Service Functions***.

Test equipment:	Power supply 2 x 0 to 10 V DC meter (URE)	
Test setup:	DC Meas ± 1 V	DC Meas ± 10 V
	Connect DC voltage + 1 V……pin 6, pin 3 (Gnd) - 1 V……pin 8, pin 5 (Gnd)	Connect DC voltage: + 10 V……pin 6, pin 3 (Gnd) - 10 V……pin 8, pin 5 (Gnd)
	Check voltages with the URE and correct if necessary.	
ZVA settings:	**Measure :** DC Inputs : DC Meas ± 1V	**Measure :** DC Inputs: DC Meas ± 10V
Measurement	Read off the voltages displayed by the ZVA: V1 = positive voltage V2 = negative voltage	
Calculating the corrections: M -> scaling factor F -> offset	M = (V1-V2)/2 F = (V1+V2)/(V1-V2)	M = (V1-V2)/20 F = 10x (V1+V2)/(V1-V2)



Pin assignment for DC MEAS connector

The values that have been obtained in this way are now written to the hard disk using the Service Functions described below and then transferred to the EEprom of network controller1.

Example illustrating DC Meas 1 V:

When +1 V is applied, V 1 = 1.023 V is displayed by the ZVA; when -1 V is applied, V2 = -1.011 V is displayed. The results of the calculation are M = 1.017 and F = 0.0059. The following entries are, therefore, made:

- Select Service Level 2 (see Service Functions).
- Set Service Functions (Writing to the hard disk)

  3.1.2.5.dc_meas_1V.DcMeasMultiplier.1.017
  3.1.2.5.dc_meas_1V.DcMeasOffset.0.0059

  etc. for the second measurement input.
- Set Service Function (Writing to the EProm)

  3.1.2.2

When correction value programming for the two DC voltage measurement inputs has been completed, end the NWA application and restart.
Check the alignment by applying the four voltages +1 V, -1 V, +10 V and -10 V and, as a further check, 0 V.

Reading the previous DC values:

- Select **Read** in the Service Function Menu
- Set Service Functions:

  3.1.2.5.dc_meas_1V.DcMeasMultiplier
  3.1.2.5.dc_meas_1V.DcMeasOffset

  3.1.2.5.dc_meas_10V.DcMeasMultiplier
  3.1.2.5.dc_meas_10V.DcMeasOffset

Correction Value Recording and Factory System Error Calibration

Required test equipment (see Table 2-1):

- PC with IEC/IEEE bus interface
- ZVAB service program
- Power meter with power sensor
- Signal generator
- Calibration kit
- N-connector test cable

Installation of the Alignment Program

Install the program by double-clicking the setup.exe file.
If you install the program for the second time the install shield will only remove the old installation. You will have to start the setup.exe again to perform the installation. The tool has been tested with Windows XP and Windows NT. Connect the PC, ZVA, power meter and signal generator via the IEC/IEEE-bus interface.

For a detailed operating description e.g. dealing with

- Configuration of the Program
- Writing Synthesizer Mapping and Shift Data to the Motherboard
- Recording Correction Values
- Factory System Error Calibration

see the "Usermanual.doc" or "Usermanual.pdf" file that comes with the installation packet and is installed in the directory " C:\Program Files\Rohde&Schwarz\ZVAB-Service" on the PC.

Checking the Gauge

It is strongly recommended that every test port of the Vector Network Analyzer is gauged prior to its first use. The gauge must be recalibrated whenever the connector adapter is changed and should be checked regularly, using the gauge block, for correct zero between adapter changes.

Table Connector pin depth tolerances

Connector type	Pin depth / mm	Pos. tolerance / mm	Neg. tolerance / mm
Type N (female)	5.258	+0.000	-0.076
3.5 mm (male)	0.000	+0.076	+0.000
2.92 mm (male)	0.000	+0.050	+0.000
2.4 mm (male)	0.000	+0.050	+0.000
1.85 mm (male)	0.000	+0.050	+0.000
1 mm (male)	0.000	+0.050	+0.000

Procedure

1. Ensure the appropriate connector adapter is fitted to the dial gauge.
2. Attach the gauge block to the gauge interface and rotate the dial so that the indication reads zero. Lock the dial in position by tightening the screw on the side of the dial. Disconnect the gauge block.
3. Mate the connector to be measured to the gauge and note the indication.
4. The connector is "in gauge" if the indication lies between the limits set by the connector specification (see Table above). For precision type N and 3.5 mm connectors, the calibrated zero indication on the dial corresponds to one extreme, the other being -76 µm (-0.003 in) (anti-clockwise on the dial).

   CAUTION!

   Damage to the connector (or the one it is to) may occur if the reading is positive.
5. After use, return the gauge set to its box.

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3 Repairs

This chapter describes the ZVA's construction, simple procedures for repairs, troubleshooting and board replacement. A selftest which checks the diagnostic voltages of the board and indicates limit violations is provided for troubleshooting and diagnostics.

Chapter 4 of this service manual describes the installation of options and firmware updates.

Instrument Construction and Function Description

The ZVA's construction is shown schematically by the following block diagrams and the exploded drawings (see Chapter 5).

The block diagram will help clarify the following function description of the instrument.

Block Diagram

See also Chapter 5, Annex and Drawings.

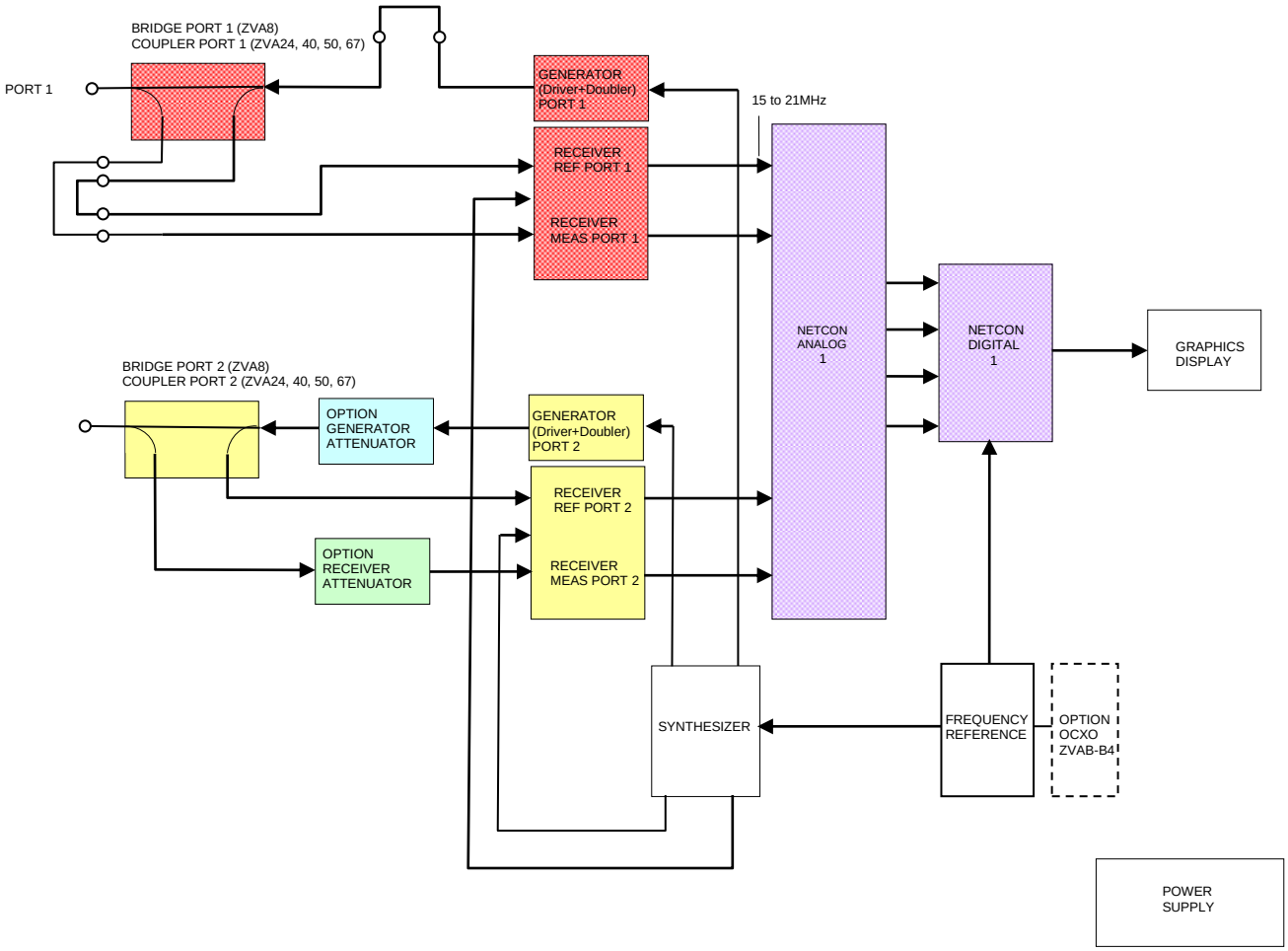


Fig. 3-1 Block diagram of the ZVA8, ZVA24, ZVA40, ZVA50 and ZVA67 two ports
With option direct generator/receiver access on port1,
options generator and receiver attenuator on port2.

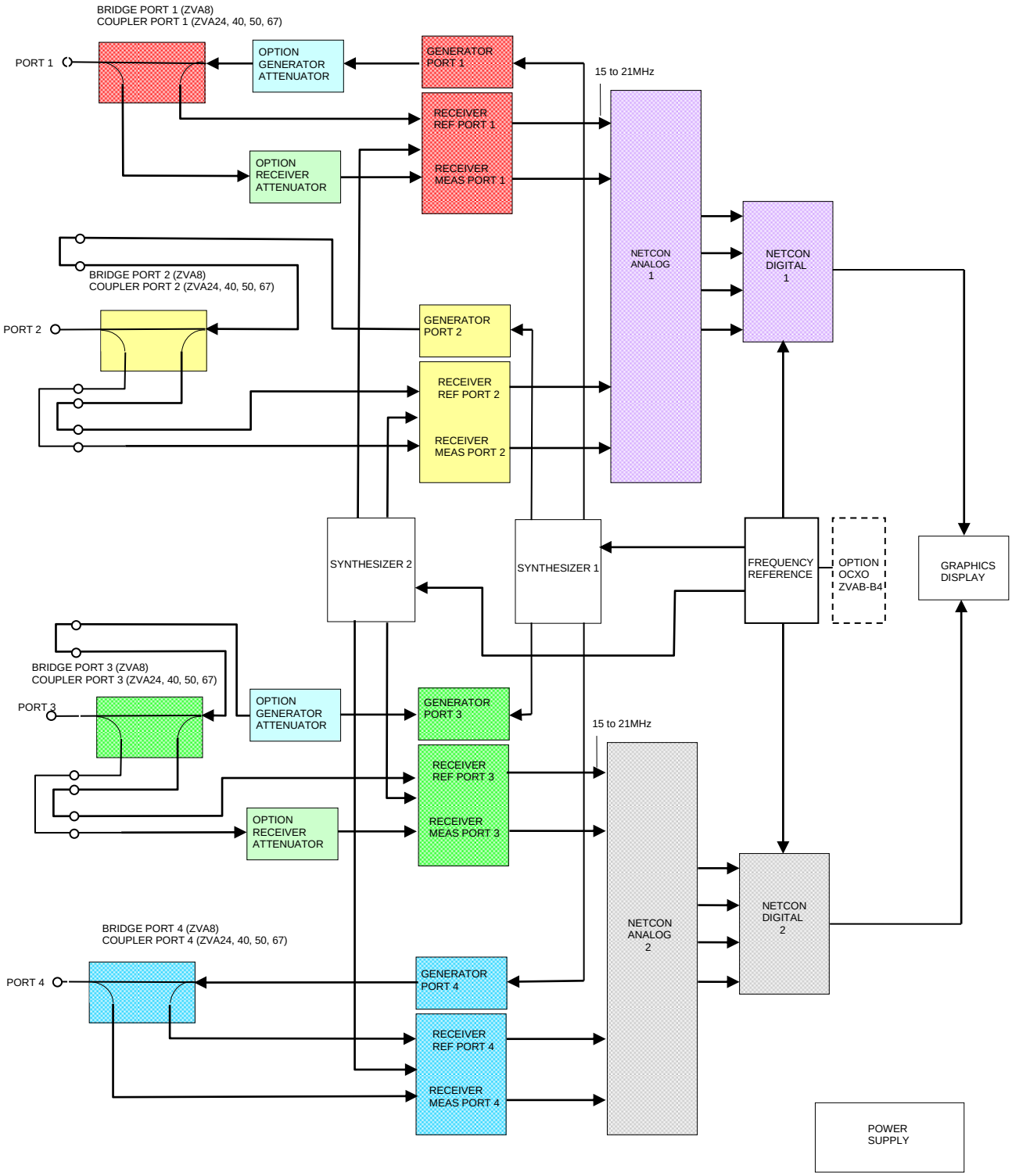


Fig. 3-2 Block diagram of the ZVA8, ZVA24, ZVA40, ZVA50 and ZVA67 four ports
With option generator/receiver attenuator on port1,
option direct generator/receiver access on port2,
options generator/receiver attenuator and direct generator/receiver access on port3.

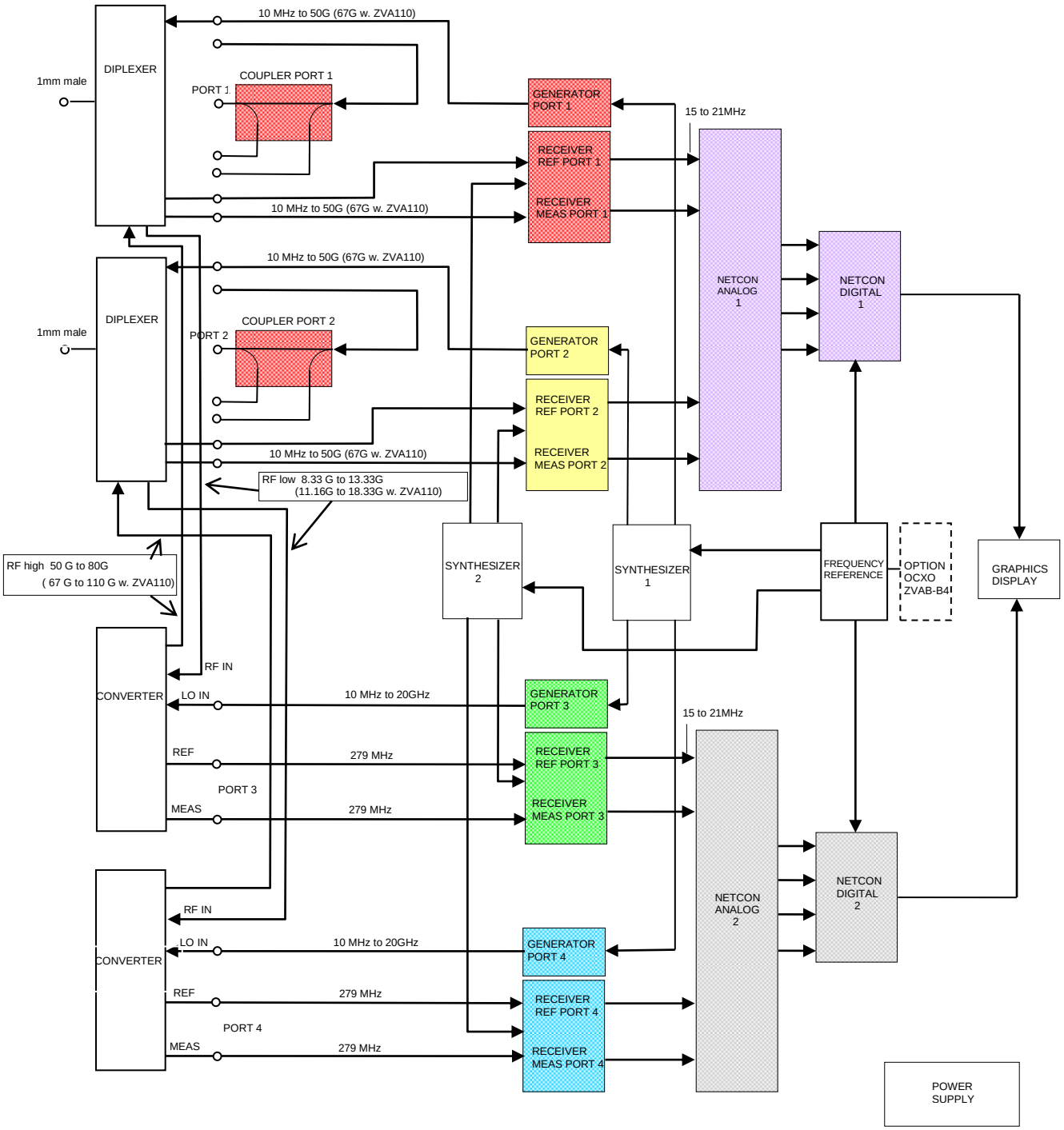


Fig. 3-3 Block diagram of the ZVA80 and ZVA110

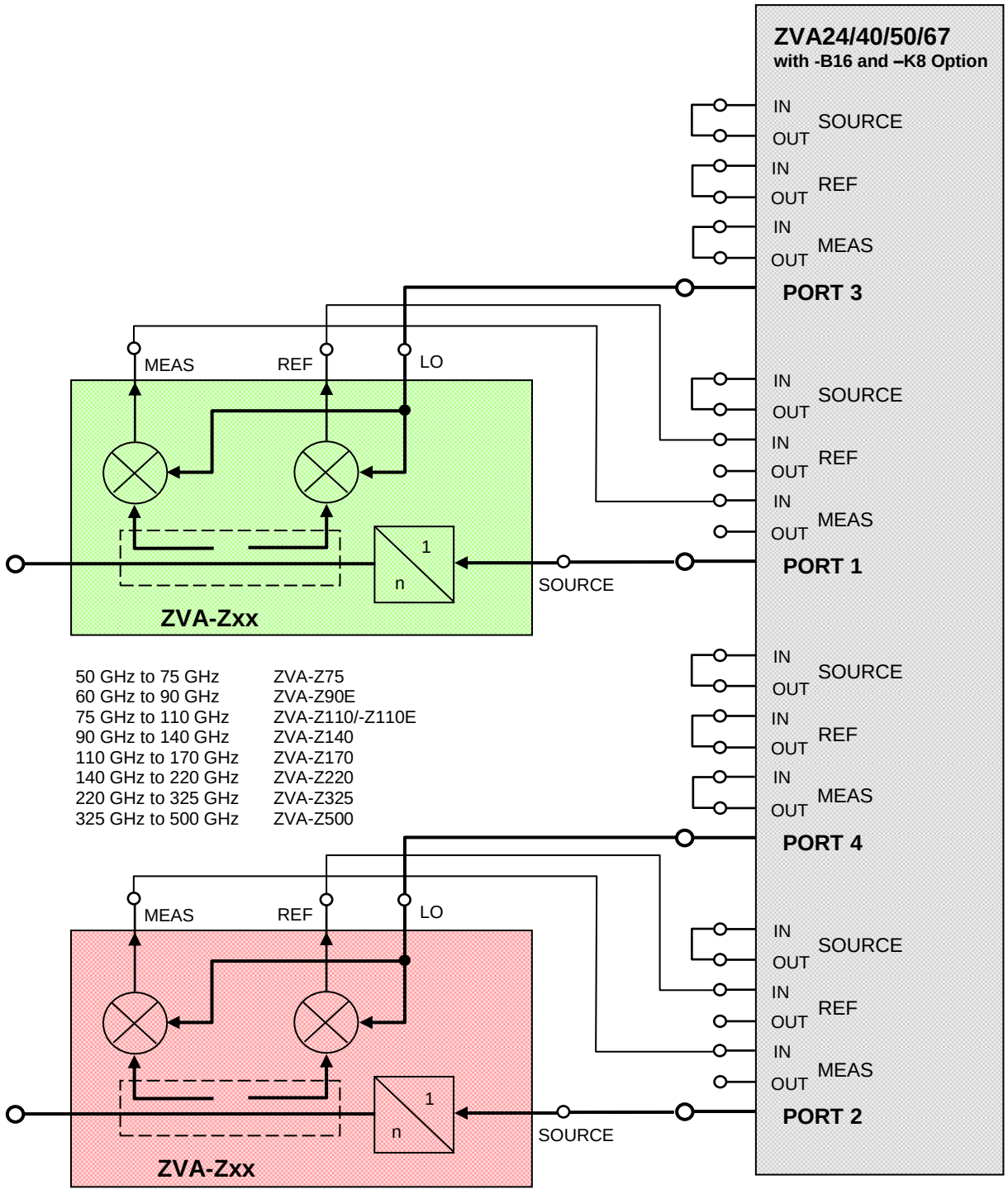


Fig. 3-4 Block diagram of the ZVAxx with Millimeter-Wave Converters ZVA-Zxx

Description of the Block Diagram

The block diagrams shown in Fig. 3-1 and Fig. 3-2 apply to the R&S ZVA8, the R&S ZVA24, the R&S ZVA40, R&S ZVA50 and the R&S ZVA67 two-ports and four-ports. Fig. 3-3 shows the R&S ZVA80 and the R&S ZV110, Fig. 3-4 shows the millimeter-wave system with Converters R&S ZVA-Zxx.

The ZVA is a vector network analyzer covering 300 kHz to 8 GHz (R&S ZVA8), 10 MHz to 24 GHz (R&S ZVA24), 10 MHz to 40 GHz (R&S ZVA40), 10 MHz to 50 GHz (R&S ZVA50), 10 MHz to 67 GHz (R&S ZVA67), 10 MHz to 80 GHz (R&S ZVA80) or 10 MHz to 110 GHz (R&S ZVA110). The R&S ZVA8 to ZVA67 are available in a two-port or four-port version, the R&S ZVA80 and R&S ZVA110 only in a two-port version. Two-port measurements in the frequency range 50 GHz to 500 GHz can be performed using a four-port ZVA24 or ZVA40, ZVA50, ZVA67 and two millimeter-wave converters ZVA-Zxx (see Fig. 3-4).

The signals (including the LO signal for the receiver) are generated using one or two synthesizer boards, depending on the number of ports. The signal processing path comprises a reflectometer board, an IF board, a network controller and a processor section, comprising a Pentium-PC, I/O interface and graphics board. The instrument can be expanded to handle future digital and analog requirements by retrofitting options.

The generator signal on R&S ZVA8 (300 kHz to 8 GHz) is generated on synthesizer board 1, amplified in the generator section of the reflectometer board and then passes via the bridge to the port (port1 to 4) and thus to the DUT. The reference signal (Ref1 to 4) is split in the bridge and fed to the receiver section (Receiver Ref1 to 4) on the reflectometer board.

The generator signal on R&S ZVA24, R&S ZVA40, R&S ZVA50 and R&S ZVA67 (10 MHz to 24 GHz, 10 MHz to 40 GHz, 10 MHz to 50 GHz, 10 MHz to 67 GHz) is generated on synthesizer board1, frequency multiplied, filtered and amplified in the generator section of the reflectometer board and then passes via the coupler to the port (port1 to 4) and thus to the DUT. The reference signal (Ref1 to 4) is split in the coupler and fed to the receiver section (Receiver Ref1 to 4) on the reflectometer board.

The generator signal on R&S ZVA80 (10 MHz to 80 GHz) is generated in the base unit ZVA80-BU (frequency range 10 MHz to 50 GHz on the same way as in ZVA50) and in the converter ZVA-Z75 (frequency range 50 GHz to 80 GHz) and then passes via a coupler to the diplexer and to the port and thus to the DUT. The reference signal is split in the coupler and fed to the receiver section in the converter ZVA-Z75 (frequency range 50 GHz to 80 GHz). For the frequency range 10 MHz to 50 GHz a second coupler is located in the diplexer. The reference signal split in this coupler is fed to the base unit (50 GHz reflectometer port1 and port2).
The signal reflected or transmitted by the DUT is fed to the port, coupled out in one of the two couplers (see above) and fed to the receiver section in the converter ZVA-Z75 (frequency range 50 GHz to 80 GHz) or to the reflectometer in the base unit (frequency range 10 MHz to 50 GHz).

The generator signal on R&S ZVA110 (10 MHz to 110 GHz) is generated in the ZVA67 (frequency range 10 MHz to 67 GHz) and in the converter ZVA-Z110 (frequency range 67 GHz to 110 GHz) and then passes via a coupler to the diplexer and to the port and thus to the DUT. The reference signal is split in the coupler and fed to the receiver section in the converter ZVA-Z110 (frequency range 67 GHz to 110 GHz). For the frequency range 10 MHz to 67 GHz a second coupler is located in the diplexer. The reference signal split in this coupler is fed to the ZVA67 (reflectometer port1 and port2).
The signal reflected or transmitted by the DUT is fed to the port, coupled out in one of the two couplers (see above) and fed to the receiver section in the converter ZVA-Z110 (frequency range 67 GHz to 110 GHz) or to the reflectometer in the ZVA67 (frequency range 10 MHz to 67 GHz).

The generator signal on the millimeter-wave converters R&S ZVA-Zxx is generated in the ZVA24/40/50/67 and multiplied in the converter ZVA-Zxx and then passes via a coupler to the port and thus to the DUT. The reference signal is split in the coupler and fed to the receiver section in the converter.

The signal reflected or transmitted by the DUT is fed to the port, coupled out in one of the two couplers of the two used converters and fed to the receiver section where it is converted to an IF below 500 MHz by harmonic mixing.

The internal reference frequencies are generated on the frequency reference board. The 128-MHz reference frequency is generated there as an internal device reference.

The following sections describe the various boards in greater detail.

Reflectometer ZVA8

A reflectometer board comprising a **bridge unit**, a **generator section (Generator)** and a **receiver section (Receiver)** is incorporated in every port (Port1 to 4). These three components are screwed together to form a compact unit.

Bridge unit

The bridge unit is a resistive coupler which is used to separate the signal going to the DUT from the signal coming from the DUT. The reference signal (= measure of the signal to the DUT) is also obtained from the bridge unit. The reference signal provides a reference for relative measurements.

Generator

The generator contains three broadband amplifier stages which boost the signal coming from the synthesizer to a level > 20 dBm. Limiter diodes protect the output stage from ESDs. A total of three adjustable attenuators form the setting element to keep the output level constant and to attenuate it electronically.

Receiver

The receiver section has two channels (measurement channel and reference channel) and uses single conversion. Every channel contains a buffer amplifier, for each of the frequency ranges 300 kHz to 4 GHz and 4 GHz to 8 GHz, a mixer with LO amplifiers and an IF amplifier. In the mixer, the input signal is directly converted to the IF range, approx 15 to 21 MHz. The inputs are protected by limiter diodes.

Reflectometer Unit ZVA24

A reflectometer unit comprising a **coupler unit**, a **generator section (Generator)** and a **receiver section (Receiver)** is incorporated in every port (Port1 to 4). The Generator and the Receiver are screwed together to form a compact unit.

Coupler unit

The coupler unit contains a bias-T and two directional couplers. One coupler is used to separate the signal going to the DUT from the signal coming from the DUT. The reference signal (= measure of the signal to the DUT) is obtained from the second coupler. The reference signal provides a reference for relative measurements.

Generator

The generator contains a frequency doubler for the range 8 GHz to 16 GHz, a switchable filter unit, a second frequency doubler with filter for the range 16 GHz to 24 GHz and a broadband amplifier for the frequency range 10 MHz to 24 GHz with two adjustable attenuators to keep the output level constant and to attenuate it electronically.

Range	Basic frequency range from synthesizer	Doubler 1	Frequency	Doubler 2	Output frequency
1	10 MHz to 8.0 GHz	---	10 MHz to 8.0 GHz	---	10 MHz to 8.0 GHz
2	4 GHz to 5.05 GHz	x	8.0 GHz to 10.1 GHz	---	8.0 GHz to 10.1 GHz
3	5.05 GHz to 6.35 GHz	x	10.1 GHz to 12.7 GHz	---	10.1 GHz to 12.7 GHz
4	6.35 GHz to 8.0 GHz	x	12.7 GHz to 16.0 GHz	---	12.7 GHz to 16.0 GHz
5	4.0 GHz to 5.0 GHz	x	8.0 GHz to 10.0 GHz	x	16.0 GHz to 20 GHz
6	5.0 GHz to 6.0 GHz	x	10.0 GHz to 12.0 GHz	x	20.0 GHz to 24 GHz

Receiver

The receiver section has two channels (measurement channel and reference channel) and uses single conversion. The measurement channel contains a buffer amplifier, two mixers for each of the frequency ranges 10 MHz to 2.5 GHz and 2.5 GHz to 24 GHz, LO amplifiers and an IF amplifier. The reference channel is identical to the measurement channel without the buffer amplifier. In the mixers, the input signal is directly converted to the IF range, approx. 15 to 21 MHz. The mixers are used as basic wave mixers.
The LO signal section contains a frequency doubler for the range 8 GHz to 16 GHz, a switchable filter unit, a second frequency doubler with filter for the range 16 GHz to 24 GHz and a broadband amplifier for the frequency range 30 MHz to 24 GHz.

Range	Basic frequency range from synthesizer	Doubler 1	Frequency	Doubler 2	Output frequency
1	30 MHz to 8.0 GHz	---	30 MHz to 8.0 GHz	---	30 MHz to 8.0 GHz
2	4 GHz to 8.0 GHz	x	8.0 GHz to 16.0 GHz	---	8.0 GHz to 16.0 GHz
3	4.0 GHz to 6.0 GHz	x	8.0 GHz to 12.0 GHz	x	16.0 GHz to 24.0 GHz

Each of the reflectometers contains a voltage-controlled fan to perform optimum cooling.

Reflectometer Unit ZVA40

A reflectometer unit comprising a **coupler**, a **generator section (Driver24 and Doubler44)** and a **receiver section (Receiver44)** is incorporated in every port (Port1 to 4). The generator and the receiver are screwed together to form a compact unit.

Coupler Unit

The coupler contains a bias-T and two directional couplers. One coupler is used to separate the signal going to the DUT from the signal coming from the DUT. The reference signal (= measure of the signal to the DUT) is obtained from the second coupler. The reference signal provides a reference for relative measurements.

Driver24

The driver contains a frequency doubler for the range 8 GHz to 16 GHz, a switchable filter unit, a second frequency doubler with filter for the range 16 GHz to 24 GHz and a broadband amplifier for the frequency range 10 MHz to 24 GHz with two adjustable attenuators to keep the output level constant and to attenuate it electronically.

Range	Basic frequency range from synthesizer	Doubler 1	Frequency	Doubler 2	Output frequency
1	10 MHz to 8.0 GHz	---	10 MHz to 8.0 GHz	---	10 MHz to 8.0 GHz
2	4 GHz to 5.05 GHz	x	8.0 GHz to 10.1 GHz	---	8.0 GHz to 10.1 GHz
3	5.05 GHz to 6.35 GHz	x	10.1 GHz to 12.7 GHz	---	10.1 GHz to 12.7 GHz
4	6.35 GHz to 8.0 GHz	x	12.7 GHz to 16.0 GHz	---	12.7 GHz to 16.0 GHz
5	4.0 GHz to 5.0 GHz	x	8.0 GHz to 10.0 GHz	x	16.0 GHz to 20 GHz
6	5.0 GHz to 6.0 GHz	x	10.0 GHz to 12.0 GHz	x	20.0 GHz to 24 GHz

Doubler44

The doubler contains a frequency doubler for the range 24 GHz to 44 GHz, a switchable filter unit and a broadband amplifier for the range 10 MHz to 44 GHz.

Range	Frequency range from driver24	Doubler	Output frequency
1	10 MHz to 24.0 GHz	---	10 MHz to 24.0 GHz
2	12.0 GHz to 14.9 GHz	x	24.0 GHz to 29.8 GHz
3	14.9 GHz to 18.5 GHz	x	29.8 GHz to 37.0 GHz
4	18.5 GHz to 22.0 GHz	x	37.0 GHz to 44.0 GHz

Receiver44

The receiver section has two channels (measurement channel and reference channel). The measurement channel contains a buffer amplifier, two mixers for each of the frequency ranges 10 MHz to 2.5 GHz and 2.5 GHz to 44 GHz, LO doublers, LO amplifiers and an IF amplifier. The reference channel is identical to the measurement channel without the buffer amplifier. In the mixers, the input signal is directly converted to the IF range, approx. 15 to 21 MHz. In the frequency range 10 MHz to 24 GHz the mixers are used as basic wave mixers (IF = LO – RF). In the range 24 GHz to 44 GHz the mixer for the upper frequency range works as a harmonic mixer (IF = 3LO – RF).
The LO signal section contains a frequency doubler for the range 8 GHz to 16 GHz, a switchable filter unit, a second frequency doubler with filter for the range 16 GHz to 24 GHz and a broadband amplifier for the frequency range 30 MHz to 24 GHz.

Range	Basic frequency range from synthesizer	Doubler 1	Frequency	Doubler 2	Output frequency
1	30 MHz to 8.0 GHz	---	30 MHz to 8.0 GHz	---	30 MHz to 8.0 GHz
2	4 GHz to 8.0 GHz	x	8.0 GHz to 16.0 GHz	---	8.0 GHz to 16.0 GHz
3	4.0 GHz to 6.0 GHz	x	8.0 GHz to 12.0 GHz	---	16.0 GHz to 24.0 GHz

Each of the reflectometers RM1 and RM2 contain two voltage-controlled fans to perform optimum cooling.

Reflectometer Unit ZVA50

A reflectometer unit comprising a **coupler**, a **generator section (Driver24 and Doubler50)** and a **receiver section (Receiver50)** is incorporated in every port (Port1 to 4). The generator and the receiver are screwed together to form a compact unit.

Coupler Unit

The coupler contains a bias-T and two directional couplers. One coupler is used to separate the signal going to the DUT from the signal coming from the DUT. The reference signal (= measure of the signal to the DUT) is obtained from the second coupler. The reference signal provides a reference for relative measurements.

Driver24

The driver is the same as it is used in ZVA40. Frequency range 6 is extended to 25 GHz.

Range	Basic frequency range from synthesizer	Doubler 1	Frequency	Doubler 2	Output frequency
1	10 MHz to 8.0 GHz	---	10 MHz to 8.0 GHz	---	10 MHz to 8.0 GHz
2	4 GHz to 5.05 GHz	x	8.0 GHz to 10.1 GHz	---	8.0 GHz to 10.1 GHz
3	5.05 GHz to 6.35 GHz	x	10.1 GHz to 12.7 GHz	---	10.1 GHz to 12.7 GHz
4	6.35 GHz to 8.0 GHz	x	12.7 GHz to 16.0 GHz	---	12.7 GHz to 16.0 GHz
5	4.0 GHz to 5.0 GHz	x	8.0 GHz to 10.0 GHz	x	16.0 GHz to 20 GHz
6	5.0 GHz to 6.25 GHz	x	10.0 GHz to 12.5 GHz	x	20.0 GHz to 25 GHz

Doubler50

The doubler contains a frequency doubler for the range 25 GHz to 50 GHz, a switchable filter unit and a broadband amplifier for the range 10 MHz to 50 GHz.

Range	Frequency range from driver24	Doubler	Output frequency
1	10 MHz to 25.0 GHz	---	10 MHz to 25.0 GHz
2	12.5 GHz to 14.9 GHz	x	25.0 GHz to 29.8 GHz
3	14.9 GHz to 18.5 GHz	x	29.8 GHz to 37.0 GHz
4	18.5 GHz to 25.0 GHz	x	37.0 GHz to 50.0 GHz

Receiver50

The receiver section has two channels (measurement channel and reference channel). The measurement channel contains a buffer amplifier, two mixers for each of the frequency ranges 10 MHz to 2.5 GHz and 2.5 GHz to 50 GHz, LO doublers, LO amplifiers and an IF amplifier. The reference channel is identical to the measurement channel without the buffer amplifier. In the mixers, the input signal is directly converted to the IF range, approx. 15 to 21 MHz. In the frequency range 10 MHz to 24 GHz the mixers are used as basic wave mixers (IF = LO – RF). In the range 24 GHz to 50 GHz the mixer for the upper frequency range works as a harmonic mixer (IF = 3LO – RF).

The LO signal section contains a frequency doubler for the range 8 GHz to 16 GHz, a switchable filter unit, a second frequency doubler with filter for the range 16 GHz to 24 GHz and a broadband amplifier for the frequency range 30 MHz to 24 GHz.

Range	Basic frequency range from synthesizer	Doubler 1	Frequency	Doubler 2	Output frequency
1	30 MHz to 8.0 GHz	---	30 MHz to 8.0 GHz	---	30 MHz to 8.0 GHz
2	4 GHz to 8.0 GHz	x	8.0 GHz to 16.0 GHz	---	8.0 GHz to 16.0 GHz
3	4.0 GHz to 6.0 GHz	x	8.0 GHz to 12.0 GHz	---	16.0 GHz to 24.0 GHz

Each of the reflectometers RM1 and RM2 contain two voltage-controlled fans to perform optimum cooling.

Reflectometer Unit ZVA67

A reflectometer unit comprising a **coupler**, a **generator section (Driver42 and Doubler67)** and a **receiver section (Receiver67)** is incorporated in every port (Port1 to 4). The generator and the receiver are screwed together to form a compact unit.

Coupler Unit

The coupler contains a bias-T and two directional couplers. One coupler is used to separate the signal going to the DUT from the signal coming from the DUT. The reference signal (= measure of the signal to the DUT) is obtained from the second coupler. The reference signal provides a reference for relative measurements.

Driver42

The driver contains a frequency doubler for the range 12 GHz to 24 GHz with a switchable filter unit and a second frequency doubler with a switchable filter unit for the range 24 GHz to 42 GHz. Switchable amplifiers and attenuators and two adjustable attenuators are used to keep the output level constant and to attenuate it electronically.

Range	Basic frequency range from synthesizer	Doubler 1	Frequency	Doubler 2	Output frequency
1	10 MHz to 12.0 GHz	---	10 MHz to 12.0 GHz	---	10 MHz to 12.0 GHz
2	6.0 GHz to 6.75 GHz	x	12.0 GHz to 13.5 GHz	---	12.0 GHz to 13.5 GHz
3	6.75 GHz to 9.0 GHz	x	13.5 GHz to 18.0 GHz	---	13.5 GHz to 18.0 GHz
4	9.0 GHz to 12.0 GHz	x	18.0 GHz to 24.0 GHz	---	18.0 GHz to 24.0 GHz
5	6.0 GHz to 6.75 GHz	x	12.0 GHz to 13.5 GHz	x	24.0 GHz to 27.0 GHz
6	6.75 GHz to 9.0 GHz	x	13.5 GHz to 18.0 GHz	x	27.0 GHz to 36.0 GHz
7	9.0 GHz to 10.5 GHz	x	18.0 GHz to 21.0 GHz	x	36.0 GHz to 42.0 GHz

Doubler67

The doubler contains a frequency doubler for the range 40 GHz to 70 GHz, a switchable filter unit and a broadband amplifier for the range 10 MHz to 70 GHz.

Range	Frequency range from driver42	Doubler	Output frequency
1	10 MHz to 41.6 GHz	---	10 MHz to 41.6 GHz
2	20.8 GHz to 27.0 GHz	x	41.6 GHz to 54.0 GHz
3	27.0 GHz to 35.0 GHz	x	54.0 GHz to 70.0 GHz

Receiver67

The receiver section has two channels (measurement channel and reference channel). The measurement channel contains a buffer amplifier, two mixers for each of the frequency ranges 10 MHz to 2.5 GHz and 2.5 GHz to 70 GHz, LO doublers, LO amplifiers and an IF amplifier. The reference channel is identical to the measurement channel without the buffer amplifier. In the mixers, the input signal is directly converted to the IF signal 17.5 MHz. In the frequency range 10 MHz to 24 GHz the mixers are used as basic wave mixers (IF = LO – RF). In the range 24 GHz to 70 GHz the mixer for the upper frequency range works as a harmonic mixer (IF = 3LO – RF).
The LO signal section contains a frequency doubler for the range 12 GHz to 24 GHz, a switchable filter unit, an adjustable attenuator and a broadband amplifier for the frequency range 30 MHz to 24 GHz.

Range	Basic frequency range from synthesizer	Doubler	Output frequency
1	30 MHz to 12.0 GHz	---	30 MHz to 12.0 GHz
2	6 GHz to 8.15 GHz	x	12.0 GHz to 16.3 GHz
3	8.15 GHz to 12.0 GHz	x	16.3 GHz to 24.0 GHz

Each of the reflectometers RM1 and RM2 contain two voltage-controlled fans to perform optimum cooling.

Diplexer80

Combiner Unit

In the Combiner Unit the generator signals from the Base Unit (10 MHz to 50 GHz) and from the Reflectometer Unit (50 GHz to 80 GHz) are combined and the reflected or transmitted signals from the DUT are splitted to a Coupler for the frequency range 10 MHz to 50 GHz and to the Converter Unit (frequency range 50 GHz to 80 GHz). The Coupler separates the signal going to the DUT (Ref) from the signal coming from the DUT (Meas). This two signals are directly fed to the Base Unit (port1 or port2).

Switch

The generator signal coming from the Base Unit is switched to the Coupler (frequency range 10 MHz to 50 GHz) or to the Converter Unit (frequency range 50 GHz to 80 GHz).

Converter80

The converter Unit contains a generator and a reflectometer section for the frequency range 50 GHz to 80 GHz. The generator path contains multipliers (x6) and an amplifier. The reflectometer section contains a coupler to separate the signal going to the DUT (Ref) from the signal coming from the DUT (Meas) and two mixers to convert the Ref and Meas signals to an IF signal (279 MHz). The mixers are used as harmonic mixers (n=8). The IF signals are amplified and then fed to the Base Unit (port3 or port4). The LO signal (6.25 GHz to10 GHz) for the mixers comes from the generator output of port3 or port4 on the Base Unit.

Diplexer110

Combiner Unit

In the Combiner Unit the generator signals from the ZVA67 (10 MHz to 67 GHz) and from the Reflectometer Unit (67 GHz to 110 GHz) are combined and the reflected or transmitted signals from the DUT are splitted to a Coupler for the frequency range 10 MHz to 67 GHz and to the Converter Unit (frequency range 67 GHz to 110 GHz). The Coupler separates the signal going to the DUT (Ref) from the signal coming from the DUT (Meas). This two signals are directly fed to the ZVA67 (port1 or port2).

Switch

The generator signal coming from the ZVA67 is switched to the Coupler (frequency range 10 MHz to 67 GHz) or to the Converter Unit (frequency range 67 GHz to 110 GHz).

Converter110

The converter Unit contains a generator and a reflectometer section for the frequency range 67 GHz to 110 GHz. The generator path contains multipliers (x6) and an amplifier. The reflectometer section contains a coupler to separate the signal going to the DUT (Ref) from the signal coming from the DUT (Meas) and two mixers to convert the Ref and Meas signals to an IF signal (279 MHz). The mixers are used as harmonic mixers (n=8). The IF signals are amplified and then fed to the ZVA67 (port3 or port4). The LO signal (8.3 GHz to13.8 GHz) for the mixers comes from the generator output of port4 on the ZVA67.

Converter ZVA-Z75 to ZVA-Z500

The converter units contain a generator and a reflectometer section. The generator path contains amplifiers and multipliers. The reflectometer section contains a coupler to separate the signal going to the DUT (Ref) from the signal coming from the DUT (Meas) and two mixers to convert the Ref and Meas signals to an IF signal (f < 500 MHz). The mixers are used as harmonic mixers. The IF signals are amplified and then fed to the ZVAxx. The LO signal for the mixers comes from port3 or port4 on the ZVAxx.

Converter	Frequency range GHz	Generator multiplier M=	Harmonic mixing N=
ZVA-Z75	50 to 75	6	6
ZVA-Z90E	60 to 90	6	6
ZVA-Z110/-Z110E	75 to 110	6	8
ZVA-Z140	90 to 140	12	8
ZVA-Z170	110 to 170	12	10
ZVA-Z220	140 to 220	12	12
ZVA-Z325	220 to 325	18	16
ZVA-Z500	325 to 500	30	24

Network controller

The network controller comprises two boards, the **netcon analog** and the **netcon digital** which are screwed together to form a single unit. The boards are four-channel – in other words, one network controller is required for two ports (2 measurement channels + 2 reference channels). After A/D conversion, the network controller performs high-speed digital processing on the IF signals from the reflectometers.

Netcon analog

The netcon analog board is a 4-channel IF amplifier and one 14-bit A/D converter per channel. The transmission bandwidth is 13 MHz to 26 MHz. A dither generator is used to linearize the A/D-converter characteristic. The board also accommodates a temperature sensor which is only used for general temperature checks and not to correct measurement results.

Netcon digital

The netcon digital board further processes the digitized raw data from the netcon analog board. Speed considerations mean that digital signal processing is performed in an ASIC which has a clock frequency of 80 MHz.

The main functions on the board are:

- Mixing to the baseband
- Filter with bandwidths from 1 Hz to 100 kHz in 1/3/5 sequence
- Detectors, PCI interface
- Setting and routine control

The current measured value (sample), the average, the RMS and the Max can be recorded simultaneously and passed on to the main processor via the PCI-bus. The connection to the PCI-bus is made via the PCINT-FPGA. A further FPGA "FCON" contains the central section of the procedure control from measurement point to measurement point and the trigger control. This FPGA is configured by the main processor.

The A/D converters for ext. DC measurements are also accommodated on the netcon digital board.

Frequency reference

The **frequency reference** board generates the highly stable and spectrally pure clock signals, required by the ZVA, which can be phase-locked to external synchronisation signals.

The various function blocks are:

The 128 MHz VCXO (voltage-controlled crystal oscillator) which generates a stable, low-noise reference frequency for the synthesisers, for the A/D converters and for digital signal processing.

The PLL for phase locking the VCXO signal to an external reference signal or to a 10 MHz OCXO (oven-controlled crystal oscillator) option.

The VCO and PLL which generate the clock for the netcon digital board (locked to the 128 MHz VCXO). The frequency can be varied from 75 MHz to 86 MHz. The VCO frequency is programmable;-the nominal clock frequency is 80 MHz.

A reference frequency of 10 MHz is standard. If the OCXO is fitted, the OCXO signal is brought out at the ZVA's rear panel (10 MHz REF) so that further instruments can be synchronised.

The free-running VCXO (no OCXO, no external reference) can be calibrated using a pre-tune voltage.
If no OCXO is fitted, a 10 MHz signal is still output at the instrument's rear panel. It is derived from the 80 MHz signal which is divided down to 10 MHz by the divider for the OCXO.

The following are also accommodated on the board:
- A control-CPLD to act as an interface between the serial bus and the board,
- Register for storing divider values,
- D/A converter for pre-tuning the VCXO and OCXO
- An on-board EEPROM for storing board-specific data
- Selftest facilities

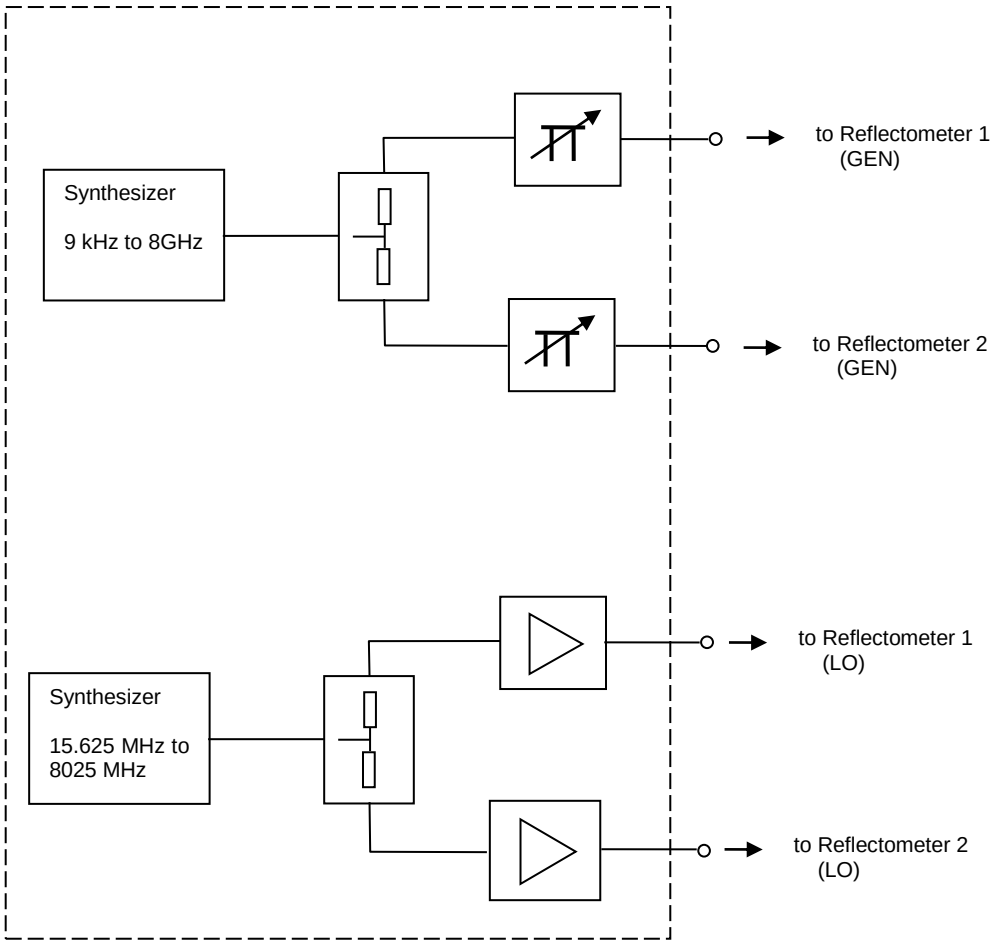
OCXO reference (option B4)

As an option, the frequency reference board can be fitted to an OCXO (oven-controlled crystal oscillator) which considerably improves the phase noise of the reference signal close to the carrier, short-term stability and long-term stability.

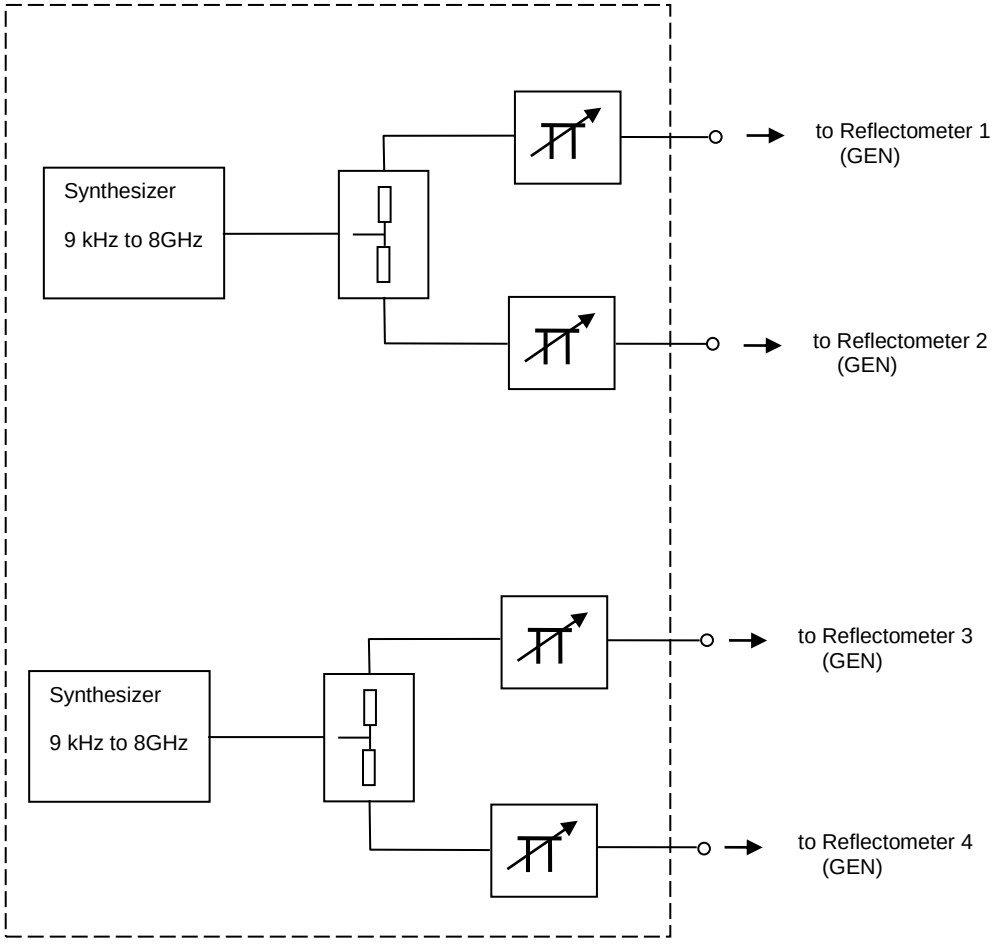
Synthesizers

The source signals for the generator signals associated with each port and the LO signal for the mixers on the receiver boards for each of the reflectometers are generated on the synthesizer board. One or two individual synthesizers are accommodated on a synthesizer board. There are three different synthesizer types used in the ZVA models:

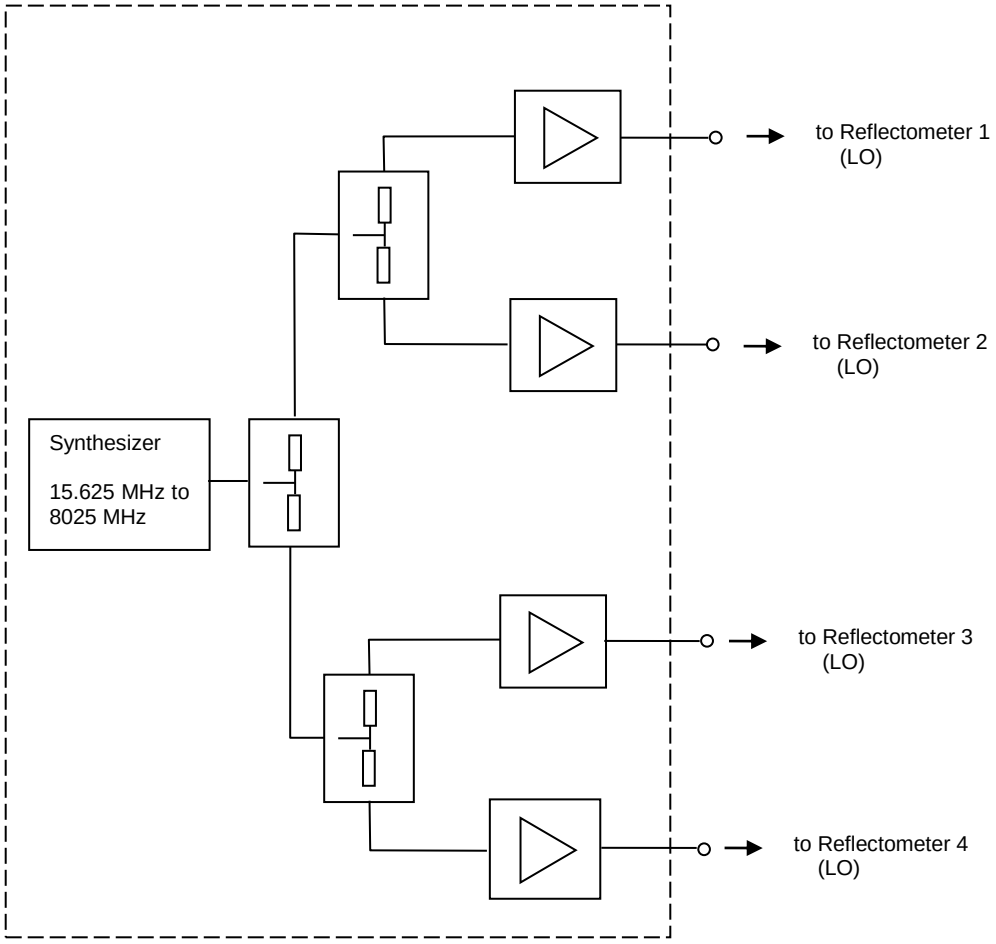
Synthesizer-LS



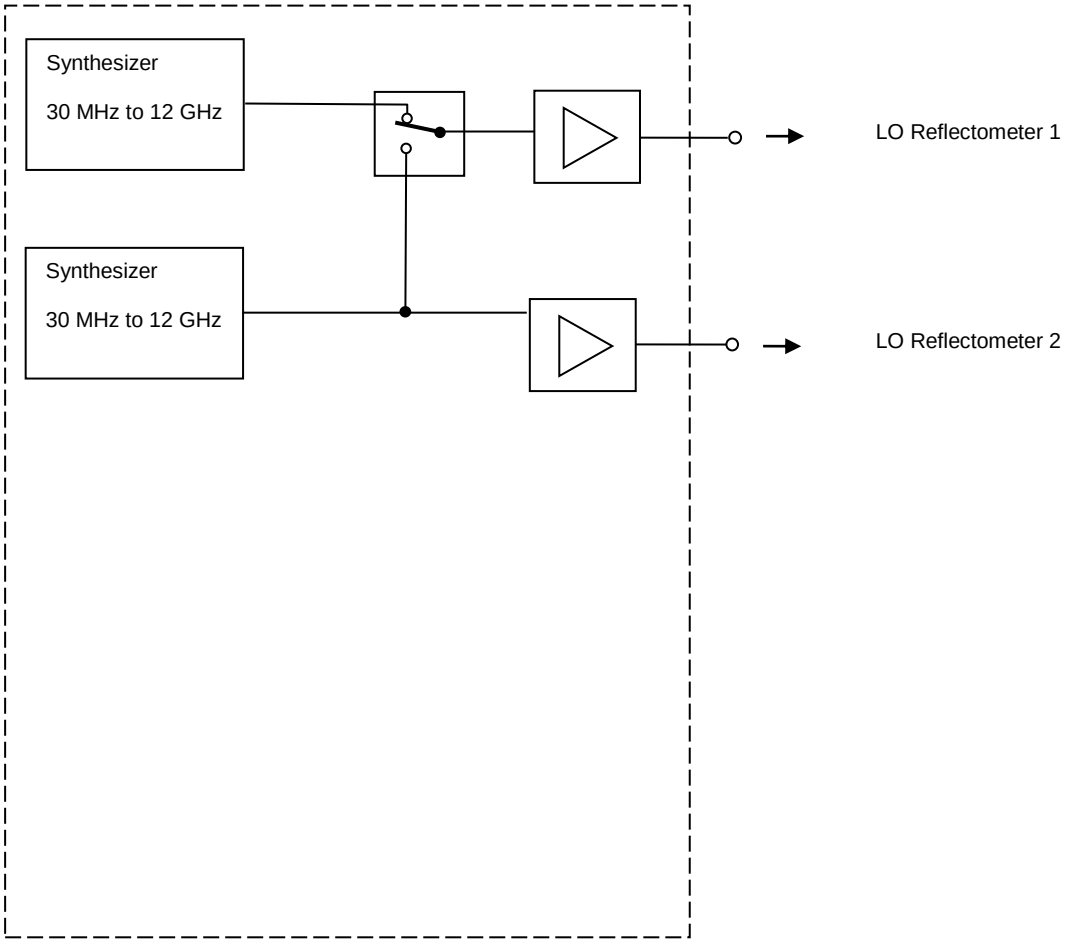
Synthesizer-DS



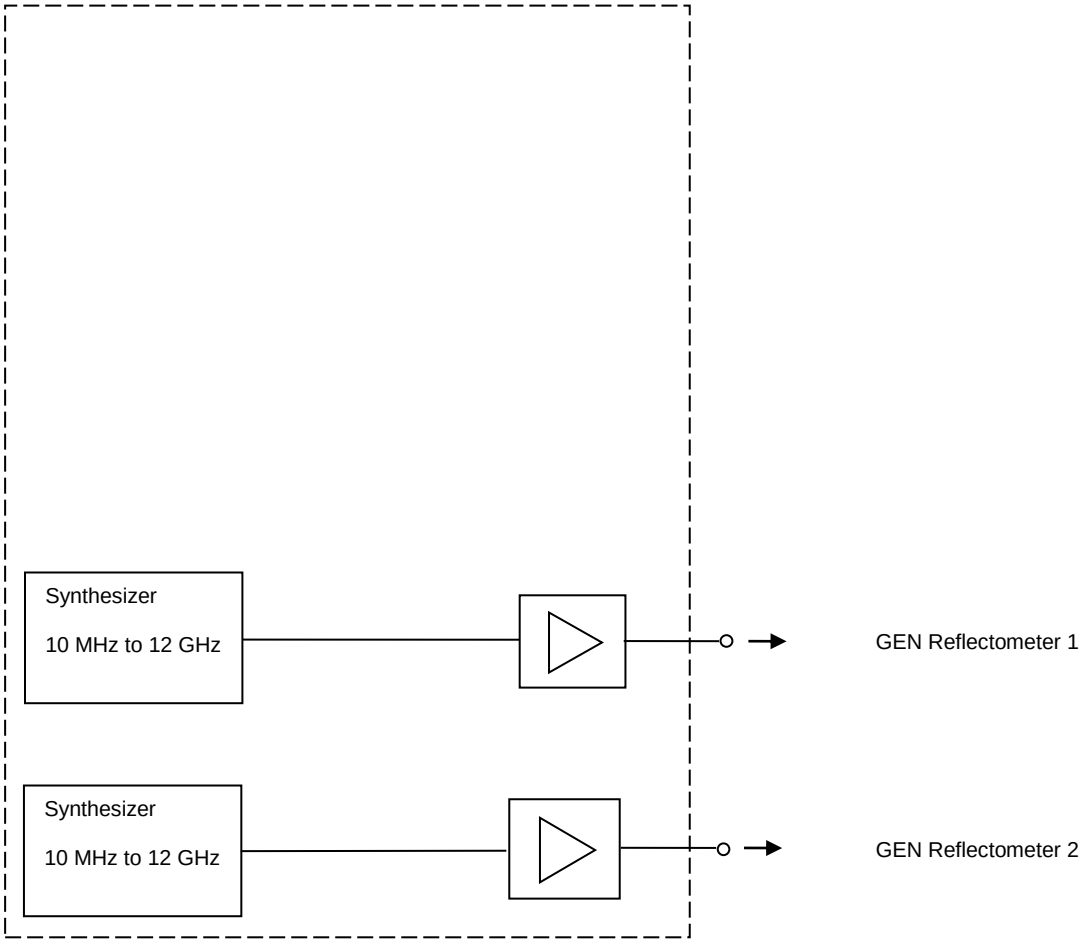
Synthesizer-LO



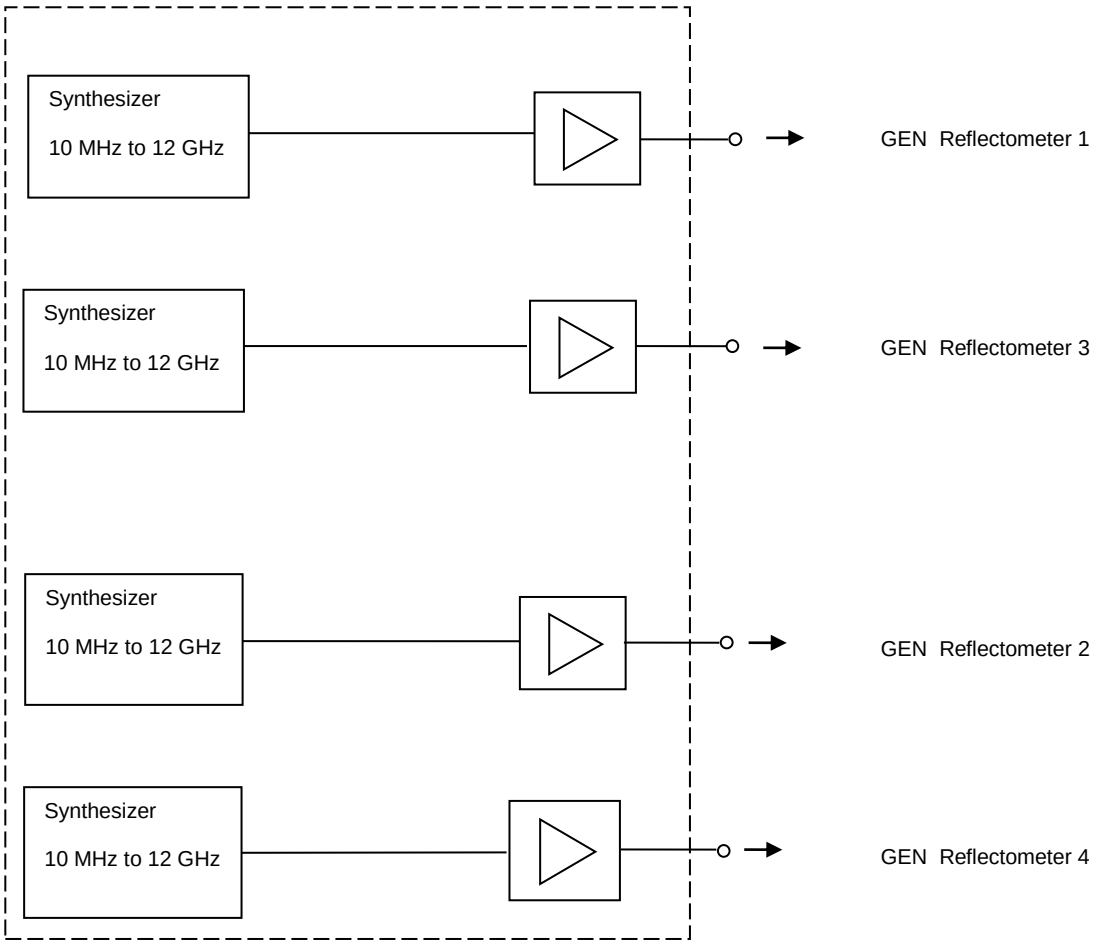
Synthesizer-12 LO



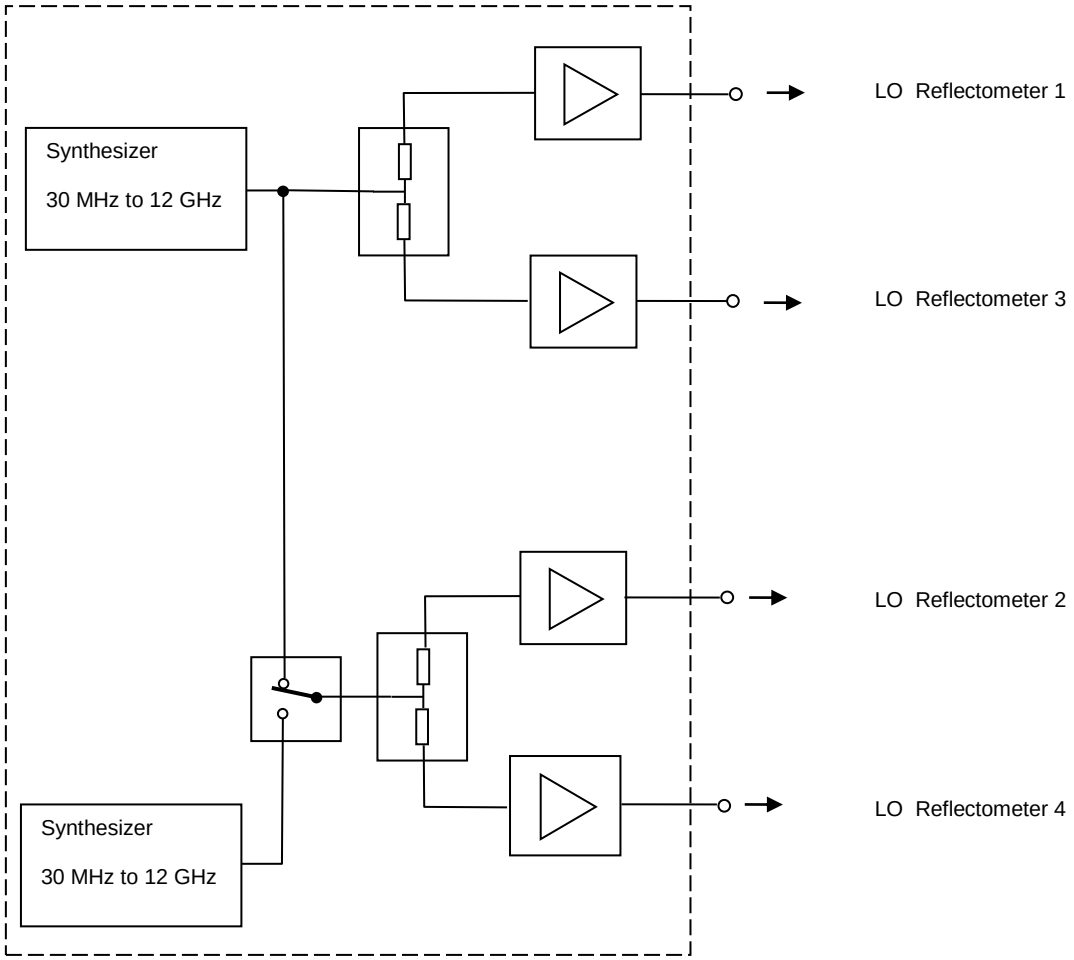
Synthesizer-12 SO



Synthesizer-12-4SO



Synthesizer-12-4LO



The synthesizer models are incorporated as follows in the various ZVA models:

Synthesizer-	**LS 1305.5300.02** (in place of 1302.4025.02 from 04/2008)	**LS 1305.5300.20** (in place of 1302.4025.20 from 04/2008)	**DS 1305.5539.02** (in place of 1302.5180.02 from 05/2008)	**LO 1305.5597.02** (in place of 1302.4248.02 from 05/2008)	**LO 1305.5597.20** (in place of 1302.4248.20 from 05/2008)
ZVA8 two port	2x SRC, 2x LO	--------	--------	--------	--------
ZVA8 four port	--------	--------	4x SRC	4x LO	--------
ZVA24 two port	2x SRC, 2x LO	--------	--------	--------	--------
ZVA24 four port	--------	--------	4x SRC	4x LO	--------
ZVA40 two port	--------	2x SRC, 2x LO	--------	--------	--------
ZVA40 four port	--------	--------	4x SRC	--------	4x LO
ZVA50 two port	--------	2x SRC, 2x LO	--------	--------	--------
ZVA50 four port	--------	--------	4x SRC	--------	4x LO
ZVA80-BU	--------	--------	4x SRC	--------	4x LO

Synthesizer-	**12 LO 1305.7283.31 (1305.3020.31)**	**12-LO 1312.6943.21**	**12 SO 1305.7202.41 (1305.3020.41)**	**12-4SO 1312.6895.21**
ZVA24 four port, four sources	--------	4x LO	--------	4x SRC
ZVA40 four port, four sources	--------	4x LO	--------	4x SRC
ZVA67 two-port	2x LO	--------	2x SRC	--------
ZVA67 four-port	--------	4x LO	--------	4x SRC

Front unit

The front unit comprises a mounting plate on which the LCD, the flexible switch board and key pad, and the tachogenerator are accommodated.
The front module controller is mounted in the controller tray in the instrument frame.

LC display

All results and setting information the user requires is displayed on the colour LCD.
The resolution of the LCD is 800 x 600 pixels (SVGA).
The display has an integral cold-cathode tube to provide illumination. The high voltage that is required is provided by a dedicated DC/AC converter. The converter is mounted on the mounting plate next to the display and connected to both the display and the controller board via a cable.

Keyboard

The keyboard comprises a flexible switch board and a key pad. They make contact whenever a rubber key is pressed. The two LEDs for the status display associated with the Standby/On key (yellow for standby/green for on) are also accommodated on the key pad.
Key detection and LED control are performed via a foil cable connection on the controller board. They are controlled by means of a matrix method implemented by a special microprocessor on the controller board; the two LEDs are controlled accordingly. When the instrument is turned off at the mains switch, the microprocessor saves the status of the Standby/On key.

Front module controller

The front module controller accommodates all the components that are required on one board - for example, the processor, memory chips (SIMMs), I/O chips, the lithium battery, IEC/IEEE bus controller, ethernet interface, HD controller, USB controller, LCD graphics controller, external monitor graphics interface (Monitor).
Only up to FMR7: Two serial interfaces (COM1/2), a parallel interface (LPT), floppy controller and a connector for an external keyboard (keyboard PS/2).

Hard disk

The hard disk is screwed to the rear of the tray for the front module controller with a holder and connected to the board with a flat cable.

Power supply

The power supply produces all the voltages required to power the ZVA. It can be turned off with a switch on the instrument's rear panel.
The power supply is a primary-switched power supply with power factor correction (PFC) and standby circuit (+12 V standby).

On the secondary side, it outputs DC voltages (+3.4 V, +5.2 V, +6.5 V, +8.25 V, +12.25 V, +12 V standby, -12.25 V).

The control signal RS_PS_ON which is controlled by the front module controller (via the *STANDBY/ON* key at the front of the instrument frame), activates the power supply. In the standby mode, the power supply generates only the 12-V standby voltage to supply a crystal oven and the STANDBY status display on the front panel.

The secondary voltages are open-proof and short-proof to ground and mutually open-proof and short-proof.
A circuit that prevents overheating is also provided. Overheating is indicated to the front module controller via a status signal (*OT*).

Motherboard

The motherboard supplies power to the boards and connects them to the control and data buses. A number of RF connections are also routed via the motherboard.

As well as straight connections, a number of circuits are accommodated on the motherboard:

Motherboard controller (MBCON)
28 V supply
Preamplifier for the DC measurement inputs
Supply voltage fuses
Rear panel interfaces
Fan control

The **MBCON** unit acts as an FSU bus-slave:

- to drive the LEDs (instrument front-panel)
- to drive the fan in five stages
- for two temperature sensors on the motherboard
- for an SPI-EEPROM on the motherboard
- Furthermore, the software can detect which device (ZVA8 or ZVA24) is present using the MBCON.

In addition to the voltages delivered by the power supply, +28 V is produced from +12 V on the motherboard by means of a boosting switching regulator. This voltage is required to operate the OCXO on the reference board when option B4 is fitted.

Each board has its own fuses for the supply voltages. These fuses are soldered into position on the board.

All external supply voltages (USB etc.) are protected to prevent shorts.

Board Replacement

The following section is a detailed description of board replacement. Chapter 5 tells you how to order spare parts. It contains a list of mechanical parts and their order numbers as well as drawings relating to board replacement.



The numbers in brackets are the item numbers in the list of mechanical parts in Chapter 5.

In turn, these item numbers are the same as the item numbers in the drawings relating to board replacements (also in Chapter 5):

1145.1110 sheet 1 (ZVA Network Analyzer)

1145.1110 sheet 2, 3, 4, 5, 6, 7 (ZVA Network Analyzer)

1305.7002 sheet 1, 2, 3 (ZVA67 Network Analyzer)

1145.1290 sheet 2 (ZVB base instrument, power supply cabeling)

1145.1310 sheet 1, 2 (ZVA base instrument)

1145.1390 sheet 1 (ZVA display unit)

1164.1770 sheet 1 (ZVA Option B4)

1145.3593 sheet 1 (8GHz Bridge)

1145.4177 sheet 1 (RM8)

1145.4283 sheet 1 (RM24)

1145.4302 sheet 1 (RM UNIT 24)

1145.4319 sheet 1 (RM40)

1305.3407 sheet 1, 2 (RM UNIT 50)

1305.3413 sheet 1 (RM50)

1305.3420 sheet 1, 2 (RM UNIT 40)

1305.6241 sheet 1 and 2 (RM67)

1164.0250 sheet 1 to 5 (ZVA8 Option B16)

1164.0267 sheet 1 to 5 (ZVA24 Option B16)

1164.0215 sheet 1 to 5 (ZVA8 Option B21 to B24 and B31 to B34)

1164.0221 sheet 1 to 5 (ZVA24 Option B21 to B24 and B31 to B34)

1164.0409 sheet 1 to 8 (ZVA40 Option B21 to B24 and B31 to B34)

1164.0715 sheet 1 (ZVAB-B14 Option Removable Flash Disc)

1302.4960.08 sheet 1 (RM Unit ZVB4/8)

1302.4990 sheet 1 (RM4/8 SUBUNIT)

1302.5621 sheet 1 (RM44 Blower Attachement)

1312.6508 sheet 1 to 3 (ZVA80-BU base unit for ZVA80 Network Analyzer)

1312.6750 sheet 1 (ZVA80 Network Analyzer)

The terms “left” and “right” always mean left and right as seen looking at the front of the instrument.

Board Overview

Table 3-1 Overview: Board Replacement

Board	**Measures taken after replacement**		
	Function test	**Alignment** **Recording of correction values** **System error calibration**	**Other**
Front module controller	Check error log		BIOS update
Lithium battery	Check error log		
Hard disk	Check error log	System error calibration	FW update
LC display / DC/AC converter	Functional test		
Flexible switch board (keyboard)/ key pad	Functional test		
Front cover			
Disk drive	Check the directory structure		
USB board	Test with mouse, keyboard		
Power supply	Check error log		
Fan			
Motherboard	Check error log	System error calibration Alignment DC measurement inputs	
Reflectometer	Check error log	Record correction values System error calibration	
Input connector port 1 to 4 (ZVA8 only)	Check error log	System error calibration	
Bridge unit (ZVA8 only)	Check error log	Record correction values System error calibration	
Coupler unit (ZVA24, ZVA40, ZVA50 and ZVA67 only)	Check error log	Record correction values System error calibration	
Reflectometer fan	Check error log		
Network controller	Check error log	Record correction values System error calibration Alignment DC measurement inputs	
Synthesizer	Check error log	Record correction values System error calibration	
LO divider	Check error log	Record correction values System error calibration	
Frequency reference	Check error log	Alignment Frequency accuracy	

Replacing Front Module Controller A90

(See Chapter 5, Spare Parts List, Item 580, and drawings 1145.1110, 1145.1310)

The front module controller is located behind the front unit.

Opening the instrument and removing the front unit

- Turn off the instrument and disconnect from the mains.
- Remove termination and 3.5mm connection cables (only with option ZVAx-B16)
- Remove the 4 screws from the front handles (410), left and right, and take off the front handles.
- Remove the countersunk screw (390) next to the display and pull off the front cover (300, 303, 306, 310, 313, 316) forwards
- Remove the 2 countersunk screws (610) in the top of the front frame and the 2 in the bottom.
- ZVA8: Remove the countersunk screws (168) (2), (153), (154), (163), (164)
- Pull out the front unit together with the keyboard and display (600, 604) forwards.

NOTICE

Risk of damage

The cables to the front module controller are still connected.

- Disconnect the cables to the LCD, the DC/AC illumination converter, the key pad (keyboard), the tachogenerator and, if necessary, the network connection on the front module controller.

NOTICE

Risk of damage

When disconnecting cables, be especially careful with the cable to the keyboard. It is a foil cable and can only be removed when the locking device on the foil-cable connector is released.

Removing the front module controller

- Remove the 10 sems screws (590) in the front module controller and remove the front module controller in the following way (see Fig. 3-5):
  Note:
  The insertion force for the front module controller on the motherboard is very large.
  The slot in the bottom of the controller tray is provided to facilitate pushing out the front module controller forwards.
  Using a blunt, flat tool, carefully edge the board forwards.

NOTICE

Risk of damage

Do not insert the tool too far into the slot; only apply pressure to the board.
To ease the board out, apply light pressure to each and every slot.
Do not bend the board.

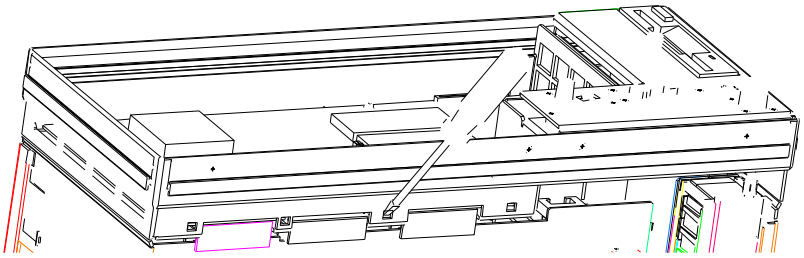


Fig. 3-5 Removing the front module controller

Installing the new front module controller and putting the instrument back together

➢ Carefully insert the new front module controller on the motherboard and screw into place with 10 sems screws (590).

CAUTION

Risk of shorting and instrument damage

With type FMR6 1091.2520.00, there is a danger of shorting between board components, tracks and screws (590). Use suitable insulation.

➢ Reconnect the cables to the front module controller, ensuring correct polarity.

Front Module Controller Typ FMR6

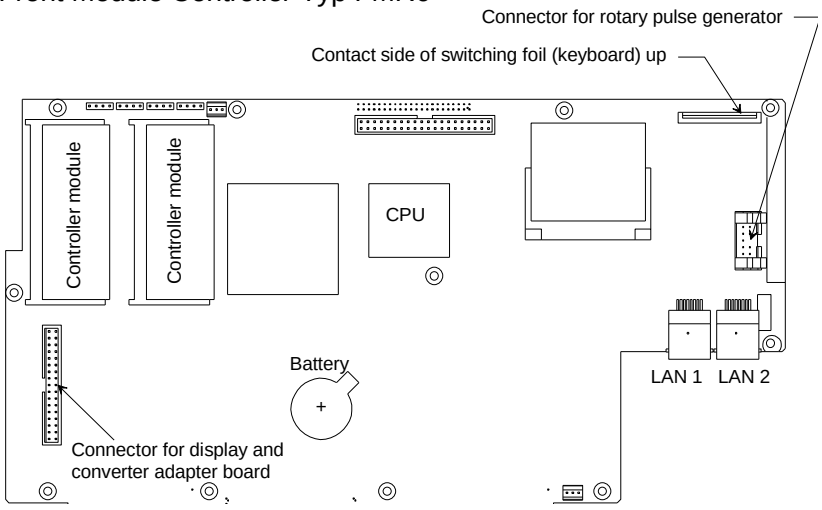


Fig. 3-6 Location of the edge connectors on the front module controller

- Re-insert the front unit into the instrument and secure to the front frame with 4 countersunk screws. (610).
- Fit the following countersunk screws (168) (2), (153), (154), (163), (164).



Avoid trapping cables and ensure cabling is tidy.

- Replace the front cover (300 to 316) and secure with the countersunk screw (390).
- Secure the 2 front handles (410) with the 4 screws.
- Fit the termination and the 3.5mm connection cables (only with option ZVAx-B16)

Putting into operation

- Connect the mains cable and turn on at the power on switch. The instrument is now in standby mode.
- Perform an Analyzer BIOS update (see **https://gloris.rohdeschwarz.com**, Document link: Firm- \ Software)
- Turn the instrument off and on.
- Select Service Level 2 (see Service Functions).
- Check the protocol file for errors:
  [INFO : Error Log]

Replacing Front Modul Controller FMR7 by FMR9

The swap from the Frontmodul FMR7/x to FMR9/6 may only implemented by an authorized service center.

Saving customers data

- It's recommended asking the customer to save all data from the instrument for later recovery.
- After installation of the FMR9/6 and SATA hard disk all customer – specific settings and data will be gone!

Creating a backup of instrument specific

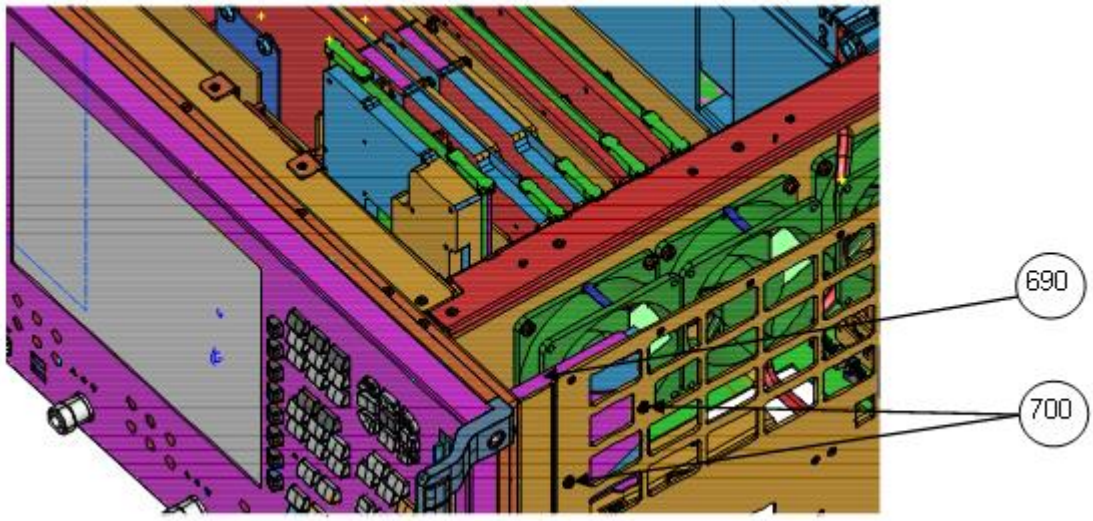
- Prior to modification, the instrument - specific data should be stored on a USB drive.
- Copy the files "Factory.cal" and "Factory.dat" from C:\Documents and Settings\All Users\Application Data\Rohde&Schwarz\Nwa\Data\calibration to an USB drive.

Disassembling the Unit

- For disassembling see chapter **Replacing Front Modul Controller A90.**

Remove the Floppy Disk Drive

- Disconnect floppy flex strip cable W300(690) from X30 of motherboard
- Undo 2 screws and washers (700) on instrument frame remove floppy disk drive (670)
- Mount the new cover (1312.7627.00) by using srews(700) on the same position



Installing the new front module controller and putting the instrument back together

- Disconnect all cables from the FMR7/x unit (2*LAN, USB, SATA), remember the position from the 2 LAN cables, they must be connected with the same connector like the FMR7/x unit
- Disassembly the FMR7 by unscrewing (590)
- Assembly the FMR9/6 with 9 screws (590)

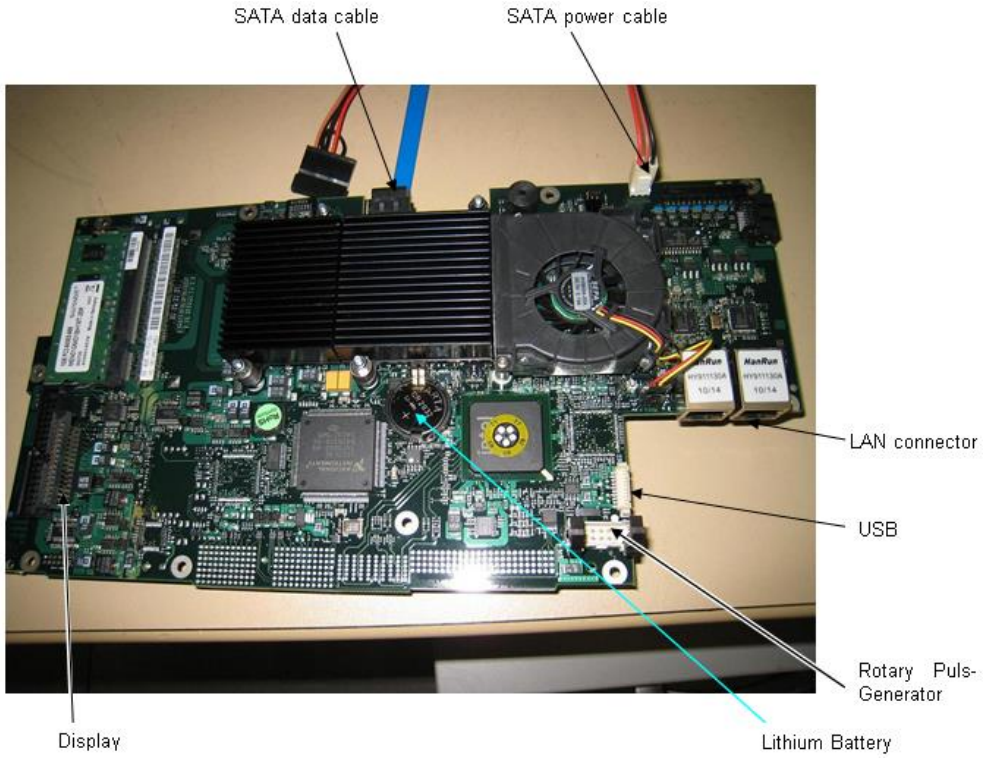


Fig. 3-7 New Frontmodul FMR9 with cabels

- Connect cables (USB, 2 *LAN, SATA data (use right SATA connector), SATA power)
- Fit the instrument top cover (296) and secure it with all countersunk screws (299).
- Mount the new Cover 1312.7627.00 and fasten it with the screws (700)
- Reconnect cables for the DISPLAY unit, USB, two Flexible Switch Foils and the cable from Rotary Puls-Generator
- For the next steps see chapter Replacing Front Modul Controller A90

Putting into operation

Firmware

- Perform an Analyzer BIOS update for FMR9 (see https://gloris.rohdeschwarz.com, Document link: Firm- \ Software)
- Perform a HD recovery using ZVABT Recovery CD FMR9
  After reboot, switch analyzer application screen to windows screen.
  Use windows explorer to browse and search the batch file to configure the display type.
  Select and execute C:\Display\Tools\image_set_601.bat.
  Reboot
- Perform a firmware update.
- Download from http://www.rsd.de/
  Select Downloads ➔ Select your product: "ZVA" and mark "Firmware" ➔ Go

  Firmware Version 2.81 or higher is necessary.
  Netcon PCINT FPGA Version 8.5 or higher is necessary.

Restoration of Factory settings

- Switch the unit on by pressing the “Standby” button in front.
- Copy the stored files “Factory.cal” and “Factory.dat” from USB drive to
  C:\Documents and Settings\All Users\Application Data\Rohde&Schwarz\Nwa\Data\calibration
- Switch the unit off and on by pressing the “Standby” button in front.
- Select Service Level 2 (see chapter **Service Functions**).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]

Replacing Front Modul Controller FMR7/FMR9 by FMR11

The swap from the Frontmodul FMR7/x and FMR9/6 to FMR11/6 may only implemented by an authorized service center.

Saving customers data

- It's recommended asking the customer to save all data from the instrument for later recovery.
- After installation of the FMR11/6 and disk image, all customer specific settings and data will be gone!

Creating a backup of instrument specific data

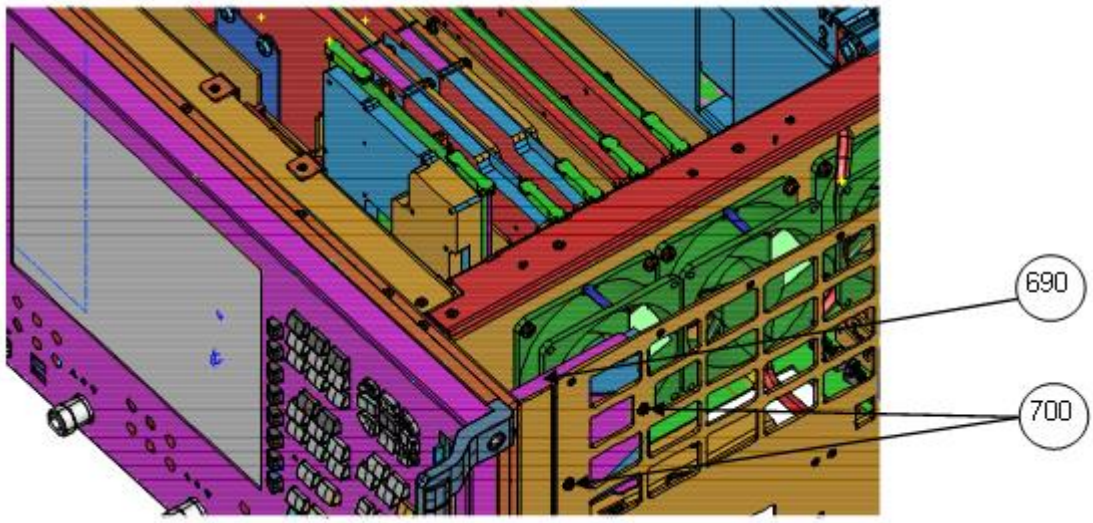
- Prior to modification, the instrument specific data should be stored on an USB drive.
- To do so, copy the files "Factory.cal" and "Factory.dat" from **C:\Documents and Settings\All Users\Application Data\Rohde&Schwarz\Nwa\Data\calibration** to an USB drive.

Disassembling the Unit

- For disassembling see chapter **Replacing Front Modul Controller A90.**

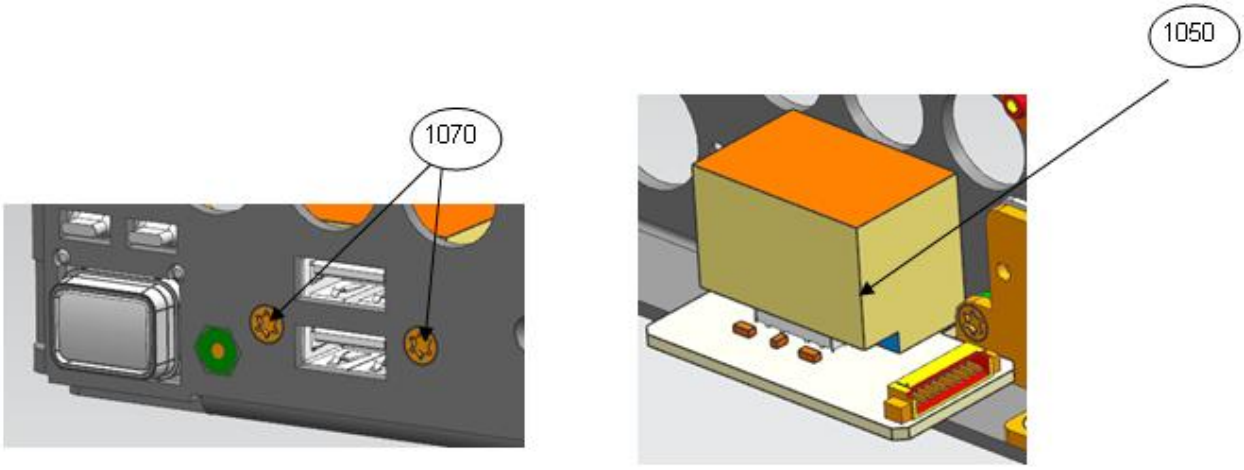
Remove the Floppy Disk Drive (Only for upgrade from FMR7/x to FMR11/6)

- Disconnect floppy flex strip cable W300(690) from X30 of motherboard
- Undo 2 screws and washers (700) on instrument frame remove floppy disk drive (670)
- Mount the new cover (1312.7627.00) by using srews(700) on the same position



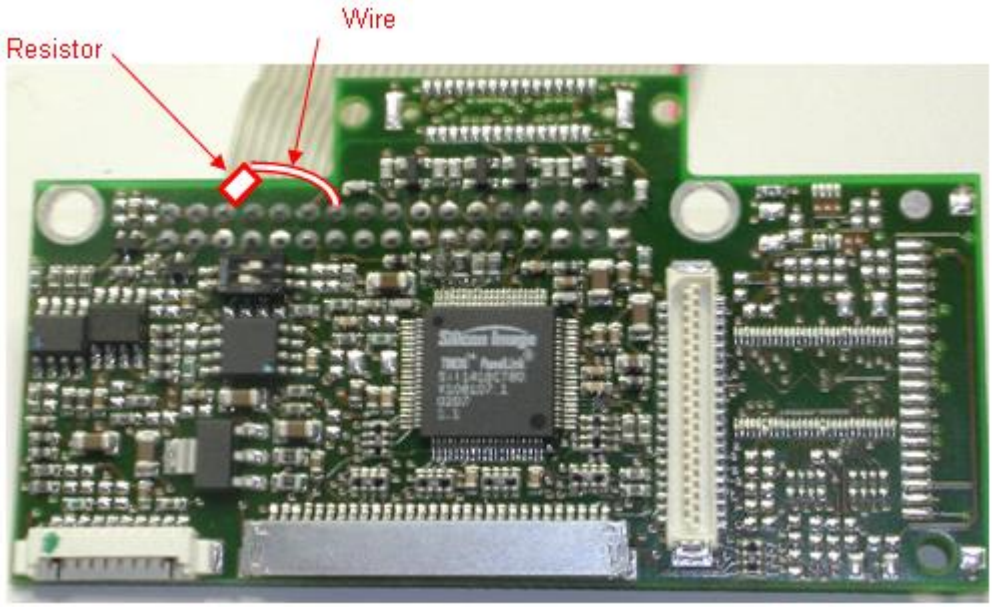
Change USB Board

- For disassembling see **Repacing USB Board A40** (Drawing 1145.1390.01)
- Remove the countersunk screws(1070)
- Remove USB board (1050), disconnect cable from USB board
- Reinstall new USB board (1305.7483.02) in reverse sequence



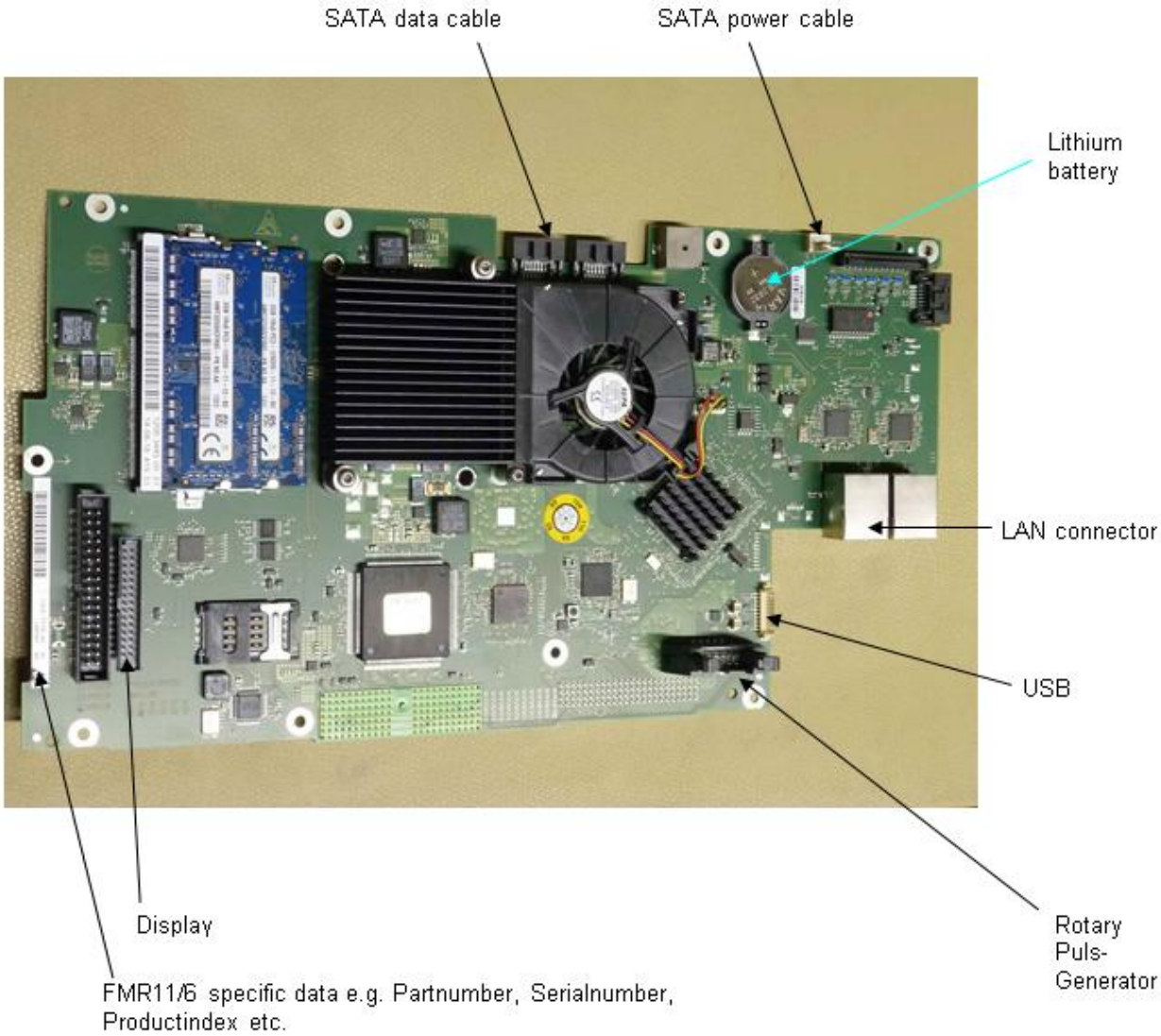
Modify Display Connector SVGA NEC-DSN

- For disassembling see **Replacing LCD A70 and DC/AC Converter** (Drawing 1145.1390.01)(1020)
- Release the two screws (1040) to remove the display connector board
- Connect pin 3 and pin 7 with a 1 kΩ resistor (R0603 009.5340.00) and a wire. Fix the wire and resistor with silicone.
- Assemble the Display Connector in reverse sequence



Installing the new front module controller and putting the instrument back together

- Disconnect all cables from the FMR7/x unit (2*LAN, USB, SATA), remember the position from the 2 LAN cables, they must be connected with the same connector like the FMR7/x unit
- Disassemble the FMR7 or FMR9 by unscrewing (590) (see drawing 1145.1310.01).
- Notice the FMR11/6 specific data e.g. partnumber, serialnumber, productindex.
- Assemble the FMR11/6 with 9 screws (590) (see drawing 1145.1310.01).



- Connect cables (USB, 2 *LAN, SATA data (use right SATA connector), SATA power).
- Fit the instrument top cover (296) and secure it with all countersunk screws (299).
- Mount the new Cover 1312.7627.00 and fasten it with the screws (700)
- Reconnect cables for the DISPLAY unit, USB, two Flexible Switch Foils and the cable from Rotary Puls-Generator
- For the next steps see chapter Replacing Front Modul Controller A90
- Add the Windows 7 licence sticker on the predefined position (Drawing 1145.1310.00)

Putting into operation

Firmware

- Perform an Analyzer BIOS update for FMR11/6 (see **https://gloris.rohdeschwarz.com**, Document link: Firm- \ Software)
- Perform a HD recovery using ZVABT Recovery Stick FMR11
- Download from http://www.rsd.de/
  Select Downloads ➔ Select your product: "ZVA" and mark "Firmware" ➔ Go
- Perform a firmware update

A netcon PCINT FPGA update is only necessary for upgrade from FMR7/x to FMR11/6. Use at least FPGA version 8.5. The PCINT FPGA version is independent from product change index of the netcon boards. The newest version is valid for all netcon boards.

Restoration of Factory settings

- Switch the unit on by pressing the “Standby” button in front.
- Copy the stored files “Factory.cal” and “Factory.dat” from USB drive to **C:\Documents and Settings\All Users\Application Data\Rohde&Schwarz\Nwa\Data\calibration**

Modify FMRx entry in the hardware info

- Find out the right part number in the motherboard section of the hardware info for the FMR (in this case it is “Part 1”).

Assemblies

Component	Name	Part Number	Serial Number
Frequency Reference	FREQUENCY REF	1145.3835.05	101148
Motherboard	MB ZVA	1305.6470.02	102235
Part 1	FMR9/6	1206.0198.00	130513

- Select service level 2 (see Service Manual chapter 3: **Service Functions)**
- Execute the service function 3.5.0.6.PART<part number>.<key>.<value> for several keys. The section represents the component of the FMRx – “PART1” for this example. The <key> are as follows (noticed in chapter 2.3.8):

<key>	<value>
PARTNUMBER	1312.7779.02
PRODUCTINDEX	xx.xx
SN	1xxxxx
PRODUCTDATE	YYYY-MM-DD
NAME	FMR11/6

- Execute the service function 3.5.0.2 to save the changed component on the mainboard eeprom.

- Example:
  - 3.5.0.6.PART1.PARTNUMBER.1312.7779.02
  - 3.5.0.6.PART1.PRODUCTINDEX.01.00
  - 3.5.0.6.PART1.SN.100001
  - 3.5.0.6.PART1.PRODUCTDATE.2014-12-17
  - 3.5.0.6.PART1.NAME.FMR11/6
  - 3.5.0.2
- Close and restart the firmware
- Check the hardware info about the new part FMR11/6

Assemblies

Component	Name	Part Number	Serial Number	Hw Code	Product Index	Test Instruction	Production Date
Frequency Reference	FREQUENCY REF	1145.3835.05	101148	0	10.00	06.12	2013-09-26
Motherboard	MB ZVA	1305.6470.02	102235	0	03.09	01.03	2013-09-16
Part 1	FMR11/6	1312.7779.02	100706	0	01.00	00.00	2014-12-17

Set the computer name

- Go to Start Menu / Control Panel / System and Security / System / Computer Name - Change settings / Change.

  Enter the computer name in the format: "[Instrument Name]-[Model]-[Serial Number]"
  Example: "ZVA24-26-100123" for a **ZVA24**, order number 1145.1110.**26**, serial number **100123**.

Check error log

- Switch the unit off and on by pressing the “Standby” button in front
- When the instrument has been started, select Service Level 2 (see Service Manual chapter 3: **Service Functions**) and check the protocol file for errors:
  [INFO: Error Log]

Replacing the Lithium Battery on the Front Module Controller

(See Chapter 5, Spare Parts List, Item (582), and drawings 1145.1110, 1145.1290*)*

The lithium battery is located on the front module controller behind the front unit.

CAUTION

Do not expose lithium batteries to high temperatures or naked flames.

Keep batteries away from children.

If the battery is not replaced correctly, there is a risk of explosion. Only use R&S-type replacement batteries (See Chapter 5, Spare Parts List, Item 776 for type FMR6).

Lithium batteries are classified as special waste - only use designated containers for disposal.

Opening the instrument and removing the front unit

- Turn off the instrument and disconnect from the mains.
- Remove termination and 3.5mm connection cables (only with option ZVAx-B16)
- Remove the 4 screws from the front handles (410), left and right, and take off the front handles.
- Remove the countersunk screw (390) next to the display and pull off the front cover (300, 303, 306, 310, 313, 316) forwards
- Remove the 2 countersunk screws (610) in the top of the front frame and the 2 in the bottom.
- ZVA8: Remove the countersunk screws (168) (2), (153), (154), (163), (164)
- Pull out the front unit together with the keyboard and display (600, 604) forwards.

NOTICE

Risk of damage

The cables to the front module controller are still connected.

- Disconnect the cables to the LCD, the DC/AC illumination converter, the key pad (keyboard), the tachogenerator and, if necessary, the network connection on the front module controller.

NOTICE

Risk of damage

When disconnecting cables, be especially careful with the cable to the keyboard. It is a foil cable and can only be removed when the locking device on the foil-cable connector is released.

Removing the lithium battery

➢ Carefully lift up and pull out the battery.

Note:
Lithium battery 3.4 V (dia. 20 mm * 3 mm) R&S Item No. 0858.2049.00

Front Module Controller Typ FMR6

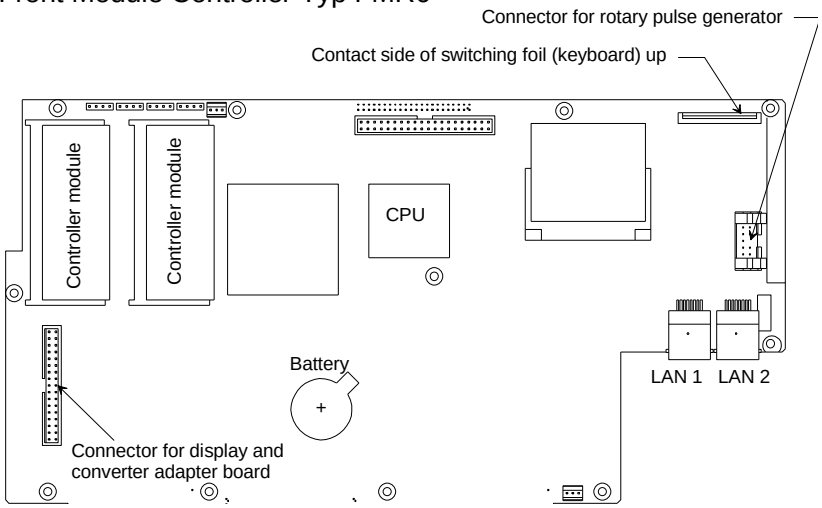


Fig. 3-8 Location of the lithium battery on the front module controller (for FMR9 or FMR11 see chapters 'Replacing Front Module Controller FMR7 by FMR9' or 'Replacing Front Module Controller FMR7/FMR9 by FMR11')

Installing the new battery and reassembling the instrument

CAUTION

Risk of minor or moderate injury

Never short circuit the battery.

➢ Insert the battery under the spring in the holder.
N.B.: The positive pole of the battery (+) must be uppermost.

➢ Reinsert the front unit in the instrument and secure to the front frame with 4 countersunk screws (610).

➢ Refit the countersunk screws (168) (2), (153), (154), (163), (164).

Avoid trapping cables and ensure cabling is tidy.

➢ Replace the front cover (300, 303, 306, 310, 313, 316) and screw in the countersunk screw (390).

➢ Refit the 2 front handles (410) using 4 screws.

➢ Fit the termination and the 3.5mm connection cables (only with option ZVAx-B16).

Putting into operation

- Connect the mains cable, turn on at the power switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]

Replacing Hard Disk A60 (not with FMR9)

(See Chapter 5, Spare Parts List, Item 710, and drawings 1145.1110 and 1145.1310)

The hard disk is located between the controller tray and the boards. The spare disk is delivered with the software pre-installed.

Before removal

Whenever possible, back up the user data on an external data storage medium.

Opening the instrument and replacing the hard disk

- Turn off the instrument, disconnect from the mains, unscrew the 4 rear-panel feet (460) and pull off the enclosure (400) backwards
- Lift off the instrument cover (296) at the top after undoing the countersunk screws (298).
- Disconnect the flat cable (715) at the hard disk drive.

  Note:
  Do not pull or push on the flat cable – instead, carefully lever out the connector strip with a small screwdriver.
- Remove the 2 countersunk screws (725) in the hard disk holder (720).
- Remove the hard disk (710) and holder (720).
- Undo the 4 countersunk screws (730), remove the old hard disk and screw the new hard disk to the holder (720).

Installing and putting the new hard disk into operation

- Refit the hard disk and holder into the instrument using 2 countersunk screws (725).

  Note:
  The bottom of the holder is inserted into a sheet-metal wall.
- Connect the flat cable (715) to the hard disk.
- Replace the instrument's top cover (296) and screw back into position with 23 or 28 countersunk screws (298).
- Slide on the enclosure (400) and screw the 4 rear-panel feet (460) back into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Function)
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Perform the factory system error calibration (see **Factory System Error Calibration**).

Replacing LCD A70 and the DC/AC Converter

(See Chapter 5, Spare Parts List Items 910, 930 and drawings 1145.1110, 1145.1390)

The LCD and the associated DC/AC converter are accommodated on a mounting plate. The connection to the front module controller is made with cables which should also be replaced individually. The replacement procedure is as follows:

Opening the instrument and removing the front unit

- Turn off the instrument and disconnect from the mains.
- Remove termination and 3.5mm connection cables (only with option ZVAx-B16)
- Remove the 4 screws from the front handles (410), left and right, and take off the front handles.
- Remove the countersunk screw (390) next to the display and pull off the front cover (300, 303, 306, 310, 313, 316) forwards
- Remove the 2 countersunk screws (610) in the top of the front frame and the 2 in the bottom.
- ZVA8: Remove the countersunk screws (168) (2), (153), (154), (163), (164)
- Pull out the front unit together with the keyboard and display (600, 604) forwards.

NOTICE

Risk of damage

The cables to the front module controller are still connected.

- Disconnect the cables to the LCD, the DC/AC illumination converter, the key pad (keyboard), the tachogenerator and, if necessary, the network connection to the front module controller.

NOTICE

Risk of damage

When disconnecting cables, be especially careful with the cable to the keyboard. It is a foil cable and can only be removed when the locking device on the foil-cable connector is released.

- Place the key-side of the front unit on a clean surface.

Removing the DC/AC converter

- Disconnect the cable from the display (910) to the DC/AC converter (930).
- Disconnect the converter cable (950) to the DC/AC converter (930)
- Remove the DC/AC converter (930) by undoing the 2 screws (940)

Removing the LCD

- Disconnect the display cable (945) by cutting through the adhesive label(946).
- Remove the display connector (1020) after you have undone the two screws (1040).
- Disconnect the display cable (1030) at the display (910).
- Remove the display (910) after removing the 4 screws (920)

Installing and putting into operation a new LCD or DC/AC converter

- Reinstall the new LCD or new DC/AC converter by reversing the disassembly procedure, refit all screws and reconnect the cables that have been disconnected (drawing 1145.1390).
- When replacing the display (921) or display cable (945), use a new adhesive label (946) to secure the cabling.
- Place the key-side of the front unit on the top of the instrument so that the cables can be connected to the front module controller.
- Carefully connect all cable connectors to the front module controller, ensuring that the polarity is correct.

Front Module Controller Typ FMR6

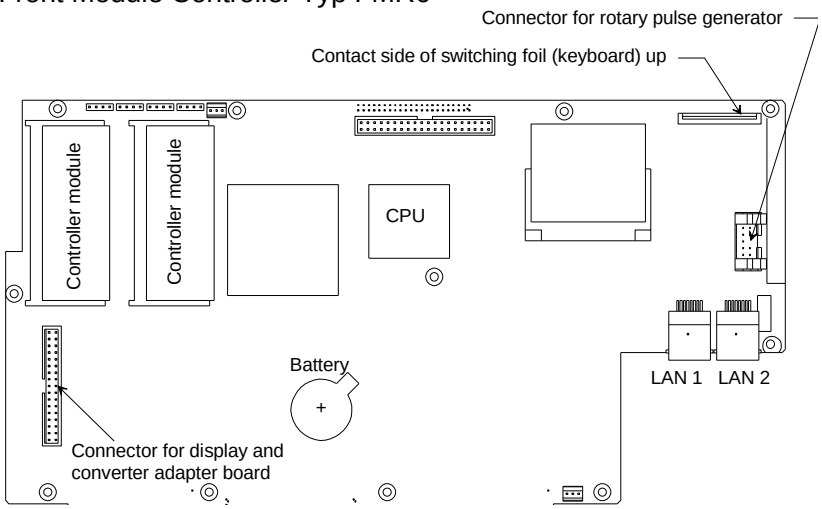


Fig. 3-9 Location of the edge contacts on the front module controller

- Reinsert the front unit in the instrument and secure to the front frame with 4 countersunk screws (610).
- Refit the countersunk screws (168) (2), (153), (154), (163), (164).

Avoid trapping cables and ensure cabling is tidy.

- Replace the front cover (300, 303, 306, 310, 313, 316) and secure with countersunk screw (390).
- Refit the 2 front handles (410) using the 4 screws.
- Fit the termination and the 3.5mm connection cables (only with option ZVAx-B16).
- Connect the mains cable, turn on at the mains switch and press the ON key.

Replacing Flexible switch board (Keyboard) A16 / Key Pad A15

(See Chapter 5, Spare Parts List, Items 860, 870 and drawings 1145.1110, 1145.1390)

The flexible switch board (keyboard) and key pad are located behind the front cover and the keyboard frame

Opening the instrument and removing the front unit

- Turn off the instrument and disconnect from the mains.
- Remove termination and 3.5mm connection cables (only with option ZVAx-B16)
- Remove the 4 screws from the front handles (410), left and right, and take off the front handles.
- Remove the countersunk screw (390) next to the display and pull off the front cover (300, 303, 306, 310, 313, 316) forwards
- Remove the 2 countersunk screws (610) in the top of the front frame and the 2 in the bottom.
- ZVA8: Remove the countersunk screws (168) (2), (153), (154), (163), (164)
- Pull out the front unit together with the keyboard and display (600, 604) forwards and place it with the key-side on top of the instrument.

NOTICE

Risk of damage

The cables to the front module controller are still connected.

- Disconnect the cables to the LCD, the DC/AC illumination converter, the key pad (keyboard), the tachogenerator and, if necessary, the network connection to the front module controller.

NOTICE

Risk of damage

When disconnecting cables, be especially careful with the cable to the keyboard. It is a foil cable and can only be removed when the locking device on the foil-cable connector is released.

Removing the flexible switch board (keyboard) / key pad

- Place the front unit with the key-side upwards on a clean surface.
- Remove knob (990) from the tachogenerator.
- Undo the 10 countersunk screws (890) and remove the keyboard frame (800, 805).
- The flexible switch board (860) and the key pad (870) can now be replaced.

Installing a new flexible switch board / key pad and reassembling the instrument

- Insert the new flexible switch board (860) into the keyboard frame (800, 805) from behind.

  N.B.: *The positioning pins must be inserted in the holes in the keyboard frame.*

- Place the new key pad (870) on the rear of the flexible switch board (860).

  Note:
  Thread the foil cable's connector through the slot in the mounting tray.
  Position the key pad so that the pins on the flexible switch board pass through the holes in the key pad.

- Place the rear of the display unit on the key pad (870).

  N.B.: *Position the display unit so that the pins on the flexible switch board pass through the holes in the mounting tray.*

- Press the front unit together, with the key-side upwards turn and screw back together again with 10 countersunkl screws (890).
- Place the front unit with the key-side on top of the instrument so that the cables can be connected to the front module controller
- Reconnect the cables to the front module controller, ensuring correct polarity.

Front Module Controller Typ FMR6

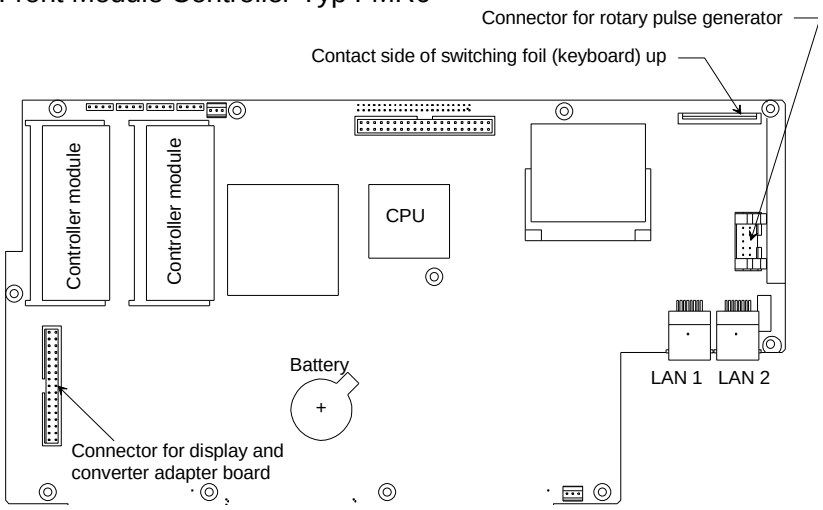


Fig. 3-10 Location of the edge contacts on the front module controller

- Reinsert the front unit into the instrument and secure to the front frame with 4 countersunk screws (610).
- Refit the countersunk screws (168) (2), (153), (154), (163), (164).



Avoid trapping cables and ensure cabling is tidy.

- Replace the front cover (300, 303, 306, 310, 313, 316) and secure with the countersunk screw (390).
- Refit the 2 front handles (410) using 4 screws.
- Fit the termination and the 3.5mm connection cables (only with option ZVAx-B16).
- Connect the mains cable, turn on at the mains switch and press the ON key.

Replacing the Front Cover

(See Chapter 5, Spare Parts List, Items 300, 306, 310, 316, 320, 321, 326, 327, 330, 334, 620, 630 and drawings 1145.1110, 1305.7002, 1312.6508)

The front cover is the outermost front panel with lettering. Each instrument type has its own front cover.

- Turn off the instrument and disconnect from the mains.
- Remove the 4 screws in the front handles (410), right and left, and take off the front handles
- Remove termination and 3.5mm connection cables (only with option ZVAx-B16)
- Remove the countersunk screw (390/640) next to the display and pull off the front cover (e.g. 300) forwards
- Fit the new front cover and reassemble the instrument by reversing the disassembly procedure.
- Connect the mains cable, turn on at the mains switch and press the ON key.

Replacing Disk Drive A30

(See Chapter 5, Spare Parts List, Item 670 and drawings 1145.1110 and 1145.1310)

Opening the instrument and removing the disk drive

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the 2 sems screws (700) and carefully lift out the floppy disk drive (670), together with the floppy drive holder (680).

  N.B.: *The floppy cable to the motherboard is still connected.*
- Disconnect floppy cable (690) on the floppy disk drive.

Installing a new disk drive and reassembling the instrument

- Release the floppy disk drive by removing the 3 sems screws (700) from the floppy drive holder (680) and insert a new floppy disk drive (670) into the floppy drive holder (680).
- Connect floppy cable (690) on the floppy disk drive.
- Resecure the floppy disk drive (680) from above to the side of the instrument with the fan using 2 sems screws (700).

  N.N.: *Center the floppy disk drive wrt the cut-out in the front cover.*
- Slide the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.

Function test

- The instrument boots up and starts the instrument firmware.
- Insert a 3 ½ ″disk with files.
- Press the FILE key, then the File Manager softkey and Edit Path.
- Enter “ a “ and “ : “ with the screen functions and terminate with the Enter key.
- The directory structure of the disk displayed on the screen shows that the floppy disk drive is operating properly.

Replacing USB Board A40

(See Chapter 5, Spare Parts List, Item 1050 and drawings 1145.1110 and 1145.1390)

The USB board is located behind the front cover and the keyboard frame next to the ON key.

Opening the instrument and removing the USB-board

- Turn off the instrument and disconnect from the mains.
- Remove termination and 3.5mm connection cables (only with option ZVAx-B16)
- Remove the 4 screws from the front handles (410), left and right, and take off the front handles.
- Remove the countersunk screw (390/640) next to the display and pull off the front cover forwards
- Remove the 2 countersunk screws (610) in the top of the front frame and the 2 in the bottom.
- ZVA8: Remove the countersunk screws (168) (2), (153), (154), (163), (164).
- Pull out the front unit together with the keyboard and display (600, 604) forwards and place it with the key-side on top of the instrument.
- Remove the 2 screws (1070), disconnect the cable and remove the USB board (1050).

Fitting the USB board and reassembling the instrument

- Install the new USB board by reversing the removal procedure, replace all screws and connect and install the relevant cables (drawing 1145.1390).
- Insert the front unit back into the instrument and secure to the front frame with 4 countersunk screws (610).
- Refit the countersunk screws (168) (2), (153), (154), (163), (164).
- Replace the front cover and secure with the countersunk screw (390/340).
- Refit the 2 front handles (410) using 4 screws.
- Fit the termination and the 3.5mm connection cables (only with option ZVAx-B16).
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Check the USB board: Connect the mouse or keyboard and perform a function check.

Replacing Power Supply A20

(See Chapter 5, Spare Parts List, Items 790 and drawings 1145.1110, 1145.1290, 1145.1310)

The power supply is installed at the rear of the instrument frame.

Removing the power supply

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) towards the rear.
- Remove the 4 screws (792) in the rear panel.
- Pull out the power supply unit a little at the rear of the instrument, remove screw (737) and anti-touch guard (736).
- On the left-hand side of the power supply, pull off the protective conductor cable and fuse board (735) to the left.
- On the right-hand side of the power supply, remove the plug-on connections to the motherboard.
- Remove the power supply unit.

Installing the new power supply

- Fit the new power supply by reversing the removal procedure
- If you refit a power supply 1145.5238, fit the cables from the removed one to the new one (see drawing 1145.1290)
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors
  [INFO : Error Log]

Replacing Fuse board A21

(See Chapter 5, Spare Parts List, Item 735, and drawings 1145.1110, 1145.1290)

The fuse board is installed on the left-hand side of the power supply.

Removing the power supply and the fuse board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the 4 screws (757) in the rear panel.
- Pull out the power supply unit a little at the rear of the instrument, remove screw (737) and anti-touch guard (736).
- On the left-hand side of the power supply, pull off the fuse board (735) to the left.
- Disconnect the two mains cables from the fuse board.

Fitting the new fuse board and the power supply

- Connect the mains cables to the fuse board and refit the fuse board to the power supply.
- Secure the anti-touch guard (736) with screw (737).
- Reinstall the power supply by reversing the removal procedure.
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors
  [INFO : Error Log]

Replacing a Fan

(See Chapter 5, Spare Parts List, Item 15 and drawings 1145.1110, 1145.1310)

The fans, three in all, are located behind the right-hand side panel.

Opening the instrument and removing the fan

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Lift off the top instrument cover (296) after undoing the countersunk screws (298).
- For replacing the fan located near by the front remove the 2 sems screws (700) and carefully lift out the floppy disk drive (670), together with the floppy disk holder (680).
- Disconnect the fan cable on the motherboard.
- Remove fan (15) by undoing the 4 fan screws (16).

Fitting a new fan and reassembling the instrument

- Install the fan using the 4 fan screws.

  N.B.: The arrows on the fan show the installation position. The fan blows air into the instrument. Route the fan cable so that it cannot get caught in the fan.
- Connect the fan cabling on the motherboard X35, X36 and X37 (FAN).
- Refit the top instrument cover (296) with countersunk screws (298).
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Check that all three fans are operating correctly (fans are blowing air into the instrument).
- Turn off the instrument and disconnect the mains cabling again.
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.

Replacing Motherboard A10

(See Chapter 5, Spare Parts List, Item 510 and drawings 1145.1110, 1145.1310)

The motherboard is located on the base of the instrument.

N.B.: *The motherboard can only be replaced at R&S service centers.*

Opening the instrument and removing the motherboard

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Lift off the top instrument cover (296) after undoing the countersunk screws (298).
- Extract the top boards: Use ejector lever for the synthesizer and network controller, hold the frequency reference by the enclosure.
- Remove the power supply (550).
  - Remove the 4 screws (757) in the rear panel.
  - Pull out the power supply unit a little at the rear of the instrument, remove screw (737) and anti-touch guard (736).
  - On the left-hand side of the power supply, pull off the protective conductor cable and the fuse board (735) to the left.
  - On the right-hand side of the power supply, pull off the plug-in connections to the motherboard.
  - Remove the power supply unit.
- Remove the 4 screws in the front handles (410), right and left, and take off the front handles.
- Remove the countersunk screw (390) next to the display and pull off the front cover (300, 303, 306, 310, 313, 316) forwards.
- Remove termination and 3.5mm connection cables (only with option ZVAx-B16)
- Remove the 2 countersunk screws (610) in the top of the front frame and the 2 in the bottom.
- Remove the countersunk screws (168) (2), (153), (154), (163), (164).
- Pull out the front unit together with the keyboard and display (600, 604) forwards.

NOTICE

Risk of damage

The cables to the front module controller are still connected.

- Disconnect the cables to the LCD, the DC/AC illumination converter, the key pad (keyboard), the tachogenerator and, if necessary, the network connection to the front module controller.

NOTICE

Risk of damage

When disconnecting cables, be especially careful with the cable to the keyboard. It is a foil cable and can only be removed when the locking device on the foil-cable connector is released.

- Remove the front module controller (for instructions see “Replacing Front Module Controller A90“)
- Place the instrument on its top and remove the instrument’s base cover (297) by undoing the screws (299).
- Undo the RF cabling from the reflectometers (165, 170, 175) to the LO divider (125) and to the motherboard.
- Release the 50-pin flat cable and disconnect from the reflectometers.
- Remove screws (151, 156, 161) and take out the reflectometers.
- Undo RF cabling at the LO divider (125).
- Disconnect the 12-pin flat cable from the LO divider
- Remove screws (127) (2 in the strut, 4 in the rear panel) and take out the LO divider together with plate (126)

Undo the screws holding the connectors on the rear panel:

- The 6 hexagonal nuts and washers for the BNC connectors.
- 2 hexagonal bolts (530, 540) each for the monitor interface and the user-control interface.
- 2 hexagonal screws (550) each for the USB interface and in the dummy panel (555).

- Remove the 3 screws (144) each for the left and right side panels and the 2 screws (143) in the center and take out both motherboard rails (140, 141).
- Disconnect any cabling still on the motherboard (fan, floppy, IEC-bus, etc.).
- Remove the 14 screws holding the motherboard (520) and take out the motherboard.
- Remove the RF and IF cables using the tool 11W 101-000 (Rosenberger).

Installing the motherboard and reassembling the instrument

N.B.: ***The motherboard is the passport of the instrument and unique for every unit.***
The Eprom on the motherboard contains the serial No. of the instrument.
Pre-configured motherboards are not available.

- Install the new motherboard by reversing the removal procedure.
  N.B.: *Install the motherboard carefully to prevent any damage to components.*
  Lettering indicates where cables are to be connected.
- Reinstall the front module controller, front unit, power supply, boards and cables, instrument covers, enclosure and rear-panel feet by reversing the disassembly procedure.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- For writing motherboard data to the EPROM please contact the Service Center in Memmingen.
- Select Service Level 2 (see Service Functions).
- Check the protocol file for errors: [INFO : Error Log]

- Align the DC inputs (see **Aligning the DC Inputs** in chapter 2)
- Write synthesizer mapping and shift data to the motherboard EPROM (see **Correction Value Recording** in chapter 2)

Replacing a Reflectometer RM8 A510 to 540

(See Chapter 5, Spare Parts List, Items 150, 160 and drawing 1145.1110)

The boards are located under the motherboard.

Opening the instrument and removing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the bottom instrument cover (297) after undoing the screws (299).
- Remove termination and 3.5mm connection cables (only with option ZVAx-B16)
- Remove the screws (153), (154), (163), (164) in the front of the instrument next to the port connector and (168) in case of port 4.
- Disconnect the source cable, the LO cable, the two IF cables and the 50-pin control cable from the reflectometer.
- Remove the 2 screws (151, 161) at the end of the reflectometer and take out the reflectometer

Installing the board and reassembling the instrument

- Insert the new board into the instrument and reconnect any cables that have been disconnected

  N.B.: *Use the lettering on the motherboard as an aid.*
- Screw in the screws (153, 154, 163, 164, 168) in the front of the instrument.
- Screw in the 2 screws (151, 161) in the end of the reflectometer.
- Fit the instrument base cover (297) and secure with screws (299).
- Slide the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the generator and receiver correction data (see **Recording Correction Values** in chapter 2).
- Perform the factory system error calibration (see **Factory System Error Calibration** in chapter 2).

Replacing Generator Board (ZVA8 only)

(See Chapter 5, Spare Parts List, Item 110 and drawing 1302.4960.08)

Opening the instrument and removing the board

- Remove the reflectometer (see chapter **Replacing Reflectometer Board A510 to A540**)
- Remove the cover (130)
- Remove the fan cable
- Pull off the generator board (110)

Installing the board and reassembling the instrument

- Fit the new generator board (110)
- Reconnect the fan cable
- Fit the cover (130)
- Reinstall the reflectometer (see chapter **Replacing Reflectometer Board A510 to A540**)
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the generator and receiver correction data (see **Recording Correction Values** in chapter 2).
- Perform the factory system error calibration (see **Factory System Error Calibration** in chapter 2).

Replacing Receiver Board (ZVA8 only)

(See Chapter 5, Spare Parts List, Item 120, 125 and drawing 1302.4960.08)

Opening the instrument and removing the board

- Remove the reflectometer (see chapter **Replacing Reflectometer Board A510 to A540**)
- Remove the cover (150)
- Pull off the receiver board (120, 125)

Installing the board and reassembling the instrument

- Fit the new receiver board (120, 125)
- Fit the cover (150)
- Reinstall the reflectometer (see chapter **Replacing Reflectometer Board A510 to A540**)
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the generator and receiver correction data (see **Recording Correction Values** in chapter 2).
- Perform the factory system error calibration (see **Factory System Error Calibration** in chapter 2).

Replacing Generator and Receiver Cover (ZVA8 only)

(See Service Circular 10028 and Chapter 5, Spare Parts List, Items 130, 150 and drawing 1302.4960.08)

Opening the instrument and removing the cover

- Remove the reflectometer (see chapter **Replacing Reflectometer Board A510 to A540**)
- Remove the RM mount (200), 4 screws (210)
- Remove the covers (130, 150)

Installing the cover and reassembling the instrument

- Fit the new covers (130, 150)
- Refit the RM mount (200)
- Reinstall the reflectometer (see chapter **Replacing Reflectometer Board A510 to A540**)
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the receiver correction data (see **Recording Correction Values** in chapter 2).
- Perform the factory system error calibration (see **Factory System Error Calibration** in chapter 2).

Replacing the Inner Conductor of a Port Connector (ZVA8 only)

(See Chapter 5, Spare Parts List, Item 110, and drawings 1145.1110, 1145.4177, 1145.3593)

Opening the instrument and removing the reflectometer

- Remove the Reflectometer (see chapter **Replacing Reflectometer Board A510 to A540**)

Replacing the inner conductor

- Unscrew the N outer conductor with a spanner (narrow, SW 14mm) and take out inner conductor unit.

  N.B.: *Ensure that the centring disk (135) is also removed.*

- Carefully insert the new inner conductor in the bridge unit enclosure and screw back the N outer-conductor (lock with Loctite 262, mount with torque 3.5 Nm).

Reassembling the instrument

- Reinstall the Reflectometer (see chapter Replacing Reflectometer Board A510 to A540)
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Check the gauge (see Checking the Gauge in chapter 2)
- Perform factory system error calibration (see Factory System Error Calibration in chapter 2).

Replacing the Bridge Unit (ZVA8 only)

(See Chapter 5, Spare Parts List, drawings 1145.1110, 1145.4177, Item 100)

Opening the instrument and removing the reflectometer

- Remove the Reflectometer (see chapter **Replacing Reflectometer Board A510 to A540**)

Removing the bridge unit

- Loosen the MEAS, REF and GEN cables (310, 320, 300) at both ends and disconnect at the bridge unit.

  N.B.: *When loosening support the cable with a 7mm spanner!*
- Remove the 3 screws (160) and carefully pull the bridge unit off the reflectometer.
- Remove the 2 screws (240) and remove the plate (230).

Fitting the new bridge unit

- Secure plate (230) to the new bridge unit using the 2 screws (240).
- Carefully place the bridge unit on the reflectometer and secure with 3 screws (160).
- Screw the MEAS- REF and GEN cables (310, 320, 300) to the bridge unit, and then tighten at both ends.

  N.B.: *When tightening with a 7 mm spanner support the cable.*

Reassembling the instrument

- Reinstall the Reflectometer (see chapter Replacing Reflectometer Board A510 to A540)
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- Check the gauge (see **Checking the Gauge** in chapter 2)
- Record generator and receiver correction data (see **Recording Correction Data**).
- Perform factory system error calibration (see **Factory System Error Calibration**).

Replacing a Reflectometer RM24 A510 to 540

(See Chapter 5, Spare Parts List, Items 180, 190, 200 and drawings 1145.1110, 1145.4283)

Opening the instrument and removing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the bottom instrument cover (297) after undoing the 12 countersunk screws (299).
- Remove 3.5mm connection cables (only with option ZVA24-B16)
- Disconnect the three cables to the coupler, the LO cable, the two IF cables and the 50-pin control cable from the reflectometer.
- Loosen the captive screws (see 1145.1110.01 sheet 4 / 5) and take out the reflectometer.

Installing the board and reassembling the instrument

- Insert the new board into the instrument.
- Screw in the captive screws.
- Reconnect any cables that have been disconnected.
- Fit the 3.5mm connection cables (only with option ZVA24-B16).
- Fit the instrument base cover (297) and secure with screws (299).
- Slide the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the generator and receiver correction data (see **Recording Correction Values**).
- Perform the factory system error calibration (see **Factory System Error Calibration**).

Replacing a Reflectometer RM40 and RM50 A510 to 540

(See Chapter 5, Spare Parts List, Items 209, 222, 230, 232 and drawings 1145.1110, 1145.4319, 1305.3413)

Opening the instrument and removing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the bottom instrument cover (297) after undoing the 12 countersunk screws (299).
- Disconnect the three cables to the coupler, the LO cable, the two IF cables and the 50-pin control cable from the reflectometer.
- Loosen the captive screws (see 1145.4319, 1305.3413) and take out the reflectometer.

Installing the board and reassembling the instrument

- Insert the new board into the instrument.
- Screw in the captive screws.
- Reconnect any cables that have been disconnected.
- Fit the instrument base cover (297) and secure with screws (299).
- Slide the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the generator and receiver correction data (see **Recording Correction Values**).
- Perform the factory system error calibration (see **Factory System Error Calibration**).

Replacing a Reflectometer RM67 A510 to 540

(See Chapter 5, Spare Parts List, Items 300 and 350 and drawing 1305.7002)

The boards are located under the motherboard.

Opening the instrument and removing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the bottom instrument cover (297) after undoing the 12 countersunk screws (299).
- Disconnect the three cables to the coupler, the LO cable, the two IF cables and the 50-pin control cable from the reflectometer.
- Loosen the captive screws (see1305.7002) and take out the reflectometer.

Installing the board and reassembling the instrument

- Insert the new board into the instrument.
- Screw in the captive screws.
- Reconnect any cables that have been disconnected.
- Fit the instrument base cover (297) and secure with screws (299).
- Slide the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the generator and receiver correction data (see **Recording Correction Values**).
- Perform the factory system error calibration (see Factory System Error Calibration).

Replacing the Reflectometers on ZVA80-BU

Port1 and port2: See Replacing a Reflectometer RM 40 and RM50

Port3 and port4:

(See Chapter 5, drawing 1312.6508)
(See Chapter 5, Spare Parts List, Item 100, and drawing 1166.1660)

The boards are located under the motherboard.

Opening the instrument and removing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and four screws (455), remove the two side handles (450) and pull off the enclosure (400) backwards.
- Remove the 4 screws in the front handles (410), right and left, and take off the front handles.
- Remove the countersunk screw (315) and pull off the front cover (300) forwards
- Remove the bottom instrument cover (298) after undoing the 18 countersunk screws (299).
- Remove RF connection cables (ZVA50-B16)
- Disconnect the source cable, the LO cable, the two IF cables and the 50-pin control cable from the reflectometer.
- Remove the 4 screws (3132) and the 2 screws (3133) in the front of the instrument next to the port connector.
- Remove the 5 screws (3131) and take out the reflectometer

Installing the board and reassembling the instrument

- Insert the new board into the instrument and reconnect any cables that have been disconnected.

  N.B.: *Use the lettering on the motherboard as an aid.*
- Screw in the 6 screws (3132, 3133) in the front of the instrument next to the port connector.
- Screw in the 5 screws (3131).
- Refit support plates (3140, 3142) and reflectometers A530, A540, A560 (only with option ZVT20-B63, -B64, -B66).
- Fit the instrument base cover (298) and secure with 18 countersunk screws (299).
- Replace the front cover (300) and secure with the countersunk screw (315).
- Refit the 2 front handles (410) using 4 screws.
- Slide the enclosure (400) back on and screw the 4 rear-panel feet (460) and the 2 side handles (450) into position.
- Connect the mains cable and turn on at the mains switch. The instrument is now in the standby mode
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the generator and receiver correction data (see **Recording Correction Values**).
- Perform the factory system error calibration (see **Factory System Error Calibration**).

Replacing the Coupler Unit (ZVA24, ZVA40, ZVA50, ZVA80-BU port1 and port2)

(See Chapter 5, Spare Parts List, item 230 and drawing 1145.1110)

Opening the instrument and removing the coupler

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the instrument base cover (297) after undoing the screws (299).
- Disconnect the 3 RF cables and the bias cable from the coupler
- Remove the 3.5mm connection cables (only with option ZVA24-B16).
- Remove the frontcover
- Remove the screws (182, 186, 202, 206) in the front of the instrument next to the port connector and take out the coupler.

Fitting the new coupler unit and reassembling the instrument

- Insert the coupler into the instrument and screw in the 4 screws (181, 186, 220).
- Reconnect the 3 RF cables and the bias cable.
- Fit the 3.5mm connection cables (only with option ZVA24-B16).
- Fit the instrument base cover (297) and secure with 12 countersunk screws (299).
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record generator and receiver correction data (see **Recording Correction Data**).
- Perform factory system error calibration (see **Factory System Error Calibration**).

Replacing the Coupler Unit (ZVA67)

(See Chapter 5, Spare Parts List, item 245 and drawings 1305.7002 and 1305.6241)

Opening the instrument and removing the coupler

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the instrument base cover (297) after undoing the screws (299).
- Disconnect the 3 RF cables and the bias cable from the coupler
- Remove the 3.5mm connection cables (only with option ZVA24-B16).
- Remove the frontcover
- Remove the screws (182, 186, 202, 206) in the front of the instrument next to the port connector and take out the coupler.

Fitting the new coupler unit and reassembling the instrument

- Insert the coupler into the instrument and screw in the 4 screws (181, 186, 220).
- Reconnect the 3 RF cables and the bias cable.
- Fit the 3.5mm connection cables (only with option ZVA24-B16).
- Fit the instrument base cover (297) and secure with 12 countersunk screws (299).
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record generator and receiver correction data (see **Recording Correction Data**).
- Perform factory system error calibration (see **Factory System Error Calibration**).

Replacing the Test Set (ZVA40 only)

N.B.: In case of defective Test Set please contact the Central Service in Munich.

Replacing the Diplexer ZVA-ZD80 (ZVA80)

N.B.: In case of defective Diplexer80 please contact the Central Service in Munich.

Replacing the Diplexer ZVA-ZD110 (ZVA110)

N.B.: In case of defective Diplexer110 please contact the Central Service in Munich.

Replacing a Converter ZVA-Z75 to ZVA-Z500

N.B.: In case of defective Converter ZVA-Zxx please contact the Central Service in Munich.

Replacing the Reflectometer Fan

(See Chapter 5, Spare Parts List, Item 100, 190 and drawings 1145.1110, 1145.4177, 1145.4283, 1302.5621)

ZVA8 and ZVA24 only:

- Remove the reflectometer (see chapter **Replacing a Reflectometer RMxx A510 to A540**)

Replacing the fan

- Disconnect the fan cable at the reflectometer.
- Undo the 4 holding screws (110,194) and remove the fan.
- Insert the new fan (ZVA8: cable outlet to the outside, ZVA24: cable outlet to the inside).
- Screw back the 4 screws (110, 194) and washers (120, 130, 192, 193).

Reassembling the instrument

- Reinstall the reflectometer (see chapter Replacing a Reflectometer RMxx A510 to A540)
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Check that the fan is operating.
- Turn off the instrument again and disconnect from the mains.
- Fit the instrument base cover (297) and secure with 12 countersunk screws (299).
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Reconnect the mains cable, turn on at the mains switch. The instrument is now in the standby mode.

ZVA40, ZVA50 and ZVA67 only:

- Remove the cover plate (260) undoing 12 screws (261) and 4 screws (212)
- Remove blower attachement (210) undoing 2 screws (211)

Replacing the fan

- Disconnect the fan cable at the reflectometer.
- Remove the fan.
- Insert the new fan (cable outlet to the inside of the instrument) and cut the rubber pins (see 1302.5621).
- Connect the fan cable to the reflectometer and reinstall the blower attachement (210).

Reassembling the instrument

- Reinstall the cover plate (260)
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Check that the fan is operating.
- Turn off the instrument again and disconnect from the mains.
- Fit the instrument base cover (297) and secure with 12 countersunk screws (299).
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Reconnect the mains cable, turn on at the mains switch. The instrument is now in the standby mode.

Replacing Network Controller Board A130, A140

(See Chapter 5, Spare Parts List, Items 100, 105 and drawing 1145.1010)

The board is in the upper section of the instrument.

Opening the instrument and removing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Lift off the instrument top cover (296) after undoing the screws (298).
- Extract the network controller using the ejector lever

Fitting the board and reassembling the instrument

- Fit the new board in the instrument.
- Refit the top instrument cover (296) with screws (298).
- Slide the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the receiver correction data (see **Recording Correction Values**).
- Perform factory system error calibration (see **Factory System Error Calibration**).
- Align the DC inputs (see **Aligning the DC Inputs**).

Replacing Synthesizer Board A150, A160

(See Chapter 5, Spare Parts List, Items 110, 112, 113, 115 and drawing 1145.1110)

The board is located in the upper section of the instrument.

N.B.: *Synthesizers with part numbers 1145.xxxx or 1300.xxxx are no longer available. In case of defect please contact the Central Service in Munich.*

Opening the instrument and removing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Lift off the instrument top cover (296) after undoing the screws (298).
- Extract the synthesizer with the ejector lever.

Installing the board and reassembling the instrument

- Insert the new board into the instrument.
- Refit the instrument top cover (296) securing with the screws (298).
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Install firmware update, if necessary (version ≥ 1.78).
- Install synthesizer mapping (see Correction Value Recording)
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]
- Record the generator and receiver correction data (see **Correction Value Recording**).
- Perform factory system error calibration (see **Factory System Error Calibration**).

Replacing Frequency Reference Board A100

(See Chapter 5, Spare Parts List, Item 120 and drawings 1145.1110, 1164.1770)

Opening the instrument and replacing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Lift off the instrument top cover (296) after undoing the screws (298).
- Extract the frequency reference board (120).

Installing the board and reassembling the instrument

- Insert the new board into the instrument
- Refit the instrument top cover (296) with the screws (298).
- Push the enclosure (400) back on and screw the 4 rear-panel feet (460) into position.
- Connect the mains cable, turn on at the mains switch and press the ON key.
- Select Service Level 2 (see Service Functions).
- When the instrument has been started, check the protocol file for errors:
  [INFO : Error Log]

Converting R&S ZVA24(40) 4Ports to R&S ZVA24(40) 4Ports with four phasesynchronized sources **(Model 28 or 48)**

(See Chapter 5, drawings 1145.1110, 1145.1310)

Use Conversion Kit ZVA24-U5 or ZVA40-U5 with installation instruction.

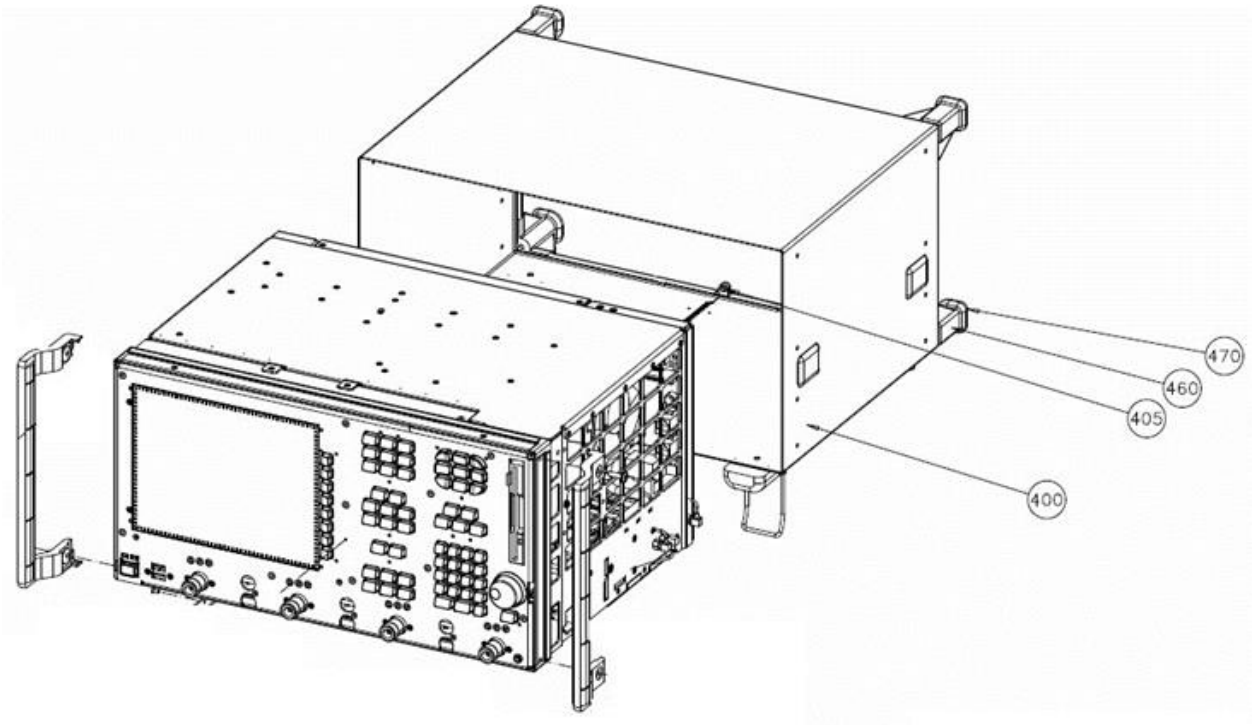
- Open the instrument and remove the reflectometers (see chapter **Replacing a Reflectometer RMxx A510 to A540**).
- Remove the synthesizer boards.
- Mount the new RF cables.
- Insert the new synthesizer boards from the conversion kit (for positions see installation instruction).

N.B.: *The C. I. of the Frequency Reference Board must be 11.00 at least. If it is lower the board must also be changed.*

Assembly Instructions for R&S ZVAB-B14

Opening the instrument and installing the board

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and the clamp (405) and pull off the enclosure (400) backwards.

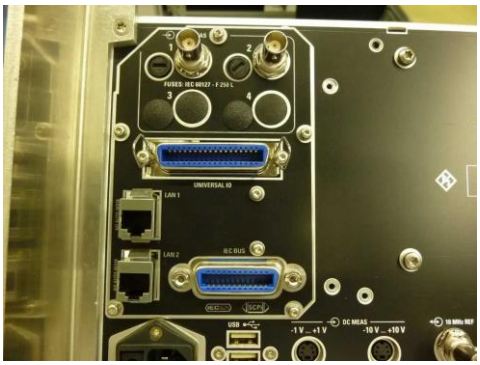


- Remove rear panel and replace by enclosed one if necessary (photo: A1.1, A1.2)



A1.1 (Rear Panel Version 1)

- Screw-fasten cable W245 (black) 1305.6335.00 and cable clamp. Cable clamp and shielding need to have contact to rear panel (photo:A1.2, A2, A3)



A1.2 Rear Panel Version 2)



A2



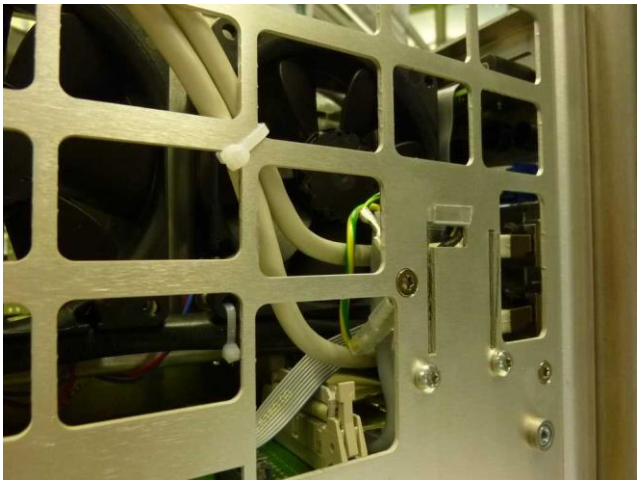
A3

- Remount Rear Panel

- Fasten cable W245 (black) 1305.6335.00 to the fan and fix in place with cable binder (photo: A4, A5, A6)



A4



A5



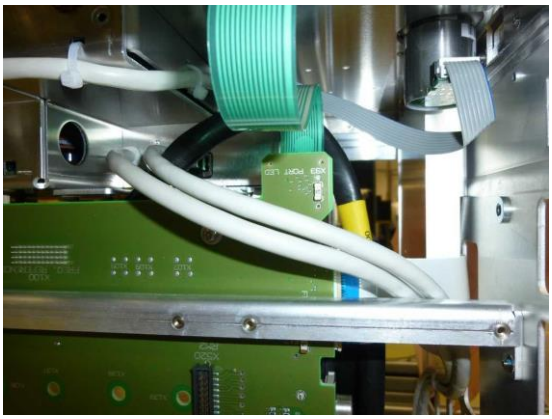
A6

Disassembly of test set

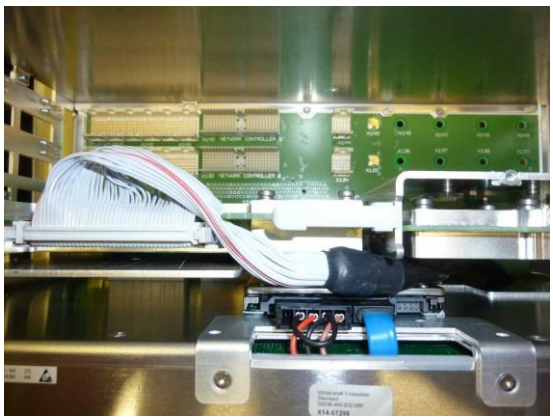
- Remove R&S ZVA24 coupler port 2 if attenuator and B16 are installed.
- Remove R&S ZVA8 reflectometer port 2
- Remove R&S ZVA40/50/67 coupler port 2 if attenuator and B16 are installed.
- Feed cable W245 (black) 1305.6335.00 through at the opening near motherboard (photo: A7, A8) und push it up. Plug universal interface board into the slot and connect it with cable W245 1305.6335.00 (photo: A9).



A7



A8



A9

- Mount enclosure (follow the instructions in section 2.1 in reverse order).
- Activate the Option ZVAB-B14 with the servicetool.
  The instrument must be completely calibrated via servicetool. Afterwards it has to be completely measured with the UCS. For the option ZVAB-B14, the ZVAB-testadapter (5007.6929.02) is necessary.

Troubleshooting

The instructions in this manual describe troubleshooting down to the board level. Any defective boards can then be replaced and the instrument put back into operation. A selftest which checks the board diagnostic voltages and displays limit violations is provided to facilitate troubleshooting and diagnosis.

We recommend that you return your instrument to the technical specialists at an R&S service facility for board replacement and any further repairs that may be needed.

NOTICE

Risk of damage to the boards

Do not insert or remove boards that are still live.

Avoid causing shorts when measuring voltages.

The ZVA has the following facilities to simplify diagnosis:

- Selftest
- Service functions

N.B. *The first thing to do if you encounter any problems is to check if any connection (cables, edge connectors etc.) are damaged or even incorrectly inserted.*

Test Equipment and Accessories

Item.	Instrument type	Recommended features	Recommended model	R&S Order No.	Qty.
1	DC meter		URE	0350.5315.02	1
2	Power supply	0 to 10 V			
3	Spectrum analyzer		FSUxx		1
4	Power meter (if FSU50 or FSU67 not available)		NRP + Sensor		1
4	Power sensor	10 MHz to 67 GHz	NRP-Z57	1171.8401.02	1
7	Test cable	Test cable 2.92 mm (m) to 2.92mm (f)	R&S ZV-Z195	1306.4536.24	1
7	Test cable	Test cable 1.85 mm (m) to 1.85mm (f)	R&S ZV-Z196	1306.4559.24	1
6	Adapter cable	1 m long SMP male to SMA male	-	1129.8259.00	1
7	Adapter cable	0.5 m long SMP male to SMP male	-	1129.8265.00	1
8	SMA cable	0.5 m long SMA male to SMA male	-	1142.5895.00	2
9	SMA cable	1 m long SMA male to SMA male	-	1142.5889.00	2
10	BNC cable	1 m to 2 m long BNC male to BNC male	-	e.g. 1100.8850.00	1
11	Adapter	SMA female to N male	-	4012.5837.00	2
12	Adapter	N male to BNC female	-	0118.2812.00	1
13	Termination	SMA termination. 50 Ω male	-	0249.7823.00	3
14	Calibration kit	1.85mm, 50 Ω. DC to 67 GHz.	ZV-Z218	5011.6571.02	1
15	SMP adapter	SMP female to SMP female	-	1093.6869.00	1
16	Adapter board	Extension 150 mm high, 48 pins, 2 mm pitch	-	1100.3542.02	1
17	Conn. Cables for DC Inputs	4-pin mini-DIN plug	ZV-Z71	1164.1005.02	1
18	Cable tool		Rosenberger 11W 101-000		1

Troubleshooting - Power-up Problems

- **Fault: It is not possible to turn on the ZVA.**

Action	Cause of fault / remedy
Check mains switch on the rear panel ⇓ Check LED is yellow (standby) ⇓	Mains switch OFF: Turn on at mains switch. LED does not come on: ➢ Measure voltage at X92.C23 (Front module controller): Nom. value: +13.5 V ± 1V Nom. value reached: Fault in key pad or controller. No voltage: Power supply defective or short to12 V standby.
Turn on instrument. Check LED is green ⇓	LED does not come on: ➢ Measure the PWR-ON signal at power supply X92.B24: < 1V for ON Voltage > 1V: Key pad or controller defective.

- **Fault: Fan not working.**

Action	Cause of fault / remedy
Check voltage at connector: X35, X36, X37 pin 3: nom. value 12V ⇓ Select Service Function Set Service Level 1 Set Service Function 2.5.0.11.1.5 (max. fan speed) Check voltage at connector: X35, X36, X37 pin 3: nom. value 11.9V	If no voltage can be measured the fan fuse may be defective (F12, F62, F63)

Troubleshooting Boot Problems

- **Fault: ZVA does not start the measurement application.**

The first action the ZVA performs after power-up is booting BIOS for the processor. When the processor has been successfully initialised, the Windows XP start-up procedure begins. Then, the measurement application is loaded as an autostart program.

If there are errors during the boot phase, messages indicate possible defects.

The message “No System Disk or Disk error…” indicates that the hard disk data is corrupt. If this is the case, replace the hard disk.

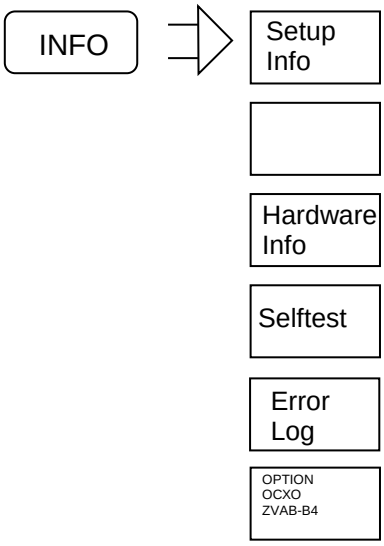
If the operating system on the hard disk has been corrupted and so cannot be loaded correctly, Windows XP outputs a “blue screen”.
This screen summarizes all the key information about the internal status of the processor.

Troubleshooting - Boot Error

If the message below appears on the screen when the boot procedure has been completed,

Warning: Boot error occurred. For details browse Error Log file.

the cause of the error can be found in the Error-Log file.



Press the *Error Log* softkey.

The results are displayed on the screen.

Cause of error: Data cannot be read from one or more boards.

When the instrument is booted, all the calibration data that is required must be written to the processor's RAM.
When the NWA application is started, the entry on the hard disk is compared with the Eprom data on the board. If the data matches, the data is loaded from the hard disk into RAM. If there is not a match, the Eprom data is written to the hard disk and then loaded into RAM.
If the data at the specified address cannot be read, a check is made in Config.ini to check if the board in question should be present. If so, the board is simulated (i.e. if this board is present and is functioning physically, the instrument will function) and an entry is made in the ErrorLog file.
If a board must always be physically present, (frequency reference, synthesizer1, NetworkControler1, reflectometer1, reflectometer2), an error message is output.

See: Troubleshooting with the Selftest.

Troubleshooting with the Selftest

The selftest is used to check supply voltages to the boards, including voltages generated on the boards themselves. On the frequency reference board, two clock signals (128 MHz and ADC-CLK) are also measured.

Starting the selftest:

- Select Service Level 2 (see Service Functions) – this means that the temperature sensor readings are displayed and tighter voltage tolerances used.
- Call the selftest in the INFO menu:

Start the selftest with the *Selftest* softkey.

The selftest results are displayed on the screen.

In the selftest result-table, an abbreviation is used for every board designation:

Fr	Frequency reference
Nd1	Network controller1, digital section
Nd2	Network controller2, digital section (only 4-oort instruments)
Sy1/DDSCON	Synthesizer1
Sy1/DDSCON	Synthesizer2(only 3-port and 4-port instruments)
Rm1	Reflectometer port1
Rm2	Reflectometer port2
Rm3	Reflectometer port3 (applies only to 3-port and 4-port-instruments)
Rm4	Reflectometer port4 (applies only to 4-port instruments)

Total selftest status: user mode ---PASSED---



Instrument Type: ZVA8 with 4 Ports
Part Number: 1145.1110k10
Product ID: 01.00
Serial Number: 100124
IP Addresses
IP Address: 0.0.0.0&nbs; Subnet Mask: 0.0.0.0
IP Address: 0.0.0.0 Subnet Mask: 0.0.0.0
IP Address: 127.0.0.1 (Localhost) Subnet Mask: 255.0.0.0
SyMapping: ZVA8_P4
LO Divider: is not active

Date: 05/28/04
Time: 14:52:57

Voltages Fr

Test description	Min	Max	Result	State
+10V_A SUPPLY	1.550V	1.950V	1.756V	PASSED
+5V_A SUPPLY	1.400V	1.800V	1.560V	PASSED
+5V_REF	1.400V	1.800V	1.560V	PASSED
+12V_STB	1.900V	2.300V	2.112V	PASSED
128_VCXO	0.800V	4.000V	2.696V	PASSED
ADC_CLK	0.800V	4.000V	2.060V	PASSED
-10V_A SUPPLY	1.900V	2.300V	2.128V	PASSED
-5V_A SUPPLY	2.100V	2.500V	2.264V	PASSED

Voltages Nd1

Test description	Min	Max	Result	State
+5VA_ADC	2.250V	2.750V	2.488V	PASSED
+2.5VD_MDD1	1.125V	1.375V	1.264V	PASSED
+2.5VD_MDD2	1.125V	1.375V	1.264V	PASSED
+1.5VD_FCON	0.675V	0.825V	0.752V	PASSED
-5VA_ADC	2.250V	2.750V	2.464V	PASSED
DGND1	0.000V	0.200V	0.000V	PASSED
DGND2	0.000V	0.200V	0.000V	PASSED
AGND	0.000V	0.200V	0.000V	PASSED

Voltages Nd2

Test description	Min	Max	Result	State
+5VA_ADC	2.250V	2.750V	2.484V	PASSED
+2.5VD_MDD1	1.125V	1.375V	1.260V	PASSED
+2.5VD_MDD2	1.125V	1.375V	1.260V	PASSED
+1.5VD_FCON	0.675V	0.825V	0.752V	PASSED
-5VA_ADC	2.250V	2.750V	2.460V	PASSED
DGND1	0.000V	0.200V	0.000V	PASSED
DGND2	0.000V	0.200V	0.000V	PASSED
AGND	0.000V	0.200V	0.000V	PASSED

Voltages Sy1\DDSCON

Test description	Min	Max	Result	State
+10V_A SUPPLY	1.500V	2.000V	1.752V	PASSED
+5V_A SUPPLY	1.300V	1.800V	1.560V	PASSED
+5V_REF	1.300V	1.800V	1.568V	PASSED
+7V_A SUPPLY	1.400V	1.900V	1.628V	PASSED

Voltages Sy2\DDSCON

Test description	Min	Max	Result	State
+10V_A SUPPLY	1.500V	2.000V	1.752V	PASSED
+5V_A SUPPLY	1.300V	1.800V	1.560V	PASSED
+5V_REF	1.300V	1.800V	1.564V	PASSED
+7V_A SUPPLY	1.400V	1.900V	1.616V	PASSED

Voltages Rm1

Test description	Min	Max	Result	State
GND	0.000V	0.200V	0.000V	PASSED
GND	0.000V	0.200V	0.000V	PASSED
+5V SUPPLY	2.300V	2.700V	2.496V	PASSED
+10.5VA SUPPLY	2.300V	2.800V	2.564V	PASSED
+10.5VB SUPPLY	2.300V	2.800V	2.564V	PASSED
+12V FAN	2.000V	2.600V	2.216V	PASSED
+12V SUPPLY	2.000V	2.600V	2.204V	PASSED
-12V SUPPLY	1.600V	2.000V	1.796V	PASSED

Voltages Rm2

Test description	Min	Max	Result	State
GND	0.000V	0.200V	0.000V	PASSED
GND	0.000V	0.200V	0.000V	PASSED
+5V SUPPLY	2.300V	2.700V	2.500V	PASSED
+10.5VA SUPPLY	2.300V	2.800V	2.576V	PASSED
+10.5VB SUPPLY	2.300V	2.800V	2.592V	PASSED
+12V FAN	2.000V	2.600V	2.204V	PASSED
+12V SUPPLY	2.000V	2.600V	2.204V	PASSED
-12V SUPPLY	1.600V	2.000V	1.796V	PASSED

Voltages Rm3

Test description	Min	Max	Result	State
GND	0.000V	0.200V	0.000V	PASSED
GND	0.000V	0.200V	0.000V	PASSED
+5V SUPPLY	2.300V	2.700V	2.500V	PASSED
+10.5VA SUPPLY	2.300V	2.800V	2.584V	PASSED
+10.5VB SUPPLY	2.300V	2.800V	2.600V	PASSED
+12V FAN	2.000V	2.600V	2.196V	PASSED
+12V SUPPLY	2.000V	2.600V	2.220V	PASSED
-12V SUPPLY	1.600V	2.000V	1.800V	PASSED

Voltages Rm4

Test description	Min	Max	Result	State
GND	0.000V	0.200V	0.000V	PASSED
GND	0.000V	0.200V	0.000V	PASSED
+5V SUPPLY	2.300V	2.700V	2.492V	PASSED
+10.5VA SUPPLY	2.300V	2.800V	2.604V	PASSED
+10.5VB SUPPLY	2.300V	2.800V	2.568V	PASSED
+12V FAN	2.000V	2.600V	2.216V	PASSED
+12V SUPPLY	2.000V	2.600V	2.136V	PASSED
-12V SUPPLY	1.600V	2.000V	1.804V	PASSED

Voltages Fr
Voltages Nd1
Voltages Nd2
Voltages Sy1\DDSCON
Voltages Sy2\DDSCON
Voltages Rm1
Voltages Rm2
Voltages Rm3
Voltages Rm4
Home

Interpreting the Results of the Selftest

Negative voltages are transformed into positive voltages by means of a positive voltage and a resistor network because the A/D converters that are used can handle only positive voltages. This is why an acceptable negative voltage may elicit a FAIL because the associated positive voltage is out of tolerance.

The voltages supplied by the power supply are not checked directly. The failure of a power supply voltage can, however, be deduced from FAILs of certain voltages on several boards. The following Table shows how the board-oriented voltages checked during the selftest are derived from the power supply voltages.

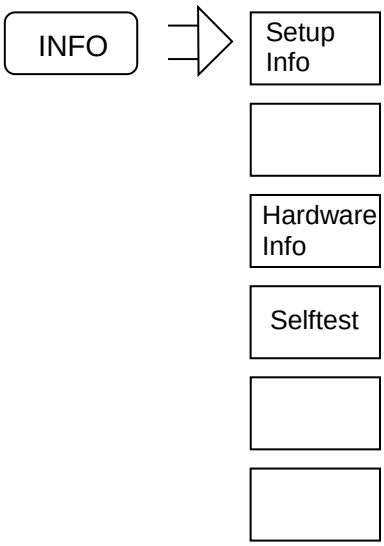
Power supply	+3.4 V	+5.2 V	+6.5 V	+8.25 V	+12.25 V	-6.5 V	-12.25 V
Fr			+5V_A +5V_REF		+10V_A +12V_STB	-5V_A	-10V_A
Nd	+2.5VD_MDD1 +2.5VD_MDD2 +1.5VD_FCON		+5VA_ADC			-5VA_ADC	
Sy			+5V_A +5V_REF		+7V_A +10V_A		
Rm			+5V		+10.5VA +10.5VB +12V +12V FAN		-12V

If the voltages listed in a column are all FAIL, the corresponding power supply voltage has failed or is out-of-tolerance. The power supply must then be replaced.
On the motherboard, there is a separate fuse for each board and for each of the power supply voltages used on the board. If a FAIL message is output, the first action to take is to check the fuse. The LO divider board must be removed before the fuses on the motherboard can be checked (See Chapter Board Replacement).

If an internal board voltage is out-of-tolerance, even though the power supply voltages used on the board are OK, the board must be replaced.

Checking the Temperature Sensors

Select Service Level 2 (see Service Functions).



When the *Hardware Info* softkey is pressed information about the installed hardware, the results of temperature measurements and … are displayed.

Temperature Info

Current Temperature Readings

Component	Sensor	Temperature	Sensor	Temperature	Sensor	Temperature
Motherboard	Near NC:	33.75°C	Near SY:	34.75°C	Near PS:	38.50°C
Netcon 1	Analog:	40.25°C	Digital:	49.75°C		
Netcon 2	Analog:	-----	Digital:	-----		
Reflectometer 1	Generator:	38.50°C				
Reflectometer 2	Generator:	36.00°C				
Reflectometer 3	Generator:	38.25°C				
Reflectometer 4	Generator:	39.25°C				
Synthesizer 1	Synth. 1:					
Synthesizer 2	Synth. 2:					

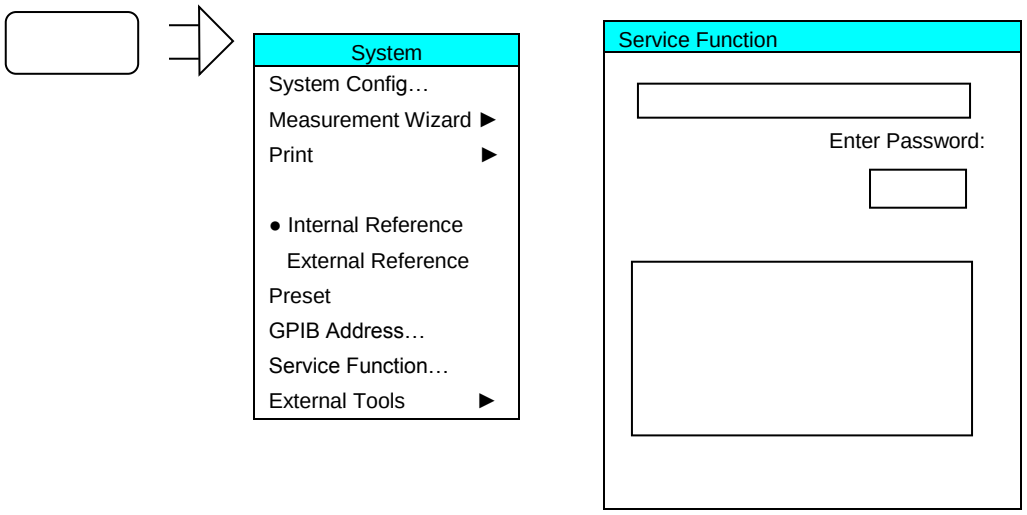
Highly elevated temperature values indicate a fan failure.

Service Functions

The service functions allow you to examine particular circuit sections on specific boards or to make well-defined settings that would normally change automatically according to the state of the instrument (e.g. the IF). There are a number of service functions which, if used incorrectly, could cause the instrument to malfunction. Usually, these functions are disabled. They are enabled only after a code number (PASSWORD) has been entered.

There are three different service levels:

Service level	Password
0	No password necessary
1	894129
2	30473035



Service Function Structure

Group . Main ID . Sub ID . Function . Address . Data

Group	Applies to
1	API
2	HW (boards)

Boards Main ID	Boards Sub ID
0: All boards	0
1: Network controller1	0: All board 1: PCI 2: ND 3: NA
2: Network controller2	
5: Motherboard	0:
9: Frequency reference	0:
11: Synthesizer1	0: All board 1: SY1 2: SY2 3: SY3 4: SY4
12: Synthesizer2	
21: Reflectometer1	0: all board 1: GEN 2: REC
22: Reflectometer 2	
23: Reflectometer 3	
24: Reflectometer 4	

Group 1:
General Functions

Functions	Service function	**Data**	**Serv. Lev.**
Enables/disables the peak detector and RMS detector independently of the model	1.0.0.1.X	0 → Use disabled 1 → Use enabled	2
Enable/disables the arbitrary mode settings in the port configuration (e.g. LowNoise/ LowDistortion) independently of the model	1.0.0.5.X	0 → Use disabled 1 → Use enabled	2
Activates or deactivates the setting of measured values to default values when status messages are issued due to HW faults	1.1.0.2.X	0 → Deactivate default values 1 → Activate default values	0
Activates or deactivates factory calibration for the active setup	1.1.0.3.X	0 → Deactivate factory calibration 1 → Activate factory calibration	0

Group 2:
General Functions

Functions	**Service function**	**Data**	**Serv. Lev.**
Suppress error-message box	2.0.0.0.X	X=0 → MSG box is output (default state) X=1 → MSG box is suppressed (error is nevertheless entered in the log file)	1
Selftest all boards	2.0.0.5.0.0		0, 1 or 2

Network controller

Functions	**Service function**	**Data**	**Serv. lev.**
ND1:Read Temp (addr.:68)	2.1.2.3		1
ND2:Read Temp (addr.:68)	2.2.2.3		1
ND[1..2] Selftest	2.[1-2].2.5.0.0		0, 1 or 2
NA1:Read Temp (addr.:69)	2.1.3.3		1
NA2:Read Temp (addr.:69)	2.2.3.3		1

Motherboard

Functions	Service function	Data	Serv. lev.
MB: Fan manual	2.5.0.11.1.X	X= 0 to 5	1
MB: Fan automatic	2.5.0.11.0		1
MB:Read Temp Front (NC) (addr.:205)	2.5.0.3.1		1
MB: Read Temp Rear (SY) (addr.: 204)	2.5.0.3.2		1
MB: Read Temp Back (PS) (addr.: 202)	2.5.0.3.3		1

Frequency reference

Functions	Service function	Data	Serv.lev.
FR Selftest	2.9.0.5.0.0		0, 1 or 2

Reflectometers

Functions	Service function	Data	Serv.lev.
RM[1-4]: Fan manual	2.[21-24].0.11.X	X = 1 to 7	1
RM[1-4]:Fan automatic	2.[21-24].0.11.0		1
RM[1-4]: Read Temp Gen	2.[21-24].1.3		1
RM[1-4]: Read Temp Rec	2.[21-24].2.3		1
RM[1-4]: Selftest	2.[21-24].0.5.X	X = 0 to 4	1
RM[1-4]: Read OVL	2.[21-24].0.12		1
RM[1-4]: OVL Reset	2.[21-24].0.13		1
RM[1-4] Generator Selftest	2.[21-24].1.5.0.0		0, 1 or 2
RM[1-4]: IF shift	2.[21-24].2.18.IF	IF in Hz 0 = IF via shift table	0

Determining which Boards are defective

The table below lists boards that are probably defective based on the faults that occurred during the performance test.

	Defective board	
Problem with:	**Probable**	**Also possible**
Frequency accuracy	Frequency reference	
SSB phase-noise Only one port All ports	Synthesizer1 Frequency reference	
Level accuracy Only one port All ports	Reflectometer associated with defective port Synthesizer1	
Max. output level Only one port All ports	Reflectometer associated with defective port Synthesizer1	
Absolute accuracy wave quantity a	Reflectometer associated with defective port	
Level linearity	Reflectometer associated with defective port	
Harmonic ratio	Reflectometer associated with defective port	Synthesizer1
Spurious suppression	Synthesizer1	
Matching portx	Bridge unit of reflectometer associated with the defective port	
Directivity portx	Bridge unit of reflectometer associated with the defective port	
Receiver absolute accuracy Port 1, 2 Port 3, 4 All ports	Reflectometer associated with defective port Reflectometer associated with defective port Synthesizer1	Network controller1 Network controller2 Frequency reference
Receiver linearity for high levels Portx All ports	Reflectometer associated with defective port LO divider	LO divider Synthesizer2
Receiver linearity for low levels Port1, 2 Port3, 4	Network controller1 Network controller2	
Receiver noise level portx	Reflectometer associated with defective port	Synthesizer2 or synth.1 for 2-port models
Dynamic range portx	Reflectometer associated with defective port (see Circular 10028)	Synthesizer2 or. synth.1 for 2-port models
DC measurement input1V	Motherboard	Network controller1
DC measurement input 10V	Motherboard	Network controller1
Frequency reference input/output	Frequency reference	
Accuracy on S-parameter measurements depending on meas. bandwidth	See Circular 10029	

A board test should be performed before the board that has been deduced to be defective is replaced.

Board Test

When boards are being tested, internal sources are used whenever possible. This means that it is always assumed that the downstream board in the signal path is OK. If a clear fault is not present, the order of the board tests given below should always be followed.

The inputs and outputs of the boards to be tested can be accessed via cables in the lower section of the instrument (except the frequency reference board).

Opening the instrument

(See Chapter 5, drawing1145.1110)

- Turn off the instrument and disconnect from the mains, screw off the 4 rear-panel feet (460) and pull off the enclosure (400) backwards.
- Remove the instrument base cover (297) after undoing the screws (299).

Only when testing the frequency reference board:

- Lift off the instrument top cover (296) after undoing the screws (298).

Testing the frequency reference board

(see **Test Equipment**)

- Remove the board from the instrument.
- Reinsert board and extension card.
- Connect the output to be tested to the spectrum analyzer using an adapter cable and adapter SMA-N.
- Set the frequencies listed in the table.
- Check signals according to following table.

Signal	Connector	Frequency	Nom. level	Setting
NA1_AD_CLK	X103	80 MHz	10 dBm ±1dB	
NA2_AD_CLK	X104	80 MHz	10 dBm ±1dB	
SY1_REF	X105	128 MHz	10 dBm ±1dB	
SY2_REF	X106	128 MHz	10 dBm ±1dB	
REF_10_OUTIN	X107	10 MHz	6 dBm ±1dB	Menu/System/Internal Reference

The board must be replaced if the signal is more than 2 dB below the stated nominal level.

- Connect the frequency reference output of the spectrum analyzer to X107 (REF_10_OUTIN) using an adapter cable and adapter SMA-N.
- Connect X105 or X106 (SY1_REF or. SY2_REF) to the spectrum analyzer using an adapter cable and adapter SMA-N.
- The 128 MHz signal's frequency must precisely equal its nominal frequency.

If the frequency differs in any way (e.g. 128.001 MHz), replace the board.

Testing the Synthesizer Board

N.B.: Synthesizers with part numbers 1145.xxxx or 1300.xxxx are no longer available. In case of defect please contact the Central Service in Munich.

- Disconnect source (or local) cable at the reflectometer (1 to 4, depending on which synthesizer section is to be tested).
- Connect the end of the cable to the spectrum analyzer input via an adapter cable and adapter SMA-N.

N.B.: Bend the source cable as little as possible*, if necessary secure adapter cable with adhesive tape.*

- Enter service function 2.21.2.18.17512345 (IF = 17.512345 MHz).
- [**Mode** : Spurious Avoidance : LO > RF]
- Set the frequencies listed in the table on the ZVA and check the values.
  [**Sweep** : Sweep Type : CW Mode : CW Frequency : **…Hz**]
  [**Sweep** : Single : **Restart**]

Synthesizer-LS 1305.5300.xx

Source Mod. 02 and Mod. 20

Frequency (ZVA setting)	**Source Level (**Mod. 02)	**2nd harmonic**	**3rd harmonic**
300 kHz	+3 dBm to -5 dBm	< -27 dBc	< -30 dBc
100 MHz	+3 dBm to -5 dBm	< -27 dBc	< -30 dBc
1 GHz	+3 dBm to -5 dBm	< -27 dBc	< -30 dBc
2 GHz	+3 dBm to -5 dBm	< -27 dBc	< -30 dBc
3 GHz	+3 dBm to -5 dBm	< -20 dBc	< -30 dBc
4 GHz	+3 dBm to -5 dBm	< -20 dBc	< -30 dBc
6 GHz	+3 dBm to -7 dBm	< -27 dBc	< -30 dBc
8 GHz	+3 dBm to -7 dBm	< -27 dBc	< -30 dBc

Isolation of source switch1 to 4
ZVA frequency 8 GHz

Port no.	**Port setting**	**Source output**	**Isolation**
1	Port1 inactive Port2 active	X168 X169	-90 dBc ±5 dB
2	Port1 active Port2 inactive	X168 X169	-90 dBc ±5 dB

Local Mod. 02

Frequency (ZVA setting)	**LO-Frequency** (Spec analyzer setting)	**Local Level (**Mod. 02)	**2nd harmonic**	**3rd harmonic**
300 kHz	17.812345 MHz	+2 dBm to -15 dBm	< -5 dBc	< +2 dBc
100 MHz	117.512345 MHz	+2 dBm to -15 dBm	< -5 dBc	< +2 dBc
1 GHz	1017.512345 MHz	+2 dBm to -4 dBm	< -5 dBc	< -5 dBc
2 GHz	2017.512345 MHz	+2 dBm to -4 dBm	< -5 dBc	< -5 dBc
3 GHz	3017.512345 MHz	+2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
3.8 GHz	3817.512345 MHz	+2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
4 GHz	4017.512345 MHz	+2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
5.2 GHz	5217.512345 MHz	+2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
5.3 GHz	5317.512345 MHz	+2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
7.2 GHz	7217.512345 MHz	+2 dBm to -5 dBm	< -5 dBc	< -5 dBc
8 GHz	8017.512345 MHz	+2 dBm to -5 dBm	< -5 dBc	< -5 dBc

Local Mod. 20

Frequency (ZVA setting)	**LO-Frequency** (Spec analyzer setting)	**Local Level (**Mod. 24)	**2nd harmonic**	**3rd harmonic**
10 MHz	27.512345 MHz	-3 dBm to -20 dBm	< -5 dBc	< +2 dBc
100 MHz	117.512345 MHz	-3 dBm to -20 dBm	< -5 dBc	< +2 dBc
1 GHz	1017.512345 MHz	-3 dBm to -9 dBm	< -5 dBc	< -5 dBc
2 GHz	2017.512345 MHz	-3 dBm to -9 dBm	< -5 dBc	< -5 dBc
3 GHz	3017.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
3.8 GHz	3817.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
4 GHz	4017.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
5.2 GHz	5217.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
5.3 GHz	5317.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
7.2 GHz	7217.512345 MHz	-3 dBm to -10 dBm	< -5 dBc	< -5 dBc
8 GHz	8017.512345 MHz	-3 dBm to -10 dBm	< -5 dBc	< -5 dBc

Synthesizer-DS 1305.5539.xx

Source 1 to 4 (set port1 to 4 active)

Frequency (ZVA setting)	**Source Level**	**2nd harmonic**	**3rd harmonic**
300 kHz	+3 dBm to -5 dBm	< -27 dBc	< -30 dBc
100 MHz	+3 dBm to -5 dBm	< -27 dBc	< -30 dBc
1 GHz	+3 dBm to -5 dBm	< -27 dBc	< -30 dBc
2 GHz	+3 dBm to -5 dBm	< -27 dBc	< -30 dBc
3 GHz	+3 dBm to -5 dBm	< -20 dBc	< -30 dBc
4 GHz	+3 dBm to -5 dBm	< -20 dBc	< -30 dBc
6 GHz	+3 dBm to -7 dBm	< -27 dBc	< -30 dBc
8 GHz	+3 dBm to -7 dBm	< -27 dBc	< -30 dBc

Isolation of source switch1 to 4
ZVA frequency 8 GHz

Port no.	**Port setting**	**Source output**	**Isolation**
1	Port1 inactive	X165	-90 dBc ±5 dB
	Port2 active	X166	
2	Port1 active	X165	
	Port2 inactive	X166	-90 dBc ±5 dB
3	Port3 inactive	X168	-90 dBc ±5 dB
	Port4 active	X169	
4	Port3 active	X168	
	Port4 inactive	X169	-90 dBc ±5 dB

The cable loss must also be taken into account at the stated levels. For the specified cable it is 0.25 dB/GHz (0.5 m) 0.5 dB/GHz (1 m).

The board must be replaced if the level is more than 2 dB below the specified value or the other values are more than 2 dB above their specified value.

Synthesizer-LO 1305.5597.02

Local 1 to 4 (set port1 to 4 active)

Frequency (ZVA setting)	**LO-Frequency** (Spec analyzer setting)	**Local Level**	**2nd harmonic**	**3rd harmonic**
300 kHz	17.812345 MHz	2 dBm to -15 dBm	< -5 dBc	< 2 dBc
100 MHz	117.512345 MHz	2 dBm to -15 dBm	< -5 dBc	< 2 dBc
1 GHz	1017.512345 MHz	2 dBm to -4 dBm	< -5 dBc	< -5 dBc
2 GHz	2017.512345 MHz	2 dBm to -4 dBm	< -5 dBc	< -5 dBc
3 GHz	3017.512345 MHz	2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
3.8 GHz	3817.512345 MHz	2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
4 GHz	4017.512345 MHz	2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
5.2 GHz	5217.512345 MHz	2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
5.5 GHz	5517.512345 MHz	2 dBm to -1.5 dBm	< -5 dBc	< -5 dBc
7.2 GHz	7217.512345 MHz	3 dBm to -4 dBm	< -5 dBc	---
8 GHz	8017.512345 MHz	3 dBm to -4 dBm	< -5 dBc	---

Synthesizer-LO 1305.5597.20

Local 1 to 4 (set port1 to 4 active)

Frequency (ZVA setting)	**LO-Frequency** (Spec analyzer setting)	**Local Level**	**2nd harmonic**	**3rd harmonic**
300 kHz	17.812345 MHz	-3 dBm to -20 dBm	< -5 dBc	< 2 dBc
100 MHz	117.512345 MHz	-3 dBm to -20 dBm	< -5 dBc	< 2 dBc
1 GHz	1017.512345 MHz	-3 dBm to -9 dBm	< -5 dBc	< -5 dBc
2 GHz	2017.512345 MHz	-3 dBm to -9 dBm	< -5 dBc	< -5 dBc
3 GHz	3017.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
3.8 GHz	3817.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
4 GHz	4017.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
5.2 GHz	5217.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
5.5 GHz	5517.512345 MHz	-3 dBm to -6.5 dBm	< -5 dBc	< -5 dBc
7.2 GHz	7217.512345 MHz	-3 dBm to -10 dBm	< -5 dBc	---
8 GHz	8017.512345 MHz	-3 dBm to -10 dBm	< -5 dBc	---

Synthesizer-12 SO

Frequency (ZVA setting)	**Source Level**	**2nd harmonic**	**3rd harmonic**
10 MHz	+5 dBm to -7 dBm	-----	-----
100 MHz	+5 dBm to -7 dBm	-----	-----
300 MHz	+5 dBm to -5 dBm	< -15 dBc	< -15 dBc
1 GHz	+5 dBm to -5 dBm	-----	-----
2 GHz	+5 dBm to -5 dBm	-----	-----
2.5 GHz	+5 dBm to -5 dBm	< -18 dBc	-----
3 GHz	+5 dBm to -5 dBm	-----	-----
4 GHz	+5 dBm to -5 dBm	-----	-----
6 GHz	+5 dBm to -5 dBm	-----	-----
8 GHz	+5 dBm to -5 dBm	-----	-----
10 GHz	+5 dBm to -5 dBm	-----	-----
12 GHz	+5 dBm to -5 dBm	-----	-----

Synthesizer-12 LO

Frequency (ZVA setting)	**LO-Frequency** (Spec analyzer setting)	**Source Level** **(**Mod. 02)
30 MHz	47.512345 MHz	+15 dBm to -7 dBm
100 MHz	117.512345 MHz	+15 dBm to -7 dBm
1 GHz	1.017512345 GHz	+15 dBm to -5 dBm
2 GHz	2.017512345 GHz	+15 dBm to -5 dBm
3 GHz	3.017512345 GHz	+15 dBm to -5 dBm
4 GHz	4.017512345 GHz	+15 dBm to -5 dBm
6 GHz	6.017512345 GHz	+15 dBm to -5 dBm
8 GHz	8.017512345 GHz	+15 dBm to -5 dBm
10 GHz	10.017512345 GHz	+15 dBm to -5 dBm
12 GHz	12.017512345 GHz	+15 dBm to -5 dBm

Synthesizer-12-4SO

Frequency (ZVA setting)	**Source Level**	**2nd harmonic**	**3rd harmonic**
10 MHz	+5 dBm to -7 dBm	-----	-----
100 MHz	+5 dBm to -7 dBm	-----	-----
300 MHz	+5 dBm to -5 dBm	< -15 dBc	< -15 dBc
1 GHz	+5 dBm to -5 dBm	-----	-----
2 GHz	+5 dBm to -5 dBm	-----	-----
2.5 GHz	+5 dBm to -5 dBm	< -18 dBc	-----
3 GHz	+5 dBm to -5 dBm	-----	-----
4 GHz	+5 dBm to -5 dBm	-----	-----
6 GHz	+5 dBm to -5 dBm	-----	-----
8 GHz	+5 dBm to -5 dBm	-----	-----
10 GHz	+5 dBm to -5 dBm	-----	-----
12 GHz	+5 dBm to -5 dBm	-----	-----

Synthesizer-12-4LO

Frequency (ZVA setting)	**LO-Frequency** (Spec analyzer setting)	**Source Level** **(**Mod. 02)
30 MHz	47.512345 MHz	+15 dBm to -10 dBm
100 MHz	117.512345 MHz	+15 dBm to -10 dBm
1 GHz	1.017512345 GHz	+15 dBm to -5 dBm
2 GHz	2.017512345 GHz	+15 dBm to -5 dBm
3 GHz	3.017512345 GHz	+15 dBm to -5 dBm
4 GHz	4.017512345 GHz	+15 dBm to -5 dBm
6 GHz	6.017512345 GHz	+15 dBm to -5 dBm
8 GHz	8.017512345 GHz	+15 dBm to -5 dBm
10 GHz	10.017512345 GHz	+15 dBm to -5 dBm
12 GHz	12.017512345 GHz	+15 dBm to -5 dBm

Testing the Reflectometer RM8

Generator levels

It is assumed that the synthesizer section (synthesizer1) associated with the reflectometer to be tested is OK.

- Loosen cable W514 (GEN -> Bridge unit) at both ends and screw off at the generator output GEN.

  Note:
  When loosening, support the cable with a 7mm spanner
- Connect the generator output to the spectrum analyzer using the SMA cables () and adapter SMA-N.
- Set the power to 8 dBm
- Set the ZVA to the CW sweep mode.
- Set the frequencies listed in the table.

Frequency	Level	2nd harmonic	3rd harmonic
300 kHz	16 dBm	---	---
50 MHz	16 dBm	< - 21 dBc	< - 21 dBc
1 GHz	16 dBm	< - 21 dBc	< - 21 dBc
3 GHz	16 dBm	< - 21 dBc	< - 21 dBc
6 GHz	16 dBm	< - 21 dBc	---
8 GHz	16 dBm	< - 21 dBc	---

With the stated levels, the cable loss must still be taken into account. For the specified cable it is 0.25 dB/GHz.

Receiver levels

The following is assumed:

- The LO synthesizer section (synthesizer1 mod. 04, synthesizer2) associated with the reflectometer to be tested is OK.
- The network controller associated with the reflectometer to be tested is OK.
- One reflectometer in the instrument is functioning.

- Loosen cable W515 (Bridge unit -> MEAS) and cable W518 (Bridge unit -> REF) at both ends and screw off at the MEAS and REF receiver inputs.

  N.B.: *When loosening, support the cable with a 7mm spanner*
- Connect the receiver input (MEAS or REF) to a functioning instrument port using an adapter cable and adapter SMA-N.
- Set the ZVA to the CW sweep mode.
- Set the frequencies and output levels for the port used for the measurement as indicated in the table and read off the level for the receiver to be tested (wave quantity ax or bx).

Frequency	Output level	Displayed level ax or bx
300 kHz	-20 dBm	0 dBm
50 MHz	-20 dBm	0 dBm
1 GHz	-20 dBm	0 dBm
3 GHz	-20 dBm	0 dBm
6 GHz	-20 dBm	0 dBm
8 GHz	-20 dBm	0 dBm

With the stated levels, the cable loss must still be taken into account. For the specified cable, it is 0.25 dB/GHz (0.5 m) or. 0.5 dB/GHz (1 m).

If the measured values are more than 3 dB below the levels and ratios list in the table, the board must be replaced.

Bridge unit levels

The following is assumed:

- One reflectometer in the instrument is OK.

Method 1:

The generator section of the associated reflectometer is OK (output level at the port meets specifications).

- Loosen cable W515 (Bridge unit -> MEAS) and cable W518 (Bridge unit -> REF) at both ends and disconnect at the bridge unit.

  N.B.: *When loosening, support the cable with a 7mm spanner*

- Connect the bridge unit output (MEAS = connector W515 or REF = connector W518) to a functioning port using the SMA cable and adapter SMA-N (measure wave quantity bx). Terminate the bridge unit output that is not used with an SMA termination.
- Screw the SHORT from a N-calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector.
- Select User Def Math : (lin Mag(Data) + (linMag(Mem2)) / 2 , activate Result is Wave Quantity
- Select Math = User Def
- Set the frequencies and levels listed in the table for the reflectometer associated with the bridge unit (port) and measure the level (wave quantity bx) at the port used for the measurement.

Frequency	Level	Output level MEAS	Output level REF
300 kHz	**0 dBm**	**-18 dBm**	**-32 dBm**
50 MHz	0 dBm	-18 dBm	-32 dBm
1 GHz	0 dBm	-18 dBm	-32 dBm
3 GHz	0 dBm	-18 dBm	-32 dBm
6 GHz	0 dBm	-18 dBm	-32 dBm
8 GHz	0 dBm	-18 dBm	-32 dBm

With the stated levels, the cable loss must still be taken into account. For the specified cable it is 0.25 dB/GHz.
If the measured values are more than 3 dB below the levels in the table, the board must be replaced.

Method 2:

The receive section of the associated reflectometer is OK.

- Loosen cable W514 (GEN -> Bridge unit) at both ends and screw off at the bridge unit.

  N.B.: *When loosening, support the cable with a 7mm spanner*
- Connect the bridge input (connector W514) to a functioning port using the SMA cable and SMA-N adapter.
- Screw the SHORT from a N-calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector.
- Select User Def Math : (lin Mag(Data) + (linMag(Mem2)) / 2 , activate Result is Wave Quantity
- Select Math = User Def
- Set the frequencies and levels listed in the table at the port used for the measurement and measure the level (wave quantity ax or bx) at the reflectometer associated with the bridge unit (port).

Frequency	Level	Level ax and bx
300 kHz	8 dBm	0 dBm
50 MHz	8 dBm	0 dBm
1 GHz	8 dBm	0 dBm
3 GHz	8 dBm	0 dBm
6 GHz	8 dBm	0 dBm
8 GHz	8 dBm	0 dBm

With the stated levels, the cable loss must still be taken into account. For the specified cable it is 0.25 dB/GHz.

If the measured values are more than 3 dB below the levels given in the table, the board must be replaced.

Bridge Directivity

The following is assumed:

- The generator and receiver sections of the reflectometer associated with the bridge unit are OK.

- Perform a sweep from 300 kHz to 8 GHz, measure Ratio bx/ax Source Portx
- Screw the SHORT from a N-calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector, save measured values (More Mem : Data -> Mem3).
- Screw the MATCH from the calibration kit to the port connector.
- Select User Def Math : linMag(Data) / ((linMag(Mem2) + linMag(Mem3)) / 2 : Math = User Def
- The trace gives the directivity.

Frequency range	Directivity
300 kHz to 50 MHz	< -10 dB
50 MHz to 8 GHz	< -16 dB

If the measured values are greater than the values stated in the table, the bridge unit must be replaced.

Bridge unit: Port Matching

It is assumed that there is a functioning reflectometer in the instrument.

- Loosen cables W514 (GEN -> Bridge unit), W515 (Bridge unit -> MEAS) and W518 (Bridge unit -> REF) at both ends and unscrew at the bridge unit.

  N.B.: *When loosening, support the cable with a 7mm spanner*

- Terminate the bridge unit input and bridge unit outputs with 3 SMA terminations.
- Connect N test cable to a functioning instrument port and perform a 1-port calibration at the end of the cable.
- Connect the end of the test cable to the port of the bridge unit under test and display the Sxx magnitude on the screen.

Frequency range	Sxx dB
300 kHz to 8 GHz	-18 dB

If the values in the table are exceeded, the board must be replaced.

Testing the Reflectometer RM24

Generator levels

It is assumed that the synthesizer section (synthesizer1) associated with the reflectometer to be tested is OK.

- Loosen cable W514 (GEN -> coupler unit) at both ends and screw off at the generator output GEN.
- Connect the generator output to the spectrum analyzer using the SMA cable ().
- Set the ZVA to the CW sweep mode.
- Set the frequencies listed in the table.
- Set the power listed in the table.

Frequency	Set power to	Level on GEN output	2nd harmonic	3rd harmonic
10 MHz	10 dBm	13.0 dBm	---	---
100 MHz	10 dBm	13.0 dBm	< - 21 dBc	< - 21 dBc
1 GHz	10 dBm	13.2 dBm	< - 21 dBc	< - 21 dBc
4 GHz	10 dBm	13.7 dBm	< - 21 dBc	< - 21 dBc
8 GHz	10 dBm	14.3 dBm	< - 21 dBc	< - 21 dBc
9 GHz	10 dBm	14.5 dBm	< - 21 dBc	---
12 GHz	10 dBm	15.0 dBm	---	---
15 GHz	5 dBm	7.5 dBm	---	---
18 GHz	5 dBm	8.0 dBm	---	---
20 GHz	5 dBm	8.3 dBm	---	---

With the stated levels, the cable loss must still be taken into account. For the specified cable it is 0.25 dB/GHz.

Receiver levels

The following is assumed:

- The LO synthesizer section (synthesizer1 mod. 20, synthesizer2) associated with the reflectometer to be tested is OK.
- The network controller associated with the reflectometer to be tested is OK.
- One reflectometer in the instrument is functioning.

- Loosen cable W515 (coupler unit -> MEAS) and cable W518 (coupler unit -> REF) at both ends and screw off at the MEAS and REF receiver inputs.
- Connect the receiver input (MEAS or REF) to a functioning instrument port using an adapter cable.
- Set the ZVA to the CW sweep mode.
- Set the frequencies and output levels for the port used for the measurement as indicated in the table and read off the level for the receiver to be tested (wave quantity ax or bx).

Frequency	Output level	Displayed level ax or bx
10 MHz	-30 dBm	+20 dBm ± 3 dB
100 MHz	-30 dBm	+5 dBm ± 3 dB
1 GHz	-20 dBm	-5 dBm ± 3 dB
2.5 GHz	-20 dBm	-10 dBm ± 3 dB
3 GHz	-20 dBm	-10 dBm ± 3 dB
8 GHz	-20 dBm	-10 dBm ± 3 dB
9 GHz	-20 dBm	-10 dBm ± 3 dB
12 GHz	-20 dBm	-10 dBm ± 3 dB
15 GHz	-20 dBm	-8 dBm ± 4 dB
18 GHz	-20 dBm	-8 dBm ± 4 dB
20 GHz	-20 dBm	-8 dBm ± 4 dB

With the stated levels, the cable loss must still be taken into account. For the specified cable, it is 0.25 dB/GHz (0.5 m) or. 0.5 dB/GHz (1 m).

If the measured values are more than 2 dB below the levels list in the table, the board must be replaced.

Coupler unit levels

The following is assumed:

- One reflectometer in the instrument is OK.

Method 1:

The generator section of the associated reflectometer is OK (output level at the port meets specifications).

- Loosen cable W515 (coupler unit -> MEAS) and cable W518 (coupler unit -> REF) at both ends and disconnect at the coupler unit.
- Connect the coupler unit output (MEAS = connector W515 or REF = connector W518) to a functioning port using the SMA cable. Terminate the coupler unit output that is not used with an SMA termination.
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector.
- Select User Def Math : (lin Mag(Data) + (linMag(Mem2)) / 2 , activate Result is Wave Quantity
- Select Math = User Def
- Set the frequencies and levels listed in the table for the reflectometer associated with the coupler unit (port) and measure the level (wave quantity bx) at the port used for the measurement.

Frequency	Level	Output level MEAS	Output level REF
10 MHz	0 dBm	-50 dBm ± 3 dB	-47 dBm ± 3 dB
100 MHz	0 dBm	-35 dBm ± 3 dB	-32 dBm ± 3 dB
1 GHz	0 dBm	-15 dBm ± 3 dB	-11 dBm ± 3 dB
2 GHz	0 dBm	-10 dBm ± 3 dB	-4.7 dBm ± 3 dB
8 GHz	0 dBm	-10 dBm ± 3 dB	-3.7 dBm ± 3 dB
12 GHz	0 dBm	-10 dBm ± 3 dB	-3 dBm ± 3 dB
16 GHz	0 dBm	-12 dBm ± 4 dB	-2.3 dBm ± 4 dB
20 GHz	0 dBm	-12 dBm ± 4 dB	-1.7 dBm ± 4 dB
24 GHz	0 dBm	-12 dBm ± 4 dB	-1 dBm ± 4 dB

With the stated levels, the cable loss must still be taken into account. For the specified cable it is 0.25 dB/GHz.

If the measured values are more than 2 dB below the levels in the table, the coupler unit must be replaced.

Method 2:

The receiver section of the associated reflectometer is OK.

- Loosen cable W514 (GEN -> coupler unit) at both ends and screw off at the coupler unit.
- Connect the coupler input (connector. W514) to a functioning port using the SMA cable.
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector.
- Select User Def Math : (lin Mag(Data) + (linMag(Mem2)) / 2 , activate Result is Wave Quantity
- Select Math = User Def
- Set the frequencies and levels listed in the table at the port used for the measurement and measure the level (wave quantity ax or bx) at the reflectometer associated with the coupler unit (port).

Frequency	Level	Level ax and bx
10 MHz	0 dBm	-3 dBm ± 1 dB
100 MHz	0 dBm	-3 dBm ± 1 dB
1 GHz	0 dBm	-3.2 dBm ± 1 dB
2 GHz	0 dBm	-3.3 dBm ± 1 dB
8 GHz	0 dBm	-4.3 dBm ± 1 dB
12 GHz	0 dBm	-5 dBm ± 1 dB
16 GHz	0 dBm	-5.7 dBm ± 1 dB
20 GHz	0 dBm	-6.3 dBm ± 1 dB
24 GHz	0 dBm	-7 dBm ± 1 dB

With the stated levels, the cable loss must still be taken into account. For the specified cable it is 0.25 dB/GHz.

If the measured values are more than 2 dB below the levels given in the table, the coupler unit must be replaced.

Coupler Directivity

The following is assumed:

- The generator and receiver sections of the reflectometer associated with the coupler unit are OK.

- Perform a sweep from 10 MHz to 24 GHz, measure Ratio bx/ax Source Portx
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector, save measured values (More Mem : Data -> Mem3).
- Screw the MATCH from the calibration kit to the port connector.
- Select User Def Math : linMag(Data) / ((linMag(Mem2) + linMag(Mem3)) / 2 : Math = User Def
- The trace gives the directivity.

Frequency range	Directivity
10 MHz to 12 GHz	< -15 dB
12 GHz to 24 GHz	< -10 dB

If the measured values are greater than the values stated in the table, the coupler unit must be replaced.

Coupler unit: Port Matching

It is assumed that there is a functioning reflectometer in the instrument.

- Loosen cables W514 (GEN -> coupler unit), W515 (coupler unit -> MEAS) and W518 (coupler unit -> REF) at both ends and unscrew at the coupler unit.
- Terminate the coupler unit input and coupler unit outputs with 3 SMA terminations.
- Connect test cable to a functioning instrument port and perform a 1-port calibration at the end of the cable.
- Connect the end of the test cable to the port of the coupler unit under test and display the Sxx magnitude on the screen.

Frequency range	Sxx dB
10 MHz to 12 GHz	< -14 dB
12 GHz to 20 GHz	< -10 dB

If the values in the table are exceeded, the coupler must be replaced.

Testing the Reflectometer RM44 and RM50

Generator levels

It is assumed that the synthesizer section (synthesizer1) associated with the reflectometer to be tested is OK.

- Loosen cable W514A (GEN -> coupler unit) or W512 (GEN -> attenuator) at both ends and screw off at the generator output GEN.
- Connect the generator output to the spectrum analyzer using the K-cable (ZVA40) or V-cable (ZVA50).
- Set the ZVA to the CW sweep mode.
- Set the frequencies listed in the table.
- Set the power listed in the table.

Frequency	Set power to (without GenAtt)	Set power to (with GenAtt)	Level on GEN output	2nd harmonic	3rd harmonic
10 MHz	10 dBm	9 dBm	12.0 dBm	---	---
50 MHz	10 dBm	9 dBm	12.0 dBm	< - 21 dBc	< - 21 dBc
1 GHz	10 dBm	9 dBm	12.0 dBm	< - 21 dBc	< - 21 dBc
4 GHz	10 dBm	9 dBm	12.0 dBm	< - 21 dBc	< - 21 dBc
8 GHz	10 dBm	9 dBm	12.0 dBm	< - 21 dBc	< - 21 dBc
10 GHz	10 dBm	9 dBm	14.0 dBm	< - 21 dBc	< - 21 dBc
13 GHz	10 dBm	9 dBm	14.0 dBm	< - 21 dBc	< - 21 dBc
15 GHz	10 dBm	8 dBm	14.0 dBm	< - 21 dBc	< - 21 dBc
18 GHz	10 dBm	8 dBm	14.0 dBm	< - 21 dBc	< - 21 dBc
20 GHz	10 dBm	8 dBm	14.0 dBm	< - 21 dBc	---
24 GHz	10 dBm	8 dBm	14.5 dBm	< - 21 dBc	---
28 GHz	10 dBm	7 dBm	14.5 dBm	< - 21 dBc	---
32 GHz	10 dBm	7 dBm	14.5 dBm	---	---
36 GHz	6 dBm	3 dBm	10.5 dBm	---	---
40 GHz	6 dBm	3 dBm	10.5 dBm	---	---
45 GHz (ZVA50 only)	6 dBm	3 dBm	10.5 dBm	---	---
50 GHz (ZVA50 only)	6 dBm	3 dBm	10.5 dBm	---	---

With the stated levels, the cable loss must still be taken into account.

Receiver levels

The following is assumed:

- The LO synthesizer section (synthesizer1 mod. 20, synthesizer2) associated with the reflectometer to be tested is OK.
- The network controller associated with the reflectometer to be tested is OK.
- One reflectometer in the instrument is functioning.

- Loosen the cable to the receiver input MEAS (X6) and the cable to the receiver input REF (X5) at both ends and screw off at the receiver inputs.
- Connect the receiver input (MEAS or REF) to a functioning instrument port using the K-cable (ZVA40) or V-cable (ZVA50).
- Set the ZVA to the CW sweep mode.
- Set the frequencies and output levels (check with power meter) for the port used for the measurement as indicated in the table and read off the level for the receiver to be tested (wave quantity ax or bx).

Frequency	Output level	Displayed level ax	Displayed level bx
10 MHz	-40 dBm	+15 dBm ± 4 dB	+7 dBm ± 4 dB
100 MHz	-40 dBm	-5 dBm ± 4 dB	-13 dBm ± 4 dB
1 GHz	-20 dBm	-2 dBm ± 4 dB	-10 dBm ± 4 dB
3 GHz	-20 dBm	-1 dBm ± 4 dB	-9 dBm ± 3 dB
8 GHz	-20 dBm	-1 dBm ± 4 dB	-9 dBm ± 3 dB
10 GHz	-20 dBm	-1 dBm ± 4 dB	-9 dBm ± 3 dB
12 GHz	-20 dBm	-0 dBm ± 4 dB	-9 dBm ± 3 dB
15 GHz	-20 dBm	-0 dBm ± 4 dB	-9 dBm ± 3 dB
18 GHz	-20 dBm	-0 dBm ± 4 dB	-9 dBm ± 3 dB
20 GHz	-20 dBm	-0 dBm ± 4 dB	-9 dBm ± 3 dB
25 GHz	-20 dBm	-0 dBm ± 4 dB	-8 dBm ± 3 dB
30 GHz	-20 dBm	-0 dBm ± 4 dB	-8 dBm ± 3 dB
35 GHz	-20 dBm	-0.5 dBm ± 4 dB	-7 dBm ± 4 dB
40 GHz	-20 dBm	-0.5 dBm ± 4 dB	-7 dBm ± 4 dB
45 GHz (ZVA50 only)	-20 dBm	-0.5 dBm ± 4 dB	-7 dBm ± 4 dB
50 GHz (ZVA50 only)	-20 dBm	-0.5 dBm ± 4 dB	-7 dBm ± 4 dB

With the stated levels, the cable loss must still be taken into account.

If the measured values are more than 2 dB below the levels list in the table, the board must be replaced.

Coupler levels

The following is assumed:

- One reflectometer in the instrument is OK.

Method 1:

The generator section of the associated reflectometer is OK (output level at the port meets specifications).

- Loosen cable at coupler MEAS_OUT and at coupler REF_OUT at both ends and disconnect at the coupler.
- Connect the coupler output (MEAS = connector X3 or REF = connector X4) to a functioning port using the K cable . Terminate the coupler output that is not used with an K-termination (V-termination).
- Set the frequencies and levels listed in the table for the reflectometer associated with the coupler (port) and measure the level (wave quantity bx) at the port used for the measurement as follows:
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector.
- Select User Def Math : (lin Mag(Data) + (linMag(Mem2)) / 2 , activate Result is Wave Quantity
- Select Math = User Def

Frequency	Level	Output level MEAS	Output level REF
10 MHz	0 dBm	-47 dBm ± 4 dB	-55 dBm ± 4 dB
100 MHz	0 dBm	-27 dBm ± 4 dB	-35 dBm ± 4 dB
1 GHz	0 dBm	-10 dBm ± 4 dB	-18 dBm ± 4 dB
3 GHz	0 dBm	-11 dBm ± 3 dB	-19 dBm ± 4 dB
8 GHz	0 dBm	-11 dBm ± 3 dB	-19 dBm ± 4 dB
10 GHz	0 dBm	-11 dBm ± 3 dB	-19 dBm ± 4 dB
12 GHz	0 dBm	-11 dBm ± 3 dB	-20 dBm ± 4 dB
15 GHz	0 dBm	-11 dBm ± 3 dB	-20 dBm ± 4 dB
18 GHz	0 dBm	-11 dBm ± 3 dB	-20 dBm ± 4 dB
20 GHz	0 dBm	-11 dBm ± 3 dB	-20 dBm ± 4 dB
25 GHz	0 dBm	-12 dBm ± 3 dB	-20 dBm ± 4 dB
30 GHz	0 dBm	-12 dBm ± 3 dB	-20 dBm ± 4 dB
35 GHz	0 dBm	-13 dBm ± 4 dB	-19.5 dBm ± 4 dB
40 GHz	0 dBm	-13 dBm ± 4 dB	-19.5 dBm ± 4 dB
45 GHz	0 dBm	-13 dBm ± 4 dB	-19.5 dBm ± 4 dB
50 GHz	0 dBm	-13 dBm ± 4 dB	-19.5 dBm ± 4 dB

With the stated levels, the cable loss must still be taken into account.

If the measured values are more than 2 dB below the levels in the table, the coupler must be replaced.

Method 2:

The receiver section of the associated reflectometer is OK.

- Loosen the cable at coupler GEN_IN at both ends and screw off at the coupler.
- Connect the coupler (connector X1) to a functioning port using the K-cable (ZVA40) or V-cable (ZVA50).
- Set the frequencies and levels listed in the table at the port used for the measurement and measure the level (wave quantity ax or bx) at the reflectometer associated with the coupler (port) as follows:
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).

- Screw the OPEN from the calibration kit to the port connector.
- Select User Def Math : (lin Mag(Data) + (linMag(Mem2)) / 2 , activate Result is Wave Quantity
- Select Math = User Def

Frequency	Level	level ax and bx (ZVA40)	level ax and bx (ZVA50)
10 MHz	0 dBm	> -2 dBm	> -2 dBm
100 MHz	0 dBm	> -2 dBm	> -2 dBm
1 GHz	0 dBm	> -2 dBm	> -2 dBm
3 GHz	0 dBm	> -2 dBm	> -2 dBm
8 GHz	0 dBm	> -2 dBm	> -2 dBm
10 GHz	0 dBm	> -2 dBm	> -2 dBm
12 GHz	0 dBm	> -2 dBm	> -2.5 dBm
15 GHz	0 dBm	> -2 dBm	> -2.5 dBm
18 GHz	0 dBm	> -2 dBm	> -2.5 dBm
20 GHz	0 dBm	> -2 dBm	> -2.5 dBm
25 GHz	0 dBm	> -2.5 dBm	> -3 dBm
30 GHz	0 dBm	> -2.5 dBm	> -3 dBm
35 GHz	0 dBm	> -3 dBm	> -3 dBm
40 GHz	0 dBm	> -3 dBm	> -3 dBm
45 GHz	0 dBm	--------	> -3.5 dBm
50 GHz	0 dBm	--------	> -3.5 dBm

With the stated levels, the cable loss must still be taken into account.

If the measured values are more than 2 dB below the levels given in the table, the coupler unit must be replaced.

Coupler Directivity

The following is assumed:

- The generator and receiver sections of the reflectometer associated with the coupler are OK.

- Perform a sweep from 10 MHz to 40 GHz, measure Ratio bx/ax Source Portx
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector, save measured values (More Mem : Data -> Mem3).
- Screw the MATCH from the calibration kit to the port connector.
- Select User Def Math : linMag(Data) / ((linMag(Mem2) + linMag(Mem3)) / 2 : Math = User Def
- The trace gives the directivity.

	Frequency range	Directivity
	10 MHz to 20 GHz	< -14 dB
	20 GHz to 35 GHz	< -10 dB
	35 GHz to 40 GHz	< -9 dB
ZVA50 only	35 GHz to 40 GHz	< -8 dB
ZVA50 only	40 GHz to 50 GHz	< -6 dB

If the measured values are more than 2 dB greater than the values stated in the table, the coupler must be replaced.

Coupler Port Matching

It is assumed that there is a functioning reflectometer in the instrument.

- Loosen cables W514A (GEN -> coupler), W515A (coupler -> MEAS) and W518A (coupler -> REF) at both ends and unscrew at the coupler.
- Terminate the coupler input and coupler outputs with three K-terminations (three V-terminations).
- Connect test cable to a functioning instrument port and perform a 1-port calibration at the end of the cable.
- Connect the end of the test cable to the port of the coupler under test and display the Sxx magnitude on the screen.

	Frequency range	Sxx dB
	10 MHz to 5GHz	< -20 dB
	5 GHz to 20 GHz	< -15 dB
	20 GHz to 30 GHz	< -12 dB
	30 GHz to 40 GHz	< -11 dB
ZVA50 only	40 GHz to 50 GHz	< -10 dB

If the measured values are more than 2 dB greater than the values stated in the table, the coupler must be replaced.

Testing the Reflectometer RM67

Generator levels

It is assumed that the synthesizer section (synthesizer1) associated with the reflectometer to be tested is OK.

- Loosen cable W514A (GEN -> BIAS 67) or W512A (GEN -> attenuator) at both ends and screw off at the generator output GEN.
- Connect the generator output to the spectrum analyzer using the V-cable (if FSU50 or FSU67 is not available use a power meter for level measurements).
- Set the ZVA to the CW sweep mode.
- Set the frequencies listed in the table.
- Set the power listed in the table.

Frequency	Set power to (without GenAtt)	Set power to (with GenAtt)	Level on GEN output	2nd harmonic
10 MHz	10 dBm	9 dBm	13.0 dBm	< - 30 dBm
500 MHz	13 dBm	12 dBm	16.0 dBm	< - 30 dBc
4 GHz	13 dBm	12 dBm	16.4 dBm	< - 30 dBc
8 GHz	13 dBm	12 dBm	16.7 dBm	< - 30 dBc
12 GHz	13 dBm	12 dBm	17.1 dBm	< - 25 dBc
16 GHz	13 dBm	11 dBm	17.4 dBm	< - 25 dBc
20 GHz	13 dBm	11 dBm	17.8 dBm	< - 25 dBc
24 GHz	10 dBm	6 dBm	15.2 dBm	---
28 GHz	10 dBm	7 dBm	15.5 dBm	---
32 GHz	10 dBm	7 dBm	15.9 dBm	---
36 GHz	6 dBm	3 dBm	12.3 dBm	---
40 GHz	6 dBm	3 dBm	12.6 dBm	---
45 GHz	6 dBm	3 dBm	13.1 dBm	---
50 GHz	6 dBm	3 dBm	13.5 dBm	---
55 GHz	2 dBm	- 1 dBm	10.0 dBm	---
60 GHz	2 dBm	- 1 dBm	10.4 dBm	---
67 GHz	2 dBm	- 1 dBm	11.1 dBm	---

With the stated levels, the cable loss must still be taken into account.

Receiver levels

The following is assumed:

- The LO synthesizer section associated with the reflectometer to be tested is OK.
- The network controller associated with the reflectometer to be tested is OK.
- One reflectometer in the instrument is functioning.

- Loosen the cable to the receiver input MEAS (X6) and the cable to the receiver input REF (X5) at both ends and screw off at the receiver inputs.

- Connect the receiver input (MEAS or REF) to a functioning instrument port using the V-cable.
- Set the ZVA to the CW sweep mode.
- Set the frequencies and output levels (check with power meter) for the port used for the measurement as indicated in the table and read off the level for the receiver to be tested (wave quantity ax or bx).

Frequency	Output level	Displayed level ax	Displayed level bx (w/o Rec Att)	Displayed level bx (with Rec Att)
10 MHz	-40 dBm	+16 dBm ± 5 dB	+6 dBm ± 5 dB	+7 dBm ± 4 dB
100 MHz	-40 dBm	-4 dBm ± 4 dB	-14 dBm ± 4 dB	-13 dBm ± 4 dB
1 GHz	-20 dBm	1 dBm ± 4 dB	-9 dBm ± 4 dB	-8 dBm ± 4 dB
3 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-8 dBm ± 4 dB
8 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-8 dBm ± 4 dB
10 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-8 dBm ± 4 dB
12 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-8 dBm ± 4 dB
15 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-7 dBm ± 4 dB
18 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-7 dBm ± 4 dB
20 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-7 dBm ± 4 dB
25 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-6 dBm ± 4 dB
30 GHz	-20 dBm	2 dBm ± 4 dB	-9 dBm ± 4 dB	-6 dBm ± 4 dB
35 GHz	-20 dBm	3 dBm ± 4 dB	-8 dBm ± 4 dB	-5 dBm ± 4 dB
40 GHz	-20 dBm	3 dBm ± 4 dB	-8 dBm ± 4 dB	-5 dBm ± 4 dB
45 GHz	-20 dBm	5 dBm ± 4 dB	-8 dBm ± 4 dB	-5 dBm ± 4 dB
50 GHz	-20 dBm	5 dBm ± 4 dB	-7 dBm ± 4 dB	-4 dBm ± 4 dB
55 GHz	-20 dBm	5 dBm ± 4 dB	-7 dBm ± 4 dB	-4 dBm ± 4 dB
60 GHz	-20 dBm	7 dBm ± 4 dB	-6 dBm ± 4 dB	-3 dBm ± 4 dB
67 GHz	-20 dBm	7 dBm ± 4 dB	-6 dBm ± 4 dB	-3 dBm ± 4 dB

With the stated levels, the cable loss must still be taken into account.

If the measured values are more than 2 dB below the levels list in the table, the board must be replaced.

Coupler levels

The following is assumed:

- One reflectometer in the instrument is OK.

Method 1:

The generator section of the associated reflectometer is OK (output level at the port meets specifications).

- Loosen cable at coupler MEAS_OUT and at coupler REF_OUT at both ends and disconnect at the coupler.
- Connect the coupler output (MEAS = connector X3 or REF = connector X4) to a functioning port. Terminate the coupler output that is not used.

- Set the frequencies and levels listed in the table for the reflectometer associated with the coupler (port) and measure the level (wave quantity bx) at the port used for the measurement as follows:
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector.
- Select User Def Math : (lin Mag(Data) + linMag(Mem2)) / 2 , activate Result is Wave Quantity
- Select Math = User Def

Frequency	Level	Output level MEAS	Output level REF
10 MHz	0 dBm	-46 dBm ± 4 dB	-54 dBm ± 4 dB
100 MHz	0 dBm	-26 dBm ± 4 dB	-34 dBm ± 4 dB
1 GHz	0 dBm	-11 dBm ± 4 dB	-19 dBm ± 4 dB
3 GHz	0 dBm	-11 dBm ± 4 dB	-20 dBm ± 4 dB
8 GHz	0 dBm	-11 dBm ± 4 dB	-19.5 dBm ± 4 dB
10 GHz	0 dBm	-11 dBm ± 4 dB	-19.5 dBm ± 4 dB
12 GHz	0 dBm	-11 dBm ± 4 dB	-19.5 dBm ± 4 dB
15 GHz	0 dBm	-11 dBm ± 4 dB	-19 dBm ± 4 dB
18 GHz	0 dBm	-11 dBm ± 4 dB	-19 dBm ± 4 dB
20 GHz	0 dBm	-11 dBm ± 4 dB	-19 dBm ± 4 dB
25 GHz	0 dBm	-11 dBm ± 4 dB	-19 dBm ± 4 dB
30 GHz	0 dBm	-11 dBm ± 4 dB	-19 dBm ± 4 dB
35 GHz	0 dBm	-12 dBm ± 4 dB	-19.5 dBm ± 4 dB
40 GHz	0 dBm	-12 dBm ± 4 dB	-19.5 dBm ± 4 dB
45 GHz	0 dBm	-12 dBm ± 4 dB	-21 dBm ± 4 dB
50 GHz	0 dBm	-13 dBm ± 4 dB	-21 dBm ± 4 dB
55 GHz	0 dBm	-13 dBm ± 4 dB	-21 dBm ± 4 dB
60 GHz	0 dBm	-14 dBm ± 4 dB	-22.5 dBm ± 4 dB
67 GHz	0 dBm	-14 dBm ± 4 dB	-22 dBm ± 4 dB

With the stated levels, the cable loss must still be taken into account.
If the measured values are more than 2 dB below the levels in the table, the coupler must be replaced.

Method 2:

The receiver section of the associated reflectometer is OK.

- Loosen the cable at coupler GEN_IN at both ends and screw off at the coupler.
- Connect the coupler (connector X1) to a functioning port.
- Set the frequencies and levels listed in the table at the port used for the measurement and measure the level (wave quantity ax or bx) at the reflectometer associated with the coupler (port) as follows:
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector.
- Select User Def Math : (lin Mag(Data) + linMag(Mem2)) / 2 , activate Result is Wave Quantity
- Select Math = User Def

Frequency	Level	level ax and bx
10 MHz	0 dBm	> -2 dBm
100 MHz	0 dBm	> -2 dBm
1 GHz	0 dBm	> -2 dBm
3 GHz	0 dBm	> -2.1 dBm
8 GHz	0 dBm	> -2.3 dBm
10 GHz	0 dBm	> -2.4 dBm
12 GHz	0 dBm	> -2.5 dBm
15 GHz	0 dBm	> -2.6 dBm
18 GHz	0 dBm	> -2.7 dBm
20 GHz	0 dBm	> -2.8 dBm
25 GHz	0 dBm	> -3 dBm
30 GHz	0 dBm	> -3.2 dBm
35 GHz	0 dBm	> -3.4 dBm
40 GHz	0 dBm	> -3.6 dBm
45 GHz	0 dBm	> -3.8 dBm
50 GHz	0 dBm	> -4 dBm
55 GHz	0 dBm	> -4.2 dBm
60 GHz	0 dBm	> -4.4 dBm
67 GHz	0 dBm	> -4.7 dBm

With the stated levels, the cable loss must still be taken into account.
If the measured values are more than 2 dB below the levels given in the table, the coupler unit must be replaced.

Coupler Directivity

The following is assumed:

- The generator and receiver sections of the reflectometer associated with the coupler are OK.
- Perform a sweep from 10 MHz to 67 GHz, measure Ratio bx/ax Source Portx
- Screw the SHORT from the calibration kit to the port connector, save measured values (Data -> Mem).
- Screw the OPEN from the calibration kit to the port connector, save measured values (More Mem : Data -> Mem3).
- Screw the MATCH from the calibration kit to the port connector.
- Select User Def Math : linMag(Data) / (linMag(Mem2) + linMag(Mem3)) / 2 : Math = User Def
- The trace gives the directivity.

Frequency range	Directivity
10 MHz to 20 GHz	< -14 dB
20 GHz to 35 GHz	< -10 dB
35 GHz to 40 GHz	< -8 dB
40 GHz to 50 GHz	< -6 dB
50 GHz to 67 GHz	< -3 dB

If the measured values are more than 2 dB greater than the values stated in the table, the coupler must be replaced.

Coupler Port Matching

It is assumed that there is a functioning reflectometer in the instrument.

- Loosen cables W514A (GEN -> coupler), W515A (coupler -> MEAS) and W518A (coupler -> REF) at both ends and unscrew at the coupler.
- Terminate the coupler input and coupler outputs with three K-terminations (three V-terminations).
- Connect test cable to a functioning instrument port and perform a 1-port calibration at the end of the cable.
- Connect the end of the test cable to the port of the coupler under test and display the Sxx magnitude on the screen.

Frequency range	Sxx dB
10 MHz to 5GHz	< -20 dB
5 GHz to 20 GHz	< -15 dB
20 GHz to 30 GHz	< -12 dB
30 GHz to 40 GHz	< -11 dB
40 GHz to 60 GHz	< -10 dB
60 GHz to 67 GHz	< -6 dB

If the measured values are more than 2 dB greater than the values stated in the table, the coupler must be replaced.

Testing the Reflectometers on ZVA80-BU

Port1 and port2: See Testing the Reflectometer RM 44 and RM50
Port3 and port4:

Generator levels

It is assumed that the synthesizer section (source section of synthesizer1 or synthesizer2) associated with the reflectometer to be tested is OK.

- Loosen cable W514 (GEN -> coupler unit) at both ends and screw off at the generator output GEN.
- Connect the generator output to the spectrum analyzer using the SMA cable ().
- Set the ZVA to the CW sweep mode.
- Set the frequencies listed in the table.
- Set the power listed in the table.

Frequency	Set power to	Level on GEN output	2nd harmonic	3rd harmonic
10 MHz	10 dBm	13.0 dBm	---	---
100 MHz	10 dBm	13.0 dBm	< - 21 dBc	< - 21 dBc
1 GHz	10 dBm	13.2 dBm	< - 21 dBc	< - 21 dBc
4 GHz	10 dBm	13.7 dBm	< - 21 dBc	< - 21 dBc
8 GHz	10 dBm	14.3 dBm	< - 21 dBc	< - 21 dBc
9 GHz	10 dBm	14.5 dBm	< - 21 dBc	---
12 GHz	10 dBm	15.0 dBm	---	---
15 GHz	5 dBm	7.5 dBm	---	---
18 GHz	5 dBm	8.0 dBm	---	---
20 GHz	5 dBm	8.3 dBm	---	---

With the stated levels, the cable loss must still be taken into account. For the specified cable it is 0.25 dB/GHz.

Receiver levels

The following is assumed:

- The LO synthesizer section (synthesizer1 mod. 20, synthesizer2) associated with the reflectometer to be tested is OK.
- The network controller associated with the reflectometer to be tested is OK.
- One reflectometer in the instrument is functioning.

➢ Loosen cable W515 (coupler unit -> MEAS) and cable W518 (coupler unit -> REF) at both ends and screw off at the MEAS and REF receiver inputs.

➢ Connect the receiver input (MEAS or REF) to a functioning instrument port using an adapter cable.

➢ Set the ZVA to the CW sweep mode.

➢ Set the frequencies and output levels for the port used for the measurement as indicated in the table and read off the level for the receiver to be tested (wave quantity ax or bx).

Frequency	Output level	Displayed level ax or bx
10 MHz	-30 dBm	+20 dBm ± 3 dB
100 MHz	-30 dBm	+5 dBm ± 3 dB
1 GHz	-20 dBm	-5 dBm ± 3 dB
2.5 GHz	-20 dBm	-10 dBm ± 3 dB
3 GHz	-20 dBm	-10 dBm ± 3 dB
8 GHz	-20 dBm	-10 dBm ± 3 dB
9 GHz	-20 dBm	-10 dBm ± 3 dB
12 GHz	-20 dBm	-10 dBm ± 3 dB
15 GHz	-20 dBm	-8 dBm ± 4 dB
18 GHz	-20 dBm	-8 dBm ± 4 dB
20 GHz	-20 dBm	-8 dBm ± 4 dB

With the stated levels, the cable loss must still be taken into account. For the specified cable, it is 0.25 dB/GHz (0.5 m) or. 0.5 dB/GHz (1 m).

If the measured values are more than 2 dB below the levels list in the table, the board must be replaced.

Testing the Network Controller Board

Testing the IF inputs

It is assumed that there is one functioning reflectometer in the instrument.

➢ Disconnect the IF-MEAS and IF-REF cable from each of the reflectometers.

➢ Connect the input to be tested at the end of the appropriate IF cable (W136, W137, W138, W139, and W146, W147, W148, W149) to a functioning port using the adapter cable and SMA-N adapter .

➢ Set the ZVA to CW sweep mode, CENTER 17.512345 MHz.

➢ Setting at the port used for the measurement: POWER -10 dBm

➢ Setting at the port associated with the network controller under test: WAVE QUANTITY ax or bx.

- Enter service function 2.21.2.18.17512345 (IF = 17.512345 MHz).
- Disable level corrections with SF 2.21[..24].2.15.1

If the level displayed on the ZVA's screen is not within the range -4 dBm ± 2 dB, the board must be replaced.

Testing the Motherboard

28 V supply

Using a multimeter, measure the voltage at X 100.B5 (wrt ground).
Permissible deviation: ± 0.5 V

Preamplifier for DC measurement inputs

Apply the DC voltages listed in the table using the 4-pin Mini-DIN connector at the DC measurement input.

Measure the DC voltage with a multimeter.

Input	Voltage at	Gnd	ApPlied voltage	Measurement at	Rated value
DC MEAS -1 V to +1 V	8	3, 5, 6	- 1 V	X 141.B10	2.33 V
DC MEAS -1 V to +1 V	6	3, 5, 8	+ 1 V	X 141.B11	2.33 V
DC MEAS -10 V to +10 V	8	3, 5, 6	- 10 V	X 141.D10	2.33 V
DC MEAS -10 V to +10 V	6	3, 5, 8	+ 10 V	X 141.D11	2.33 V

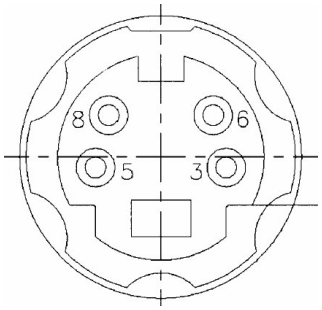


Fig. 3-11 Pin assignment DC MEAS connector

If the measured value is more than 10% above or more than 10% below the stated nominal value, the motherboard must be replaced.

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4 Software Update / Installation of Options

Chapter 4 provides information on updating software, restoring the operating system installation and installing options. Descriptions accompanying the software update or the options can be included in this folder as part of Chapter 4.

Installing new ZVA Software

The instrument firmware can be downloaded from the R&S website (www.rohde-schwarz.com). This is a Microsoft Installation file (.MSI). The file name is ZVAB_XX_YY.MSI for a released version and ZVAB_XX_YY_BETAZZ.MSI for a test version. This file must be made available to the instrument via a suitable medium (Memory Stick, USB CD-ROM drive network or Remote Desktop). The instrument firmware is installed when you double click on the file. The instrument is ready for operation after you switch off and then switch back on again.

Installing Options

The following options can be fitted to the ZVA:

Direct Generator/Receiver Access		
for ZVA8 with two ports	R&S ZVA8-B16	1164.0209.08
for ZVA8 with four ports	R&S ZVA8-B16	1164.0209.10
for ZVA24 with two ports	R&S ZVA24-B16	1164.0209.24
for ZVA24 with four ports	R&S ZVA24-B16	1164.0209.26
for ZVA40 with two ports	R&S ZVA40-B16	1164.0209.40
for ZVA40 with four ports	R&S ZVA40-B16	1164.0209.42
for ZVA50 with two ports	R&S ZVA50-B16	1164.0209.50
for ZVA50 with four ports	R&S ZVA50-B16	1164.0209.52
for ZVA67 with two ports	R&S ZVA67-B16	1164.0209.67
for ZVA67 with four ports	R&S ZVA67-B16	1164.0209.69
Generator Step Attenuator Port 1		
for ZVA8	R&S ZVA8-B21	1164.0009.02
for ZVA24	R&S ZVA24-B21	1164.0109.02
for ZVA40	R&S ZVA40-B21	1302.5409.02
for ZVA50	R&S ZVA50-B21	1305.5616.02
for ZVA67	R&S ZVA67-B21	1305.7077.02
Generator Step Attenuator Port 2		
for ZVA8	R&S ZVA8-B22	1164.0015.02
for ZVA24	R&S ZVA24-B22	1164.0115.02
for ZVA40	R&S ZVA40-B22	1302.5415.02
for ZVA50	R&S ZVA50-B22	1305.5622.02
for ZVA67	R&S ZVA67-B22	1305.7083.02
Generator Step Attenuator Port 3		
for ZVA8 with four ports	R&S ZVA8-B23	1164.0021.02
for ZVA24 with four ports	R&S ZVA24-B23	1164.0121.02
for ZVA40 with four ports	R&S ZVA40-B23	1302.5421.02
for ZVA50 with four ports	R&S ZVA50-B23	1305.5639.02
for ZVA67 with four ports	R&S ZVA67-B23	1305.7090.02
Generator Step Attenuator Port 4		
for ZVA8 with four ports	R&S ZVA8-B24	1164.0038.02
for ZVA24 with four ports	R&S ZVA24-B24	1164.0138.02
for ZVA40 with four ports	R&S ZVA40-B23	1302.5438.02
for ZVA50 with four ports	R&S ZVA50-B23	1305.5645.02
for ZVA67 with four ports	R&S ZVA67-B23	1305.7102.02
Receiver Step Attenuator Port 1		
for ZVA8	R&S ZVA8-B31	1164.0044.02
for ZVA24	R&S ZVA24-B31	1164.0144.02
for ZVA40	R&S ZVA40-B31	1302.5444.02

for ZVA50	R&S ZVA50-B31	1305.5716.02
for ZVA67	R&S ZVA67-B31	1305.7119.02
Receiver Step Attenuator Port 2		
for ZVA8	R&S ZVA8-B32	1164.0050.02
for ZVA24	R&S ZVA24-B32	1164.0150.02
for ZVA40	R&S ZVA40-B32	1302.5450.02
for ZVA50	R&S ZVA50-B32	1305.5722.02
for ZVA67	R&S ZVA67-B32	1305.7125.02
Receiver Step Attenuator Port 3		
for ZVA8 with four ports	R&S ZVA8-B33	1164.0067.02
for ZVA24 with four ports	R&S ZVA24-B33	1164.0167.02
for ZVA40 with four ports	R&S ZVA40-B33	1302.5467.02
for ZVA50 with four ports	R&S ZVA50-B33	1305.5739.02
for ZVA67 with four ports	R&S ZVA67-B33	1305.7131.02
Receiver Step Attenuator Port 4		
for ZVA8 with four ports	R&S ZVA8-B34	1164.0073.02
for ZVA24 with four ports	R&S ZVA24-B34	1164.0173.02
for ZVA40 with four ports	R&S ZVA40-B34	1302.5473.02
for ZVA50 with four ports	R&S ZVA50-B34	1305.5745.02
for ZVA67 with four ports	R&S ZVA67-B34	1305.7148.02
Oven Controlled Crystal Oscillator (OCXO)	R&S ZVAB-B4	1164.1757.02
Universal Interface Board	R&S ZVAB-B14	1305.6306.02
Removable Flash Disc 4 GB (for R&S FMR6/5)	R&S ZVAB-B18	1164.0715.02
Removable Flash Disc 4 GB (for R&S FMR7/3, FMR7/6)	R&S ZVAB-B18	1164.0715.03
Removable Hard Disc 160 GB (for R&S FMR7/3, FMR7/6)	R&S ZVAB-B18	1164.0715.04
Add. Removable Data Medium (for R&S FMR6/5, Flash Mem)	R&S ZVAB-B19	1164.1111.02
Add. Removable Data Medium (for R&S FMR7, Flash Mem)	R&S ZVAB-B19	1164.1111.03
Add. Removable Data Medium (for R&S FMR7, Hard Disk)	R&S ZVAB-B19	1164.1111.04
Add. Removable Data Medium (for R&S FMR9, Hard Disk)	R&S ZVAB-B19	1164.1111.05
Time Domain	R&S ZVAB-K2	1164.1657.02
Frequency Conversion	R&S ZVA-K4	1164.1863.02
True Differencial Mode	R&S ZVA-K6	1164.1540.02
Pulsed Measurements	R&S ZVA-K7	1164.1511.02

Pulsed Measurements with increased recording time for 2-port models	R&S ZVA-B7	1164.1492.02
Pulsed Measurements with increased recording time for 4-port models	R&S ZVA-B7	1164.1492.03
Mixer Delay w/o LO Access	R&S ZVA-K9	1311.3128.02
5 MHz Receiver Bandwidth	R&S ZVA-K17	1164.1070.02
Internal Pulse Generators	R&S ZVA-K27	1164.1892.02
Noise Figure Measurements	R&S ZVA-K30	1164.1828.02

Install according to the instructions that are supplied with the option.
These installation instructions can be appended to this chapter.

The OCXO option is permanently integrated on the frequency reference board (mod. 03, mod. 05) and, as a rule, it is specified when the instrument is ordered. When it is retrofitted, the frequency reference board must be replaced (replace mod. 02 or mod. 04 with mod. 05).

Installing hardware options:

NOTICE

Before installing the options, disconnect the mains cable.

Observe the safety instructions at the beginning of this manual.
The boards in the instrument are electrostatically sensitive devices (ESD). The appropriate handling instructions for these devices must be observed (ESD workstation*).*

- Turn off the instrument and disconnect the mains cable.
- Unscrew the 4 back-panel feet (460) and pull off the enclosure (400) towards the rear.
- Follow the replacement instructions in Chapter 3
- When installation has been completed, push the enclosure back into position and refit the back-panel feet.

NOTICE

When replacing the enclosure, ensure that no cables are damaged or pulled out:

- Connect the mains cable and turn on the instrument.

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5 Documents

This chapter provides information on the ordering of spare parts and contains the spare parts list and the documents for the complete ZVA unit.

Spare Parts

The Stock Nos. necessary for ordering replacement parts and modules can be found in the component lists provided later in this chapter.



Important!

When replacing a module, please observe the safety instructions and repair instructions provided in chapter 3 and at the beginning of this service manual

When shipping a module, be sure to provide sufficient mechanical and antistatic protection.

Available Power Cables

Table 5-1 List of power cables available

Stock No.	Safety plug in accordance with	Mainly used in
DS 0006.7013	BS1363: 1967' complying with IEC 83: 1975 standard B2	Great Britain
DS 0006.7020	Type 12 complying with SEV regulation 1011.1059, standard sheet S 24 507	Switzerland
DS 0006.7036	Type 498/13 complying with US regulation UL 498, or with IEC 83	USA/Canada
DS 0006.7107	Type SAA3 10 A, 250 V, complying with AS C112-1964 Ap.	Australia
DS 0025.2365.00 DS 0086.4400.00	DIN 49 441, 10 A, 250 V, straight	Europe (except Switzerland)
DS 0041.4752.00		China
DS 0041.6232.00		Japan

ROHDE&SCHWARZ

Spare Parts List

Mechanical Drawings

List of ZVA parts including spare parts

The ZVA is constructed in accordance with R&S Design 2000.

Rackmount: 6E 1/1 T350 MOD. 22

Overall dimensions: B x H x T: 465.1 x 286.2 x 417.0

Accessories: 19" Adapter ZZA-611, Stock No. 1096.3302.00



The recommended spare parts are marked with an x in the last column.

Table 5-2 List of all ZVA parts and spare parts

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
DRAWING 1145.1110.01 (ZVA NETWORK ANALYZER)					
10	ZM FUNDAMENTAL UNIT ZVA Model 08 10	1145.1310.08	1		
12	ZM FUNDAMENTAL UNIT ZVA Model 24 26 28	1145.1310.24	1		
14	ZM FUNDAMENTAL UNIT ZVA Model 40 42 43 45 48 50 52	1145.1310.40	1		
15	ZM FAN ZVB Mounted in frame 1145.1355.00	1145.2200.00	0	E1 E2 E3	x
16	VS 7985/ISR-M4X8-A4-PA	1148.2652.00	0		
18	VS DIN433-4.3-A4	0082.4586.00	0		
100	ZE NETWORK CONTROLLER	1145.3635.06	1	A140	x
105	ZE NETWORK CONTROLLER Model 10 26 28 42 45 48 52	1145.3635.06	1	A130	x
110	EE SYNTH-LS Model 08 24 in place of 1302.4025.02 from 04/2008	1305.5300.02	1	A160	x
111	EE SYNTH-LS Model 40 43 50 in place of 1302.4025.20 from 04/2008	1305.5300.20	1	A160	x
113	EE SYNTH-DS Model 10 26 42 45 52 in place of 1302.5180.02 from 05/2008	1305.5539.02	1	A160	x
114	EE SYNTH-12-4SO Model 28 48	1312.6895.21	1	A160	x
115	EE SYNTH-LO Model 10 26 in place of 1302.4248.02 from 05/2008	1305.5597.02	1	A150	x

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
116	EE SYNTH-L0 Model 42 45 52 in place of 1302.4248.20 from 05/2008	1305.5597.20	1	A150	x
117	EE SYNTH-12-LO Model 28 48	1312.6943.21	1	A150	x
120	EE FREQ. REFERENCE	1145.3835.04	1	A100	x
130	ED PORT BIAS	1145.3935.02	1	A18	
131	HEX 14 NUT ½-28UNEF for A18	3583.1578.00	2		
132	SERRATED LOCKWASHER for A18	3583.1578.00	2		
135	ED PORT BIAS Model 10 26 41 42 45 51 52	1145.3935.02	1	A19	
136	HEX 14 NUT ½-28UNEF MODEL 10 26 28 42 45 48 52 for A19	3583.1561.00	2		
137	SERRATED LOCKWASHER MODEL 10 26 28 42 45 48 52 for A19	3583.1578.00	2		
140	MZ MOTHERB. RAIL 1 ZVA	1145.2168.00	1		
141	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	4		
142	VS 6900/ISR-M2.5X8-A2	0041.1653.00	1		
143	MZ RAIL CONTACT ZVB 8/20	1300.0874.00	1		
145	ZN MOTHERB. RAIL 2 ZVA	1145.2051.00	1		
146	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	4		
147	VS 6900/ISR-M2.5X8-A2	0041.1653.00	1		
150	ZM RM UNIT ZVA 8 Model 08	1145.4177.02	2	A510 A520	
151	VS 6900/ISR-M2.5X6-A2 Model 08	1148.3059.00	4		
152	ZM CABLE SET ZVA8 2PORT Model 08	1302.5050.08	1		
153	VS 965/ISR-M2.5X8-A4-PA Model 08	1148.3294.00	4		
154	VS 965/ISR-M2.5X6-A4-PA Model 08	1148.3288.00	8		
160	ZM RM UNIT ZVA 8GHz Model 10	1145.4177.02	4	A510 A520 A530 A540	
161	VS 6900/ISR-M2.5X6-A2 Model 10	1148.3059.00	8		
162	ZM CABLE SET ZVA Model 10	1145.5050.10	1		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
163	VS 965/ISR-M2.5X8-A4-PA Model 10	1148.3294.00	8		
164	VS 965/ISR-M2.5X6-A4-PA Model 10	1148.3288.00	16		
166	DW RF CABLE W509/A520 Model 08 10	1145.3041.00	1	W509	
167	MZ EXT. ANALYZER MOUNT Model 08 10	1145.3058.00	1		
168	VS 965/ISR-M2.5X6-A4-PA Model 08 10	1148.3288.00	4		
170	ZN MOTHERB. RAIL 2 ZVA	1145.2051.00	1		
171	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	4		
172	VS 6900/ISR-M2.5X8-A2	0041.1653.00	1		
180	ZE RM UNIT ZVA 24 GHz Model 24	1145.4302.02	2	A510 A520	
182	VS 965/ISR-M3X8-A4-PA Model 24	1300.0868.00	8		
185	ZM CABLE SET ZVA24 2PORT Model 24	1302.5050.24	1		
186	VS 965/ISR-M2.5X6-A4-PA Model 24	1148.3288.00	8		
200	ZE RM UNIT ZVA 24 GHz Model 26 28	1145.4302.02	4	A510 A520 A530 A540	
202	VS 965/ISR-M3X8-A4-PA Model 26 28	1148.2798.00	16		
204	CABLE LOOM ZVA24 4PORT MODEL 28	1302.5050.28	1		
205	ZM CABLE SET ZVA Model 26	1145.5050.26	1		
206	VS 965/ISR-M2.5X6-A4-PA Model 26 28	1148.3288.00	16		
207	ZM RM UNIT2 ZVA40 GHz Model 43 45, Port1 and 2 2.4mm	1305.3420.12	2	A510 A520	
208	ZM RM UNIT2 ZVA40 GHz Model 43 45, Port3 and 4 2.4mm	1305.3420.13	2	A530 A540	
209	ZM RM UNIT2 ZVA40 GHz Model 40	1305.3420.02	2	A510 A520	
210	MZ RM44 BLOWER ATTACHEMENT (included in RM Unit ZVA40) Model 40 42 43 45 48 50 52	1302.5621.00	0		
211	VS 965ISR-M2.5X6-A4-PA Model 40 42 43 45 48 50 52	1148.3288.00	4		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
212	VS 6900/ISR-M2.5X6-A2 Model 40 42 43 45 48 50 52	1148.3059.00	4		
213	MZ RM44 SUPPORT PLATE RM1-2 Model 40 42 43 45 48 50 52	1302.5596.00	1		
214	VS 965ISR-M2.5X6-A4-PA Model 40 42 43 45 48 50 52	1148.3288.00	4		
215	VS 6900/ISR-M2.5X8-A2 Model 40 42 43 45 48 50 52	0041.1653.00	2		
216	VS 6900/ISR-M2.5X8-A2 Model 40 42 48 50 52	0041.1653.00	4		
217	VS 965ISR-M3X10-A4-PA Model 40 43 50	1148.3320.00	8		
218	VS 965ISR-M2.5X6-A4-PA Model 40 43 50	1148.3288.00	4		
219	ZM CABLE SET ZVA40 2PORT Model 40 43	1302.5050.40	1		
220	PLAIN WASHER ISO7093-2.7-A4 Model 40 42 48 50 52	0031.5179.00	4		
223	MZ RM44 SUPPORT PLATE RM3-4 Model 42 45 48 52	1302.5609.00	1		
224	VS 965ISR-M2.5X6-A4-PA Model 42 45 48 52	1148.3288.00	6		
230	ZM RM UNIT2 ZVA40 GHz Model 42 48	1305.3420.02	2	A510 A520	
232	ZM RM UNIT2 ZVA40 GHz Model 42 48	1305.3420.03	2	A530 A540	
233	MZ RM44 SUPPORT PLATE RM3-4 Model 42 45 48 52	1305.3494.00	1		
234	VS 965ISR-M2.5X6-A4-PA Model 42 45 48 52	1148.3288.00	4		
235	PLAIN WASHER ISO7093-2.7-A4 Model 42 48 50 52	0031.5179.00	4		
236	VS 6900/ISR-M2.5X8-A2 Model 42 45 48 52	0041.1653.00	2		
237	VS 965ISR-M3X10-A4-PA Model 42 45 48 52	1148.3320.00	16		
238	VS 965ISR-M2.5X6-A4-PA Model 42 45 48 52	1148.3288.00	6		
239	ZM CABLE SET ZVA40 2PORT Model 42 45	1302.5050.42	1		
240	ZM RM UNIT ZVA 50 GHz Model 50	1305.3407.02	2	A510 A520	
241	ZM CABLE SET ZVA50 2PORT Model 50	1302.5050.50	1		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
242	ZM CABLE SET ZVA48 4PORT Model 48	1302.5050.48	1		
245	ZM RM UNIT ZVA 50 GHz Model 52	1305.3407.02	2	A510 A520	
246	ZM RM UNIT ZVA 50 GHz Model 52	1305.3407.03	2	A530 A540	
247	ZM CABLE SET ZVA50 4PORT Model 52	1302.5050.52	1		
260	KB COVER PLATE ZVA	1145.3029.00	1		
261	VS 6900/ISR-M2.5X6-A2	1148.3059.00	12		
262	ZN COVER HOLDING	1300.0974.00	2		
263	VS 965/ISR-M2.5X4-A4-PA	1148.3271.00	4		
264	KB REAR PLATE	1145.1861.00	1		
265	VS 6900/ISR-M2.5X6-A2	1148.3059.00	5		
266	COVER REAR PANEL	1145.1232.00	1		
267	COMBI SCREW 6900/ISR-M3X6-A2	0041.1682.00	2		
270	FT ADAPTER 8PINS	1093.9122.00	2	X241 X242	
272	SILICONE CORD 4X8 mm	1130.0164.00	2		
275	LAN CABLE WITH SPRING	1166.1819.00	2	W241 W242	
280	IEC-BUS CABLE W21	1315.527.00	1	W21	
282	WASHER DIN125-A3.2-A4	0082.4670.00	2		
285	SREW	0099.2846.00	2		
284	WAVE SPRING WASHER DIN137-A3-A2	0005.0296.00	2		
287	COVER 30X20 SW MODEL 08 24 40 43 50	1093.9051.00	2		
289	COVER 30X20 SW	1093.9051.00	1		
292	MP CAP MODEL 08 24 40 43 50	0570.5187.00	2		
293	MP CAP MODEL 08 24 40 43 50	0344.4591.00	2		
295	MP ADHESIVE FOIL 33X68	1300.0597.00	4		
296	MZ TOP COVER ZVA	1145.1855.00	1		
297	MZ BOTTOM COVER ZVA	1145.1955.00	1		
299	VS 6900/ISR-M2.5X6-A2	1148.3059.00	44		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
300	KB FRONT COVER ZVA 8 2PORT Model 08	1145.1555.00	1		
306	KB FRONT COVER ZVA 8 4PORT Model 10	1145.1503.00	1		
310	KB FRONT COVER ZVA24 2PORT Model 24	1145.2380.00	1		
316	KB FRONT COVER ZVA 24 4PORT Model 26	1145.1510.00	1		
318	KB FRONT COVER ZVA 24 4T Model 28	1312.7691.00	1		
320	KB FRONT COVER ZVA 40 Model 40	1145.1526.00	1		
321	KB FRONT COVER ZVA 40 2T 2.4MM Model 43	1305.5268.00	1		
326	KB FRONT COVER ZVA 40 4T Model 42	1302.4877.00	1		
327	KB FRONT COVER ZVA 40 4T 2.4MM Model 45	1305.5274.00	1		
328	KB FRONT COVER ZVA 40 4T Model 48	1305.7704.00	1		
330	KB FRONT COVER ZVA 50 2P Model 50	1305.3388.00	1		
334	KB FRONT COVER ZVA 50 4P Model 52	1305.3394.00	1		
390	KB COUNTERSUNK SCREW M1.6X3 LIGHT-GREY	0396.1070.00	1		
400	KR TUBE 6HU1/1T450 ZVA	1305.3442.00	1		x
405	KR HOLDING HOOK	1096.4796.00	6		x
410	KR BW2 FRONT HANDLE 6E	1096.1500.00	2		x
420	VS SCREW M4X14-ISR	1096.4896.00	6		
430	KR BW2 INSTRUMENT FOOT	1096.2506.00	4		x
440	KR BW2 MOUNTING FOOT	1096.2529.00	2		x
450	KR BW2 SIDE CARRYING HANDLE T450	1096.2670.00	1		x
455	VS 965/ISR-M4X12-A4-PA	1148.2830.00	4		
460	KR BW2 REAR PANEL FOOT	1096.2487.00	4		x
470	OS BW2 REAR PANEL FOOT LABEL	1096.2435.00	1		
471	FJ CAP Model 08	0092.6375.00	2		
473	FJ CAP Model 10	0092.6375.00	4		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
490	FJ CAP Model 24 40 43 50	0114.1770.00	2		
492	FJ CAP Model 26 28 42 45 48 52	0114.1770.00	4		
DRAWING 1305.7002.01 (ZVA67 NETWORK ANALYZER)					
30	ZM FUNDAMENTAL UNIT ZVA	1145.1310.42	1		
40	ZM FAN ZVB Mounted in frame 1145.1355.00	1145.2200.00	0	E1 E2 E3	x
50	VS 7985/SR-M4X8-A4-PA	1148.2652.00	0		
60	VS DIN433-4.3-A4	0082.4586.00	0		
70	ZE NETWORK CONTROLLER Model 02 04	1145.3635.04	1	A140	x
80	ZE NETWORK CONTROLLER Model 02 04	1145.3635.04	1	A130	x
90	EE SYNTH-12-2LO Model 02	1305.7283.31	1	A160	x
95	EE SYNTH-12-2LO Model 04	1305.7283.21	1	A160	x
100	EE SYNTH-12-2SO Model 02	1305.7202.41	1	A150	x
105	EE SYNTH-12-2SO Model 04	1305.7202.21	1	A150	x
120	EE FREQ. REFERENCE	1145.3835.04	1	A100	x
130	ED PORT BIAS	1145.3935.02	1	A18	
140	FJ HEX 14 NUT 1/-28UNEF (for A18)	3583.1561.00	2		
150	SERRATED LOCKWASHER (for A18)	3583.1578.00	2		
160	ED PORT BIAS Model 04	1145.3935.02	1	A19	
170	FJ HEX 14 NUT 1/-28UNEF (for A19)	3583.1578.00	2		
180	SERRATED LOCKWASHER (for A19)	3583.1578.00	2		
190	MZ MOTHERB. RAIL 1 ZVA	1145.2168.00	1		
200	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	4		
210	VS 6900/ISR-M2.5X8-A2	0041.1653.00	1		
220	MZ RAIL CONTACT ZVB 8/20	1300.0874.00	1		
230	MZ RM44 BLOWER ATTACHEMENT (included in RM Unit)	1302.5621.00	0		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
240	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	4		
245	VS 6900/ISR-M2.5X6-A2	1148.3059.00	4		
250	VS 6900/ISR-M2.5X6-A2	1148.3059.00	4		
260	MZ RM44 SUPPORT PLATE RM1-2	1302.5596.00	1		
270	VS 6900/ISR-M2.5X8-A2	0041.1653.00	4		
275	VS 6900/ISR-M2.5X8-A2	0041.1653.00	2		
280	VS 965/ISR-M3X10-A4-PA	1148.3320.00	8		
290	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	4		
300	ZM RM UNIT ZVA67 Model 02 04	1305.6241.02	2	A510, A520	x
310	MZ RM44 SUPPORT PLATE RM3-4 Model 04	1305.3494.00	1		
315	MZ RM44 SUPPORT PLATE RM3-4 Model 04	1305.3494.00	1		
320	VS 965/ISR-M2.5X6-A4-PA Model 04	1148.3288.00	4		
330	VS 965/ISR-M2.5X6-A4-PA Model 04	1148.3288.00	8		
335	VS 965/ISR-M2.5X6-A4-PA Model 04	1148.3288.00	6		
340	VS 965ISR-M3X10-A4-PA Model 41 51	1148.3320.00	16		
345	VS 6900/ISR-M2.5X8-A2 Model 04	0041.1653.00	8		
346	VS ISO7093-2.7-A4	0031.5179.00	8		
350	ZM RM UNIT ZVA67 Model 04	1305.6241.02	2	A530, A540	x
360	ZM CABLE SET ZVA50 2PORT Model 02	1302.5050.50	1		
370	ZM CABLE SET ZVA50 4PORT Model 04	1302.5050.52	1		
380	KB COVER PLATE ZVA	1145.3029.00	1		
390	VS 6900/ISR-M2.5X6-A2	1148.3059.00	13		
400	ZN COVER HOLDING	1300.0974.00	2		
410	VS 965/ISR-M2.5X4-A4-PA	1148.3271.00	4		
420	KB REAR PANEL PLATE	1145.1226.00	1		
421	KB COVER REAR PANEL	1145.1232.00	1		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
422	VS 6900/ISR-M3X6-A2	0041.1682.00	2		
430	VS 6900/ISR-M2.5X6-A2	1148.3059.00	5		
440	2XRJ45 COUPLER JACK STRAIGHT	1093.9122.00	2	X241, X242	x
450	SILICONE CORD	1130.0164.00	2		
460	LAN CABLE WITH SPRING	1166.1819.00	2	W241, W242	
470	IEC-BUS CABLE W21	1129.7252.00	1	W21	
480	WASHER DIN125-A3.2-A4	0082.4670.00	2		
490	WAVE SPRING WASHER DIN137-A3-A2	0005.0296.00	2		
500	VS DIN934-M3-A4	0016.4398.00	2		
510	COVER 30X20 SW	1093.9051.00	2		
520	COVER 30X20 SW	1093.9051.00	1		
550	MP CAP	0570.5187.00	2		
560	MP CAP	0344.4591.00	2		
580	MP ADHESIVE FOIL 33X68	1300.0597.00	4		
590	MZ TOP COVER ZVA	1145.1855.00	1		
600	MZ BOTTOM COVER ZVA	1145.1955.00	1		
610	VS 6900/ISR-M2.5X6-A2	1148.3059.00	44		
620	KB FRONT COVER ZVA67 2T Model 02	1305.7025.00	1		
630	KB FRONT COVER ZVA67 4T Model 04	1305.7048.00	1		
640	KB COUNTERSUNK SCREW M1.6X3 LIGHT-GREY	0396.1070.00	1		
650	KR TUBE 6HU1/1T450 ZVA	1305.3442.00	1		x
660	KR HOLDING HOOK	1096.4796.00	6		x
670	KR BW2 FRONT HANDLE 6E	1096.1500.00	2		x
680	VS SCREW M4X14-ISR	1096.4896.00	6		
690	KR BW2 INSTRUMENT FOOT	1096.2506.00	4		x
700	KR BW2 MOUNTING FOOT	1096.2529.00	2		x
710	KR BW2 SIDE CARRYING HANDLE T450	1096.2670.00	2		x
720	VS 965/ISR-M4X12-A4-PA	1148.2830.00	4		
730	KR BW2 REAR PANEL FOOT	1096.2487.00	4		x
740	OS BW2 REAR PANEL FOOT LABEL	1096.2435.00	1		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
750	FJ CAP Model 02 04	0114.1770.00	2		
760	FJ CAP Model 04	0114.1770.00	2		
770	ZB ACCESS. ZVA	1145.1149.00	1		
DRAWING 1312.6750.01 (ZVA80 NETWORK ANALYZER)					
15	ZVA80 TOTAL SYSTEM LABEL	1311.7417.00	1		
20	ZVA50 VECT. NETW: ANALYZER 4P Model 03	1145.1110.52	1		
30	ZVA80-BU Model 02	1312.6508.02	1		
50	ZVA-ZD80 DIPLEXER80 LEFT Model 02 03	1312.6504.12	1		
60	ZVA-ZD80 DIPLEXER80 RIGHT Model 02 03	1312.6504.18	1		
70	ZVA-Z75 CONVERTER WR15 Model 02 03	1307.7400.02	2		
80	ACCESSOIRES Model 02 03	1312.6766.00	1		
90	ZVA-B11 CABLE SET B Model 02	1312.6820.80	1		
100	ZVA-B11 CABLE SET A Model 03	1312.6820.50	1		
110	ZVA-K8 FREQ. CONVERTER CONTROL Model 03	1307.7022.02	1		
120	ZVA50-B19 DIRECT CHANNEL ACCESS Model 03	1164.0209.52	1		
DRAWING 1312.6508.01 (ZVA80-BU BASE UNIT FOR ZVA80 NETWORK ANALYZER)					
30	ZM FUNDAMENTAL UNIT ZVA	1145.1310.41	1		
70	ZE NETWORK CONTROLLER	1145.3635.04	1	A140	x
80	ZE NETWORK CONTROLLER	1145.3635.04	1	A130	x
90	EE SYNTH-DS	1305.5539.02	1	A160	x
100	EE SYNTH-LO	1305.5597.02	1	A150	x
120	EE FREQ. REFERENCE	1145.3835.04	1	A100	x
130	ED PORT BIAS	1145.3935.02	1	A18	
140	FJ HEX 14 NUT 1/-28UNEF (for A18)	3583.1561.00	2		
150	SERRATED LOCKWASHER (for A18)	3583.1578.00	2		
190	MZ MOTHERB. RAIL 1 ZVA	1145.2168.00	1		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
200	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	4		
210	VS 6900/ISR-M2.5X8-A2	0041.1653.00	1		
220	MZ RAIL CONTACT ZVB 8/20	1300.0874.00	1		
230	MZ RM44 BLOWER ATTACHEMENT (included in RM Unit)	1302.5621.00	0		
240	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	4		
250	VS 6900/ISR-M2.5X6-A2	1148.3059.00	4		
260	MZ RM44 SUPPORT PLATE RM1-2	1302.5596.00	1		
270	VS 6900/ISR-M2.5X8-A2	0041.1653.00	4		
275	VS 6900/ISR-M2.5X8-A2	0041.1653.00	2		
280	VS 965/ISR-M3X10-A4-PA	1148.3320.00	8		
290	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	8		
300	ZM RM UNIT ZVA50 + B16	1312.6650.02	2	A510, A520	x
310	MZ RM44 SUPPORT2 PLATE RM3-4	1312.6614.00	1		
315	MZ RM44 SUPPORT PLATE RM3-4	1312.6608.00	1		
335	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	6		
345	VS 6900/ISR-M2.5X6-A2	1148.3059.00	4		
346	VS PLAIN WASHER	0031.5179.00	4		
350	RM UNIT 20 GHZ (ZVA80)	1312.6543.02	2	A530, A540	
355	VS 6900/ISR-M3X6-A2	0041.1682.00	6		
360	CABLE LOOM ZVA80 2PORT	1312.6566.02	1		
380	KB COVER PLATE ZVA	1145.3029.00	1		
390	VS 6900/ISR-M2.5X6-A2	1148.3059.00	13		
400	ZN COVER HOLDING	1300.0974.00	2		
410	VS 965/ISR-M2.5X4-A4-PA	1148.3271.00	4		
420	KB REAR PANEL PLATE	1145.1226.00	1		
421	KB COVER REAR PANEL	1145.1232.00	1		
422	VS 6900/ISR-M3X6-A2	0041.1682.00	2		
430	VS 6900/ISR-M2.5X6-A2	1148.3059.00	5		
440	2XRJ45 COUPLER JACK STRAIGHT	1093.9122.00	2	X241, X242	x
450	SILICONE CORD	1130.0164.00	2		
460	LAN CABLE WITH SPRING	1166.1819.00	2	W241, W242	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
470	IEC-BUS CABLE W21	1129.7252.00	1	W21	
480	WASHER DIN125-A3.2-A4	0082.4670.00	2		
490	WAVE SPRING WASHER DIN137-A3-A2	0005.0296.00	2		
500	VS DIN934-M3-A4	0016.4398.00	2		
550	MP CAP	0570.5187.00	2		
560	MP CAP	0344.4591.00	2		
590	MZ TOP COVER ZVA	1145.1855.00	1		
600	MZ BOTTOM COVER ZVA	1145.1955.00	1		
610	VS 6900/ISR-M2.5X6-A2	1148.3059.00	44		
620	KB FRONT COVER ZVA80 BASE	1312.6720.00	1		
635	CABLE EXT B16	1305.5397.00	6		x
640	KB COUNTERSUNK SCREW M1.6X3 LIGHT-GREY	0396.1070.00	1		
650	KR TUBE 6HU1/1T450 ZVA	1305.3442.00	1		x
660	KR HOLDING HOOK	1096.4796.00	6		x
670	KR BW2 FRONT HANDLE 6E	1096.1500.00	2		x
680	VS SCREW M4X14-ISR	1096.4896.00	6		
690	KR BW2 INSTRUMENT FOOT	1096.2506.00	4		x
700	KR BW2 MOUNTING FOOT	1096.2529.00	2		x
710	KR BW2 SIDE CARRYING HANDLE T450	1096.2670.00	2		x
720	VS 965/ISR-M4X12-A4-PA	1148.2830.00	4		
730	KR BW2 REAR PANEL FOOT	1096.2487.00	4		x
740	OS BW2 REAR PANEL FOOT LABEL	1096.2435.00	1		
750	FJ CAP	0114.1770.00	2		
DRAWING 1312.7004.01 (ZVA110 NETWORK ANALYZER)					
15	OS ZVA110 TOTAL SYSTEM LABEL	1314.4402.00	1		
20	GM ZVA67 VECT. NW. ANALYZER 4P, 67GHZ Mod 03 05	1305.7002.04	1		
50	GO ZVA-ZD110 DIPLEXER LEFT 110GHZ Mod 03 05	1314.4002.12	1		
60	GO ZVA-ZD110 DIPLEXER RIGHT 110GHZ Mod 03 05	1314.4002.18	1		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
70	GO ZVA-Z110E CONVERTER EL ATT WR10 Mod 03 05	1307.7000.40	1		
80	ZB ACCESSORIES ZVA110 MOD 03 05	1314.4477.00	1		
100	GM ZVA-B11 CABLE SET C Mod 03	1312.6820.11	1		
105	GM ZVA-B11 CABLE SET Mod 03 05	1312.6820.05	1		
110	GH ZVA-K8 FREQ. CONVERTER CONTROL Mod 03 05	1307.7022.02	1		
120	GS ZVA67-B16 DIRECT CHANNEL ACCESS Mod 03 05	1164.0209.69	1		
130	GM ZVA-B8 PWR. CONTR. Mod 03 05	1307.6026.02	1		
DRAWING 1145.1310.01 (FUNDAMENTAL UNIT ZVA)					
500	ZM METAL FRAME ZVA	1145.1355.00	1		
516	ED MOTHERBOARD ZVA Model 08 24 40 41	1305.6470.02	1	A10	x
517	ED MOTHERBOARD ZVA67 Model 42	1305.6570.02	1	A10	x
520	VS 6900/ISR-M2.5X6-A2	1148.3059.00	17		
530	FM LOCKING SCREW H=4.5	1093.9180.00	2		
535	VS SCREW M2.5X10 A2	0088.7706.00	0		
540	FM LOCKING SCREW M3	0009.6501.00	2		
551	EMC GASKET	1300.1806.00	2		
552	SERRATED LOCKWASHER	3583.1578.00	3		
553	HEX 14 NUT 1/2 -28UNEF	3583.1561.00	3		
560	MF COVER	1302.4377.00	1		
565	VS 965/ISR-M2.5X16-A4-PA	1148.3313.00	2		
570	VS SCREW M2.5X6	0071.7572.00	0		
580	NR FMR11/6 FUER ZVX FRONTM. CONTR. FMR11/6 FOR ZVX	1312.7779.02	1	A90	x
581	HS BIOS ZVA/T FUER FMR11/WIN7 BIOS ZVA/T FOR FMR11//WIN7	1312.7785.00	1		
582	LITHIUM BATTERY CR2032	0858.2049.00	0		x
590	VS 6900/ISR-M2.5X6-A2	1148.3059.00	9		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
595	DF CABLE 4X2 AND SHIELDING 630	1145.5115.00	1	W12	
596	DZ FEED THROUGH	0099.1440.00	1		
598	DZ CABLE TIE	0015.9038.00	4		
600	ZM DISPLAY UNIT ZVA Model 08	1145.1390.08	1	A1	
604	ZM DISPLAY UNIT ZVA Model 24 40 41 42	1145.1390.24	1	A1	
610	VS 965/ISR-M2.5X5-A4-PA	1148.2752.00	5		
670	COVER	1312.7627..00	1		x
680	CF-CARD ADAPTOR PLATE	1163.0963.00	1		
700	VS 6900/ISR-M2.5X6-A2	1148.3059.00	2		
702	VS 7985/ISR-M2.5X4-A4-PA	1148.2717.00	3		
704	VS WASHER DIN127-B2.5-A4	0082.4786.00	3		
710	ZE HD WITH FIRMWARE	1145.1178.03	1	A60	x
715	DY SATA CABLE 265	1316.2620.00	1	W11	x
716	DY SATA POWERCABLE 285	1091.3427.00	1	W13	x
720	MZ DISK HOLDER	1093.4837.00	1		
725	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	2		
730	VS 965/ISR-M3X5-A4-PA	1148.2775.00	4		
735	ED AC FUSE BOARD	1145.3906.02	1	A21	x
736	MZ PROTECTION COVER	1300.0845.00	1		
737	VS 7985/ISR-M3X10-A4-PA	1148.2623.00	1		
738	OS LABEL 25MM HIGH-VOLTAGE FLASH	0042.5169.00	1		
740	DY CABLE FOR ZVAB POWER SUPPLY Model 08 24 40 41	1145.5544.00	1	W22	x
741	DX POWER SUPPLY CABLE 2X6 Model 42	1300.2448.00	1	W20	
742	DY CABLE FOR ZVT POWER SUPPLY Model 42	1300.0768.00	1	W21	x
745	DX POWER SUPPLY CABLE 6P Model 08 24 40 41	1145.5515.00	1	W23	
746	DX POWER SUPPLY CABLE 4P Model 42	1300.1941.00	1	W22	
750	DX POWER SUPPLY CABLE 8P Model 08 24 40 41	1145.5521.00	1	W24	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
751	DX POWER SUPPLY CABLE 8P Model 42	1300.1987.00	1	W24	
754	DX POWER SUPPLY CABLE 10P Model 42	1300.1993.00	1	W25	
755	DX POWER SUPPLY CABLE 10P Model 08 24 40 41	1145.5538.00	1	W25	
756	VS DIN137-A3-A2	0005.0296.00	8		
757	VS DIN137-A4-A2	0005.0315.00	6		
758	LOCK WASHER	0016.2820.00	8		
759	LOCK WASHER	0016.2837.00	6		
760	POWER ENTRY MODUL 10A SWITCH	3587.5749.00	1	X200	x
762	ADAPTER PLATE	1313.2006.00	1		
765	VS 965/ISR-M3X8-A4-PA	1148.2798.00	2		
770	ZE POWER UNIT ZVAB	1145.3893.00	1	W200	x
772	SCREW	1096.4838.00	2		
775	DX PE CABLE	1090.3881.00	1	W201	
778	OS LABEL RD11 EARTH SYMBOL	0042.5330.00	2		
788	OS LABEL 25MM HIGH-VOLTAGE FLASH	0042.5169.00	1		
789	PROTECTION COVER ZVA	1145.3193.00	1		
790	GJ SWITCHING POWER SUPPLY Model 08 24 40 41	1145.5238.00	1	A20	
	SPARE PART	1145.5473.00			x
791	VS WASHER DIN433-4.3-A4	0082.4586.00	4		
792	VS 7985/ISR-M4X8-A4-PA	1148.2652.00	4		
794	GJ SWITCHING POWER SUPPLY Model 42	1300.2490.00	1	A20	
	SPARE PART	1145.1278.00			x
798	HS WINDOWS EMBEDDED STANDARD 7 WS7E	1099.8570.00	1		
799	OS BARCODE LABEL	0071.7714.00	1		
DRAWING 1145.1390.01 (DISPLAY UNIT ZVA)					
800	ZM MOUNTING PLATE ZVA 8	1145.1703.00	1		
805	ZM MOUNTING PLATE ZVA24	1145.2480.00	1		
810	OP SCREENED FILTER GLASS 10 OHM/SQ	1069.2021.00	1		x

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
820	EK RF SPRING (169)	1069.3063.00	2		
830	EK RF SPRING (225)	1069.3057.00	2		
840	MB SCREEN HOLDER	0852.0850.00	4		
850	VS 965/ISR-M2.5X5-A4-PA	1148.2752.00	4		
855	MM PROTECTIVE COLLAR 9.6X13.9	0852.1234.00	1		
860	SF FLEXIBLE SWITCH BOARD	1145.1990.00	1	A16	x
870	SF KEY PAD 68T ZVA	1145.2016.00	1	A15	x
880	ZM SUPPORT PLATE ZVA	1145.1984.00	1		
890	VS 965/ISR-M2.5X5-A4-PA	1148.2752.00	16		
895	MZ SUPPORT PLATE 2 ZVA	1145.2474.00	1		
897	VS 965/ISR-M2.5X5-A4-PA	1148.2752.00	3		
905	WW ADHESIVE FOAM RIBBON	0852.1805.00	.77 m		
910	BP TFT 800X600X3 10.4INCH	1145.5367.00	1	A70	x
912	MZ DISPLAY COVER	1302.5215.00	1		
920	VS 6900/ISR-M2.5X6-A2	1148.3059.00	2		
925	VS 6900/ISR-M3.0X6-A2	0041.1682.00	2		
930	BP 8MA22368 DC TO AC CONVERTER	1145.5267.00	1	T10	x
935	VS DIN125-A2.2-HP	0049.7396.00	2		
940	VS 7985/ISR-M2X6-A4-PA	1148.2700.00	2		
950	DF CONVERTER CABLE L=330	1145.5215.00	1	W100	x
960	EM ROTARY PULSE GENERATOR 1 (WITH KEY)	0852.2760.00	1	B10	x
980	EM COLLAR	0852.1105.00	1		
990	OK KNOB	0852.1086.00	1		
1000	MZ HOLDING BRACKET FOR PCB	1302.5873.00	1		
1010	VS 965/ISR-M2.5X5-A4-PA	1148.2752.00	2		
1020	GR DISPLAY CONNECTION	1300.1741.00	1	A19	
1030	DF DISPLAY CABLE NEC-ADAPTER	1302.5396.00	1	W70	x
1040	VS 6900/ISR-M2.5X6-A2	1148.3059.00	2		
1050	ED USB BOARD	1305.3207.02	1	A40	x
1070	VS 965/ISR-M2.5X5-A4-PA	1148.2752.00	2		
DRAWING 1145.4177.01 (RM UNIT ZVA 8)					

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
100	ZE RM8 BR UNIT	1145.3593.02	1	A505	x
160	VS 965/ISR-M2.5X8-A4-PA	1148.3294.00	3		
170	MB INTAKE FUNNEL RM8	1145.4583.00	1		
180	VS 6900/ISR-M2.5X6-A2	1148.3059.00	2		
190	ZE FAN 40x40x10	1145.4590.00	1	E500	x
192	VS DIN433-3.2-A4	0082.4570.00	4		
193	VS DIN128-A3-A2	0005.2499.00	4		
194	VS 7985/ISR-M3X16-A4	1145.5021.00	4		
200	MZ RM MOUNT ZVA	1145.2068.00	1		
210	VS 6900/ISR-M2.5X6-A2	1148.3059.00	4		
230	MZ SMA HOLDING ZVA	1145.2022.00	1		
240	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	2		
250	OS LABEL RM8	1145.4548.00	1		
300	DW CABLE W514 GEN	1145.2616.00	1	W514	
310	DW CABLE W515 MEAS	1145.2622.00	1	W515	
320	DW CABLE W518 REF	1145.3012.00	1	W518	
330	FJ TERMINATION 50OHMS SMA	0249.7823.00	1		
510	ZM RM SUBUNIT ZVAB 4/8GHz	1302.4990.08	1		
DRAWING 1145.3593.01 (RM8 BR UNIT)					
100	MB OUTER CONDUCTOR	1045.8888.00	1		
110	ZM INNER CONDUCTOR UNIT	1302.5067.00	1		x
DRAWING 1302.4990.01 (RM SUBUNIT ZVAB 8)					
110	ED RM8 GENERATOR	1145.4754.02	1	A504	x
125	ED RM8 RECEIVER 2	1302.5009.08	1	A503	x
130	MN COVER B-SIDE GEN 8GHZ	1145.3670.00	1		
140	MN COVER A-SIDE GEN 8GHZ	1302.5096.00	1		
150	MN COVER B-SIDE REC 8GHZ	1302.5109.00	1		
400	OS BARCODE LABEL FOR PCB	0071.7714.00	1		
DRAWING 1145.4302.01 (RM UNIT ZVA 24)					
200	ZE REFLECTOMETER 24	1145.4283.02	1	A500	x
220	FJ ADAPTER PC3.5 MALE/MALE	1127.9493.00	1	X2	x

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
230	ZE COUPLER 24	1162.0701.02	1	A501	x
240	MZ COUPLER HOLDING ZVA	1145.4677.00	1		
250	VS 7985/ISR-M2.5X16-A4-PA	1148.2869.00	1		
270	MZ SMA HOLDING ZVA24	1145.4660.00	1		
275	MZ PLATE RM24	1145.4490.00	1		
280	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	2		
300	DW RF CABLE W518 REF	1300.0351.00	1	W518	
310	DW RF CABLE W515 MEAS	1300.0368.00	1	W515	
320	DW RF CABLE W514 GEN	1300.0374.00	1	W514	
330	DV RF CABLE W541	1145.4931.00	1	W541	
DRAWING 1145.4283.01 (REFLECTOMETER 24)					
20	ED RM24 GENERATOR	1145.4348.02	1	A504	
30	ZE GENERATOR 24	1151.6503.02	1	A506	
40	MN COVER A-SIDE GEN 24GHZ	1145.4648.00	1		
50	ED RM24 RECEIVER	1145.4360.02	1	A503	
60	ZE RECEIVER 24	1151.7022.02	1	A507	
70	MN COVER B-SIDE REC 24GHZ	1145.4654.00	1		
80	MZ RM HOLDING ZVA	1145.2422.00	1		
90	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	16	E500	
100	ZE FAN 40x40x20	1145.4619.00	1		x
110	VS 7985/ISR-M3X25-A4	1148.3007.00	4		
120	VS DIN433-3.2-A4	0082.4570.00	4		
130	VS DIN128-A3-A2	0005.2499.00	4		
140	DY CABLE 26P 1,27 70MM1:1	1145.4831.00	1	W519	
DRAWING 1145.4319.01 (RM UNIT ZVA40 GHz)					
400	ZE REFLECTOMETER ZVA40	1145.4390.02	1	A500	x
430	ZE TEST SET 44	1302.3503.02	1	A501	x
440	MZ COUPLEHOLDER 2 ZVA40	1305.3436.00	1		
467	VS 6900/ISR-M2.5X6-A2	1148.3059.00	2		
470	MZ SMA-HOLDER ZVA40	1302.5767.00	1		
475	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	1		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
480	DY CABLE W700	1305.3820.00	1		
485	DV RF CABLE	1305.3842.00	1		
490	MZ RM44 BLOWER ATTACHEMENT	1302.5621.00	1		
500	DW RF CABLE W518A REF	1305.3965.00	1		
510	DW RF CABLE W515A MEAS	1305.3959.00	1		
520	DW RF CABLE W514A GEN	1305.3942.00	1		
600	DW RF CABLE W518B REF	1305.5750.00	1		
610	DW RF CABLE W515B MEAS	1305.5744.00	1		
620	DW RF CABLE W514B GEN	1305.5738.00	1		
DRAWING 1305.3420.01 (RM UNIT 2 ZVA40 GHz)					
400	ZE REFLECTOMETER ZVA40	1145.4390.02	1	A500	x
430	ZE COUPLER 44 Model 02 03	1306.7506.02	1	A501	x
431	ZE COUPLER 44 Model 12 13	1306.7506.03	1	A501	x
440	MZ COUPLEHOLDER 2 ZVA40	1302.5773.00	1		
445	VS 6900/ISR-M2.5X6-A2	1148.3059.00	2		
450	ZE BIAS 44	1304.2007.02	1		x
460	MZ HOLDER	1304.4651.00	1		
470	MZ SMA-HOLDER ZVA40	1302.5767.00	1		
480	DY CABLE W700	1305.3820.00	1	W700	
485	DV RF CABLE	1305.3842.00	1	W541	
490	MZ RM44 BLOWER ATTACHEMENT Model 02 12	1302.5621.00	1		
500	DW RF CABLE W518A REF Model 02 12	1145.4448.00	1	W518A	
510	DW RF CABLE W515A MEAS Model 02 12	1302.5715.00	1	W515A	
520	DW RF CABLE W514A GEN Model 02 12	1302.5709.00	1	W514A	
600	DW RF CABLE W518B REF Model 03 13	1145.445400	1	W518B	
610	DW RF CABLE W515B MEAS Model 03 13	1302.5744.00	1	W515B	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
620	DW RF CABLE W514B GEN Model 03 13	1302.5738.00	1	W514B	
DRAWING 1305.3407.01 (RM UNIT ZVA50 GHz)					
400	ZE REFLECTOMETER ZVA50	1305.3413.02	1	A500	x
430	ZE COUPLER 50	1306.9009.02	1	A501	x
440	MZ COUPLEHOLDER ZVA40	1302.5773.00	1		
445	VS 6900/ISR-M2.5X6-A2	1148.3059.00	2		
450	ZE BIAS 50	1306.9509.02	1		x
460	MZ HOLDER	1304.4651.00	1		
470	MZ SMA-HOLDER ZVA50	1305.5516.00	1		
475	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	2		
480	DY CABLE W700	1305.3820.00	1	W700	
485	DV RF CABLE	1305.3842.00	1	W541	
490	MZ RM44 BLOWER ATTACHEMENT Model 02	1302.5621.00	1		
500	DW RF CABLE W518A REF Model 02	1305.5245.00	1	W518A	
510	DW RF CABLE W515A MEAS Model 02	1305.5222.00	1	W515A	
520	DW RF CABLE W514A GEN Model 02	1305.5200.00	1	W514A	
600	DW RF CABLE W518B REF Model 03	1305.5252.00	1	W518B	
610	DW RF CABLE W515B MEAS Model 03	1305.5239.00	1	W515B	
620	DW RF CABLE W514B GEN Model 03	1305.5216.00	1	W514B	
DRAWING 1305.6241.01 (RM UNIT ZVA67 GHz)					
400	ZE REFLECTOMETER ZVA67	1305.6258.02	1	A500	x
430	ZE COUPLER 67	1310.5504.02	1	A501	x
440	MZ COUPLEHOLDER ZVA40	1302.5773.00	1		
445	VS 6900/ISR-M2.5X6-A2	1148.3059.00	2		
450	ZE MICROSTRIP BIAS 67	1310.4008.02	1		x
460	MZ HOLDER BIAS67	1305.6464.00	1		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
470	MZ SMA-HOLDER ZVA50	1305.5516.00	1		
475	VS 965/ISR-M2.5X6-A4-PA	1148.3288.00	2		
480	DY CABLE W700	1305.3820.00	1	W700	x
485	DV RF CABLE	1305.3842.00	1	W541	
490	MZ RM44 BLOWER ATTACHEMENT Model 02	1302.5621.00	1		
500	DW RF CABLE W518 REF Model 02	1305.6641.00	1	W518A	
510	DW RF CABLE W515 MEAS Model 02	1305.6670.00	1	W515A	
520	DW RF CABLE W514 GEN Model 02	1305.6664.00	1	W514A	
600	DW RF CABLE W518B REF Model 03	1305.6858.00	1	W518B	
610	DW RF CABLE W515B MEAS Model 03	1305.6864.00	1	W515B	
620	DW RF CABLE W514B GEN Model 03	1305.6841.00	1	W514B	
DRAWING 1164.1770.00 (OPTION ZVAB-B4 1164.1757.02)					
20	EE FREQUENCY REFERENCE	1145.3835.05	1	A100	x
30	PD INSTALLATION INSTRUCTION ZVAB-B4	1164.1770.00	1		
DRAWING 1305.6306.00 (OPTION ZVAB-B14 1305.6306.02)					
20	EE UNIVERSAL INTERFACE BOARD	1305.6312.02	1		x
30	DY CABLE	1305.6335.00	1	W245	x
40	VS COMBINATION SCREW	0048.7886.00	2		
50	VS NUT DIN 934-M3	0016.4398.00	2		
60	DZ CABLE TIE	0015.9038.00	2		
70	PD INSTALL: INSTRUCTION ZVAB-B14	1305.6341.00	1		
80	PD SAFETY INSTR. BOOKLET	1171.0100.42	1		
90	KB REAR PANEL PLATE	1145.1226.00	1		
DRAWING 1164.0715.01 (OPTION ZVAB-B18 REMOVABLE FLASH DISC)					
3000	ED COMPACT FI-BOARD S-ATA Mod 02, 03	1164.5046.02	1	A381	x
3010	ZM FLASH MEMWITH SW Mod 02 for FMR6	1164.0809.02	1	A380	x

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
3015	ZM FLASH MEMWITH SW Mod 03 for FMR7	1164.0809.03	1	A380	x
3020	ZM CF HOLDER ZVAB-B18 Mod 02, 03	1164.0767.00	1		
3030	VS COMBINATION SCREW Mod 02, 03	1148.3059.00	4		
3040	MZ CF-CARD ADAPTER PLATE Mod 02, 03	1163.0963.00	1		
3050	VS COMBINATION SCREW Mod 02, 03	1148.3059.00	3		
3060	DY FLATCABLE W11 Mod 02 for units with FMR6 only	1164.0796.00	1	W11	x
3065	DG SATA DATACABLE 420 Mod 03, 04 for units with FMR7 only	1091.3456.00	1	W11	x
3066	DF SATA POWERCABLE 440 Mod 03, 04 for units with FMR7 only	1091.3433.00	1	W13	x
3070	DZ FLAT CABLE HOLDER Mod 02	0627.2116.00	2		
3080	WT POLYETHYLEN COMPOUND Mod 02	0001.9501.00	.15m		
3085	DZ GROMMET 14X24X7	0099.1440.00	1		
3095	PD ASSEMBLY INSTRUCTION ZVAB-B18	1164.0738.00	1		
3096	PD SAFETY INSTR. BOOKLET	1171.0100.42	1		
4000	MZ HDD GUIDING Mod 04	1305.6787.00	1		x
4010	MZ HDD HOLDER Mod 04	1305.6793.00	1		x
4030	MP HOLDER Mod 04	1201.8161.00	2		
4040	FP SATA ADAPTOR Mod 04	1308.0280.00	1		x
4050	MB SPECIAL SCREW M3 Mod 04	1304.9199.00	2		x
DRAWING 1164.0250.00 (OPTION ZVA8-B16 DIRECT GENERATOR/RECEIVER ACCESS 1164.0209.08/09/10)					
1120	DW RF CABLE W503 REF OUT Model 08 09 10	1145.2968.00	2	W503	
1122	DW RF CABLE W503 REF OUT Model 09 10	1145.2968.00	1	W503	
1124	DW RF CABLE W503 REF OUT Model 10	1145.2968.00	1	W503	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
1130	DW RF CABLE W501 REF IN Model 08 09 10	1145.2951.00	2	W501	
1132	DW RF CABLE W501 REF IN Model 09 10	1145.2951.00	1	W501	
1134	DW RF CABLE W501 REF IN Model 10	1145.2951.00	1	W501	
1140	DW RF CABLE W513 SRC OUT Model 08 09 10 (only w. Gen Att)	1164.0321.00	2	W513	
1142	DW RF CABLE W513 SRC OUT Model 09 10 (only w. Gen Att)	1164.0321.00	1	W513	
1144	DW RF CABLE W513 SRC OUT Model 10 (only w. Gen Att)	1164.0321.00	1	W513	
1150	DW RF CABLE W534 SRC IN Model 08 09 10	1145.2997.00	2	W534	
1152	DW RF CABLE W534 SRC IN Model 09 10	1145.2997.00	1	W534	
1154	DW RF CABLE W534 SRC IN Model 10	1145.2997.00	1	W534	
1160	DW RF CABLE W505 MEAS OUT Model 08 09 10	1145.2980.00	2	W505	
1162	DW RF CABLE W505 MEAS OUT Model 09 10	1145.2980.00	1	W505	
1164	DW RF CABLE W505 MEAS OUT Model 10	1145.2980.00	1	W505	
1170	DW RF CABLE W506 MEAS IN Model 08 09 10 (only w. Rec Att)	1164.0280.00	2	W506	
1172	DW RF CABLE W506 MEAS IN Model 09 10 (only w. Rec Att)	1164.0280.00	1	W506	
1174	DW RF CABLE W506 MEAS IN Model 10 (only w. Rec Att)	1164.0280.00	1	W506	
1180	DW RF CABLE W535 SRC OUT Model 08 09 10 (only w. Gen Att or Com-biner)	1145.3006.00	2	W535	
1182	DW RF CABLE W535 SRC OUT Model 09 10 (only w. Gen Att or Combiner)	1145.3006.00	1	W535	
1184	DW RF CABLE W535 SRC OUT Model 10 (only w. Gen Att or Combiner)	1145.3006.00	1	W535	
1190	DW RF CABLE W504 MEAS IN Model 08 09 10 (only w. Rec Att)	1145.2974.00	2	W504	
1192	DW RF CABLE W504 MEAS IN Model 09 10 (only w. Rec Att)	1145.2974.00	1	W504	
1194	DW RF CABLE W504 MEAS IN Model 10 (only w. Rec Att)	1145.2974.00	1	W504	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
1200	DW RF CABLE W513 SRC OUT Model 08 09 10 (only w. Combiner Att)	1300.0480.00	2	W513	
1202	DW RF CABLE W513 SRC OUT Model 09 10 (only w. Combiner Att)	1300.0480.00	1	W513	
1204	DW RF CABLE W513 SRC OUT Model 10 (only w. Combiner Att)	1300.0480.00	1	W513	
1210	DW CABLE EXT. 3.6 Model 08 09 10	1300.1729.00	6	W611 W612 W613 W621 W622 W623	
1212	DW CABLE EXT. 3.6 Model 09 10	1300.1729.00	3	W631 W632 W633	
1214	DW CABLE EXT. 3.6 Model 10	1300.1729.00	3	W641 W642 W643	
1215	PD INSTALLATION INSTRUCTION	1164.0250.00	1		
DRAWING 1164.0267.00 (OPTION ZVA24-B16 DIRECT GENERATOR/RECEIVER ACCESS 1164.0209.24/25/26)					
1220	DW RF CABLE W503 REF OUT Model 24 25 26	1300.0380.00	2	W503	
1222	DW RF CABLE W503 REF OUT Model 25 26	1300.0380.00	1	W503	
1224	DW RF CABLE W503 REF OUT Model 26	1300.0380.00	1	W503	
1230	DW RF CABLE W501 REF IN Model 24 25 26	1300.0397.00	2	W501	
1232	DW RF CABLE W501 REF IN Model 25 26	1300.0397.00	1	W501	
1234	DW RF CABLE W501 REF IN Model 26	1300.0397.00	1	W501	
1240	DW RF CABLE W513 SRC OUT Model 24 25 26 (only w. Gen Att)	1300.0474.00	2	W513	
1242	DW RF CABLE W513 SRC OUT Model 25 26 (only w. Gen Att)	1300.0474.00	1	W513	
1244	DW RF CABLE W513 SRC OUT Model 26 (only w. Gen Att)	1300.0474.00	1	W513	
1250	DW RF CABLE W534 SRC IN Model 24 25 26	1300.0422.00	2	W534	
1252	DW RF CABLE W534 SRC IN Model 25 26	1300.0422.00	1	W534	
1254	DW RF CABLE W534 SRC IN Model 26	1300.0422.00	1	W534	
1260	DW RF CABLE W505 MEAS OUT Model 24 25 26	1300.0416.00	2	W505	
1262	DW RF CABLE W505 MEAS OUT Model 25 26	1300.0416.00	1	W505	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
1264	DW RF CABLE W505 MEAS OUT Model 26	1300.0416.00	1	W505	
1270	DW RF CABLE W506 MEAS IN Model 24 25 26 (only w. Rec Att)	1300.0468.00	2	W506	
1272	DW RF CABLE W506 MEAS IN Model 25 26 (only w. Rec Att)	1300.0468.00	1	W506	
1274	DW RF CABLE W506 MEAS IN Model 26 (only w. Rec Att)	1300.0468.00	1	W506	
1280	DW RF CABLE W535 SRC OUT Model 24 25 26 (only w. Gen Att)	1300.0439.00	2	W535	
1282	DW RF CABLE W535 SRC OUT Model 25 26 (only w. Gen Att)	1300.0439.00	1	W535	
1284	DW RF CABLE W535 SRC OUT Model 26 (only w. Gen Att)	1300.0439.00	1	W535	
1290	DW RF CABLE W504 MEAS IN Model 24 25 26 (only w. Rec Att)	1300.0400.00	2	W504	x
1292	DW RF CABLE W504 MEAS IN Model 25 26 (only w. Rec Att)	1300.0400.00	1	W504	
1294	DW RF CABLE W504 MEAS IN Model 26 (only w. Rec Att)	1300.0400.00	1	W504	
1300	DW CABLE EXT. (AL3.6 PC3.5) Model 24 25 26	1145.2580.00	6	W611 W612 W613 W621 W622 W623	X
1302	DW CABLE EXT. (AL3.6 PC3.5) Model 25 26	1145.2580.00	3	W631 W632 W633	
1304	DW CABLE EXT. (AL3.6 PC3.5) Model 26	1145.2580.00	3	W641 W642 W643	
1310	PD INSTALLATION INSTRUCTION	1164.0267.00	1		
DRAWING 1305.5322.00 (OPTION ZVA40-B16 DIRECT GENERATOR/RECEIVER ACCESS 1164.0209.40/41/42)					
1320	DW RF CABLE W503 REF OUT Model 40 42	1145.4525.00	2	W503	
1322	DW RF CABLE W503 REF OUT Model 41 42	1145.4525.00	1	W503	
1324	DW RF CABLE W503 REF OUT Model 42	1145.4525.00	1	W503	
1330	DW RF CABLE W501A REF IN Model 40 41 42	1305.3594.00	2	W501A	
1332	DW RF CABLE W501B REF IN Model 41 42	1305.3620.00	1	W501B	
1334	DW RF CABLE W501B REF IN Model 42	1305.3620.00	1	W501B	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
1340	DW RF CABLE W513 SRC OUT Model 40 41 42 (only w. Gen Att)	1300.0474.00	2	W513	
1342	DW RF CABLE W513 SRC OUT Model 41 42 (only w. Gen Att)	1300.0474.00	1	W513	
1344	DW RF CABLE W513 SRC OUT Model 42 (only w. Gen Att)	1300.0474.00	1	W513	
1350	DW RF CABLE W534 SRC IN Model 40 41 42	1305.3542.00	2	W534	
1352	DW RF CABLE W534 SRC IN Model 41 42	1305.3542.00	1	W534	
1354	DW RF CABLE W534 SRC IN Model 42	1305.3542.00	1	W534	
1360	DW RF CABLE W505 MEAS OUT Model 40 41 42	1305.3565.00	2	W505	
1362	DW RF CABLE W505 MEAS OUT Model 41 42	1305.3565.00	1	W505	
1364	DW RF CABLE W505 MEAS OUT Model 42	1305.3565.00	1	W505	
1370	DW RF CABLE W506 MEAS IN Model 40 41 42 (only w. Rec Att)	1300.0468.00	2	W506	
1372	DW RF CABLE W506 MEAS IN Model 41 42 (only w. Rec Att)	1300.0468.00	1	W506	
1374	DW RF CABLE W506 MEAS IN Model 42 (only w. Rec Att)	1300.0468.00	1	W506	
1380	DW RF CABLE W535A SRC OUT Model 40 41 42 (only without Gen Att)	1305.3559.00	2	W535A	
1382	DW RF CABLE W535B SRC OUT Model 41 42 (only without Gen Att)	1305.3607.00	1	W535B	
1384	DW RF CABLE W535B SRC OUT Model 42 (only without Gen Att)	1305.3607.00	1	W535B	
1390	DW RF CABLE W504A MEAS IN Model 49 41 42 (only without Rec Att)	1305.3571.00	2	W504A	
1392	DW RF CABLE W504B MEAS IN Model 41 42 (only without Rec Att)	1305.3613.00	1	W504B	
1394	DW RF CABLE W504B MEAS IN Model 42 (only without Rec Att)	1305.3513.00	1	W504B	
1400	DW CABLE EXT. (AL3.6 PC3.5) Model 40 41 42	1145.2580.00	6	W611 W612 W613 W621 W622 W623	
1402	DW CABLE EXT. (AL3.6 PC3.5) Model 41 42	1145.2580.00	3	W631 W632 W633	
1404	DW CABLE EXT. (AL3.6 PC3.5) Model 42	1145.2580.00	3	W641 W642 W643	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
1410	PD INSTALLATION INSTRUCTION	1164.0238.00	1		
DRAWING 1305.5322.00 (OPTION ZVA50-B16 DIRECT GENERATOR/RECEIVER ACCESS 1164.0209.54/52)					
1420	DW RF CABLE W503 REF OUT Model 50 52	1305.5451.00	2	W503	
1424	DW RF CABLE W503 REF OUT Model 52	1305.5451.00	1	W503	
1430	DW RF CABLE W501A REF IN Model 50 52	1305.5445.00	2	W501A	
1434	DW RF CABLE W501B REF IN Model 52	1305.5480.00	1	W501B	
1440	DW RF CABLE W513 SRC OUT Model 50 52 (only w. Gen Att)	1305.5500.00	2	W513	
1444	DW RF CABLE W513 SRC OUT Model 52 (only w. Gen Att)	1305.5500.00	1	W513	
1450	DW RF CABLE W534 SRC IN Model 50 52	1305.5400.00	2	W534	
1454	DW RF CABLE W534 SRC IN Model 52	1305.5400.00	1	W534	
1460	DW RF CABLE W505 MEAS OUT Model 50 52	1305.5439.00	2	W505	
1464	DW RF CABLE W505 MEAS OUT Model 52	1305.5439.00	1	W505	
1470	DW RF CABLE W506 MEAS IN Model 50 52 (only w. Rec Att)	1305.5497.00	2	W506	
1474	DW RF CABLE W506 MEAS IN Model 52 (only w. Rec Att)	1300.5497.00	1	W506	
1480	DW RF CABLE W535A SRC OUT Model 50 52 (only without Gen Att)	1305.5416.00	2	W535A	
1484	DW RF CABLE W535B SRC OUT Model 52 (only without Gen Att)	1305.5416.00	1	W535B	
1490	DW RF CABLE W504A MEAS IN Model 50 52 (only without Rec Att)	1305.5422.00	2	W504A	
1494	DW RF CABLE W504B MEAS IN Model 52 (only without Rec Att)	1305.5474.00	1	W504B	
1500	VS DIN912-M1.6X5-A2 Model 50 52	0920.8428.00	48		
1504	VS DIN912-M1.6X5-A2 Model 52	0920.8428.00	48		
1510	DW CABLE EXT B16 Model 50 52	1305.5397.00	6	W611 W612 W613 W621 W622 W623	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
1514	DW CABLE EXT B16 Model 52	1305.5397.00	6	W631 W632 W633 W641 W642 W643	
1520	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
1600	STD SAFETY INSTR. BOOKLET A4 EN ES DE FR	1171.0100.42	1		
DRAWING 1305.5322.00 (OPTION ZVA67-B16 DIRECT GENERATOR/RECEIVER ACCESS 1164.0209.67/69)					
1421	DW RF CABLE W503 REF OUT Model 67 69	1305.6958.00	2	W503	
1425	DW RF CABLE W503 REF OUT Model 69	1305.6958.00	2	W503	
1431	DW RF CABLE W501A REF IN Model 67 69	1305.6964.00	2	W501A	
1435	DW RF CABLE W501B REF IN Model 69	1305.6970.00	2	W501B	
1441	DW RF CABLE W513 SRC OUT Model 67 69 (only w. Gen Att)	1305.6893.00	2	W513	
1445	DW RF CABLE W513 SRC OUT Model 69 (only w. Gen Att)	1305.6893.00	2	W513	
1451	DW RF CABLE W534 SRC IN Model 67 69	1305.6987.00	2	W534	
1455	DW RF CABLE W534 SRC IN Model 69	1305.6987.00	2	W534	
1461	DW RF CABLE W505 MEAS OUT Model 67 69	1305.6993.00	2	W505	
1465	DW RF CABLE W505 MEAS OUT Model 69	1305.6993.00	2	W505	
1471	DW RF CABLE W506 MEAS IN Model 67 69 (only w. Rec Att)	1305.6935.00	2	W506	
1475	DW RF CABLE W506 MEAS IN Model 69 (only w. Rec Att)	1300.6935.00	2	W506	
1481	DW RF CABLE W535A SRC OUT Model 67 69 (only without Gen Att)	1305.7154.00	2	W535A	
1485	DW RF CABLE W535B SRC OUT Model 69 (only without Gen Att)	1305.7154.00	2	W535B	
1491	DW RF CABLE W504A MEAS IN Model 67 69 (only without Rec Att)	1305.7177.00	2	W504A	
1495	DW RF CABLE W504B MEAS IN Model 69 (only without Rec Att)	1305.7177.00	2	W504B	
1500	VS DIN912-M1.6X5-A2 Model 67 69	0920.8428.00	48		
1504	VS DIN912-M1.6X5-A2 Model 69	0920.8428.00	48		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
1511	DW CABLE EXT B16 Model 67 69	1305.7031.00	6	W611 W612 W613 W621 W622 W623	
1515	DW CABLE EXT B16 Model 69	1305.7031.00	6	W631 W632 W633 W641 W642 W643	
1520	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
1600	STD SAFETY INSTR. BOOKLET A4 EN ES DE FR	1171.0100.42	1		
DRAWING	1164.0215.00 (OPTION ZVA8-B21 GEN.ATTENUATOR PORT 1 1164.0009.02) (OPTION ZVA8-B22 GEN.ATTENUATOR PORT 2 1164.0015.02) (OPTION ZVA8-B23 GEN.ATTENUATOR PORT 3 1164.0021.02) (OPTION ZVA8-B24 GEN.ATTENUATOR PORT 4 1164.0038.02)				
20	ZE ATTENUATOR COMB 8	1137.1595.02	1	A550	x
40	VS DIN6900-M2.5X6 -A2	0071.5040.00	2		
50	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
60	DW RF CABLE W512 ATT-GEN	1164.0315.00	1	W512	
70	DW RF CABLE W536 SRC	1164.0367.00	1	W536	
80	DW RF CABLE W517 EXT SRC1	1300.0516.00	1	W517	
130	PD INSTALLATION INSTRUCTION	1164.0215.00	1		
DRAWING	1164.0215.00 (OPTION ZVA8-B31 REC.ATTENUATOR PORT 1 1164.0044.02) (OPTION ZVA8-B32 REC.ATTENUATOR PORT 2 1164.0050.02) (OPTION ZVA8-B33 REC.ATTENUATOR PORT 3 1164.0067.02) (OPTION ZVA8-B34 REC.ATTENUATOR PORT 4 1164.0073.02)				
20	ZE ATTENUATOR REC8	1137.1543.02	1	A550	x
40	VS DIN6900-M2.5X6 -A2	0071.5040.00	2		
50	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
70	DW RF CABLE W507 ATT-REC	1164.0296.00	1	W507	
80	DW RF CABLE W508 MEAS	1164.0273.00	1	W508	
100	PD INSTALLATION INSTRUCTION	1164.0215.00	1		
DRAWING	1164.0221.00 (OPTION ZVA24-B21 GEN.ATTENUATOR PORT 1 1164.0109.02) (OPTION ZVA24-B22 GEN.ATTENUATOR PORT 2 1164.0115.02) (OPTION ZVA24-B23 GEN.ATTENUATOR PORT 3 1164.0121.02) (OPTION ZVA24-B24 GEN.ATTENUATOR PORT 4 1164.0138.02)				
20	ZE ATTENUATOR GEN24	1046.5082.04	1	A550	x
30	MZ ATTENUATOR MOUNT ZVA24	1164.0438.00	1		
40	VS DIN6900-M2.5X6 -A2	0071.5040.00	3		
50	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
60	DW RF CABLE W512 ATT-GEN	1300.0451.00	1	W512	
70	DW RF CABLE W536 SRC	1164.0380.00	1	W536	
120	PD INSTALLATION INSTRUCTION	1164.0221.00	1		
DRAWING	1164.0221.00 (OPTION ZVA24-B31 REC.ATTENUATOR PORT 1 1164.0144.02) (OPTION ZVA24-B32 REC.ATTENUATOR PORT 2 1164.0150.02) (OPTION ZVA24-B33 REC.ATTENUATOR PORT 3 1164.0167.02) (OPTION ZVA24-B34 REC.ATTENUATOR PORT 4 1164.0173.02)				
20	ZE ATTENUATOR REC24	1046.5082.05	1	A550	x
30	MZ ATTENUATOR MOUNT ZVA24	1164.0438.00	1		
40	VS DIN6900-M2.5X6 -A2	0071.5040.00	3		
50	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
70	DW RF CABLE W507 ATT-REC	1300.0445.00	1	W507	
80	DW RF CABLE W508 MEAS	1164.0373.00	1	W508	
DRAWING	1164.0409.00 (OPTION ZVA40-B21 GEN.ATTENUATOR PORT 1 1302.5409.02) (OPTION ZVA40-B22 GEN.ATTENUATOR PORT 2 1302.5415.02)				
2010	ZE ATTENUATOR GEN44	1046.5082.02	1	A550	x
2020	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2030	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
2040	DW RF CABLE W512A ATT-GEN	1305.3636.00	1	W512A	
2060	DW RF CABLE W536 SRC	1305.3671.00	1	W536	
2070	DW RF CABLE W513 SRC OUT	1300.0474.00	1	W513	
2090	PD INSTALLATION INSTRUCTION	1164.0409.00	1		
DRAWING	1164.0409.00 (OPTION ZVA40-B23 GEN.ATTENUATOR PORT 3 1302.5421.02) (OPTION ZVA40-B24 GEN.ATTENUATOR PORT 4 1302.5438.02)				
2010	ZE ATTENUATOR GEN44	1046.5082.02	1	A550	x
2020	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2030	DY ATT-CTRL_CABLE GENERATOR 240 MM	1164.0396.00	1	W550	
2040	DW RF CABLE W512B ATT-GEN	1305.3659.00	1	W512B	
2060	DW RF CABLE W536 SRC	1305.3671.00	1	W536	
2070	DW RF CABLE W513 SRC OUT	1300.0474.00	1	W513	
2090	PD INSTALLATION INSTRUCTION	1164.0409.00	1		
DRAWING	1164.0409.00 (OPTION ZVA40-B31 REC.ATTENUATOR PORT 1 1302.5444.02) (OPTION ZVA40-B32 REC.ATTENUATOR PORT 2 1302.5450.02)				
2110	ZE ATTENUATOR REC44	1046.5082.03	1	A550	x

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
2120	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2130	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
2140	DW RF CABLE W507A ATT-REC	1305.3642.00	1	W507A	
2160	DW RF CABLE W508 MEAS	1305.3688.00	1	W508	
2170	DW RF CABLE W506 MEAS IN	1305.0468.00	1	W506	
2190	PD INSTALLATION INSTRUCTION	1164.0409.00	1		
DRAWING	1164.0409.00 (OPTION ZVA40-B33 REC.ATTENUATOR PORT 3 1302.5467.02) (OPTION ZVA40-B34 REC.ATTENUATOR PORT 4 1302.5473.02)				
2110	ZE ATTENUATOR REC44	1046.5082.03	1	A550	x
2120	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2130	DY ATT-CTRL_CABLE GENERATOR 240 MM	1164.0396.00	1	W550	
2140	DW RF CABLE W507B ATT-REC	1305.3665.00	1	W507B	
2160	DW RF CABLE W508 MEAS	1305.3688.00	1	W508	
2170	DW RF CABLE W506 MEAS IN	1305.0468.00	1	W506	
2190	PD INSTALLATION INSTRUCTION	1164.0409.00	1		
DRAWING	1164.0409.00 (OPTION ZVA50-B21 GEN.ATTENUATOR PORT 1 1305.5616.02) (OPTION ZVA50-B22 GEN.ATTENUATOR PORT 2 1305.5622.02)				
2010	ZE ATTENUATOR 50 DB	1170.0065.02	1	A550	x
2020	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2030	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
2040	DW RF CABLE W512A ATT-GEN	1305.5345.00	1	W512A	
2060	DW RF CABLE W536 SRC	1305.5339.00	1	W536	
2070	DW RF CABLE W513 SRC OUT	1305.5500.00	1	W513	
2090	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
DRAWING	1164.0409.00 (OPTION ZVA50-B23 GEN.ATTENUATOR PORT 3 1305.5639.02) (OPTION ZVA50-B24 GEN.ATTENUATOR PORT 4 1305.5645.02)				
2010	ZE ATTENUATOR 50 DB	1170.0065.02	1	A550	x
2020	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2030	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
2040	DW RF CABLE W512B ATT-GEN	1305.5351.00	1	W512B	
2060	DW RF CABLE W536 SRC	1305.5339.00	1	W536	
2070	DW RF CABLE W513 SRC OUT	1305.5500.00	1	W513	

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
2090	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
DRAWING	1164.0409.00 (OPTION ZVA50-B31 REC.ATTENUATOR PORT 1 1302.5716.02) (OPTION ZVA50-B32 REC.ATTENUATOR PORT 2 1302.5722.02)				
2110	ZE ATTENUATOR 35 DB	1170.0065.03	1	A550	x
2120	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2130	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
2140	DW RF CABLE W507A ATT-REC	1305.5374.00	1	W507A	
2160	DW RF CABLE W508 MEAS	1305.3568.00	1	W508	
2170	DW RF CABLE W506 MEAS IN	1305.5497.00	1	W506	
2190	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
DRAWING	1164.0409.00 (OPTION ZVA50-B33 REC.ATTENUATOR PORT 3 1302.5739.02) (OPTION ZVA50-B34 REC.ATTENUATOR PORT 4 1302.5745.02)				
2110	ZE ATTENUATOR 35 DB	1170.0065.03	1	A550	x
2120	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2130	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
2140	DW RF CABLE W507B ATT-REC	1305.5380.00	1	W507B	
2160	DW RF CABLE W508 MEAS	1305.5368.00	1	W508	
2170	DW RF CABLE W506 MEAS IN	1305.5497.00	1	W506	
2190	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
DRAWING	1305.5322.00 (OPTION ZVA67-B21 GEN.ATTENUATOR PORT 1 1305.7077.02) (OPTION ZVA67-B22 GEN.ATTENUATOR PORT 2 1305.7083.02)				
2010	ZE ATTENUATOR GEN67GHZ	1170.0065.04	1	A550	x
2020	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2030	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
2040	DW RF CABLE W512A ATT-GEN	1305.6870.00	1	W512A	
2060	DW RF CABLE W536 SRC	1305.6887.00	1	W536	
2070	DW RF CABLE W513 SRC OUT	1305.6893.00	1	W513	
2090	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
2100	STD SAFETY INSTR. BOOKLET A4 EN ES DE FR	1171.0100.42	1		
DRAWING	1305.5322.00 (OPTION ZVA67-B23 GEN.ATTENUATOR PORT 3 1305.7090.02) (OPTION ZVA67-B24 GEN.ATTENUATOR PORT 4 1305.7102.02)				
2010	ZE ATTENUATOR GEN67GHZ	1170.0065.04	1	A550	x
2020	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
2030	DY ATT-CTRL_CABLE GENERATOR 240MM	1164.0396.00	1	W550	
2050	DW RF CABLE W512B ATT-GEN	1305.6906.00	1	W512B	
2060	DW RF CABLE W536 SRC	1305.6887.00	1	W536	
2070	DW RF CABLE W513 SRC OUT	1305.6893.00	1	W513	
2090	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
2100	STD SAFETY INSTR. BOOKLET A4 EN ES DE FR	1171.0100.42	1		
DRAWING	1305.5322.00 (OPTION ZVA67-B31 REC.ATTENUATOR PORT 1 1302.7119.02) (OPTION ZVA67-B32 REC.ATTENUATOR PORT 2 1302.7125.02)				
2110	ZE ATTENUATOR REC67GHZ	1170.0065.05	1	A550	x
2120	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2130	DY ATT-CTRL_CABLE 90	1164.0244.00	1	W550	
2140	DW RF CABLE W507A ATT-REC	1305.6912.00	1	W507A	
2160	DW RF CABLE W508 MEAS	1305.6929.00	1	W508	
2170	DW RF CABLE W506 MEAS IN	1305.6935.00	1	W506	
2190	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
2200	STD SAFETY INSTR. BOOKLET A4 EN ES DE FR	1171.0100.42	1		
DRAWING	1305.5322.00 (OPTION ZVA67-B33 REC.ATTENUATOR PORT 3 1302.7131.02) (OPTION ZVA67-B34 REC.ATTENUATOR PORT 4 1302.7148.02)				
2110	ZE ATTENUATOR REC67GHZ	1170.0065.05	1	A550	x
2120	VS DIN6900-M2.5X6 -A2	1148.3059.00	2		
2130	DY ATT-CTRL_CABLE GENERATOR 240MM	1164.0396.00	1	W550	
2150	DW RF CABLE W507B ATT-REC	1305.6941.00	1	W507B	
2160	DW RF CABLE W508 MEAS	1305.6929.00	1	W508	
2170	DW RF CABLE W506 MEAS IN	1305.6935.00	1	W506	
2190	PD INSTALLATION INSTRUCTION	1305.5322.00	1		
2200	STD SAFETY INSTR. BOOKLET A4 EN ES DE FR	1171.0100.42	1		
	MILLIMETER WAVE CONVERTERS				
ZVA-Z75	ZVA-Z75 REFLECTOMETER WR15	1307.7400.02			
ZVA-Z90E	ZVA-Z90E REFLECTOMETER EL ATT WR15	1307.7600.02			
ZVA-Z110	ZVA-Z110 REFLECTOMETER WR10	1307.7000.02			

Position	Designation	Stock No.	Number	Electrical Designation	Recommended spare parts
ZVA-Z110E	ZVA-Z110E REFLECTOMETER EL ATT WR10	1307.7000.40			
ZVA-Z110EP	ZVA-Z110EP REFLECTOMETER ELATT POW WR10	1307.7000.44			
ZVA-Z140	ZVA-Z140 REFLECTOMETER WR08	1307.7800.02			
ZVA-Z170	ZVA-Z170 REFLECTOMETER WR06	1311.8707.02			
ZVA-Z220	ZVA-Z220 REFLECTOMETER WR05	1307.8006.02			
ZVA-Z325	ZVA-Z325 FREQUENCY CONVERTER WR03	1317.0514.02			
ZVA-Z500	ZVA-Z500 FREQUENCY CONVERTER WR02	1317.0520.02			

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NX

MOD08,24 (110)
MOD40,43,50 (111)
MOD09,10,26,42,45,52 (113)
MOD28,48 (117)
MOD10,26 (115)
MOD42 45,52 (116)
MOD28,48 (114)
(100)
MOD09,10,26,28,42,45,48,52 (105)
(120)
(420)
(410)
(295)
(296)
(299)
(510) KC-Label glued acc.to HVL700 placed on rear panel below GS/VDE print
VIEW A
MOD 10,26 28,42,45 48,52 (135) (130)
(265) (264) (266) (267) (280) (282) (284)
W21
W241
W242
(270) (272) (275)
VIEW A only MOD08,24,40,50
(470) (460) (455) (450) (405) (400) (430) (440)
(293) MOD08,24 40,43,50
(292) MOD08,24 40,43,50
(14) MOD40,42 43,45,48,50,52
(12) MOD24,26,28
(10) MOD08,10
(297)
(299)
MOD08 (471)
MOD10 (473)
MOD24 40,43,50 (490)
MOD26,28 42,45,48,52 (492)
(300) MOD08
(306) MOD10
(310) MOD24
(316) MOD26
(318) MOD28
(320) MOD40
(321) MOD43
(326) MOD42
(327) MOD45
(328) MOD48
(390)
(330) MOD50
(334) MOD52

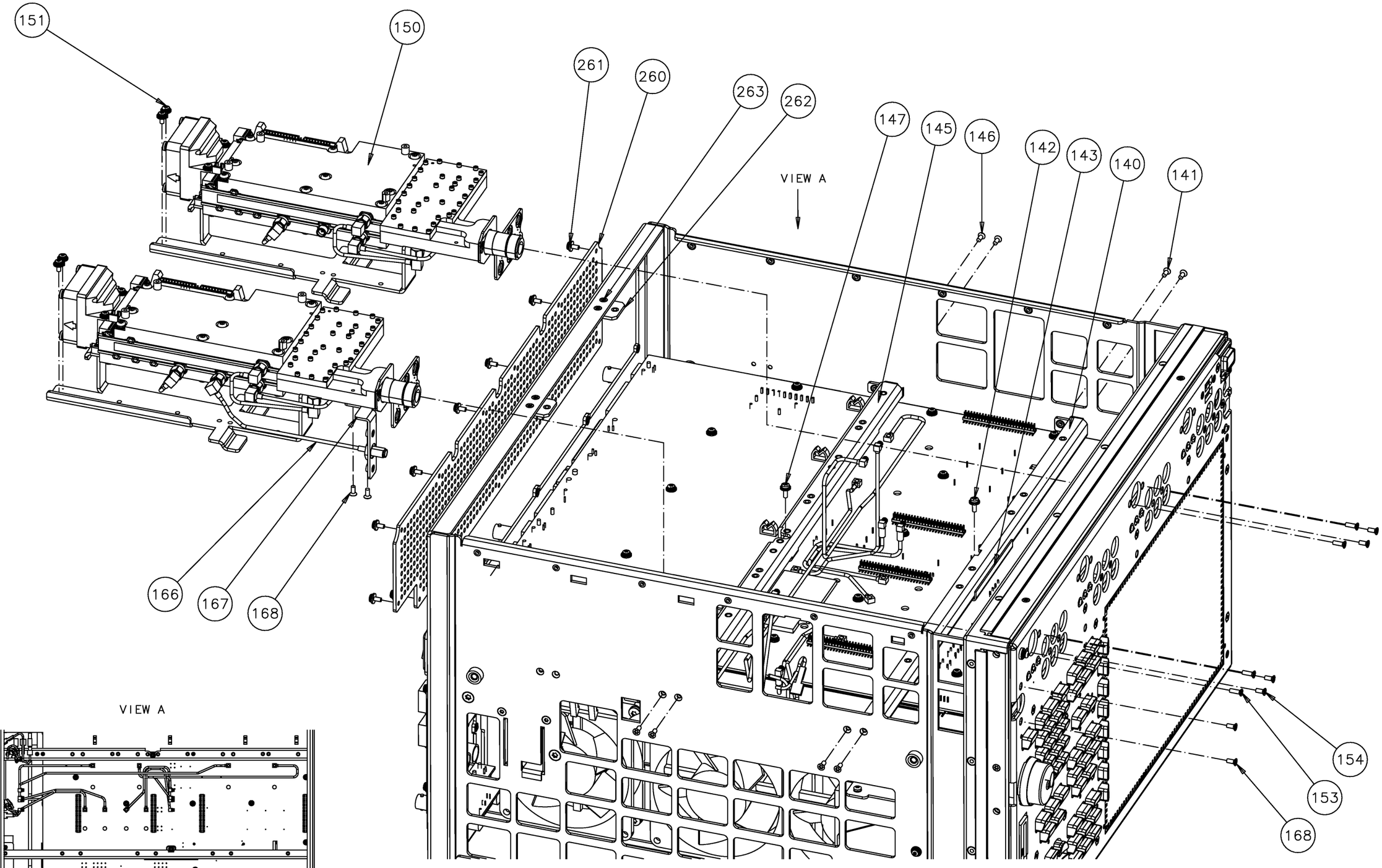
MOD 08 = 8GHZ - 2 PORT
MOD 10 = 8GHZ - 4 PORT
MOD 24 = 24GHZ - 2 PORT
MOD 26 = 24GHZ - 4 PORT
MOD 28 = 24GHZ - 4 PORT
MOD 40 = 40GHZ - 2 PORT
MOD 42 = 40GHZ - 4 PORT
MOD 43 = 40GHZ - 2 PORT 2.4mm
MOD 45 = 40GHZ - 4 PORT 2.4mm
MOD 48 = 40GHZ - 4 PORT
MOD 50 = 50GHZ - 2 PORT
MOD 52 = 50GHZ - 4 PORT

for POS. 140 to POS. 263 see next pages

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.* ISO2768-m	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung *Designation* ZVA NETWORK ANALYZER			Sprache *Lang.* en	Aei. *C.I.* 12.00	Blatt *Sh.* 1
				Zeichn.Nr. *Drawing No.* 1145.1110.01		D
ZVA	Datum *Date* 2013-11-28	Abteilung *Dept.* MTEK	Name *Name* mk			

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VIEW A

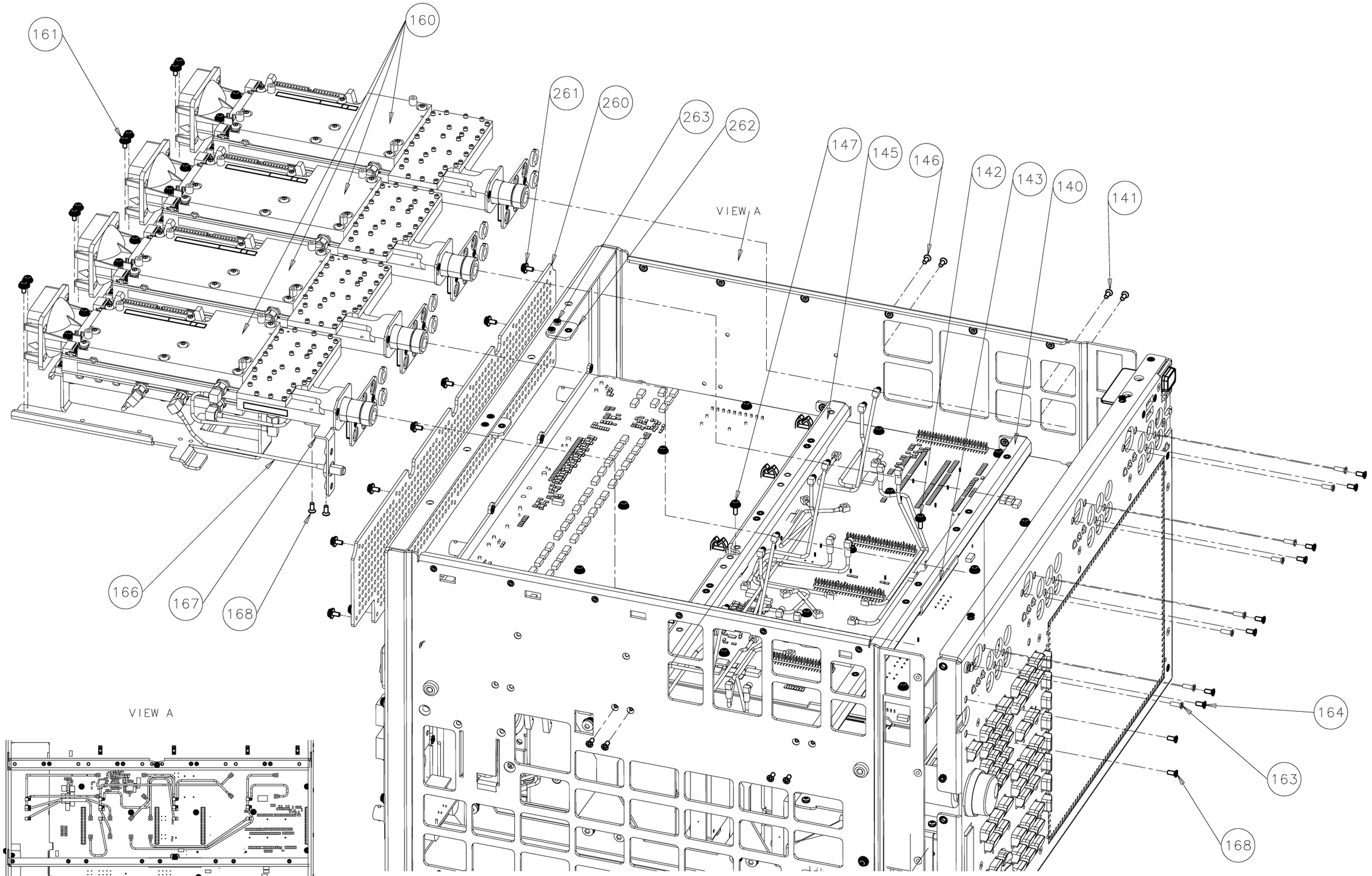
Projektions-methode
Projection Method

(152) see connector designation of cables and motherboard for cable mounting

THIS PAGE IS ONLY FOR MOD08

Maßstab / *Scale*	Toleranz / *Tol.*	Werkstoff / *Material*			
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				Zeichn.Nr. / *Drawing No.* 1145.1110.01		D
ZVA	Datum / *Date* 2005-10-24	Abteilung / *Dept.* 1ESK	Name / *Name* Wn			

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VIEW A

Projektions-methode

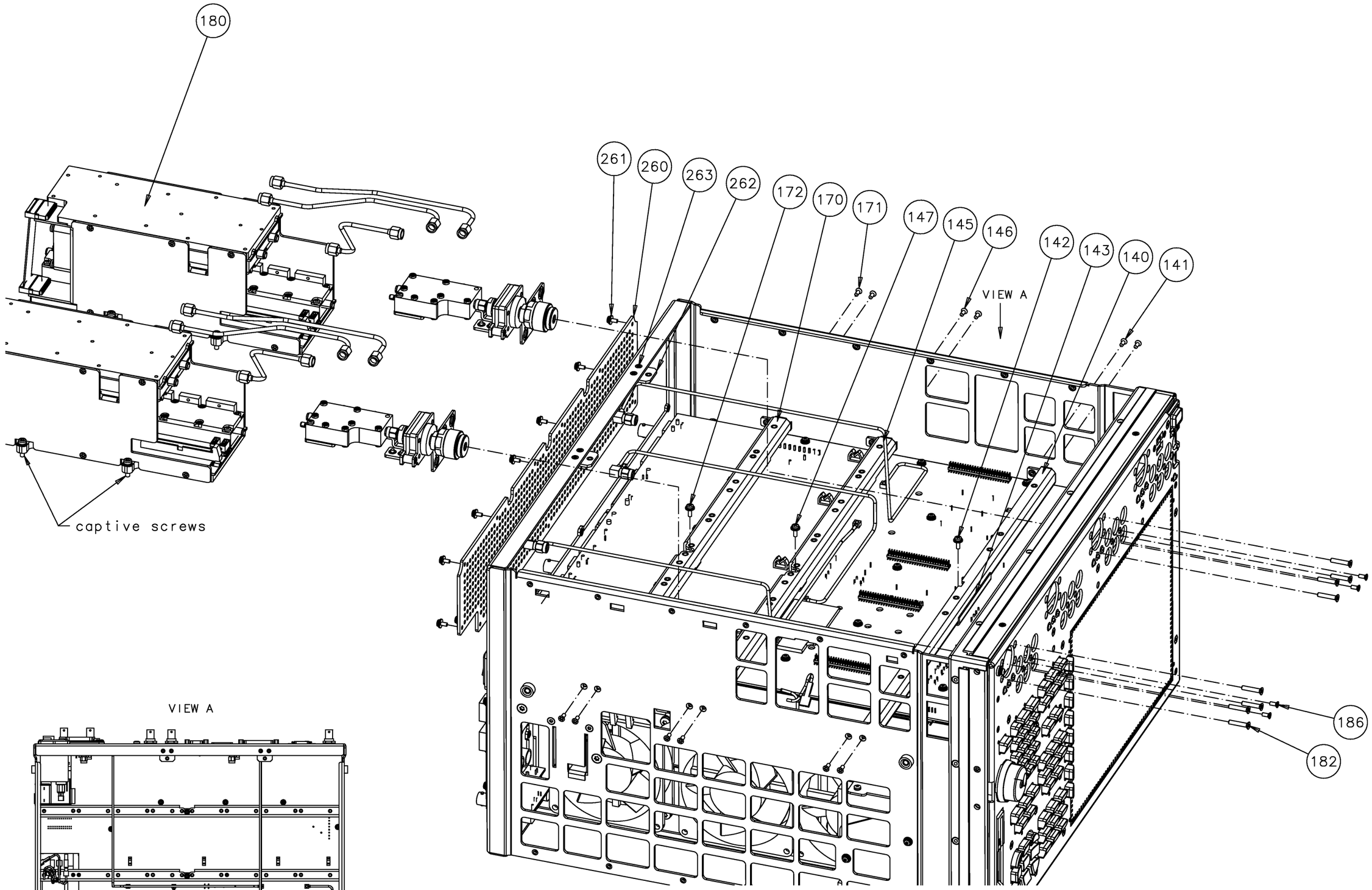
Projection Method

162 } see connector designation of cables and motherboard for cable mounting

THIS PAGE IS ONLY FOR MOD10

Maßstab *Scale*	Toleranz *Tol.* ISO2768-m	Werkstoff *Material*			
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ZVA	Datum *Date* 2012-08-28	Abteilung *Dept.* MTEK	Name *Name* mk	Zeichn.Nr. / *Drawing No.* 1145.1110.01		D

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VIEW A

Projektions-methode

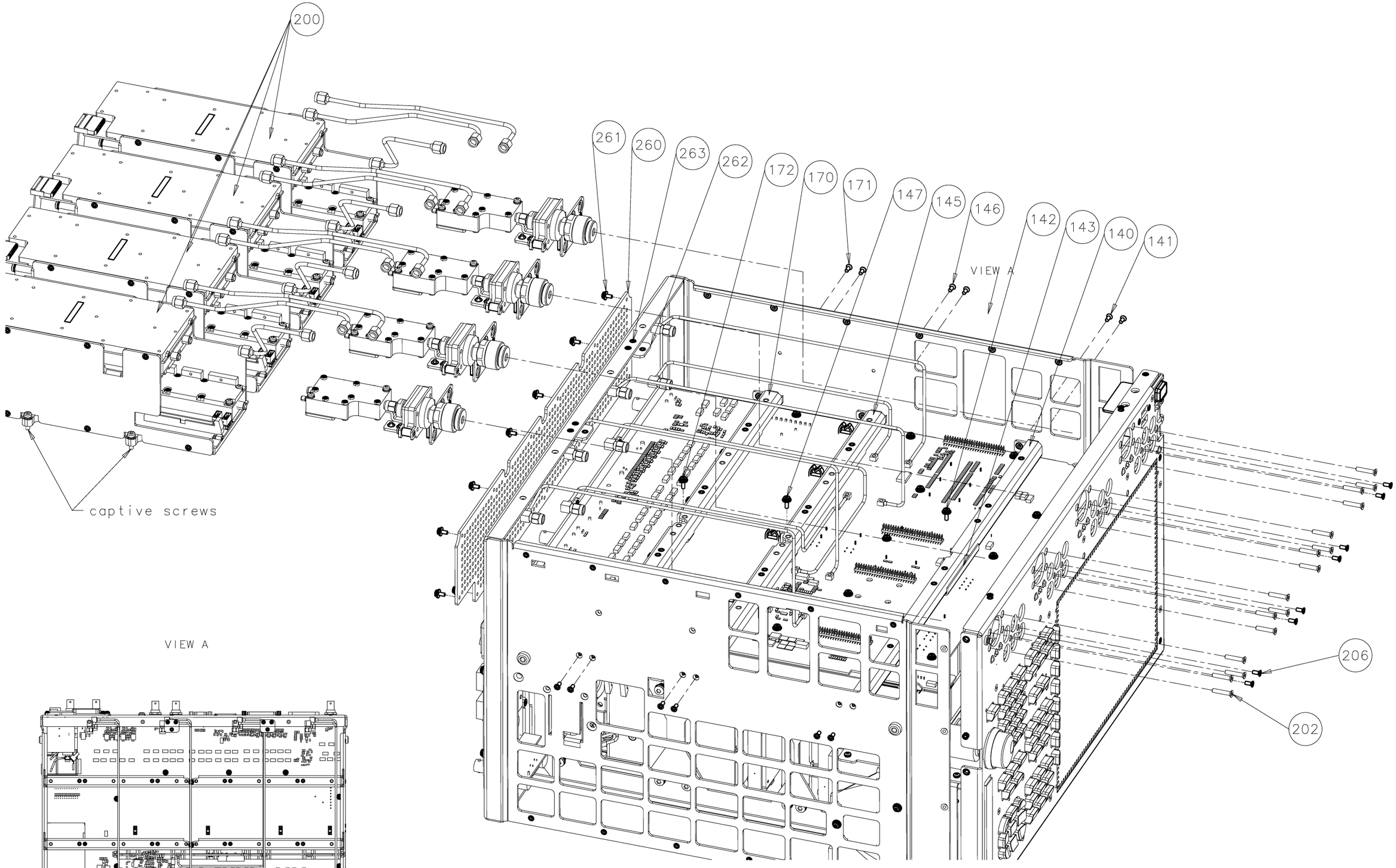
Projection Method

(185) see connector designation of cables and motherboard for cable mounting

THIS PAGE IS ONLY FOR MOD24

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*				
ROHDE&SCHWARZ	Benennung / *Designation* ZVA NETWORK ANALYZER				Sprache / *Lang.* en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 4
					Zeichn.Nr. / *Drawing No.* 1145.1110.01		D
ZVA	Datum *Date* 2006-10-25	Abteilung *Dept.* 1ESK	Name *Name* Wn				

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VIEW A

Projektions-methode

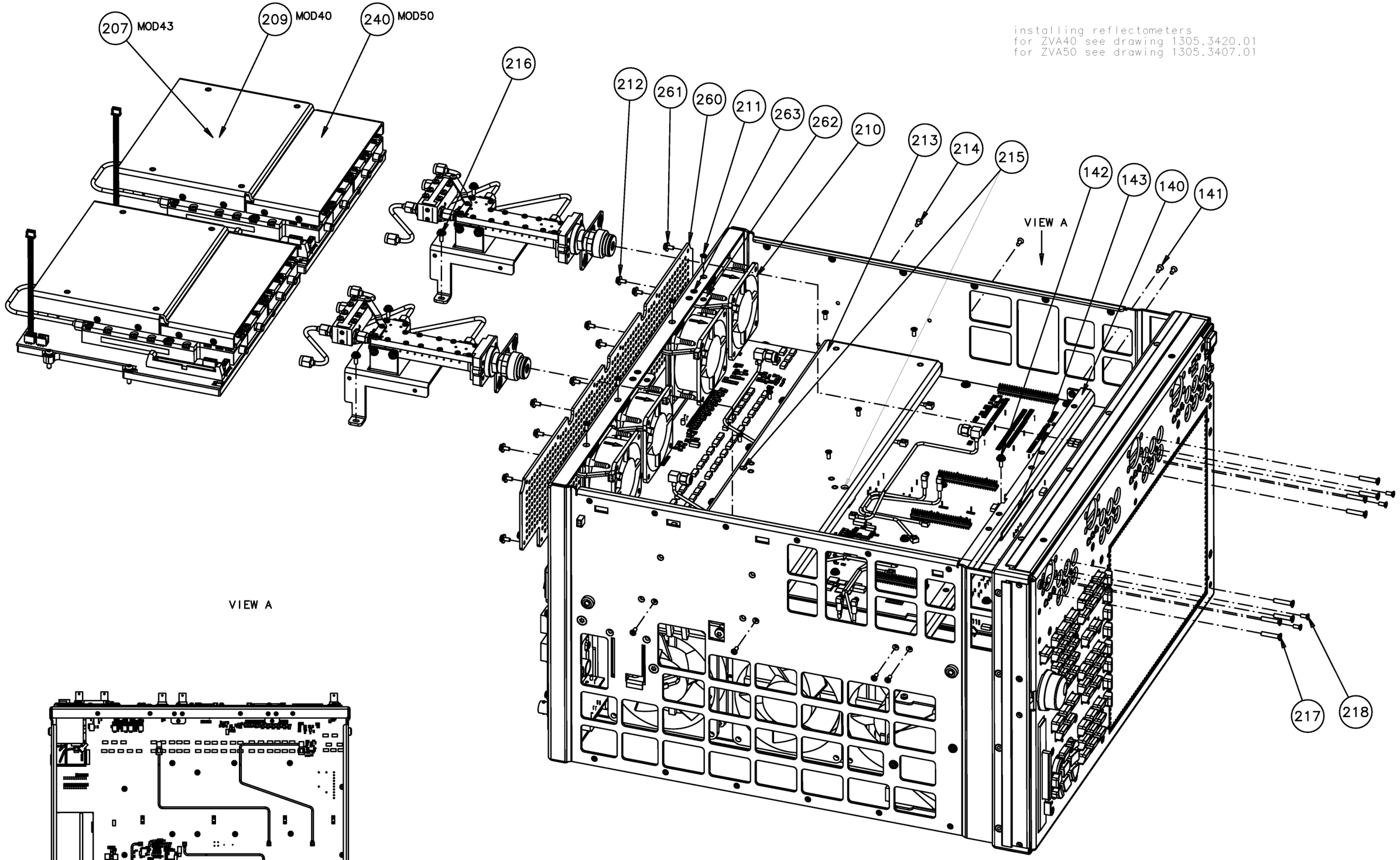
Projection Method

205 MOD26
204 MOD28
see connector designation of cables and motherboard for cable mounting

THIS PAGE IS ONLY FOR MOD26,28

Maßstab *Scale*	Toleranz *Tol.* ISO2768-m	Werkstoff *Material*			
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				Zeichn.Nr. *Drawing No.* 1145.1110.01 D		
ZVA	Datum *Date* 2012-12-20	Abteilung *Dept.* MTEK	Name *Name* mk			

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installing reflectometers
for ZVA40 see drawing 1305.3420.01
for ZVA50 see drawing 1305.3407.01

VIEW A

Projektions-methode
Projection Method

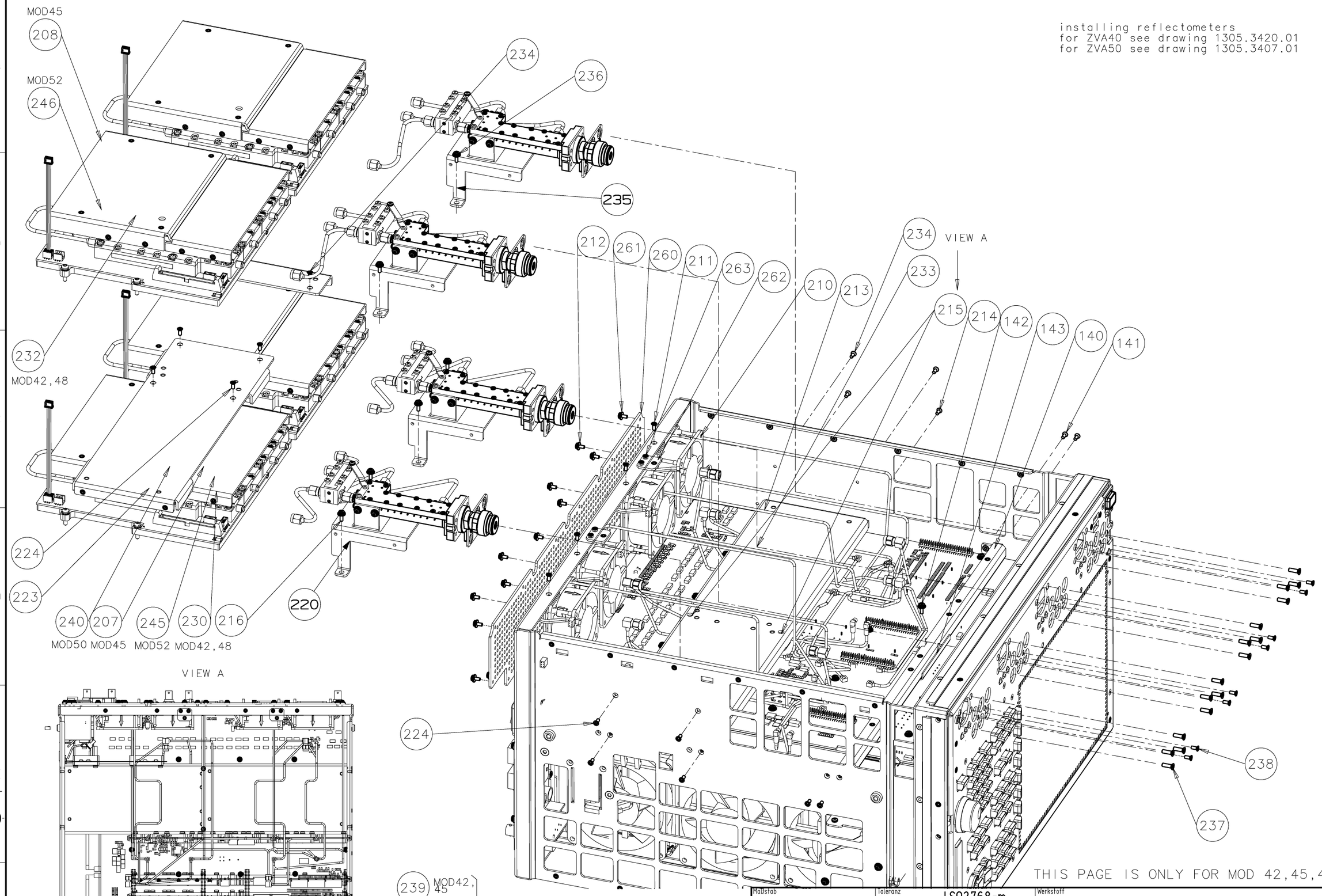
219 see connector designation of cables and motherboard
241 for cable mounting

THIS PAGE IS ONLY FOR MOD40,43,50

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
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ZVA	Datum *Date* 2007-04-23	Abteilung *Dept.* 1ESK	Name *Name* LA	Zeichn.Nr. / *Drawing No.* 1145.1110.01	D

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installing reflectometers
for ZVA40 see drawing 1305.3420.01
for ZVA50 see drawing 1305.3407.01



VIEW A

239 MOD42, 45
247 MOD52
242 MOD48

see connector designation of cables and motherboard for cable mounting

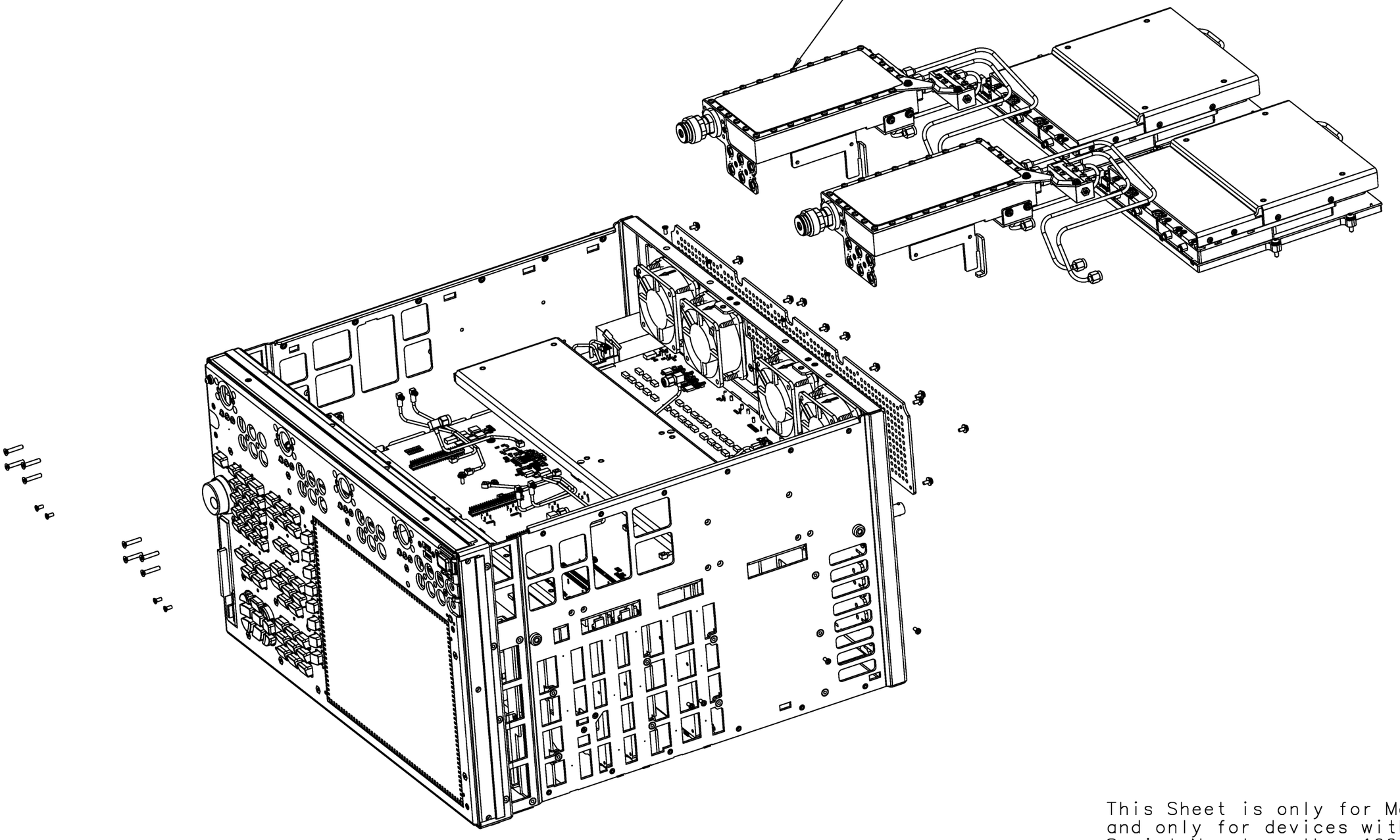
THIS PAGE IS ONLY FOR MOD 42,45,48,52

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.* ISO2768-m	Werkstoff *Material*			
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				Zeichn.Nr. *Drawing No.* 1145.1110.01		D
ZVA	Datum *Date* 2012-12-18	Abteilung *Dept.* MTEK	Name *Name* mk			

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1145.4319.02
(instead of 1305.3420.02)

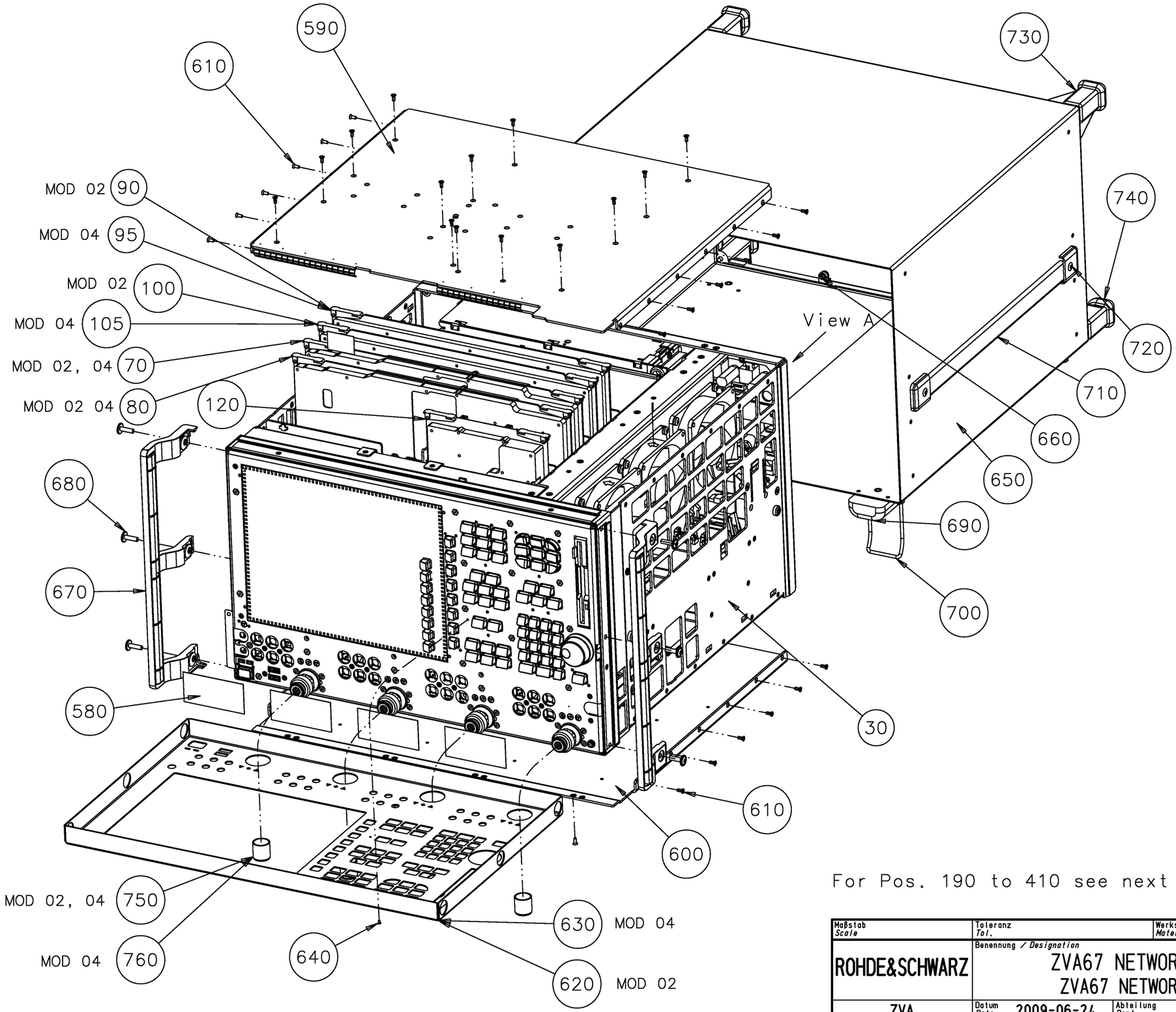


This Sheet is only for Mod40
and only for devices with
Serial No. less than 100140

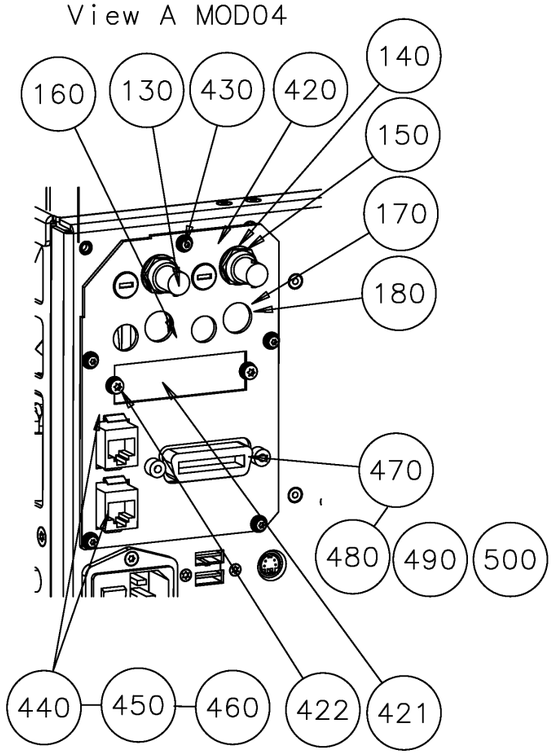
Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*				
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					Zeichn.Nr. / *Drawing No.* 1145.1110.01		D
ZVA	Datum *Date* 2007-02-20	Abteilung *Dept.* 1ESK	Name *Name* la				

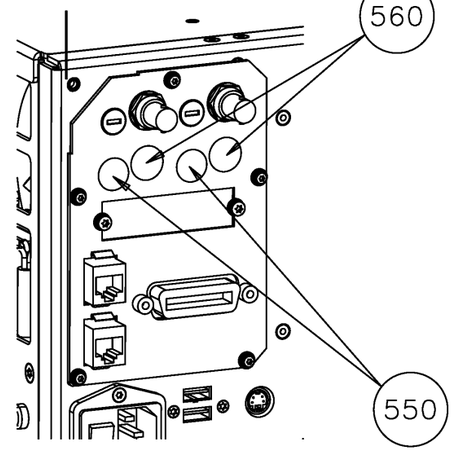
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View A MOD04



View A MOD02



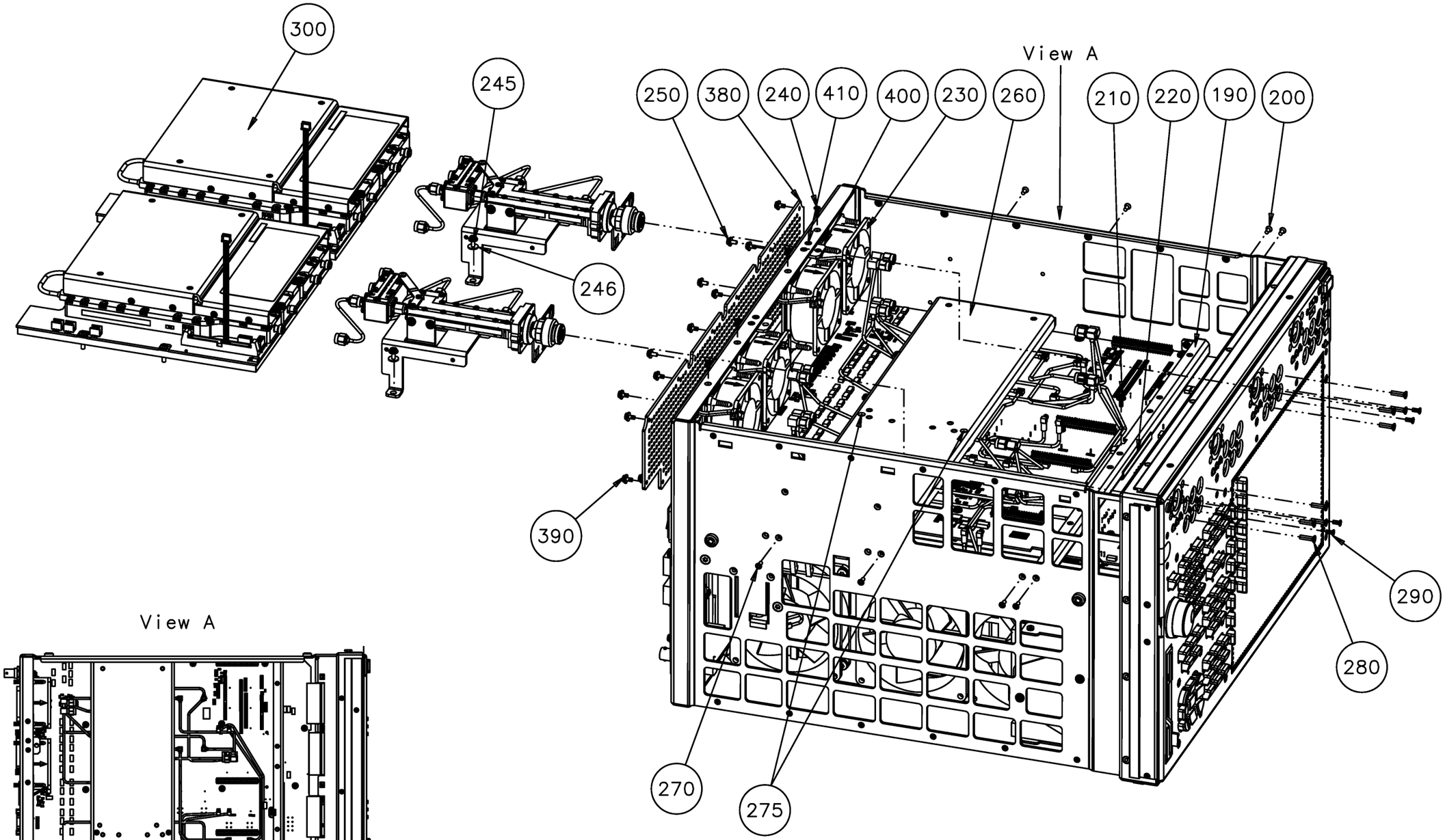
MOD 02 = 67GHZ - 2 PORT
MOD 04 = 67GHZ - 4 PORT

For Pos. 190 to 410 see next pages

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*	
ROHDE&SCHWARZ	Benennung / *Designation*: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER	Sprache / *Lang.*: de en	Aei. / *C.I.*: 05.00	Blatt / *Sh.*: 1
ZVA	Datum *Date*: 2009-06-24	Abteilung *Dept.*: 1ESK	Name *Name*: rn	Zeichn.Nr. / *Drawing No.*: 1305.7002.01 D

for installing reflectometers see 1305.6241.01



View A

360 see conector designation of cables and motherboard for cabel mounting View A is not complete!

THIS PAGE IS ONLY FOR MOD 02

Maßstab / Scale	Toleranz / Tol.	Werkstoff / Material			
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ZVA	Datum / Date: 2010-10-20	Abteilung / Dept.: 1ESK	Name / Name: RN	Zeichn.Nr. / Drawing No.: 1305.7002.01	Blatt / Sh.: 2 D

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Projektionsmethode
Projection Method

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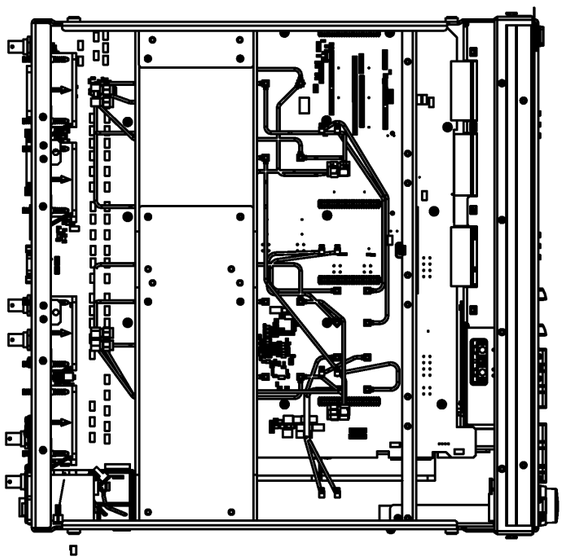
for installing reflectometers see 1305.6241.01

View A

350 345 346 300 315 260 320 210 220 190 200 410 400 230 310 380 240 250 335 390 320 270 275 330 340

after installing reflectometers 1+2

View A



370 see connector designation of cables and motherboard for cable mounting View A is not complete!

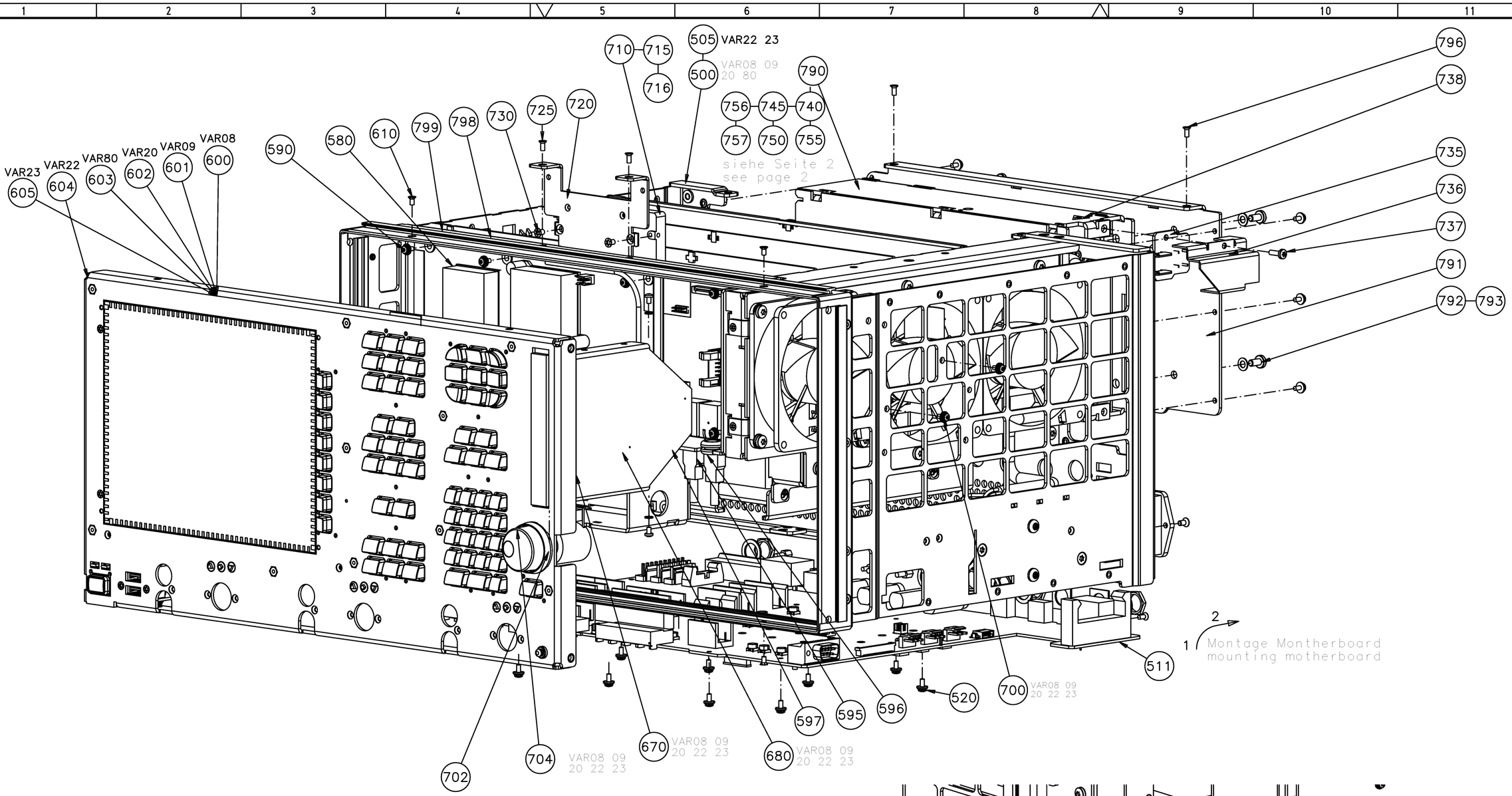
THIS PAGE IS ONLY FOR MOD 04

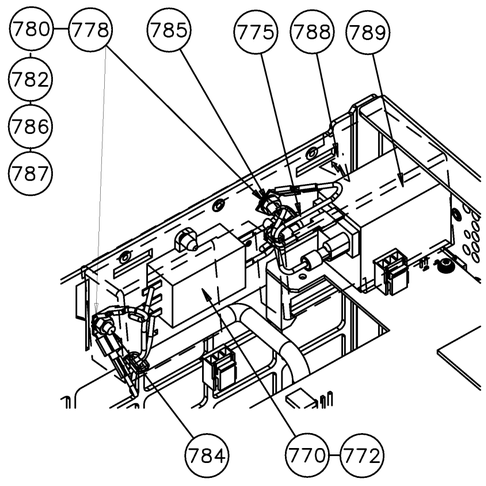
Projektions-methode
Projection Method

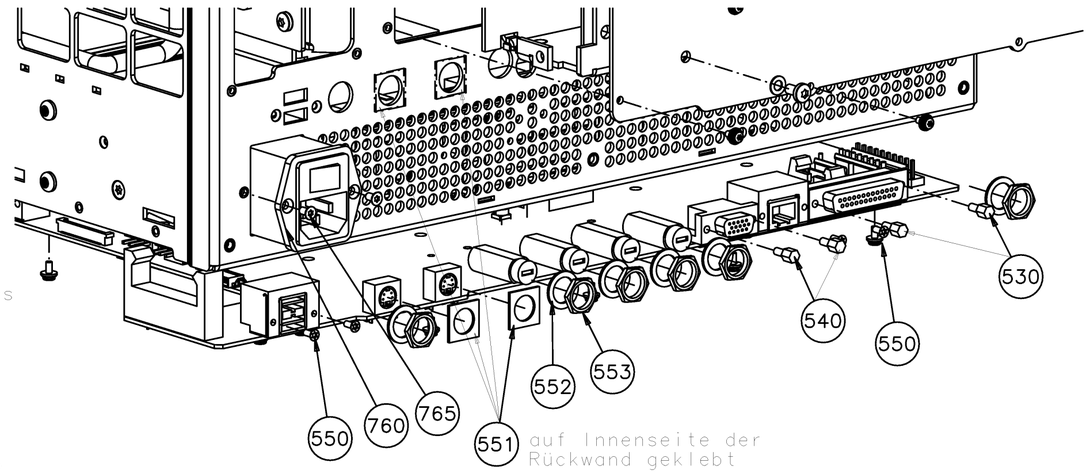
Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER			Sprache / *Lang.* de en	Ael. / *C.I.* 05.00	Blatt / *Sh.* 3
ZVA	Datum *Date* 2010-10-20	Abteilung *Dept.* 1ESK	Name *Name* RN	Zeichn.Nr. / *Drawing No.* 1305.7002.01		D

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Projektions-methode
Projection Method







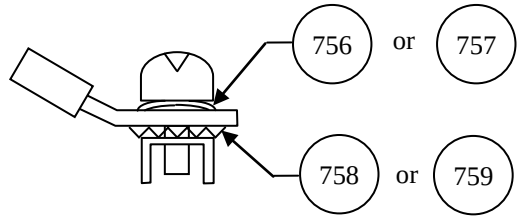
Variantenerklaerung/Versions
VAR08 = 4/8 GHz - 2/3 TOR
MOD08 = 4/8 GHz - 2/3 PORT
VAR09 = 4/8 GHz - 4 TOR
MOD09 = 4/8 GHz - 4 PORT
VAR20 = 20 GHz - 2/3 TOR
MOD20 = 20 GHz - 2/3 PORT
VAR22 = 20 GHz - 4 TOR
MOD22 = 20 GHz - 4 PORT
VAR23 = 14/20 GHz - 2/4 TOR
MOD23 = 14/20 GHz - 2/4 PORT
VAR80 = ZVI
MOD80 = ZVI

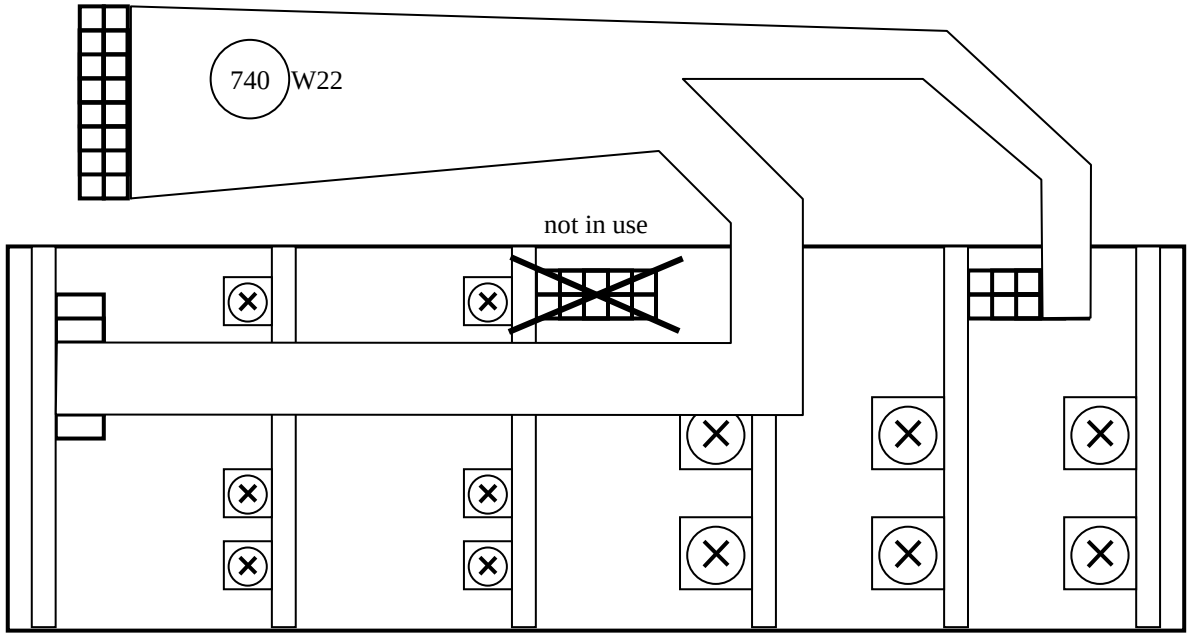
Maßstab / *Scale*	Toleranz / *Tol.*	Werkstoff / *Material*		
ROHDE&SCHWARZ	Benennung / *Designation*: Grundeinheit ZVB / Fundamental Unit		Sprache / *Lang.*: de en; Ael. / *C.I.*: 13.00; Blatt / *Sh.*: 1	
	Datum / *Date*: 2010-11-19	Abteilung / *Dept.*: MTEK	Name / *Name*: mk	Zeichn.Nr. / *Drawing No.*: 1145.1290.01 D

Verdrahtungsplan Netzteil
wire connections for power supply

Pos. 755		Pos. 755		Pos. 750		Pos. 745		Pos. 750	
W25 (Cable 10p)		W25 (Cable 10p)		W24 (Cable 8p)		W23 (Cable 6p)		W24 (Cable 8p)	
12V		6,5V		8V		3,6V		5,2V	
+	+12V (red)	+	+6V (orange)						
-	GND(+12V) (black)	-	GND(+6V) (black)						
+	GND(-12V) (black)	+	GND(-6V) (black)	+	+8V (orange)	+	+3,3V (red)	+	+5V (red)
-	-12V (blue)	-	-6V (violet)	-	GND(+8V) (black)	-	GND(+3,3V) (black)	-	GND(+5V) (black)

Connection for upper table:



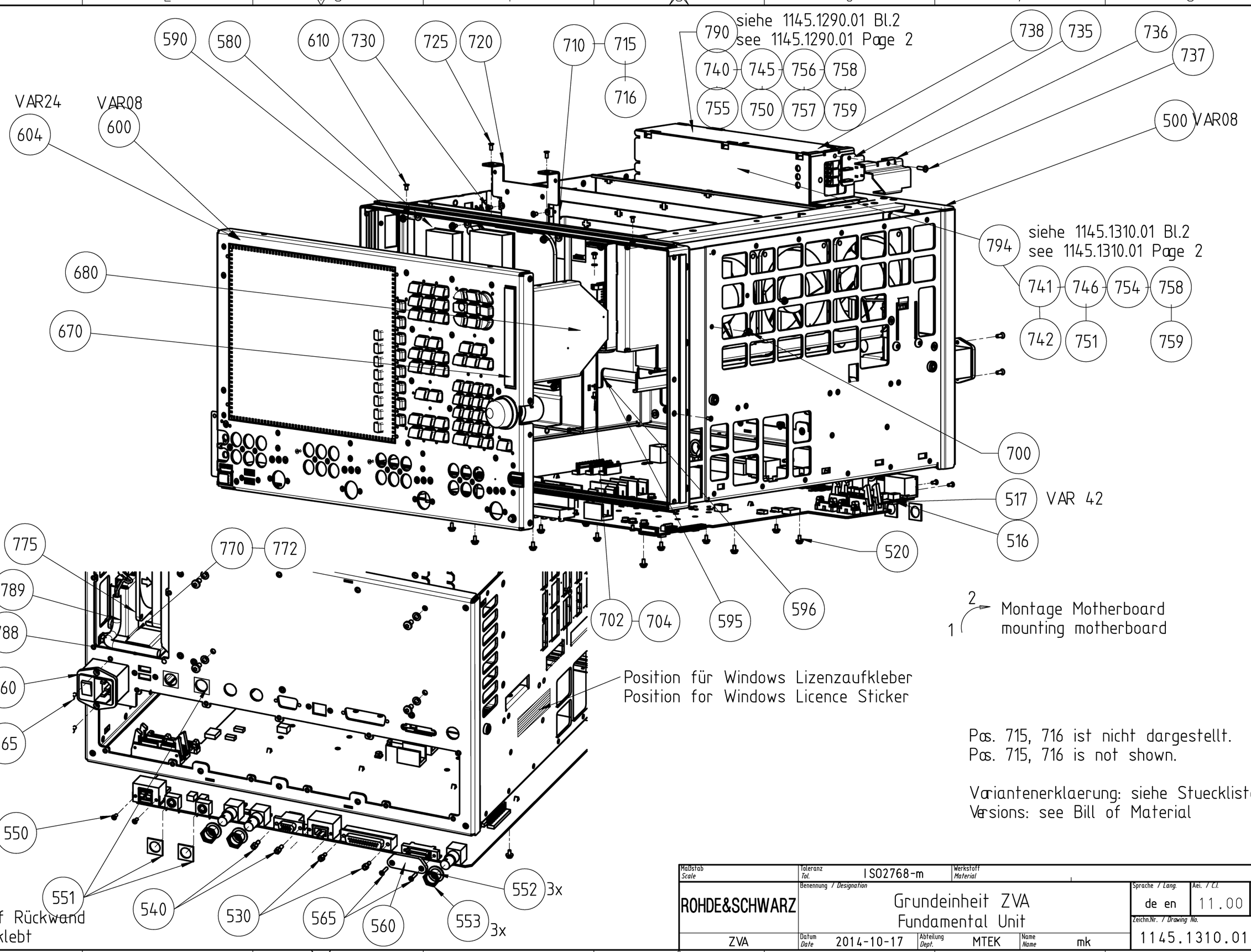


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Maßstab: / *Scale:*	Toleranz: / *Tol.:*	Rauht.: /*Roughn.:*	Kanten: / *Edges:*	Werkstoff: / *Material:*	Werknormen: / *Company Standards:*

ROHDE&SCHWARZ	Benennung: *Designation:* Grundeinheit ZVB Fundamental Unit			Sprache: / *Lang.:* de	Aei: / *C.I.:* 04.00	Blatt: / *Sh.:* 2
Typ: *Type:* ZVB	Datum: *Date:* 25.03.08	Abteilung: *Dept.:* 1ESK	Name: *Name:* Wn	Zeichn. Nr.: / *Drawing Nr.:* **1145.1290.01**		
1. Z.: *used in:*						

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Pos. 715, 716 ist nicht dargestellt.
Pos. 715, 716 is not shown.

Variantenerklaerung: siehe Stueckliste
Versions: see Bill of Material

Maßeinheit
Measuring Unit
[mm]

Projektionsmethode
Projection Method

Maßstab *Scale*	Toleranz *Tol.* ISO2768-m	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung *Designation* Grundeinheit ZVA Fundamental Unit			Sprache *Lang.* de en	Aei. *C.I.* 11.00	Blatt *Sh.* 1
ZVA	Datum *Date* 2014-10-17	Abteilung *Dept.* MTEK	Name *Name* mk	Zeichn.Nr. *Drawing No.* 1145.1310.01		D

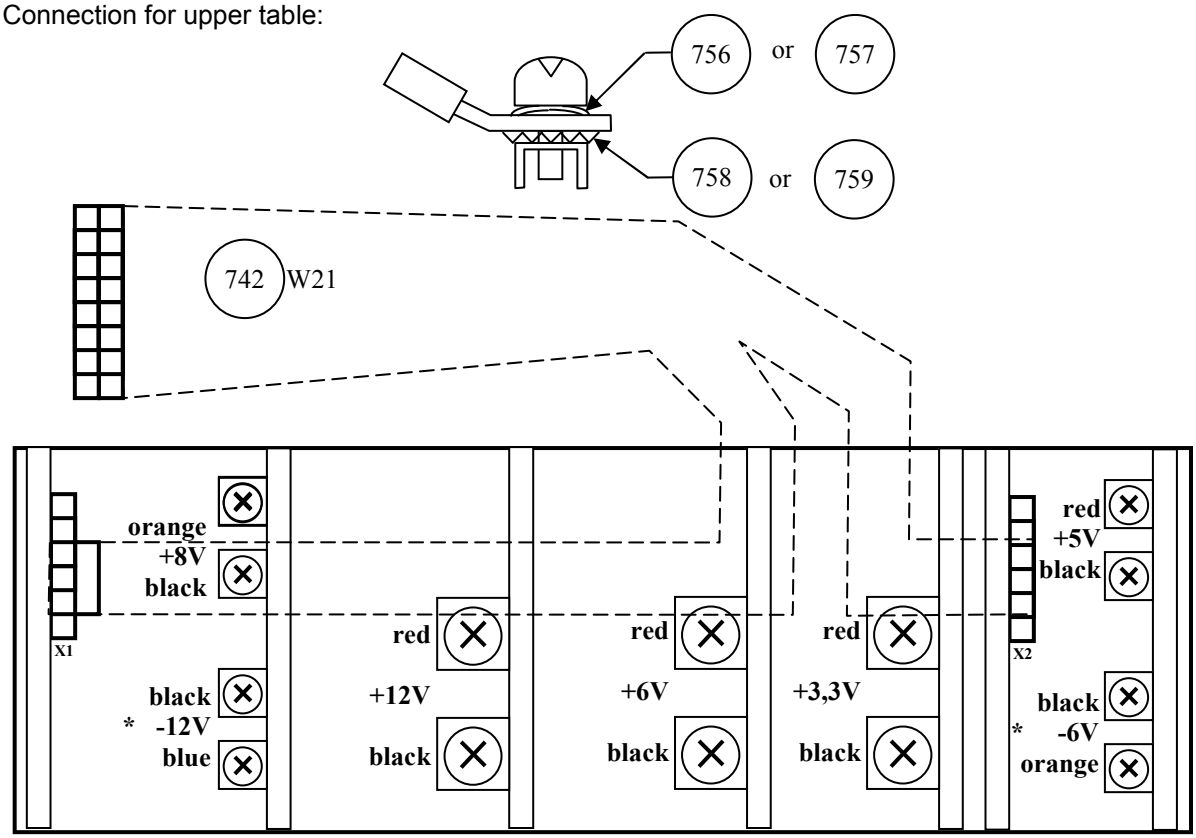
A3

Verdrahtungsplan Netzteil
wire connections for power supply

Pos. 751		Pos. 746		Pos. 754		Pos. 741		Pos. 751	
W24 (Cable 8p)		W22 (Cable 4p)		W25 (Cable 10p)		W20 (Cable 2x6p)		W24 (Cable 8p)	
		12V		6,5V		3,4V			
+	+8V (orange)							+	+5V (red)
-	GND(+8V) (black)							-	GND(+5V) (black)
Pos. 755								Pos. 755	
W25 (Cable 10p)								W25 (Cable 10p)	
+	GND(-12V) (black)	+	+12V (red)	+	+6V (red)	+	+3,3V (red)	+	GND(-6V) (black)
-	-12V (blue)	-	GND(+12V) (black)	-	GND(+6V) (black)	-	GND(+3,3V) (black)	-	-6V (orange)

***Caution:** check wiring of negative voltage

Connection for upper table:



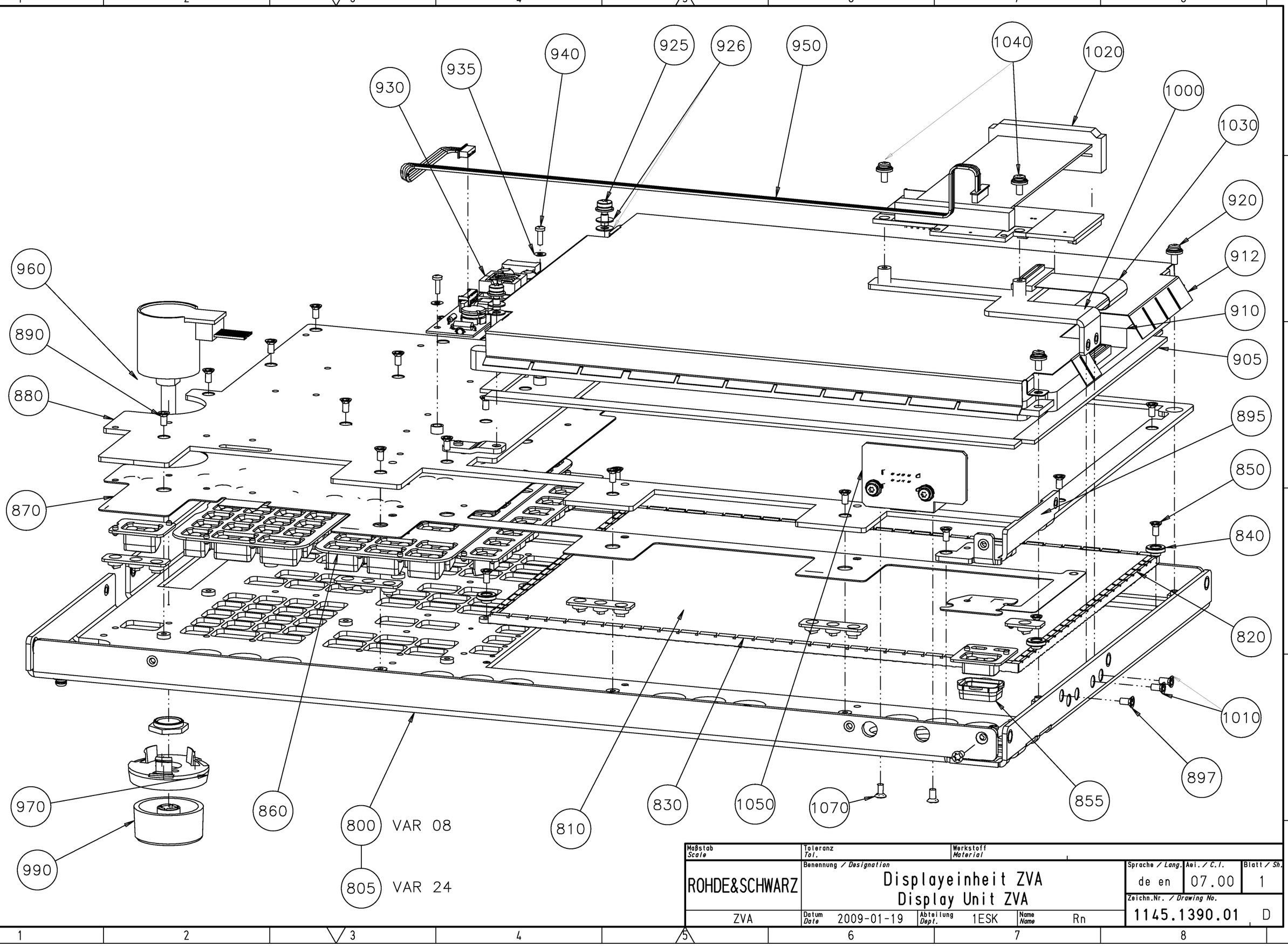
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Maßstab: / *Scale:*	Toleranz: / *Tol.:*	Rauht.: /*Roughn.:*	Kanten: / *Edges:*	Werkstoff: / *Material:*	Werknormen: / *Company Standards:*

ROHDE&SCHWARZ	Benennung: *Designation:* Grundeinheit ZVA Variante 42 Fundamental Unit Model 42	Sprache: / *Lang.:* de en	Aei: / *C.I.:* 01.00	Blatt: / *Sh.:* 2
Typ: *Type:* ZVA	Datum: *Date:* 21.01.09 / Abteilung: *Dept.:* 1ESK / Name: *Name:* RN	Zeichn. Nr.: / *Drawing Nr.:* 1145.1310.01		
1. Z.: *used in:*				

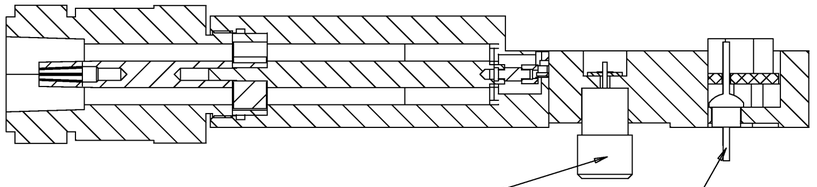
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Projektions-methode
Projection Method



Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*	Displayeinheit ZVA Display Unit ZVA		Sprache / *Lang.* de en	Aei. / *C.I.* 07.00	Blatt / *Sh.* 1
ZVA	Datum *Date* 2009-01-19	Abteilung *Dept.* 1ESK	Name *Name* Rn	Zeichn.Nr. / *Drawing No.* 1145.1390.01		D

VAR 02

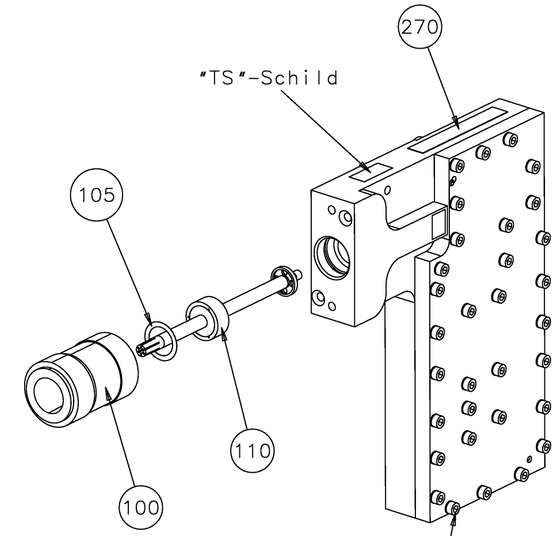


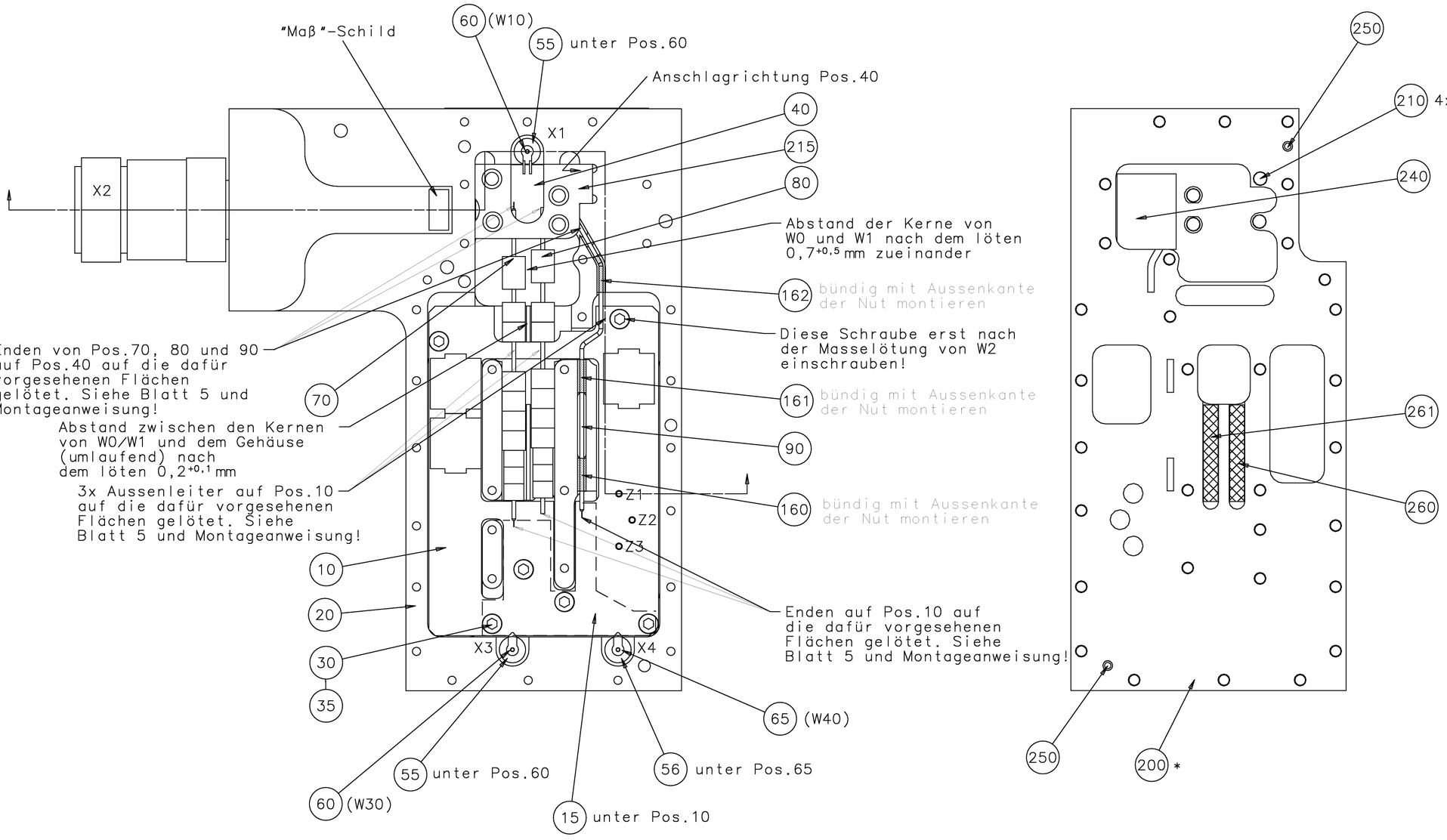
50 eingelötet (X1/X3)

51 eingelötet (X4)

25 eingelötet (Z1)

26 eingelötet (Z2/Z3)





Variantenerklärung:
VAR 02 = Grundausführung (Blatt 1)
VAR 03 = ohne LF und RF (Blatt 2)

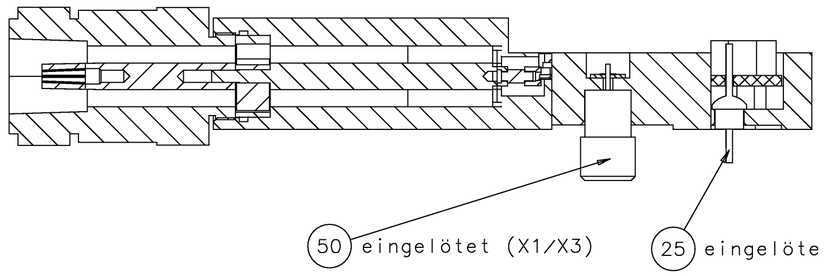
* Deckel bei Montage parallel zum Gehäuse angedrückt und Schrauben gleichmässig angezogen.
**Anzugsdrehmoment 20Ncm

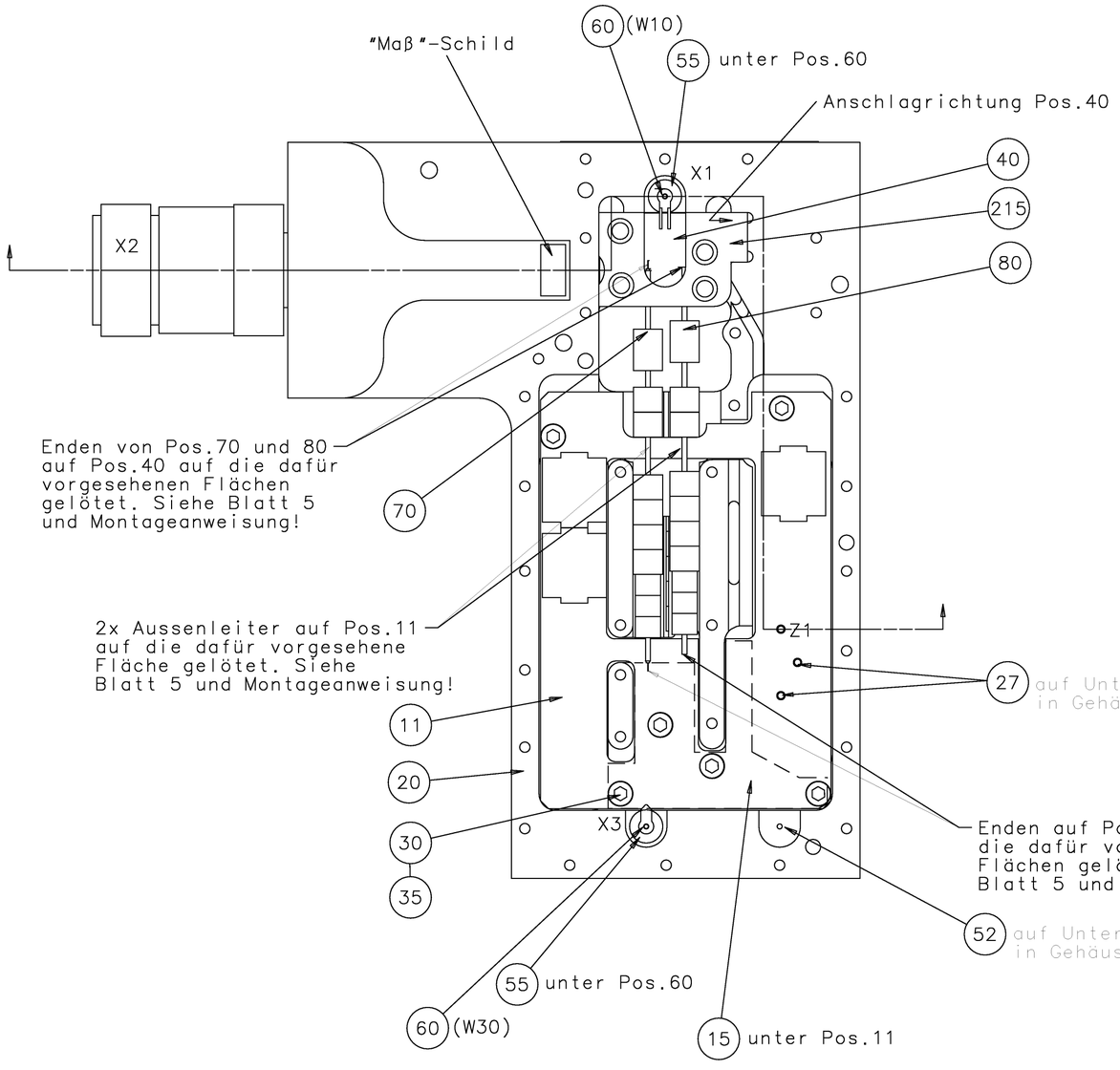
Maßstab / Scale 2:1	Toleranz / Tol.	Werkstoff / Material			
ROHDE&SCHWARZ	Benennung / Designation: RM8 BR UNIT RM8 BR UNIT			Sprache / Long. de en	Ael. / C.I. 14.00	Blatt / Sh. 1
Typ / Type ZVAB				Zeichn.Nr. / Drawing No. 1145.3593.01		D
i.Z. / used in 1145.4160.01	Datum / Date 2008-01-22	Abteilung / Dept. 1ESK	Name / Name WM			

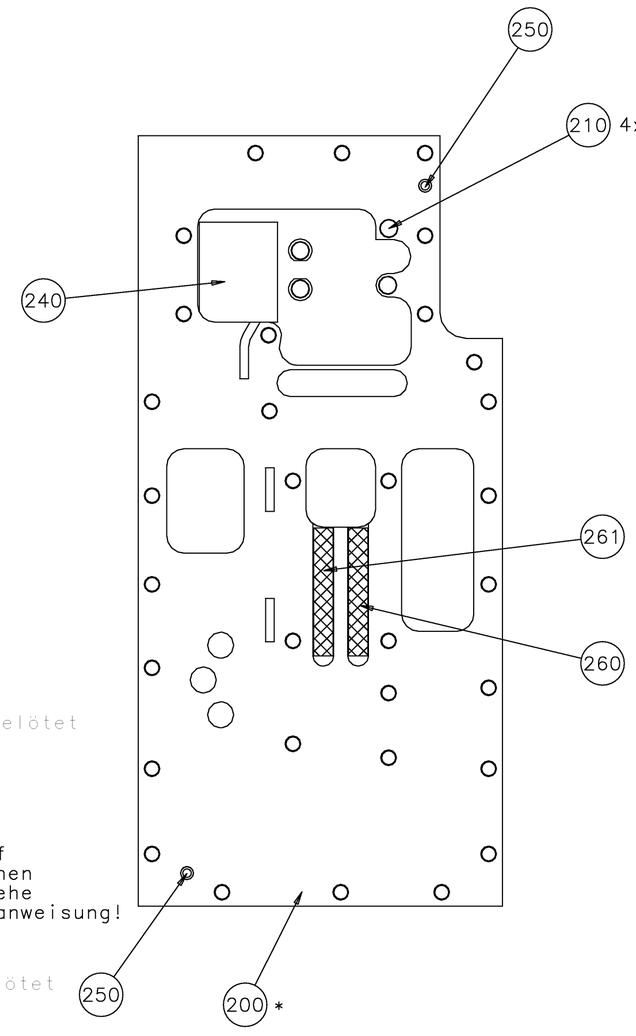
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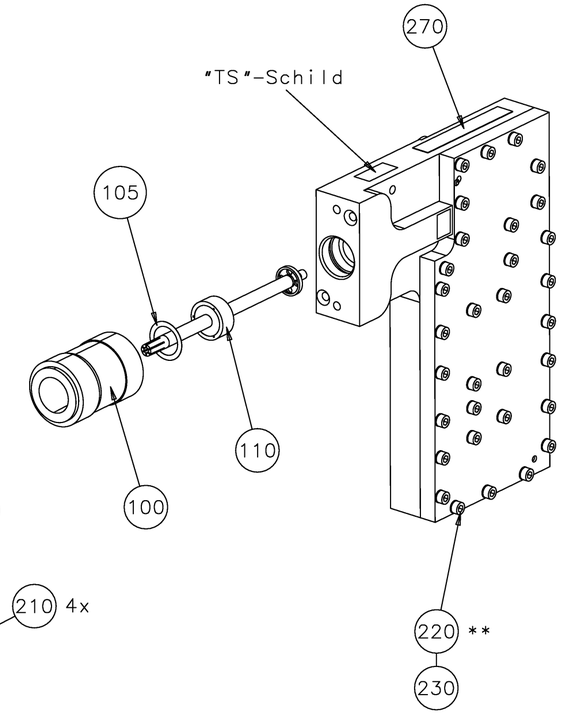
Projektionsmethode
Projection Method

VAR 03









Variantenerklärung:
VAR 02 = Grundausführung (Blatt 1)
VAR 03 = ohne LF und RF (Blatt 2)

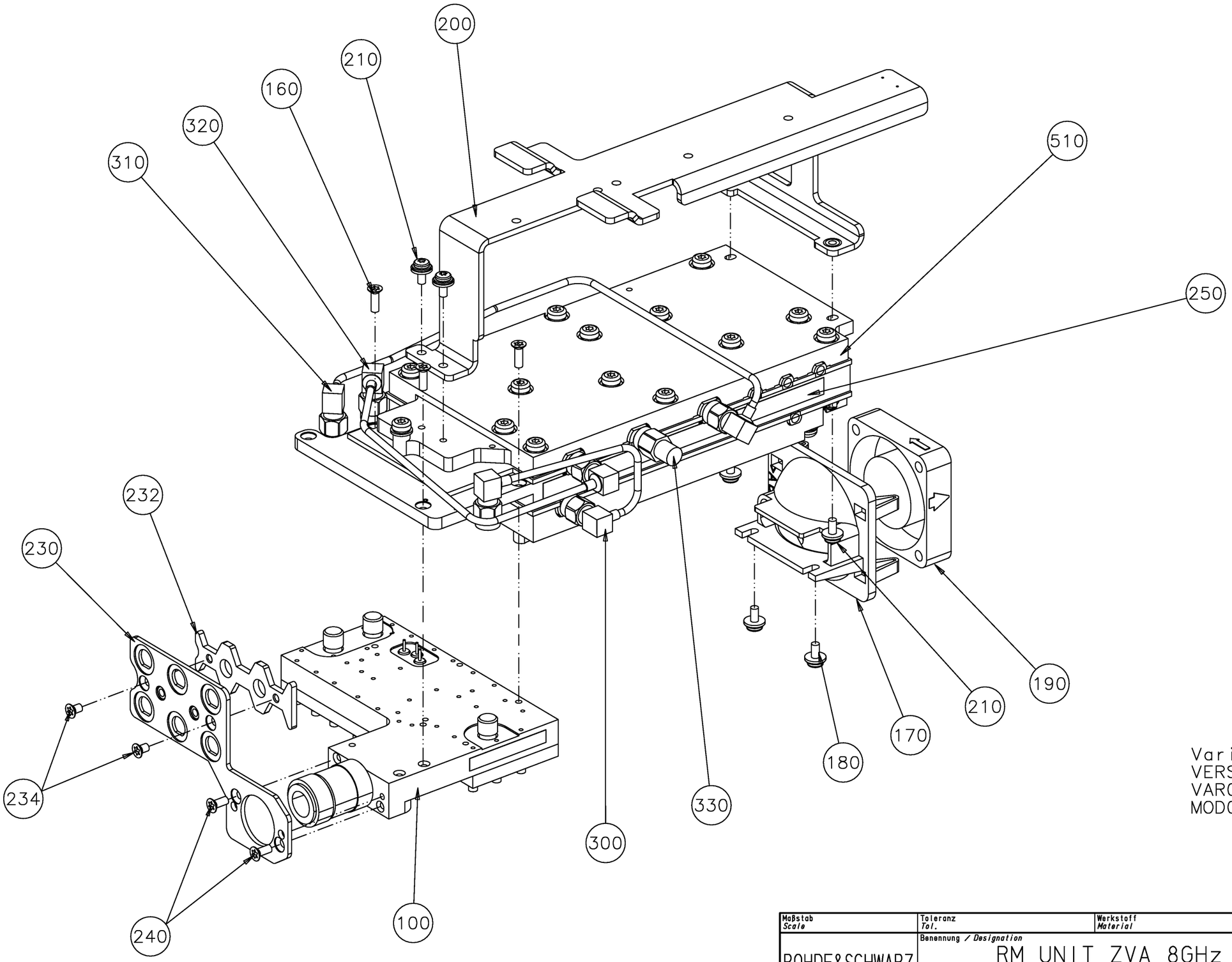
* Deckel bei Montage parallel zum Gehäuse angedrückt und Schrauben gleichmässig angezogen.
**Anzugsdrehmoment 20Ncm

Maßstab / Scale 2:1	Toleranz / Tol.	Werkstoff / Material			
ROHDE&SCHWARZ	Benennung / Designation: RM8 BR UNIT RM8 BR UNIT		Sprache / Lang. de en	Aei. / C.I. 08.00	Blatt / Sh. 2
Typ / Type ZVAB			Zeichn.Nr. / Drawing No. 1145.3593.01		D
I.Z. / used in 1145.4160.01	Datum / Date 2008-01-22	Abteilung / Dept. 1ESK	Name / Name WM		

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Projektionsmethode
Projection Method

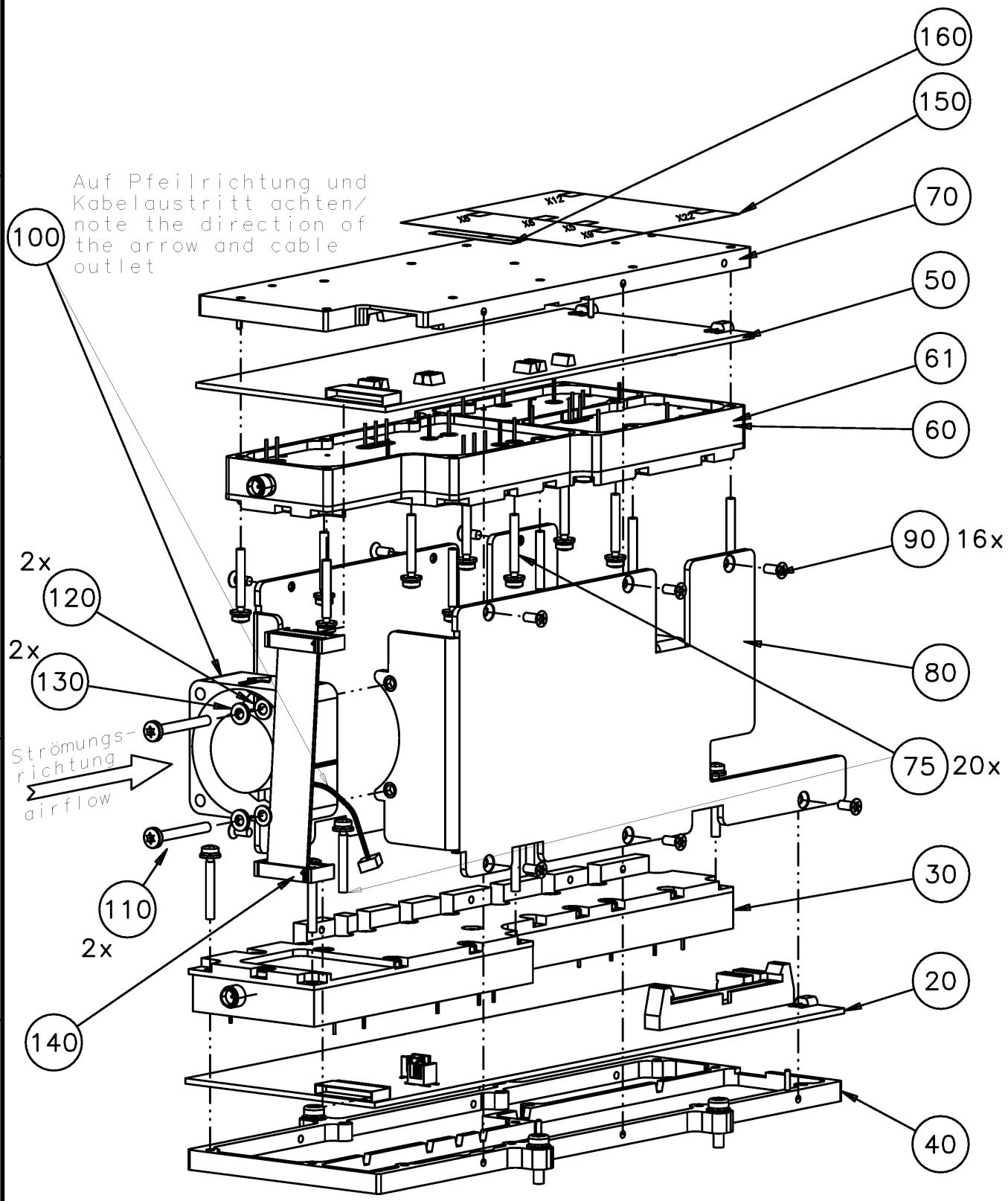
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Projektions-methode
Projection Method

Variantenerklaerung/
VERSIONS:
VAR02 = Grundvariante
MOD02 = BASIC MODEL

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* RM UNIT ZVA 8GHz RM UNIT ZVA 8GHz			Sprache / *Lang.* de en	Aei. / *C.I.* 04.00	Blatt / *Sh.* 1
	Datum *Date* 2007-10-18	Abteilung *Dept.* 1ESK	Name *Name* Wn	Zeichn.Nr. / *Drawing No.* 1145.4177.01		D

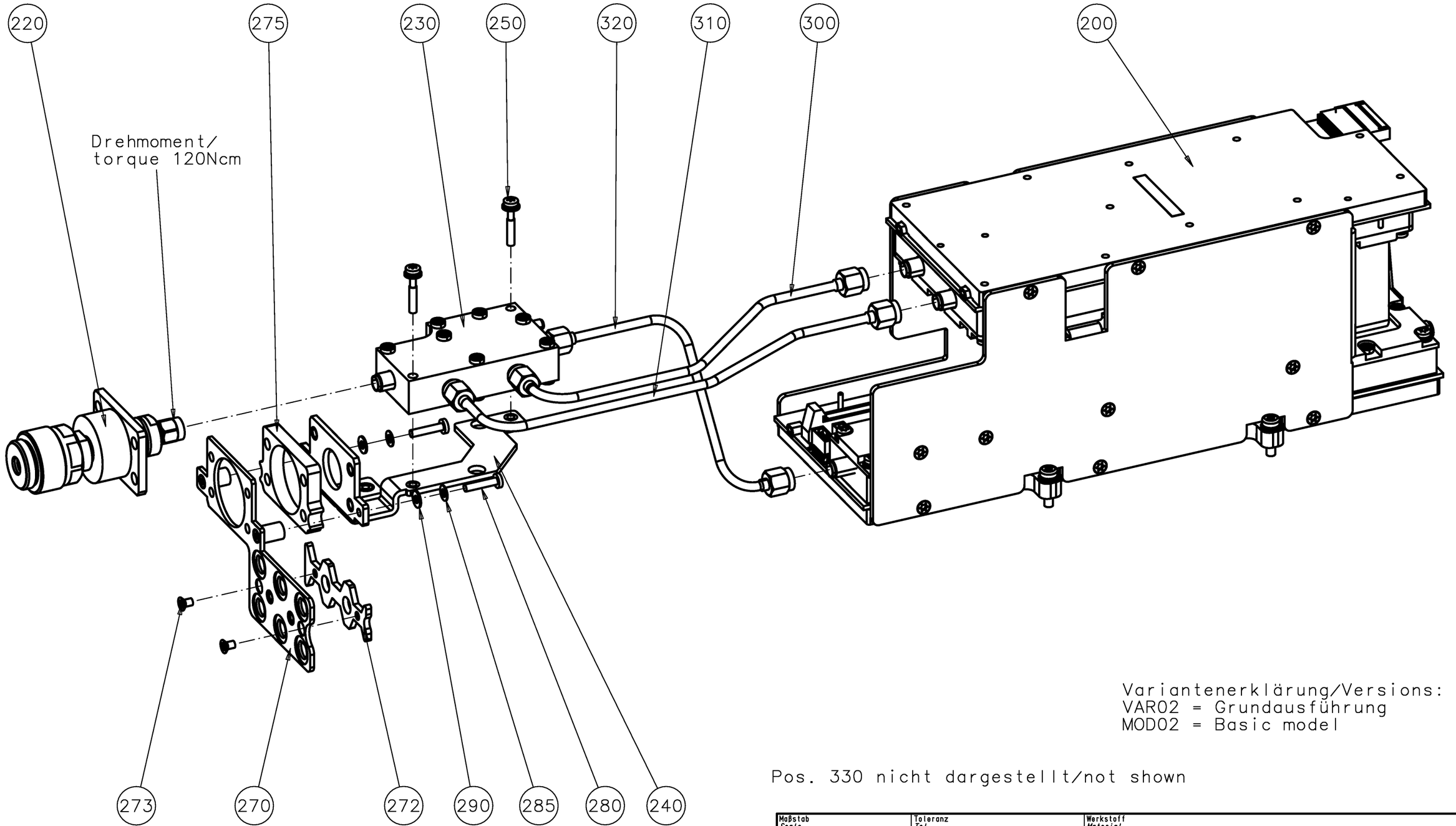


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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* REFLECTOMETER 24			Sprache / *Lang.* de en	Aei. / *C.I.* 10.00	Blatt / *Sh.* 1
ZVA	Datum *Date* 2010-08-02	Abteilung *Dept.* MTEK	Name *Name* mk	Zeichn.Nr. / *Drawing No.* 1145.4283.01		D

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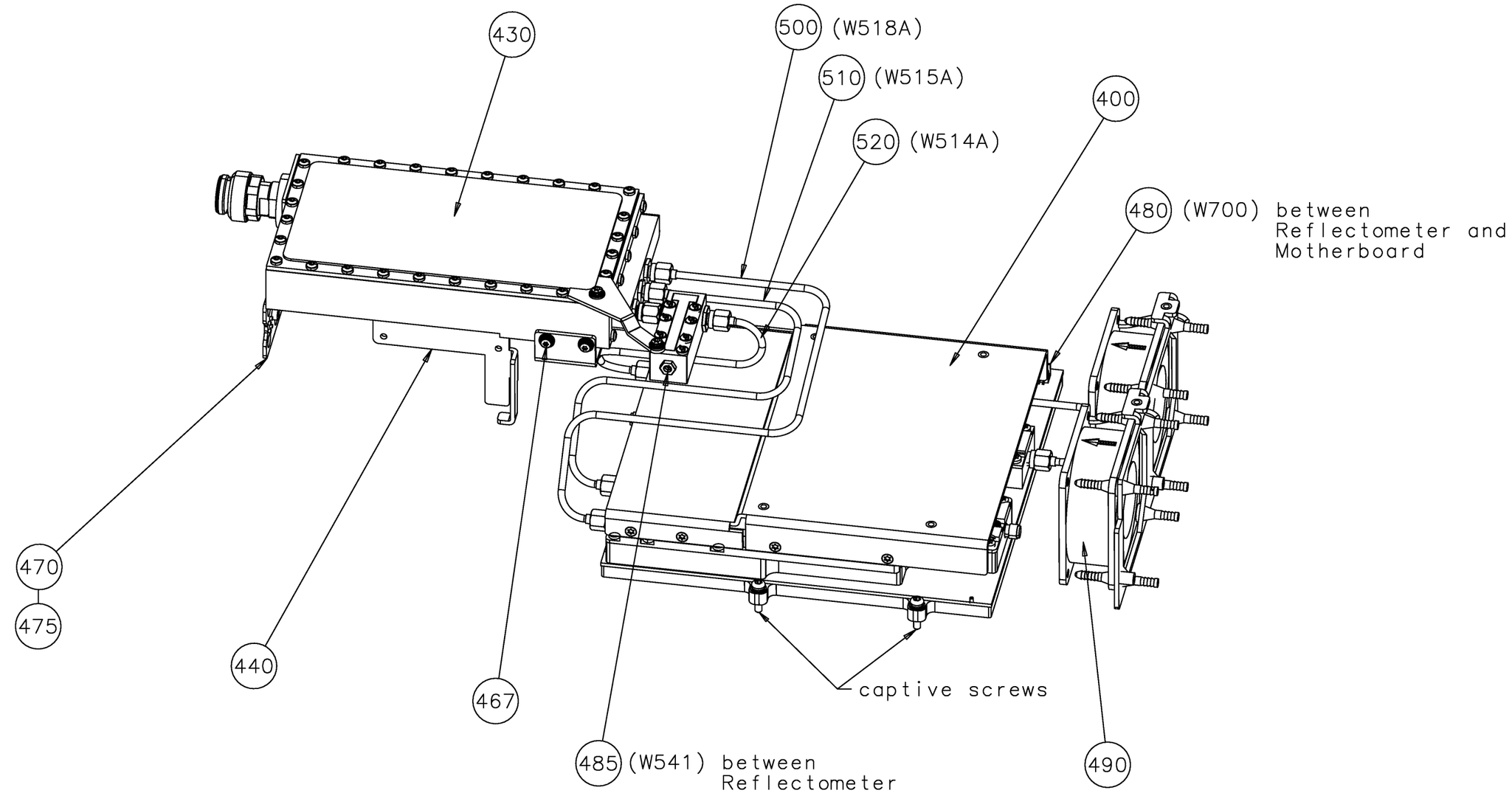
Projektions-methode
Projection Method

Variantenerklärung/Versions:
VAR02 = Grundausführung
MOD02 = Basic model

Pos. 330 nicht dargestellt/not shown

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* RM UNIT ZVA 24 GHz			Sprache / *Lang.* de en	Aei. / *C.I.* 05.00	Blatt / *Sh.* 1
				Zeichn.Nr. / *Drawing No.* 1145.4302.01		D
ZVA	Datum *Date* 2008-10-27	Abteilung *Dept.* 1ESK	Name *Name* LA/VL			

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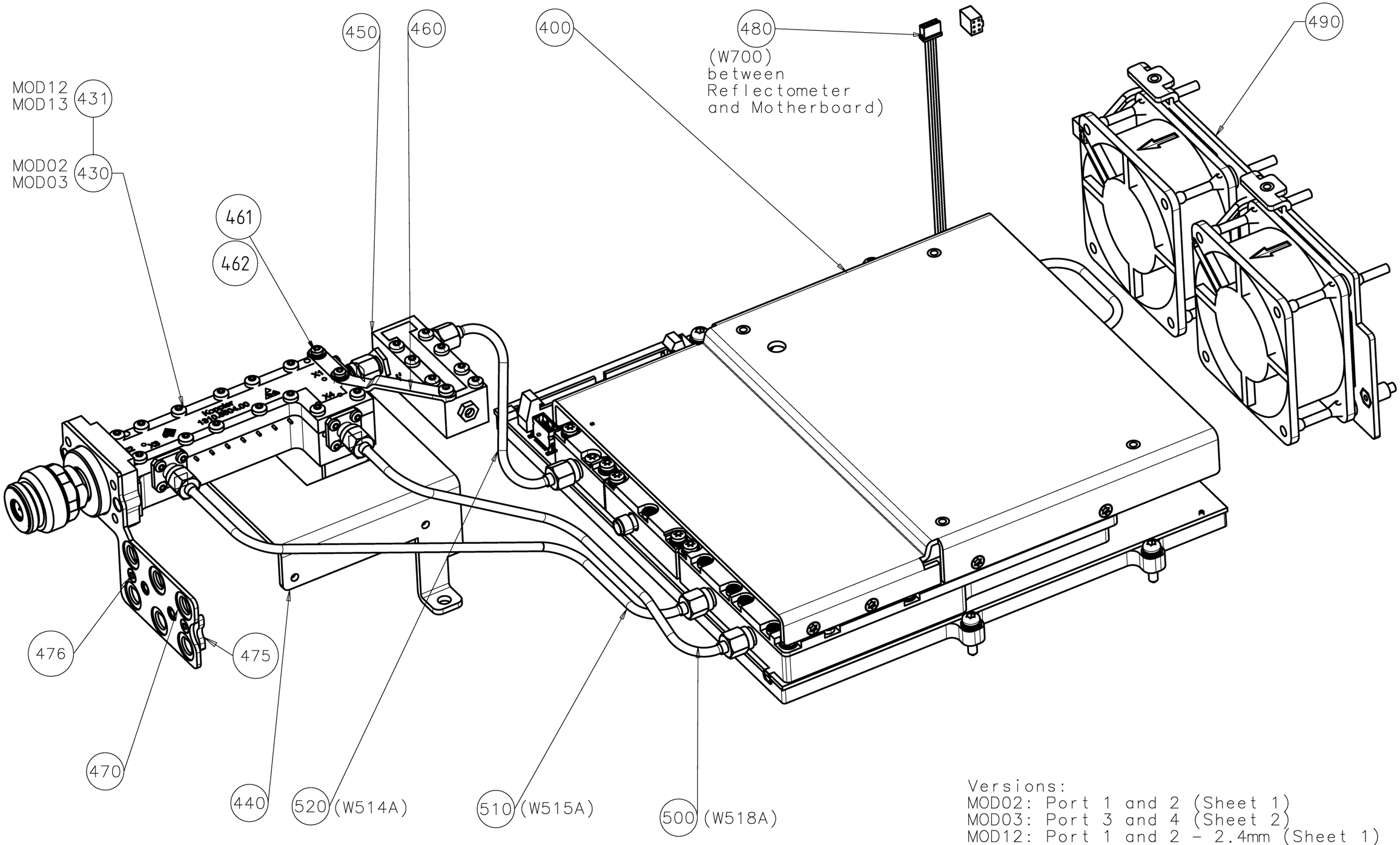
Versions:
MOD02 = PORT 1 and 2

Pos. 480(W700) and 490(W541) not shown

Projektions-methode
Projection Method

Maßstab *Scale* 1:2	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* RM UNIT ZVA 40 GHz			Sprache / *Lang.* de en	Aei. / *C.I.* 01.00	Blatt / *Sh.* 1
ZVA	Datum *Date* 2006-10-25	Abteilung *Dept.* 1ESK	Name *Name* Wn	Zeichn.Nr. / *Drawing No.* 1145.4319.01		D

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Versions:
MOD02: Port 1 and 2 (Sheet 1)
MOD03: Port 3 and 4 (Sheet 2)
MOD12: Port 1 and 2 - 2.4mm (Sheet 1)
MOD13: Port 3 and 4 - 2.4mm (Sheet 2)

Pos 445, 485(W541) ist nicht dargestellt.
Pos 445, 485(W541) not shown.

Maßeinheit / *Measuring Unit*: [mm]

Projektionsmethode / *Projection Method*

Maßstab / *Scale*	Toleranz / *Tol.*	Werkstoff / *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*: RM UNIT 2 ZVA 40 GHz RM UNIT 2 ZVA 40 GHZ			Sprache / *Lang.*: de en	Aei. / *C.I.*: 07.00
				Blatt / *Sh.*: 1	
ZVA40	Datum / *Date*: 2015-01-21	Abteilung / *Dept.*: MTEK	Name / *Name*: mk	Zeichn.Nr. / *Drawing No.*: 1305.3420.01	D

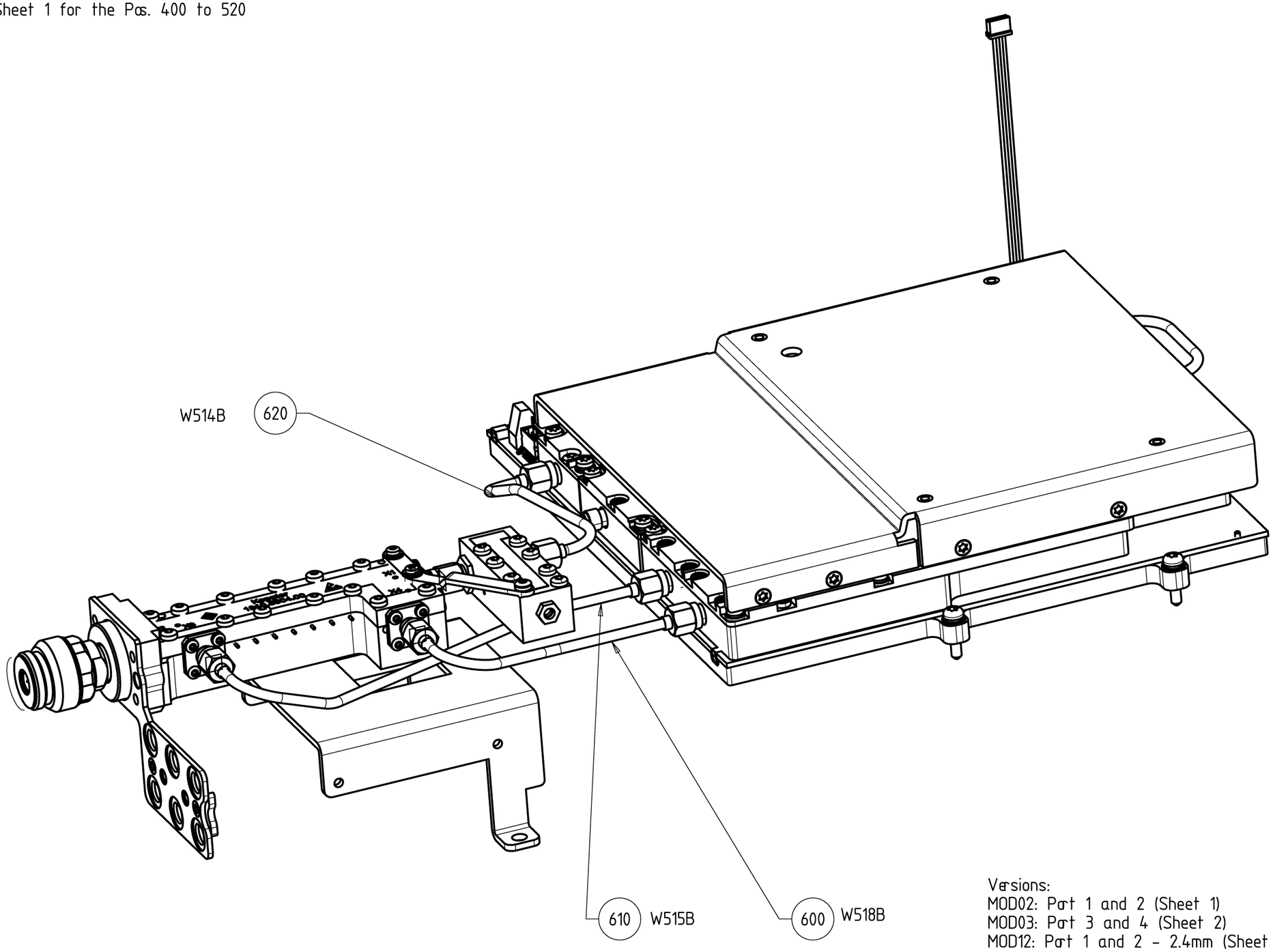
A3

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Maßeinheit
Measuring Unit
[mm]

Projektions-methode
Projection Method

Please see Sheet 1 for the Pos. 400 to 520



Versions:
MOD02: Pos 1 and 2 (Sheet 1)
MOD03: Pos 3 and 4 (Sheet 2)
MOD12: Pos 1 and 2 - 2.4mm (Sheet 1)
MOD13: Pos 3 and 4 - 2.4mm (Sheet 2)

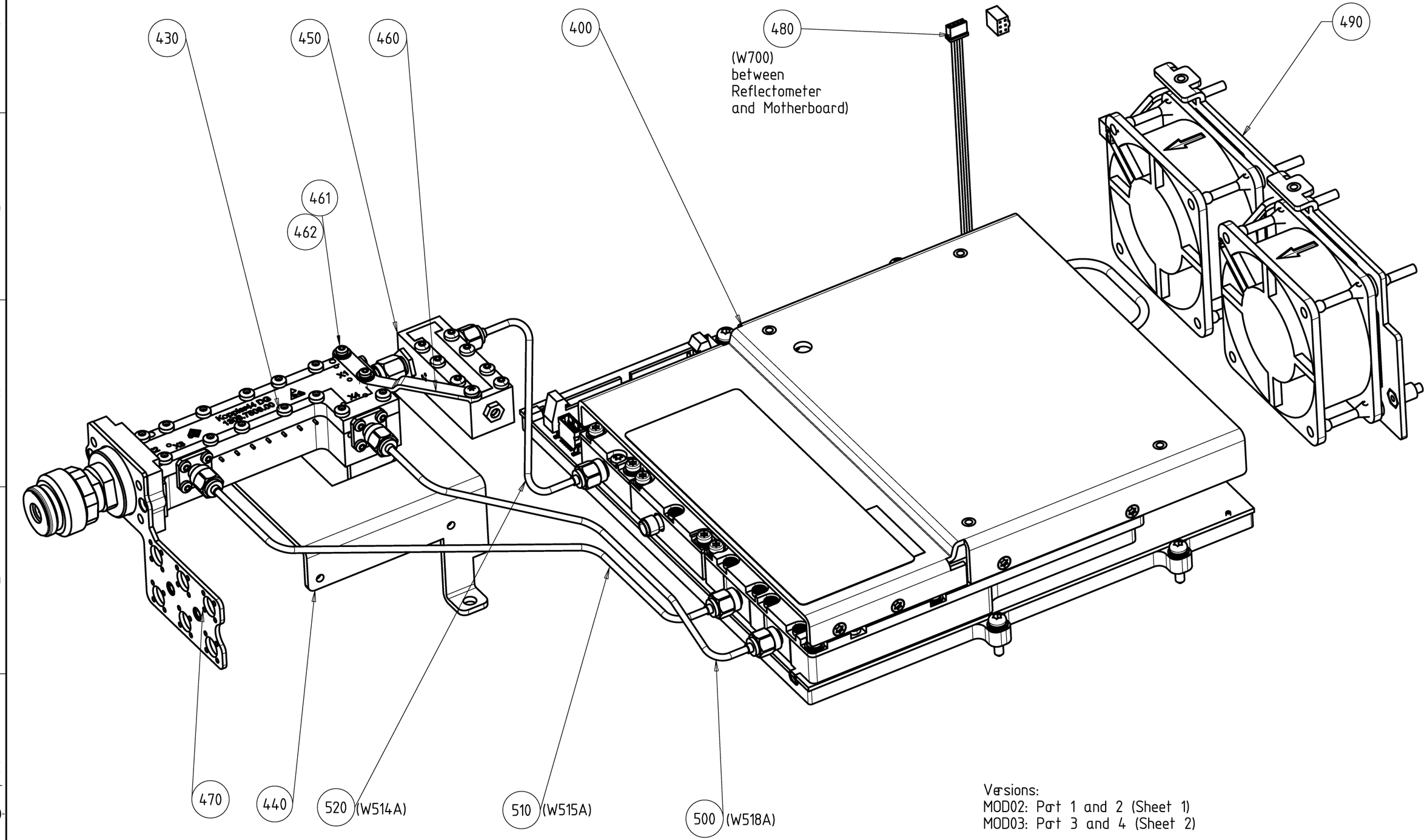
Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung *Designation*: RM UNIT 2 ZVA 40 GHz / RM UNIT 2 ZVA 40 GHZ			Sprache *Lang.*: de en	Aei. *Cl.*: 05.00 / Blatt *Sh.*: 2
ZVA40	Datum *Date*: 2015-01-21	Abteilung *Dept.*: MTEK	Name *Name*: mk	Zeichn.Nr. *Drawing No.*: 1305.3420.01	D

A3

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Maßeinheit
Measuring Unit
[mm]

Projektions-methode
Projection Method



Versions:
MOD02: Part 1 and 2 (Sheet 1)
MOD03: Part 3 and 4 (Sheet 2)

Pos 445, 485(W541) ist nicht dargestellt.
Pos 445, 485(W541) not shown.

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*	
ROHDE&SCHWARZ	Benennung / *Designation* RM UNIT ZVA 50 GHz RM UNIT ZVA 50 GHZ	Sprache / *Lang.* de en	Aei. / *C.I.* 03.00
ZVA50	Datum *Date* 2015-01-20	Abteilung *Dept.* MTEK	Name *Name* mk
		Zeichn.Nr. / *Drawing No.* 1305.3407.01	Blatt / *Sh.* 1 D

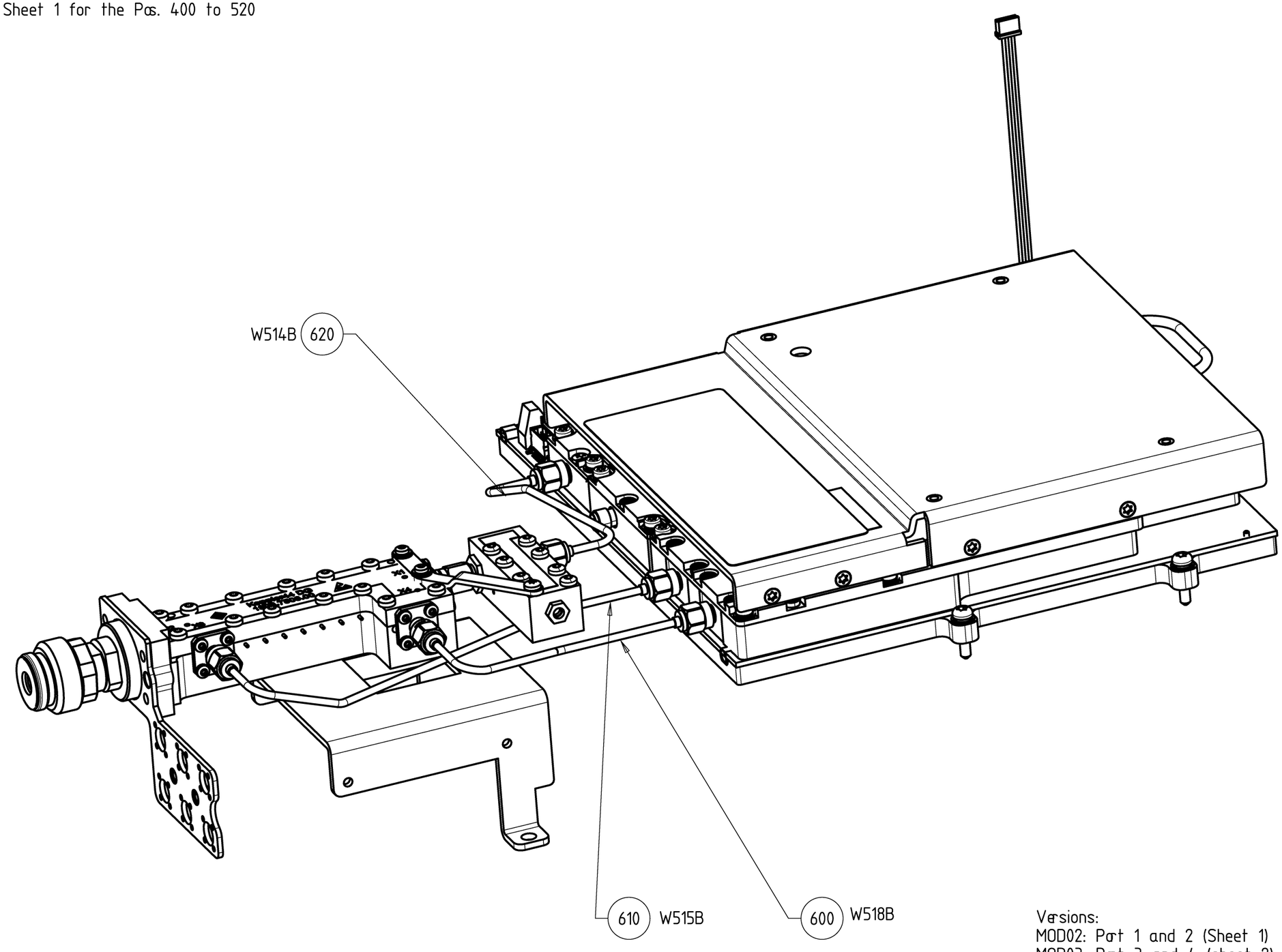
A3

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Maßeinheit
Measuring Unit
[mm]

Projektions-methode
Projection Method

Please see Sheet 1 for the Pos. 400 to 520

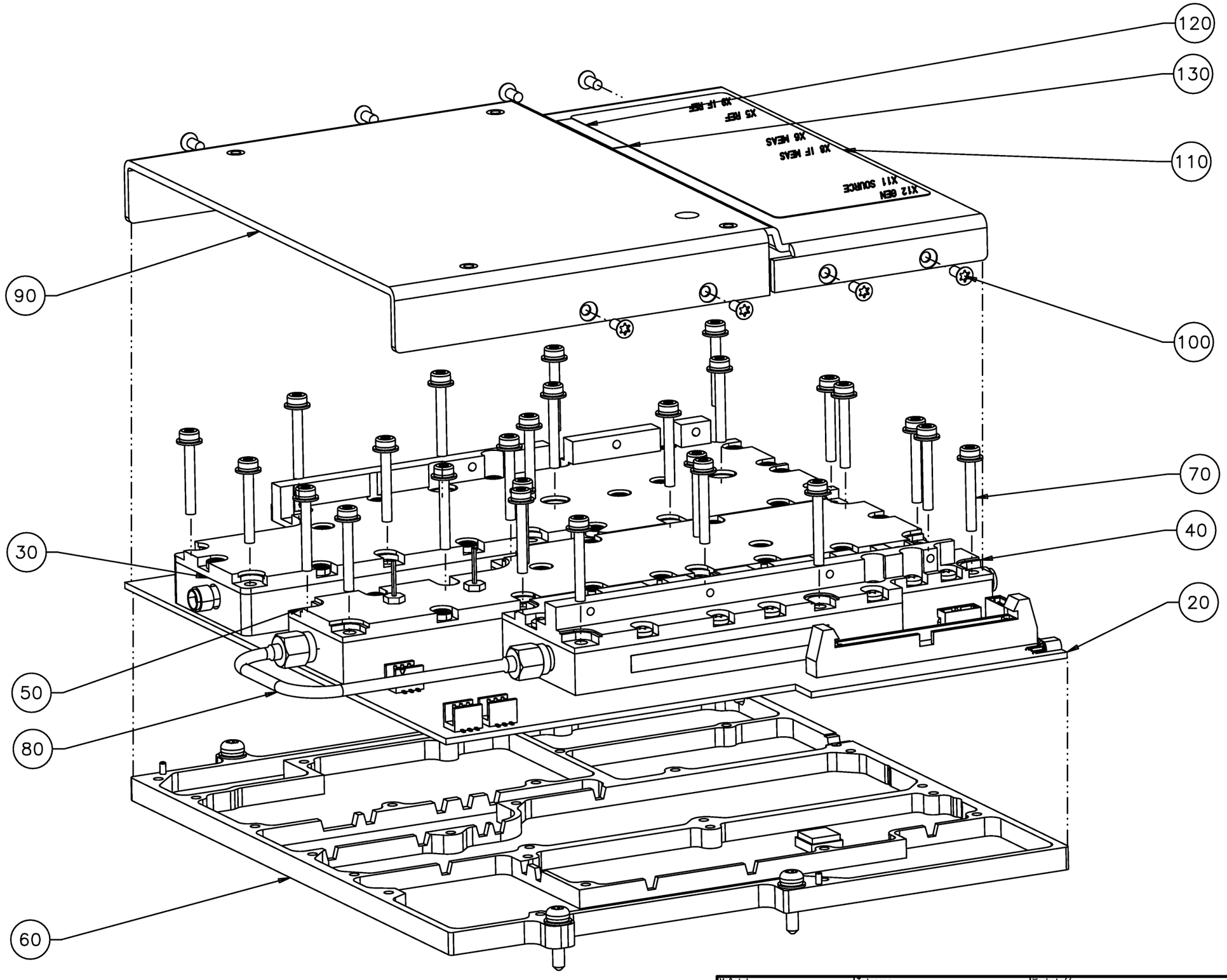


Versions:
MOD02: Part 1 and 2 (Sheet 1)
MOD03: Part 3 and 4 (sheet 2)

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung */ Designation* RM UNIT ZVA 50 GHz RM UNIT ZVA 50 GHZ			Sprache */ Lang.* de en	Aei. */ C.I.* 03.00	Blatt */ Sh.* 2
ZVA50	Datum *Date* 2015-01-20	Abteilung *Dept.* MTEK	Name *Name* mk	Zeichn.Nr. */ Drawing No.* 1305.3407.01		D

A3

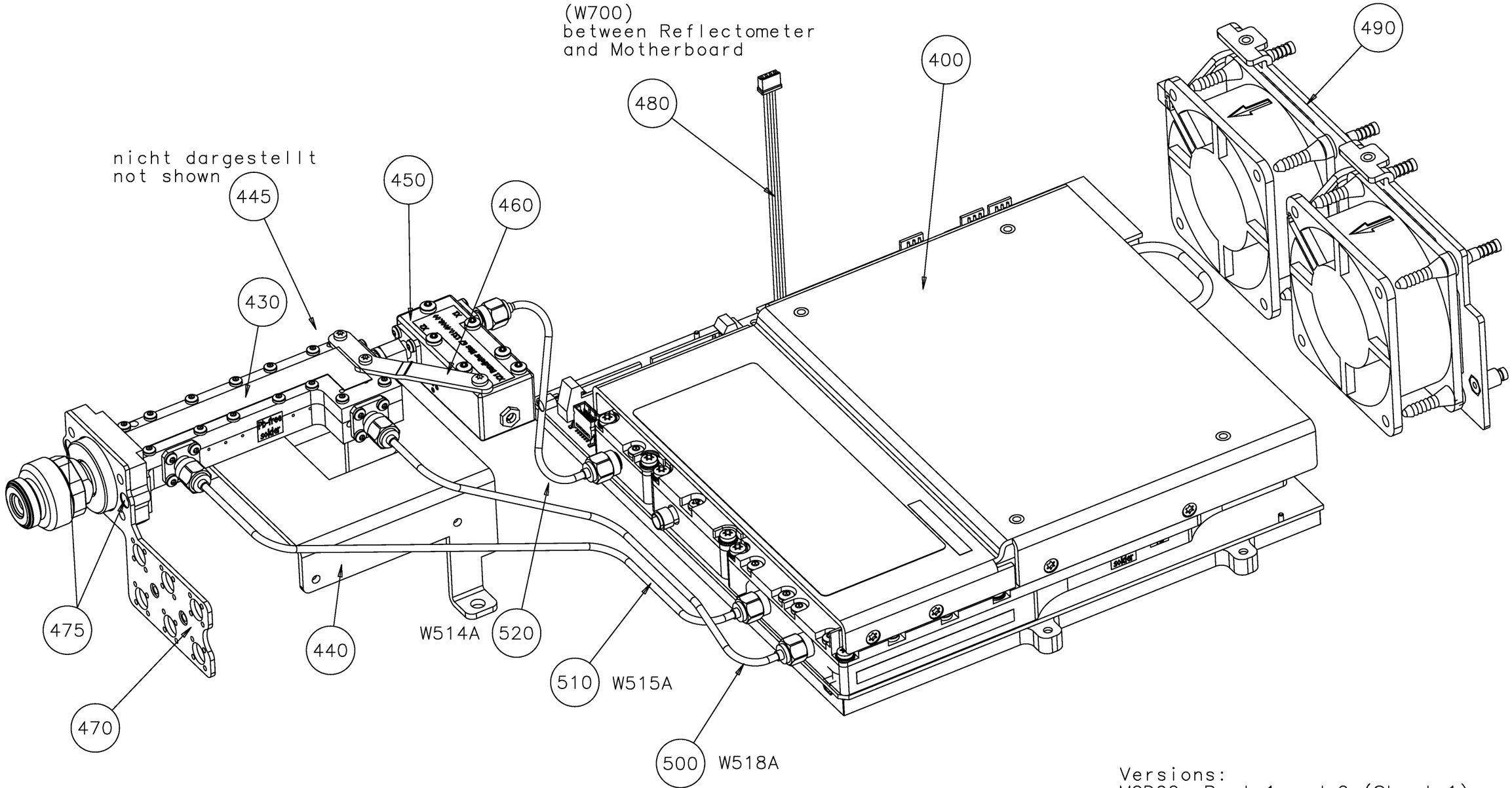
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Projektions-methode
Projection Method

Maßstab *Scale* 1:1	Toleranz *Tol.* ISO2768-mK	Werkstoff *Material*		
ROHDE&SCHWARZ	Benennung / *Designation* REFLECTOMETER ZVA 50 REFLECTOMETER ZVA 50		Sprache / *Lang.* de en	Aei. / *C.I.* 04.00	Blatt / *Sh.* 1
ZVA50	Datum *Date* 2014-02-07	Abteilung *Dept.* MTEK	Name *Name* mk	Zeichn.Nr. / *Drawing No.* 1305.3413.01 D	

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Pos. 485(W451) ist nicht dargestellt
Pos. 485(W451) not shown

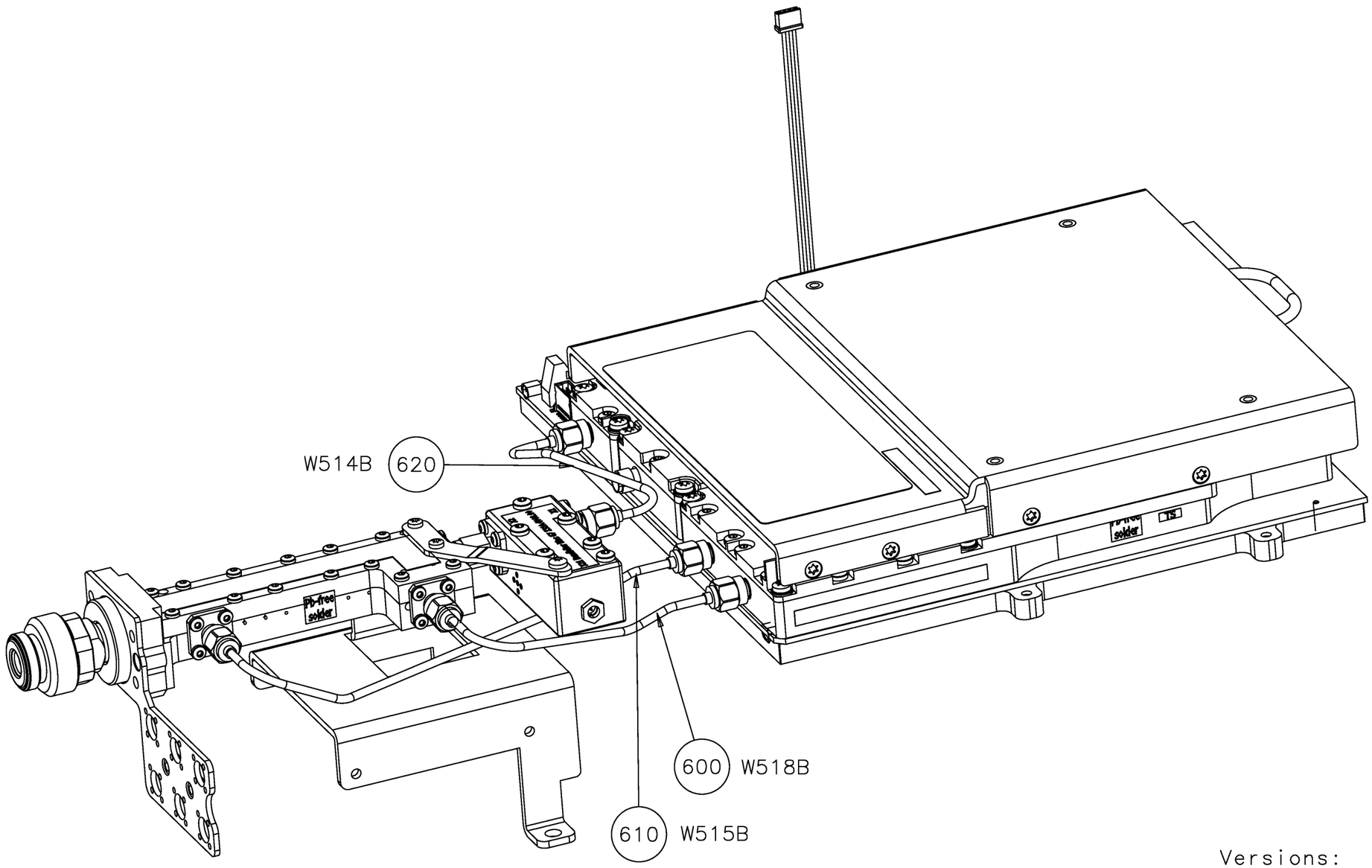
Versions:
MOD02: Port 1 and 2 (Sheet 1)
MOD03: Port 3 and 4 (Sheet 2)

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* RM UNIT ZVA67 RM UNIT ZVA67			Sprache / *Lang.* de en	Aei. / *C.I.* 03.00	Blatt / *Sh.* 1
ZVA67	Datum *Date* 2010-06-29	Abteilung *Dept.* 1ESK	Name *Name* VL/RN	Zeichn.Nr. / *Drawing No.* 1305.6241.01		D

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Please see Sheet 1 for Pos. 400 to 520

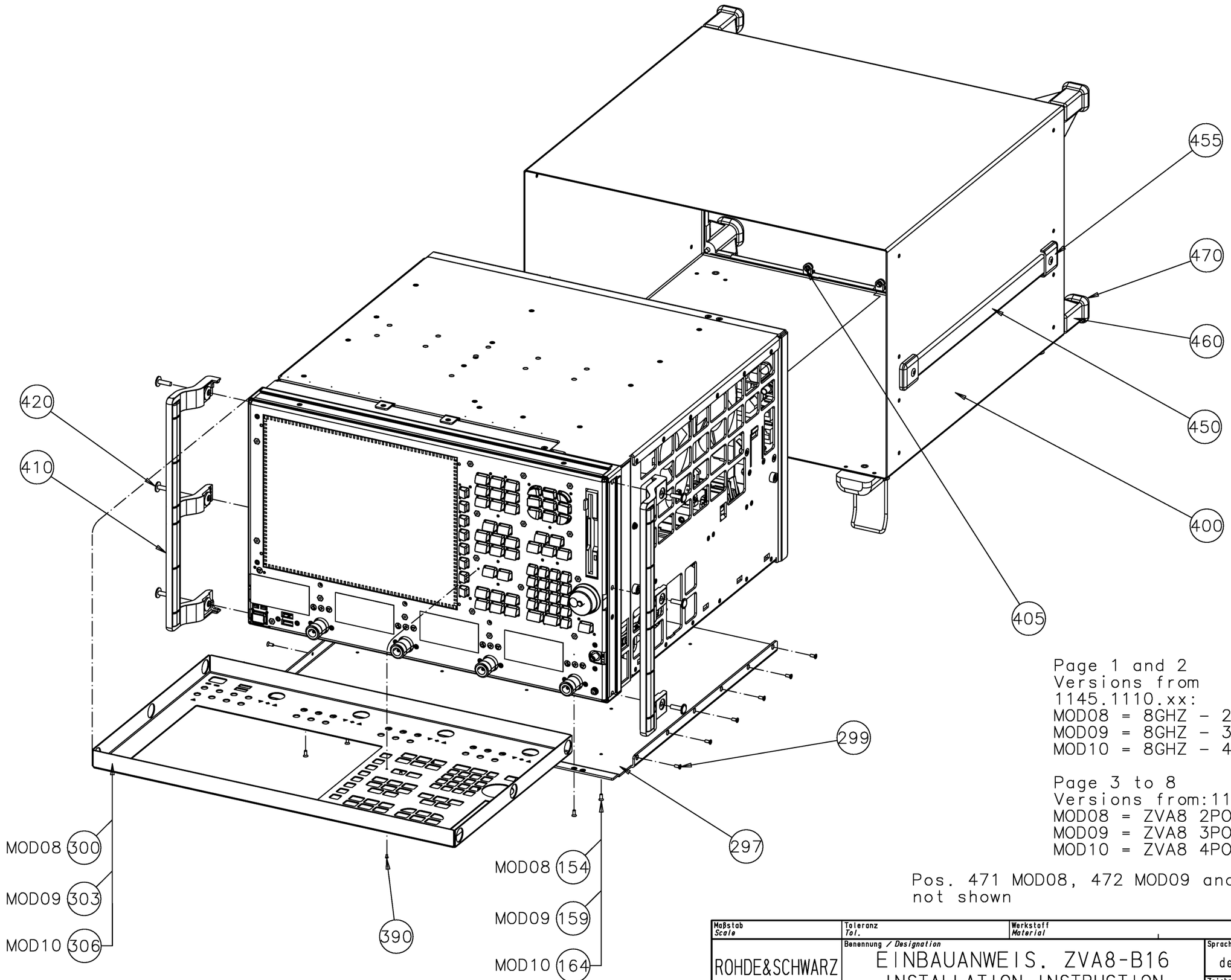


Versions:
MOD02: Port 1 and 2 (Sheet 1)
MOD03: Port 3 and 4 (Sheet 2)

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* RM UNIT ZVA67 RM UNIT ZVA67			Sprache / *Lang.* de en	Aei. / *C.I.* 03.00
				Blatt / *Sh.* 2	
ZVA67	Datum *Date* 2010-06-29	Abteilung *Dept.* 1ESK	Name *Name* VL/RN	Zeichn.Nr. / *Drawing No.* 1305.6241.01	D

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Projektions-methode
Projection Method

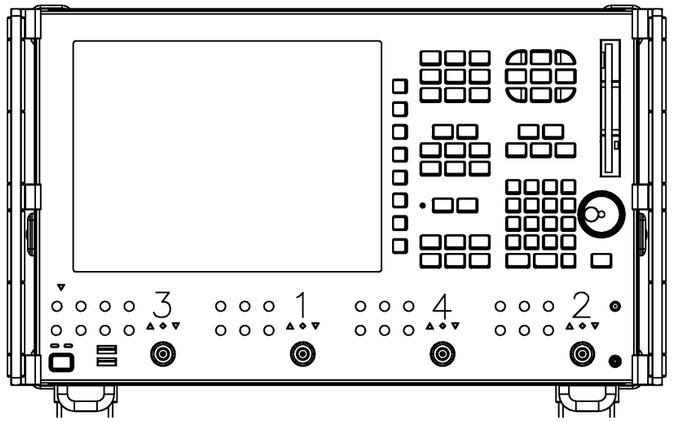
Page 1 and 2
Versions from
1145.1110.xx:
MOD08 = 8GHZ - 2PORT
MOD09 = 8GHZ - 3PORT
MOD10 = 8GHZ - 4PORT

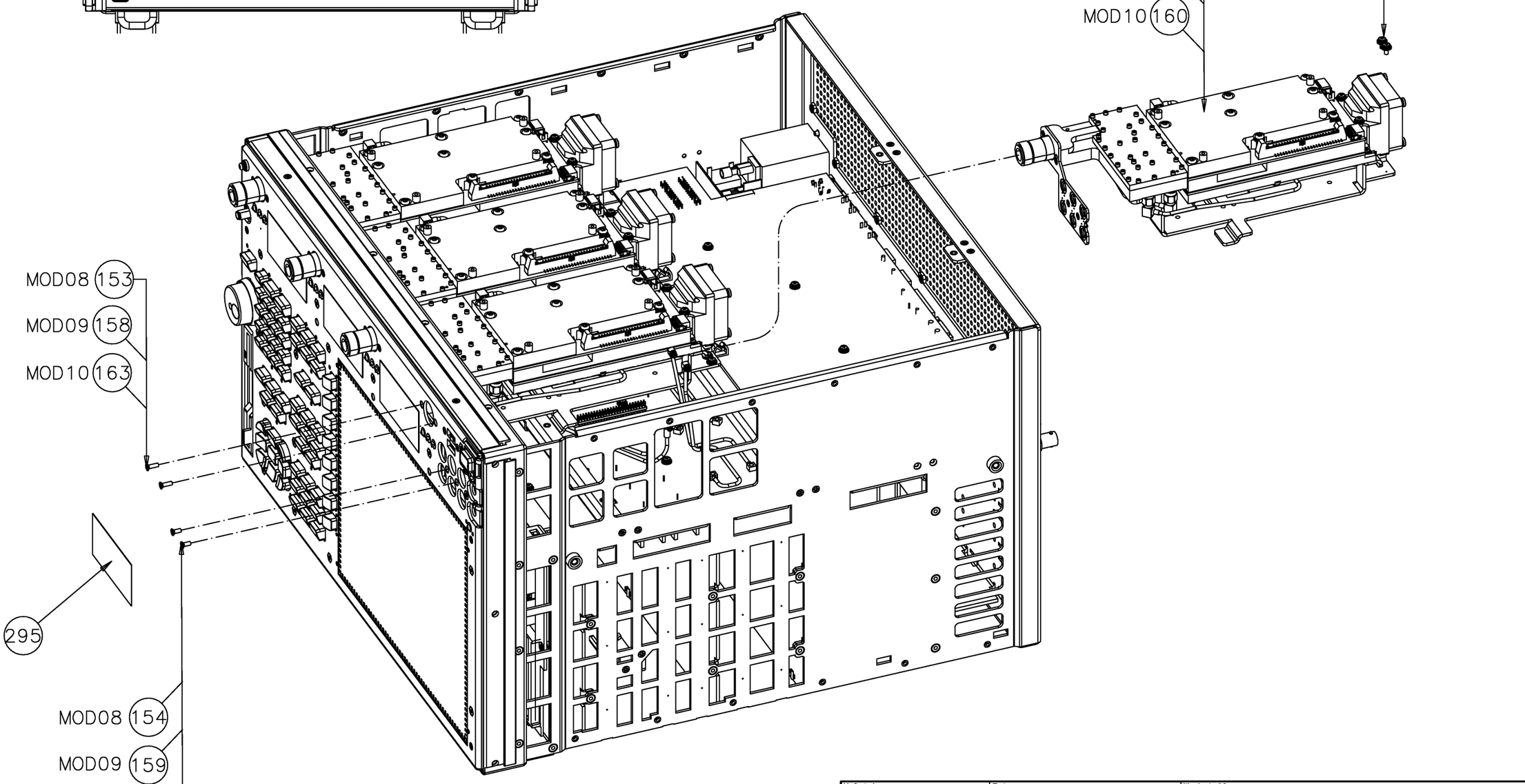
Page 3 to 8
Versions from:1164.0209.xx:
MOD08 = ZVA8 2PORT
MOD09 = ZVA8 3PORT
MOD10 = ZVA8 4PORT

Pos. 471 MOD08, 472 MOD09 and 473 MOD10 not shown

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*: EINBAUANWEIS. ZVA8-B16 INSTALLATION INSTRUCTION			Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 1
ZVA	Datum *Date*: 2006-07-14	Abteilung *Dept.*: 1ESK	Name *Name*: Wn	Zeichn.Nr. / *Drawing No.*: 1164.0250.00		D

Installing/uninstalling reflectometers (RM Unit ZVA8)



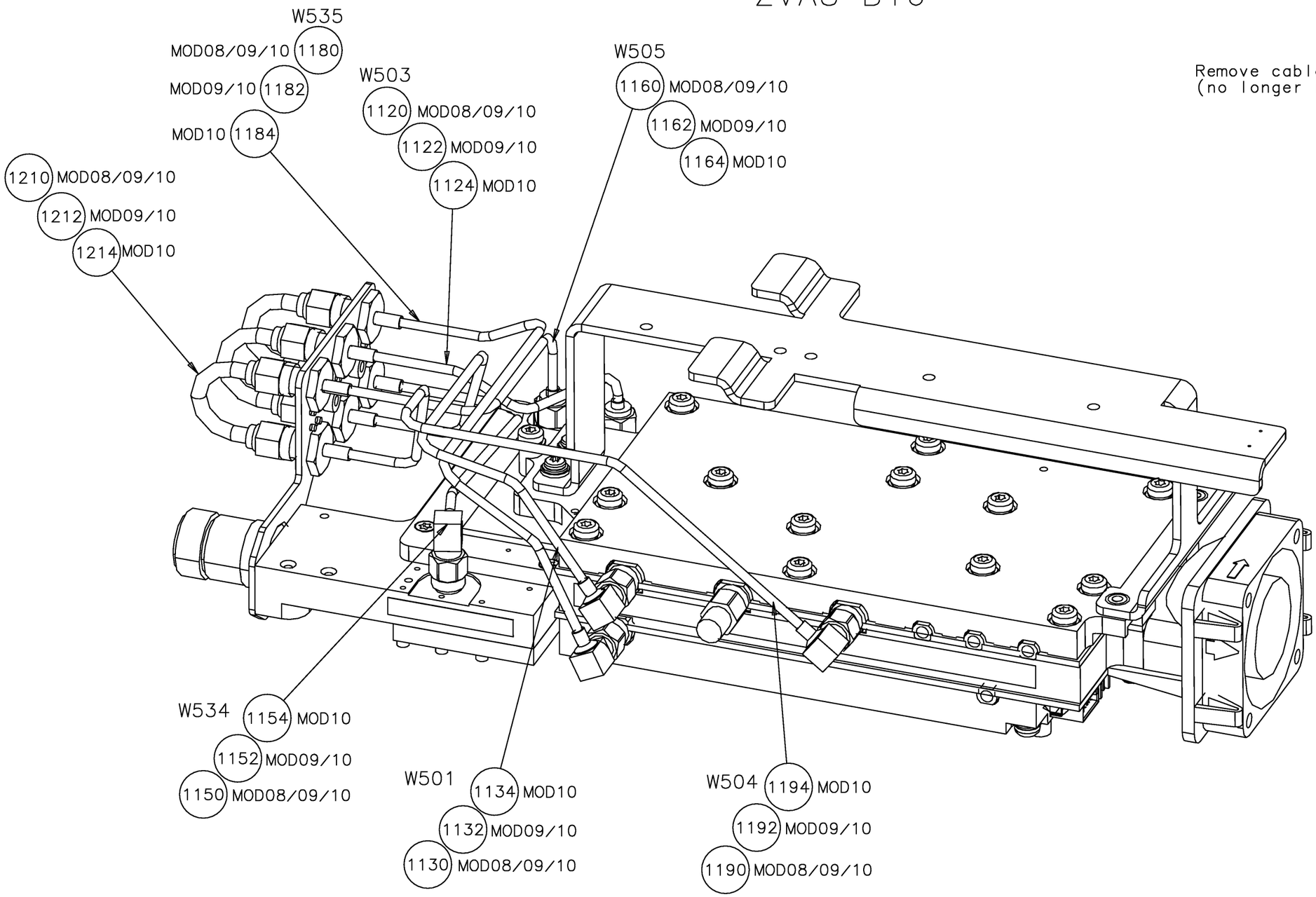


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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEIS. ZVA8-B16 INSTALLATION INSTRUCTION			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 2
				Zeichn.Nr. / *Drawing No.* 1164.0250.00 D		
ZVA	Datum *Date* 2006-09-18	Abteilung *Dept.* 1ESK	Name *Name* Wn			

ZVA8-B16



Remove cables W514, W515 and W518
(no longer required)

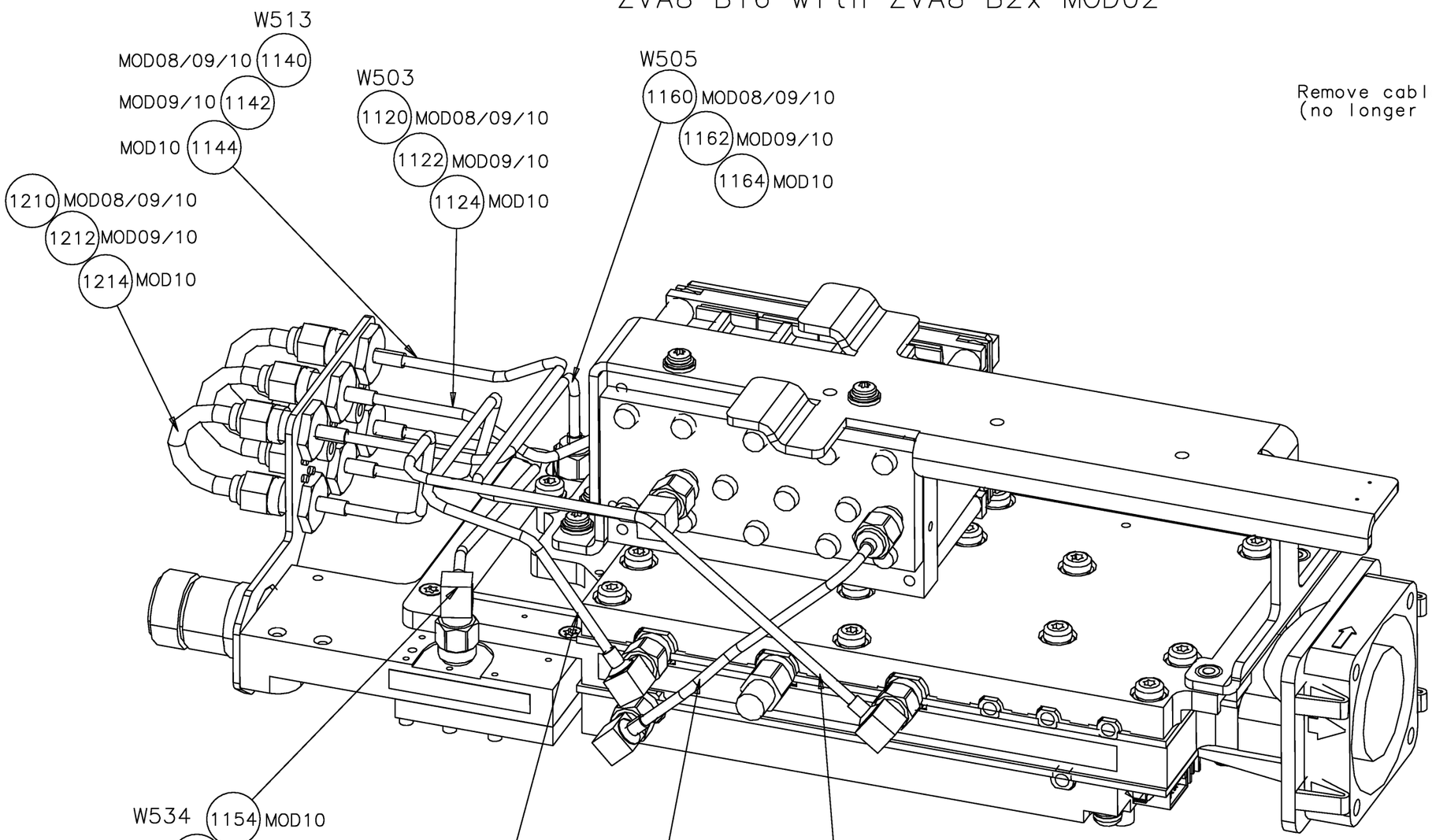
Pos. 1140, 1142, 1144, 1170, 1172, 1174, 1200, 1202 and 1204 will be not required

Maßstab / Scale 1:1	Toleranz / Tol.	Werkstoff / Material			
ROHDE&SCHWARZ	Benennung / Designation: EINBAUANWEIS. ZVA8-B16 INSTALLATION INSTRUCTION			Sprache / Lang. de en	Aei. / C.I. 02.00	Blatt / Sh. 3
ZVA	Datum / Date 2006-07-12	Abteilung / Dept. 1ESK	Name / Name HG	Zeichn.Nr. / Drawing No. 1164.0250.00	D

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Projektions-methode
Projection Method

ZVA8-B16 with ZVA8-B2x MOD02



Remove cables W514, W515 and W518
(no longer required)

W512 1164.0315.00
part of ZVA8-B2x

W536 1164.0309.00 part of ZVA8-B2x
will be not required

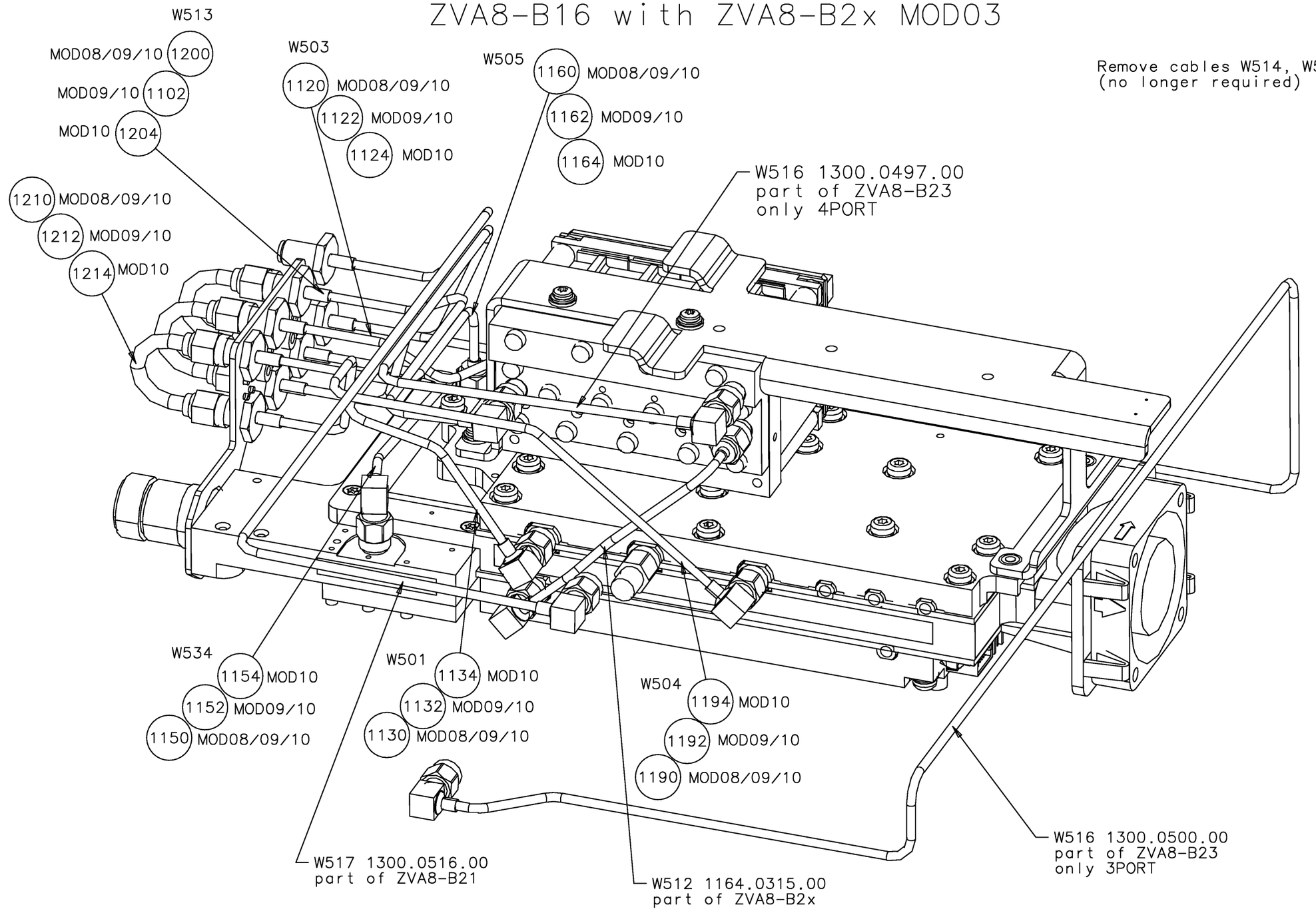
Pos. 1170, 1172, 1174, 1180, 1182, 1184, 1200, 1202 and 1204 will be not required

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Projektions-methode
Projection Method

Maßstab *Scale* 1:1	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEIS. ZVA8-B16 INSTALLATION INSTRUCTION			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 4
ZVA	Datum *Date* 2006-07-12	Abteilung *Dept.* 1ESK	Name *Name* HG	Zeichn.Nr. / *Drawing No.* 1164.0250.00		D

ZVA8-B16 with ZVA8-B2x MOD03



Remove cables W514, W515 and W518
(no longer required)

W536 1164.0367.00 part of ZVA8-B21 and
ZVA8-B23 will be not required

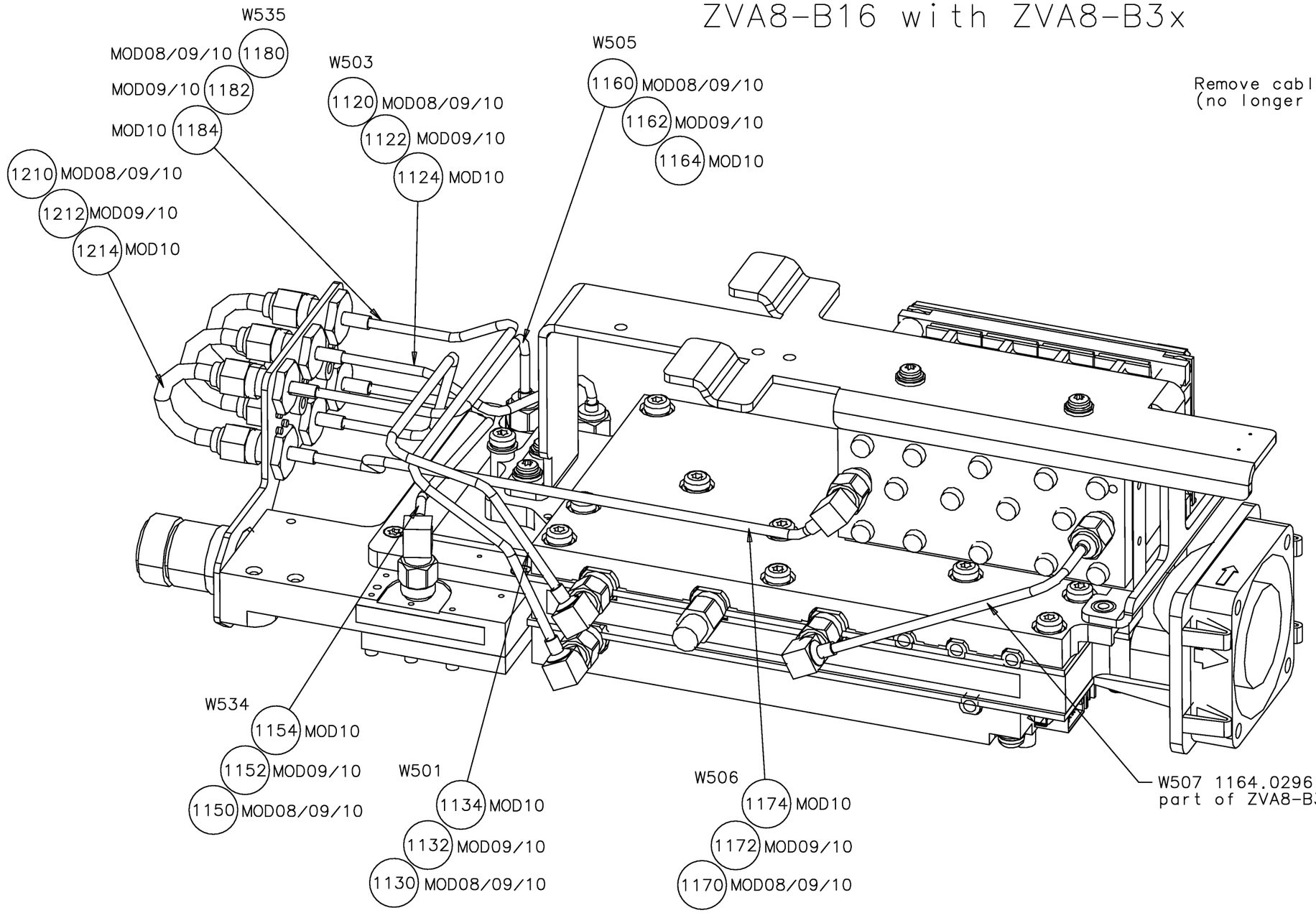
Pos. 1140, 1142, 1144, 1170, 1172, 1174, 1180, 1182 und 1184 will be not required

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Projektions-methode
Projection Method

Maßstab *Scale* 1:1	Toleranz *Tol.*	Werkstoff *Material*		
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEIS. ZVA8-B16 INSTALLATION INSTRUCTION		Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 5
ZVA	Datum *Date* 2006-07-12	Abteilung *Dept.* 1ESK	Name *Name* Mi	Zeichn.Nr. / *Drawing No.* 1164.0250.00 D	

ZVA8-B16 with ZVA8-B3x



Remove cables W514, W515 and W518
(no longer required)

W508 1164.0273.00 part of ZVA8-B3x will be not required

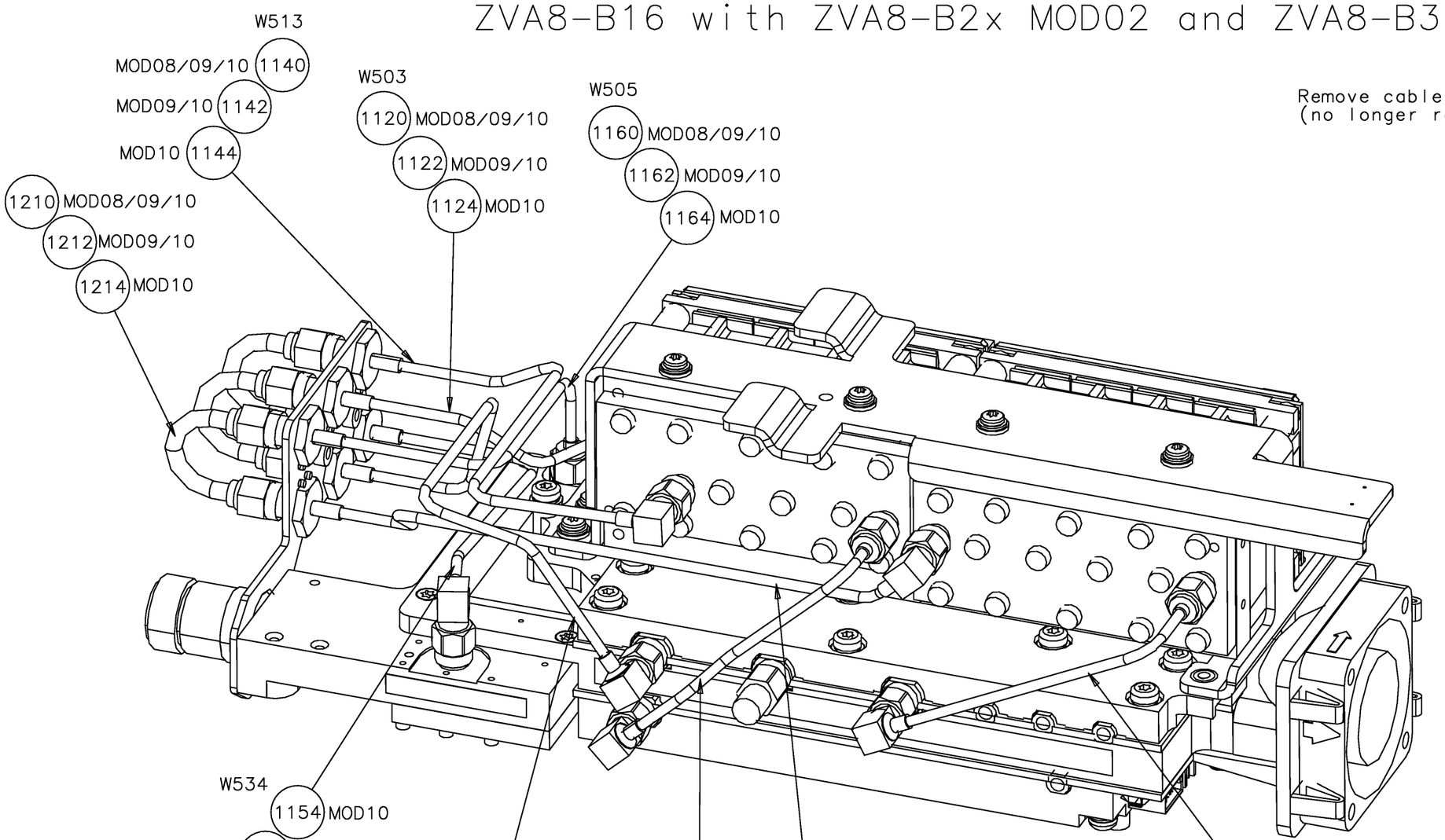
Pos. 1140, 1142, 1144, 1190, 1192, 1194, 1200, 1202 and 1204 will be not required

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Projektions-methode
Projection Method

Maßstab *Scale* 1:1	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEIS. ZVA8-B16 INSTALLATION INSTRUCTION			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 6
ZVA	Datum *Date* 2006-07-13	Abteilung *Dept.* 1ESK	Name *Name* Mi	Zeichn.Nr. / *Drawing No.* 1164.0250.00		D

ZVA8-B16 with ZVA8-B2x MOD02 and ZVA8-B3x



Remove cables W514, W515 and W518
(no longer required)

W536 1164.0309.00 part of ZVA8-B2x and
W508 1164.0273.00 part of ZVA8-B3x
will be not required

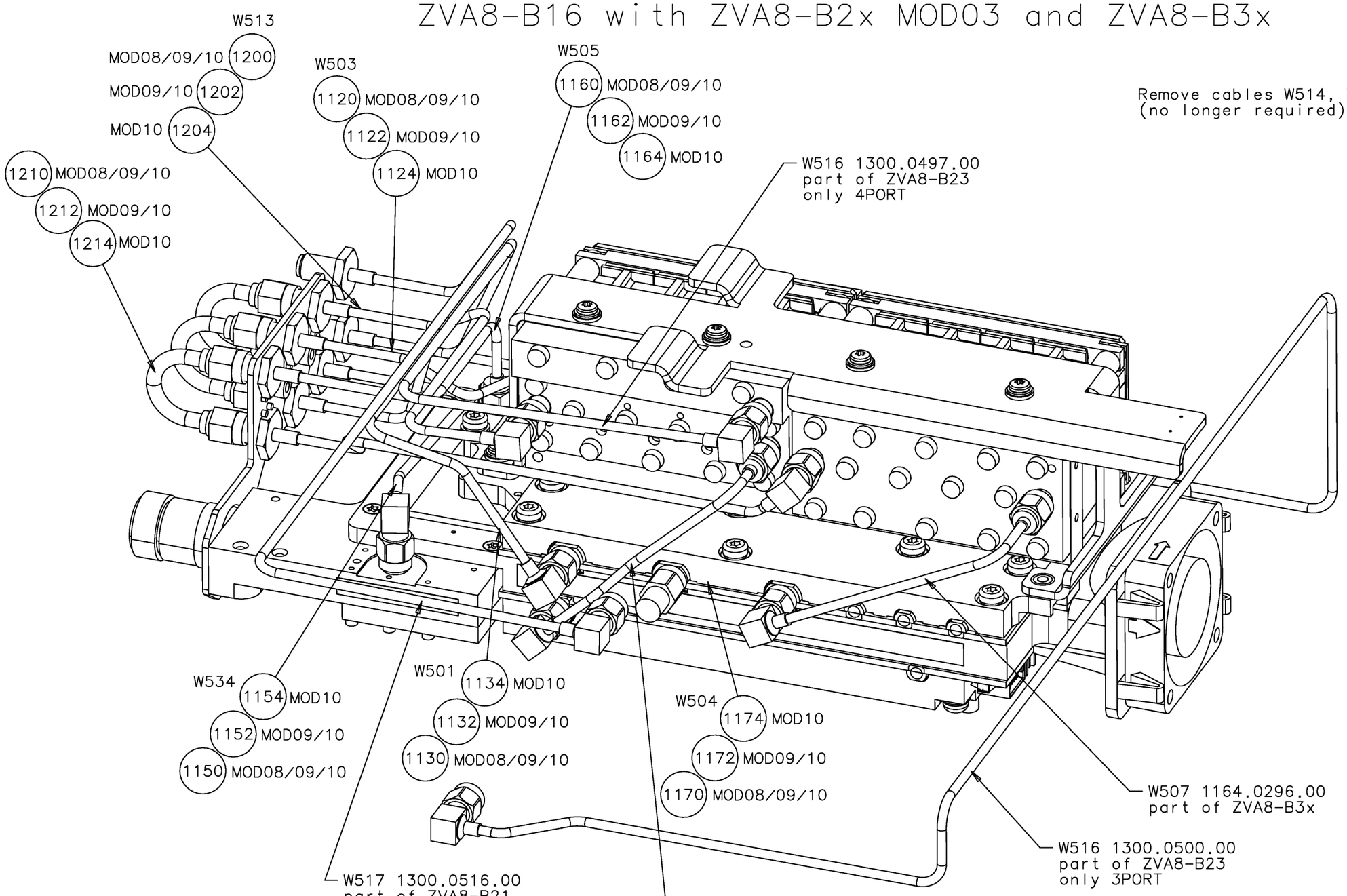
Pos. 1180, 1182, 1184, 1190, 1192, 1194, 1200, 1202 and 1204 will be not required

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Projektions-methode
Projection Method

Maßstab *Scale* 1:1	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEIS. ZVA8-B16 INSTALLATION INSTRUCTION			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 7
ZVA	Datum *Date* 2006-07-13	Abteilung *Dept.* 1ESK	Name *Name* Mi	Zeichn.Nr. / *Drawing No.* 1164.0250.00		D

ZVA8-B16 with ZVA8-B2x MOD03 and ZVA8-B3x



Remove cables W514, W515 and W518
(no longer required)

W536 1164.0367.00 part of ZVA8-B21 and
ZVA8-B23 will not be shown
W508 1164.0273.00 part of ZVA8-B3x
will will be not required

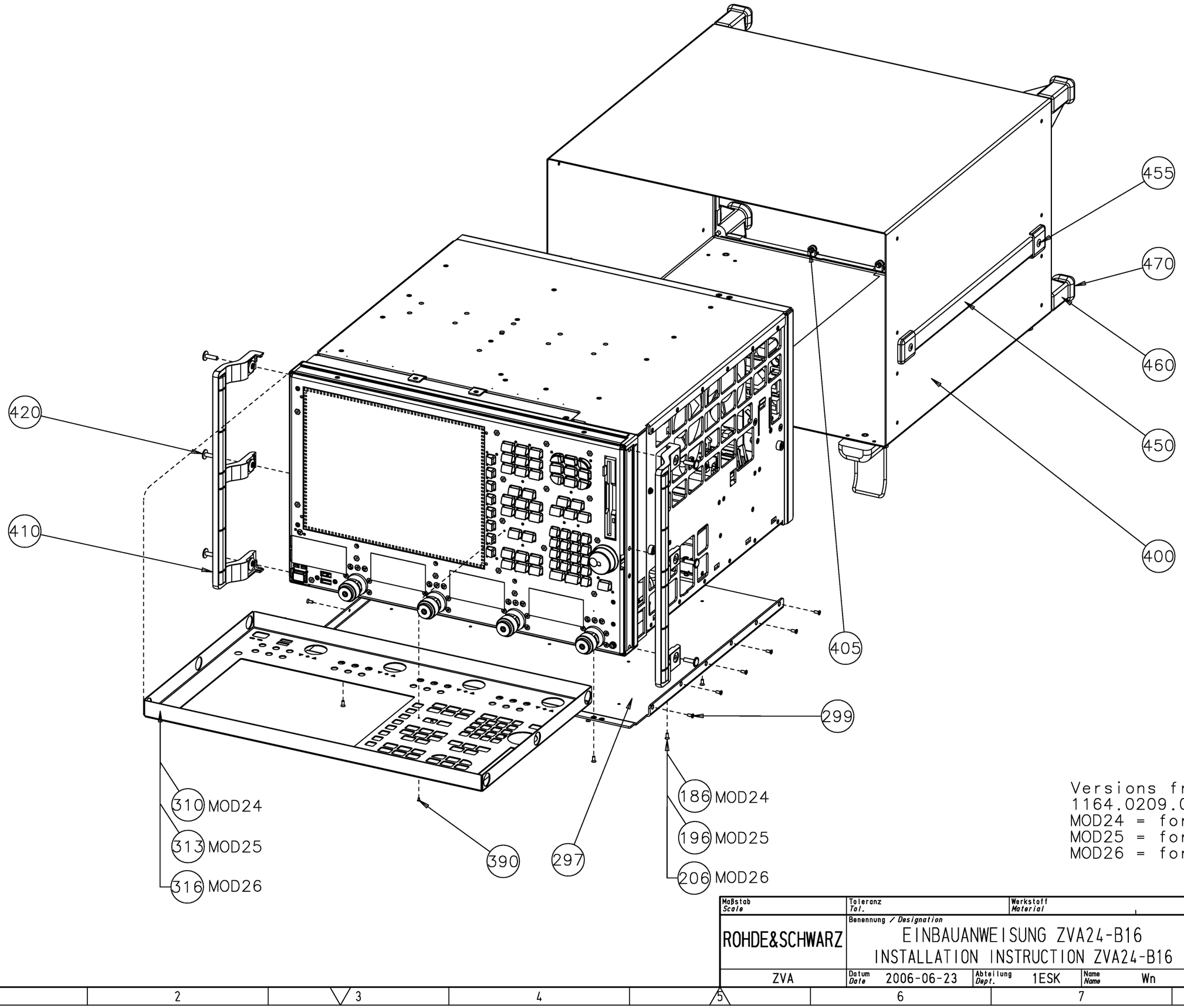
Pos. 1140, 1142, 1144, 1180, 1182, 1184, 1190, 1192 and 1194 will be not required

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Projektions-methode
Projection Method

Maßstab / *Scale*	Toleranz / *Tol.* 1:1	Werkstoff / *Material*	
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEIS. ZVA8-B16 INSTALLATION INSTRUCTION	Sprache / *Lang.* de en	Aei. / *C.I.* 02.00 / Blatt / *Sh.* 8
ZVA	Datum / *Date* 2006-07-13 / Abteilung / *Dept.* 1ESK / Name / *Name* Mi	Zeichn.Nr. / *Drawing No.* 1164.0250.00	D

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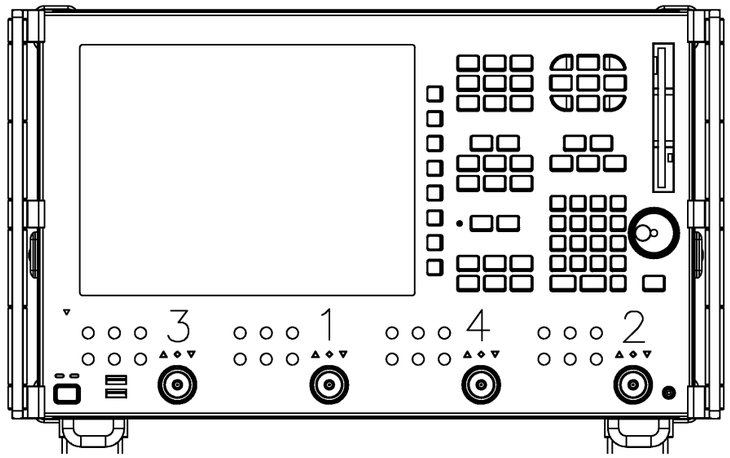
Versions from
1164.0209.01
MOD24 = for 2PORT
MOD25 = for 3PORT
MOD26 = for 4PORT

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEISUNG ZVA24-B16 INSTALLATION INSTRUCTION ZVA24-B16			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 1
ZVA	Datum *Date* 2006-06-23	Abteilung *Dept.* 1ESK	Name *Name* Wn	Zeichn.Nr. / *Drawing No.* 1164.0267.00		D

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Installing/uninstalling reflectormeters (RM Unit ZVA24

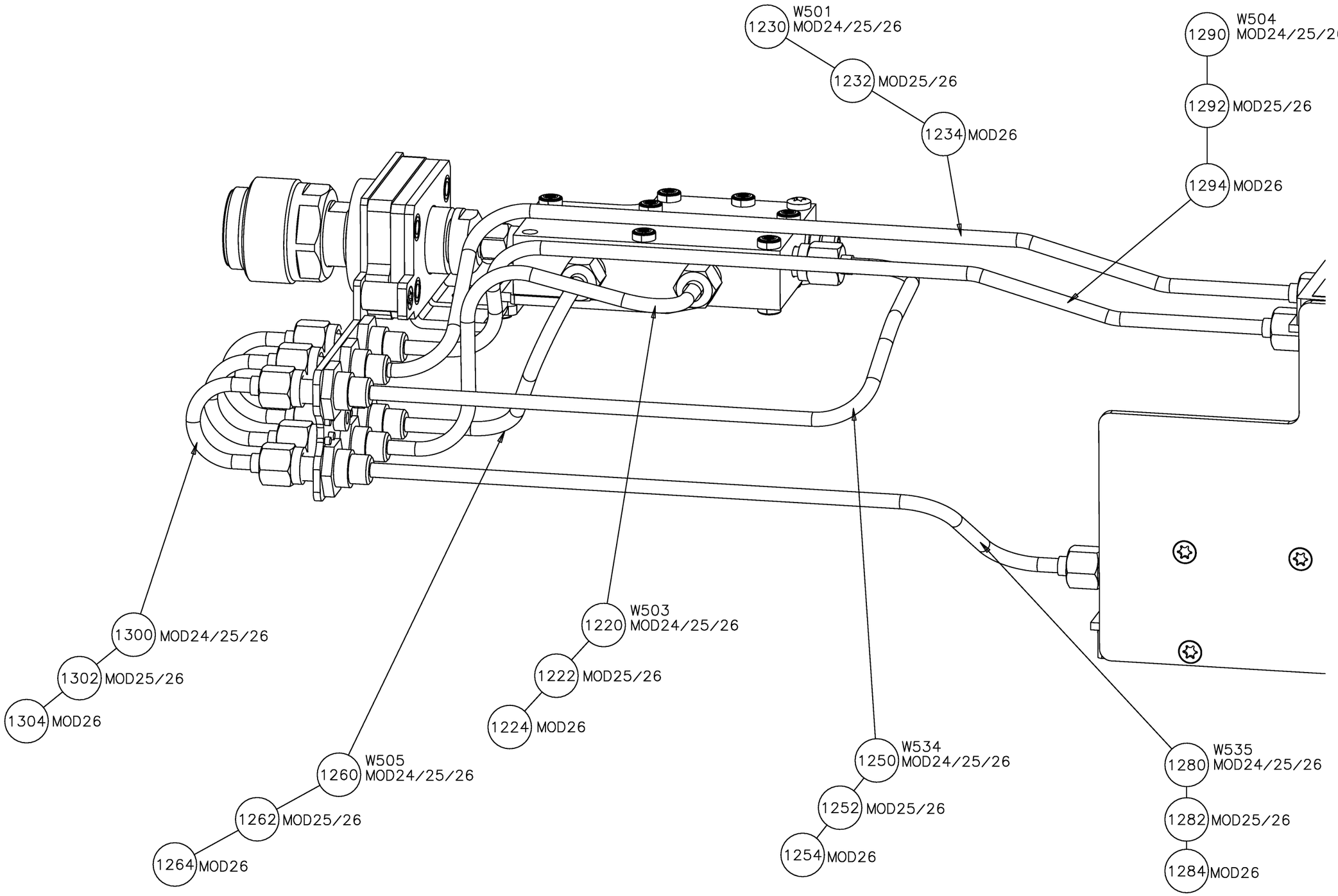


Remove cable W514, W515 and W518
between coupler/Attenuator and RM unit
prior to uninstalling the RM Unit ZVA24
After installing of the RM Unit ZVA24
with options connect cable as described
in installation instructions.

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*		
ROHDE&SCHWARZ	Benennung / *Designation*: EINBAUANWEISUNG ZVA24-B16 INSTALLATION INSTRUCTION ZVA24-B16		Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 2
ZVA	Datum *Date*: 2006-06-23	Abteilung *Dept.*: 1ESK	Name *Name*: Wn	Zeichn.Nr. / *Drawing No.*: 1164.0267.00	D

ZVA24-B16



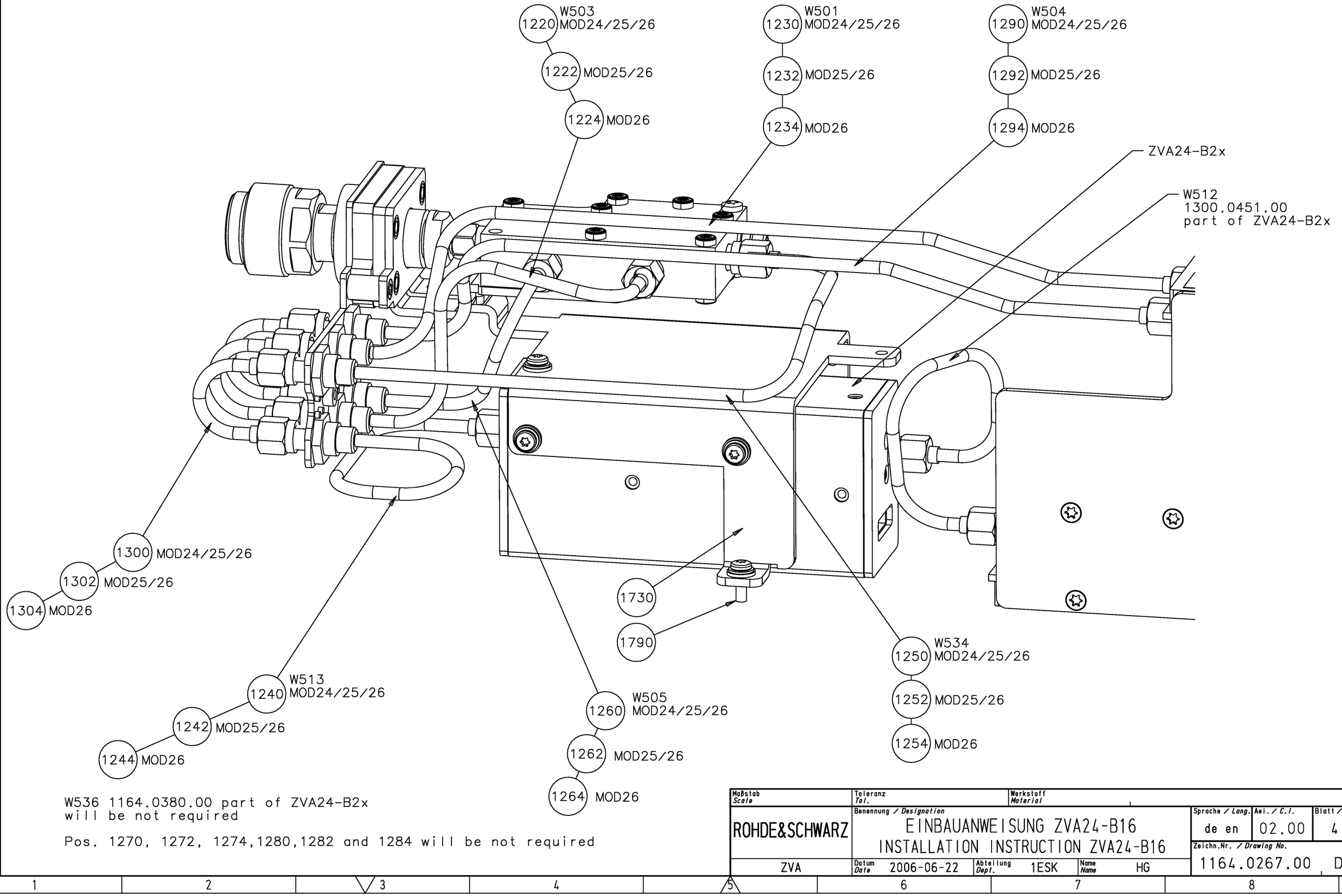
Pos. 1240, 1242, 1244, 1270, 1272 and 1274 will be not required

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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEISUNG ZVA24-B16 INSTALLATION INSTRUCTION ZVA24-B16			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 3
ZVA	Datum *Date* 2006-06-22	Abteilung *Dept.* 1ESK	Name *Name* HG	Zeichn.Nr. / *Drawing No.* 1164.0267.00		D

ZVA24-B16 with ZVA24-B2x (Attenuator)



W536 1164.0380.00 part of ZVA24-B2x
will be not required

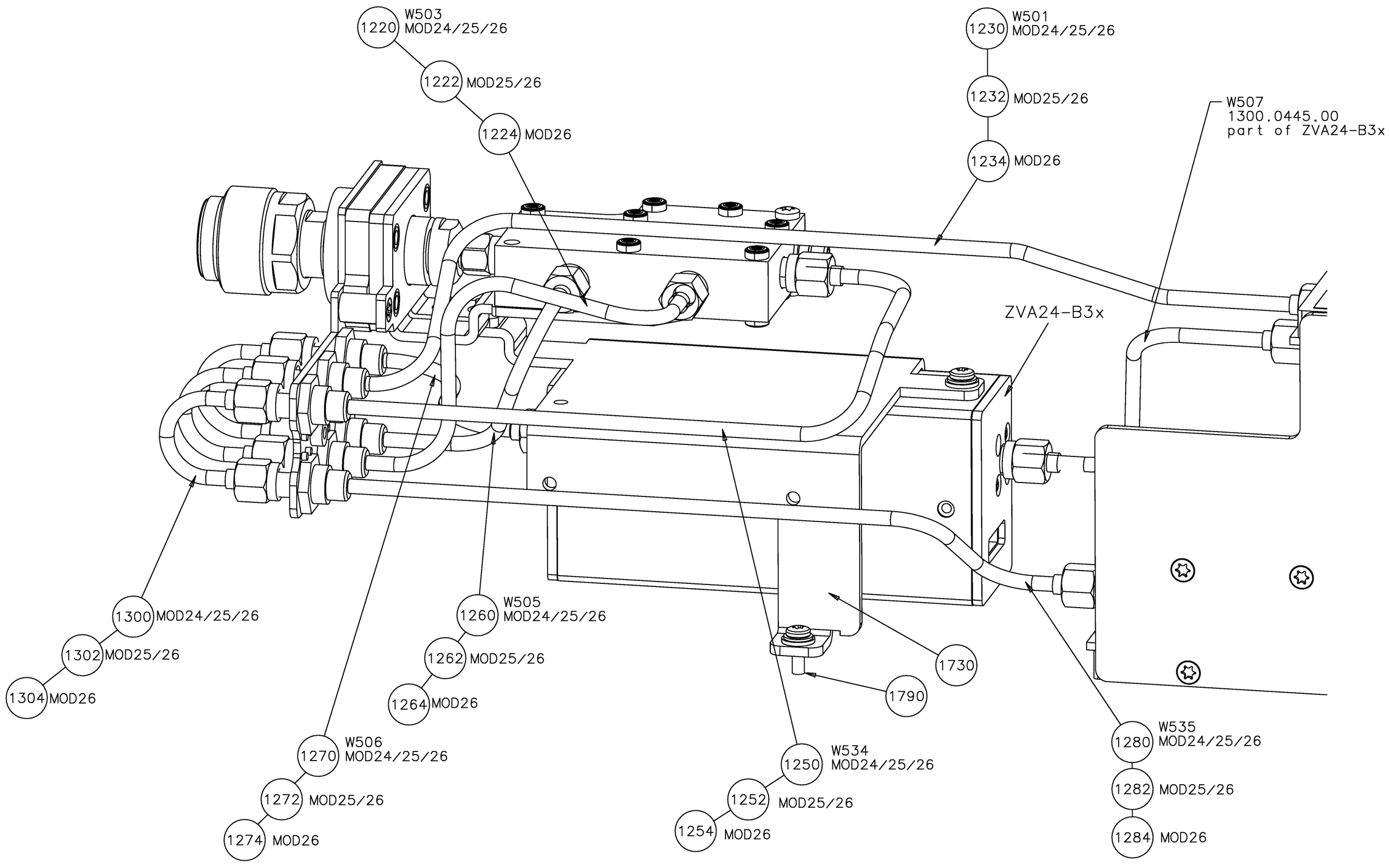
Pos. 1270, 1272, 1274,1280,1282 and 1284 will be not required

Projektions-methode
Projection Method

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Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEISUNG ZVA24-B16 INSTALLATION INSTRUCTION ZVA24-B16			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 4
ZVA	Datum *Date* 2006-06-22	Abteilung *Dept.* 1ESK	Name *Name* HG	Zeichn.Nr. / *Drawing No.* 1164.0267.00		D

ZVA24-B16 with ZVA24-B3x (Attenuator)



W508 1164.0373.00 part of ZVA24-B3x will be not required

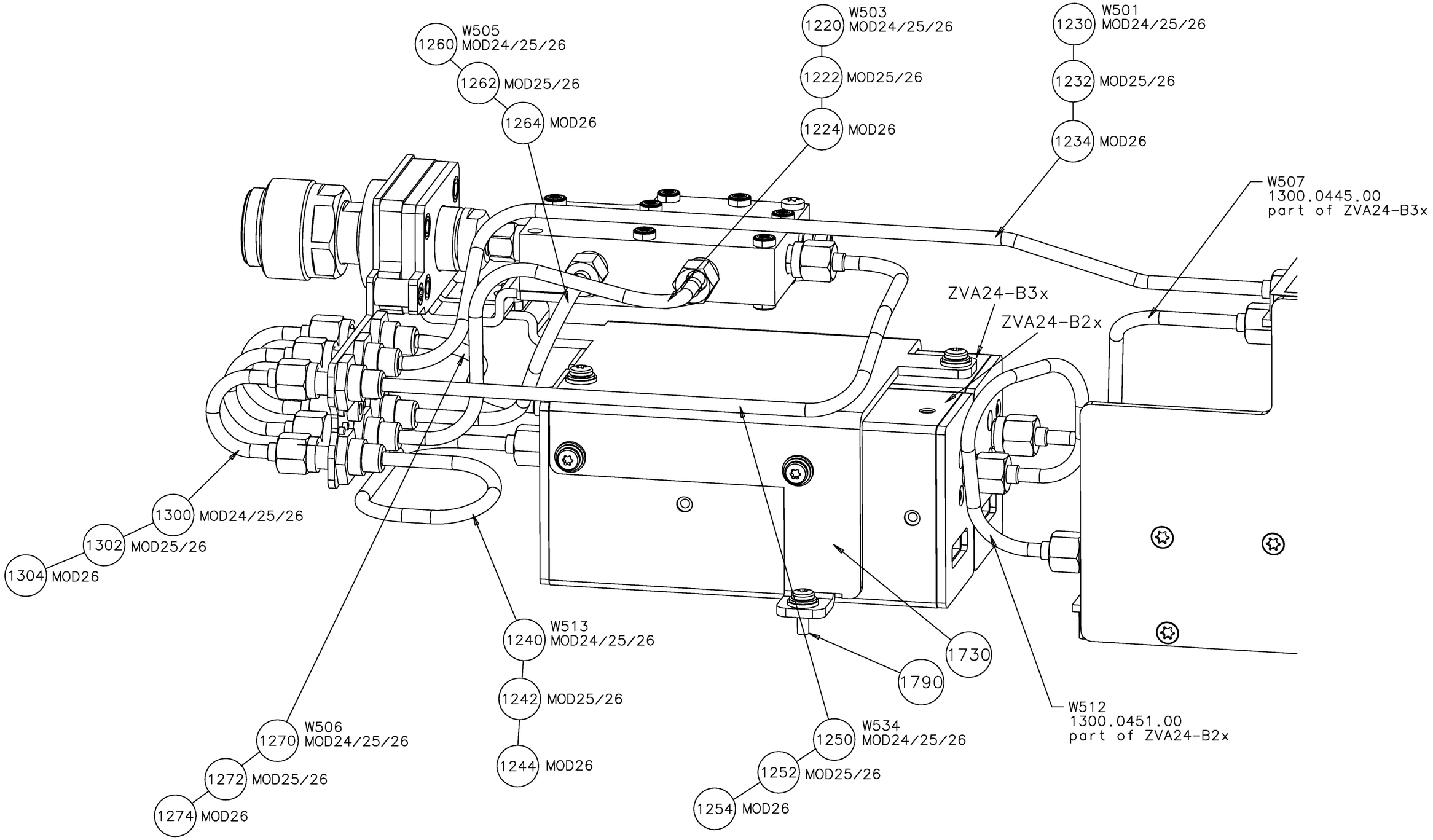
Pos. 1240, 1242, 1244,1290,1292 and 1294 will be not required

Maßstab / *Scale*	Toleranz / *Tol.*	Werkstoff / *Material*		
ROHDE&SCHWARZ	Benennung / *Designation*: EINBAUANWEISUNG ZVA24-B16 / INSTALLATION INSTRUCTION ZVA24-B16		Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 5
ZVA	Datum / *Date*: 2006-06-22	Abteilung / *Dept.*: 1ESK	Name / *Name*: Mi	Zeichn.Nr. / *Drawing No.*: 1164.0267.00	D

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Projektionsmethode / *Projection Method*

ZVA24-B16 with ZVA24-B2x and ZVA24-B3x (Attenuator)



W536 1164.0380.00 part of ZVA24-B2x and
W508 1164.0373.00 part of ZVA24-B3x will be not required

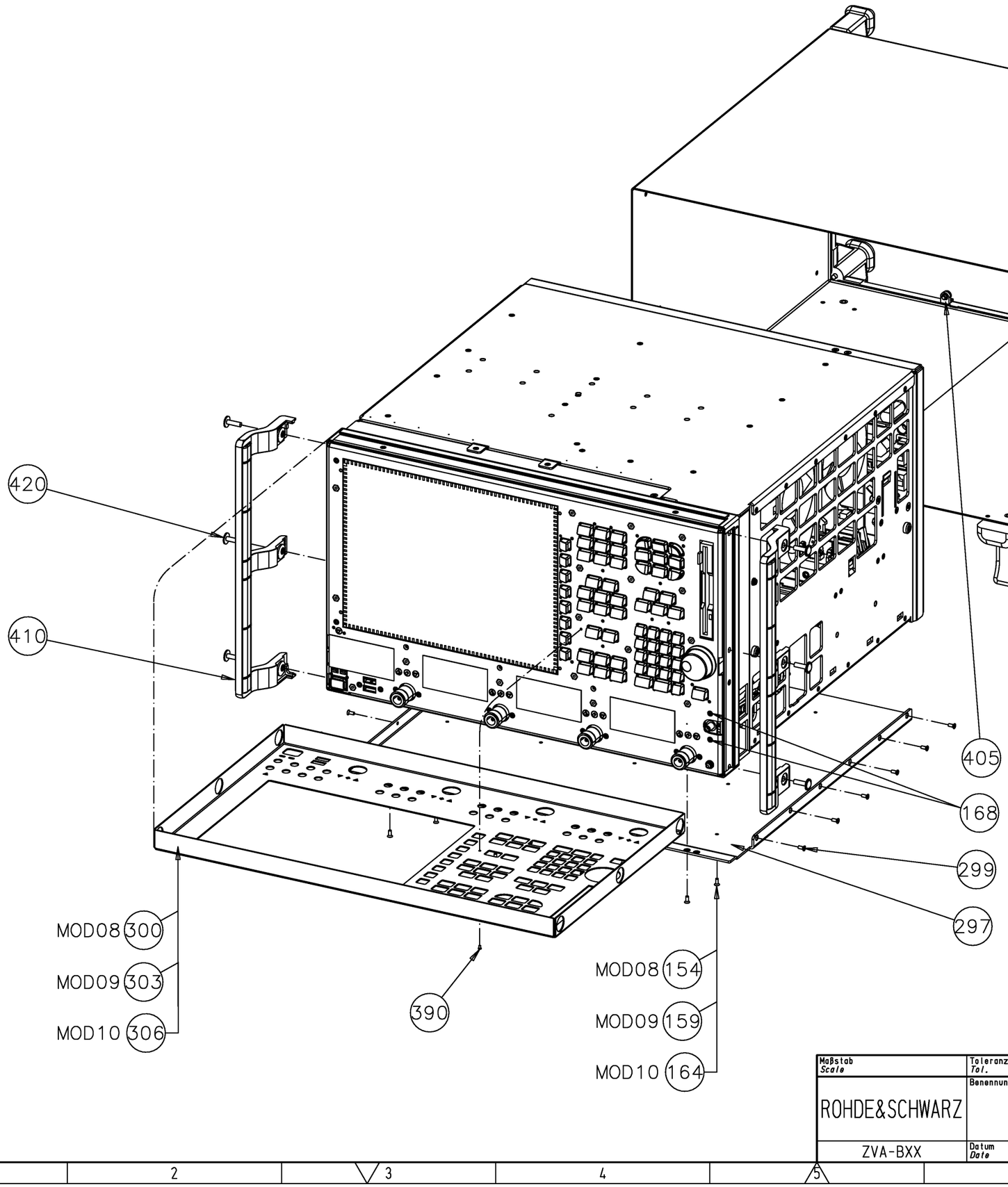
Pos. 1280, 1282, 1284,1290,1292 and 1294 will be not required

Maßstab / *Scale*	Toleranz / *Tol.*	Werkstoff / *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*: EINBAUANWEISUNG ZVA24-B16 / INSTALLATION INSTRUCTION ZVA24-B16			Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 6
ZVA	Datum / *Date*: 2006-06-22	Abteilung / *Dept.*: 1ESK	Name / *Name*: Mi	Zeichn.Nr. / *Drawing No.*: 1164.0267.00		D

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Projektions-methode
Projection Method

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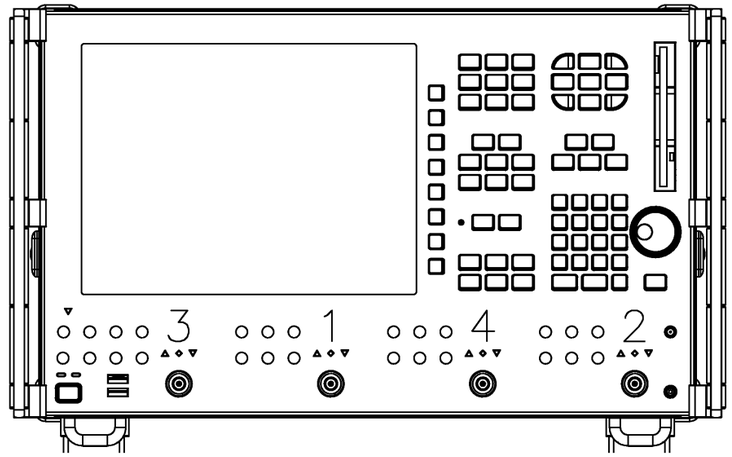
Versions:
MOD08 = 2PORT
MOD09 = 3PORT
MOD10 = 4PORT

Pos. 471 MOD08, 472 MOD09 and 473 MOD10 not shown

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* Einbauanweisung ZVA8-Bxx Installation Instruction			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 1
ZVA-BXX	Datum *Date* 2006-09-18	Abteilung *Dept.* 1ESK	Name *Name* Wn	Zeichn.Nr. / *Drawing No.* 1164.0215.00		D

Installing/uninstalling reflectometers (RM Unit ZVA8)



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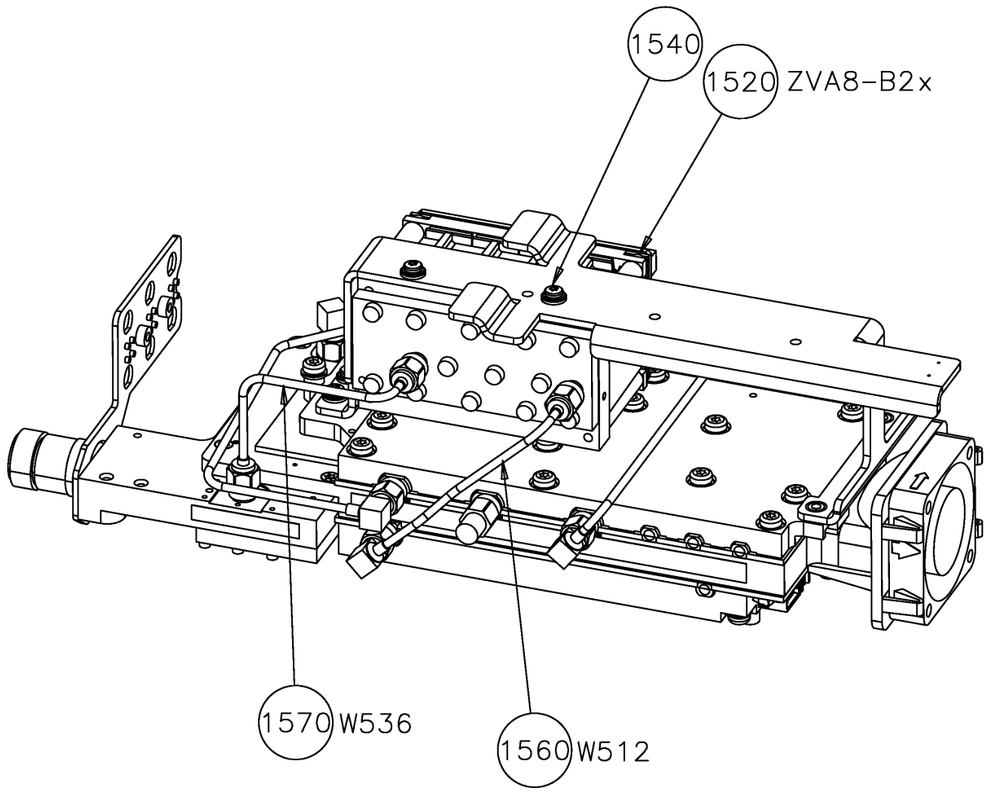
Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*		
ROHDE&SCHWARZ	Benennung / *Designation*: Einbauanweisung ZVA8-Bxx Installation Instruction		Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 2
ZVA-BXX	Datum *Date*: 2006-07-18	Abteilung *Dept.*: 1ESK	Name *Name*: Wn	Zeichn.Nr. / *Drawing No.*: 1164.0215.00	D

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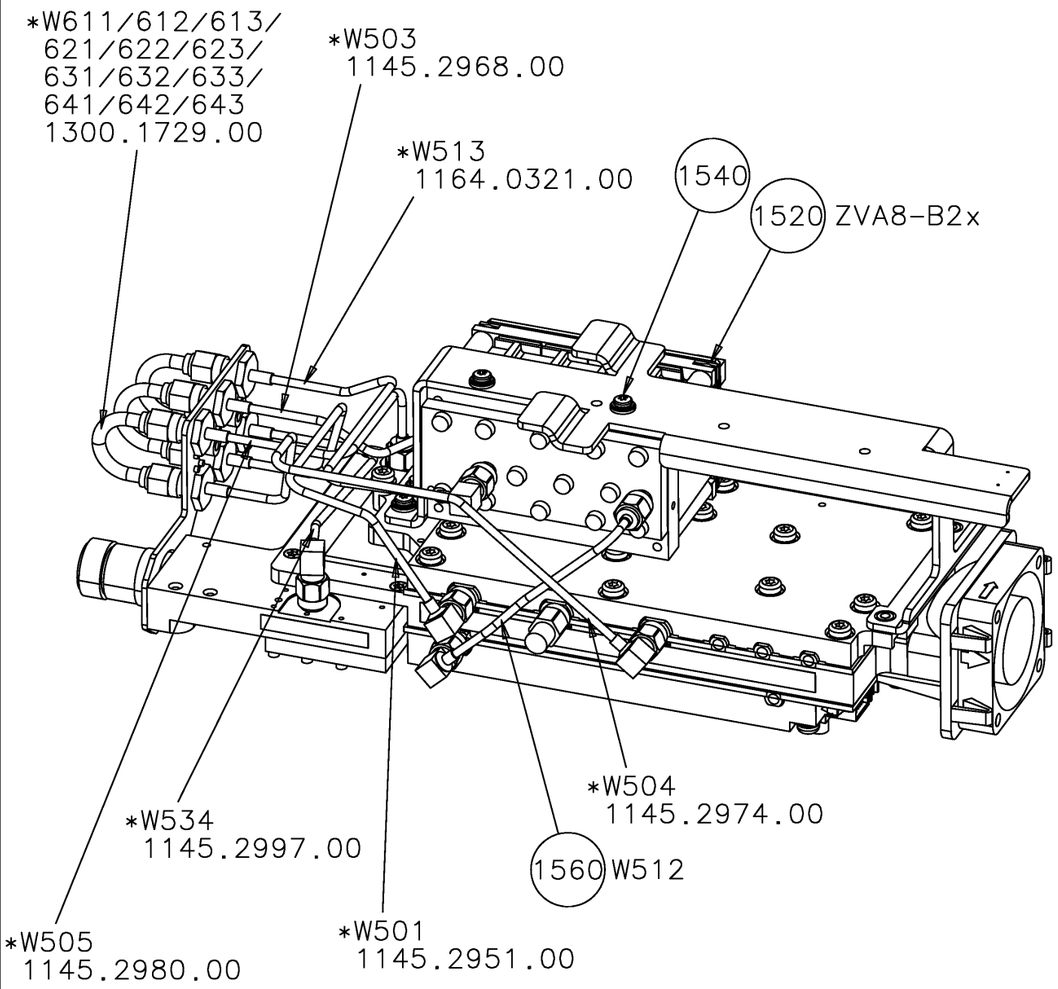
ZVA8-B21/22/23/24 MOD02

Prior installation remove cable W514



ZVA8-B21/22/23/24 MOD02 with ZVA8-B16

Prior installation remove cables W514, W515 and W518



*part of ZVA8-B16

Pos. 1550 (W550) not shown

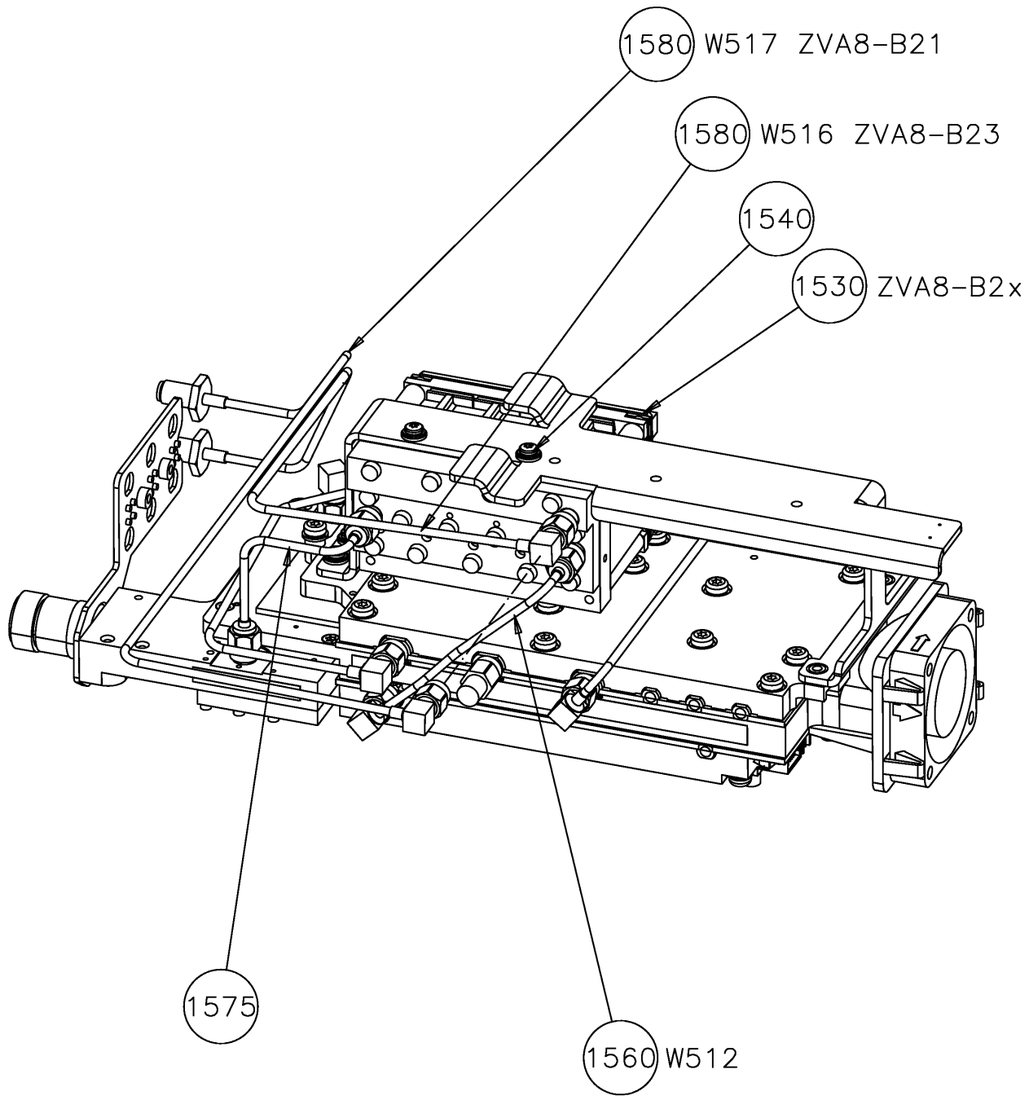
Pos. 1570 (W536) will be not required

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*					
ROHDE&SCHWARZ	Benennung / *Designation*	Einbauanweisung ZVA8-Bxx Installation Instruction			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 3
					Zeichn.Nr. / *Drawing No.* 1164.0215.00		D
ZVA-BXX	Datum *Date* 2006-07-18	Abteilung *Dept.* 1ESK	Name *Name* Wn				

ZVA-B21/22/23/24 MOD03

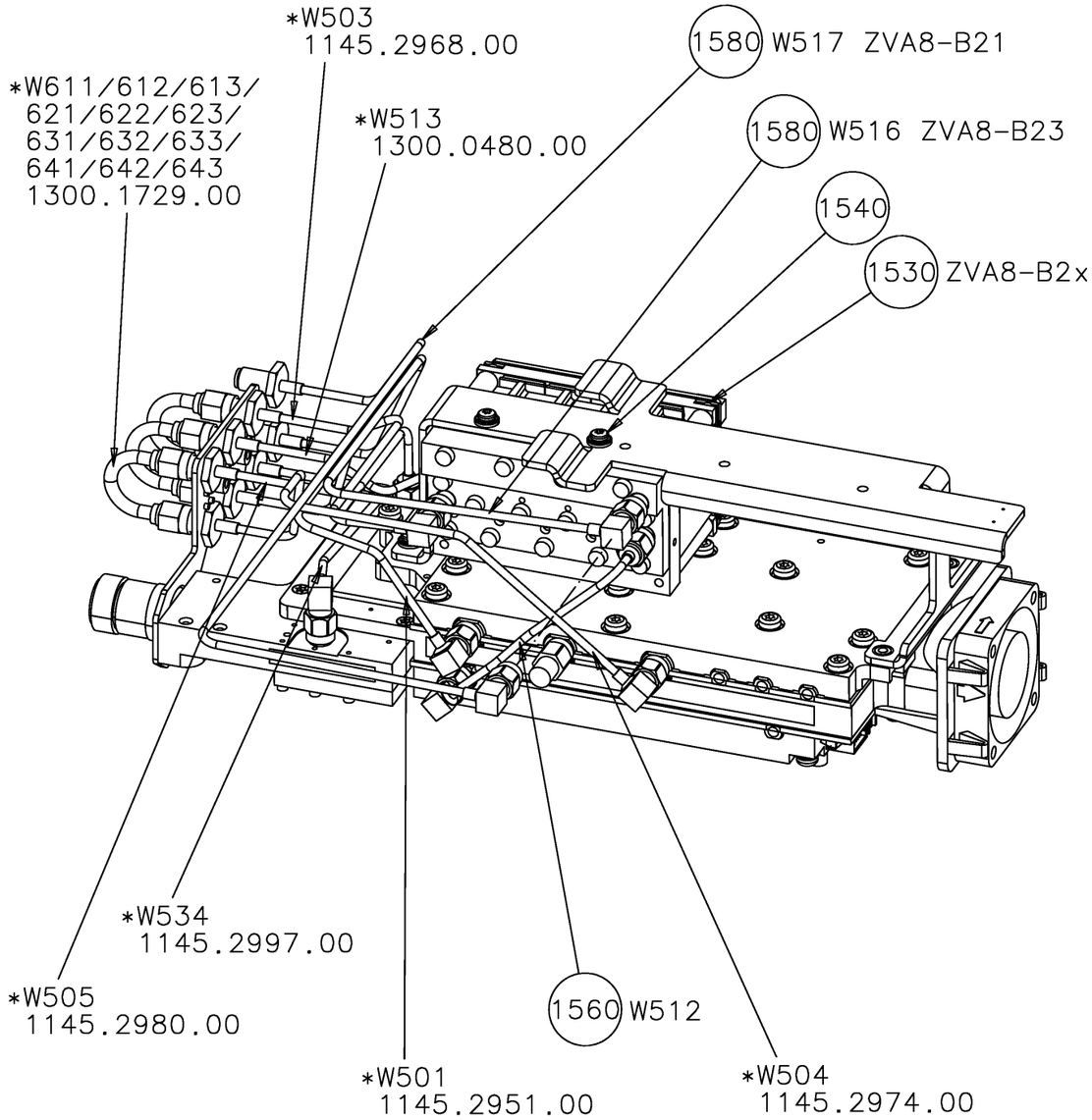
Prior installation remove cable W514



Pos. 1550 (W550) not shown

ZVA-B21/22/23/24 MOD03 with ZVA8-B16

Prior installation remove cables W514, W515 and W518



*part of ZVA8-B16

Pos. 1575 (W536) will be not required

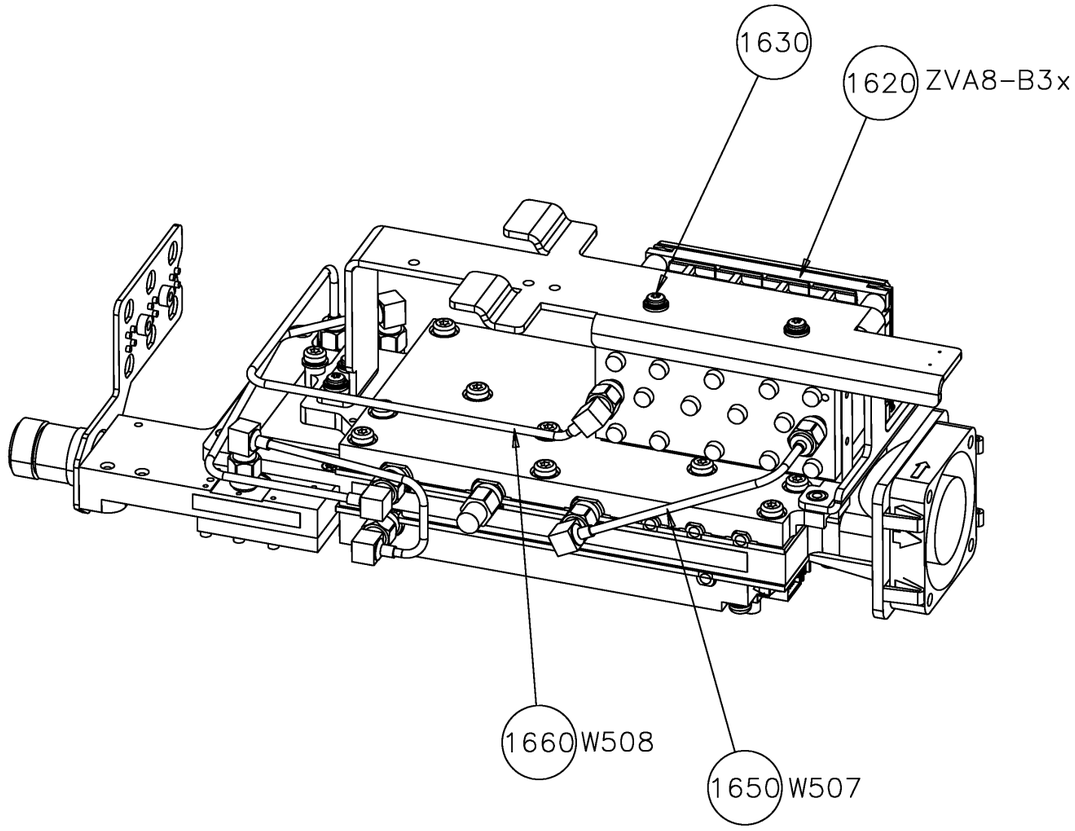
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Projektions-methode
Projection Method

Maßstab / Scale	Toleranz / Tol.	Werkstoff / Material			
ROHDE&SCHWARZ	Benennung / Designation: Einbauanweisung ZVA8-Bxx Installation Instruction			Sprache / Lang.: de en	Aei. / C.I.: 02.00	Blatt / Sh.: 4
ZVA-BXX	Datum / Date: 2006-07-18	Abteilung / Dept.: 1ESK	Name / Name: Wn	Zeichn.Nr. / Drawing No.: 1164.0215.00		D

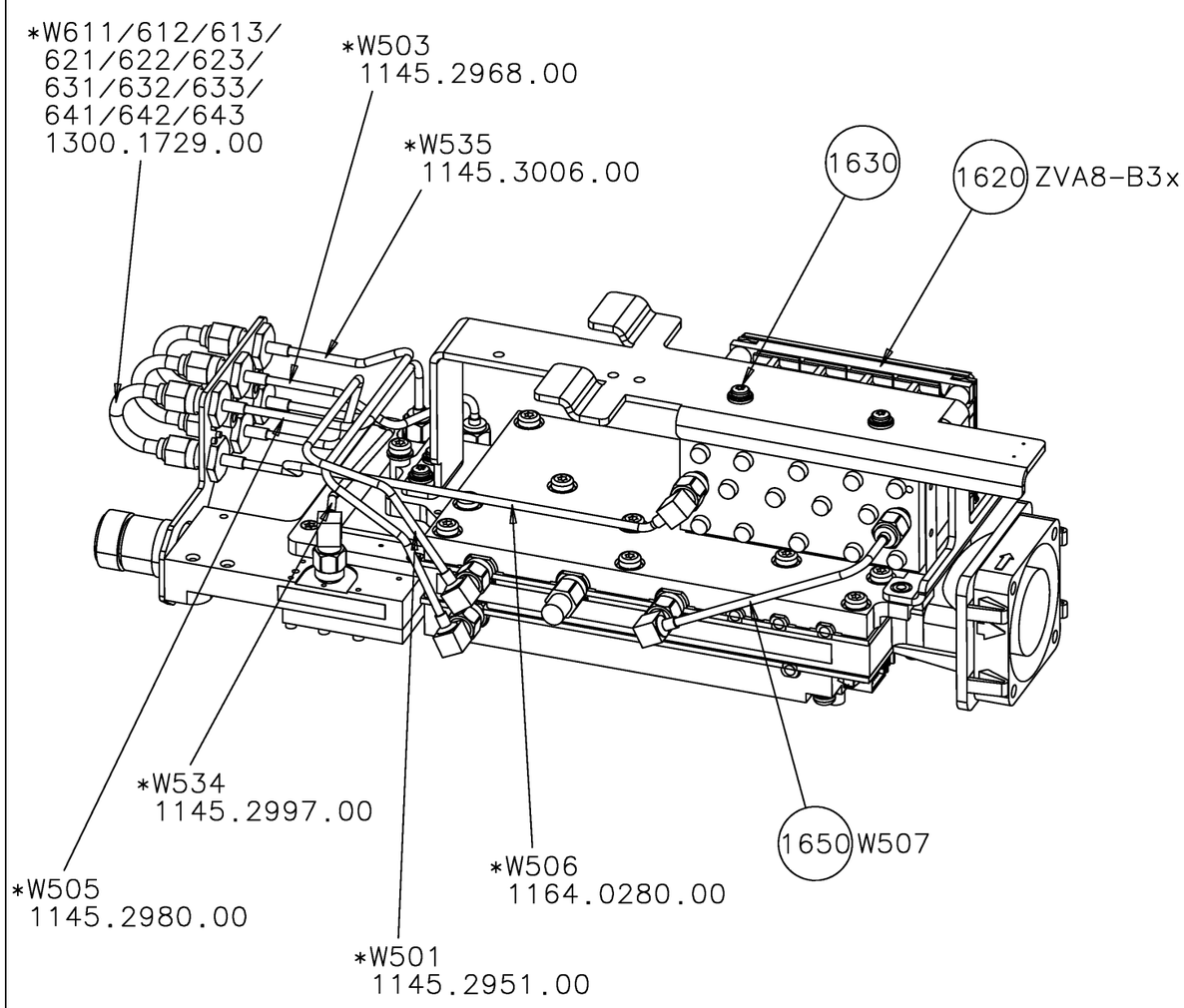
ZVA8-B31/32/33/34

Prior installation remove cable W515



ZVA8-B31/32/33/34 with ZVA8-B16

Prior installation remove cables W514, W515 and W518



Pos. 1640 (W550) not shown

*part of ZVA8-B16

Pos. 1660 W508)will be not required

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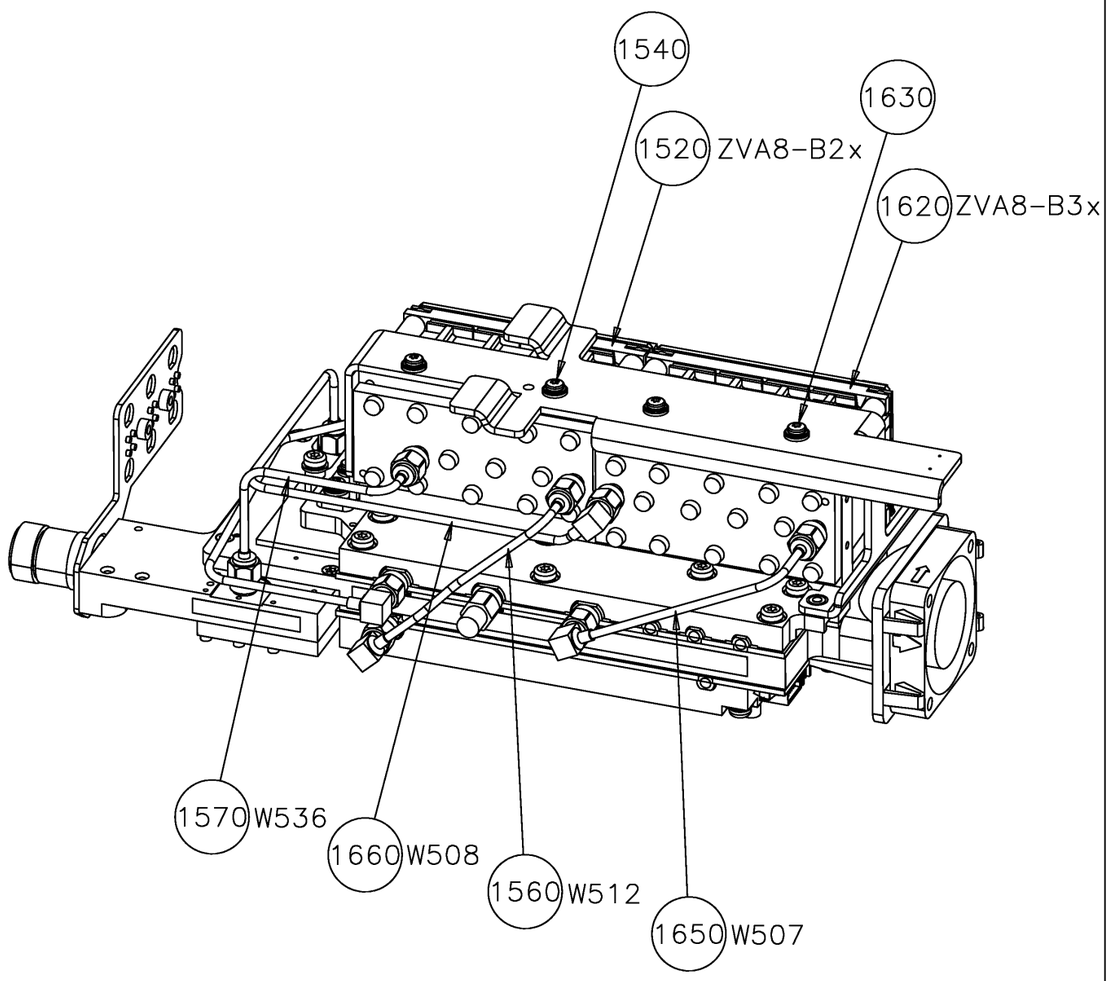
Projektions-methode

Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*		
ROHDE&SCHWARZ	Benennung / *Designation*: Einbauanweisung ZVA8-Bxx / Installation Instruction		Sprache / *Lang.*: de en; Aei. / *C.I.*: 02.00; Blatt / *Sh.*: 5	
ZVA-BXX	Datum *Date*: 2006-07-18	Abteilung *Dept.*: 1ESK	Name *Name*: Wn	Zeichn.Nr. / *Drawing No.*: 1164.0215.00 D

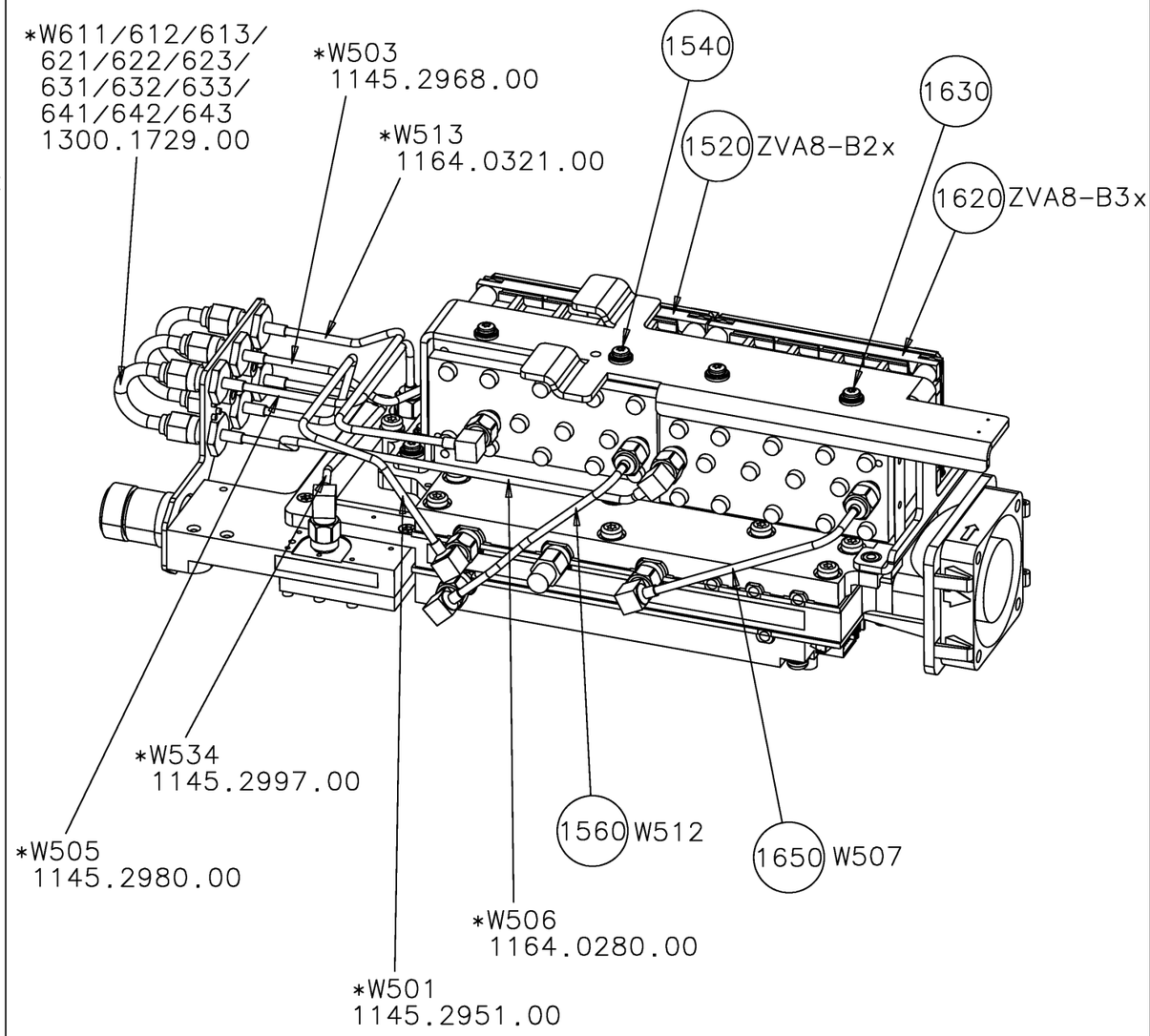
ZVA8-B21/22/23/24 MOD02 and ZVA8-B31/32/33/34

Prior installation remove cables W514 and W515



ZVA8-B21/22/23/24 MOD02 and ZVA8-B31/32/33/34 with ZVA8-B16

Prior installation remove cables W514, W515 and W518



*part of ZVA8-B16

Pos. 1550 (W550) and 1640 (W550) not shown

Pos. 1570 (W536) and 1660 (W508) will be not required

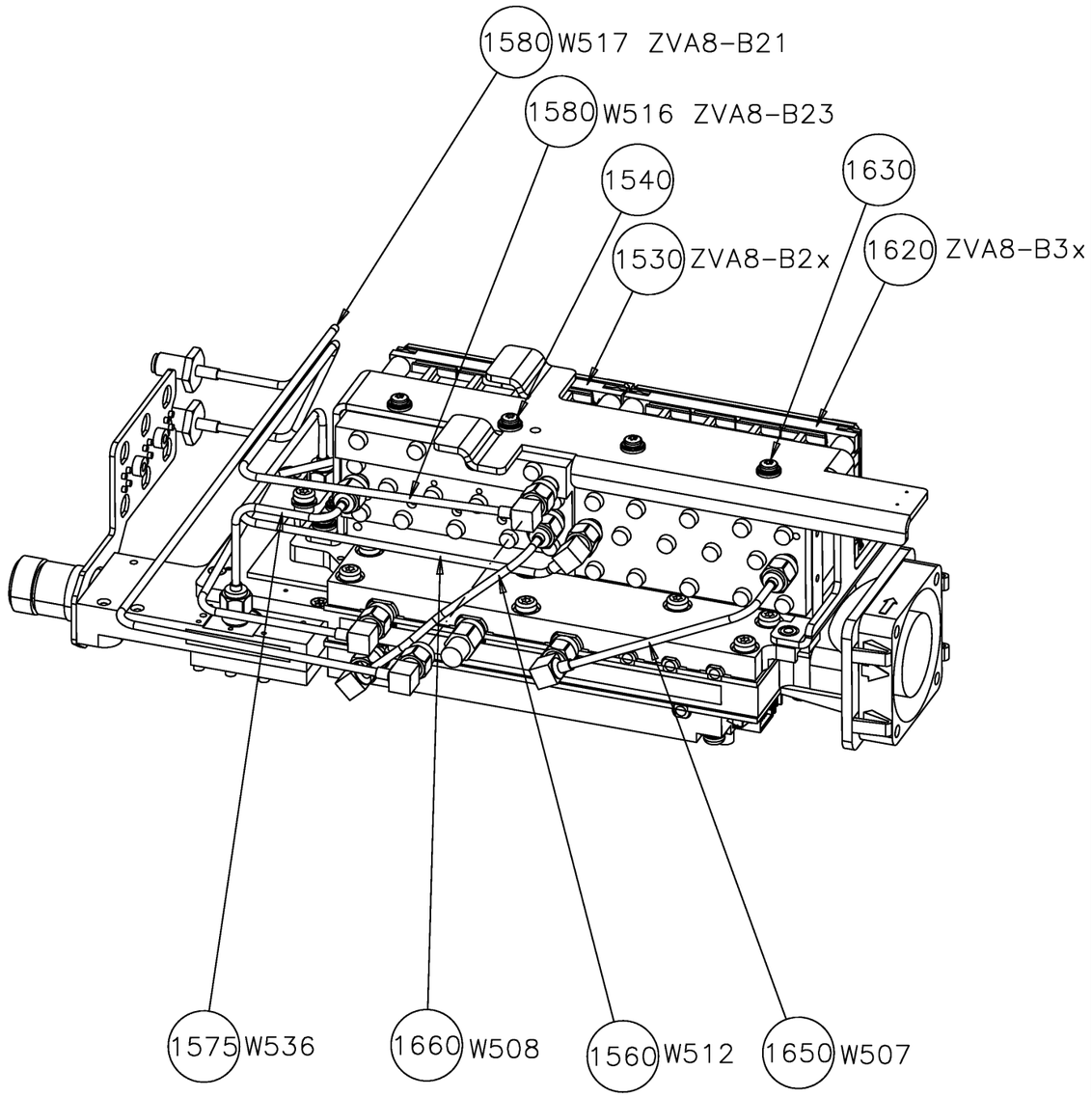
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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* Einbauanweisung ZVA8-Bxx Installation Instruction			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 6
ZVA-BXX	Datum *Date* 2006-07-18	Abteilung *Dept.* 1ESK	Name *Name* Wn	Zeichn.Nr. / *Drawing No.* 1164.0215.00 D		

ZVA8-B21/22/23/24 MOD03 and ZVA8-B31/32/33/34

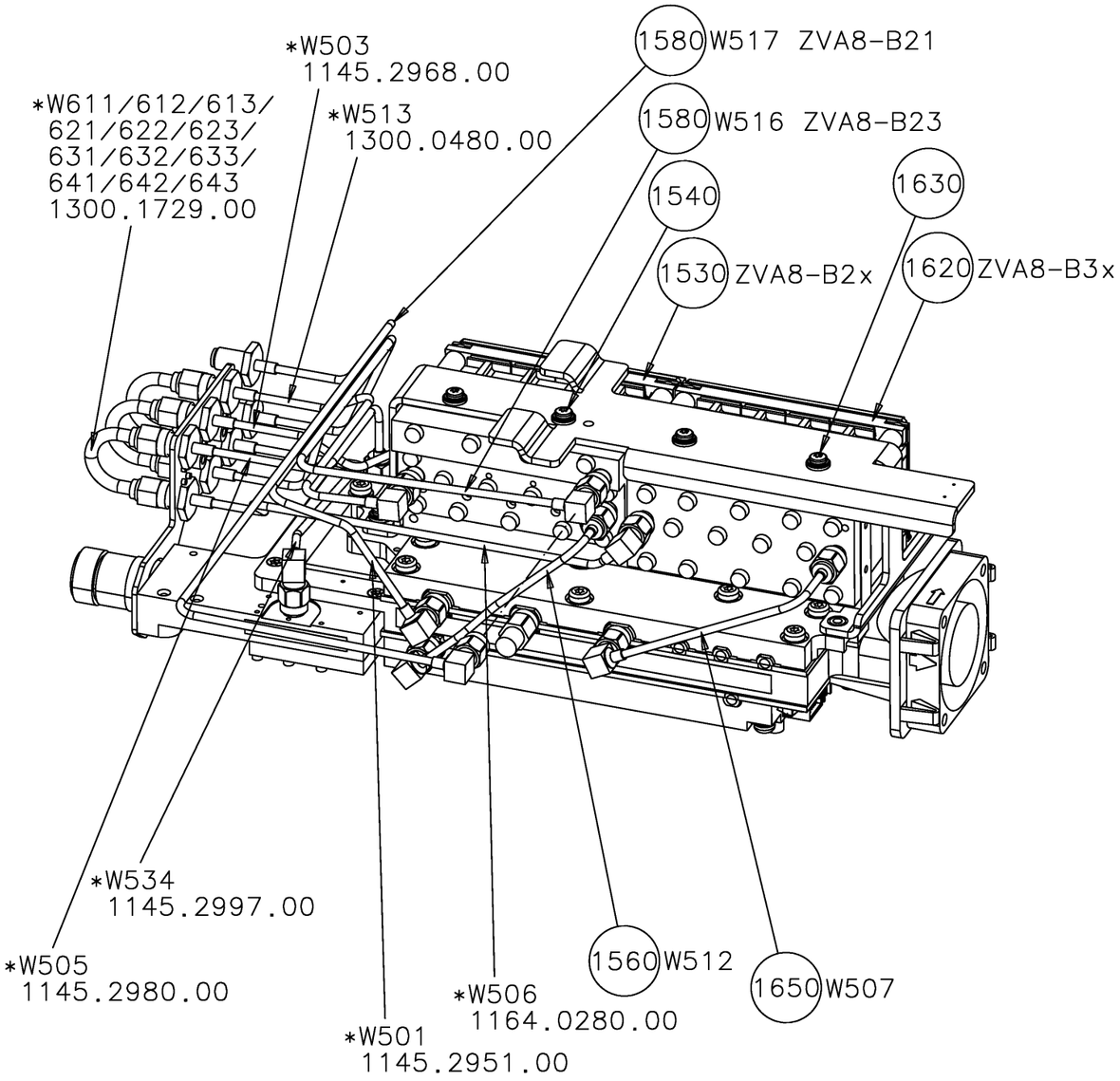
Prior installation removes cable W514 and W515



Pos. 1550 (W550) and 1640 (W550) not shown

ZVA8-B21/22/23/24 MOD03 and ZVA8-B31/32/33/34 with ZVA8-B16

Prior installation remove cables W514, W515 and W518



*part of ZVA8-B16

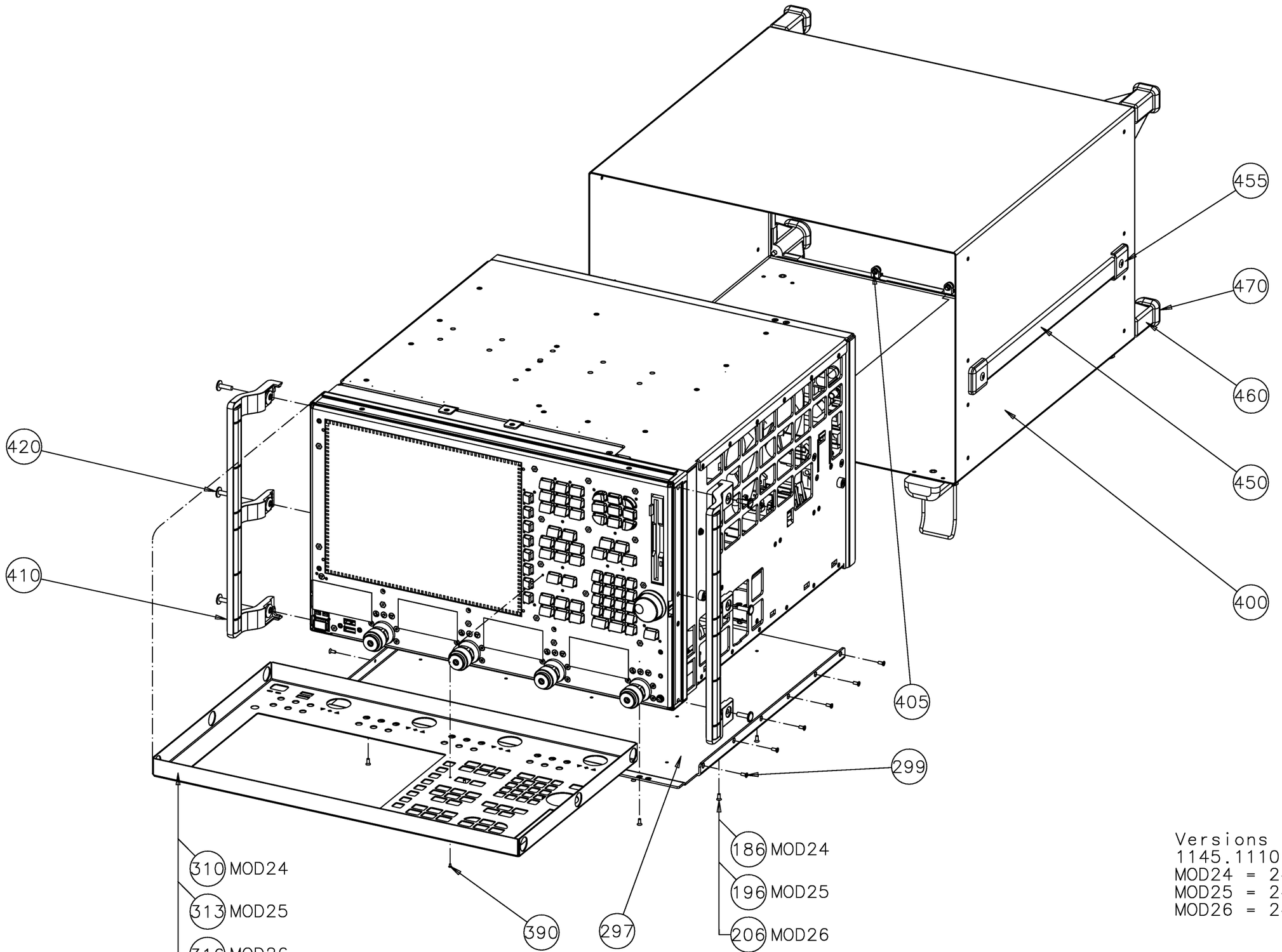
Pos. 1575 (W536) and 1660 (W508) will be not required

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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
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ZVA-BXX	Datum *Date* 2006-07-18	Abteilung *Dept.* 1ESK	Name *Name* Wn	Zeichn.Nr. / *Drawing No.* 1164.0215.00		D

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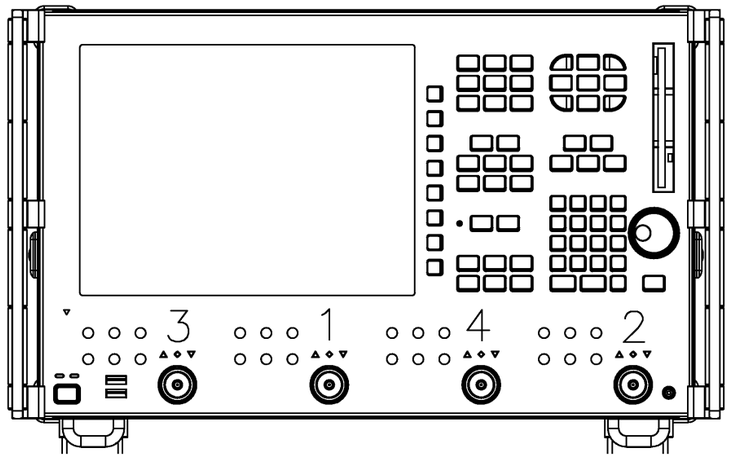


Versions from
1145.1110.xx:
MOD24 = 24GHZ - 2PORT
MOD25 = 24GHZ - 3PORT
MOD26 = 24GHZ - 4PORT

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
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ZVA24-BXX	Datum *Date* 2006-09-27	Abteilung *Dept.* 1ESK	Name *Name* Wn	Zeichn.Nr. / *Drawing No.* 1164.0221.00		D

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Installing/uninstalling reflectometers (RM Unit ZVA24)

ZVA24:
Remove cable W514, W515 and W518
between coupler/Attenuator and RM unit
prior to uninstalling the RM Unit ZVA24.

ZVA24 with ZVA24-B16:
Unscrew cables W501, W504 and W535 at RM-Unit
prior to uninstalling the RM Unit ZVA24.

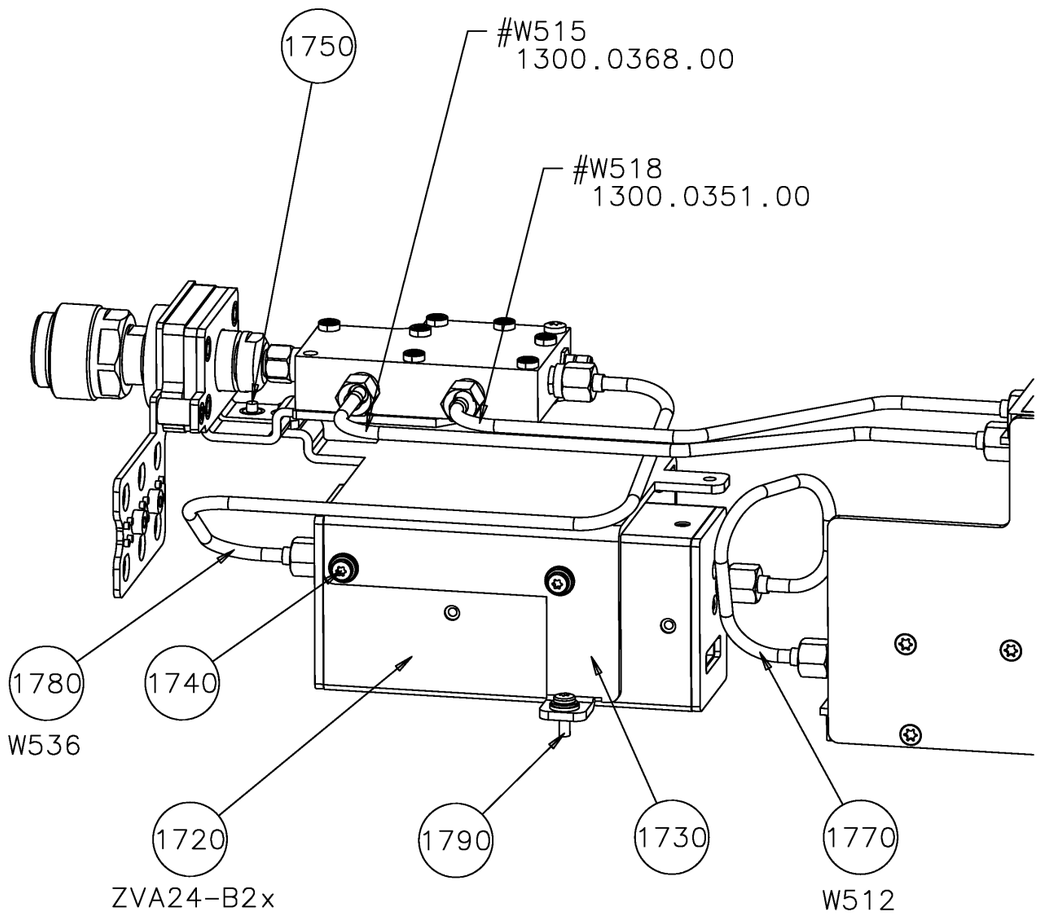
After installing the RM Unit ZVA24
with options connect cables as described
in installation instructions.

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
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ZVA24-BXX	Datum *Date*: 2006-09-29	Abteilung *Dept.*: 1ESK	Name *Name*: Wn	Zeichn.Nr. / *Drawing No.*: 1164.0221.00		D

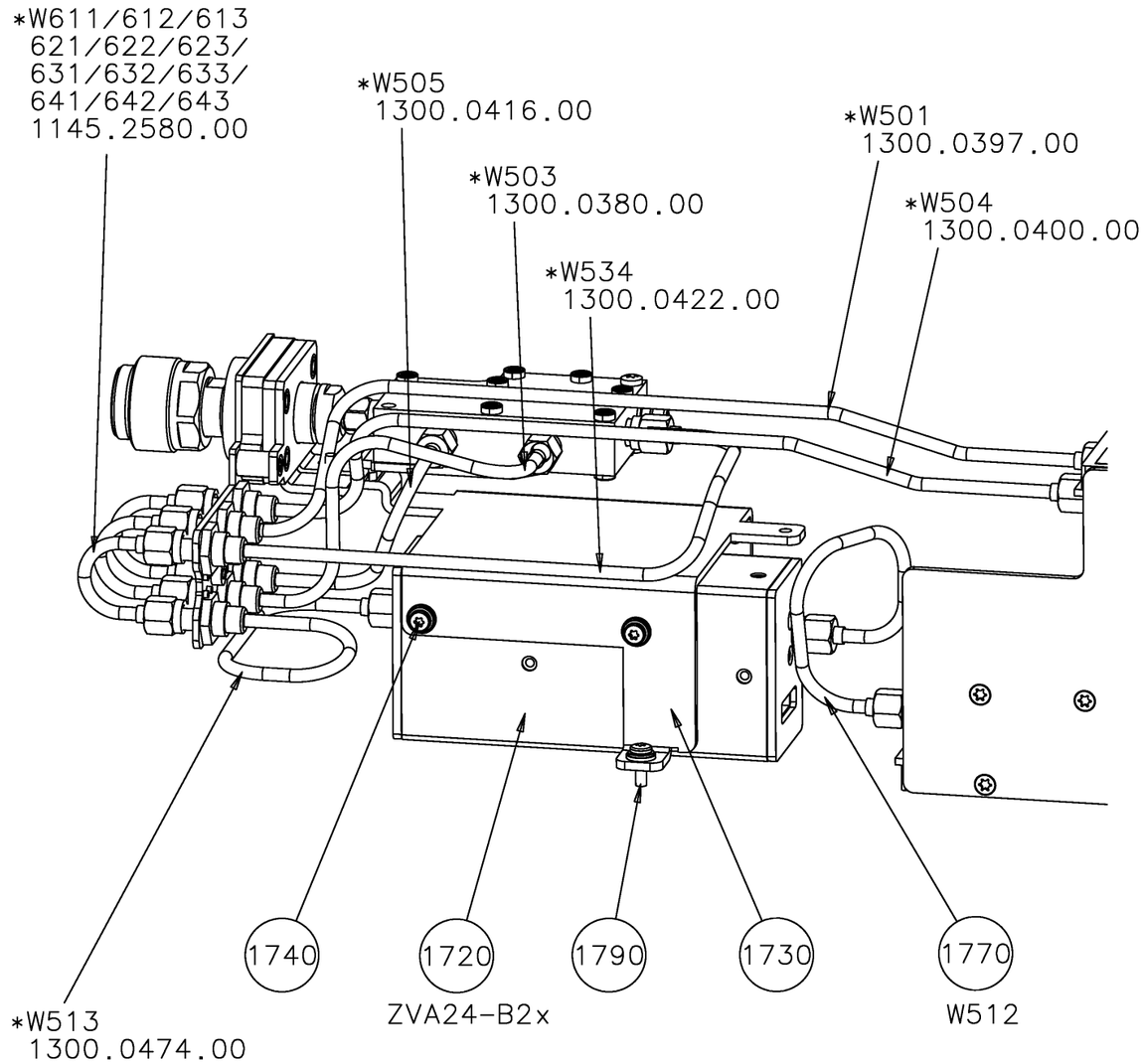
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ZVA24-B21/22/23/24



part of RM Unit ZVA24

ZVA24-B21/22/23/24 with ZVA24-B16



* part of ZVA24-B16

Pos.1760 (W550)not shown

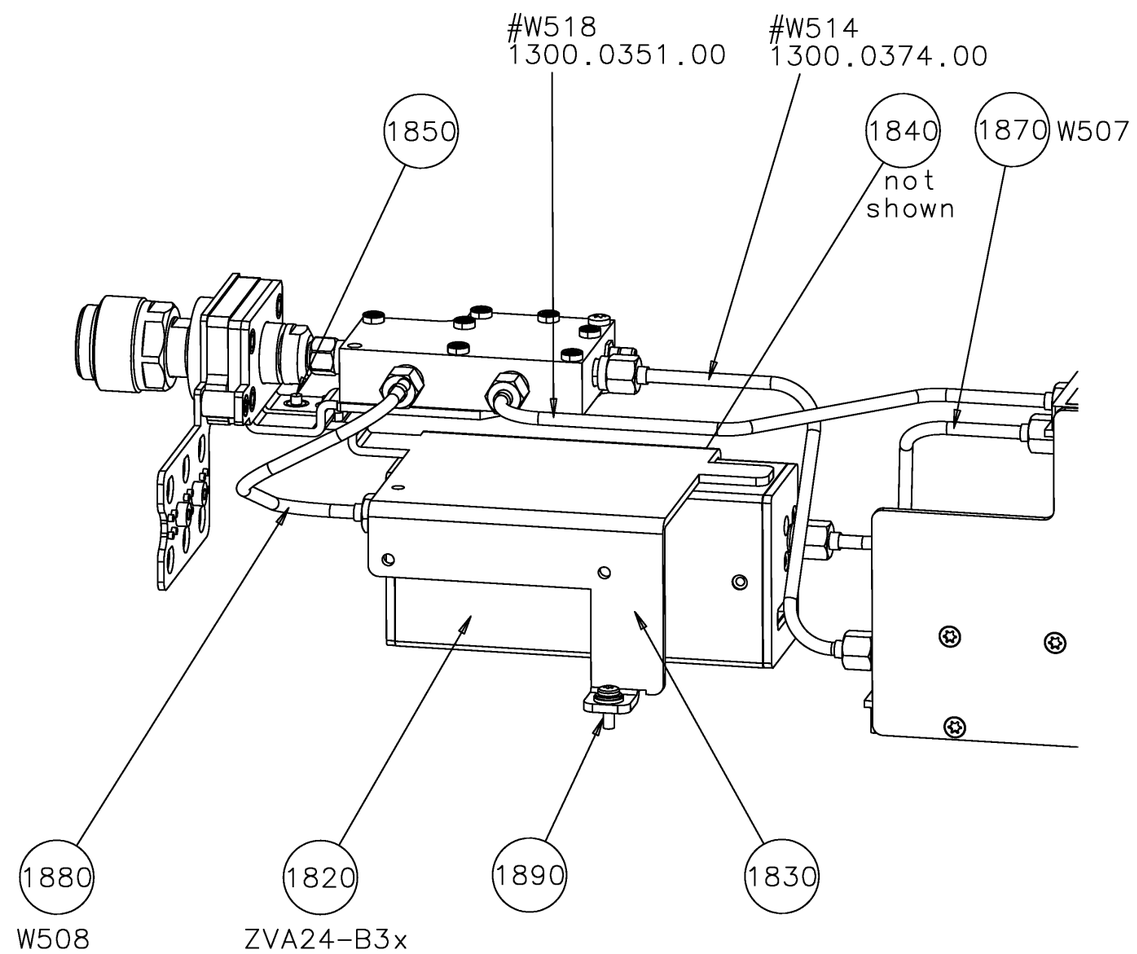
Pos.1780 (W536) will be not required

Projektions-methode
Projection Method

Maßstab / Scale	Toleranz / Tol.	Werkstoff / Material			
ROHDE&SCHWARZ	Benennung / Designation: Einbauanweisung ZVA24-Bxx Installation Instruction			Sprache / Lang.: de en	Aei. / C.I.: 02.00	Blatt / Sh.: 3
ZVA24-BXX	Datum / Date: 2006-09-27	Abteilung / Dept.: 1ESK	Name / Name: Wn	Zeichn.Nr. / Drawing No.: 1164.0221.00		D

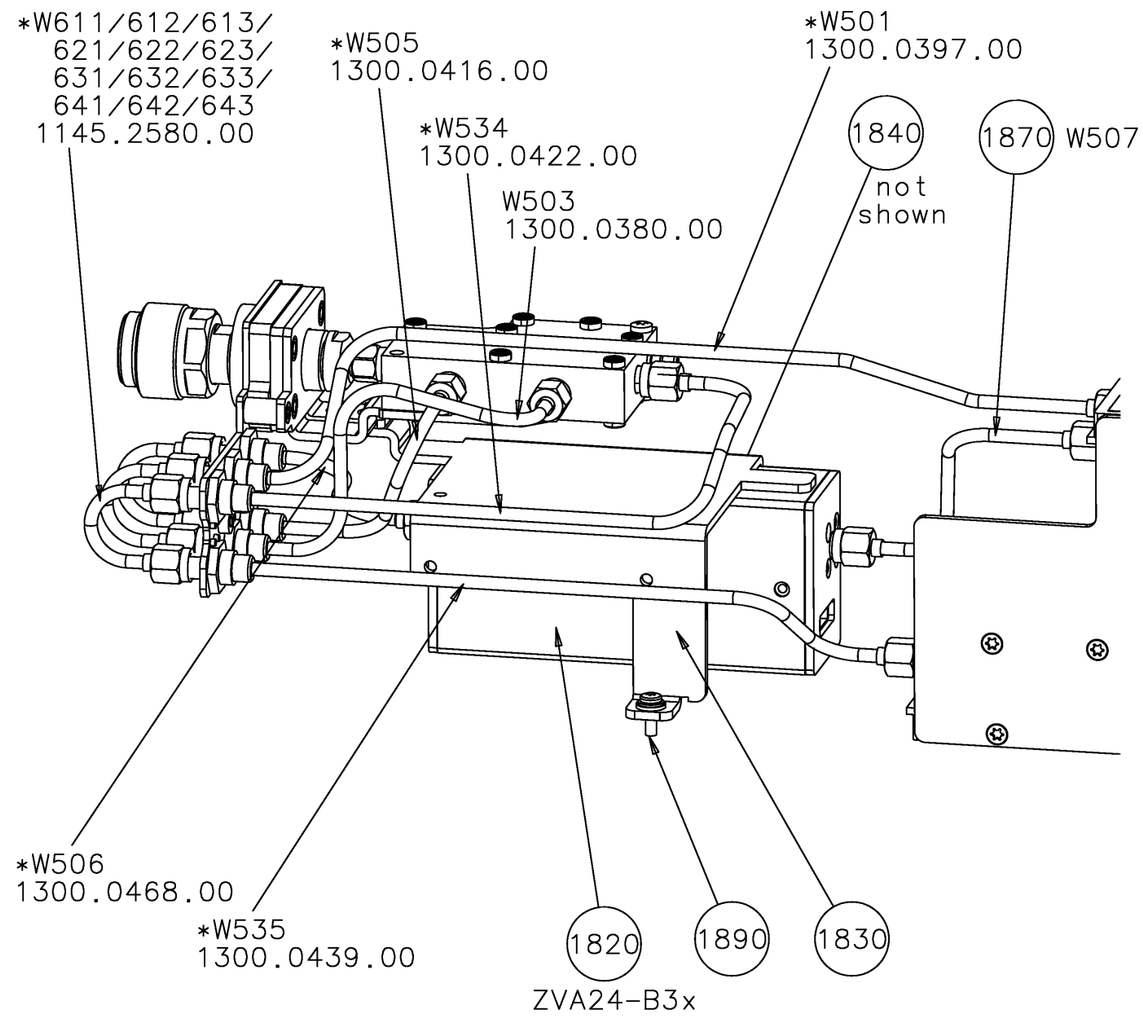
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ZVA24-B31/32/33/34



\# part of RM unit ZVA24

ZVA24-B31/32/33/34 with ZVA24-B16



* part of ZVA24-B16

Pos. 1860 (W550) not shown

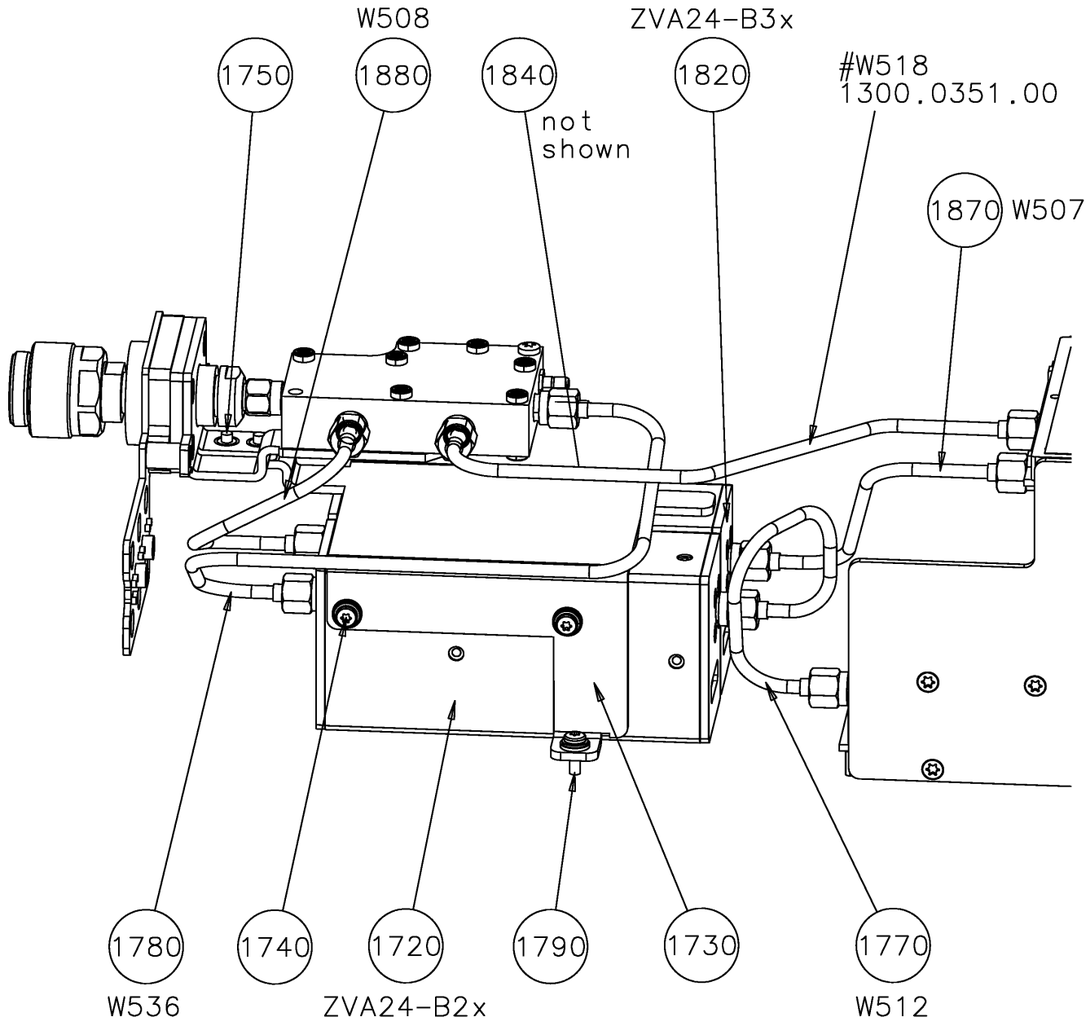
Pos. 1880 (W508) will be not required

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*	
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ZVA24-BXX	Datum *Date*: 2006-09-27 · Abteilung *Dept.*: 1ESK · Name *Name*: Wn	Zeichn.Nr. / *Drawing No.*: 1164.0221.00	D

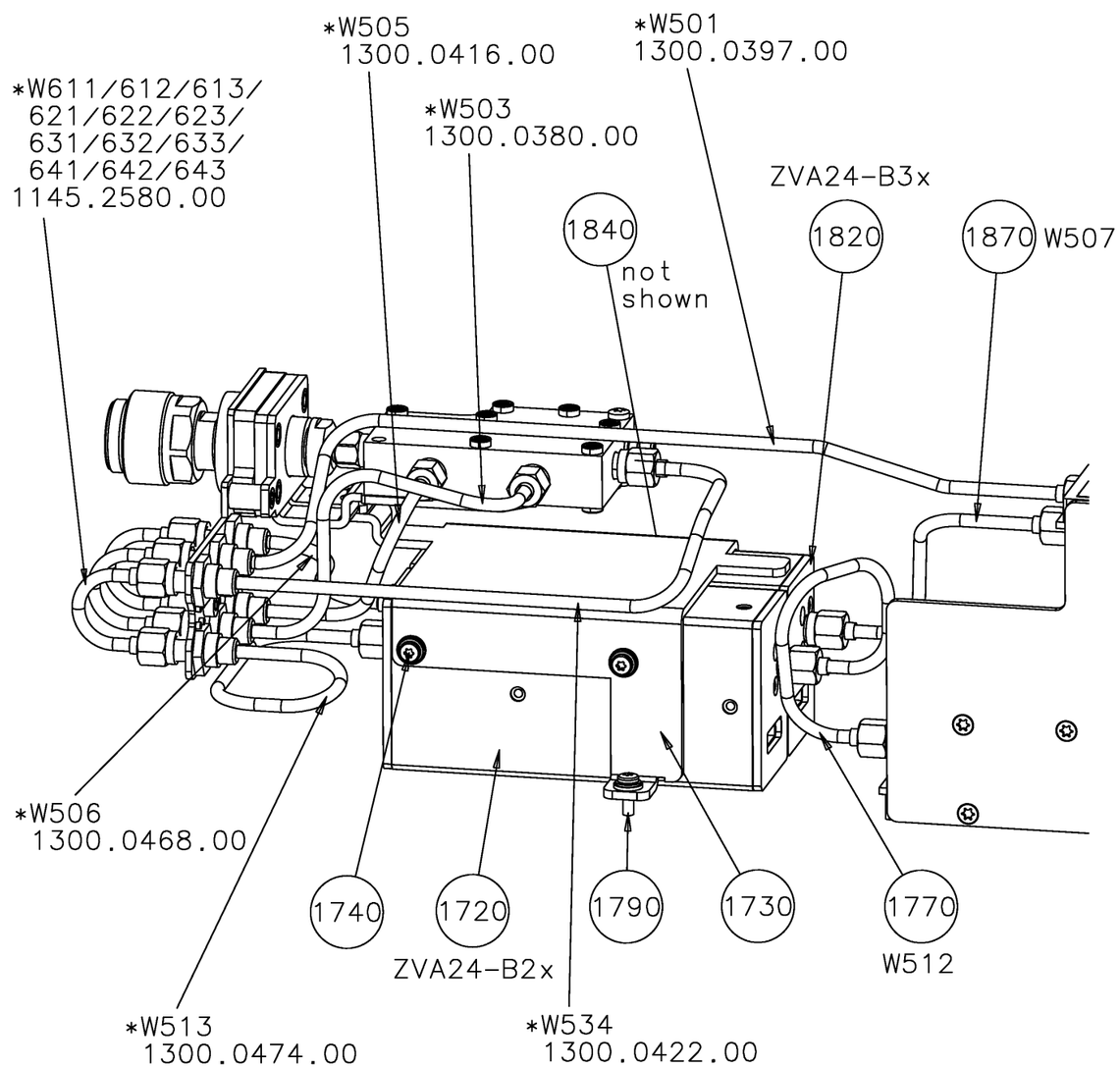
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ZVA24-B21/22/23/24 and ZVA24-B31/32/33/34



\# part of RM unit ZVA24

ZVA24-B21/22/23/24 and ZVA24-B31/32/33/34 with ZVA24-B16



* part of ZVA24-B16

Pos.1760 (W550) and 1860 (W550) not shown

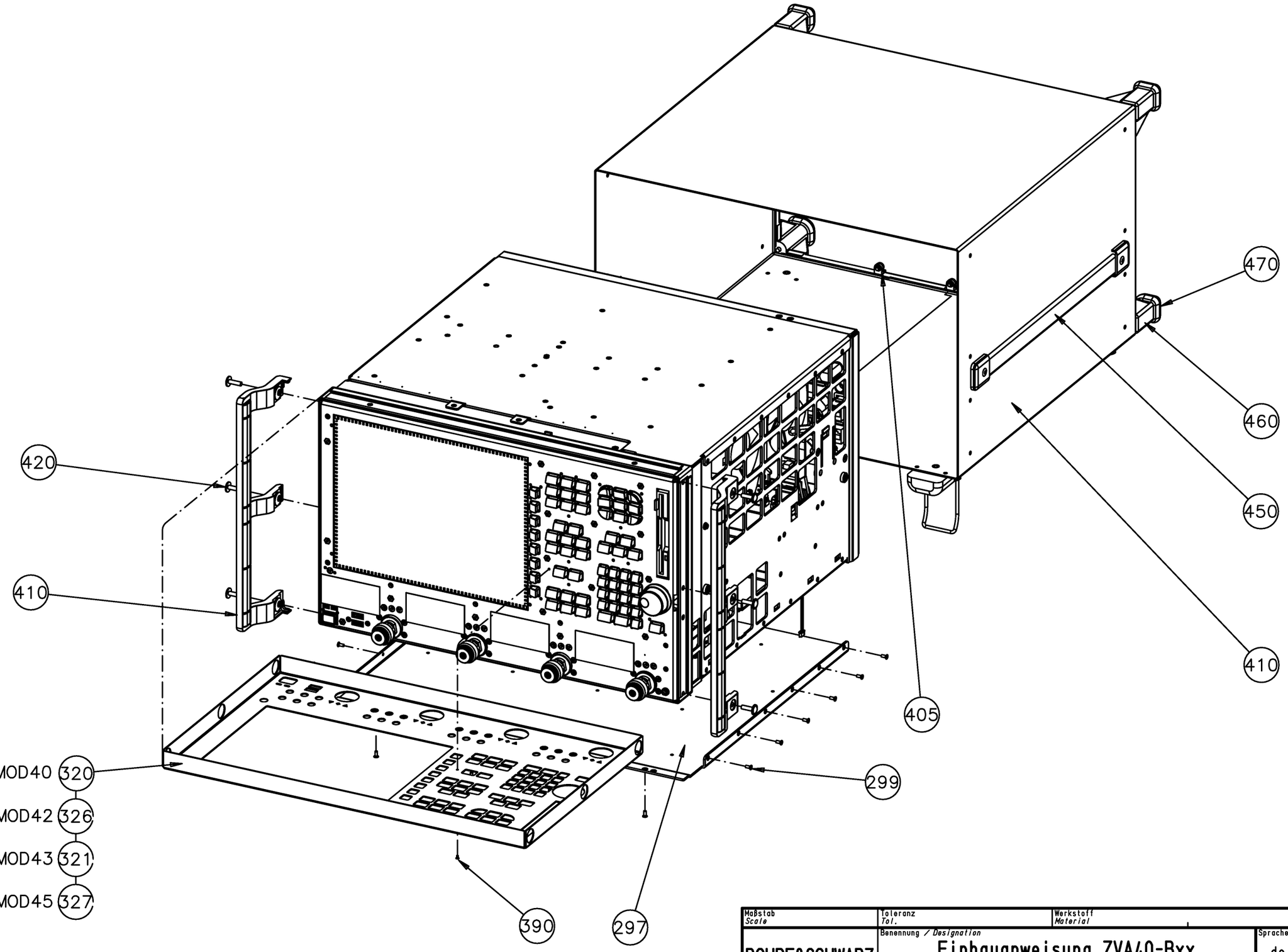
Pos. 1830,1850 und 1890 will be not required

Pos. 1780 (W536),1830,1850,1880 (W508) and 1890 will be not required

Projektionsmethode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*				
ROHDE&SCHWARZ	Benennung / *Designation*	Einbauanweisung ZVA24-Bxx Installation Instruction			Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 5
					Zeichn.Nr. / *Drawing No.*		
ZVA24-BXX	Datum *Date* 2006-09-27	Abteilung *Dept.* 1ESK	Name *Name* Wn		1164.0221.00		D

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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*					
ROHDE&SCHWARZ	Benennung / *Designation* **Einbauanweisung ZVA40-Bxx** **Assembly Instruction ZVA40-Bxx**				Sprache / *Lang.* de en	Ael. / *C.I.* 02.00	Blatt / *Sh.* 1
ZVA40-BXX	Datum *Date* 2006-03-02	Abteilung *Dept.* 1ESK	Name *Name* Wn		Zeichn.Nr. / *Drawing No.* 1164.0409.00		D

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Montage/Demontage der Reflektometer (RM Unit ZVA40)/
Installing/uninstalling reflectometers (RM Unit ZVA40)

Kabel zwischen Bias/Eichleitung und RM Unit
vor Demontage der RM Unit ZVA40 entfernen
und nach Montage RM Unit ZVA40 mit Optionen
Kabel entsprechend Einbauanweisung montieren./
Remove cable between bias/Attenuator and RM unit
prior to uninstalling the RM Unit ZVA40.
After installing of the RM Unit ZVA40 with options
connect cable as described in installation
instructions.

233 VAR/MOD42,45

236 VAR/MOD42,45

VAR/MOD42
232
208
VAR/MOD45

234 VAR/MOD42,45

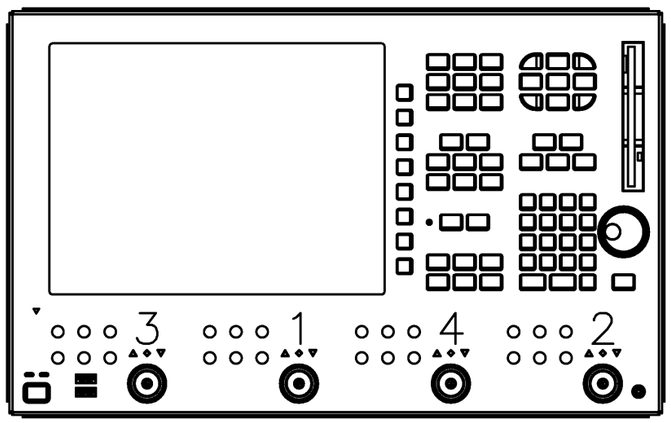
VAR/MOD40 209
VAR/MOD42 230
VAR/MOD43 207

VAR/MOD40,43 217
VAR/MOD42,45 237

223 VAR/MOD42,45
224 VAR/MOD42,45
216 VAR/MOD40,43
VAR/MOD42,45 224

295

218 VAR/MOD40,43
238 VAR/MOD42,45

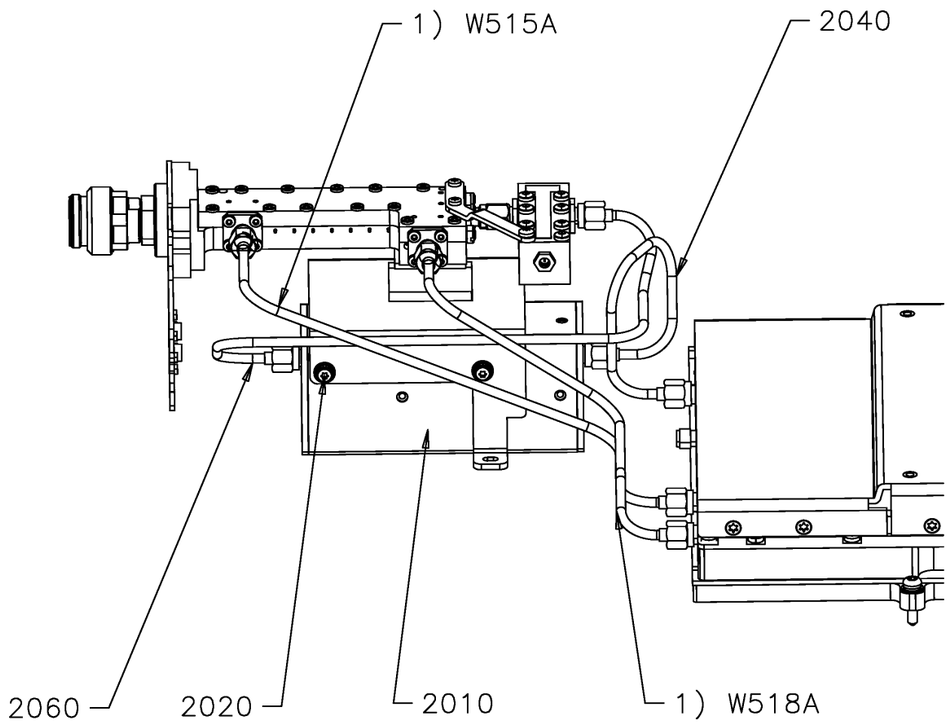


Projektions-methode
Projection Method

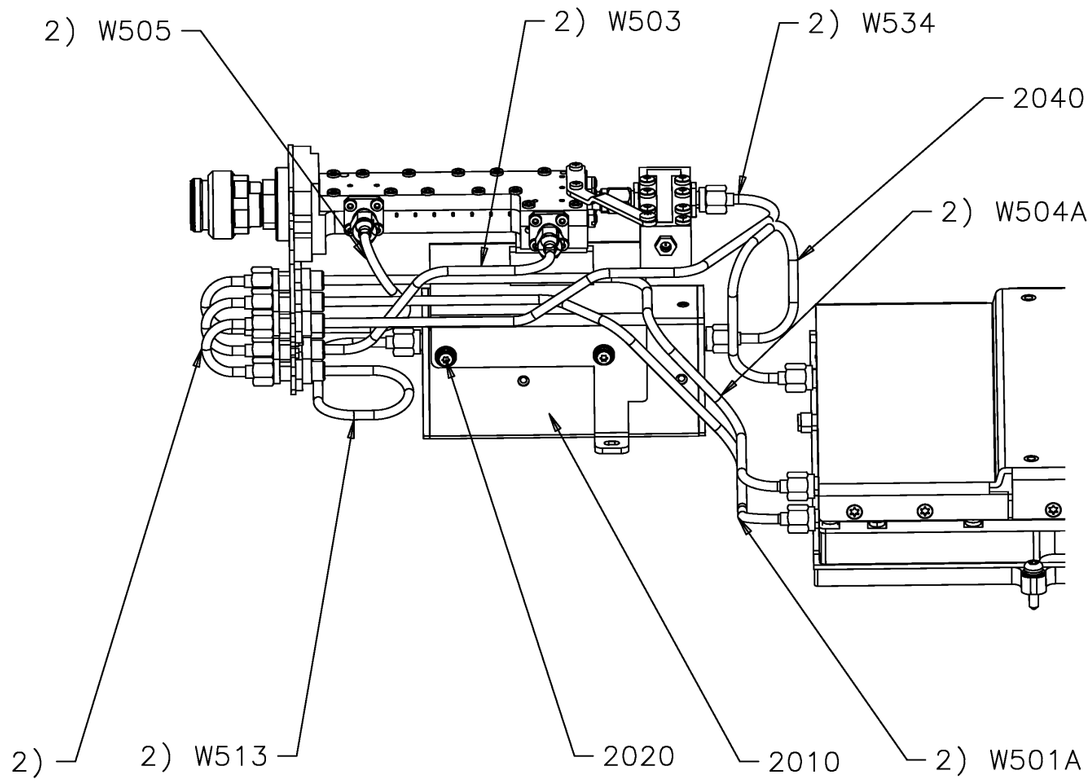
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ZVA40-BXX	Datum *Date* 2006-03-02	Abteilung *Dept.* 1ESK	Name *Name* Wn		Zeichn.Nr. / *Drawing No.* 1164.0409.00		D

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ZVA4-B21/22



ZVA4-B21/22 mit/with ZVA40B16



Projektionsmethode
Projection Method

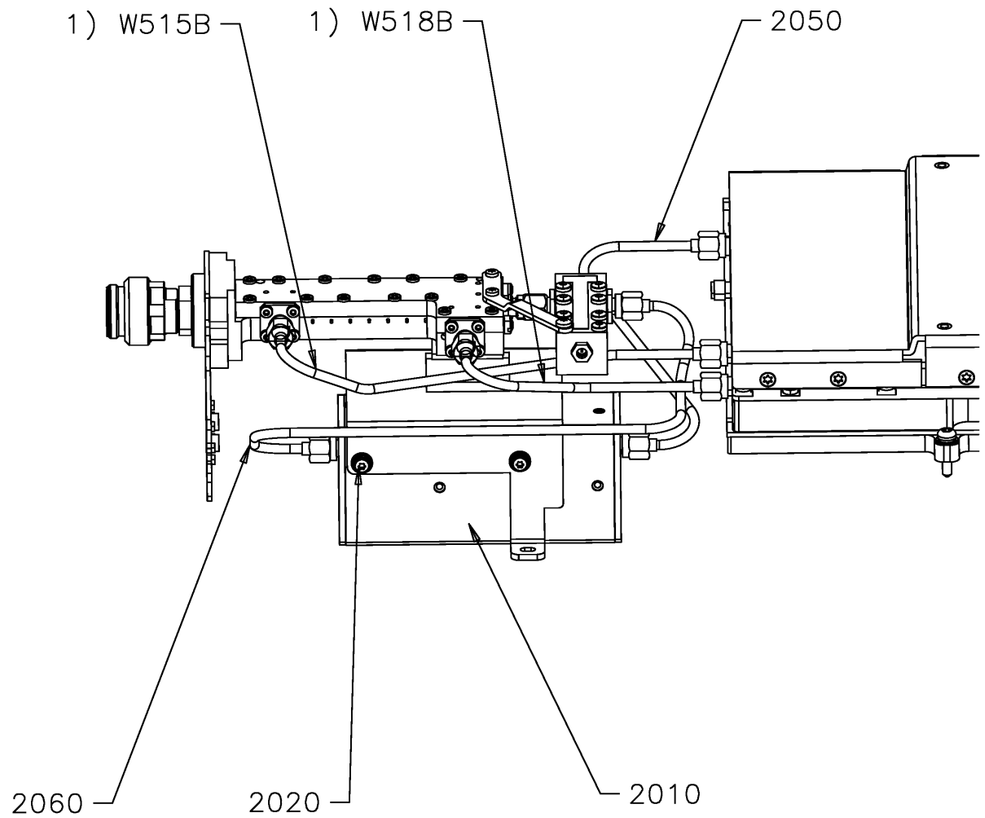
Pos. 2030 nicht dargestellt/
Pos. 2030 not shown

1) Bestandteil von / Part of:
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2) Bestandteil von / Part of:
   1164.0209.01 ZVA40-B16

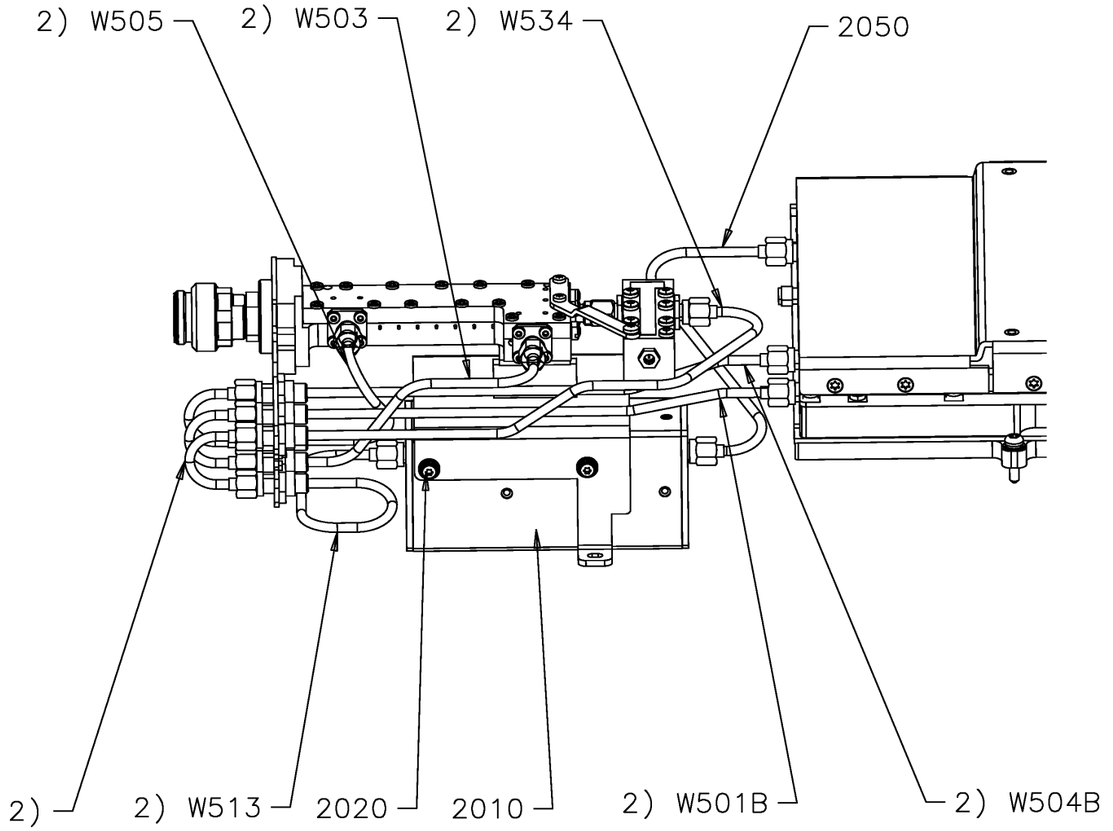
Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*		
ROHDE&SCHWARZ	Benennung / *Designation*: Einbauanweisung ZVA40-Bxx / Assembly Instruction ZVA40-Bxx		Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 3
ZVA40-BXX	Datum *Date*: 2007-03-30	Abteilung *Dept.*: 1ESK	Name *Name*: LA	Zeichn.Nr. / *Drawing No.*: 1164.0409.00	D

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ZVA40-B23/24



ZVA40-B23/24 mit/with ZVA40-B16



Projektionsmethode / *Projection Method*

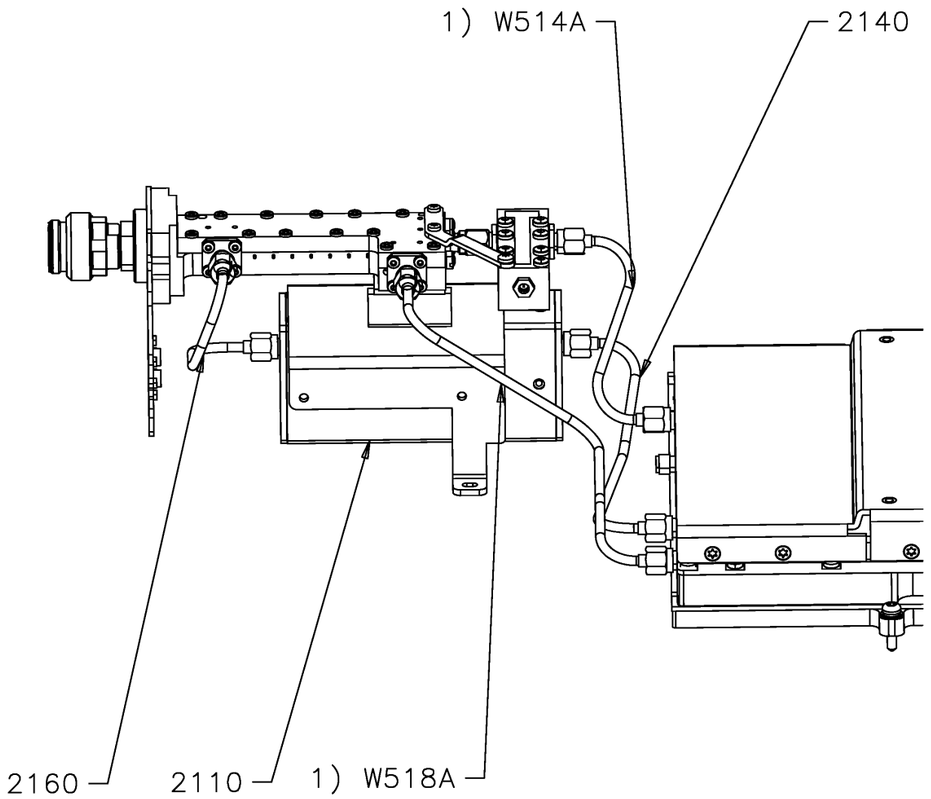
Pos. 2030 nicht dargestellt/
Pos. 2030 not shown

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2) Bestandteil von / Part of:
   1164.0209.01 ZVA40-B16

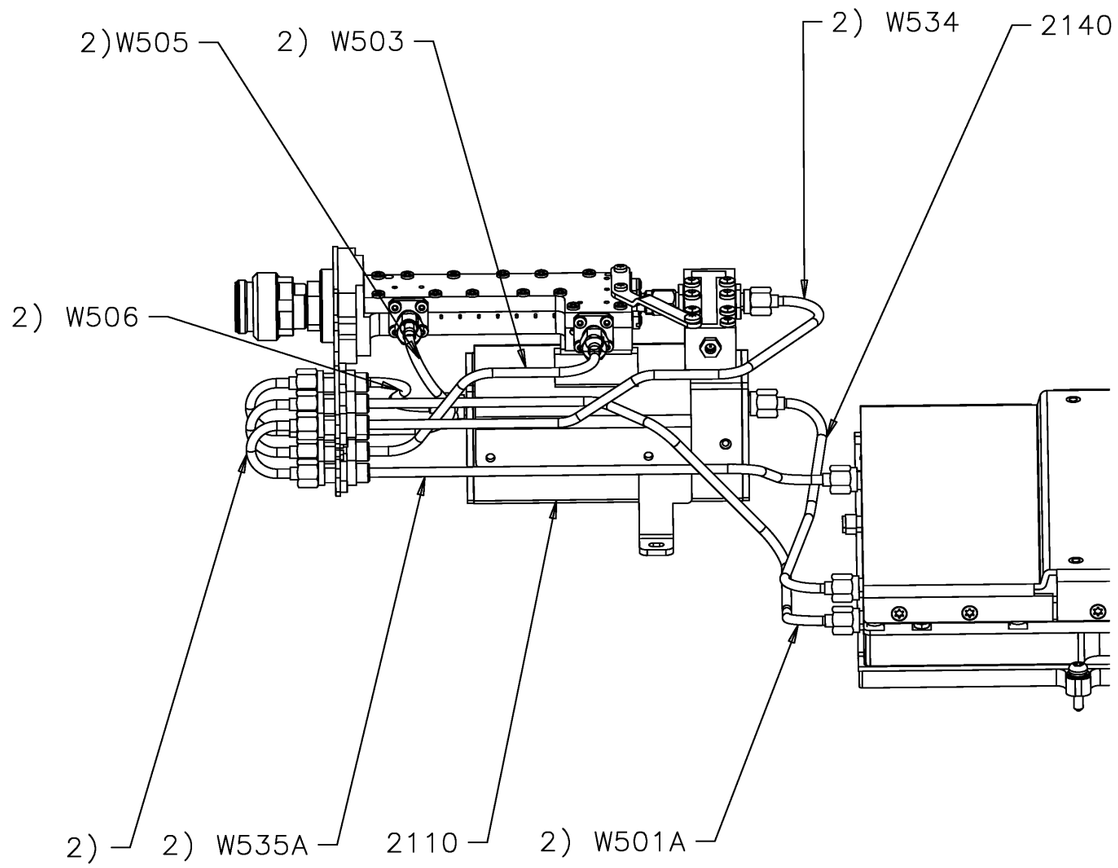
Maßstab / *Scale*	Toleranz / *Tol.*	Werkstoff / *Material*		
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ZVA40-BXX	Datum / *Date*: 2007-04-23	Abteilung / *Dept.*: 1ESK	Name / *Name*: LA	Zeichn.Nr. / *Drawing No.*: 1164.0409.00 D

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ZVA4-B31/B32



ZVA40-B31/B32 mit/with ZVA40-B16



Projektions-methode
Projection Method

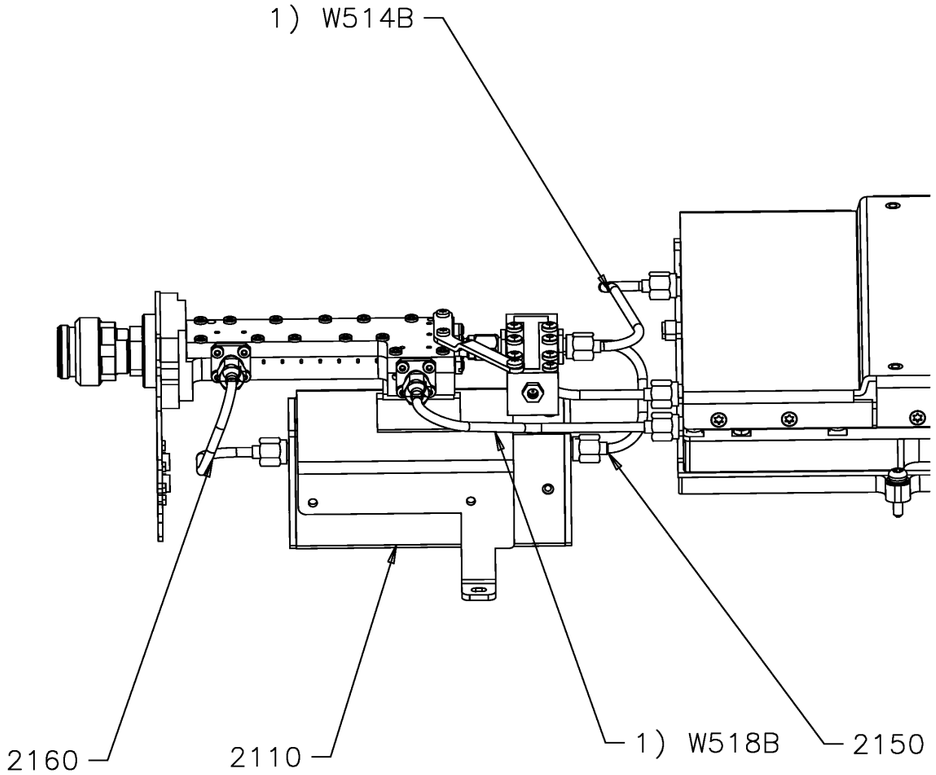
Pos. 2120, 2130 nicht dargestellt/
Pos. 2120, 2130 not shown

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   1305.3420.01 RM UNit 2 ZVA40
2) Bestandteil von / Part of:
   1164.0209.01 ZVA40-B16

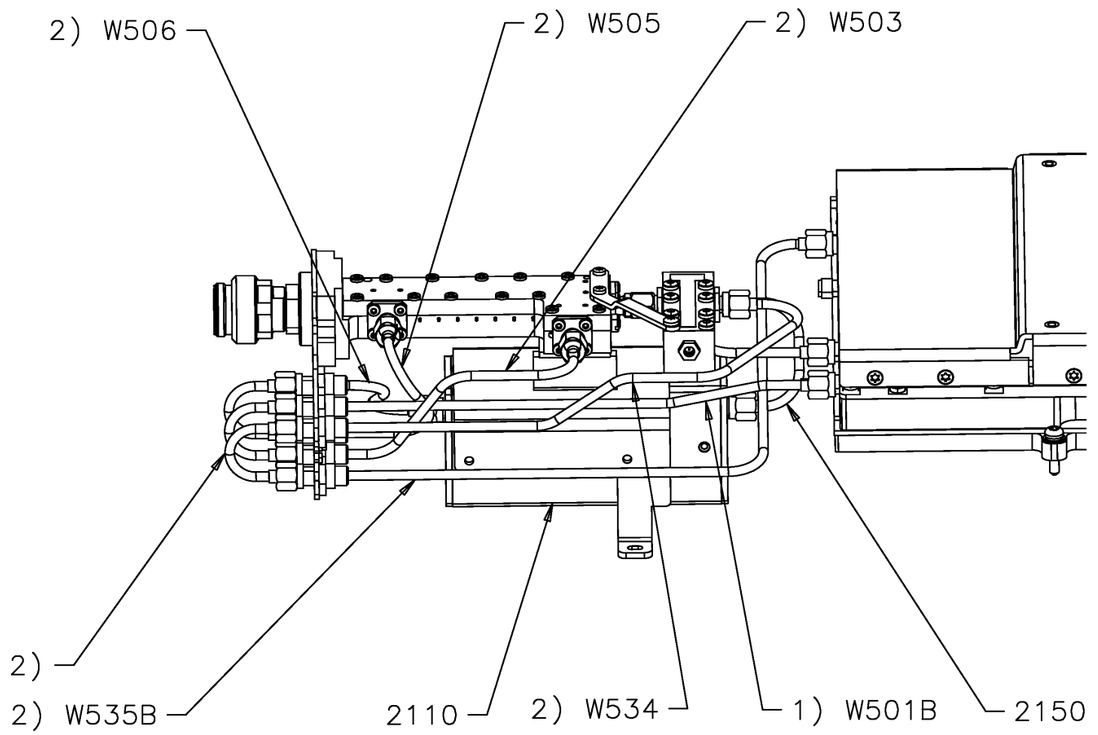
Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*: Einbauanweisung ZVA40-Bxx / Assembly Instruction ZVA40-Bxx			Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 5
ZVA40-BXX	Datum *Date*: 2007-04-23	Abteilung *Dept.*: 1ESK	Name *Name*: LA	Zeichn.Nr. / *Drawing No.*: 1164.0409.00		D

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ZVA40-B33/34



ZVA40-B33/34 mit with ZVA40-B16



Pos. 2120, 2130 nicht dargestellt
Pos. 2120, 2130 not shown

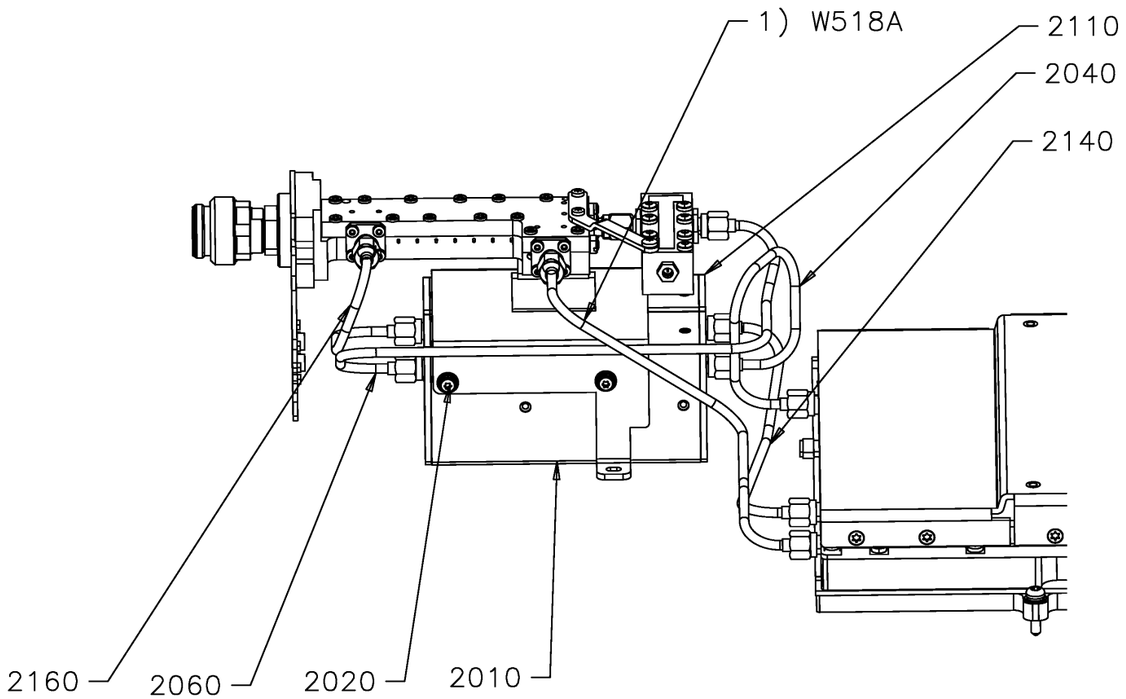
1) Bestandteil von / Part of:
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2) Bestandteil von / Part of:
   1164.0209.01 ZVA40-B16

Projektionsmethode
Projection Method

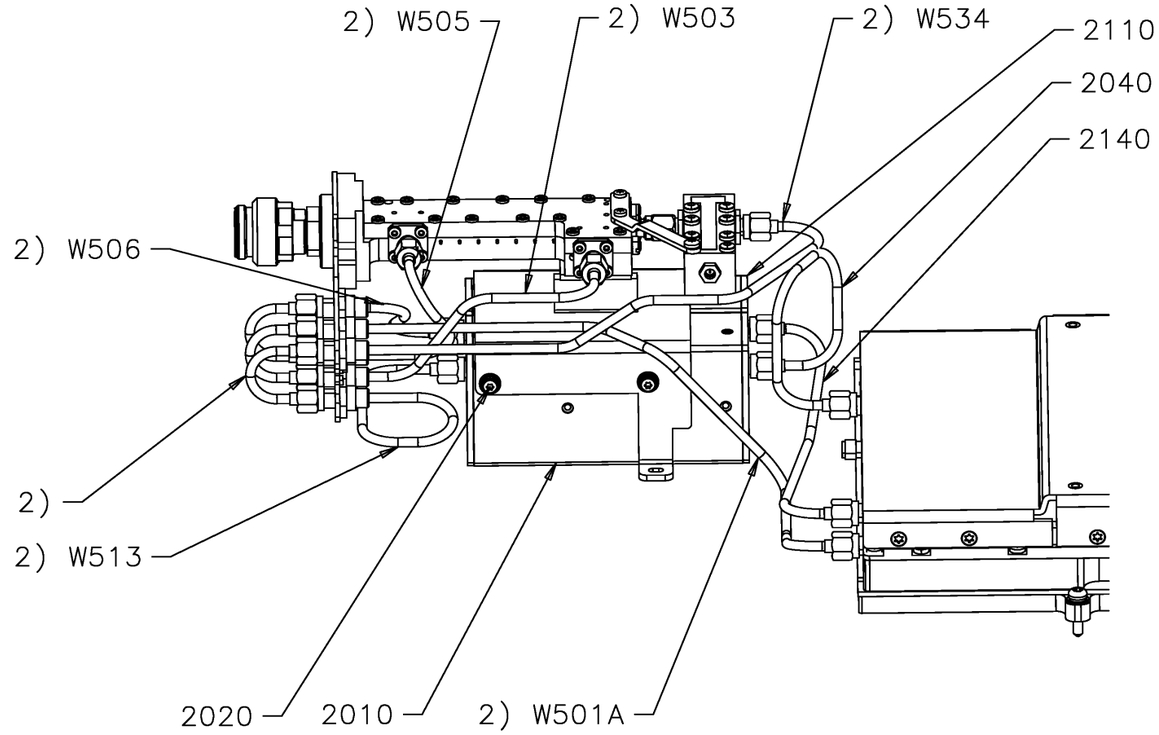
Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*: Einbauanweisung ZVA40-Bxx / Assembly Instruction ZVA40-Bxx			Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 6
ZVA40-BXX	Datum *Date*: 2006-04-24	Abteilung *Dept.*: 1ESK	Name *Name*: LA	Zeichn.Nr. / *Drawing No.*: 1164.0409.00		D

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ZVA40-B21/22 und/and ZVA40-B31/32



ZVA40-B21/22 und/and ZVA40-B31/32 mit/with ZVA40-B16



Projektionsmethode / *Projection Method*

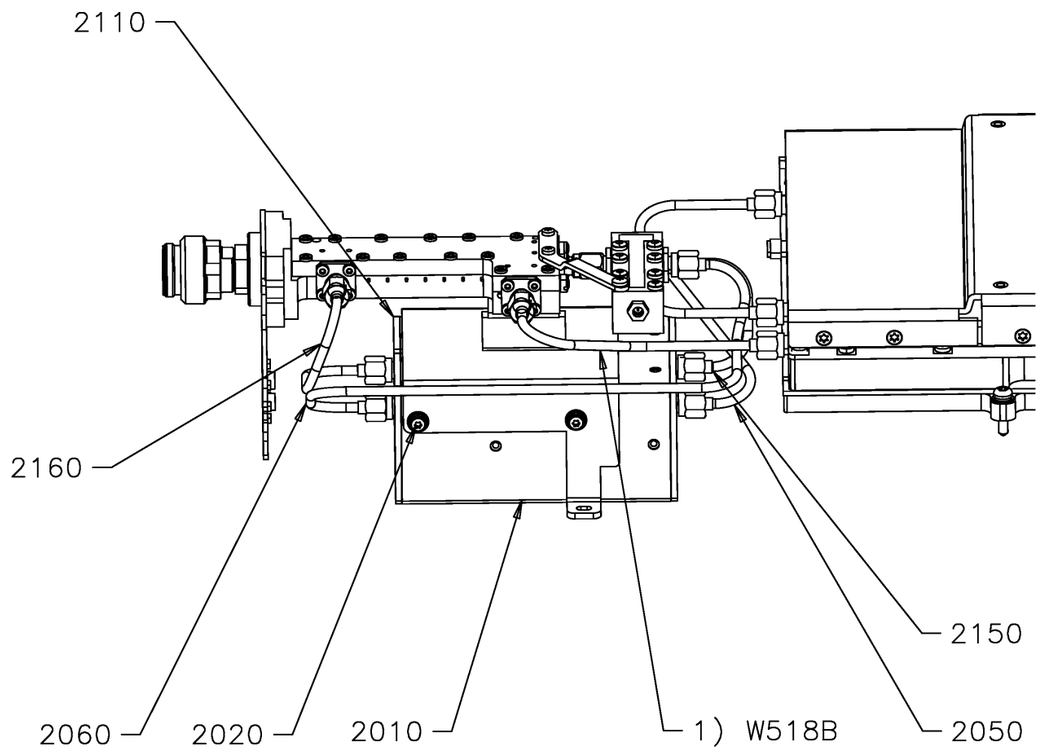
Pos. 2030, 2120, 2130 nicht dargestellt
Pos. 2030, 2120, 2130 not shown

1) Bestandteil von / Part of:
1305.3420.01 RM Unit 2 ZVA40
2) Bestandteil von / Part of:
1164.0209.01 ZVA40-B16

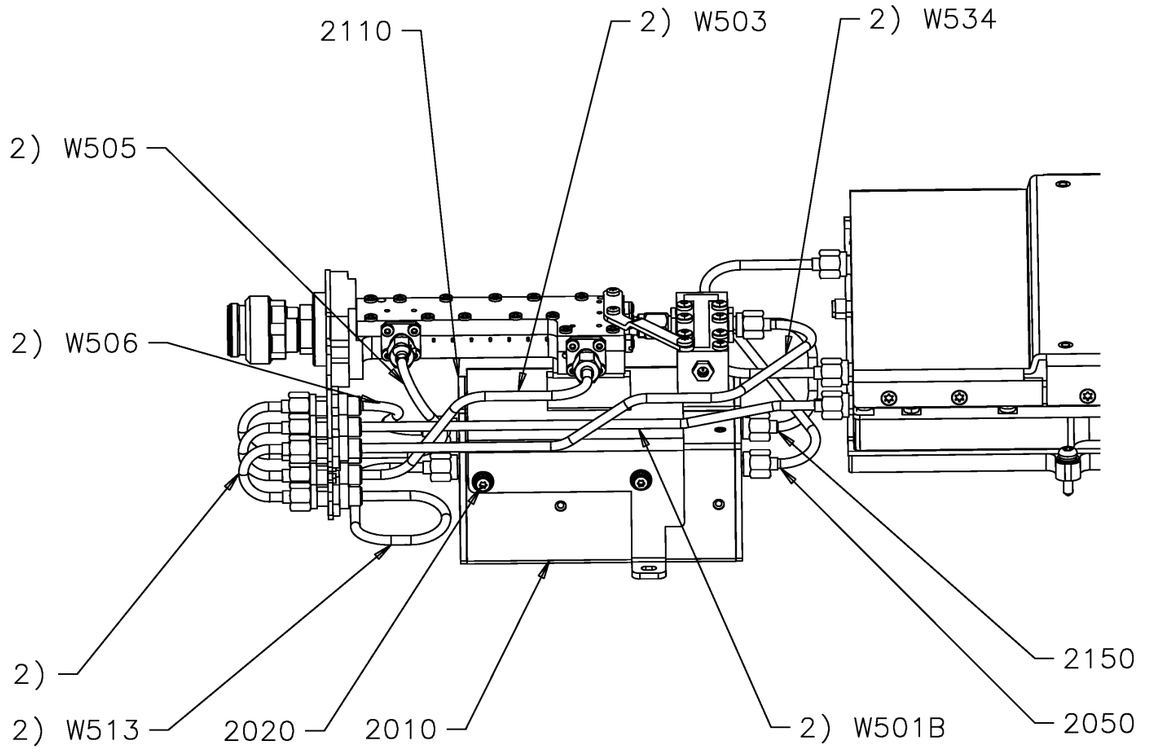
Maßstab / *Scale*	Toleranz / *Tol.*	Werkstoff / *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*: Einbauanweisung ZVA40-Bxx / Assembly Instruction ZVA40-Bxx			Sprache / *Lang.*: de en	Aei. / *C.I.*: 02.00	Blatt / *Sh.*: 7
ZVA40-BXX	Datum / *Date*: 2007-04-24	Abteilung / *Dept.*: 1ESK	Name / *Name*: LA	Zeichn.Nr. / *Drawing No.*: 1164.0409.00		D

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ZVA40-B23/24 und/and ZVA40-B33/34



ZVA40-B23/24 und/and ZVA40-B33/34 mit/with ZVA40-B16



Projektions-methode

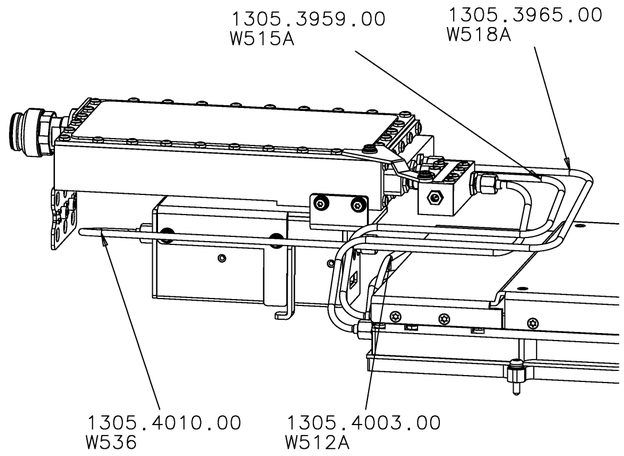
Projection Method

Pos. 2030, 2120, 2130 nicht dargestellt
Pos. 2030, 2120, 2130 not shown

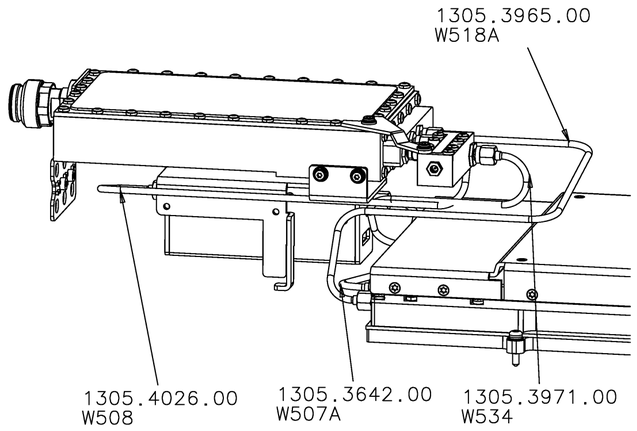
1) Bestandteil von / Part of:
   13053420.01 RM Unit 2 ZVA40
2) Bestandteil von / Part of:
   1164.0209.01 ZVA40-B16

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*	Einbauanweisung ZVA40-Bxx Assembly Instruction ZVA40-Bxx		Sprache / *Lang.* de en	Aei. / *C.I.* 02.00	Blatt / *Sh.* 8
ZVA40-BXX	Datum *Date* 2007-04-24	Abteilung *Dept.* 1ESK	Name *Name* LA	Zeichn.Nr. / *Drawing No.* 1164.0409.00		D

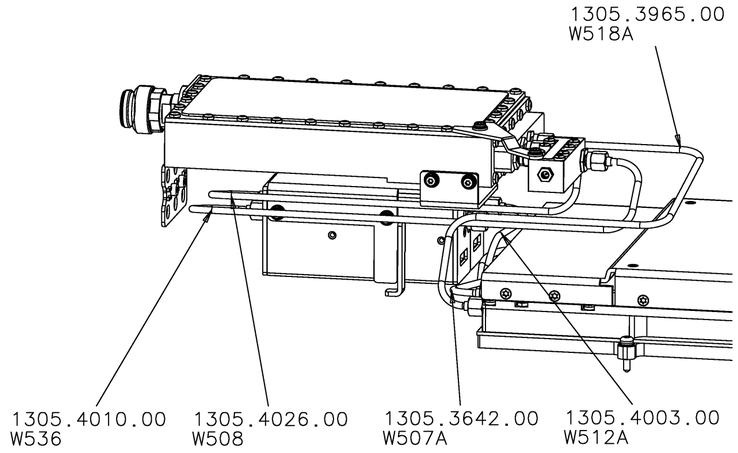
ZVA40-B21/22



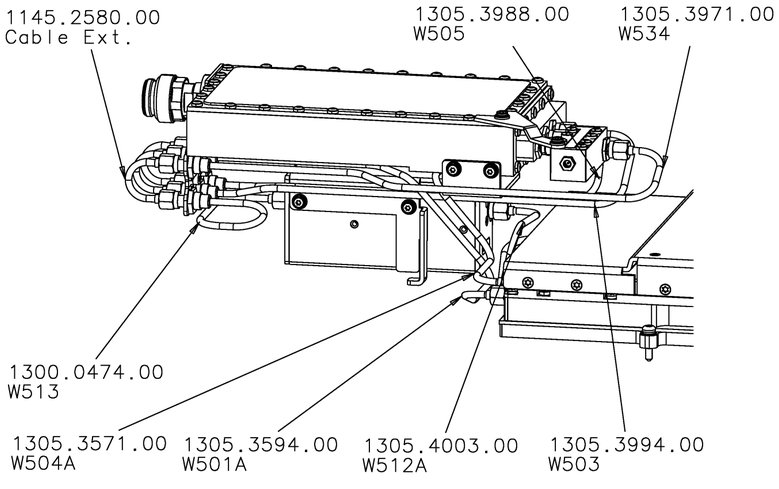
ZVA40-B31/32



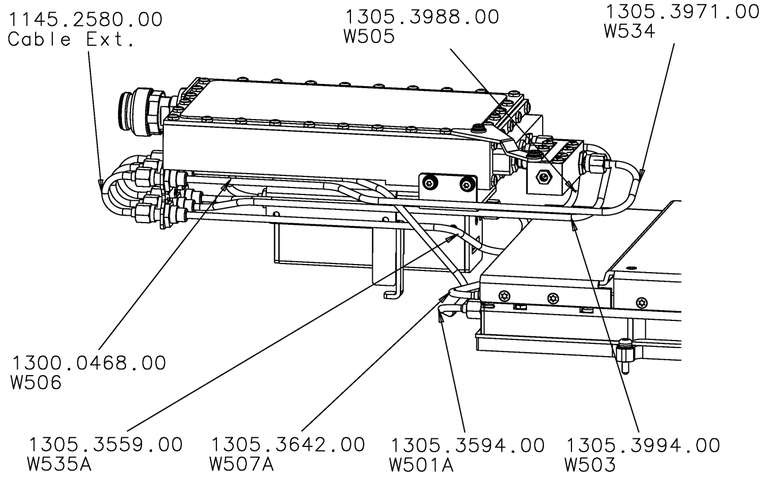
ZVA40-B21/22 and ZVA40-B31/32



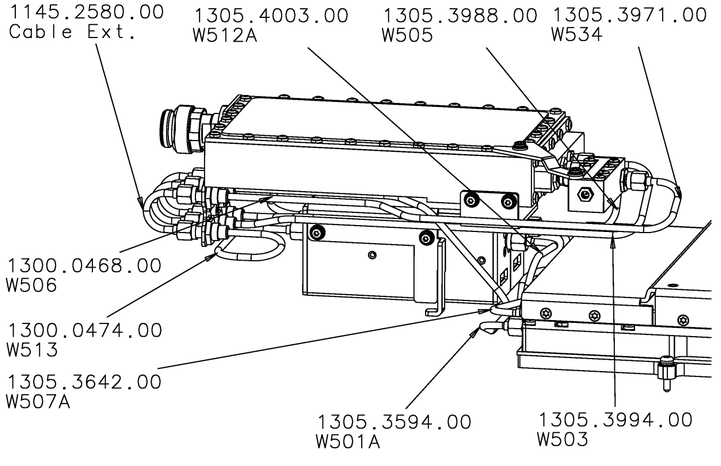
ZVA40-B21/22 with ZVA40-B16



ZVA40-B31/32 with ZVA40-B16



ZVA40-B21/22 and ZVA40-B31/32 with ZVA40-B16

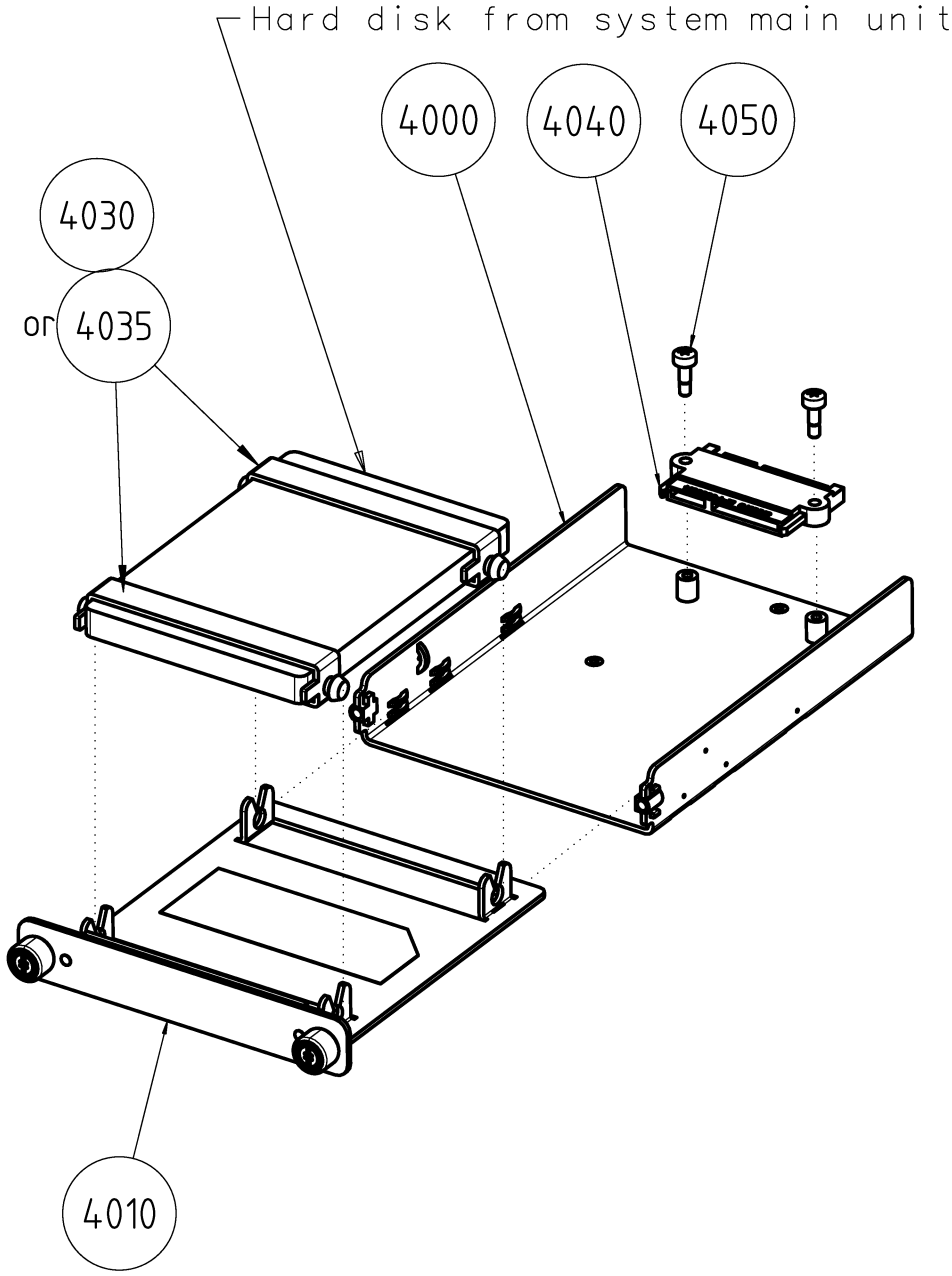


This Sheet is only for MOD40 and
only for devices with Serial No. less than 100140

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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation*: Einbauanweisung ZVA40-Bxx / Assembly Instruction ZVA40-Bxx			Sprache / *Lang.*: en	Aei. / *C.I.*: 01.00	Blatt / *Sh.*: 9
ZVA40-BXX	Datum *Date*: 2007-02-23	Abteilung *Dept.*: 1ESK	Name *Name*: la	Zeichn.Nr. / *Drawing No.*: 1164.0409.00		D



VAR 04
MOD 04

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*					
ROHDE&SCHWARZ	Benennung */ Designation* ZVAB-B18 FLASH-WECHSELFESTPLATTE ZVAB-B18 REMOVABLE FLASH DISC				Sprache */ Lang.* de en	Aei. */ C.I.* 02.00	Blatt */ Sh.* 1
ZVA-B18	Datum *Date* 2014-09-26	Abteilung *Dept.* MTEK	Name *Name* mk		Zeichn.Nr. */ Drawing No.* 1164.0715.01		D

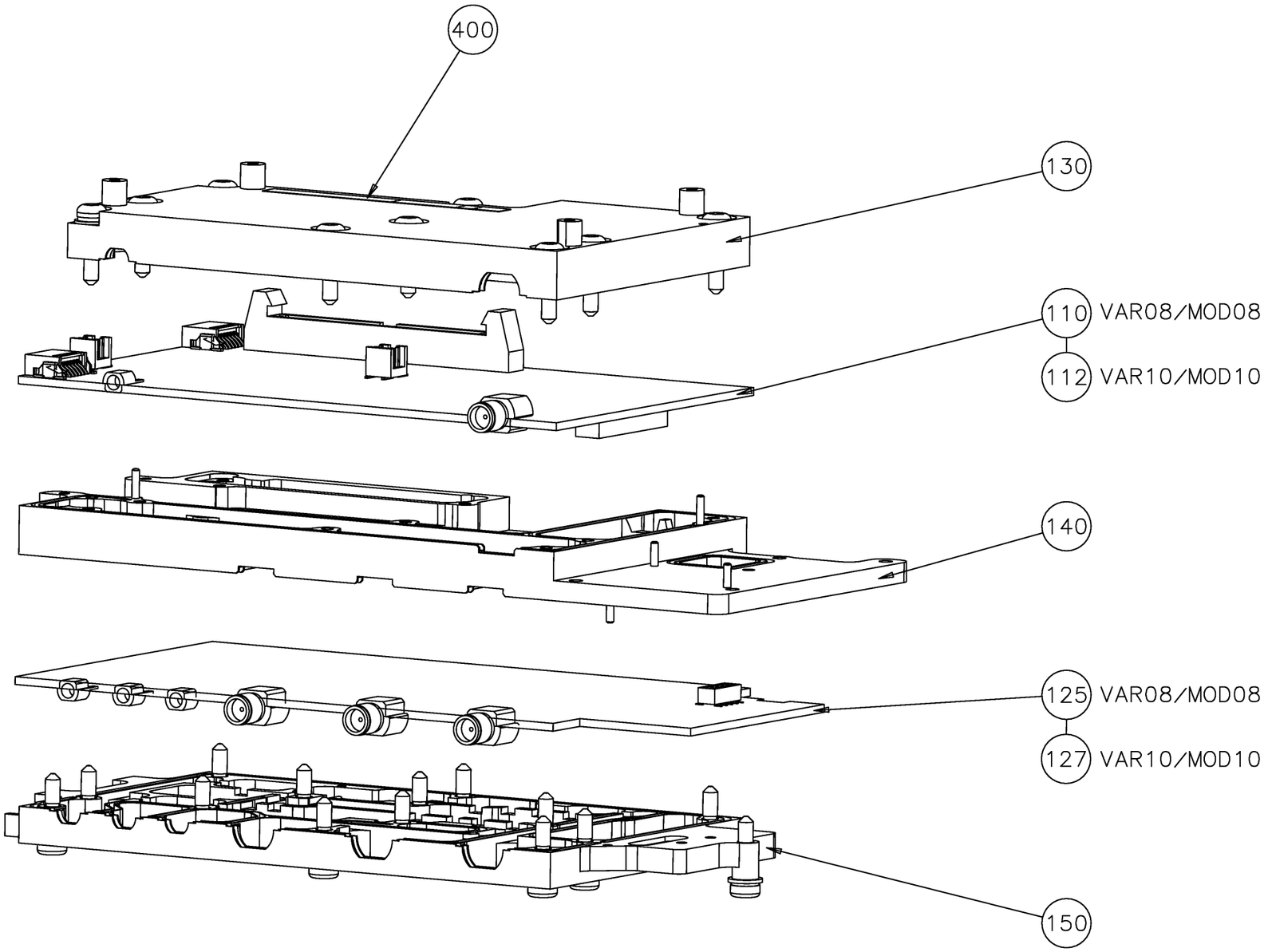
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Maßeinheit *Measuring Unit* [mm]

Projektionsmethode *Projection Method*

A4

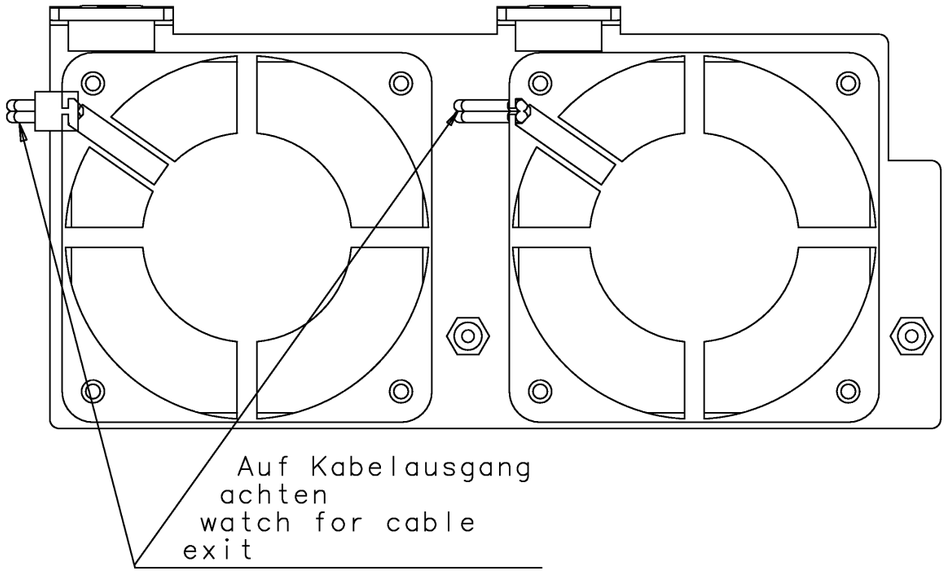
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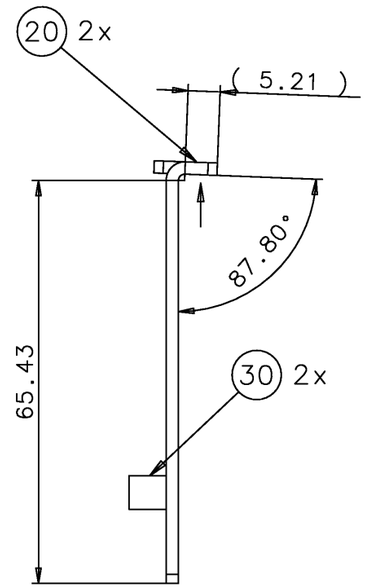


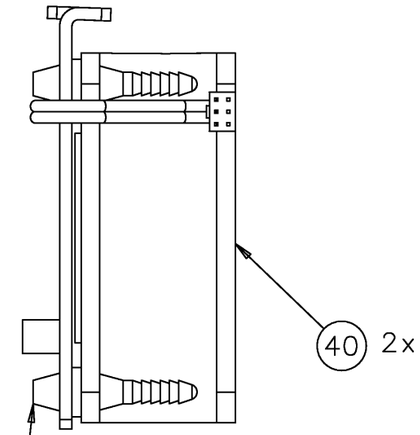
VARIANTENERKLÄRUNG/
EXPLANATION OF MODELS
VAR08 = 8GHZ
MOD08 = 8GHZ
VAR10 = ZVAR-AUSFÜHRUNG
MOD10 = ZVAR MODEL

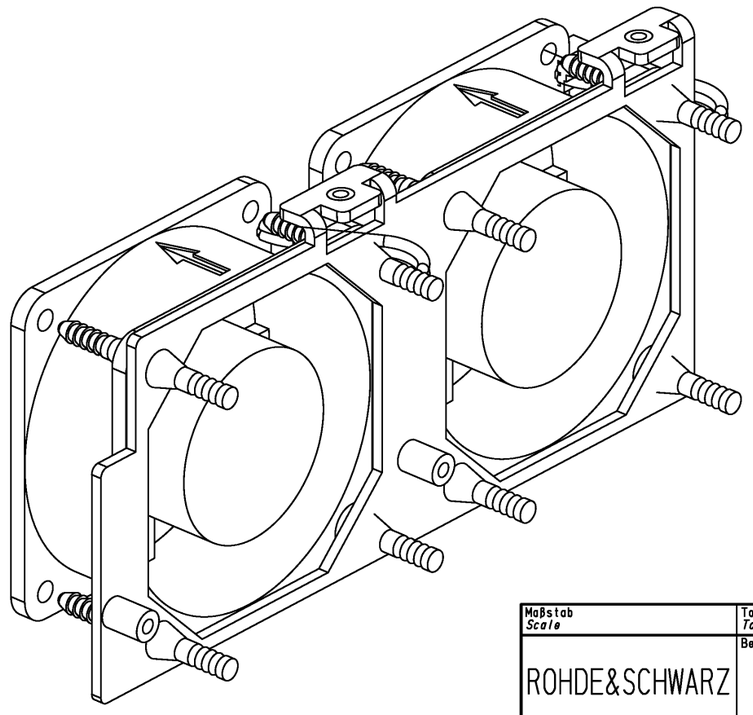
Projektions-methode
Projection Method

Maßstab *Scale* 1:1	Toleranz *Tol.* ISO2768-m	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* RM SUBUNIT ZVAB 4/8GHz RM SUBUNIT ZVAB 4/8GHz			Sprache / *Lang.* de en	Aei. / *C.I.* 01.00	Blatt / *Sh.* 1
ZVAB	Datum *Date* 2009-04-14	Abteilung *Dept.* 1ESK	Name *Name* Wn	Zeichn.Nr. / *Drawing No.* 1302.4990.01		D









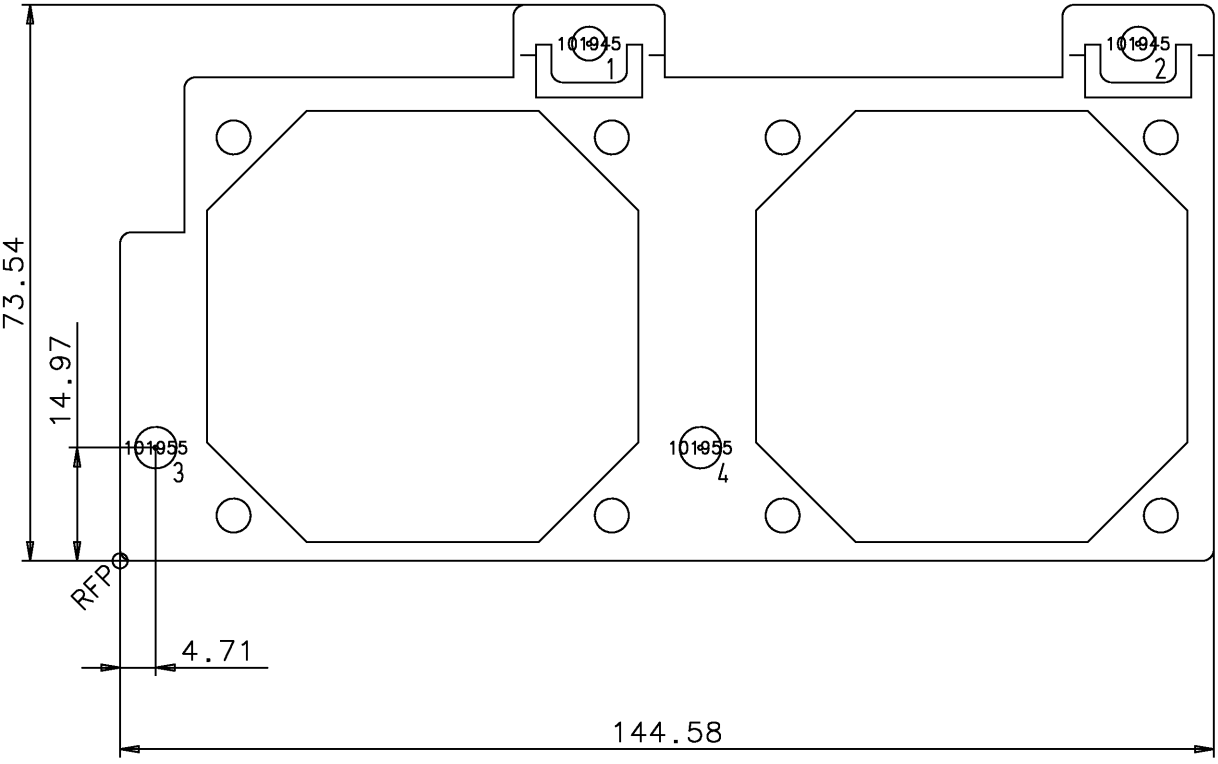
Einpressrichtung
press-in direction

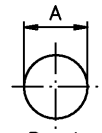
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Projektions-
methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material* 0001.1569.00 , BL 2 DIN1783ALMG3 W19			
ROHDE&SCHWARZ	Benennung / *Designation* RM44 LUEFTERBEFESTIGUNG RM44 BLOWER ATTACHEMENT			Sprache / *Lang.* de en	Aei. / *C.I.* 03.00	Blatt / *Sh.* 1
ZVA44	Datum *Date* 2006-10-26	Abteilung *Dept.* 1ESK	Name *Name* Mi	Zeichn.Nr. / *Drawing No.* 1302.5621.00 , D		

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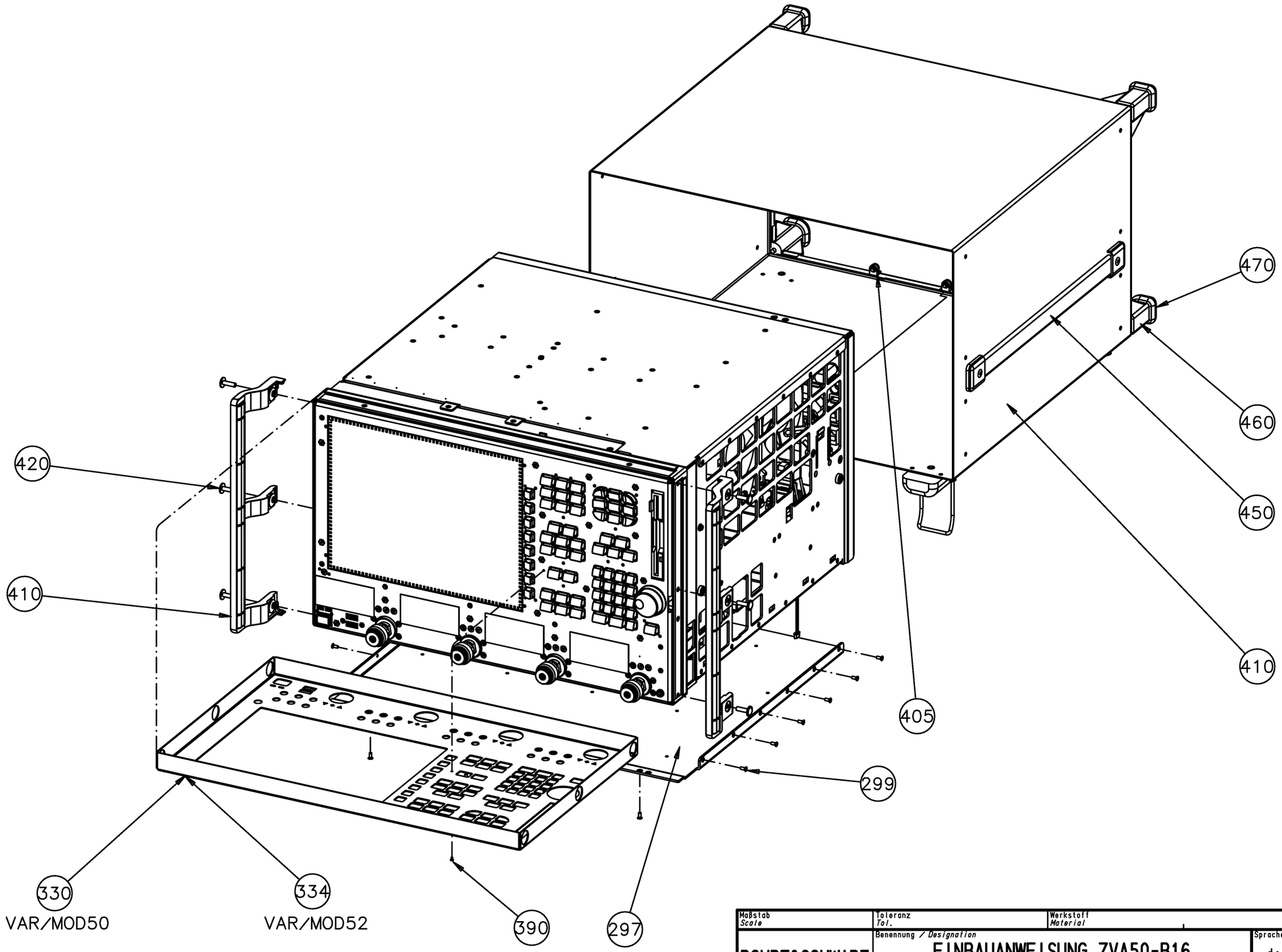


Rund
101

Projektions-methode
Projection Method

Maßstab *Scale* 1:1	Toleranz *Tol.* +-0.2	Werkstoff *Material* 0001.1569.00 , BL 2 DIN1783ALMG3 W19			
ROHDE&SCHWARZ	Benennung / *Designation* RM44 LUEFTERBEFESTIGUNG RM44 BLOWER ATTACHEMENT		Sprache / *Lang.* de en	Aei. / *C.I.* 03.00	Blatt / *Sh.* 2
			Zeichn.Nr. / *Drawing No.* 1302.5621.00 D		
ZVA44	Datum *Date* 2006-06-14	Abteilung *Dept.* 1ESK	Name *Name* Mi		

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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEISUNG ZVA50-B16 INSTALLATION INSTRUCTION ZVA50-B16			Sprache / *Lang.* de en	Ael. / *C.I.* 01.00	Blatt / *Sh.* 1
ZVA50	Datum *Date* 2007-08-28	Abteilung *Dept.* 1ESK	Name *Name* La	Zeichn.Nr. / *Drawing No.* 1305.5322.00		D

Montage/Demontage der Reflektometer (RM Unit ZVA50)
Installing/uninstalling reflectometers (RM Unit ZVA50)

Kabel zwischen Bias/Eichleitung und RM Unit
vor Demontage der RM Unit ZVA50 entfernen.
Nach Montage RM Unit ZVA50 mit Optionen
Kabel entsprechend Einbauanweisung montieren.

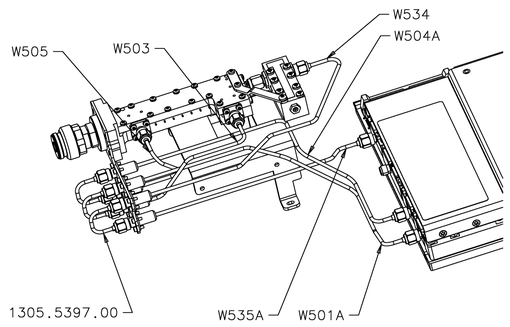
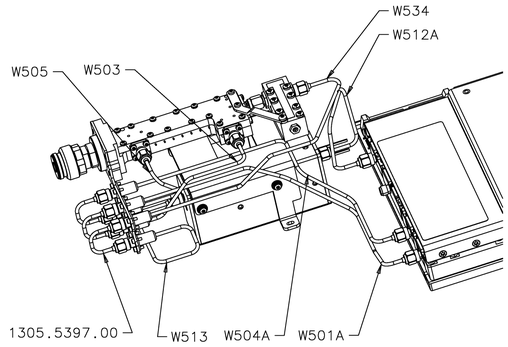
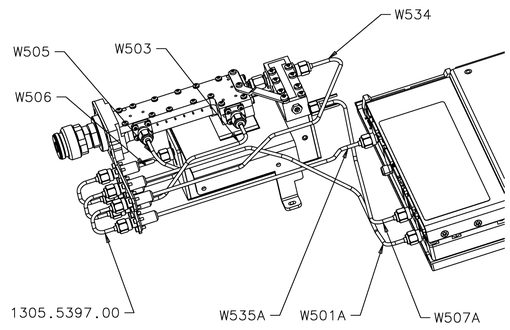
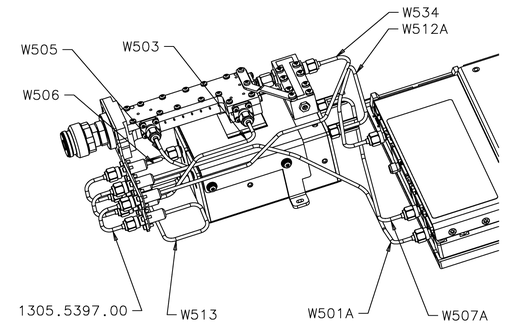
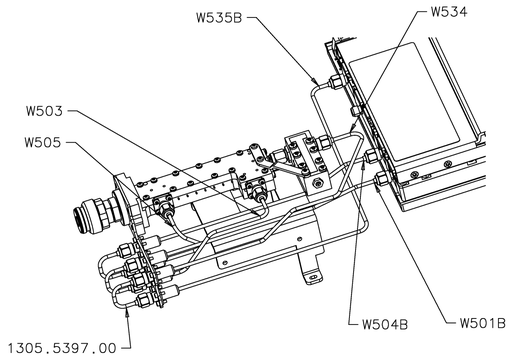
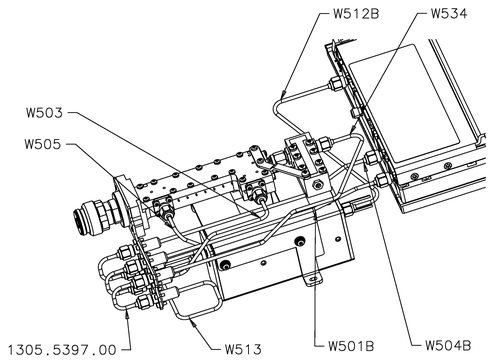
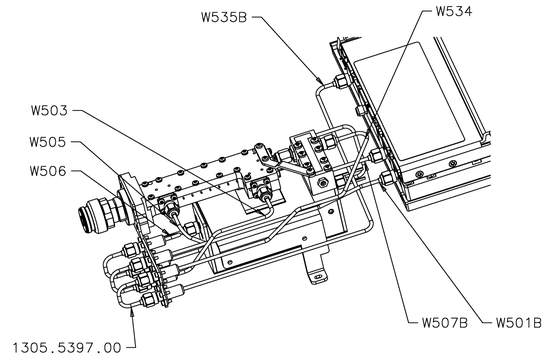
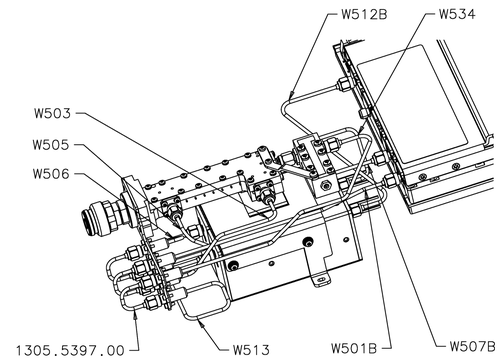
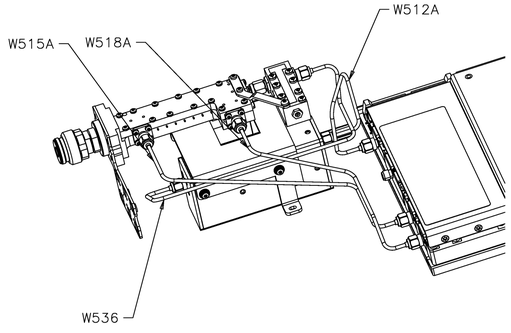
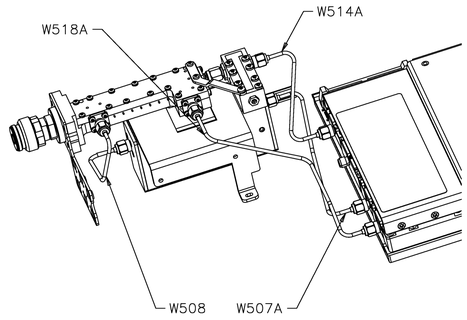
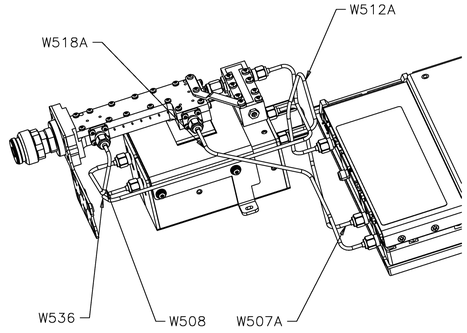
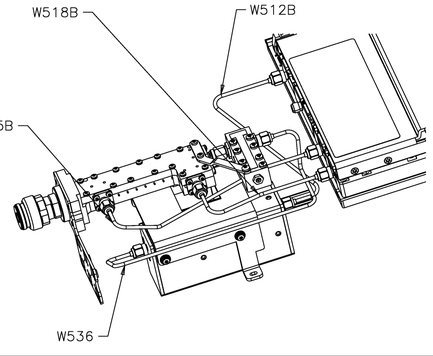
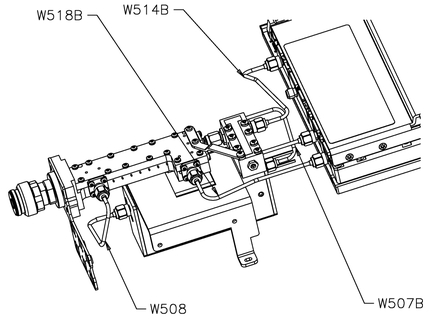
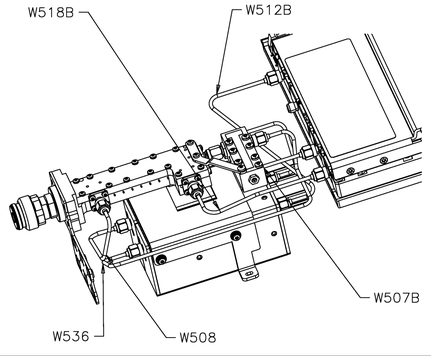
Remove cable between Bias/Attenuator and RM unit
befor unmount the RM Unit ZVA50.
After installing of the RM Unit ZVA50 with options
connect cable according to the installation instructions.

VAR/MOD52 246
VAR/MOD52 233
236 VAR/MOD52
234 VAR/MOD52
VAR/MOD50 240
VAR/MOD52 245
224 VAR/MOD52
223 VAR/MOD52
216
VAR/MOD52 224
VAR/MOD52 227
VAR/MOD50 217
295
218 VAR/MOD50
228 VAR/MOD52

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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* EINBAUANWEISUNG ZVA50-B16 INSTALLATION INSTRUCTION ZVA50-B16			Sprache / *Lang.* de en	Aei. / *C.I.* 01.00	Blatt / *Sh.* 2
ZVA50	Datum *Date* 2007-08-28	Abteilung *Dept.* 1ESK	Name *Name* La	Zeichn.Nr. / *Drawing No.* 1305.5322.00		D

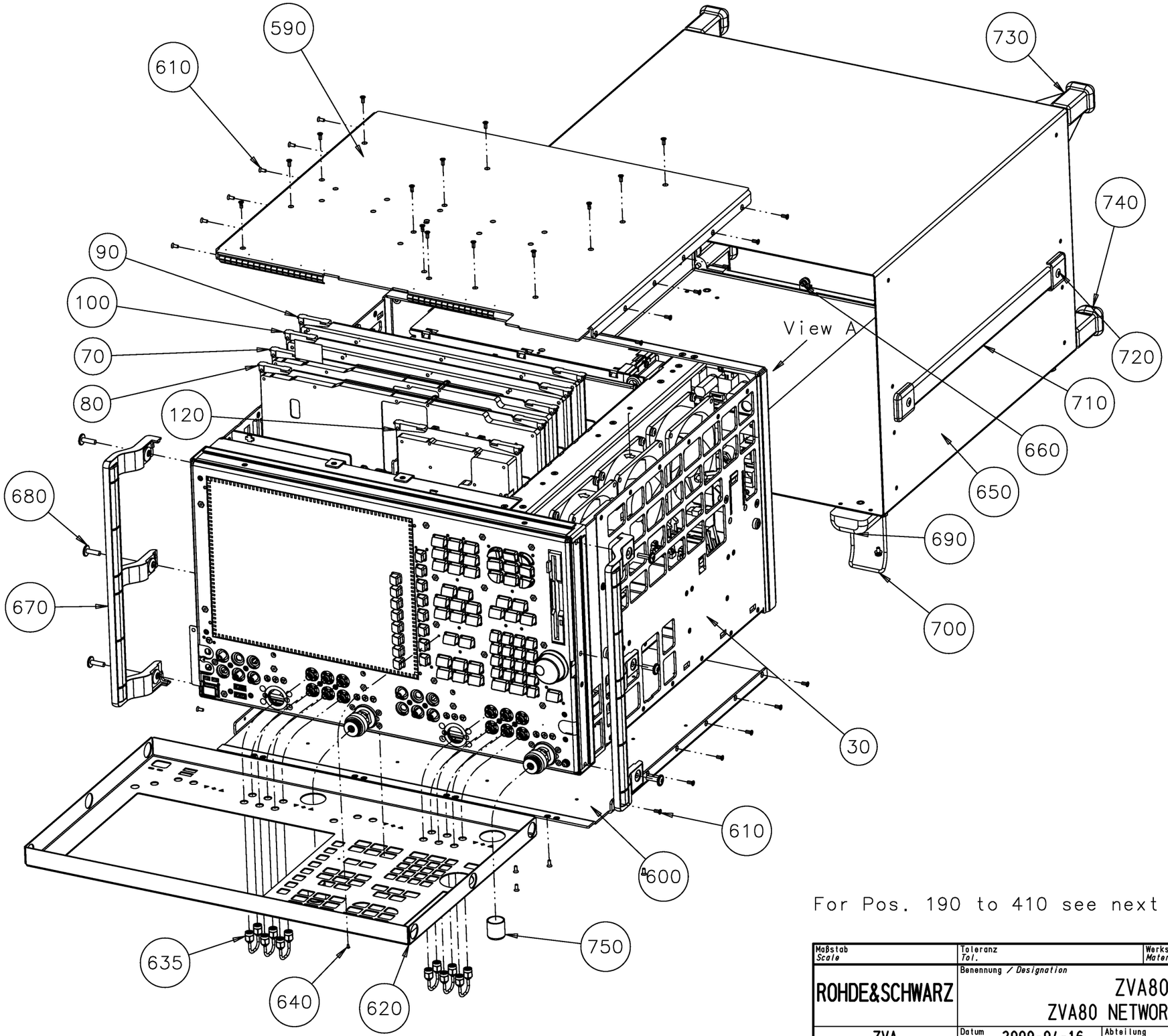
	Option B16	Option B2x (x= Port#)	Option B3x (x= Port#)	Option B2x and B3x
Port 1/2 with B16				
Port 3/4 with B16				
Port 1/2 without B16				
Port 3/4 without B16				

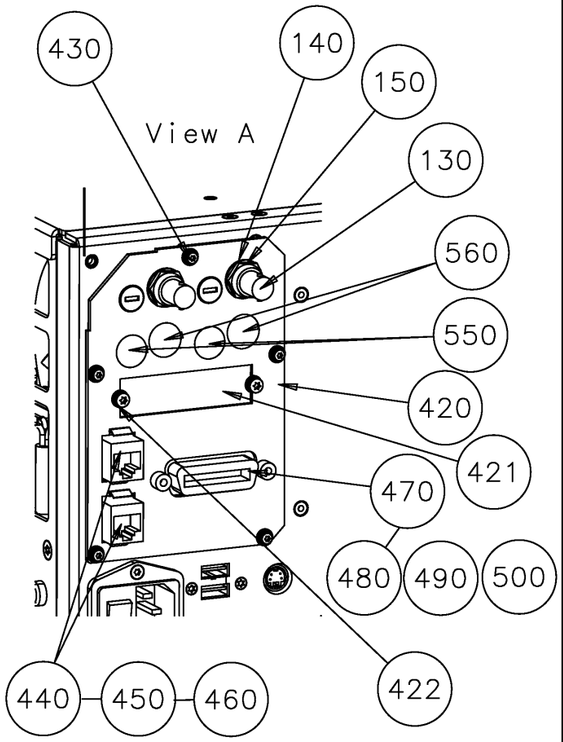
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Projektionsmethode
Projection Method

Maßstab / Scale: 1:2	Toleranz / Tol.	Werkstoff / Material			
ROHDE&SCHWARZ	Benennung / Designation: EINBAUANWEISUNG ZVA-B16 INSTALLATION INSTRUCTION ZVA-B16			Sprache / Lang.: de en	Änd. / E.C.: 02.00	Blatt / Sh.: 3
ZVA50	Datum / Date: 2008-11-28	Abteilung / Dept.: 1ESK	Name / Name: RN	Zeichn.Nr. / Drawing No.: 1305.5322.00		D

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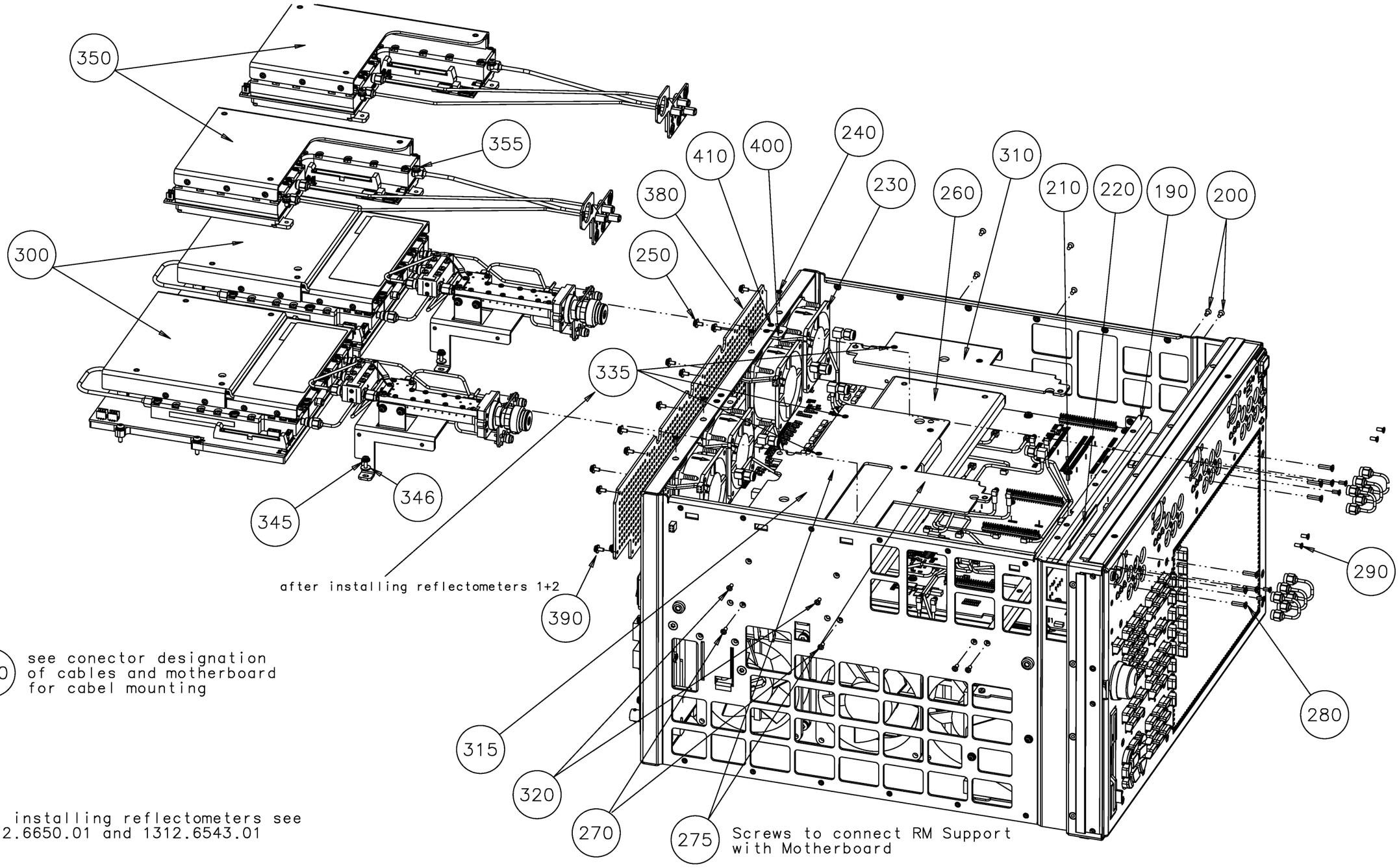


For Pos. 190 to 410 see next pages

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* ZVA80-BS ZVA80 NETWORK ANALYZER			Sprache / *Lang.* de en	Aei. / *C.I.* 03.00	Blatt / *Sh.* 1
ZVA	Datum *Date* 2009-04-16	Abteilung *Dept.* 1ESK	Name *Name* rn	Zeichn.Nr. / *Drawing No.* 1312.6508.01		D

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360 see conector designation of cables and motherboard for cabel mounting

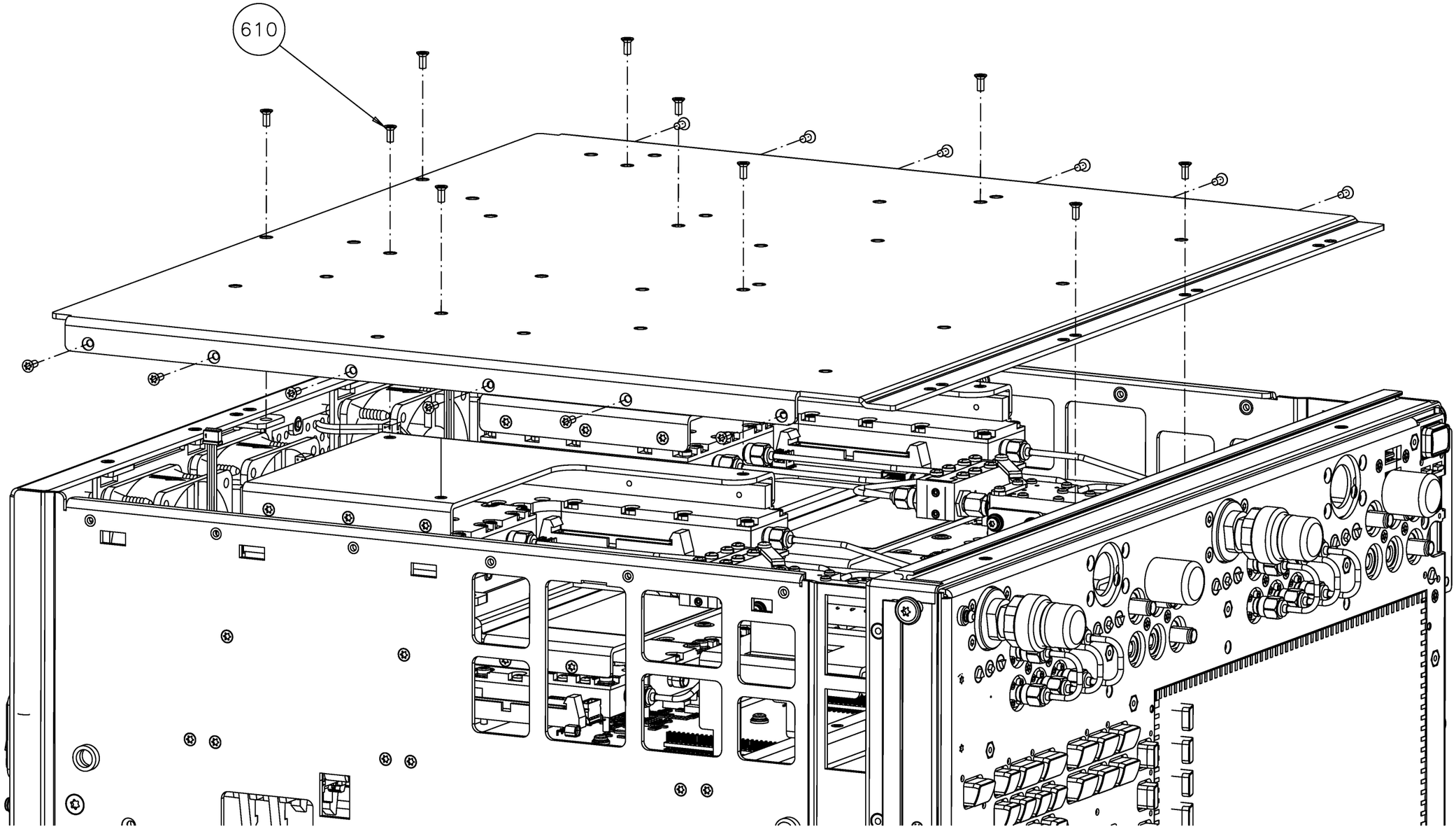
for installing reflectometers see 1312.6650.01 and 1312.6543.01

275 Screws to connect RM Support with Motherboard

Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*			
ROHDE&SCHWARZ	Benennung / *Designation* ZVA80-BU ZVA80-BU			Sprache / *Lang.* de en	Aei. / *C.I.* 03.00	Blatt / *Sh.* 2
ZVA	Datum *Date* 2010-01-26	Abteilung *Dept.* 1ESK	Name *Name* rn	Zeichn.Nr. / *Drawing No.* 1312.6508.01		D

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Projektions-methode
Projection Method

Maßstab *Scale*	Toleranz *Tol.*	Werkstoff *Material*				
ROHDE&SCHWARZ	Benennung / *Designation* ZVA80 NETWORK ANALYZER ZVA80 NETWORK ANALYZER				Sprache / *Lang.* de en	Aei. / *C.I.* 01.00	Blatt / *Sh.* 3
ZVA	Datum *Date* 2009-01-15	Abteilung *Dept.* 1ESK	Name *Name* rn		Zeichn.Nr. / *Drawing No.* 1312.6508.01		D

ROHDE&SCHWARZ

Circuit Diagram

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
W100 &
A19 & DISPL. CONNECT FMR-TOSHIBA
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
W11 W13
& W70
A100 FREQUENCY REFERENCE
MOD.04 Without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
X103 NA2_AD_CLK
X104 NA1_AD_CLK
X105 ST2_REF
X106 ST1_REF
X107 FR_REF_10_OUT/IN
OPTION STANDARD PCI X110
OPTION ZVAB-B14 UNIVERSAL I/O COMPACT PCI
W245 REAR PANEL
A140 NETWORK CONTROLLER (1)
MOD.02 Basic Model
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.02/04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .02 MOD.02
StockNo .04 MOD.04/05
X141 X142 X143 X140 X144 X145 X146 X147 X148 X149
W200 POW UN
(Z22)
(W200)
A21* AC FUSE BOARD
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201
GND
A160 SYNTH-LS (1)
StockNo.02 for MOD .08 .24
StockNo.20 for MOD .40 .43 .50
X165 SO_OUT_1
X166 SO_OUT_2
X160 X161 X167 12MHZ IN
X168 SO_OUT_3
X169 SO_OUT_4
A20 POWER SUPPLY
W23 W24 W25 W22
REAR PANEL
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A90 * FRONT MODULE CONTROLER
Data ISA X90
PCI X91
I/O X92
X93
X11 X8
X10
LAN1 LAN2 USB
W241 W242
A40 & USB X219
W12 *
A30 * Floppy
W300 *
X103 X104 X100 X105 X106 X107 X110 X120 X131 X132 X133 X130 X134 X135
X141 X142 X143 X140 X144 X145 X146 X147 X148 X149 X155 X156 X150 X151 X157 X158 X159 X165 X166 X160 X161 X167 X168 X169 X23 X24 X25 X21
A10 * MOTHERBOARD
TEST X94
X30 X209 SUB D RS232 (COM)
X35 X36 X37
X(E1) X(E2) X(E3)
X511 X510 X530 X531 X540 X541 X521 X520
W146 W147 W148 W149 W165 W166 W168 W169
RM1_IF_MEAS RM1_IF_REF RM2_IF_MEAS RM2_IF_REF RM1 LOCAL RM2 LOCAL RM1 SOURCE RM2 SOURCE
COMBINER X65
REF_10_OUTIN
DC MEAS X211/ X212 GNDA
EXT TRIGGER X225
DIGITAL INTERFACE X221
USER CONTROL X220
CASCADE X219
MONITOR X218
NOISE SOURCE X201
10 MHz REF X210
DC MEAS -10V...+10V X212
DC MEAS -1V...+1V X211
X215 USB(2x)
X69 F5 IEC127 -F250L X201
F4 IEC127 -F250L X202
A18 PORT BIAS
X70
X68 W21 P24 IEC BUS
W245 P25 OPTION UNIVERSAL IO
P8 X242 LAN2
P8 X241 LAN1

OPTION ZVA-B8 POWER CONTROL
X405 P50 50

only ZVA40 W700 W510 4 50
RM1_IF_MEAS W146
RM1_IF_REF W147
RM1 LOCAL W165
RM1 SOURCE W168
to A510
X18 X16 X8 X9 X10 X11
RM 1
PORT 1

only ZVA40 W710 W520 4 50
RM2_IF_MEAS W149
RM2_IF_REF W148
RM2 LOCAL W166
RM2 SOURCE W169
to A520
X18 X16 X8 X9 X10 X11
RM 2
PORT 2

MODEL ZVA_2PORT

MODELS			
1145.1110.01 ZVA DISPLAY-MB-REARPANEL	2PORT		Sheet 1
1145.1110.01 ZVA DISPLAY-MB-REARPANEL	4PORT		Sheet 2
1145.1110.08	ZVA8	2PORT	Sheet 3
1145.1110.10	ZVA8	4PORT	Sheet 4
1145.1110.24	ZVA24	2PORT	Sheet 5
1145.1110.26	ZVA24	4PORT	Sheet 6
1145.1110.40/43	ZVA40	2PORT	Sheet 7
1145.1110.42/45	ZVA40	4PORT	Sheet 8
1145.1110.50	ZVA50	2PORT	Sheet 7
1145.1110.52	ZVA50	4PORT	Sheet 8
1145.1110.	ZVA50	4PORT NIST	Sheet 9

Legende / legend

Cables to RM n
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVB
1302.5050.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

& enthalten in / contained in DISPLAYEINHEIT ZVB / DISPLAY UNIT ZVB 1145.1384.01

X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ

ZVA

Benennung / Designat.: ZVA NETWORK ANALYZER

Datum: Date: 09-11-06 | Abteilung: Dept.: 1ESK | Name: Name: smolinsk

Spr.:/Lang.: de | Aei:/C.l.: 15.00 | Blatt:/Sh.: 1 +

Zeichn.Nr.:/Drawing No.: 1145.1110.01 S

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A1 DISPLAY UNIT ZVB*
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
W100 &
A19 & DISPL.CONNECT FMR-TOSHIBA
& W70
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
W11 W13
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A90 * FRONT MODULE CONTROLER
ISA X90
PCI X91
I/O X92
X93
X8 P34
X11 P10
X10 P26
USB
LAN1
LAN2
W241
W242
A40 & USB X219
10 W12 *
A30 * Floppy
W300 * 26

A100 FREQUENCY REFERENCE
MOD.04 without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
X103 NAZ_AD_CLK
X104 NAT_AD_CLK
X105 SYZ_REF
X106 SYT_REF
X107 FR_REF_IO_OUT/IN
OPTION COMPACT PCI X110
OPTION ZVAB-B10 IEC SYSTEM BUS STANDARD PCI
A199 PCI BALANCE X120

A130 NETWORK CONTROLLER (2)
MOD.02 Basic Model
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.02/04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .02 MOD.02
StockNo .04 MOD.04/05
X131 X132 X133 X130 X134 X135
X136 RM3_IF_MEAS
X137 RM3_IF_REF
X138 RM4_IF_REF
X139 RM4_IF_MEAS

A140 NETWORK CONTROLLER (1)
MOD.02 Basic Model
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.02/04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .02 MOD.02
StockNo .04 MOD.04/05
X141 X142 X143 X140 X144 X145 X146 X147 X148 X149
X146 RM1_IF_MEAS
X147 RM1_IF_REF
X148 RM2_IF_REF
X149 RM2_IF_MEAS

A10 * MOTHERBOARD
TEST X94 P6

A150 SYNTH-LO (2)
A160 SYNTH-DS (1)
X155 LO_OUT_1
X156 LO_OUT_2
X157 128MHZ_IN
X158 LO_OUT_3
X159 LO_OUT_4
X165 SO_OUT_1
X166 SO_OUT_2
X167 128MHZ_IN
X168 SO_OUT_3
X169 SO_OUT_4
W155 LOCAL 1
W156 LOCAL 2
W158 LOCAL 3
W159 LOCAL 4
W165 SOURCE 1
W166 SOURCE 2
W168 SOURCE 3
W169 SOURCE 4

W200 * POW UN
A21 * AC FUSE BOARD
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201 GND
A20 * POWER SUPPLY
W23 W24 W25 W22
X23 X24 X25 X21
REAR PANEL

EXT TRIGGER X225 BNC
DIGITAL INTERFACE X221 P25 SUB D
USER CONTROL X220 P25 SUB D
CASCADE X219 P8
MONITOR X218 P15
NOISE SOURCE X201 BNC
10 MHz REF X210 BNC
REF_10_OUTIN
DC MEAS X211/X212 -10V...+10V
DC MEAS X211 -1V...+1V
USB(2x) X215
COMBINER X65

X69 F5 IEC127 -F250L X201 BNC 1
F4 IEC127 -F250L X202 BNC 2
A18 PORT BIAS
X70 F3 IEC127 -F250L X203 BNC 3
F6 IEC127 -F250L X204 BNC 4
A19 PORT BIAS
for 3/4 PORT MODELS only
PORT BIAS
W20 P24 to ZVAB-B10 OPTION IEC SYSTEM BUS
X68 W21 P24 IEC BUS
W245 P25 SUB D OPTION
W230 BNC OPTION AUX
P8 X242 LAN2
P8 X241 LAN1

X (E1) X (E2) X (E3)

50 W530 W136 W137 W155 W165
RM3_IF_MEAS RM3_IF_REF RM3 LOCAL RM3 SOURCE
to A530
X16 X8 X9 X10 X11

50 W510 W146 W147 W156 W168
RM1_IF_MEAS RM1_IF_REF RM1 LOCAL RM1 SOURCE
to A510
X16 X8 X9 X10 X11

50 W540 W139 W138 W158 W166
RM4_IF_MEAS RM4_IF_REF RM4 LOCAL RM4 SOURCE
to A540
X16 X8 X9 X10 X11

50 W520 W149 W148 W159 W169
RM2_IF_MEAS RM2_IF_REF RM2 LOCAL RM2 SOURCE
to A520
X16 X8 X9 X10 X11

	RM 3	RM 1	RM 4	RM 2
4PORT MODEL	PORT 3	PORT 1	PORT 4	PORT 2
3PORT MODEL		PORT 1	PORT 3	PORT 2

MODEL ZVA_3/4PORT

Legende / legend

Cables to RM n
enthalten in / contained in KABELSATZ ZVA/ SET OF CABLE ZVB 1302.5050.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

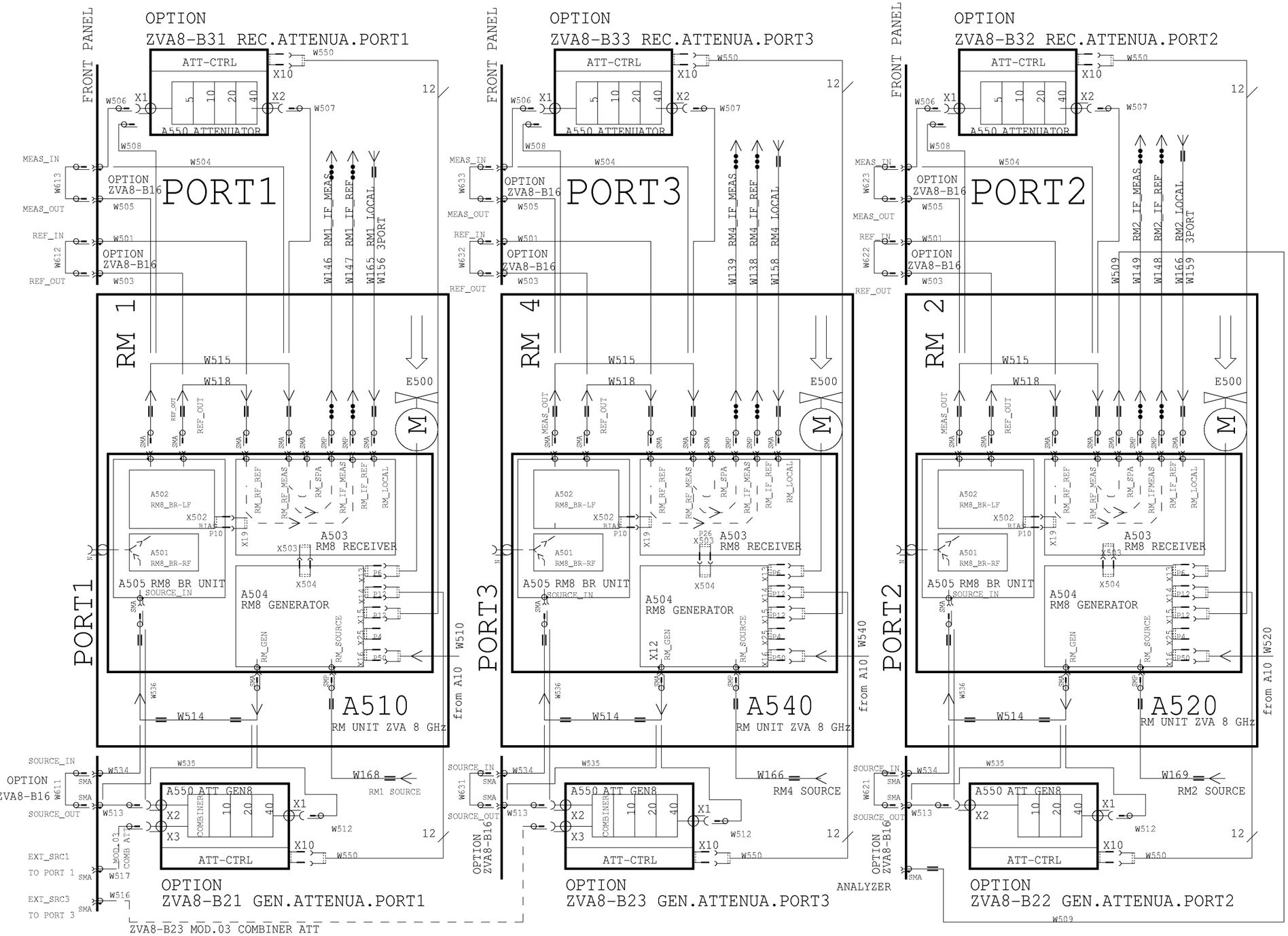
* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

& enthalten in / contained in DISPLAYEINHEIT ZVB / DISPLAY UNIT ZVB 1145.1384.01

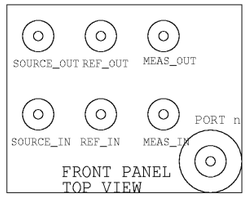
X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

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					Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		
ZVA	Datum: Date: 07-11-09	Abteilung: Dept.: 1ESK	Name: Name: schoettl				

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Ext Cables to A510, A520, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01



Legende / legend

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

MODELS
1145.1110.08 ZVA8 2PORT
1145.1110.09 ZVA8 3PORT

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 13.00	Blatt:/Sh.: 3 +
				Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		
ZVA	Datum: Date: 07-11-09	Abteilung: Dept.: 1ESK	Name: Name: schoettl			

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OPTION
ZVA8-B33 REC.ATTENUA.PORT3

OPTION
ZVA8-B31 REC.ATTENUA.PORT1

OPTION
ZVA8-B34 REC.ATTENUA.PORT4

OPTION
ZVA8-B32 REC.ATTENUA.PORT2

FRONT PANEL

ATT-CTRL

A550 ATT REC8

PORT3

PORT1

PORT4

PORT2

OPTION ZVA8-B16

RM 3

RM 1

RM 4

RM 2

A530
RM UNIT ZVA 8 GHz

A510
RM UNIT ZVA 8 GHz

A540
RM UNIT ZVA 8 GHz

A520
RM UNIT ZVA 8 GHz

A505 RM8 BR UNIT

A504
RM8 GENERATOR

A503
RM8 RECEIVER

A502
RM8_BR-LF

A501
RM8_BR-RF

A550 ATT GEN8

ATT-CTRL

OPTION
ZVA8-B23 GEN.ATTENUA.PORT3

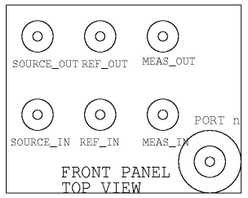
OPTION
ZVA8-B21 GEN.ATTENUA.PORT1

OPTION
ZVA8-B24 GEN.ATTENUA.PORT4

OPTION
ZVA8-B22 GEN.ATTENUA.PORT2

ZVA8-B23 MOD.03 COMBINER ATT

Ext Cables to A510, A520, A530, 540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01



Legende / legend

RM n = REFLECTOMETER n

semi rigid cable

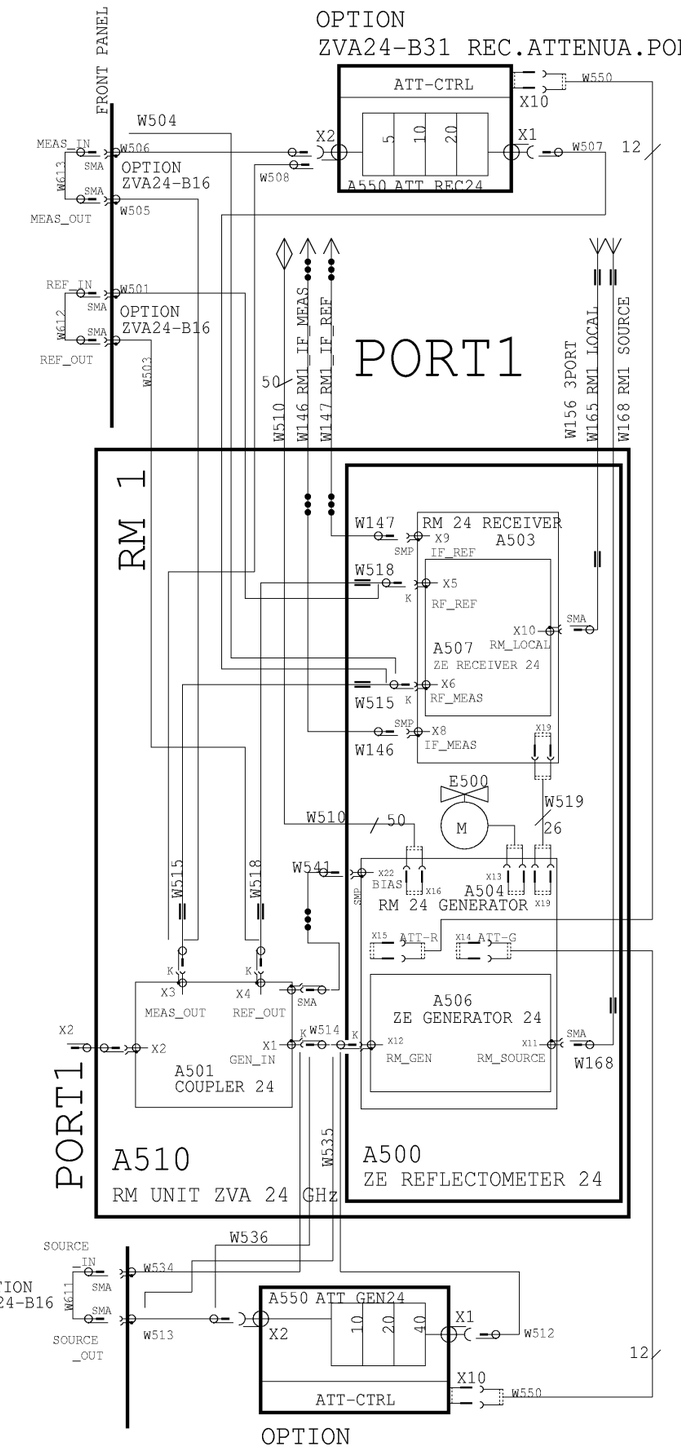
flex koax cable

MODEL
1145.1110.10 ZVA8 4PORT

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 13.00	Blatt:/Sh.: 4 +
				Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		
ZVA	Datum: Date: 07-11-09	Abteilung: Dept.: 1ESK	Name: Name: schoettl			

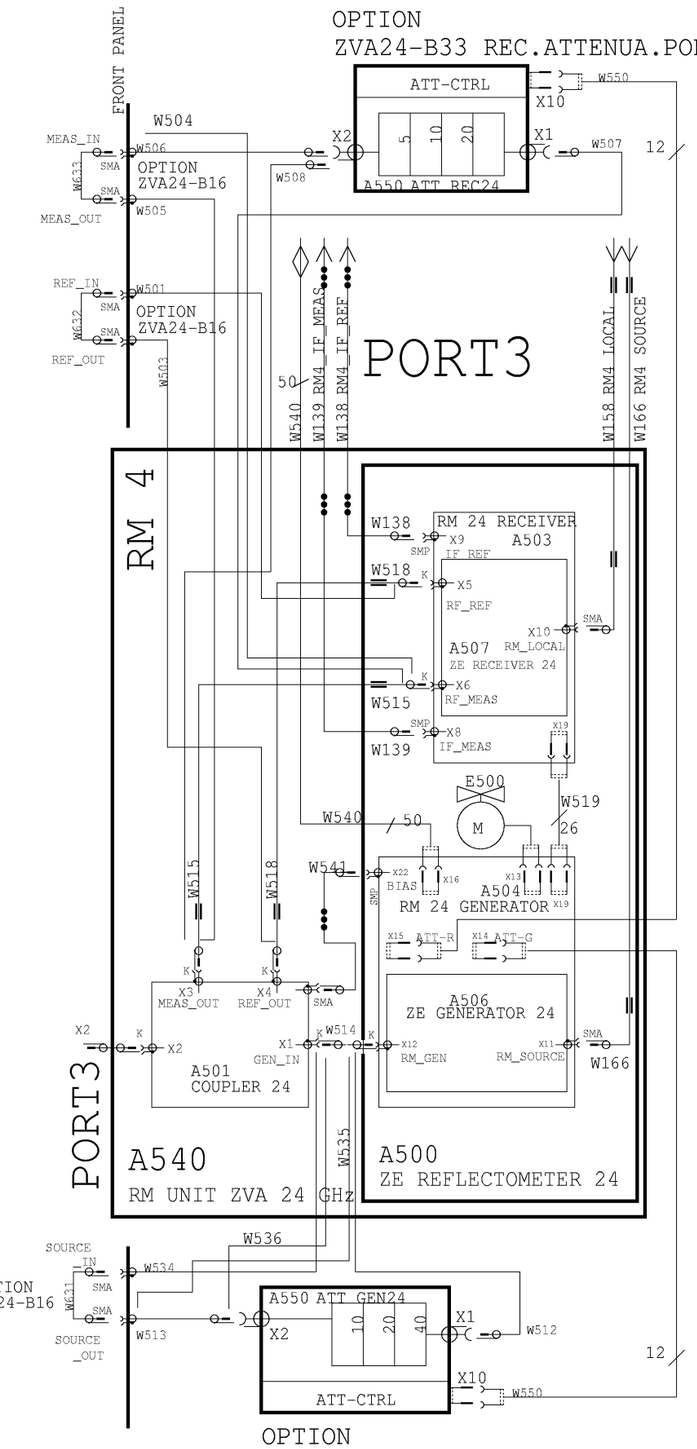
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OPTION
ZVA24-B31 REC.ATTENUA.PORT1



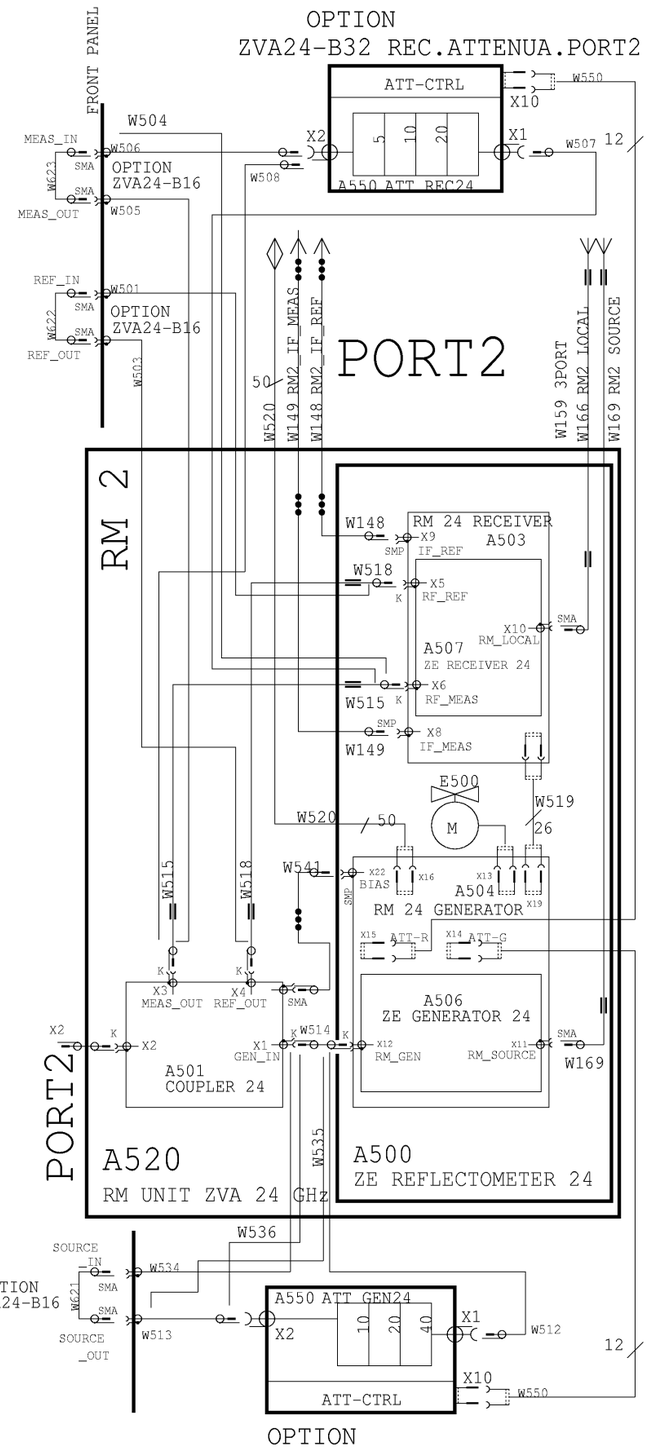
OPTION
ZVA24-B21 GEN.ATTENUA.PORT1

OPTION
ZVA24-B33 REC.ATTENUA.PORT3



OPTION
ZVA24-B23 GEN.ATTENUA.PORT3

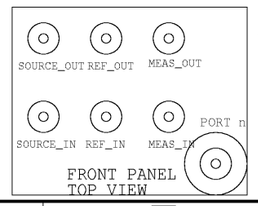
OPTION
ZVA24-B32 REC.ATTENUA.PORT2



OPTION
ZVA24-B22 GEN.ATTENUA.PORT2

MODELS 1145.1110.24 ZVA24 2PORT
1145.1110.25 ZVA24 3PORT

Ext Cables to A510, A520, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01



Legende / legend

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 13.00	Blatt:/Sh.: 5 +
				Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		
ZVA	Datum: Date: 07-11-09	Abteilung: Dept.: 1ESK	Name: Name: schoettl			

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OPTION
ZVA24-B33 REC.ATTENUA.PORT3

OPTION
ZVA24-B31 REC.ATTENUA.PORT1

OPTION
ZVA24-B34 REC.ATTENUA.PORT4

OPTION
ZVA24-B32 REC.ATTENUA.PORT2

FRONT PANEL

ATT-CTRL

A550 ATT REC24

OPTION ZVA24-B16

PORT3

PORT1

PORT4

PORT2

RM 3

RM 1

RM 4

RM 2

RM 24 RECEIVER A503

A507 ZE RECEIVER 24

A504 RM 24 GENERATOR

A506 ZE GENERATOR 24

A501 COUPLER 24

A530 RM UNIT ZVA 24 GHz

A510 RM UNIT ZVA 24 GHz

A540 RM UNIT ZVA 24 GHz

A520 RM UNIT ZVA 24 GHz

A500 ZE REFLECTOMETER 24

A550 ATT GEN24

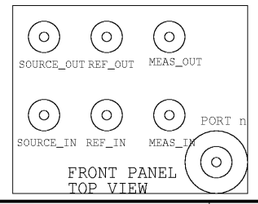
OPTION
ZVA24-B23 GEN.ATTENUA.PORT3

OPTION
ZVA24-B21 GEN.ATTENUA.PORT1

OPTION
ZVA24-B24 GEN.ATTENUA.PORT4

OPTION
ZVA24-B22 GEN.ATTENUA.PORT2

Ext Cables to A510, A520, A530, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01



Legende / legend

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

MODEL 1145.1110.26 ZVA24 4PORT

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 13.00	Blatt:/Sh.: 6 +
				Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		
ZVA	Datum: Date: 07-11-09	Abteilung: Dept.: 1ESK	Name: Name: schoettl			

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OPTION
ZVA40/50-B31 REC.ATTENUA.PORT1

FRONT PANEL
W504A
MEAS_IN
W506
SMA
W613
SMA
OPTION
ZVA40/50-B16
MEAS_OUT
W505
REF_IN
W501A
SMA
W612
SMA
OPTION
ZVA40/50-B16
REF_OUT
W503

ATT-CTRL
X10
W550
X2
5
10
20
X1
W507A
W508
A550 ATT REC44/50
12

PORT1

W146 RM1_IF_MEAS
W147 RM1_IF_REF
RM1 LOCAL W165
RM1 SOURCE W168

RM 1

W147
X9 IF_REF
SMP
A509 RM44 CONTROL
X15
ATT-R
W518A
X5
RF_REF
X10
SMA
A507 RM_LOCAL
ZE RECEIVER 44/50
X6
RF_MEAS
W515A
W146
X8 IF_MEAS
SMP
X17
E501
M
RM 40 GENERATOR
W700
4
50
W510
X18
X16
A506
ZE DRIVER 24
X11
SMA
X13
X17
E500
M
RM 40 GENERATOR
W541
X22
SMP BIAS
W512
W515A
W518A
SMP
X21
X3
MEAS_OUT
X4
REF_OUT
A508
ZE DOUBLER 44/50
X2
X2
X1
GEN_IN
X2
X1
W514A
X12
RM_GEN
X11
RM_SOURCE
A501
BL-KOPPLER 44/50
A502
BIAS44/50
ATT-G
X14
PORT1
A510
RM UNIT ZVA 40/50 GHz
W535A
A500
ZE REFLECTOMETER 40/50

SOURCE
_IN
W534
W536
SMA
W611
SMA
OPTION
ZVA40/50-B16
SOURCE
_OUT
W513
A550 ATT GEN44/50
X2
10
20
40
X1
W512A
12
X10
ATT-CTRL
W550

OPTION
ZVA40/50-B21 GEN.ATTENUA.PORT1

OPTION
ZVA40/50-B32 REC.ATTENUA.PORT2

FRONT PANEL
W504A
MEAS_IN
W506
SMA
W623
SMA
OPTION
ZVA40/50-B16
MEAS_OUT
W505
REF_IN
W501A
SMA
W622
SMA
OPTION
ZVA40/50-B16
REF_OUT
W503

ATT-CTRL
X10
W550
X2
5
10
20
X1
W507A
W508
A550 ATT REC44/50
12

PORT2

W149 RM2_IF_MEAS
W148 RM2_IF_REF
RM2 LOCAL W166
RM2 SOURCE W169

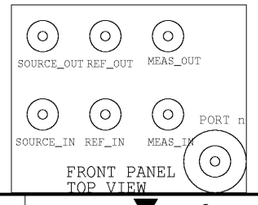
RM 2

W148
X9 IF_REF
SMP
A509 RM44 CONTROL
X15
ATT-R
W518A
X5
RF_REF
X10
SMA
A507 RM_LOCAL
ZE RECEIVER 44/50
X6
RF_MEAS
W515A
W149
X8 IF_MEAS
SMP
X17
E501
M
RM 40 GENERATOR
W710
4
50
W520
X18
X16
A506
ZE DRIVER 24
X11
SMA
X13
X17
E500
M
RM 40 GENERATOR
W541
X22
SMP BIAS
W512
W515A
W518A
SMP
X21
X3
MEAS_OUT
X4
REF_OUT
A508
ZE DOUBLER 44/50
X2
X2
X1
GEN_IN
X2
X1
W514A
X12
RM_GEN
X11
RM_SOURCE
A501
BL-KOPPLER 44/50
A502
BIAS44/50
ATT-G
X14
PORT2
A520
RM UNIT ZVA 40/50 GHz
W535A
A500
ZE REFLECTOMETER 40/50

SOURCE
_IN
W534
W536
SMA
W621
SMA
SOURCE
_OUT
W513
OPTION
ZVA40/50-B16
A550 ATT GEN44/50
X2
10
20
40
X1
W512A
12
X10
ATT-CTRL
W550

OPTION
ZVA40/50-B22 GEN.ATTENUA.PORT2

Ext Cables to A510, A520, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01

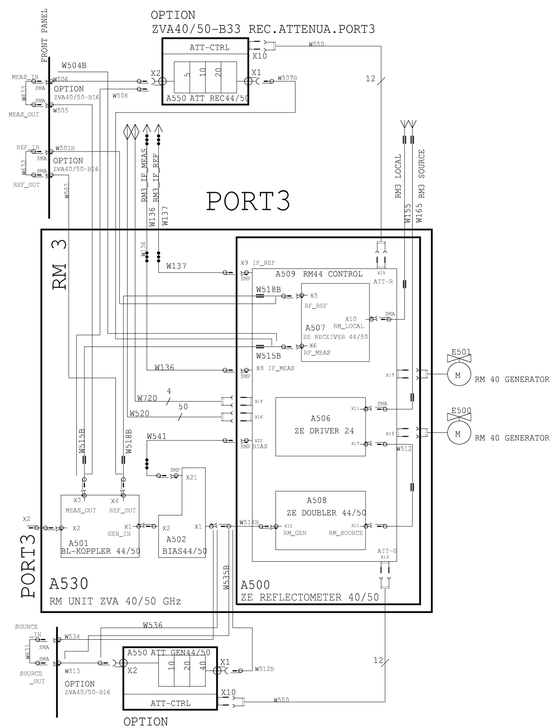


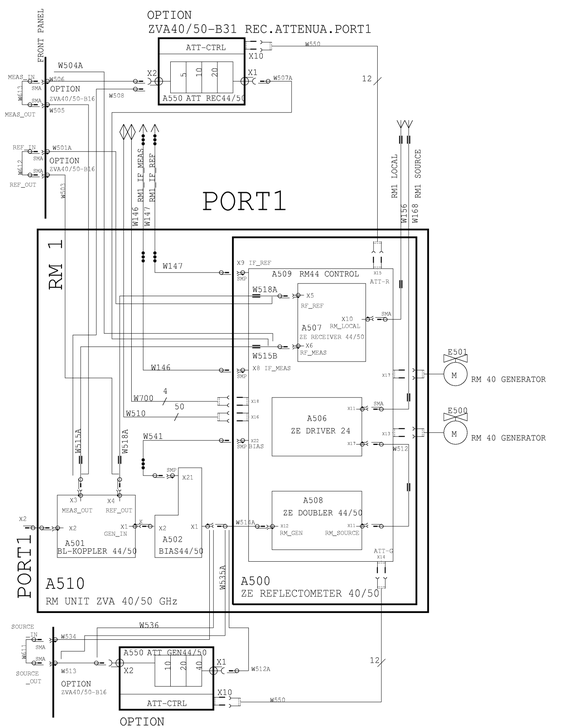
Legende / legend

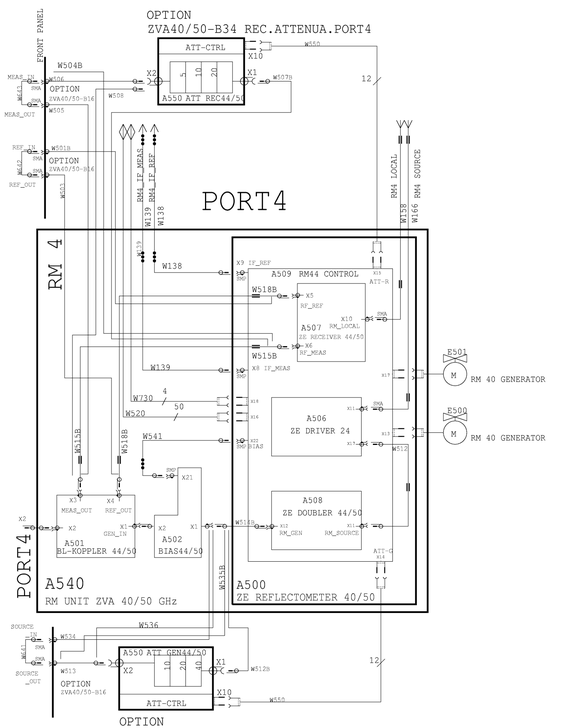
RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

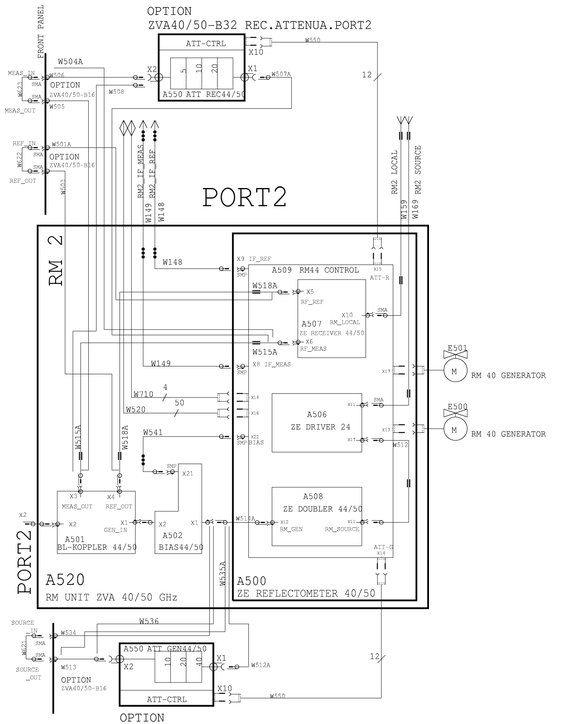
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				Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		
ZVA	Datum: Date: 07-11-09	Abteilung: Dept.: 1ESK	Name: Name: schoettl			

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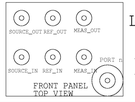








Ext Cables to A510, A520, A530, A540
enhalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01



Legende / legend

RM n = REFLECTOMETER n

semi rigid cable

flex koax cable

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe St.

For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.
ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

ROHDE&SCHWARZ

Benennung / Designat.:
ZVA NETWORK ANALYZER

Spr./Lang.: de | Aen/C.I.: 13.00 | Blatt/Bl.: 8 –

Zeichn.Nr./Drawing No.:
1145.1110.01 S

ZVA | Datum/ Date: 07-11-09 | Abteilungs Dept.: 1ESK | Name/ Name: schoett1

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
W100 &
A19 & DISPL. CONNECT FMR-TOSHIBA
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
& W70
W11 W13
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A90 * FRONT MODULE CONTROLER
Data ISA X90
PCI X91
I/O X92
X93
X94 TEST
X10 USB
LAN1 W241
LAN2 W242
A40 & USB X219
W12 *
A30 * Floppy
W300 *
OPTION ZVA-B8 POWER CONTROL
W245 REAR PANEL

A100 FREQUENCY REFERENCE
MOD.04 Without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
X103 HAZ_AD_CLK
X104 NA1_AD_CLK
X105 SY2_REF
X106 SY1_REF
X107 FR_REF_10_OUT/IN

OPTION STANDARD PCI

OPTION ZVAB-B14 UNIVERSAL I/O COMPACT PCI

A130 NETWORK CONTROLLER (2)
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .04 MOD.04/05
X141 X142 X143 X140 X144 X145 MA_AD_CLK X146 RMA_IF_MEAS X147 RMA_IF_REF X148 RMB_IF_REF X149 RMB_IF_MEAS

A140 NETWORK CONTROLLER (1)
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .04 MOD.04/05
X141 X142 X143 X140 X144 X145 MA_AD_CLK X146 RM1_IF_MEAS X147 RM1_IF_REF X148 RM2_IF_REF X149 RM2_IF_MEAS

A150 SYNTH-12GENERATOR
MOD.04
X155 0.9_OUT_3 X156 0.9_OUT_1 X160 X161 12MHZ IN X157 X158 0.9_OUT_2 X159 0.9_OUT_4

A160 SYNTH-12LOCAL
MOD.03
X165 0.9_OUT_3 X166 0.9_OUT_1 X160 X161 12MHZ IN X167 X168 0.9_OUT_2 X169 0.9_OUT_4

A10 * MOTHERBOARD
X100 X105 X106 X107 X110 X120 X131 X132 X133 X130 X134 X135 X141 X142 X143 X140 X144 X145 X146 X147 X148 X149 X155 X156 X150 X151 X157 X158 X159 X165 X166 X160 X161 X167 X168 X169 X23 X20 X22 X24 X25
W146 RM1_IF_MEAS W147 RM1_IF_REF W148 RM2_IF_REF W149 RM2_IF_MEAS
W158 RMT SOURCE W159 RM2 SOURCE W165 RMT LOCAL W166 RM2 LOCAL

X35 X36 X37 X(E1) X(E2) X(E3)
X511 X510 X531 X530 X541 X540 X521 X520
X30 X209 SUB D RS232 (COM)

A21 * AC FUSE BOARD
W200 POW UN (Z22) (W200)
X200 * LINE IN 100..240V 47...63 Hz 450 VA GND W201 *
A20 POWER SUPPLY X1/X2 W20 W22 W24 W25 W21
REAR PANEL

EXT TRIGGER X225 BNC
DIGITAL INTERFACE X221 P25 SUB D
USER CONTROL X220 P25 SUB D
CASCADE X219 P8
MONITOR X218 P15
NOISE SOURCE X201 BNC
10 MHz REF X210 BNC
REF_10_OUTIN
COMBINER X65
DC MEAS X211/X212 GNDA
DC MEAS X212 -10V...+10V
DC MEAS X211 -1V...+1V
X215 USB(2x)
X69 F5 IEC127 -F250L X201 BNC
F4 IEC127 -F250L X202 BNC
A18 PORT BIAS
X70
X68 W21 P24 IEC BUS
W245 P25 SUB D OPTION UNIVERSAL IO
W242 P8 X242 LAN2
W241 P8 X241 LAN1

MODELS		
1305.7002.02 ZVA67 DISPLAY-MB-REARPANEL	2PORT	Sheet 1
1305.7002.04 ZVA67 DISPLAY-MB-REARPANEL	4PORT	Sheet 2
1305.7002.02 RM UNIT + OPTION	2PORT	Sheet 3
1305.7002.04 RM UNIT + OPTION	4PORT	Sheet 4

4 50 W700 only ZVA40 W510 RM1_IF_MEAS W146 RM1_IF_REF W147 RM1 SOURCE W158 RM1 LOCAL W165
to A510
X18 X16 X8 X9 X10 X11
A510 RM UNIT
PORT 1

4 50 W710 only ZVA40 W520 RM2_IF_MEAS W149 RM2_IF_REF W148 RM2 SOURCE W159 RM2 LOCAL W166
to A520
X18 X16 X8 X9 X10 X11
A520 RM UNIT
PORT 2

Legende / legend

Cables to RM n
enthalten in / contained in KABELSATZ ZVA/ SET OF CABLE ZVB 1302.5050.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

& enthalten in / contained in DISPLAYEINHEIT ZVB DISPLAY UNIT ZVB 1145.1390.01

X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 05.00	Blatt:/Sh.: 1 +
ZVA	Datum: Date: 2009-11-05	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1305.7002.01 S		

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
A19 & DISPL. CONNECT FMR-TOSHIBA
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
W100 &
W11 W13 W70 &
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A90 * FRONT MODULE CONTROLER
Data Power ISA X90
PCI X91
I/O X92
X11 X8 X10 X219
LAN1 LAN2 USB
W241 W242
A40 & USB
W12 *
A30 * Floppy
W300 *
OPTION ZVA-B8 POWER CONTROL
P50

W245 REAR PANEL

A100 FREQUENCY REFERENCE
MOD.04 without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
X103 M2_AD_CLK
X104 M1_AD_CLK
X105 SY2_REF
X106 SY1_REF
X107 FR_REF_10_OUT/IN

OPTION STANDARD PCI

OPTION ZVAB-B14 UNIVERSAL I/O COMPACT PCI

A130 NETWORK CONTROLLER (2)
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .04 MOD.04/05
X141 X142 / X143 X140 X144 X145 M4_AD_CLK X146 RM4_IF_MEAS X147 RM4_IF_REF X148 RM3_IF_REF X149 RM3_IF_MEAS

A140 NETWORK CONTROLLER (1)
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .04 MOD.04/05
X141 X142 / X143 X140 X144 X145 M3_AD_CLK X146 RM4_IF_MEAS X147 RM4_IF_REF X148 RM3_IF_REF X149 RM3_IF_MEAS

A150 SYNTH-12-4SO
MOD.02
X165 0.9_OUT_3 X166 0.9_OUT_1 X160 X161 X167 128MHZ_IN X168 0.9_OUT_2 X169 LO_OUT_4

A160 SYNTH-12-4LO
MOD.02
X165 0.9_OUT_3 X166 0.9_OUT_1 X160 X161 X167 128MHZ_IN X168 0.9_OUT_2 X169 SO_OUT_4

A10 * MOTHERBOARD
X103 X104 X100 X105 X106 X107 X110 X120 X131 X132 X133 X130 X134 X135 X141 X142 X143 X140 X144 X145 XW555 X150 X151 X157 X158 X159 X165 X166 X160 X161 X167 X168 X169 X23 X20 X22 X24 X25
X90 X91 X92 X93 X30 X209 X35 X36 X37 X510 X530 X540 X520
W136/X136 W137/X137 W138/X138 W139/X139 W146/X146 W147/X147 W148/X148 W149/X149 W156 W168 W169
TEST X94
SUB D RS232 (COM)
X(E1) X(E2) X(E3)

A20 POWER SUPPLY X1/X2
W200 POW UN (Z22)
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201 * (W200)
A21 * AC FUSE BOARD
GND
REAR PANEL

EXT TRIGGER X225
DIGITAL INTERFACE X221
USER CONTROL X220
CASCADE X219
MONITOR X218
NOISE SOURCE X201
10 MHz REF X210
DC MEAS -10V...+10V X212
DC MEAS -1V...+1V X211
USB(2x) X215
COMBINER X65
REF_10_OUTIN
DC MEAS X211/X212

X69 F5 IEC127 -F250L X201 1
X70 F4 IEC127 -F250L X202 2
F3 IEC127 -F250L X203 3
F6 IEC127 -F250L X204 4
A18 PORT BIAS
A19 PORT BIAS
X68 IEC BUS
OPTION UNIVERSAL IO
LAN2 X242
LAN1 X241

50 W530 W136 RM3_IF_MEAS W137 RM3_IF_REF W156 RM3 SOURCE W166 RM3 LOCAL to A530
50 W510 W146 RM1_IF_MEAS W147 RM1_IF_REF W155 RM1 SOURCE W165 RM1 LOCAL to A510
50 W540 W139 RM4_IF_MEAS W138 RM4_IF_REF W158 RM4 SOURCE W168 RM4 LOCAL to A540
50 W520 W149 RM2_IF_MEAS W148 RM2_IF_REF W159 RM2 SOURCE W169 RM2 LOCAL to A520

X16 X8 X9 X10 X11
A530 RM UNIT PORT 3
A510 RM UNIT PORT 1
A540 RM UNIT PORT 4
A520 RM UNIT PORT 2

Legende / legend

Cables to RM n
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVB
1302.5050.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

* enthalten in / contained in
GRUNDEINHEIT ZVA /
FUNDAMENTAL UNIT
1145.1310.01

& enthalten in / contained in
DISPLAYEINHEIT ZVB
DISPLAY UNIT ZVB
1145.1384.01

X = E1, E2, E3
enthalten in / contained in
GERAETERAHMEN/
DEVICE FRAME
1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 05.00	Blatt:/Sh.: 2 +
ZVA	Datum: Date: 2009-11-05	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1305.7002.01 S		

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OPTION
ZVA67-B31 REC.ATTENUA.PORT1

FRONT PANEL
W504A
MEAS_IN
W506
OPTION
ZVA67-B16
W613
MEAS_OUT
W505
REF_IN
W501A
W612
REF_OUT
W503
W508
ATT-CTRL
X10
X2
X1
5
10
20
A550 ATT REC44/50
W550
W507A
12
RM1_IF_MEAS
RM1_IF_REF
RM1 LOCAL
RM1 SOURCE
W146
W147
W165
W168

PORT1

W147
X9 IF_REF
A509 RM67 CONTROL
X15 ATT-R
W518A
X5
RF_REF
X10 RM_LOCAL
A507
ZE RECEIVER 67
W515A
X6 RF_MEAS
W146
X8 IF_MEAS
E501
M
FAN1
W700
4
50
W510
X18
X16
A506
ZE DRIVER 42
X11
X13
X17
W512
E500
M
FAN2
W541
X22 BIAS
W515A
W518A
SMP
X21
X3 MEAS_OUT
X4 REF_OUT
A508
ZE DOUBLER 67
X12 RM_GEN
X11 RM_SOURCE
W514A
X2
X1 GEN_IN
A501
BL-KOPPLER 67
A502
BIAS 67
ATT-G
X14
W535A
A510
RM UNIT ZVA67
A500
ZE REFLECTOMETER 67

SOURCE_IN
W534
OPTION
ZVA40/50-B16
W611
SOURCE_OUT
W513
W536
A550 ATT GEN44/50
10
20
40
X1
X2
W512A
12
ATT-CTRL
X10
W550

OPTION
ZVA67-B21 GEN.ATTENUA.PORT1

OPTION
ZVA67-B32 REC.ATTENUA.PORT2

FRONT PANEL
W504A
MEAS_IN
W506
OPTION
ZVA67-B16
W623
MEAS_OUT
W505
REF_IN
W501A
W622
REF_OUT
W503
W508
ATT-CTRL
X10
X2
X1
5
10
20
A550 ATT REC44/50
W550
W507A
12
RM2_IF_MEAS
RM2_IF_REF
RM2 LOCAL
RM2 SOURCE
W149
W148
W166
W169

PORT2

W148
X9 IF_REF
A509 RM67 CONTROL
X15 ATT-R
W518A
X5
RF_REF
X10 RM_LOCAL
A507
ZE RECEIVER 67
W515A
X6 RF_MEAS
W149
X8 IF_MEAS
E501
M
FAN1
W710
4
50
W520
X18
X16
A506
ZE DRIVER 42
X11
X13
X17
W512
E500
M
FAN2
W541
X22 BIAS
W515A
W518A
SMP
X21
X3 MEAS_OUT
X4 REF_OUT
A508
ZE DOUBLER 67
X12 RM_GEN
X11 RM_SOURCE
W514A
X2
X1 GEN_IN
A501
BL-KOPPLER 67
A502
BIAS 67
ATT-G
X14
W535A
A520
RM UNIT ZVA67
A500
ZE REFLECTOMETER 67

SOURCE_IN
W534
OPTION
ZVA40/50-B16
W621
SOURCE_OUT
W513
W536
A550 ATT GEN44/50
10
20
40
X1
X2
W512A
12
ATT-CTRL
X10
W550

OPTION
ZVA67-B22 GEN.ATTENUA.PORT2

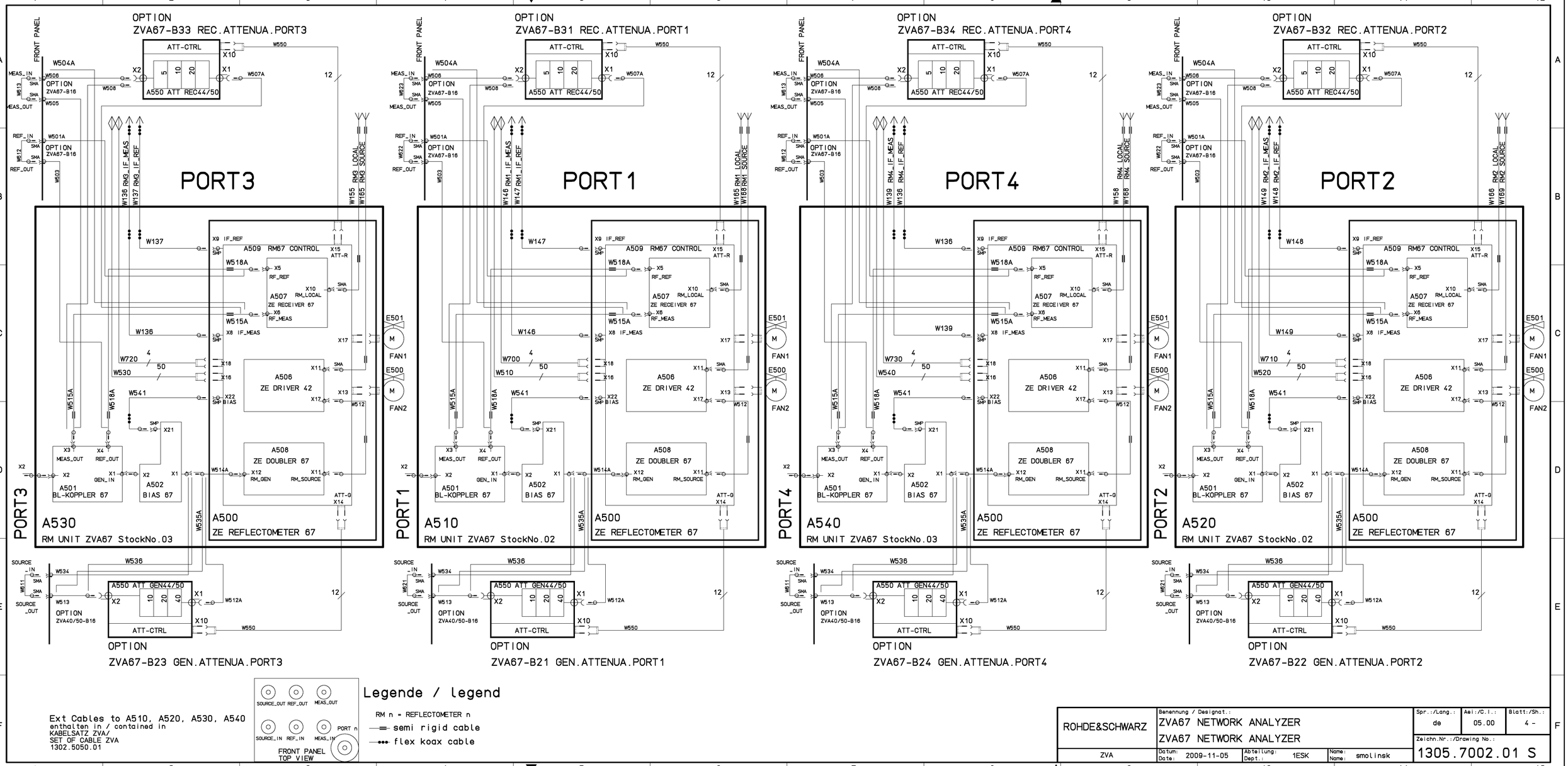
Ext Cables to A510, A520, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01

SOURCE_OUT REF_OUT MEAS_OUT
SOURCE_IN REF_IN MEAS_IN
PORT n
FRONT PANEL
TOP VIEW

Legende / legend

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 05.00	Blatt:/Sh.: 3 +
ZVA	Datum: Date: 2009-11-05	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1305.7002.01 S		



Ext Cables to A510, A520, A530, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01

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ROHDE&SCHWARZ	Benennung / Designat.: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER	Spr.:/Lang.: de	Aei.:/C.I.: 05.00
			Blatt:/Sh.: 4 -
ZVA	Datum: Date: 2009-11-05	Abteilung: Dept.: 1ESK	Name: smolinsk
			Zeichn.Nr.:/Drawing No.: 1305.7002.01 S

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
A19 & DISPL. CONNECT FMR-TOSHIBA
W100 &
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
A100 FREQUENCY REFERENCE MOD.04 without-B4
OPTION ZVAB-B4 OVENQUARZ
OPTION STANDARD PCI
OPTION COMPACT PCI
A130 NETWORK CONTROLLER (2) MOD.04 Switchable Dither Generator
A141 NETCON DIGITAL StockNo .02 MOD.02/04 StockNo .03 MOD.05
A142 NETCON ANALOG StockNo .02 MOD.02 StockNo .04 MOD.04/05
A140 NETWORK CONTROLLER (1) MOD.04 Switchable Dither Generator
A150 SYNTH-LO (2) MOD.20
A160 SYNTH-DS (1) MOD.02
W200 POW UN
A21* AC FUSE BOARD
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201
GND
* A20 POWER SUPPLY
REAR PANEL
A10 * MOTHERBOARD
A90 * FRONT MODULE CONTROLER
Data ISA X90
PCI X91
I/O X92
X93
TEST X94
LAN1 W241
LAN2 W242
USB
A40 & USB X219
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A30 * Floppy
W300 *
X (E1) X (E2) X (E3)
W700
COMBINER X65
REF_10_OUTIN
DC MEAS X211/ X212
EXT TRIGGER X225
DIGITAL INTERFACE X221
USER CONTROL X220
CASCADE X219
MONITOR X218
NOISE SOURCE X201
10 MHz REF X210
DC MEAS -10V...+10V X212
DC MEAS -1V...+1V X211
USB(2x) X215
IEC60127 -F250L F5
IEC60127 -F250L F4
BNC X201
BNC X202
PORT BIAS
A18 PORT BIAS
(rear panel plate)
IEC BUS X68
OPTION UNIVERSAL IO
LAN2 X242
LAN1 X241

W530 RM3_IF_MEAS W136 RM3_IF_REF W137 RM3 LOCAL W155 RM3 SOURCE W165 — to A530 — X16 X8 X9 X10 X11
W510 W700 RM1_IF_MEAS W146 RM1_IF_REF W147 RM1 LOCAL W156 RM1 SOURCE W168 — to A510 — X18 X16 X8 X9 X10 X11
W540 RM4_IF_MEAS W139 RM4_IF_REF W138 RM4 LOCAL W158 RM4 SOURCE W166 — to A540 — X16 X8 X9 X10 X11
W520 W700 RM2_IF_MEAS W149 RM2_IF_REF W148 RM2 LOCAL W159 RM2 SOURCE W169 — to A520 — X18 X16 X8 X9 X10 X11

SOURCE_OUT REF_IN MEAS_IN 3 — FRONT PANEL TOP VIEW — PORT 3
SOURCE_OUT REF_OUT MEAS_OUT PORT SOURCE_IN REF_IN MEAS_IN 1 — FRONT PANEL TOP VIEW — PORT 1
SOURCE_OUT REF_IN MEAS_IN PORT 4 — FRONT PANEL TOP VIEW — PORT 4
SOURCE_OUT REF_OUT MEAS_OUT PORT SOURCE_IN REF_IN MEAS_IN 2 — FRONT PANEL TOP VIEW — PORT 2

Sheet 1	DISPLAY-MB-REARPANEL
Sheet 2	PORT1 / 3 REFLECTOMETER
Sheet 3	PORT2 / 4 REFLECTOMETER
Sheet 4	FRONT ZVA80-BU with ZVA-Z75 + DIPLEXER80 (left)
Sheet 5	FRONT ZVA80-BU with ZVA-Z75 + DIPLEXER80 (right)

Legende / legend

Cables to RM n
enthalten in / contained in
SET OF CABLE ZVA80 2PORT
1312.6566.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

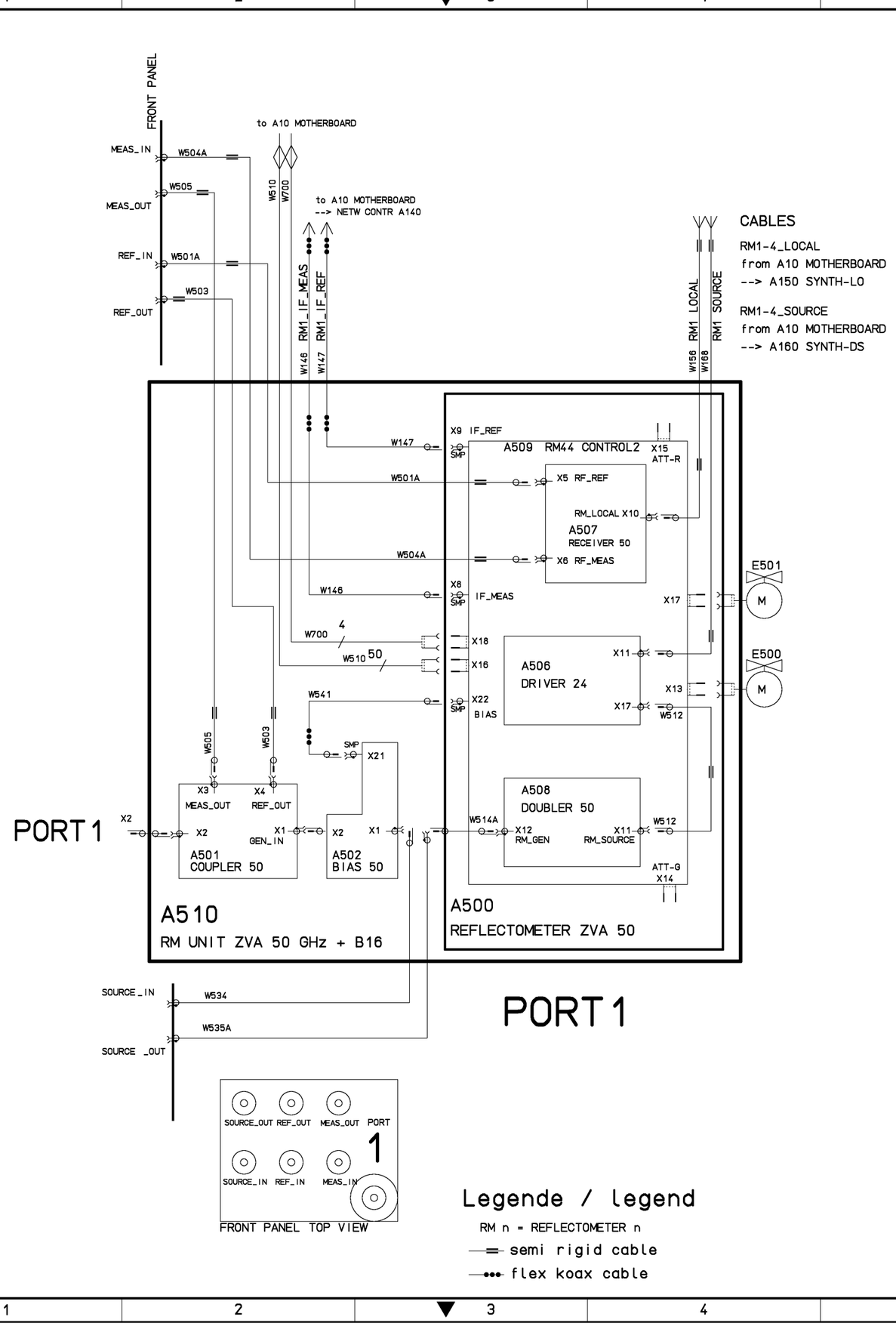
* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

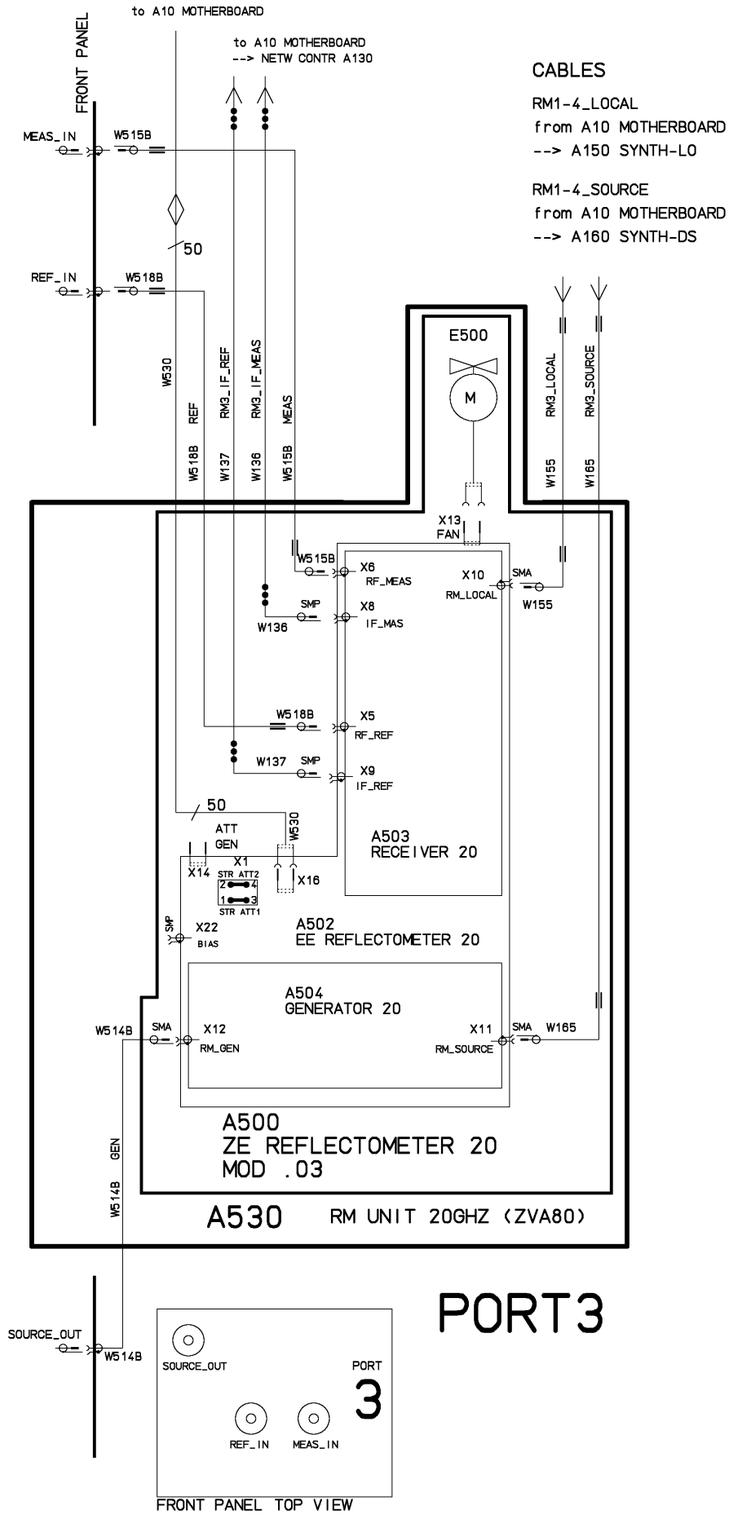
& enthalten in / contained in DISPLAYEINHEIT ZVA DISPLAY UNIT ZVA 1145.1390.01

X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 1 +
ZVA80	Datum: / Date: 2009-07-09	Abteilung: / Dept.: 1ESK	Name: / Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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Legende / legend

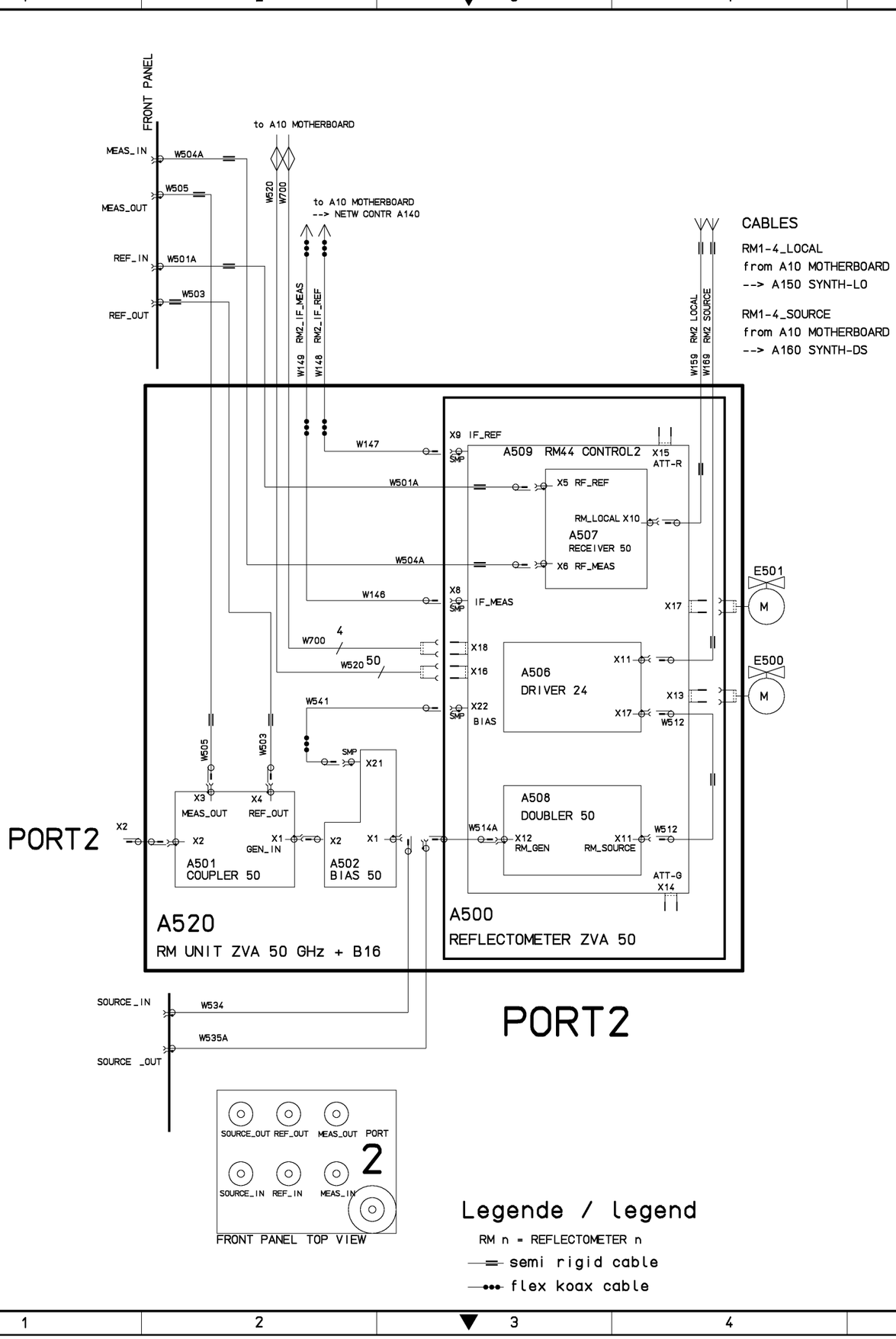
RM n = REFLECTOMETER n

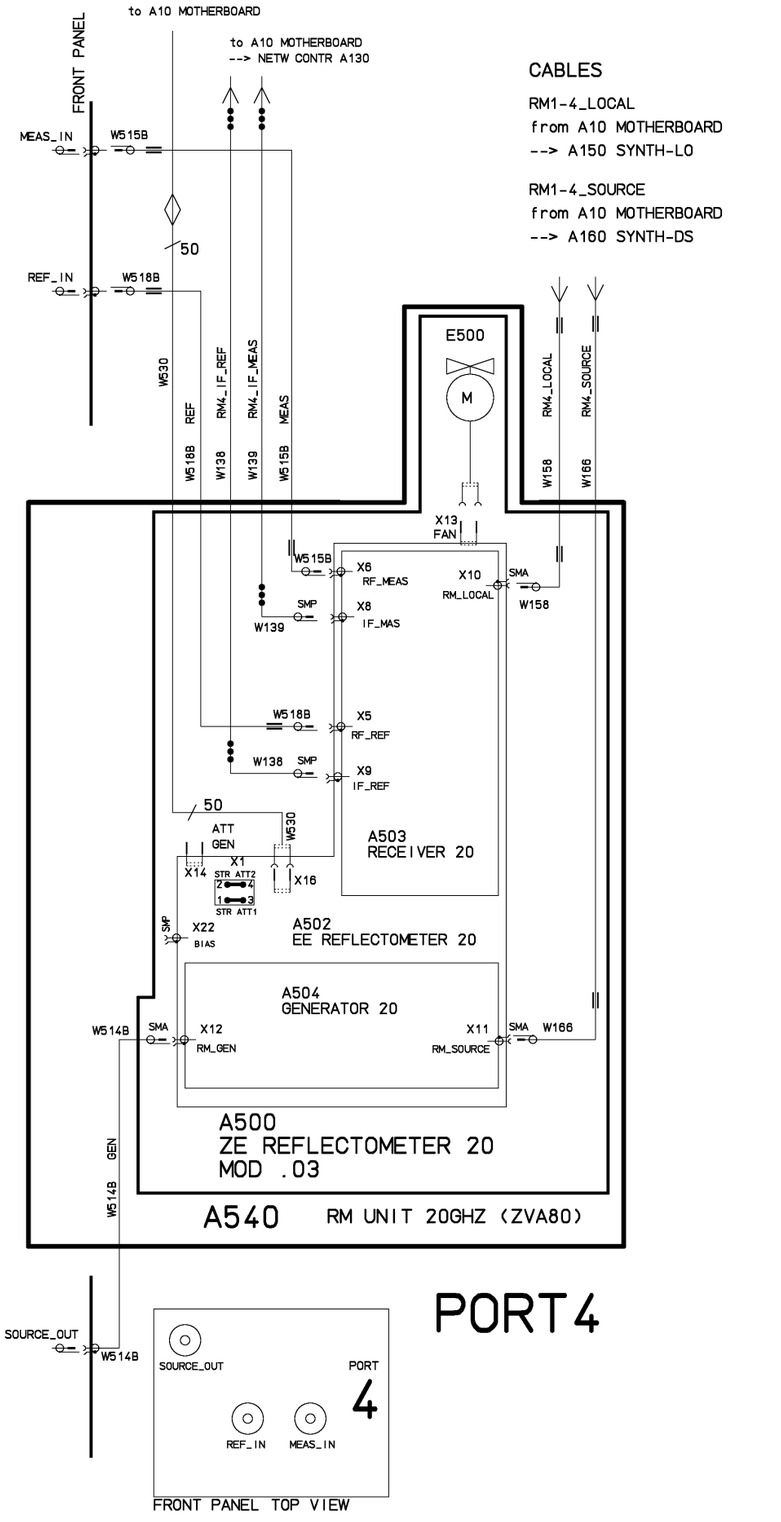
semi rigid cable

flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 2 +
ZVA80	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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Legende / legend

RM n = REFLECTOMETER n

semi rigid cable

flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 3 +
ZVA80	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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FRONT PANEL ZVA80-BU TOP VIEW

to REAR PANEL USER PORT

ZV-Z193 RF-CABLE 3,5MM

CABLE EXT REF

CABLE EXT MEAS

SOURCE_OUT REF_OUT MEAS_OUT SOURCE_IN REF_IN MEAS_IN PORT 3 PORT 1 PORT 4 PORT 2

REF OUT

W4

S200

A200 N-BOARD2

grn

yel

A210 POWER SUPPLY

1=PW8V 2=MAS X202 4P 1=red 2=sw (W202) 2 PW8V

1=PWIN 2=PWOUT X201 2P 1=red 2=vio

X200

F200 T1 IEC127-2/V red 2 W201 (W201) vio

RF IN W1

X200 W100 X100

LO IN W2

MEAS W3

M=6 x2 x3 PW8V

R4 3dB +20dB blk red PW8V N=8

W202 2

+10dB PW8V

R3 3dB +20dB PW8V N=8

A100 REFLECTOMETER WR15

ZVA-Z75 REFLECTOMETER WR15-BAND
1307.7400.80

RF-CABLE RF LOW 12

ZV-Z196 RF-CABLE 1.85MM

BIAS BNC

REF OUT LOW RF IN LOW/ HIGH MEAS OUT LOW

A31 COMBINER 80 A+C UNIT

1mm (male)

COMBINER 80 B UNIT A32

A30 UNIT COMBINER 80

A1 BD SWITCH 70 X1 X2 X3 X4 X5

A10 ED SWITCH 70 X6 X7 X8 P8 P4 P2 grn

K RF HIGH OUT

H/L SWITCH

vio red F1 T1 IEC127-2/V

A20 SWITCH 70-AMP

DIPLEXER80 W-BAND (LEFT)
1311.6504.12

H/L SWICH CABLE

Legende

= WAVEGUIDE WR-15

= WAVEGUIDE WR-15

= flex koax cable

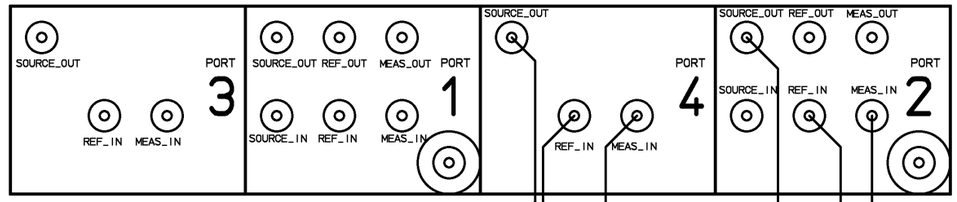
= semi rigid cable

= GORE Phaseflex

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 4 +
ZVA80	Datum: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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FRONT PANEL ZVA80-BU TOP VIEW



ZV-Z193 RF-CABLE 3,5MM

CABLE EXT REF

CABLE EXT MEAS

ZV-Z196 RF-CABLE 1,85MM

ZV-Z196 RF-CABLE 1,85MM

ZV-Z196 RF-CABLE 1,85MM

REF OUT

W4

S200

A200
N-BOARD2

grn

yel

A210
POWER
SUPPLY

1=PW8V
2=MAS
X202

4P
1=red
2=sw

⟨W202⟩ 2 PW8V

1=PWIN
2=PWOUT
X201

2P
1=red
2=vio

X200

F200
T1 IEC127-2/V

red 2 W201

vio
⟨W201⟩

RF IN

W1

x2

x3

PW8V

X200

W100

X100

LO IN

W2

+10dB

PW8V

MEAS

W3

PW8V

R3

3dB

+20dB

M=6

R4

3dB

+20dB

blk

red PW8V

W202 2

N=8

N=8

A100 REFLECTOMETER WR15

ZVA-Z75 REFLECTOMETER WR15-BAND
1307.7400.80

RF-CABLE RF LOW 18

BIAS

REF OUT LOW

RF IN LOW/HIGH

MEAS OUT LOW

BNC

A31
COMBINER 80 A+C UNIT

1mm (male)

COMBINER 80
B UNIT
A32

A30 UNIT COMBINER 80

A1
BD SWITCH 70
X5 X1 X2 X4 X3

A10 ED SWITCH 70
X6 X7 X8
P6 P4 P2

grn

vio
red

F1
T1 IEC127-2/V

K
RF
HIGH
OUT

H/L
SWITCH

A20 SWITCH 70-AMP

DIPLEXER80 W-BAND ⟨RIGHT⟩
1311.6504.18

Legende

= WAVEGUIDE WR-15

= WAVEGUIDE WR-15

= flex koax cable

= semi rigid cable

= GORE Phaseflex

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 03.00	Blatt:/Sh.: 5 -
ZVA80	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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FRONT PANEL ZVA67

to REAR PANEL
USER PORT

ZV-Z193 RF-CABLE 3,5MM

LO to external
TestSet (left)

CABLE EXT REF

CABLE EXT MEAS

(W202) 2 PW8V
4P
1=red
2=sw

WILKINSON

LO to external
TestSet (right)

CABLE POWER Z75

REF OUT

W4

S200

A200
N-BOARD2

grn

yel

A210
POWER
SUPPLY

1=PW8V
2=MAS
X202

1=PWIN
2=PWOUT
X201

X200

2P
1=red
2=vio

F200
T1 IEC127-2/V

red 2 W201
(W201)
vio

RF IN

W1

X200

W100

X100

LO IN

W2

MEAS

W3

EL ATT
3P
2

W4

W202 2 PW8V
4P
1=red
2=sw

+20dB
blk
red PW8V

N=8

W202 2

M=6

x2

x3

PW8V

+10dB
PW8V

PW8V
+20dB

N=8

ZVA-Z110 REFLECTOMETER W-BAND
1307.7000.40

A100 REFLECTOMETER WR10 ELATT

RF-CABLE RF HIGH

BIAS
BNC

ZV-Z196 RF-CABLE 1,85MM
REF OUT LOW

ZV-Z196 RF-CABLE 1,85MM
RF IN LOW/ HIGH

ZV-Z196 RF-CABLE 1,85MM
MEAS OUT LOW

A31
COMBINER 110 A+C UNIT

1mm (male)

COMBINER 110
B UNIT
A32

A30 UNIT COMBINER 110

A1
BD SWITCH 70
X2
X1
X3
X5 X1 X2 X4 X3

K
RF
HIGH
OUT

A10 ED SWITCH 70
X6 X7 X8
P6 P4 P2
grn

vio
red
F1
T1 IEC127-2/V

2
H/L
SWITCH

A20 SWITCH 70-AMP

ZVA-ZD110 DIPLEXER110 W-BAND (LEFT)
1314.4002.12

H/L SWICH CABLE

Legende

= WAVEGUIDE WR-10

= WAVEGUIDE WR-10

= flex koax cable

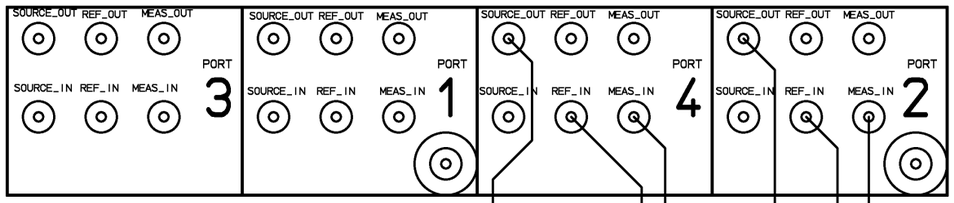
= semi rigid cable

= GORE Phaseflex

ROHDE&SCHWARZ	Benennung / Designat.: ZVA110 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 06.00	Blatt:/Sh.: 1 +
	ZVA110 VECT. NETW. ANALYZER			Zeichn.Nr.:/Drawing No.: 1312.7004.01 S		
ZVA110	Datum: Date: 2011-01-25	Abteilung: Dept.: 1EST1	Name: Name: smolinsk			

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FRONT PANEL ZVA67



LO to external TestSet (left)

WILKINSON

ZV-Z193 RF-CABLE 3,5MM

CABLE EXT REF

CABLE EXT MEAS

ZV-Z196 RF-CABLE 1,85MM

ZV-Z196 RF-CABLE 1,85MM

ZV-Z196 RF-CABLE 1,85MM

CABLE POWER Z75

REF OUT

W4

S200

A200
N-BOARD2

grn

yel

A210
POWER
SUPPLY

1=PW8V
2=MAS
X202

1=PWIN
2=PWOUT
X201

X200

F200
T1 IEC127-2/V

(W201)

red

vio

2

W201

W202 2 PW8V

4P
1=red
2=sw

2P
1=red
2=vio

+20dB

blk

red

PW8V

N=8

M=6

RF IN

W1

x2

x3

PW8V

X200

W100

X100

LO IN

W2

+10dB

PW8V

MEAS

W3

PW8V

+20dB

EL ATT

3P

2

N=8

ZVA-Z110 REFLECTOMETER W-BAND
1307.7000.40

A100 REFLECTOMETER WR10 ELATT

RF-CABLE RF HIGH

BIAS

REF OUT LOW

RF IN LOW/HIGH

MEAS OUT LOW

BNC

A31
COMBINER 110 A+C UNIT

1mm (male)

COMBINER 110
B UNIT
A32

A30 UNIT COMBINER 110

A1
BD SWITCH 70

X1 X2 X3 X4 X5

A10 ED SWITCH 70
X6 X7 X8

P6 P4 P2

grn

RF
HIGH
OUT

H/L
SWITCH

vio

red

F1
T1 IEC127-2/V

A20 SWITCH 70-AMP

ZVA-ZD110 DIPLEXER110 W-BAND (RIGHT)
1314.4002.18

Legende

= WAVEGUIDE WR-10

= WAVEGUIDE WR-10

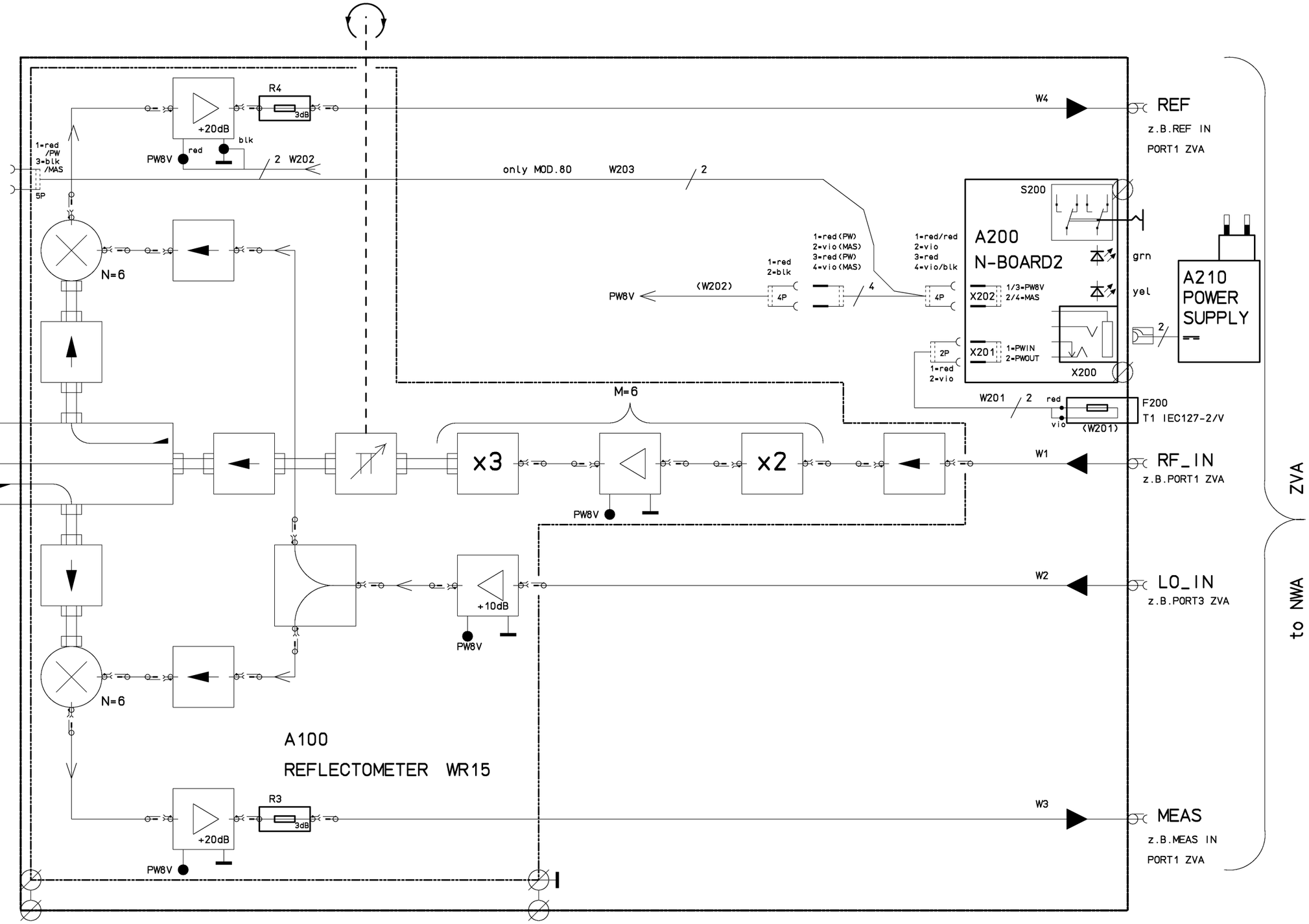
= flex koax cable

= semi rigid cable

= GORE Phaseflex

ROHDE&SCHWARZ	Benennung / Designat.: ZVA110 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 06.00	Blatt:/Sh.: 2 -
	ZVA110 VECT. NETW. ANALYZER			Zeichn.Nr.:/Drawing No.: 1312.7004.01 S		
ZVA110	Datum: Date: 2011-01-25	Abteilung: Dept.: 1EST1	Name: Name: smolinsk			

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Legende

= WAVEGUIDE WR-15

= KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

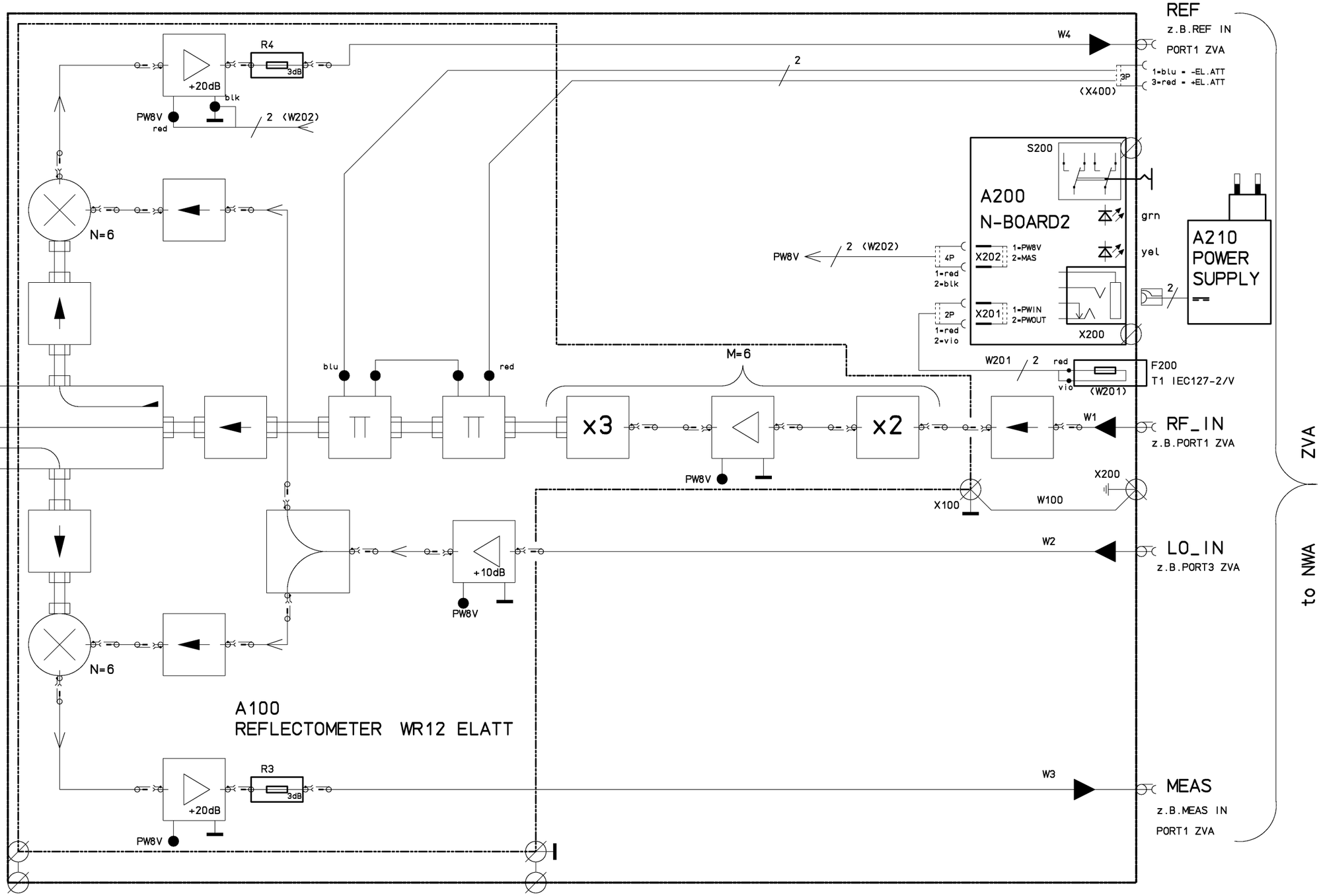
For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z75 REFLEKTOMETER WR15-BAND ZVA-Z75 REFLECTOMETER WR15-BAND				Spr.:/Lang.: de	Aei:/C.I.: 01.00	Blatt:/Sh.: 1 -
ZVA-Z75	Datum: Date: 2009-08-11	Abteilung: Dept.: 1ESK	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7400.01 S		

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Legende

= WAVEGUIDE WR-12

= KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

For binding information on models, trimming and components values and nonfitted components see parts list.

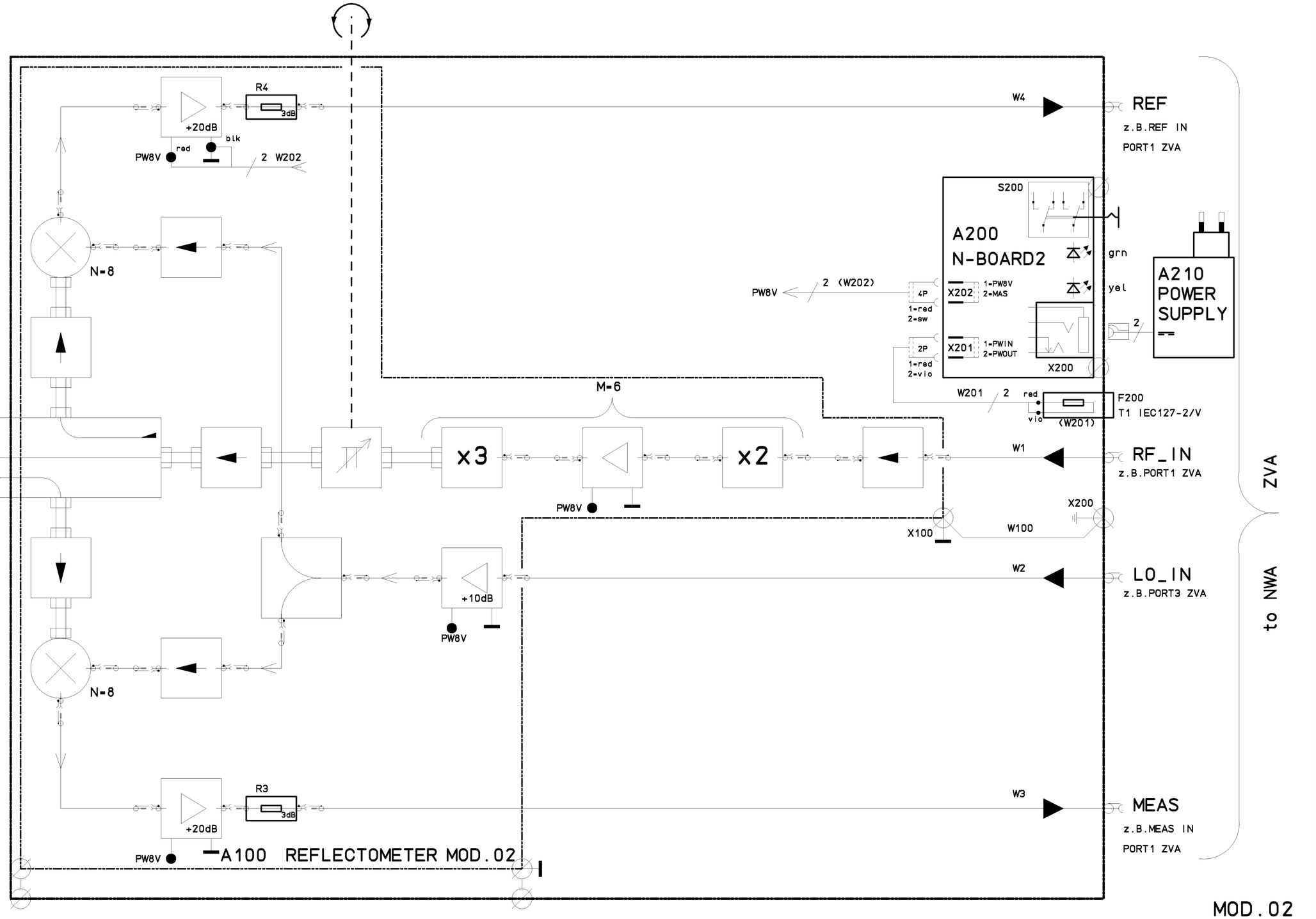
ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

MOD.02

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z90E REFLEKTOMETER WR12-BAND ZVA-Z90E REFLECTOMETER WR12-BAND				Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 1 -
ZVA-Z90E	Datum: Date: 2009-06-04	Abteilung: Dept.: 1EST1	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7600.01 S		

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MOD.02

Legende

- WAVEGUIDE WR-10
- KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

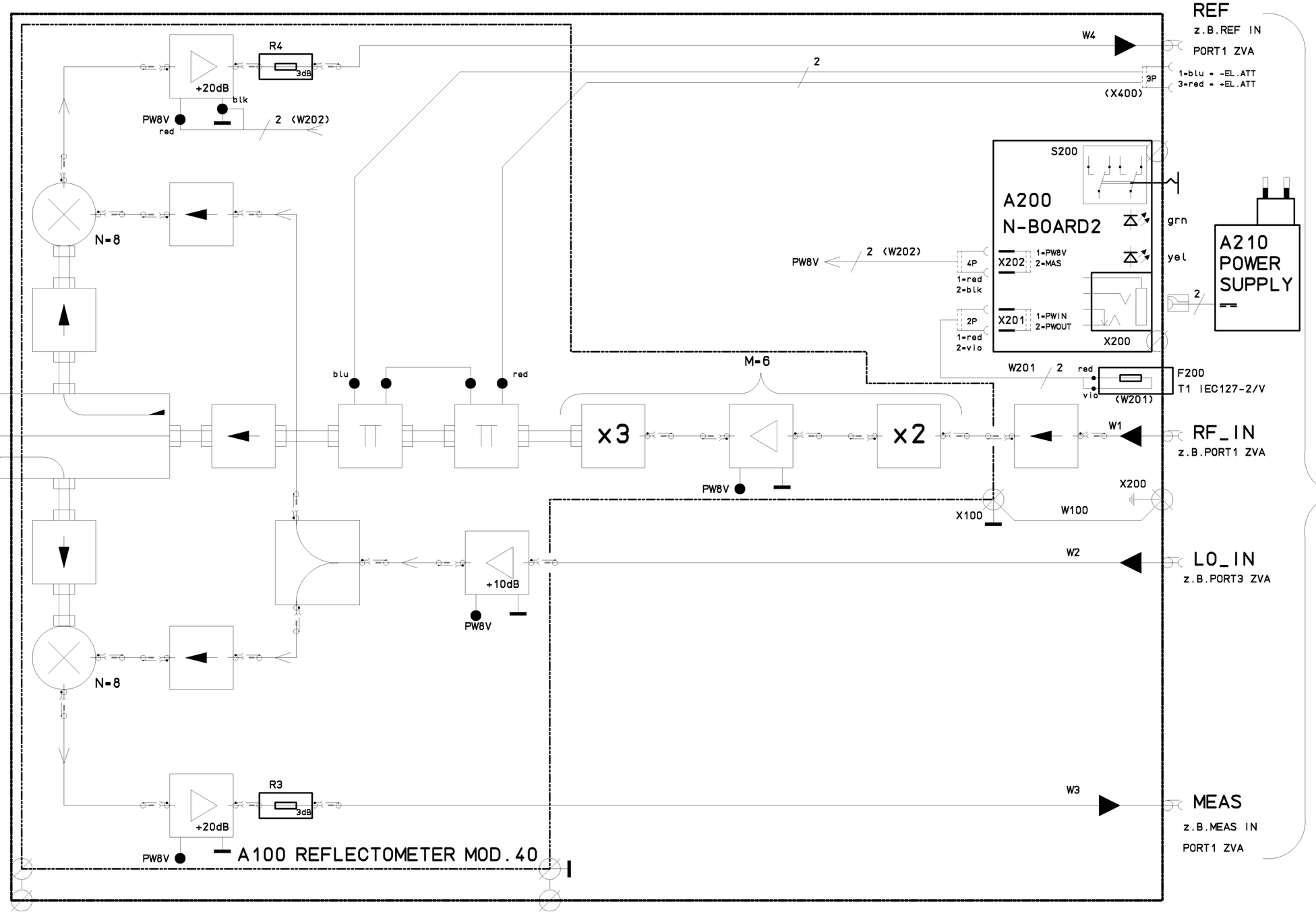
For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z110 REFLEKTOMETER W-BAND ZVA-Z110 REFLECTOMETER W-BAND			Spr.:/Lang.: de	Aei:/C.i.: 03.00	Blatt:/Sh.: 1 +
ZVA-Z110	Datum: 08-12-02	Abteilung: 1ESK	Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1307.7000.01 S		

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Legende

- WAVEGUIDE WR-10
- KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

For binding information on models, trimming and components values and nonfitted components see parts list.

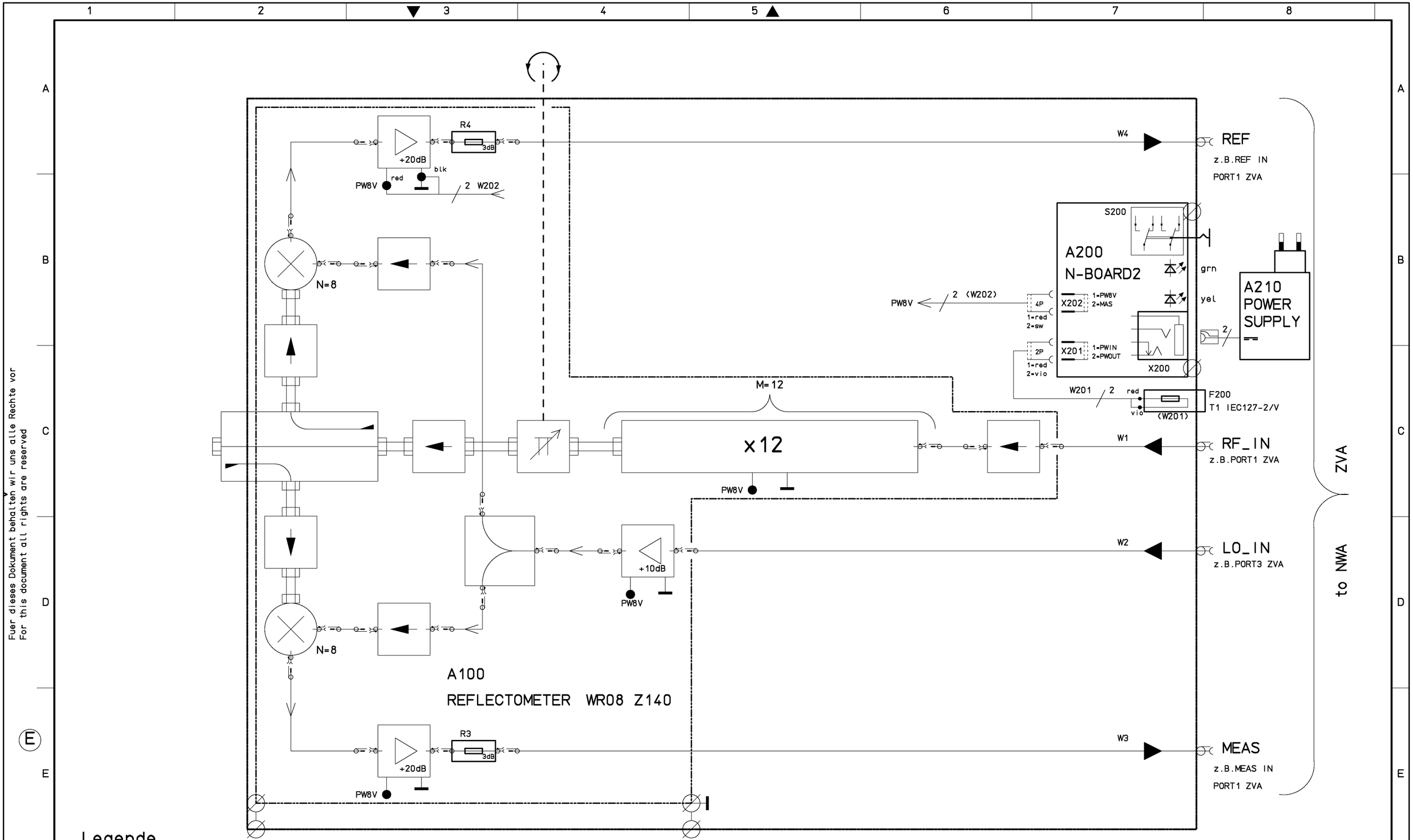
ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

MOD.40

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z110 REFLEKTOMETER W-BAND ZVA-Z110 REFLECTOMETER W-BAND				Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 2 -
ZVA-Z110	Datum: Date: 08-12-02	Abteilung: Dept.: 1ESK	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7000.01 S		

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Legende

= WAVEGUIDE WR-08

= KOAX CON

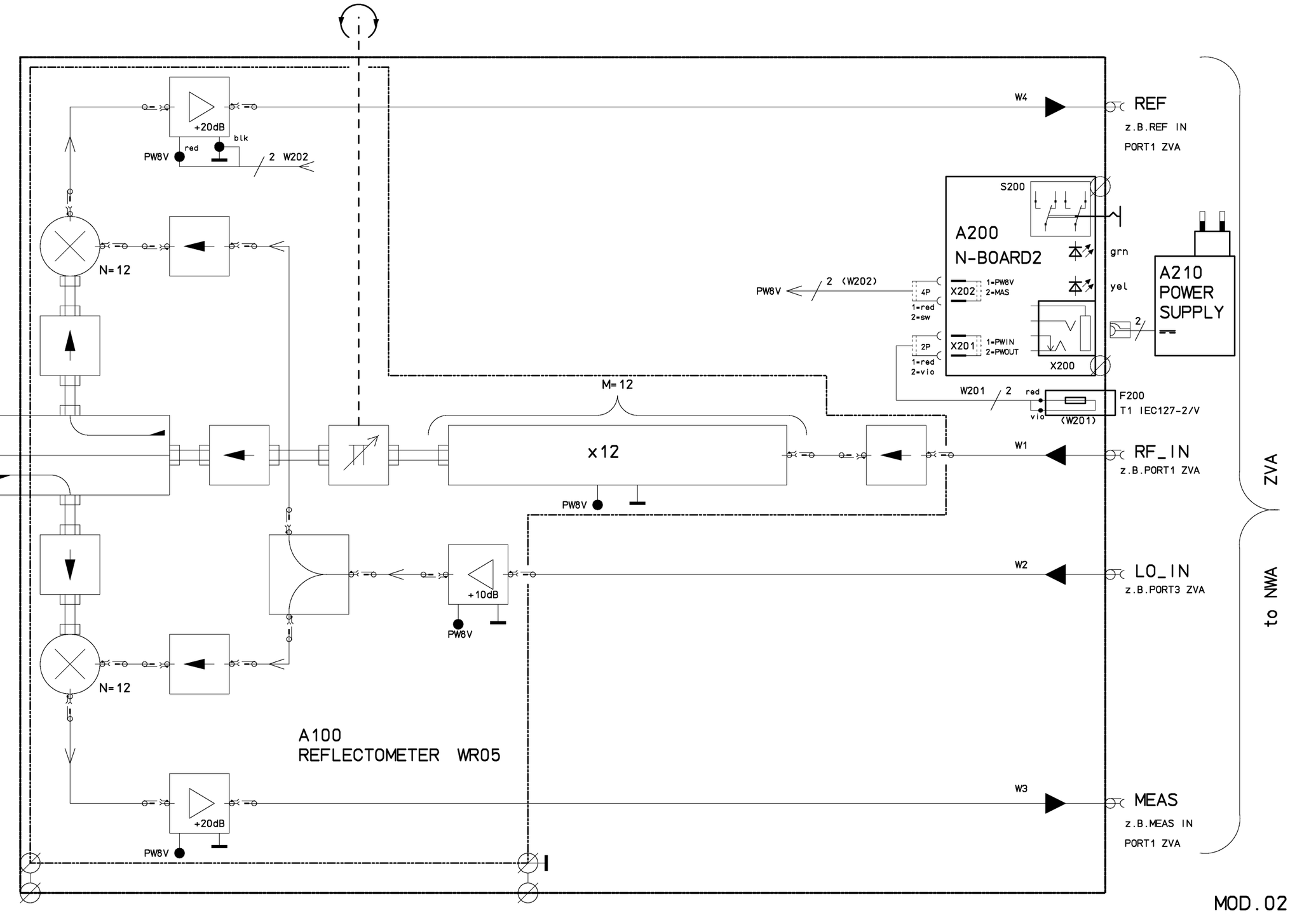
Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.
ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z140 REFLEKTOMETER WR08-BAND ZVA-Z140 REFLECTOMETER WR08-BAND				Spr.:/Lang.: de	Aei:/C.i.: 04.00	Blatt:/Sh.: 1 -
ZVA-Z140	Datum: Date: 2009-08-11	Abteilung: Dept.: 1ESK	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7800.01 S		

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Legende

= WAVEGUIDE WR-05

= KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

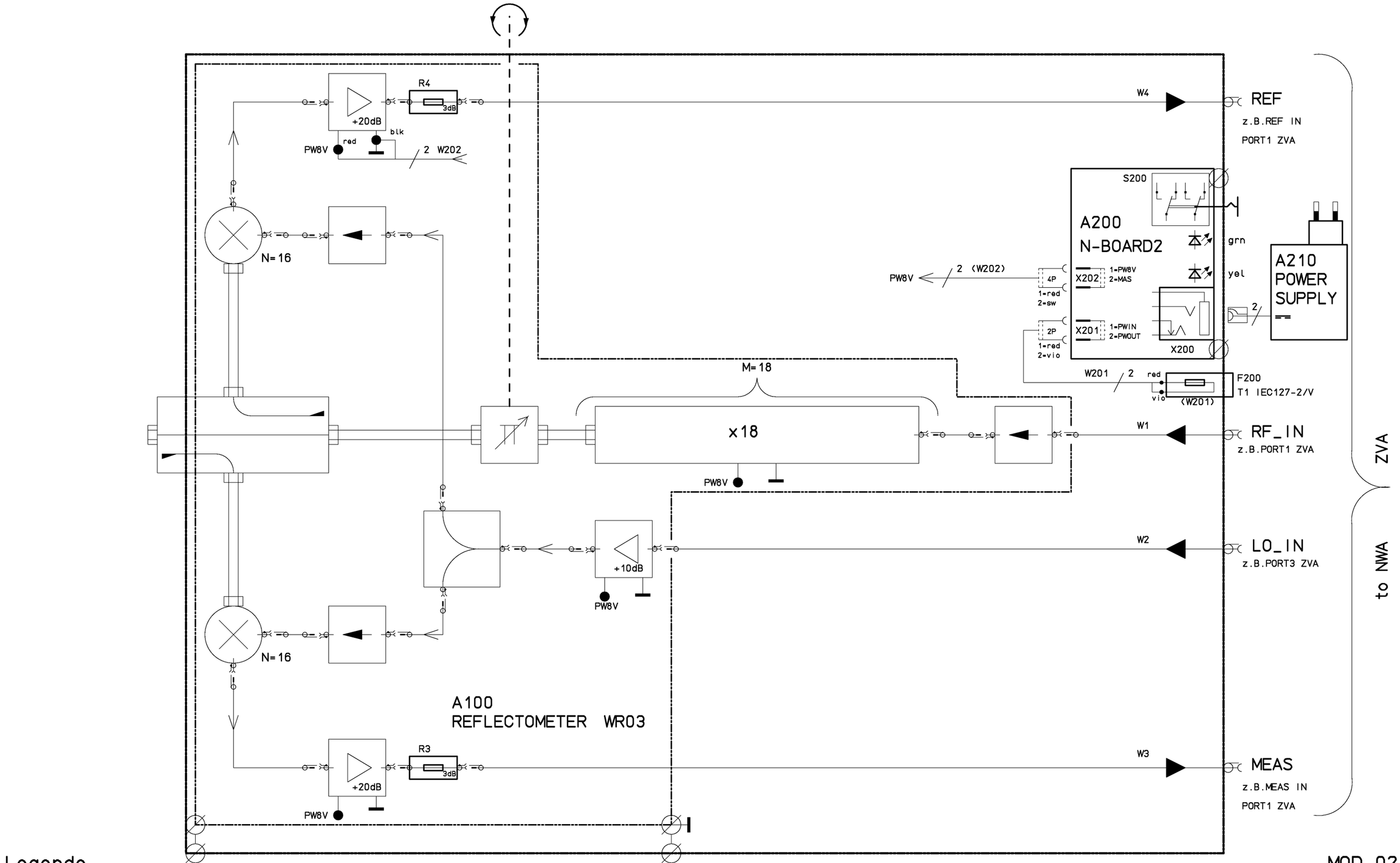
For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.
ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

MOD.02

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z220 REFLEKTOMETER WR05-BAND ZVA-Z220 REFLECTOMETER WR05-BAND				Spr.:/Lang.: de	Aei:/C.l.: 05.00	Blatt:/Sh.: 1 -
ZVA-Z220	Datum: Date: 2010-01-11	Abteilung: Dept.: 1ESK	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.8006.01 S		

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Legende

= WAVEGUIDE WR-03

= KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe SA.

For binding information on models, trimming, component values and not fitted components see SA.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

MOD.02

ZVA-Z325	Benennung / Designat.: ZVA-Z325 REFLEKTOMETER WR03-BAND ZVA-Z325 REFLECTOMETER WR03-BAND				Spr.:/Lang.: de	Aei:/C.I.: 07.00	Blatt:/Sh.: 1 -
	Datum: Date: 2011-12-05	Abteilung: Dept.: 1EST1	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7200.01 S		

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A1 DISPLAY UNIT ZVB *
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
B10 & ROT PULS
A19 & DISPL. CONNECT FMR-TOSHIBA
W100 &
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
A100 FREQUENCY REFERENCE MOD.04 without-B4
OPTION ZVAB-B4 OVENQUARZ
OPTION STANDARD PCI
OPTION COMPACT PCI
A130 NETWORK CONTROLLER (2) MOD.04 Switchable Dither Generator
A141 NETCON DIGITAL StockNo .02 MOD.02/04
A142 NETCON ANALOG StockNo .02 MOD.02
A140 NETWORK CONTROLLER (1) MOD.04 Switchable Dither Generator
A150 SYNTH-LO (2) MOD.20
A160 SYNTH-2S (1) MOD.02
A21* AC FUSE BOARD
W200 POW UN
(Z22)
(W200)
W201
X200 * LINE IN 100..240V 47...63 Hz 450 VA
GND
A20 POWER SUPPLY
REAR PANEL
A10 * MOTHERBOARD
A90 * FRONT MODULE CONTROLER
Data ISA X90
PCI X91
I/O X92
TEST X94
LAN1 LAN2 USB
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A40 & USB X219
A30 * Floppy
W300 * 26
W241 W242
W12 *
X(E1) X(E2) X(E3)
W700
COMBINER X65
REF_10_OUTIN
DC MEAS X211/X212
EXT TRIGGER X225
DIGITAL INTERFACE X221
USER CONTROL X220
CASCADE X219
MONITOR X218
NOISE SOURCE X201
10 MHz REF X210
DC MEAS -10V...+10V X212
DC MEAS -1V...+1V X211
USB(2x) X215
IEC127 -F250L F5
IEC127 -F250L F4
BNC X201
BNC X202
PORT BIAS
(rear panel plate)
IEC BUS X68
OPTION UNIVERSAL IO
LAN2 X242
LAN1 X241

RM3_IF_MEAS RM3_IF_REF RM3 LOCAL RM3 SOURCE
to A530
X16 X8 X9 X10 X11
SOURCE_OUT REF_IN MEAS_IN PORT 3
FRONT PANEL TOP VIEW
PORT 3

RM1_IF_MEAS RM1_IF_REF RM1 LOCAL RM1 SOURCE
X18 to A510
X16 X8 X9 X10 X11
SOURCE_OUT REF_OUT MEAS_OUT PORT 1
SOURCE_IN REF_IN MEAS_IN
FRONT PANEL TOP VIEW
PORT 1

RM4_IF_MEAS RM4_IF_REF RM4 LOCAL RM4 SOURCE
to A540
X16 X8 X9 X10 X11
SOURCE_OUT REF_IN MEAS_IN PORT 4
FRONT PANEL TOP VIEW
PORT 4

RM2_IF_MEAS RM2_IF_REF RM2 LOCAL RM2 SOURCE
X18 to A520
X16 X8 X9 X10 X11
SOURCE_OUT REF_OUT MEAS_OUT PORT 2
SOURCE_IN REF_IN MEAS_IN
TOP VIEW
FRONT PANEL TOP VIEW
PORT 2

Sheet 1
DISPLAY-MB-REARPANEL
Sheet 2
PORT1 / 3
without OPTIONS
Sheet 3
PORT2 / 4
without OPTIONS

Legende / legend

Cables to RM n
enthalten in / contained in
KABELSATZ ZVA80
SET OF CABLE ZVA80
1312.6566.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

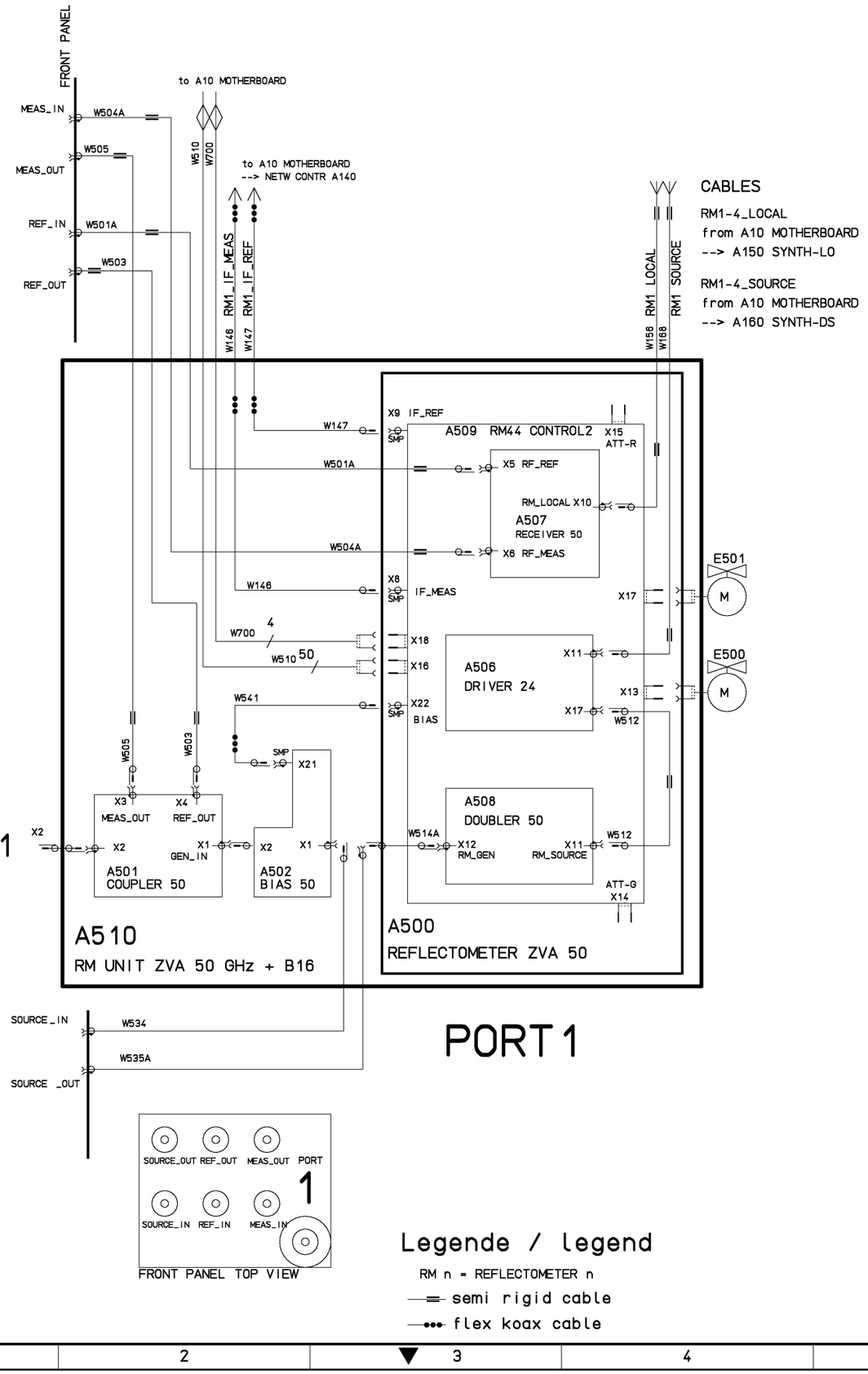
* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

& enthalten in / contained in DISPLAYEINHEIT ZVA / DISPLAY UNIT ZVA 1145.1390.01

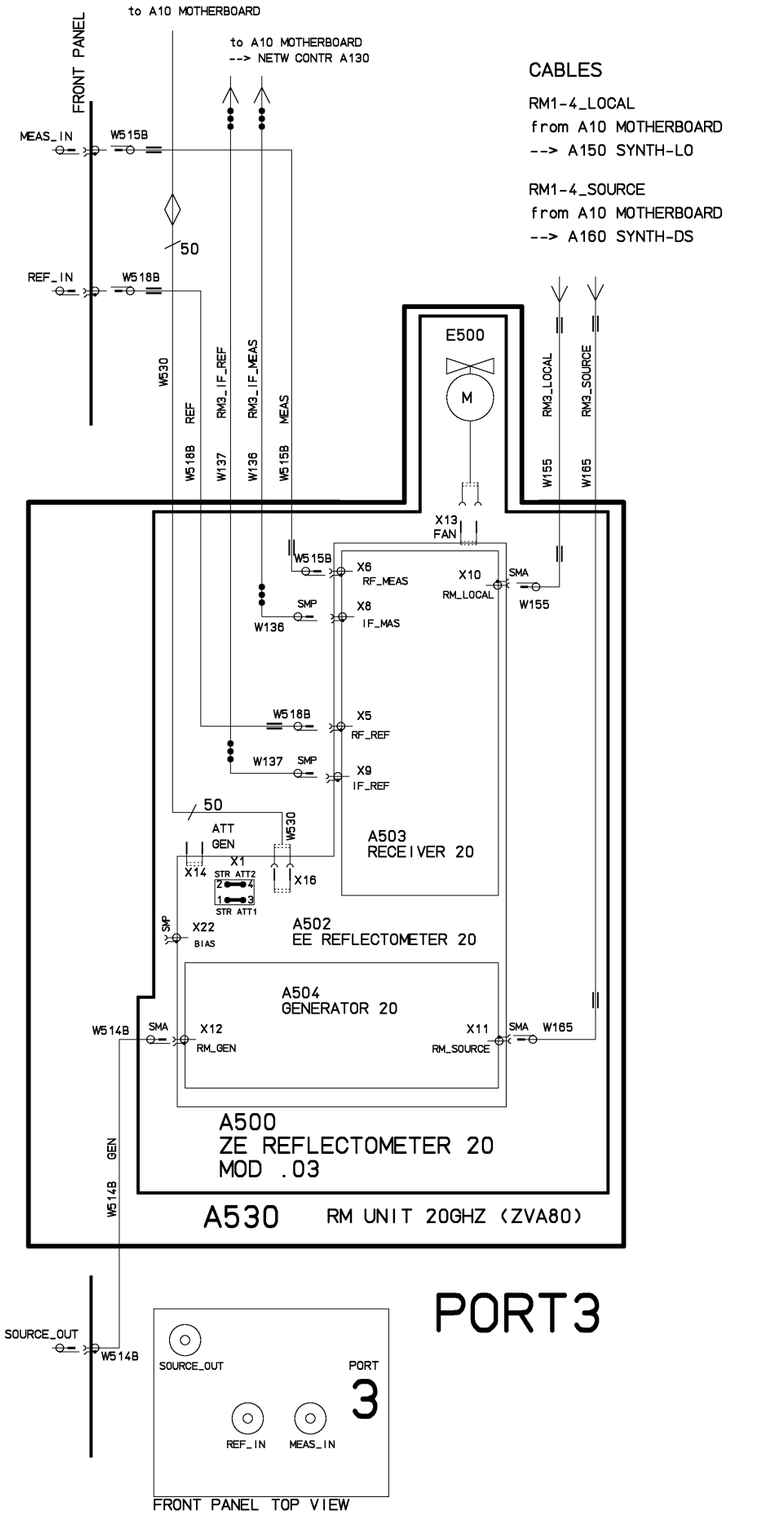
X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80-BU ZVA80-BU			Spr.:/Lang.: de	Aei:/C.I.: 06.00	Blatt:/Sh.: 1 +
ZVA	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6508.01 S		

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PORT 1



PORT 3

Legende / legend

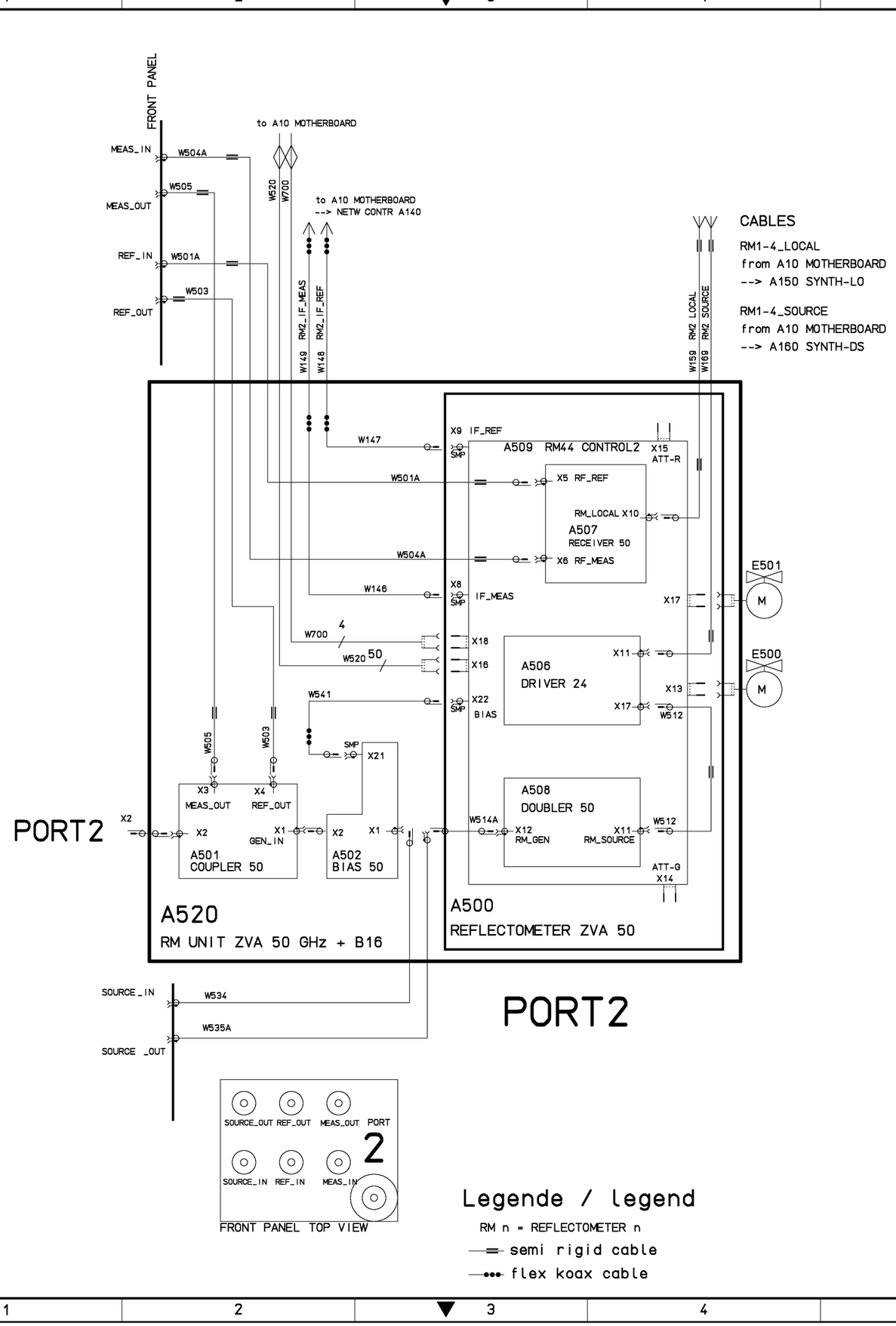
RM n = REFLECTOMETER n

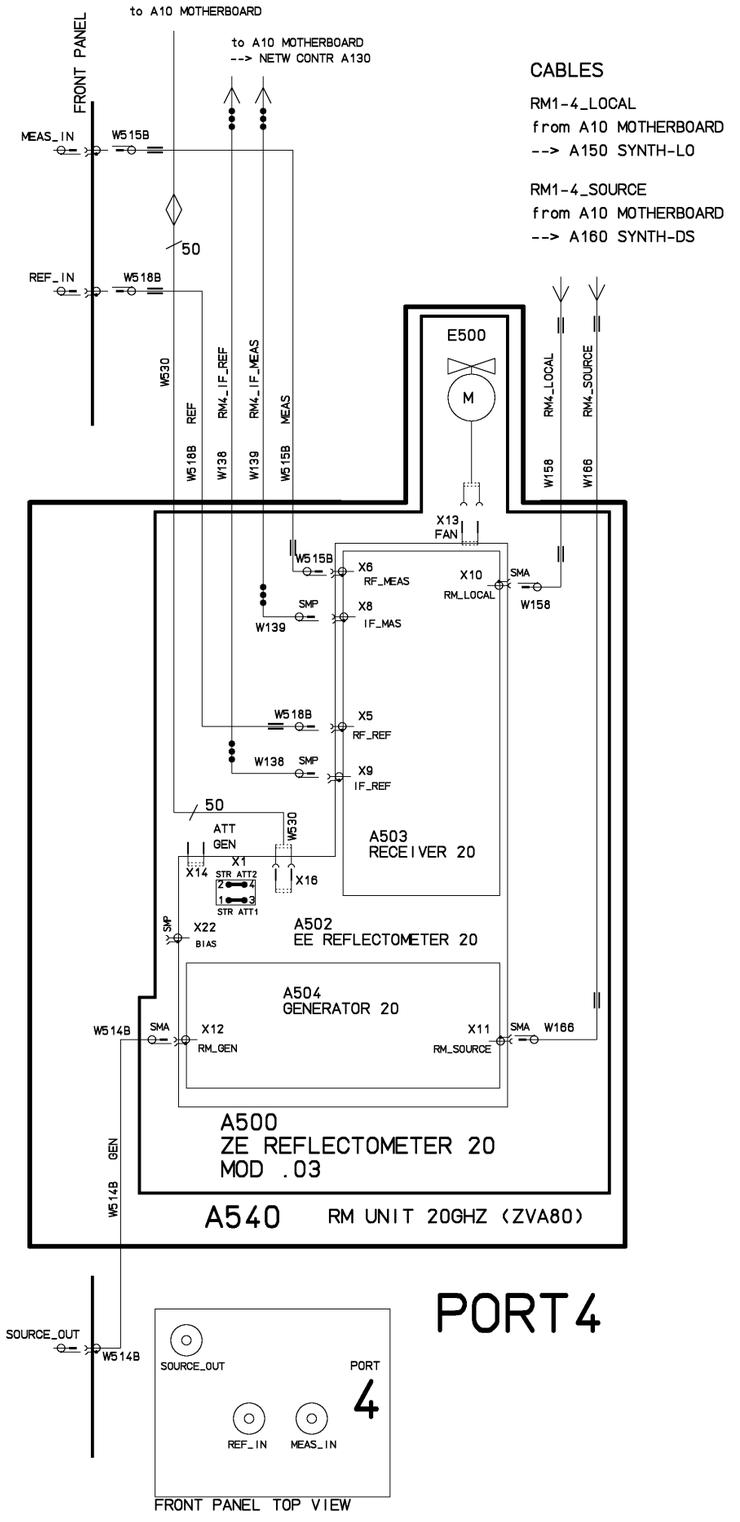
semi rigid cable

flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80-BU ZVA80-BU			Spr.:/Lang.: de	Aei:/C.I.: 06.00	Blatt:/Sh.: 2 +
ZVA	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6508.01 S		

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Legende / legend

RM n = REFLECTOMETER n

semi rigid cable

flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80-BU ZVA80-BU			Spr.:/Lang.: de	Aei:/C.l.: 06.00	Blatt:/Sh.: 3 -
ZVA	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6508.01 S		

ROHDE&SCHWARZ

Circuit Diagrams

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
W100 &
A19 & DISPL. CONNECT FMR-TOSHIBA
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
W11 W13
& W70
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A90 * FRONT MODULE CONTROLER
Data ISA X90
PCI X91
I/O X92
X93
TEST X94
LAN1 LAN2 USB
W241 W242
X10
A40 & USB X219
W12 *
A30 * Floppy
W300 *
W245 REAR PANEL
A100 FREQUENCY REFERENCE
MOD.04 Without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
X103 NA2_AD_CLK
X104 NA1_AD_CLK
X105 SYZ_REF
X106 SYT_REF
X107 FR_REF_10_OUT/IN
OPTION STANDARD PCI X110
OPTION ZVAB-B14 UNIVERSAL I/O COMPACT PCI
A10 * MOTHERBOARD
X100 X110 X120 X131 X132 X133 X130 X134 X135
X30 X209 SUB D RS232 (COM)
X35 X36 X37
X(E1) X(E2) X(E3)
X511 X510 X530 X531 X540 X541 X521 X520
A140 NETWORK CONTROLLER (1)
MOD.02 Basic Model
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.02/04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .02 MOD.02
StockNo .04 MOD.04/05
X141 X142 X143 X140 X144 X145 X146 X147 X148 X149
X155 X156 X150 X151 X157 X158 X159
A160 SYNTH-LS (1)
StockNo.02 for MOD .08 .24
StockNo.20 for MOD .40 .43 .50
X165 SO_OUT_1
X166 SO_OUT_2
X160 X161 X167 10MHZ IN
X168 SO_OUT_3
X169 SO_OUT_4
W200 POW UN
(Z22)
(W200)
A21 * AC FUSE BOARD
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201
GND
A20 POWER SUPPLY
W23 W24 W25 W22
REAR PANEL
X23 X24 X25 X21
W165 RM1 LOCAL
W166 RM2 LOCAL
W168 RM1 SOURCE
W169 RM2 SOURCE
COMBINER
X65
REF_10_OUTIN
DC MEAS
X211/ X212
GNDA
EXT TRIGGER X225 BNC
DIGITAL INTERFACE X221 P25 SUB D
USER CONTROL X220 P25 SUB D
CASCADE X219 P8
MONITOR X218 P15
NOISE SOURCE X201 BNC
10 MHz REF X210 BNC
DC MEAS X212 -10V...+10V
DC MEAS X211 -1V...+1V
X215 USB(2x)
X69 F5 IEC127 -F250L BNC X201
F4 IEC127 -F250L BNC X202
A18 PORT BIAS
PORT BIAS
X70
X68 W21 P24 IEC BUS
W245 P25 SUB D OPTION UNIVERSAL IO
P8 X242 LAN2
P8 X241 LAN1
MODEL ZVA_2PORT

OPTION ZVA-B8 POWER CONTROL
2 4 1 3
X405 P50
50

MODELS			
1145.1110.01 ZVA DISPLAY-MB-REARPANEL	2PORT		Sheet 1
1145.1110.01 ZVA DISPLAY-MB-REARPANEL	4PORT		Sheet 2
1145.1110.08	ZVA8	2PORT	Sheet 3
1145.1110.10	ZVA8	4PORT	Sheet 4
1145.1110.24	ZVA24	2PORT	Sheet 5
1145.1110.26	ZVA24	4PORT	Sheet 6
1145.1110.40/43	ZVA40	2PORT	Sheet 7
1145.1110.42/45	ZVA40	4PORT	Sheet 8
1145.1110.50	ZVA50	2PORT	Sheet 7
1145.1110.52	ZVA50	4PORT	Sheet 8
1145.1110.	ZVA50	4PORT NIST	Sheet 9

4 50 W700 only ZVA40
50 W510
RM1_IF_MEAS W146
RM1_IF_REF W147
RM1 LOCAL W165
RM1 SOURCE W168
to A510
X18 X16 X8 X9 X10 X11
RM 1
PORT 1

4 50 W710 only ZVA40
50 W520
RM2_IF_MEAS W149
RM2_IF_REF W148
RM2 LOCAL W166
RM2 SOURCE W169
to A520
X18 X16 X8 X9 X10 X11
RM 2
PORT 2

Legende / legend
Cables to RM n
enthalten in / contained in KABELSATZ ZVA/ SET OF CABLE ZVB 1302.5050.01
RM n = REFLECTOMETER n
semi rigid cable
flex koax cable
* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01
& enthalten in / contained in DISPLAYEINHEIT ZVB DISPLAY UNIT ZVB 1145.1384.01
X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 15.00	Blatt:/Sh.: 1 +
ZVA	Datum: Date: 09-11-06	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
A19 & DISPL. CONNECT FMR-TOSHIBA
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
W100 &
W11 W13 W70 &

A100 FREQUENCY REFERENCE
MOD.04 without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
OPTION STANDARD PCI
OPTION ZVAB-B14 UNIVERSAL I/O COMPACT PCI

W245 REAR PANEL

A130 NETWORK CONTROLLER (2)
MOD.02 Basic Model
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.02/04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .02 MOD.02
StockNo .04 MOD.04/05

A140 NETWORK CONTROLLER (1)
MOD.02 Basic Model
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.02/04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .02 MOD.02
StockNo .04 MOD.04/05

A150 SYNTH-LO (2)
StockNo.02 for MOD .10 .26
StockNo.20 for MOD .42 .45 .52

A160 SYNTH-DS (1)
StockNo .02 for MOD .10. .26 .42 .45 .52

A10 * MOTHERBOARD
A90 * FRONT MODULE CONTROLER
Data Power ISA X90
PCI X91
I/O X92
LAN1 LAN2 USB
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A40 & USB X219
A30 * Floppy
W241 W242 W300 W12

A21 * AC FUSE BOARD
W200 POW UN (Z22) (W200)
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201 GND
A20 POWER SUPPLY
REAR PANEL

EXT TRIGGER X225 BNC
DIGITAL INTERFACE X221 P25 SUB D
USER CONTROL X220 P25 SUB D
CASCADE X219 P8
MONITOR X218 P15
NOISE SOURCE X201 BNC
10 MHz REF X210 BNC REF_10_OUTIN
DC MEAS X211/X212 -10V...+10V
DC MEAS X211 -1V...+1V
USB(2x) X215
COMBINER X65 P10

X(E1) X(E2) X(E3)

OPTION ZVA-B8 POWER CONTROL
F50

to A530 RM3_IF_MEAS RM3_IF_REF RM3 LOCAL RM3 SOURCE
to A510 RM1_IF_MEAS RM1_IF_REF RM1 LOCAL RM1 SOURCE
to A540 RM4_IF_MEAS RM4_IF_REF RM4 LOCAL RM4 SOURCE
to A520 RM2_IF_MEAS RM2_IF_REF RM2 LOCAL RM2 SOURCE

RM 3 PORT 3
RM 1 PORT 1
RM 4 PORT 4
RM 2 PORT 2

X69 X70 X68
A18 PORT_BIAS A19 PORT_BIAS
F5 F4 F3 F6 IEC127 -F250L
X201 X202 X203 X204
for 3/4 PORT MODELS only
PORT BIAS
IEC BUS
OPTION UNIVERSAL IO
LAN2 X242 LAN1 X241

MODEL ZVA_4PORT

Legende / legend

Cables to RM n
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVB
1302.5050.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

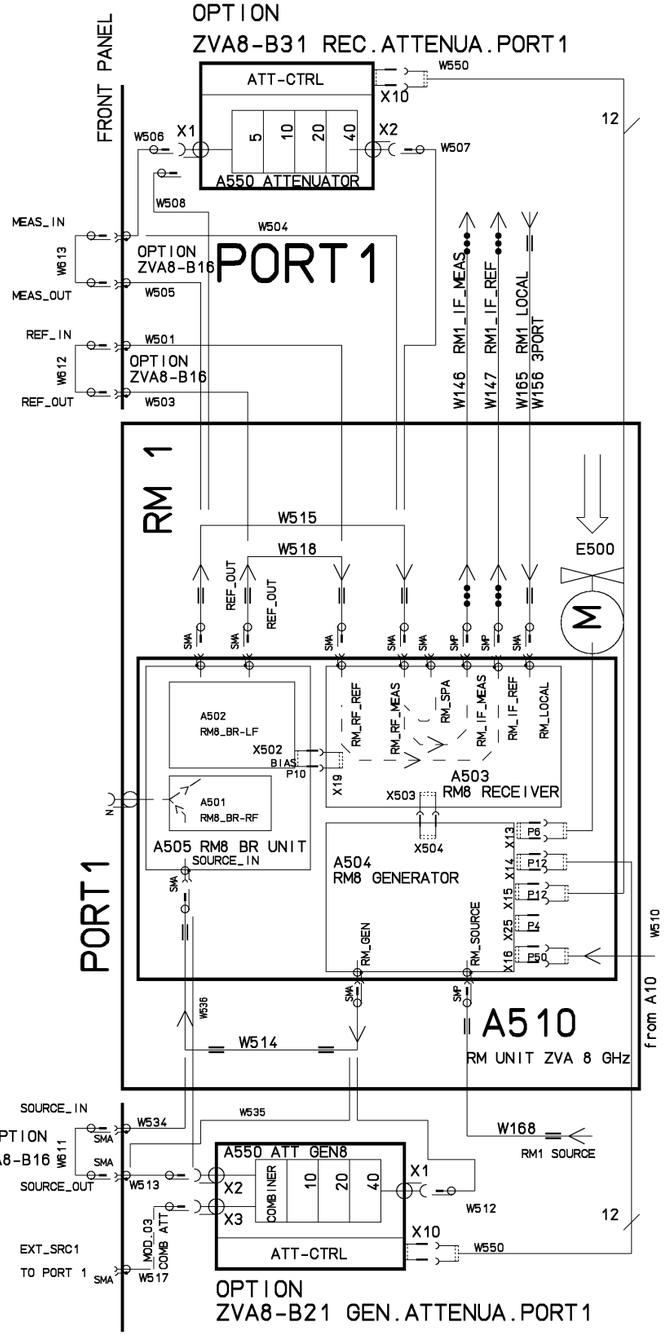
& enthalten in / contained in DISPLAYEINHEIT ZVB / DISPLAY UNIT ZVB 1145.1384.01

X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

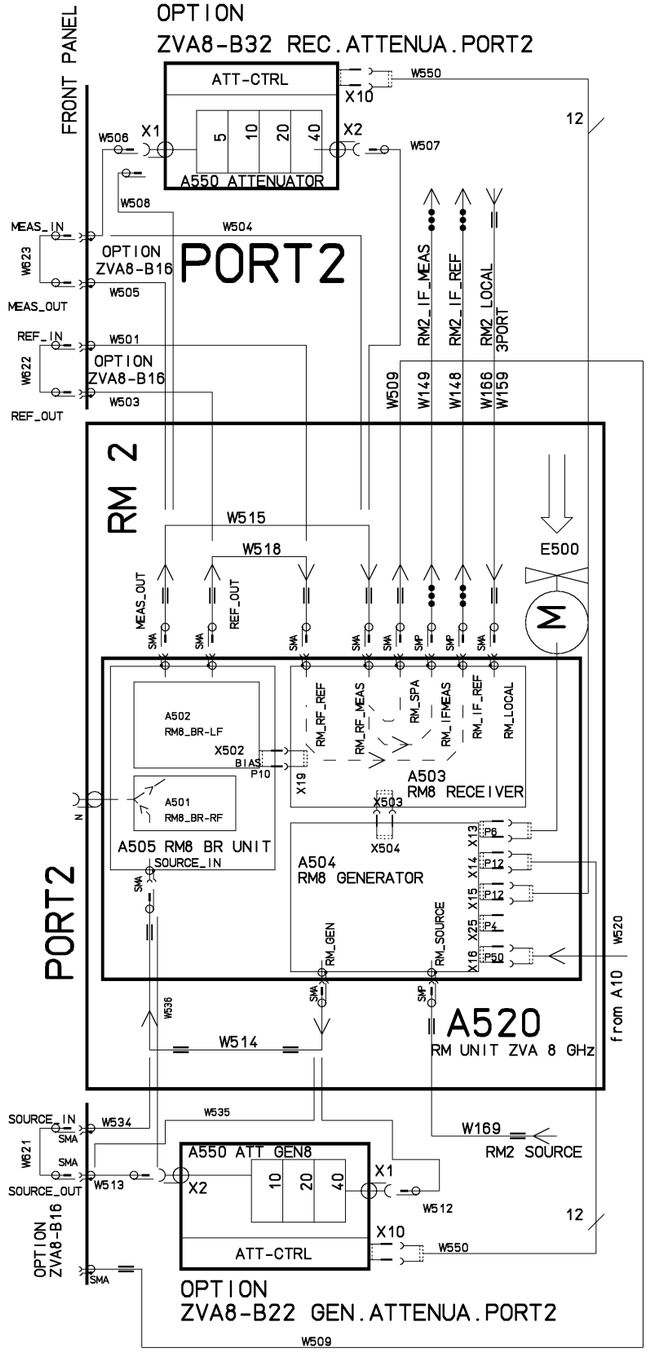
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ZVA	Datum: Date: 09-11-06	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		

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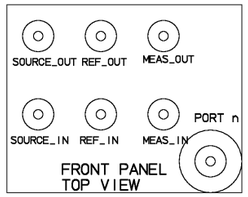
OPTION
ZVA8-B31 REC.ATTENUA.PORT1



OPTION
ZVA8-B32 REC.ATTENUA.PORT2



Ext Cables to A510, A520, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01



Legende / legend

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

MODEL
1145.1110.08 ZVA8 2PORT

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 15.00	Blatt:/Sh.: 3 +
				Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		
ZVA	Datum: Date: 09-11-06	Abteilung: Dept.: 1ESK	Name: Name: smolinsk			

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OPTION
ZVA8-B33 REC.ATTENUA.PORT3

OPTION
ZVA8-B31 REC.ATTENUA.PORT1

OPTION
ZVA8-B34 REC.ATTENUA.PORT4

OPTION
ZVA8-B32 REC.ATTENUA.PORT2

FRONT PANEL

ATT-CTRL 5 10 20 40 — A550 ATT REC8 — W550 X10 W506 X1 X2 W507 W508 12

MEAS_IN W633 MEAS_OUT W505 — OPTION ZVA8-B16 — W504

REF_IN W501 — OPTION ZVA8-B16 — W632 REF_OUT W503

PORT3 — W136 RM3_IF_MEAS, W137 RM3_IF_REF, W155 RM3_LOCAL

PORT1 — W146 RM1_IF_MEAS, W147 RM1_IF_REF, W156 RM1_LOCAL

PORT4 — W139 RM4_IF_MEAS, W138 RM4_IF_REF, W158 RM4_LOCAL

PORT2 — W509 RM2_IF_MEAS, W149 RM2_IF_REF, W159 RM2_LOCAL

RM 3 / RM 1 / RM 4 / RM 2

W515, W518, E500 M

MEAS_OUT, REF_OUT, SMA, SMP

X3 X4

A502 RM8_BR-LF — X502 BIAS P10 — RM_RF_REF, RM_RF_MEAS, RM_SPA, RM_IF_MEAS, RM_IF_REF, RM_LOCAL

A501 RM8_BR-RF

A503 RM8 RECEIVER — X503 P26 — X504

A505 RM8 BR UNIT — X1 SOURCE_IN

A504 RM8 GENERATOR — X12 RM_GEN, X11 RM_SOURCE — X13 P6, X14 P12, X15 P12, X25 P4, X16 P50

W536

A530 RM UNIT ZVA 8 GHz — W514 — from A10 W530

A510 RM UNIT ZVA 8 GHz — W514 — from A10 W510

A540 RM UNIT ZVA 8 GHz — W514 — from A10 W540

A520 RM UNIT ZVA 8 GHz — W514 — from A10 W520

OPTION ZVA8-B16 SOURCE_IN W534 SMA — W535

SOURCE_OUT W513 — A550 ATT GEN8 — COMBINER 10 20 40 — X1 X2 X3 — W512 — X10 ATT-CTRL W550

W165 RM3 SOURCE

W168 RM1 SOURCE

W166 RM4 SOURCE

W169 RM2 SOURCE

EXT_SRC3 TO PORT3 — W517 — MOD.03 COMB ATT

EXT_SRC1 TO PORT1 W516 SMA

ZVA8-B23 MOD.03 COMBINER ATT

OPTION ZVA8-B23 GEN.ATTENUA.PORT3

OPTION ZVA8-B21 GEN.ATTENUA.PORT1

OPTION ZVA8-B24 GEN.ATTENUA.PORT4

OPTION ZVA8-B22 GEN.ATTENUA.PORT2

W509

SOURCE_OUT REF_OUT MEAS_OUT
SOURCE_IN REF_IN MEAS_IN
PORT n
FRONT PANEL TOP VIEW

Legende / legend

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

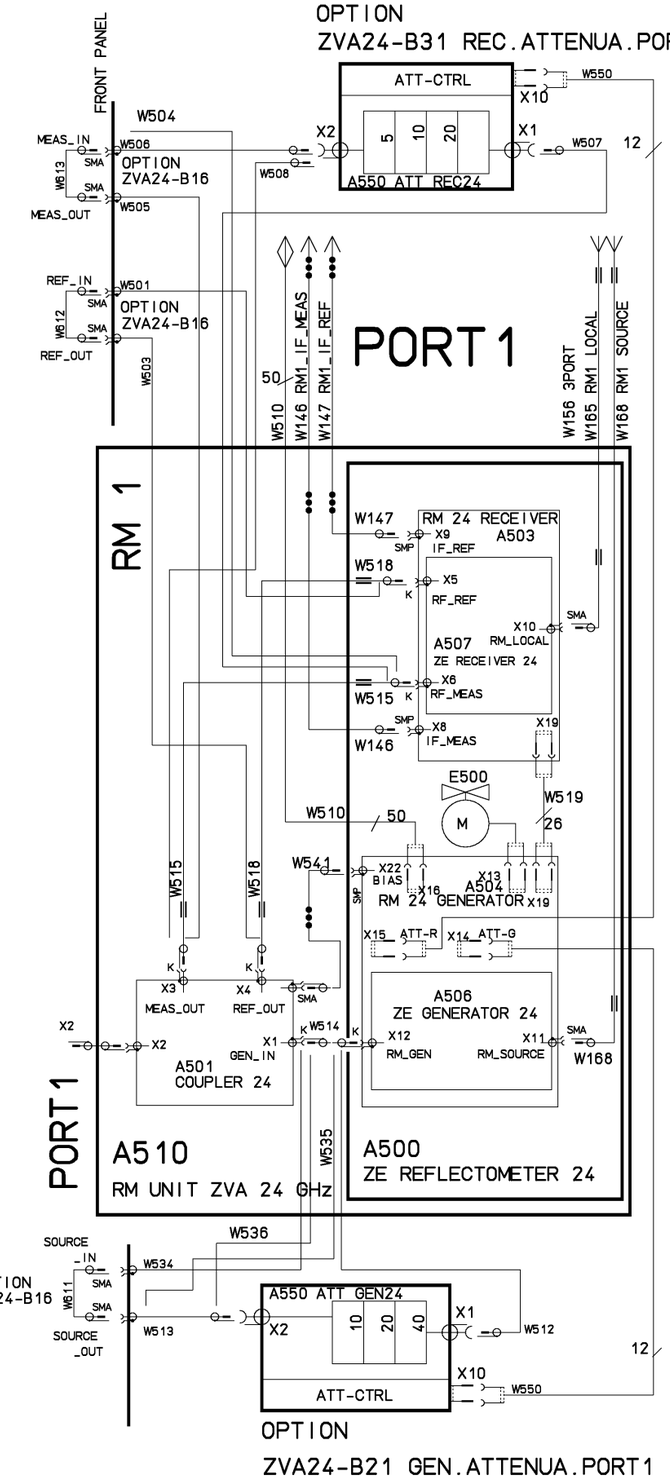
Ext Cables to A510, A520, A530, 540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01

MODEL
1145.1110.10 ZVA8 4PORT

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 15.00	Blatt:/Sh.: 4 +
ZVA	Datum: / Date: 09-11-06	Abteilung: / Dept.: 1ESK	Name: / Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		

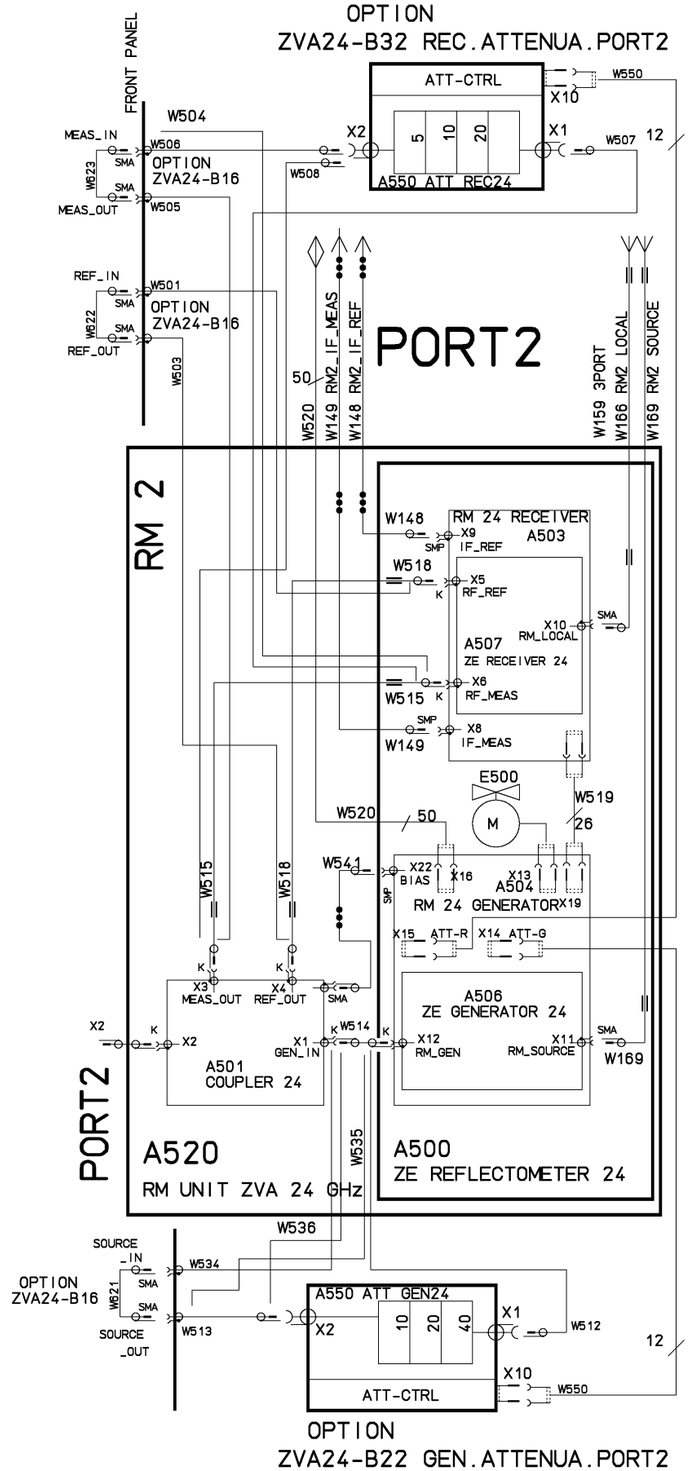
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OPTION
ZVA24-B31 REC.ATTENUA.PORT1



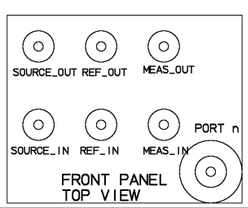
OPTION
ZVA24-B21 GEN.ATTENUA.PORT1

OPTION
ZVA24-B32 REC.ATTENUA.PORT2



OPTION
ZVA24-B22 GEN.ATTENUA.PORT2

Ext Cables to A510, A520, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01



Legende / legend

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

MODEL 1145.1110.24 ZVA24 2PORT

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 15.00	Blatt:/Sh.: 5 +
ZVA	Datum: Date: 09-11-06	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		

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OPTION
ZVA24-B33 REC.ATTENUA.PORT3

OPTION
ZVA24-B31 REC.ATTENUA.PORT1

OPTION
ZVA24-B34 REC.ATTENUA.PORT4

OPTION
ZVA24-B32 REC.ATTENUA.PORT2

FRONT PANEL

ATT-CTRL

A550 ATT REC24

OPTION ZVA24-B16

PORT3

PORT1

PORT4

PORT2

RM 3

RM 1

RM 4

RM 2

RM 24 RECEIVER A503

RM 24 GENERATOR A504

ZE RECEIVER 24 A507

ZE GENERATOR 24 A506

A501 COUPLER 24

A530 RM UNIT ZVA 24 GHz

A510 RM UNIT ZVA 24 GHz

A540 RM UNIT ZVA 24 GHz

A520 RM UNIT ZVA 24 GHz

A500 ZE REFLECTOMETER 24

A550 ATT GEN24

OPTION
ZVA24-B23 GEN.ATTENUA.PORT3

OPTION
ZVA24-B21 GEN.ATTENUA.PORT1

OPTION
ZVA24-B24 GEN.ATTENUA.PORT4

OPTION
ZVA24-B22 GEN.ATTENUA.PORT2

Ext Cables to A510, A520, A530, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01

FRONT PANEL TOP VIEW

Legende / legend

RM n = REFLECTOMETER n

semi rigid cable

flex koax cable

MODEL 1145.1110.26 ZVA24 4PORT

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de / Aei:/C.I.: 15.00 / Blatt:/Sh.: 6 +
ZVA	Datum: Date: 09-11-06	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1145.1110.01 S

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OPTION
ZVA40/50-B31 REC.ATTENUA.PORT1

OPTION
ZVA40/50-B32 REC.ATTENUA.PORT2

PORT1

PORT2

RM 1

RM 2

A510
RM UNIT ZVA 40/50 GHz

A520
RM UNIT ZVA 40/50 GHz

A500
ZE REFLECTOMETER 40/50

A509 RM44 CONTROL

A507
ZE RECEIVER 44/50

A506
ZE DRIVER 24

A508
ZE DOUBLER 44/50

A501
BL-KOPPLER 44/50

A502
BIAS44/50

A550 ATT REC44/50

A550 ATT GEN44/50

ATT-CTRL

FRONT PANEL

OPTION
ZVA40/50-B16

RM 40 GENERATOR

OPTION
ZVA40/50-B21 GEN.ATTENUA.PORT1

OPTION
ZVA40/50-B22 GEN.ATTENUA.PORT2

Ext Cables to A510, A520, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01

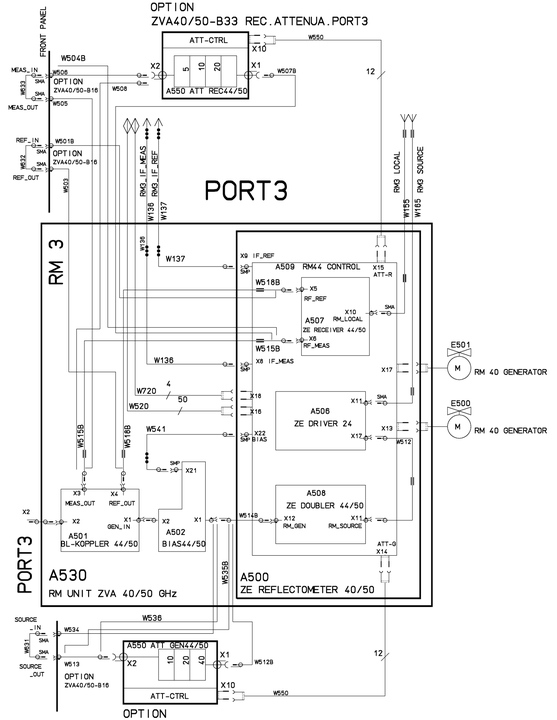
FRONT PANEL
TOP VIEW

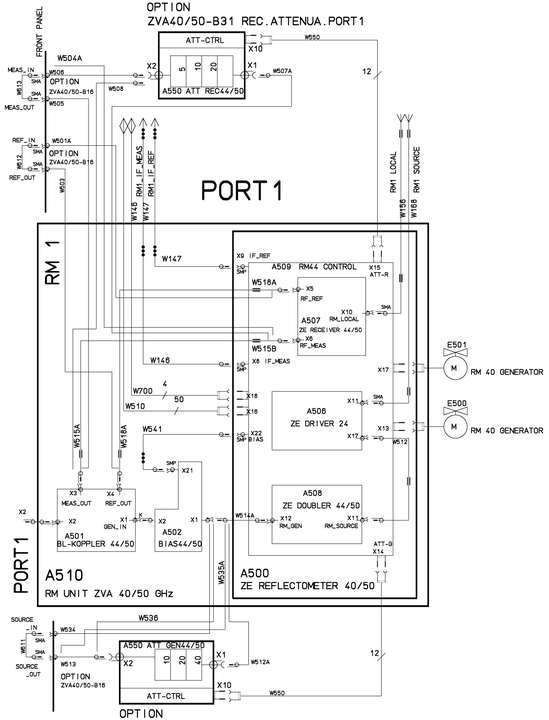
Legende / legend

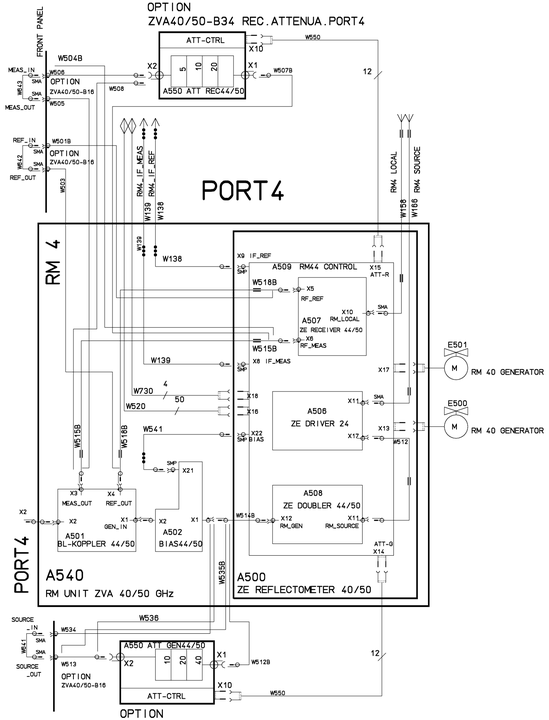
RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

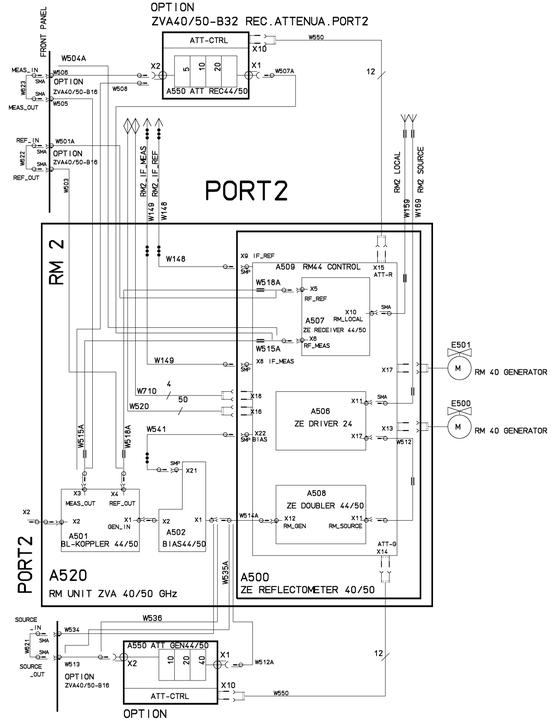
ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 15.00	Blatt:/Sh.: 7 +
ZVA	Datum: Date: 09-11-06	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		

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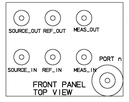








Ext Cables to A510, A520, A530, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01



Legende / legend

RM n = REFLECTOMETER n

—═— semi rigid cable

—▪▪▪— flex koax cable

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.
ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
W100 &
A19 & DISPL. CONNECT FMR-TOSHIBA
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
W11 W13
& W70 34
W245 REAR PANEL

A100 FREQUENCY REFERENCE
MOD.04 Without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
X103 NA2_AD_CLK
X104 NA1_AD_CLK
X105 ST2_REF
X106 ST1_REF
X107 FR_REF_10_OUT/IN

OPTION STANDARD PCI
OPTION ZVAB-B14 UNIVERSAL I/O COMPACT PCI

A130 NETWORK CONTROLLER (2)
MOD.02 Basic Model
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.02/04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .02 MOD.02
StockNo .04 MOD.04/05
X141 X142/X143 X140 X144 X145 MA_AD_CLK X146 RMA_IF_MEAS X147 RMA_IF_REF X148 RMB_IF_REF X149 RMB_IF_MEAS

A140 NETWORK CONTROLLER (1)
MOD.02 Basic Model
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.02/04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .02 MOD.02
StockNo .04 MOD.04/05
X141 X142/X143 X140 X144 X145 MA_AD_CLK X146 RMA_IF_MEAS X147 RMA_IF_REF X148 RMB_IF_REF X149 RMB_IF_MEAS

A150 SYNTH-LO (2)
StockNo.02
X165 LO_OUT_1 X166 LO_OUT_2 X160 X161 X167 12MHZ_IN X168 LO_OUT_3 X169 LO_OUT_4

A160 SYNTH-DS (1)
StockNo .02
X165 SO_OUT_1 X166 SO_OUT_2 X160 X161 X167 12MHZ_IN X168 SO_OUT_3 X169 SO_OUT_4

A21* AC FUSE BOARD
W200 POW UN (Z22) (W200)
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201 GND
A20 POWER SUPPLY
W23 W24 W25 W22 REAR PANEL

A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A90 * FRONT MODULE CONTROLER
X11 X8 Data Power ISA X90 PCI X91 I/O X92 X93
X10 USB LAN1 LAN2 W241 W242
A40 & USB X219
10 W12 *
A30 * Floppy
W300 * 26

A10 * MOTHERBOARD
X103 X104 X100 X105 X106 X107 X110 X120 X131 X132 X133 X130 X134 X135
X90 X91 X92 X93 X30 X209 SUB D RS232 (COM)
TEST X94 P6
W136/X136 RM6_IF_MEAS W137/X137 RM6_IF_REF W138/X138 RM4_IF_REF W139/X139 RM4_IF_MEAS
X141 X142 X143 X140 X144 X145 W146/X146 RM1_IF_MEAS W147/X147 RM1_IF_REF W148/X148 RM2_IF_REF W149/X149 RM2_IF_MEAS
X156 W6156 LOCAL DIV1 X157 X158 W6158 LOCAL DIV2
X165 SOURCE 1 X166 SOURCE 2 X160 X161 X167 X168 SOURCE 3 X169 SOURCE 4
X23 X24 X25 X21

EXT TRIGGER X225 BNC
DIGITAL INTERFACE X221 P25 SUB D
USER CONTROL X220 P25 SUB D
CASCADE X219 P8
MONITOR X218 P15
NOISE SOURCE X201 BNC
10 MHz REF X210 BNC
REF_10_OUTIN
DC MEAS X211/X212 GNDA 8 5 3 6 GNDA GNDA
DC MEAS X212 -10V...+10V
DC MEAS X211 -1V...+1V
X215 USB(2x)

COMBINER X65 P10

X69 10 F5 IEC127 -F250L X201 1 BNC
A18 PORT BIAS
F4 IEC127 -F250L X202 2 BNC
X70 10 for 3/4 PORT MODELS only
F3 IEC127 -F250L X203 3 BNC
A19 PORT BIAS
F6 IEC127 -F250L X204 4 BNC
PORT B1AS
X68 W21 P24 IEC BUS
W245 P25 SUB D OPTION UNIVERSAL IO
W242 P8 X242 LAN2
W241 P8 X241 LAN1

X(E1) X(E2) X(E3)
P3 X35 P3 X36 P3 X37
P50 X510 P50 X530 P50 X540 P50 X520

OPTION ZVA-B8 POWER CONTROL
2 4 1 3 P50 50

50 W530 W136 W137 W165 RM3_IF_MEAS RM3_IF_REF RM3 SOURCE
50 W510 W146 W147 W168 RM1_IF_MEAS RM1_IF_REF RM1 SOURCE
50 W540 W139 W138 W166 RM4_IF_MEAS RM4_IF_REF RM4 SOURCE
50 W520 W149 W148 W169 RM2_IF_MEAS RM2_IF_REF RM2 SOURCE

to A530 X16 X8 X9 X10 X11 RM 3
to A510 X16 X8 X9 X10 X11 RM 1
to A540 X16 X8 X9 X10 X11 RM 4
to A520 X16 X8 X9 X10 X11 RM 2

PORT 3 PORT 1 PORT 4 PORT 2

% = ZVA_4PORT_NIST
Additional Cables and Components enthalten in / contained in 1305.7848.01 ST ZVA50-NIST

W6156% LOCAL DIV1 IN %A6156 DIVIDER 1 OUT -3dB W656% RM1_LOCAL OUT -3dB W659% RM2_LOCAL
W657% RM3_LOCAL W658% RM4_LOCAL %A6158 DIVIDER 2 IN W6158% LOCAL DIV2

MODEL ZVA_4PORT_NIST

Legende / legend

Cables to RM n
enthalten in / contained in KABELSATZ ZVA/ SET OF CABLE ZVB 1302.5050.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

& enthalten in / contained in DISPLAYEINHEIT ZVB DISPLAY UNIT ZVB 1145.1384.01

X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.i.: 15.00	Blatt:/Sh.: 9 -
ZVA	Datum: Date: 2009-11-06	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1145.1110.01 S		

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
W100 &
A19 & DISPL. CONNECT FMR-TOSHIBA
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
& W70
W11 W13
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A90 * FRONT MODULE CONTROLER
Data ISA X90
PCI X91
I/O X92
X93
X94 TEST
X10 USB
LAN1 W241
LAN2 W242
A40 & USB X219
W12 *
A30 * Floppy
W300 *
OPTION ZVA-B8 POWER CONTROL
W245 REAR PANEL

A100 FREQUENCY REFERENCE
MOD.04 Without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
X103 HAZ_AD_CLK
X104 NA1_AD_CLK
X105 SY2_REF
X106 SY1_REF
X107 FR_REF_10_OUT/IN

OPTION STANDARD PCI

OPTION ZVAB-B14 UNIVERSAL I/O COMPACT PCI

A130 NETWORK CONTROLLER (2)
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .04 MOD.04/05
X141 X142 X143 X140 X144 X145 MA_AD_CLK X146 RMA_IF_MEAS X147 RMA_IF_REF X148 RMB_IF_REF X149 RMB_IF_MEAS

A140 NETWORK CONTROLLER (1)
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .04 MOD.04/05
X141 X142 X143 X140 X144 X145 MA_AD_CLK X146 RM1_IF_MEAS X147 RM1_IF_REF X148 RM2_IF_REF X149 RM2_IF_MEAS

A150 SYNTH-12GENERATOR
MOD.04
X155 0.9_OUT_3 X156 0.9_OUT_1 X160 X161 12MHZ IN X157 X158 0.9_OUT_2 X159 0.9_OUT_4

A160 SYNTH-12LOCAL
MOD.03
X165 0.9_OUT_3 X166 0.9_OUT_1 X160 X161 12MHZ IN X167 X168 0.9_OUT_2 X169 0.9_OUT_4

A10 * MOTHERBOARD
X100 X105 X106 X107 X110 X120 X131 X132 X133 X130 X134 X135 X141 X142 X143 X140 X144 X145 X146 X147 X148 X149 X155 X156 X150 X151 X157 X158 X159 X165 X166 X160 X161 X167 X168 X169 X23 X20 X22 X24 X25
W146 RM1_IF_MEAS W147 RM1_IF_REF W148 RM2_IF_REF W149 RM2_IF_MEAS
W158 RMT SOURCE W159 RM2 SOURCE W165 RMT LOCAL W166 RM2 LOCAL

X35 X36 X37 X(E1) X(E2) X(E3)
X511 X510 X531 X530 X541 X540 X521 X520
X30 X209 SUB D RS232 (COM)

A21 * AC FUSE BOARD
W200 POW UN (Z22) (W200)
X200 * LINE IN 100..240V 47...63 Hz 450 VA GND W201 *
A20 POWER SUPPLY X1/X2 W20 W22 W24 W25 W21
REAR PANEL

EXT TRIGGER X225 BNC
DIGITAL INTERFACE X221 P25 SUB D
USER CONTROL X220 P25 SUB D
CASCADE X219 P8
MONITOR X218 P15
NOISE SOURCE X201 BNC
10 MHz REF X210 BNC
REF_10_OUTIN
COMBINER X65
DC MEAS X211/X212 GNDA
DC MEAS X212 -10V...+10V
DC MEAS X211 -1V...+1V
X215 USB(2x)
X69 F5 IEC127 -F250L X201 BNC
F4 IEC127 -F250L X202 BNC
A18 PORT BIAS
X70
X68 W21 P24 IEC BUS
W245 P25 SUB D OPTION UNIVERSAL IO
W242 P8 X242 LAN2
W241 P8 X241 LAN1

MODELS		
1305.7002.02 ZVA67 DISPLAY-MB-REARPANEL	2PORT	Sheet 1
1305.7002.04 ZVA67 DISPLAY-MB-REARPANEL	4PORT	Sheet 2
1305.7002.02 RM UNIT + OPTION	2PORT	Sheet 3
1305.7002.04 RM UNIT + OPTION	4PORT	Sheet 4

4 50 W700 only ZVA40 W510 RM1_IF_MEAS W146 RM1_IF_REF W147 RM1 SOURCE W158 RM1 LOCAL W165
to A510
X18 X16 X8 X9 X10 X11
A510 RM UNIT
PORT 1

4 50 W710 only ZVA40 W520 RM2_IF_MEAS W149 RM2_IF_REF W148 RM2 SOURCE W159 RM2 LOCAL W166
to A520
X18 X16 X8 X9 X10 X11
A520 RM UNIT
PORT 2

Legende / legend

Cables to RM n
enthalten in / contained in KABELSATZ ZVA/ SET OF CABLE ZVB 1302.5050.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

& enthalten in / contained in DISPLAYEINHEIT ZVB DISPLAY UNIT ZVB 1145.1390.01

X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 05.00	Blatt:/Sh.: 1 +
ZVA	Datum: Date: 2009-11-05	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1305.7002.01 S		

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
A19 & DISPL. CONNECT FMR-TOSHIBA
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
W100 &
W11 W13 W70 &
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A90 * FRONT MODULE CONTROLER
Data Power ISA X90
PCI X91
I/O X92
X11 X8 X10 X219
LAN1 LAN2 USB
W241 W242
A40 & USB
W12 *
A30 * Floppy
W300 *
OPTION ZVA-B8 POWER CONTROL
P50

W245 REAR PANEL

A100 FREQUENCY REFERENCE
MOD.04 without-B4
MOD.05 with -B4
OPTION ZVAB-B4 OVENQUARZ
X103 M2_AD_CLK
X104 M1_AD_CLK
X105 SY2_REF
X106 SY1_REF
X107 FR_REF_10_OUT/IN

OPTION STANDARD PCI

OPTION ZVAB-B14 UNIVERSAL I/O COMPACT PCI

A130 NETWORK CONTROLLER (2)
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .04 MOD.04/05
X141 X142 / X143 X140 X144 X145 M4_AD_CLK X146 RM4_IF_MEAS X147 RM4_IF_REF X148 RM3_IF_REF X149 RM3_IF_MEAS

A140 NETWORK CONTROLLER (1)
MOD.04 Switchable Dither Generator
MOD.05 for Option B7 - Pulsed Measurement
A141 NETCON DIGITAL
StockNo .02 MOD.04
StockNo .03 MOD.05
A142 NETCON ANALOG
StockNo .04 MOD.04/05
X141 X142 / X143 X140 X144 X145 M3_AD_CLK X146 RM4_IF_MEAS X147 RM4_IF_REF X148 RM3_IF_REF X149 RM3_IF_MEAS

A150 SYNTH-12-4SO
MOD.02
X165 0.9_OUT_3 X166 0.9_OUT_1 X160 X161 X167 128MHZ_IN X168 0.9_OUT_2 X169 LO_OUT_4

A160 SYNTH-12-4LO
MOD.02
X165 0.9_OUT_3 X166 0.9_OUT_1 X160 X161 X167 128MHZ_IN X168 0.9_OUT_2 X169 SO_OUT_4

A10 * MOTHERBOARD
X103 X104 X100 X105 X106 X107 X110 X120 X131 X132 X133 X130 X134 X135 X141 X142 X143 X140 X144 X145 XW555 X150 X151 X157 X158 X159 X165 X166 X160 X161 X167 X168 X169 X23 X20 X22 X24 X25
X90 X91 X92 X93 X30 X209 X35 X36 X37 X510 X530 X540 X520
W136/X136 W137/X137 W138/X138 W139/X139 W146/X146 W147/X147 W148/X148 W149/X149 W156 W168 W169
TEST X94
SUB D RS232 (COM)
X(E1) X(E2) X(E3)

A20 POWER SUPPLY X1/X2
W200 POW UN (Z22)
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201 * (W200)
A21 * AC FUSE BOARD
GND
REAR PANEL

EXT TRIGGER X225
DIGITAL INTERFACE X221
USER CONTROL X220
CASCADE X219
MONITOR X218
NOISE SOURCE X201
10 MHz REF X210
DC MEAS -10V...+10V X212
DC MEAS -1V...+1V X211
USB(2x) X215
COMBINER X65
REF_10_OUTIN
DC MEAS X211/X212

X69 F5 IEC127 -F250L X201 1
X70 F4 IEC127 -F250L X202 2
F3 IEC127 -F250L X203 3
F6 IEC127 -F250L X204 4
A18 PORT BIAS
A19 PORT BIAS
X68 IEC BUS
OPTION UNIVERSAL IO
LAN2 X242
LAN1 X241

50 W530 W136 RM3_IF_MEAS W137 RM3_IF_REF W156 RM3 SOURCE W166 RM3 LOCAL to A530
50 W510 W146 RM1_IF_MEAS W147 RM1_IF_REF W155 RM1 SOURCE W165 RM1 LOCAL to A510
50 W540 W139 RM4_IF_MEAS W138 RM4_IF_REF W158 RM4 SOURCE W168 RM4 LOCAL to A540
50 W520 W149 RM2_IF_MEAS W148 RM2_IF_REF W159 RM2 SOURCE W169 RM2 LOCAL to A520

X16 X8 X9 X10 X11
A530 RM UNIT PORT 3
A510 RM UNIT PORT 1
A540 RM UNIT PORT 4
A520 RM UNIT PORT 2

Legende / legend

Cables to RM n
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVB
1302.5050.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

* enthalten in / contained in
GRUNDEINHEIT ZVA /
FUNDAMENTAL UNIT
1145.1310.01

& enthalten in / contained in
DISPLAYEINHEIT ZVB
DISPLAY UNIT ZVB
1145.1384.01

X = E1, E2, E3
enthalten in / contained in
GERAETERAHMEN/
DEVICE FRAME
1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 05.00	Blatt:/Sh.: 2 +
ZVA	Datum: Date: 2009-11-05	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1305.7002.01 S		

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OPTION
ZVA67-B31 REC.ATTENUA.PORT1

FRONT PANEL
W504A
MEAS_IN
W506
OPTION
ZVA67-B16
W613
MEAS_OUT
W505
REF_IN
W501A
W612
REF_OUT
W503
W508
ATT-CTRL
X10
X2
X1
5
10
20
A550 ATT REC44/50
W550
W507A
12
RM1_IF_MEAS
RM1_IF_REF
RM1 LOCAL
RM1 SOURCE
W146
W147
W165
W168

PORT1

W147
X9 IF_REF
A509 RM67 CONTROL
X15 ATT-R
W518A
X5
RF_REF
X10 RM_LOCAL
A507
ZE RECEIVER 67
W515A
X6 RF_MEAS
W146
X8 IF_MEAS
E501
M
FAN1
W700
4
50
W510
X18
X16
A506
ZE DRIVER 42
X11
X13
X17
W512
E500
M
FAN2
W541
X22 BIAS
W515A
W518A
SMP
X21
X3 MEAS_OUT
X4 REF_OUT
A508
ZE DOUBLER 67
X12 RM_GEN
X11 RM_SOURCE
W514A
X2
X1 GEN_IN
A501
BL-KOPPLER 67
A502
BIAS 67
ATT-G
X14
W535A
A510
RM UNIT ZVA67
A500
ZE REFLECTOMETER 67

SOURCE_IN
W534
OPTION
ZVA40/50-B16
W611
SOURCE_OUT
W513
W536
A550 ATT GEN44/50
10
20
40
X1
X2
W512A
12
ATT-CTRL
X10
W550

OPTION
ZVA67-B21 GEN.ATTENUA.PORT1

OPTION
ZVA67-B32 REC.ATTENUA.PORT2

FRONT PANEL
W504A
MEAS_IN
W506
OPTION
ZVA67-B16
W623
MEAS_OUT
W505
REF_IN
W501A
W622
REF_OUT
W503
W508
ATT-CTRL
X10
X2
X1
5
10
20
A550 ATT REC44/50
W550
W507A
12
RM2_IF_MEAS
RM2_IF_REF
RM2 LOCAL
RM2 SOURCE
W149
W148
W166
W169

PORT2

W148
X9 IF_REF
A509 RM67 CONTROL
X15 ATT-R
W518A
X5
RF_REF
X10 RM_LOCAL
A507
ZE RECEIVER 67
W515A
X6 RF_MEAS
W149
X8 IF_MEAS
E501
M
FAN1
W710
4
50
W520
X18
X16
A506
ZE DRIVER 42
X11
X13
X17
W512
E500
M
FAN2
W541
X22 BIAS
W515A
W518A
SMP
X21
X3 MEAS_OUT
X4 REF_OUT
A508
ZE DOUBLER 67
X12 RM_GEN
X11 RM_SOURCE
W514A
X2
X1 GEN_IN
A501
BL-KOPPLER 67
A502
BIAS 67
ATT-G
X14
W535A
A520
RM UNIT ZVA67
A500
ZE REFLECTOMETER 67

SOURCE_IN
W534
OPTION
ZVA40/50-B16
W621
SOURCE_OUT
W513
W536
A550 ATT GEN44/50
10
20
40
X1
X2
W512A
12
ATT-CTRL
X10
W550

OPTION
ZVA67-B22 GEN.ATTENUA.PORT2

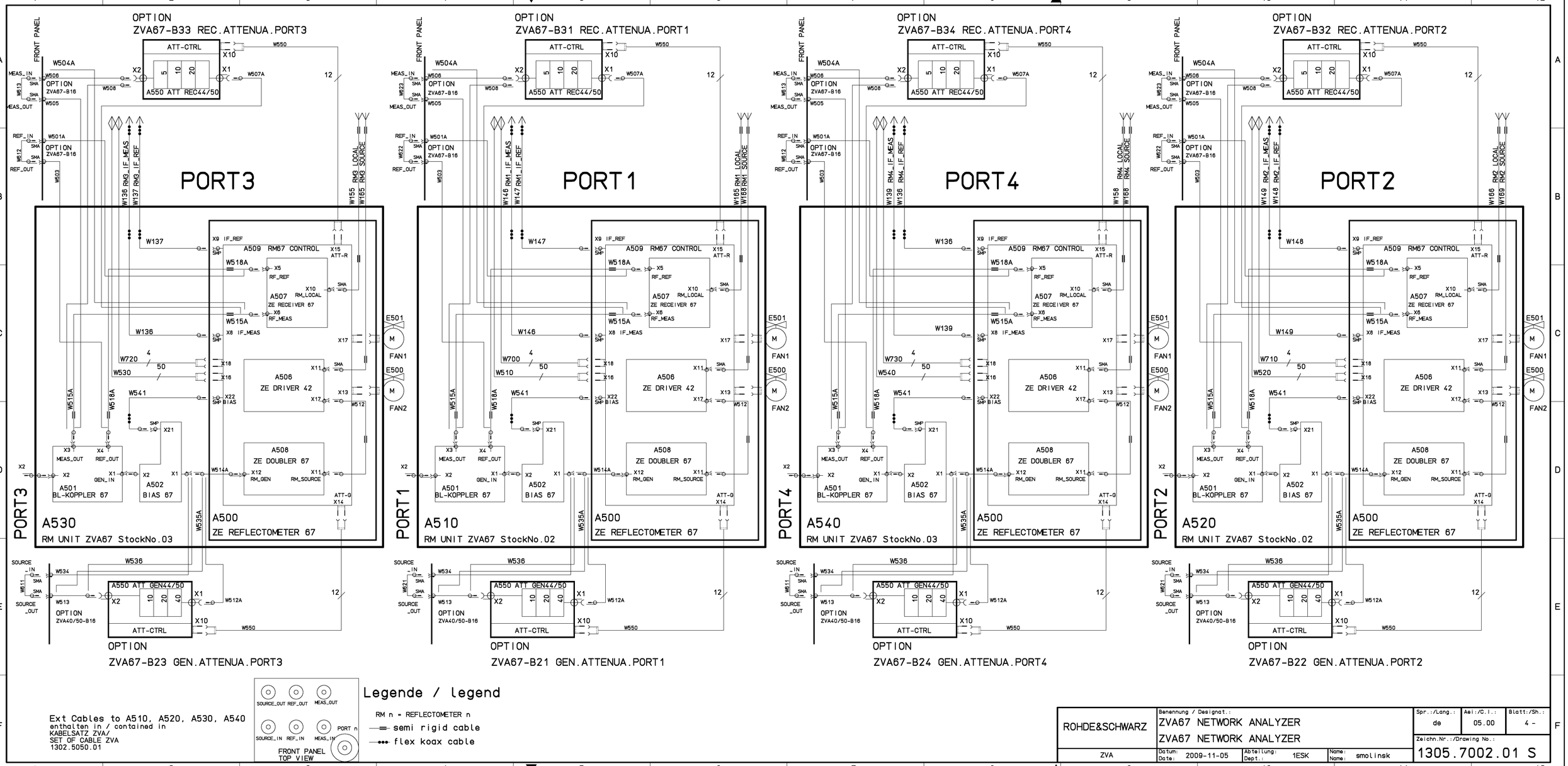
Ext Cables to A510, A520, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01

SOURCE_OUT REF_OUT MEAS_OUT
SOURCE_IN REF_IN MEAS_IN
PORT n
FRONT PANEL
TOP VIEW

Legende / legend

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 05.00	Blatt:/Sh.: 3 +
ZVA	Datum: Date: 2009-11-05	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1305.7002.01 S		



Ext Cables to A510, A520, A530, A540
enthalten in / contained in
KABELSATZ ZVA/
SET OF CABLE ZVA
1302.5050.01

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ROHDE&SCHWARZ	Benennung / Designat.: ZVA67 NETWORK ANALYZER ZVA67 NETWORK ANALYZER	Spr.:/Lang.: de	Aei.:/C.I.: 05.00
			Blatt:/Sh.: 4 -
ZVA	Datum: Date: 2009-11-05	Abteilung: Dept.: 1ESK	Name: smolinsk
			Zeichn.Nr.:/Drawing No.: 1305.7002.01 S

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A1 DISPLAY UNIT ZVB *
B10 & ROT PULS
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
A19 & DISPL. CONNECT FMR-TOSHIBA
W100 &
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
A100 FREQUENCY REFERENCE MOD.04 without-B4
OPTION ZVAB-B4 OVENQUARZ
OPTION STANDARD PCI
OPTION COMPACT PCI
A130 NETWORK CONTROLLER (2) MOD.04 Switchable Dither Generator
A141 NETCON DIGITAL StockNo .02 MOD.02/04 StockNo .03 MOD.05
A142 NETCON ANALOG StockNo .02 MOD.02 StockNo .04 MOD.04/05
A140 NETWORK CONTROLLER (1) MOD.04 Switchable Dither Generator
A150 SYNTH-LO (2) MOD.20
A160 SYNTH-DS (1) MOD.02
W200 POW UN
A21* AC FUSE BOARD
X200 * LINE IN 100..240V 47...63 Hz 450 VA
W201
GND
* A20 POWER SUPPLY
REAR PANEL
A10 * MOTHERBOARD
A90 * FRONT MODULE CONTROLER
Data ISA X90
PCI X91
I/O X92
X93
TEST X94
LAN1 W241
LAN2 W242
USB
A40 & USB X219
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A30 * Floppy
W300 *
X (E1) X (E2) X (E3)
W700
COMBINER X65
REF_10_OUTIN
DC MEAS X211/ X212
EXT TRIGGER X225
DIGITAL INTERFACE X221
USER CONTROL X220
CASCADE X219
MONITOR X218
NOISE SOURCE X201
10 MHz REF X210
DC MEAS -10V...+10V X212
DC MEAS -1V...+1V X211
USB(2x) X215
IEC60127 -F250L F5
IEC60127 -F250L F4
BNC X201
BNC X202
PORT BIAS
A18 PORT BIAS
(rear panel plate)
IEC BUS X68
OPTION UNIVERSAL IO
LAN2 X242
LAN1 X241

W530 RM3_IF_MEAS W136 RM3_IF_REF W137 RM3 LOCAL W155 RM3 SOURCE W165 — to A530 — X16 X8 X9 X10 X11
W510 W700 RM1_IF_MEAS W146 RM1_IF_REF W147 RM1 LOCAL W156 RM1 SOURCE W168 — to A510 — X18 X16 X8 X9 X10 X11
W540 RM4_IF_MEAS W139 RM4_IF_REF W138 RM4 LOCAL W158 RM4 SOURCE W166 — to A540 — X16 X8 X9 X10 X11
W520 W700 RM2_IF_MEAS W149 RM2_IF_REF W148 RM2 LOCAL W159 RM2 SOURCE W169 — to A520 — X18 X16 X8 X9 X10 X11

SOURCE_OUT REF_IN MEAS_IN 3 — FRONT PANEL TOP VIEW — PORT 3
SOURCE_OUT REF_OUT MEAS_OUT PORT SOURCE_IN REF_IN MEAS_IN 1 — FRONT PANEL TOP VIEW — PORT 1
SOURCE_OUT REF_IN MEAS_IN PORT 4 — FRONT PANEL TOP VIEW — PORT 4
SOURCE_OUT REF_OUT MEAS_OUT PORT SOURCE_IN REF_IN MEAS_IN 2 — FRONT PANEL TOP VIEW — PORT 2

Sheet 1	DISPLAY-MB-REARPANEL
Sheet 2	PORT1 / 3 REFLECTOMETER
Sheet 3	PORT2 / 4 REFLECTOMETER
Sheet 4	FRONT ZVA80-BU with ZVA-Z75 + DIPLEXER80 (left)
Sheet 5	FRONT ZVA80-BU with ZVA-Z75 + DIPLEXER80 (right)

Legende / legend

Cables to RM n
enthalten in / contained in
SET OF CABLE ZVA80 2PORT
1312.6566.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

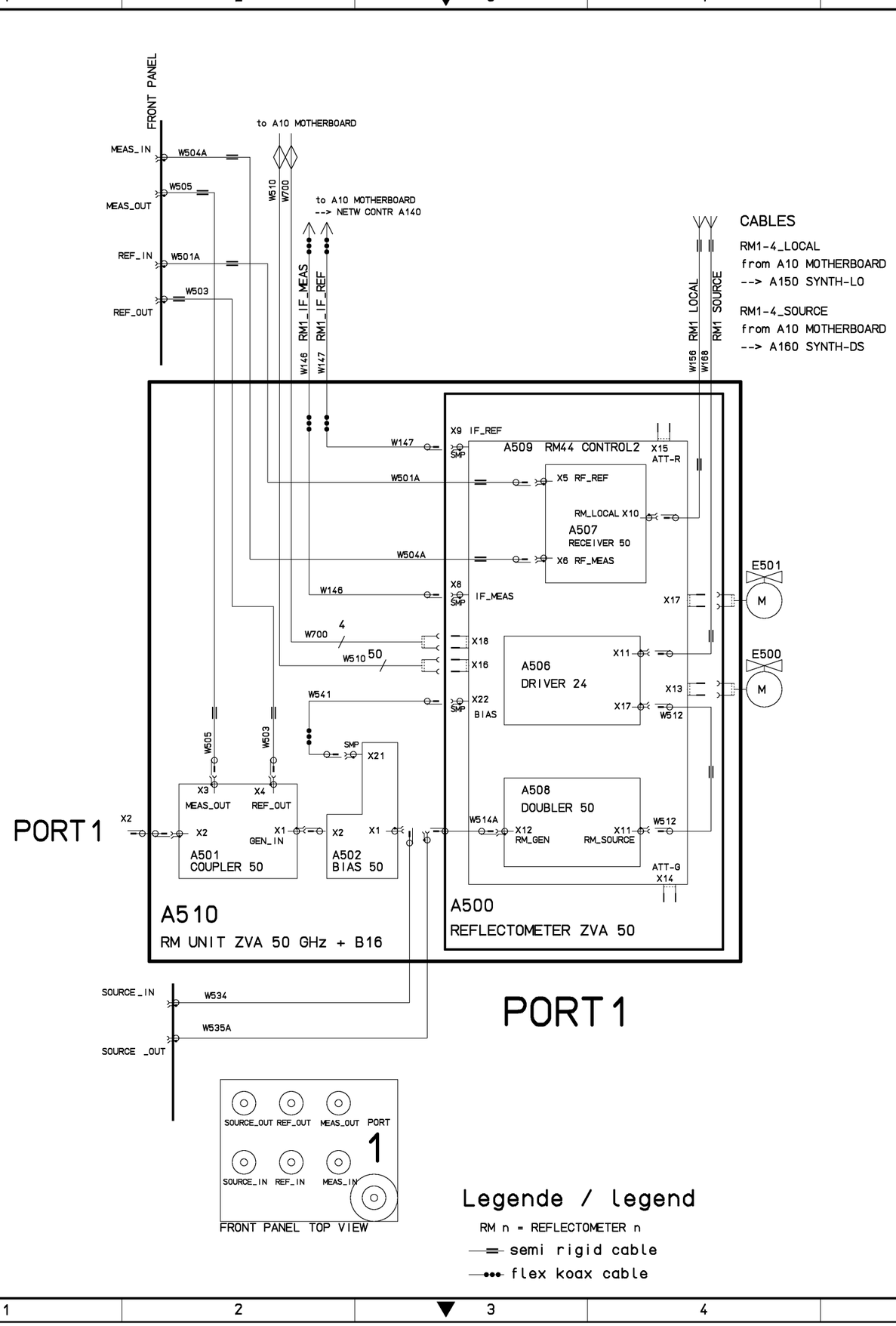
* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

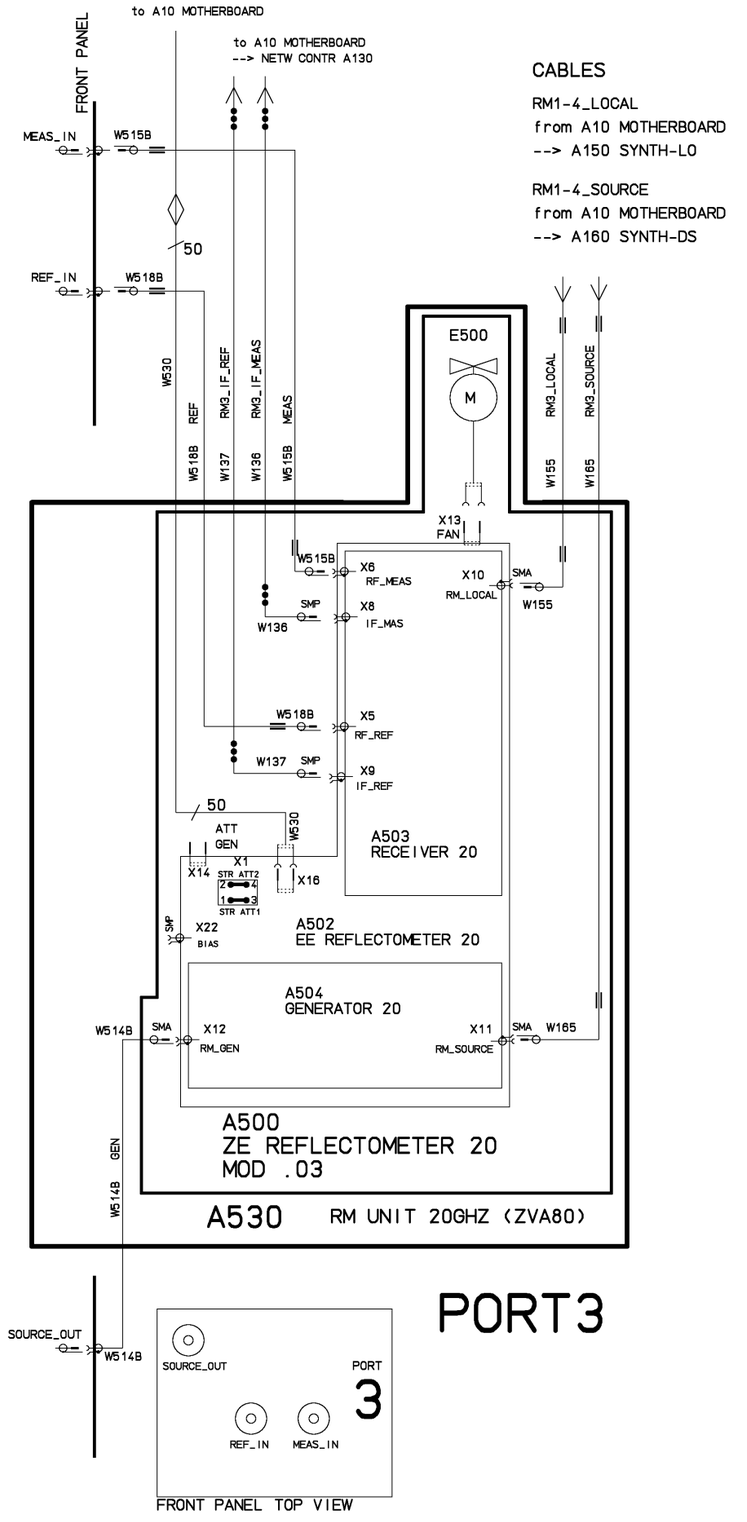
& enthalten in / contained in DISPLAYEINHEIT ZVA DISPLAY UNIT ZVA 1145.1390.01

X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 1 +
ZVA80	Datum: / Date: 2009-07-09	Abteilung: / Dept.: 1ESK	Name: / Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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Legende / legend

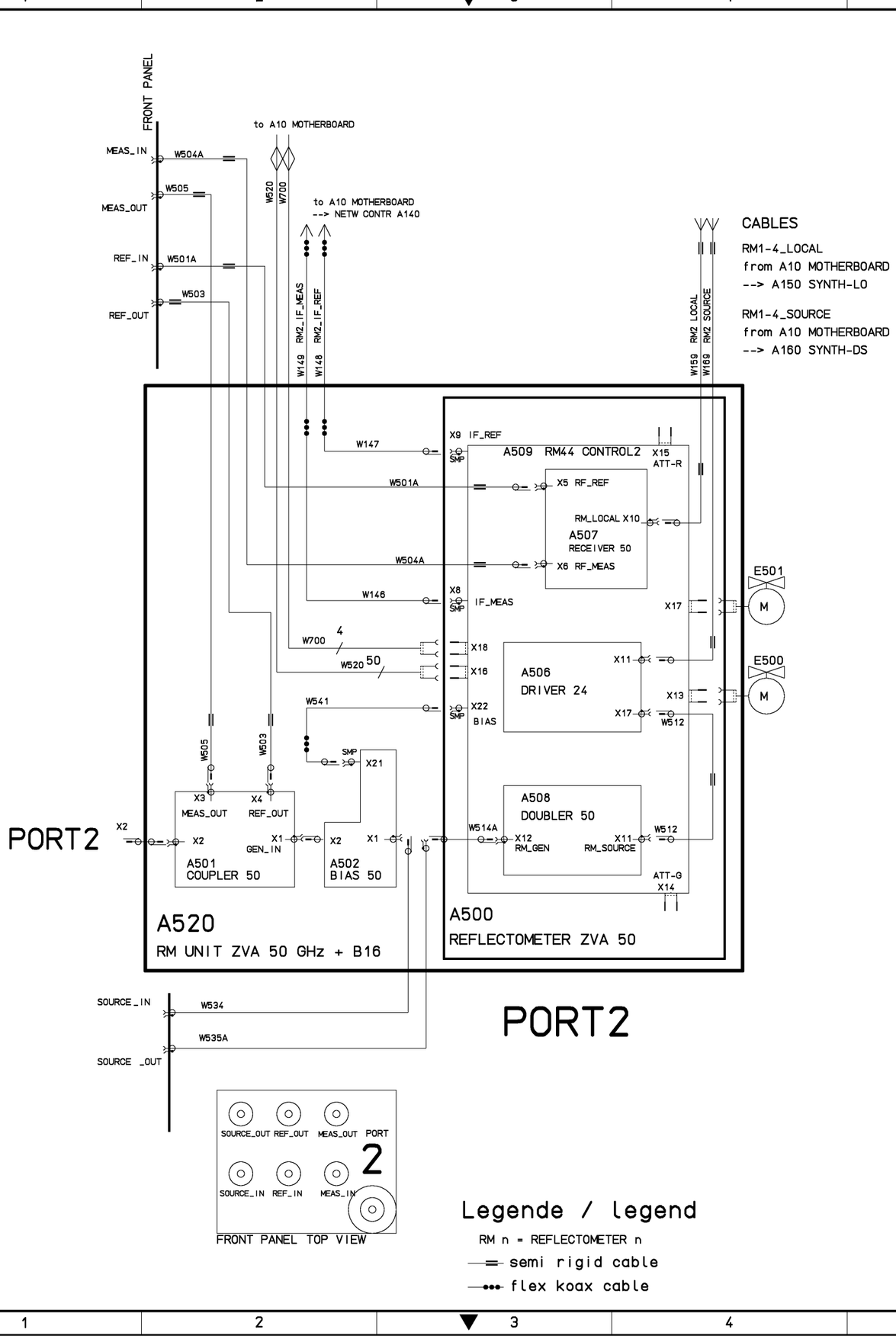
RM n = REFLECTOMETER n

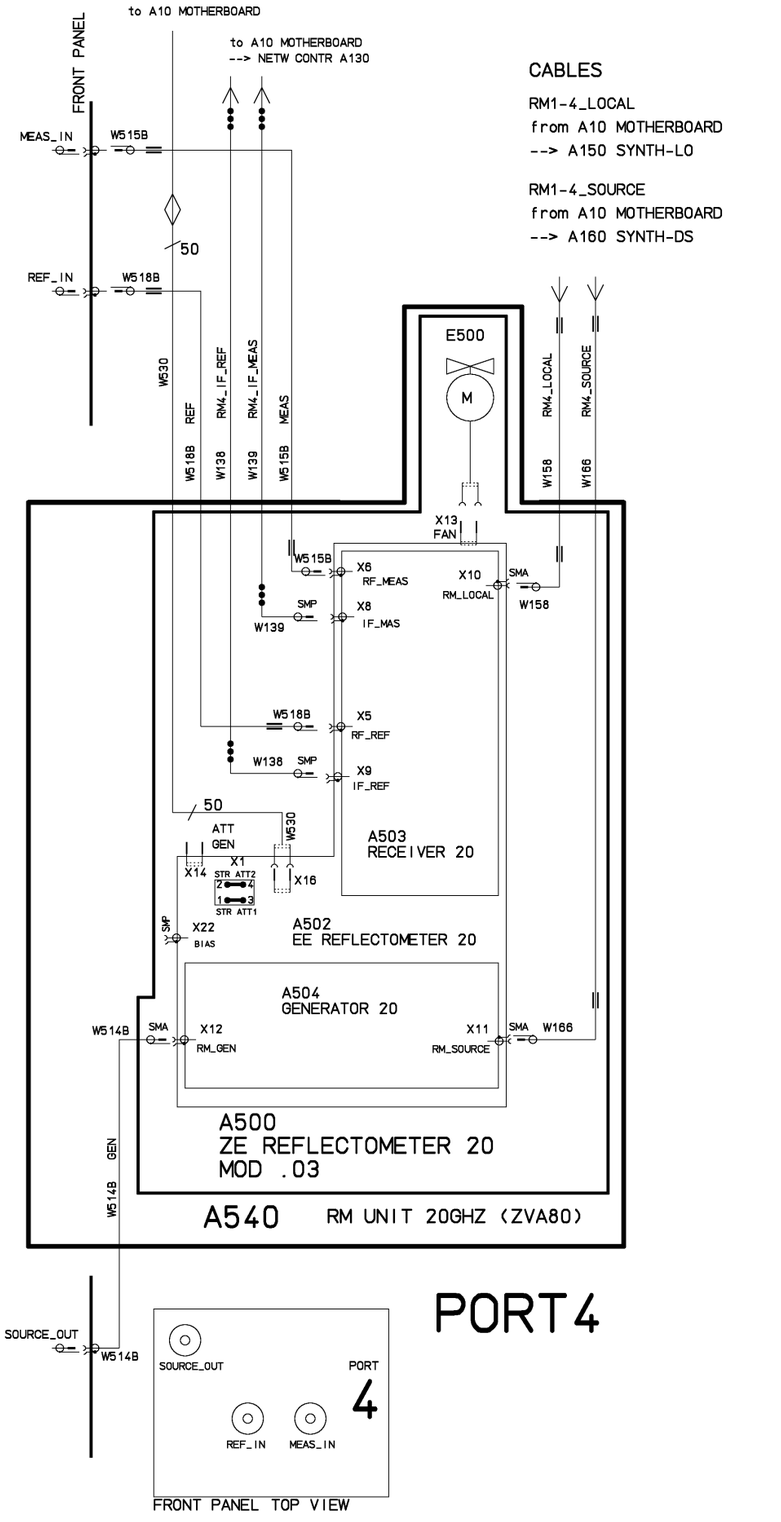
semi rigid cable

flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 2 +
ZVA80	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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Legende / legend

RM n = REFLECTOMETER n

semi rigid cable

flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 3 +
ZVA80	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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FRONT PANEL ZVA80-BU TOP VIEW

to REAR PANEL USER PORT

ZV-Z193 RF-CABLE 3,5MM

CABLE EXT REF

CABLE EXT MEAS

SOURCE_OUT REF_OUT MEAS_OUT SOURCE_IN REF_IN MEAS_IN PORT 3 PORT 1 PORT 4 PORT 2

REF OUT

W4

S200

A200 N-BOARD2

grn

yel

A210 POWER SUPPLY

1=PW8V 2=MAS X202 4P 1=red 2=sw (W202) 2 PW8V

1=PWIN 2=PWOUT X201 2P 1=red 2=vio

X200

F200 T1 IEC127-2/V red 2 W201 (W201) vio

RF IN W1

X200 W100 X100

LO IN W2

MEAS W3

M=6 x2 x3 PW8V

R4 3dB +20dB blk red PW8V N=8

W202 2

+10dB PW8V

R3 3dB +20dB PW8V N=8

A100 REFLECTOMETER WR15

ZVA-Z75 REFLECTOMETER WR15-BAND
1307.7400.80

RF-CABLE RF LOW 12

ZV-Z196 RF-CABLE 1.85MM

BIAS BNC

REF OUT LOW RF IN LOW/ HIGH MEAS OUT LOW

A31 COMBINER 80 A+C UNIT

1mm (male)

COMBINER 80 B UNIT A32

A30 UNIT COMBINER 80

A1 BD SWITCH 70 X1 X2 X3 X4 X5

A10 ED SWITCH 70 X6 X7 X8 P8 P4 P2 grn

K RF HIGH OUT

H/L SWITCH

vio red F1 T1 IEC127-2/V

A20 SWITCH 70-AMP

DIPLEXER80 W-BAND (LEFT)
1311.6504.12

H/L SWICH CABLE

Legende

= WAVEGUIDE WR-15

= WAVEGUIDE WR-15

= flex koax cable

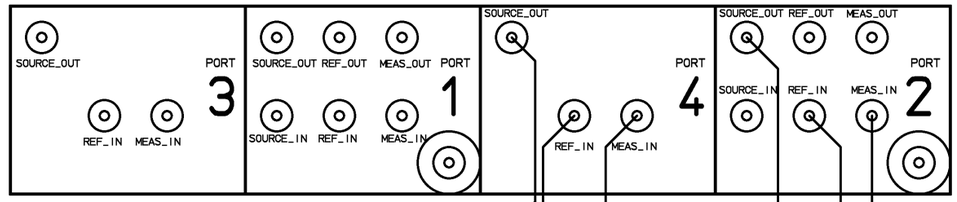
= semi rigid cable

= GORE Phaseflex

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 4 +
ZVA80	Datum: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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FRONT PANEL ZVA80-BU TOP VIEW



ZV-Z193 RF-CABLE 3,5MM

CABLE EXT REF

CABLE EXT MEAS

ZV-Z196 RF-CABLE 1,85MM

ZV-Z196 RF-CABLE 1,85MM

ZV-Z196 RF-CABLE 1,85MM

REF OUT

W4

S200

A200
N-BOARD2

grn

yel

A210
POWER
SUPPLY

1=PW8V
2=MAS
X202

4P
1=red
2=sw

⟨W202⟩ 2 PW8V

1=PWIN
2=PWOUT
X201

2P
1=red
2=vio

X200

F200
T1 IEC127-2/V

red 2 W201

vio
⟨W201⟩

RF IN

W1

x2

x3

PW8V

X200

W100

X100

LO IN

W2

+10dB

PW8V

MEAS

W3

PW8V

R3

3dB

+20dB

M=6

R4

3dB

+20dB

blk

red PW8V

W202 2

N=8

N=8

A100 REFLECTOMETER WR15

ZVA-Z75 REFLECTOMETER WR15-BAND
1307.7400.80

RF-CABLE RF LOW 18

BIAS

REF OUT LOW

RF IN LOW/HIGH

MEAS OUT LOW

BNC

A31
COMBINER 80 A+C UNIT

1mm (male)

COMBINER 80
B UNIT
A32

A30 UNIT COMBINER 80

A1
BD SWITCH 70
X5 X1 X2 X4 X3

A10 ED SWITCH 70
X6 X7 X8
P6 P4 P2

grn

vio
red

F1
T1 IEC127-2/V

K
RF
HIGH
OUT

H/L
SWITCH

A20 SWITCH 70-AMP

DIPLEXER80 W-BAND ⟨RIGHT⟩
1311.6504.18

Legende

= WAVEGUIDE WR-15

= WAVEGUIDE WR-15

= flex koax cable

= semi rigid cable

= GORE Phaseflex

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80 VECT. NETW. ANALYZER ZVA80 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.l.: 03.00	Blatt:/Sh.: 5 -
ZVA80	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6750.01 S		

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FRONT PANEL ZVA67

to REAR PANEL
USER PORT

ZV-Z193 RF-CABLE 3,5MM

LO to external
TestSet (left)

CABLE EXT REF

CABLE EXT MEAS

(W202) 2 PW8V
4P
1=red
2=sw

WILKINSON

LO to external
TestSet (right)

CABLE POWER Z75

REF OUT

W4

S200

A200
N-BOARD2

grn

yel

A210
POWER
SUPPLY

1=PW8V
2=MAS
X202

1=PWIN
2=PWOUT
X201

X200

2P
1=red
2=vio

F200
T1 IEC127-2/V

red 2 W201
(W201)
vio

RF IN

W1

X200

W100

X100

LO IN

W2

MEAS

W3

EL ATT
3P
2

W4

W202 2 PW8V
4P
1=red
2=sw

+20dB
blk
red PW8V

N=8

W202 2

M=6

x2

x3

PW8V

+10dB
PW8V

PW8V
+20dB

N=8

ZVA-Z110 REFLECTOMETER W-BAND
1307.7000.40

A100 REFLECTOMETER WR10 ELATT

RF-CABLE RF HIGH

BIAS
BNC

ZV-Z196 RF-CABLE 1,85MM
REF OUT LOW

ZV-Z196 RF-CABLE 1,85MM
RF IN LOW/ HIGH

ZV-Z196 RF-CABLE 1,85MM
MEAS OUT LOW

A31
COMBINER 110 A+C UNIT

1mm (male)

COMBINER 110
B UNIT
A32

A30 UNIT COMBINER 110

A1
BD SWITCH 70
X2
X1
X3
X5 X1 X2 X4 X3

K
RF
HIGH
OUT

A10 ED SWITCH 70
X6 X7 X8
P6 P4 P2
grn

vio
red
F1
T1 IEC127-2/V

2
H/L
SWITCH

A20 SWITCH 70-AMP

ZVA-ZD110 DIPLEXER110 W-BAND (LEFT)
1314.4002.12

H/L SWICH CABLE

Legende

= WAVEGUIDE WR-10

= WAVEGUIDE WR-10

= flex koax cable

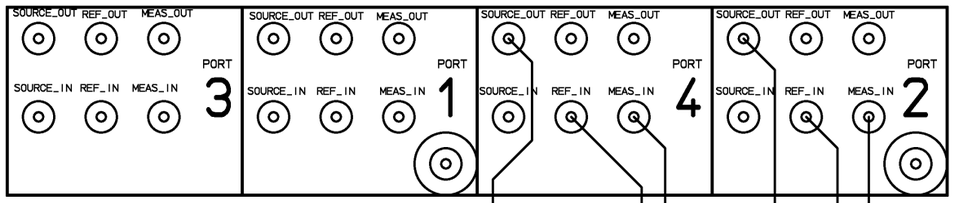
= semi rigid cable

= GORE Phaseflex

ROHDE&SCHWARZ	Benennung / Designat.: ZVA110 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 06.00	Blatt:/Sh.: 1 +
	ZVA110 VECT. NETW. ANALYZER			Zeichn.Nr.:/Drawing No.: 1312.7004.01 S		
ZVA110	Datum: Date: 2011-01-25	Abteilung: Dept.: 1EST1	Name: Name: smolinsk			

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FRONT PANEL ZVA67



LO to external TestSet (left)

WILKINSON

ZV-Z193 RF-CABLE 3,5MM

CABLE EXT REF

CABLE EXT MEAS

ZV-Z196 RF-CABLE 1,85MM

ZV-Z196 RF-CABLE 1,85MM

ZV-Z196 RF-CABLE 1,85MM

CABLE POWER Z75

REF OUT

W4

S200

A200
N-BOARD2

grn

yel

A210
POWER
SUPPLY

1=PW8V
2=MAS
X202

1=PWIN
2=PWOUT
X201

X200

F200
T1 IEC127-2/V

(W201)

red

vio

2

W201

W202 2 PW8V

4P
1=red
2=sw

2P
1=red
2=vio

+20dB

blk

red

PW8V

N=8

M=6

RF IN

W1

x2

x3

PW8V

X200

W100

X100

LO IN

W2

+10dB

PW8V

MEAS

W3

PW8V

+20dB

EL ATT

3P

2

N=8

ZVA-Z110 REFLECTOMETER W-BAND
1307.7000.40

A100 REFLECTOMETER WR10 ELATT

RF-CABLE RF HIGH

BIAS

REF OUT LOW

RF IN LOW/HIGH

MEAS OUT LOW

BNC

A31
COMBINER 110 A+C UNIT

1mm (male)

COMBINER 110
B UNIT
A32

A30 UNIT COMBINER 110

A1
BD SWITCH 70

X1 X2 X3 X4 X5

A10 ED SWITCH 70
X6 X7 X8

P6 P4 P2

grn

RF
HIGH
OUT

H/L
SWITCH

vio

red

F1
T1 IEC127-2/V

A20 SWITCH 70-AMP

ZVA-ZD110 DIPLEXER110 W-BAND (RIGHT)
1314.4002.18

Legende

= WAVEGUIDE WR-10

= WAVEGUIDE WR-10

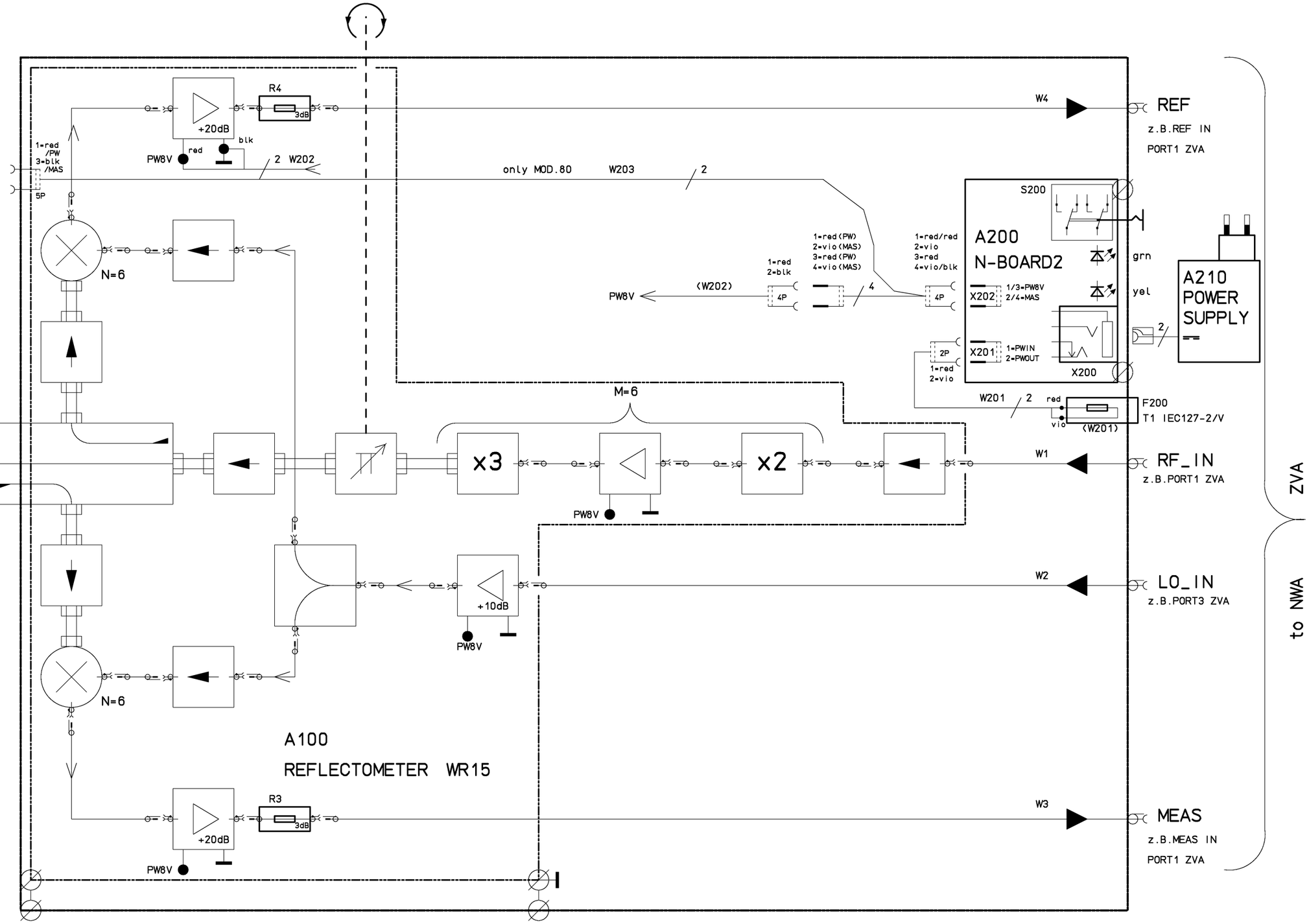
= flex koax cable

= semi rigid cable

= GORE Phaseflex

ROHDE&SCHWARZ	Benennung / Designat.: ZVA110 VECT. NETW. ANALYZER			Spr.:/Lang.: de	Aei:/C.I.: 06.00	Blatt:/Sh.: 2 -
	ZVA110 VECT. NETW. ANALYZER			Zeichn.Nr.:/Drawing No.: 1312.7004.01 S		
ZVA110	Datum: Date: 2011-01-25	Abteilung: Dept.: 1EST1	Name: Name: smolinsk			

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Legende

= WAVEGUIDE WR-15

= KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

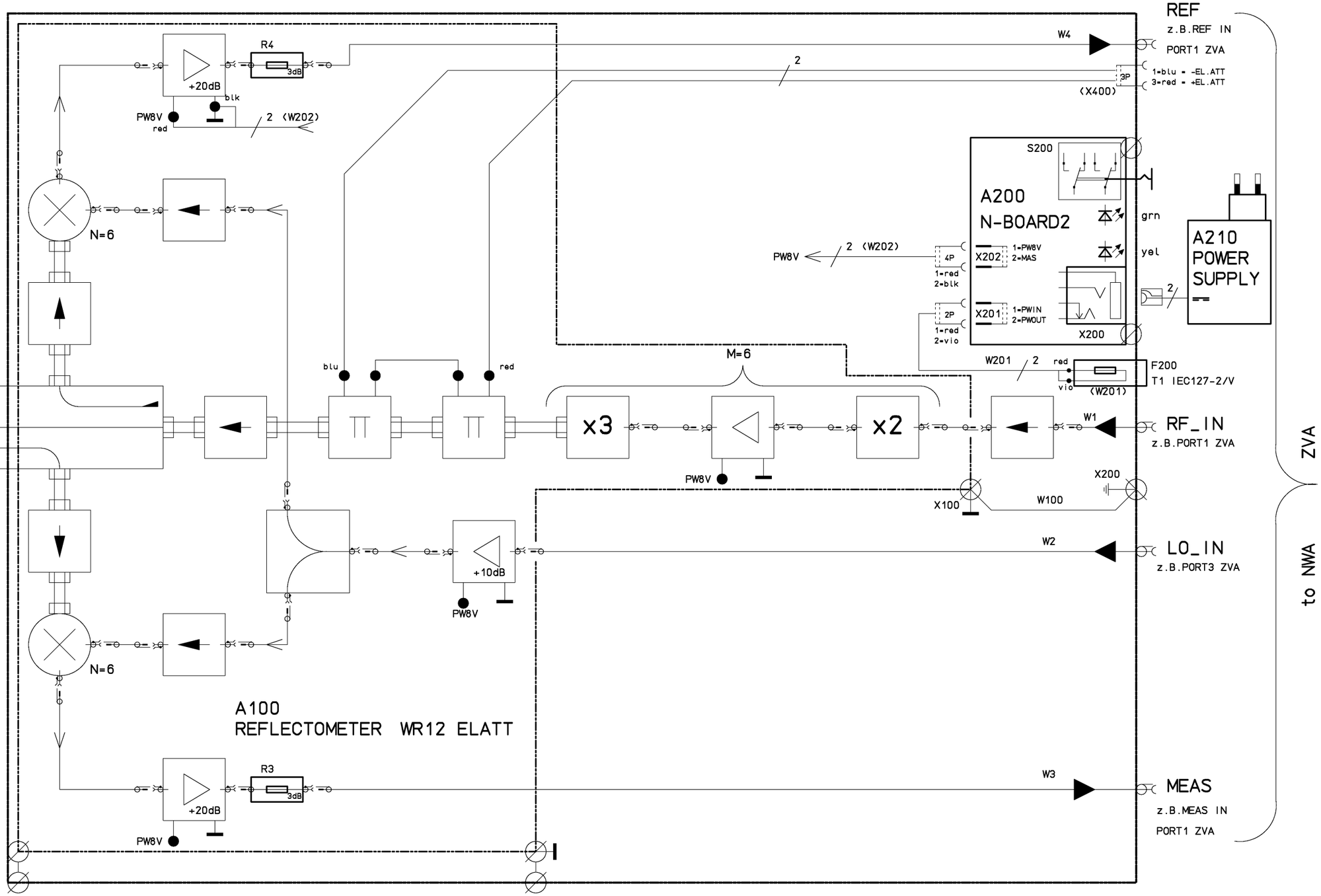
For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z75 REFLEKTOMETER WR15-BAND ZVA-Z75 REFLECTOMETER WR15-BAND				Spr.:/Lang.: de	Aei:/C.I.: 01.00	Blatt:/Sh.: 1 -
ZVA-Z75	Datum: Date: 2009-08-11	Abteilung: Dept.: 1ESK	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7400.01 S		

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Legende

= WAVEGUIDE WR-12

= KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

For binding information on models, trimming and components values and nonfitted components see parts list.

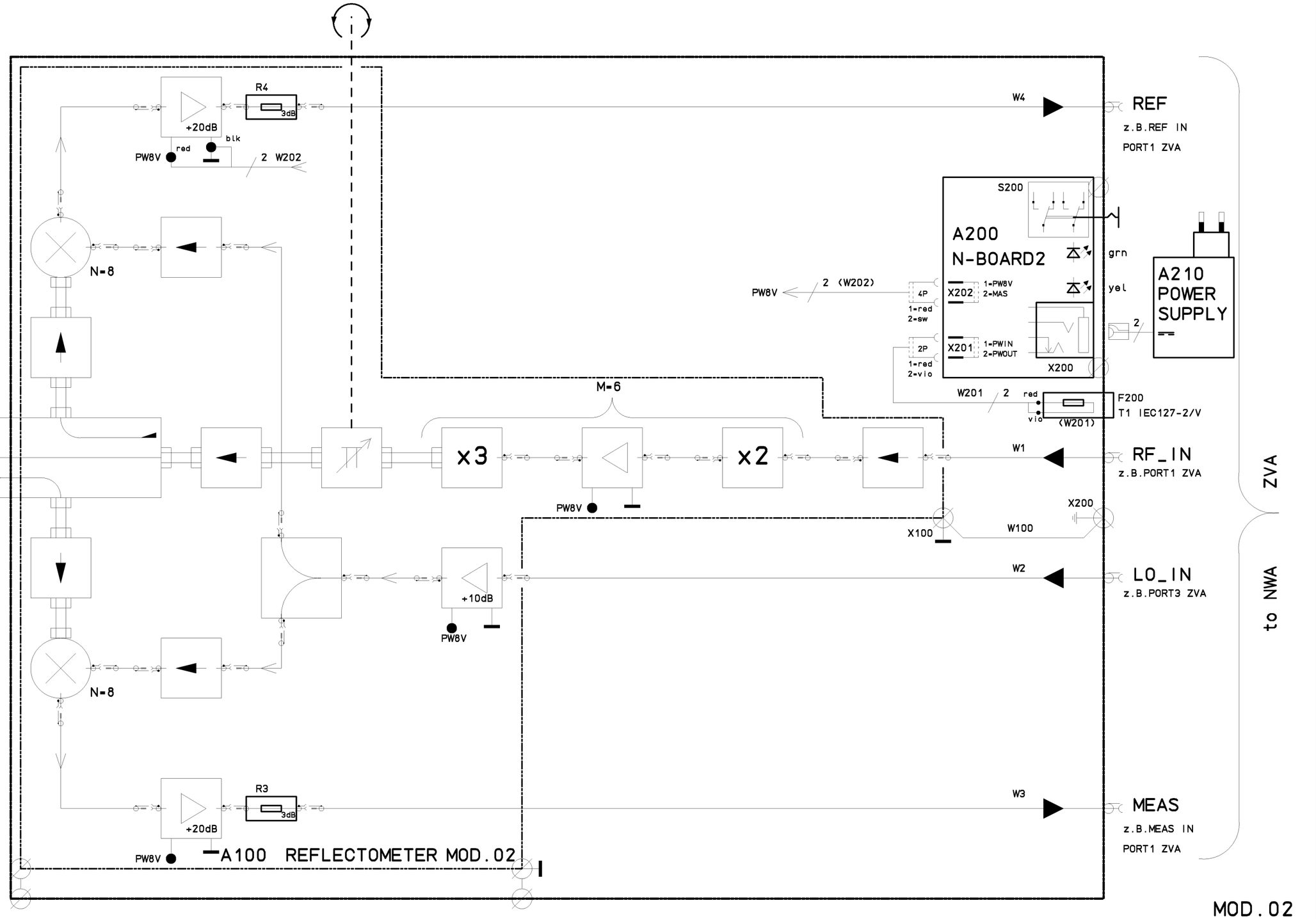
ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

MOD.02

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z90E REFLEKTOMETER WR12-BAND ZVA-Z90E REFLECTOMETER WR12-BAND				Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 1 -
ZVA-Z90E	Datum: Date: 2009-06-04	Abteilung: Dept.: 1EST1	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7600.01 S		

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MOD.02

Legende

- WAVEGUIDE WR-10
- KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

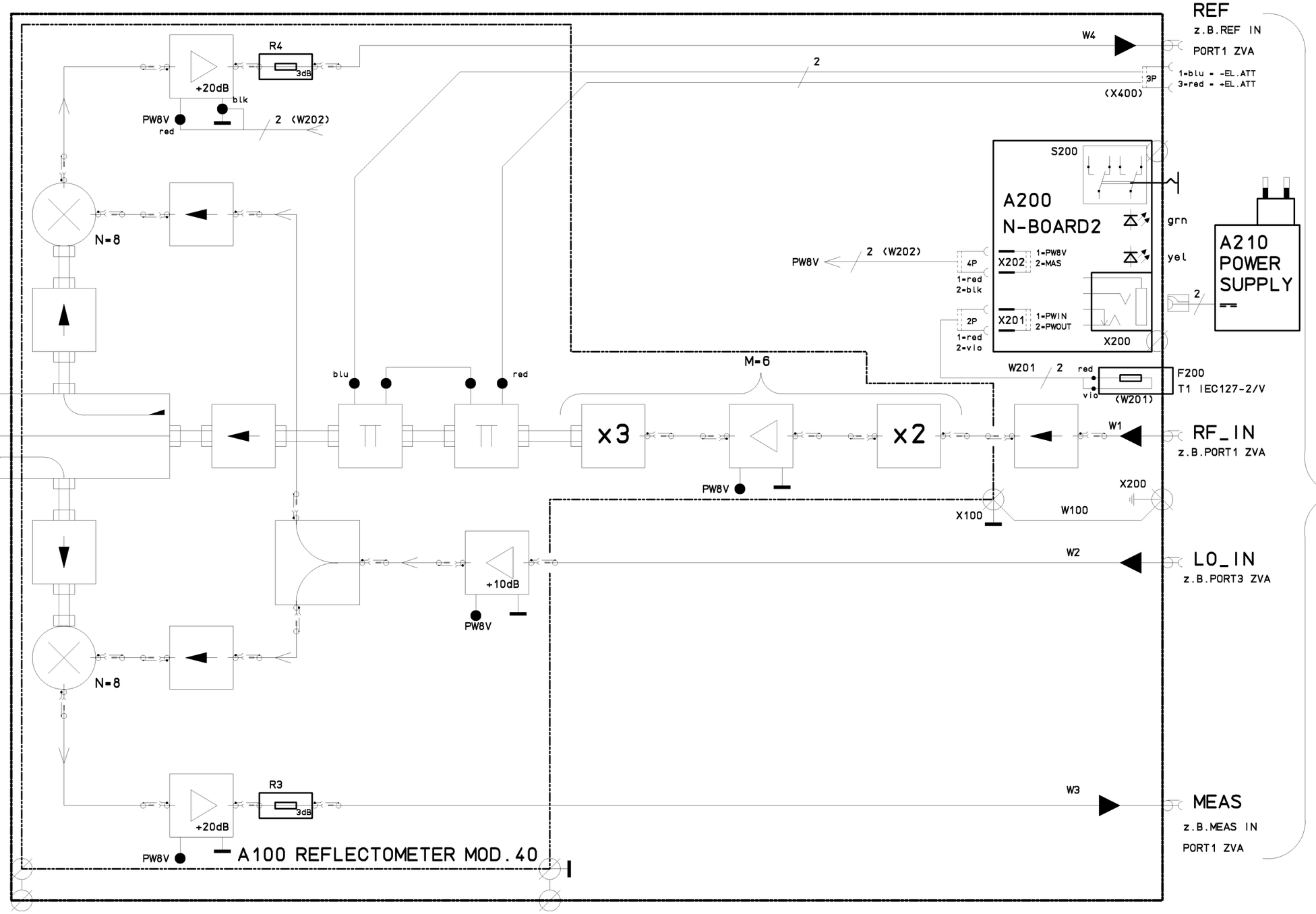
For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z110 REFLEKTOMETER W-BAND ZVA-Z110 REFLECTOMETER W-BAND			Spr.:/Lang.: de	Aei:/C.i.: 03.00	Blatt:/Sh.: 1 +
ZVA-Z110	Datum: 08-12-02	Abteilung: 1ESK	Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1307.7000.01 S		

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Legende

- WAVEGUIDE WR-10
- KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

For binding information on models, trimming and components values and nonfitted components see parts list.

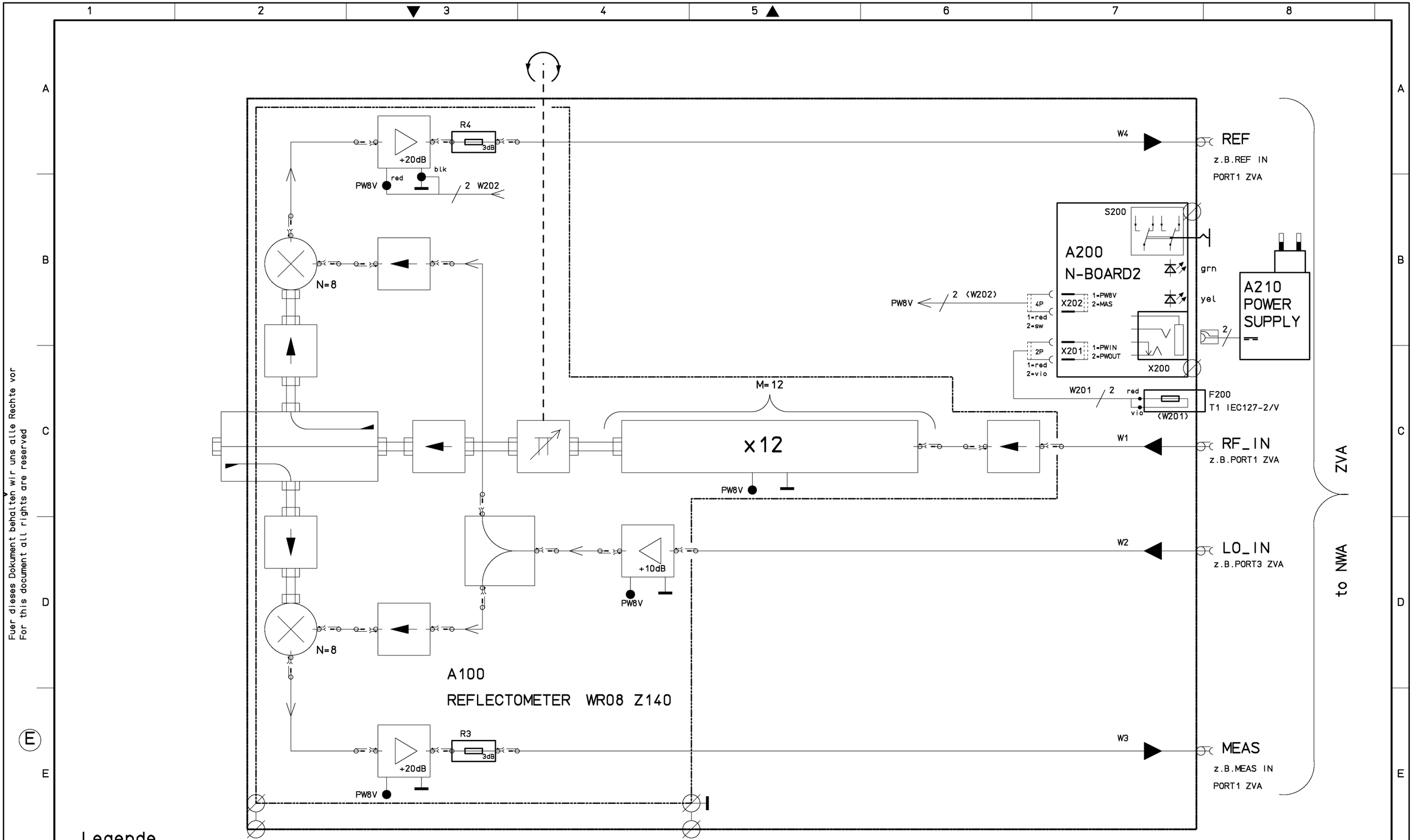
ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

MOD.40

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z110 REFLEKTOMETER W-BAND ZVA-Z110 REFLECTOMETER W-BAND				Spr.:/Lang.: de	Aei:/C.I.: 03.00	Blatt:/Sh.: 2 -
ZVA-Z110	Datum: Date: 08-12-02	Abteilung: Dept.: 1ESK	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7000.01 S		

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Legende

= WAVEGUIDE WR-08

= KOAX CON

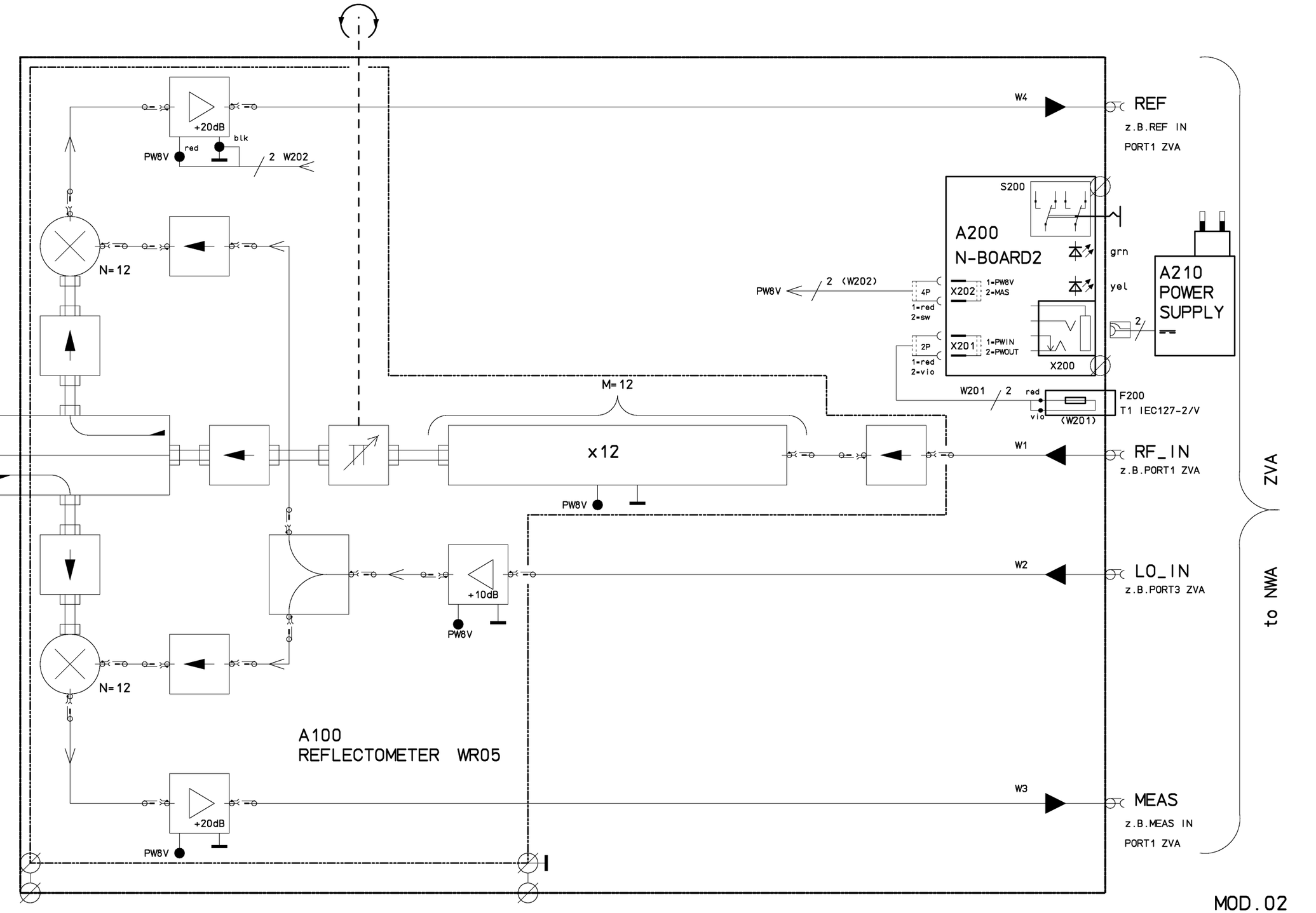
Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.
ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z140 REFLEKTOMETER WR08-BAND ZVA-Z140 REFLECTOMETER WR08-BAND				Spr.:/Lang.: de	Aei:/C.i.: 04.00	Blatt:/Sh.: 1 -
ZVA-Z140	Datum: Date: 2009-08-11	Abteilung: Dept.: 1ESK	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7800.01 S		

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Legende

= WAVEGUIDE WR-05

= KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe ST.

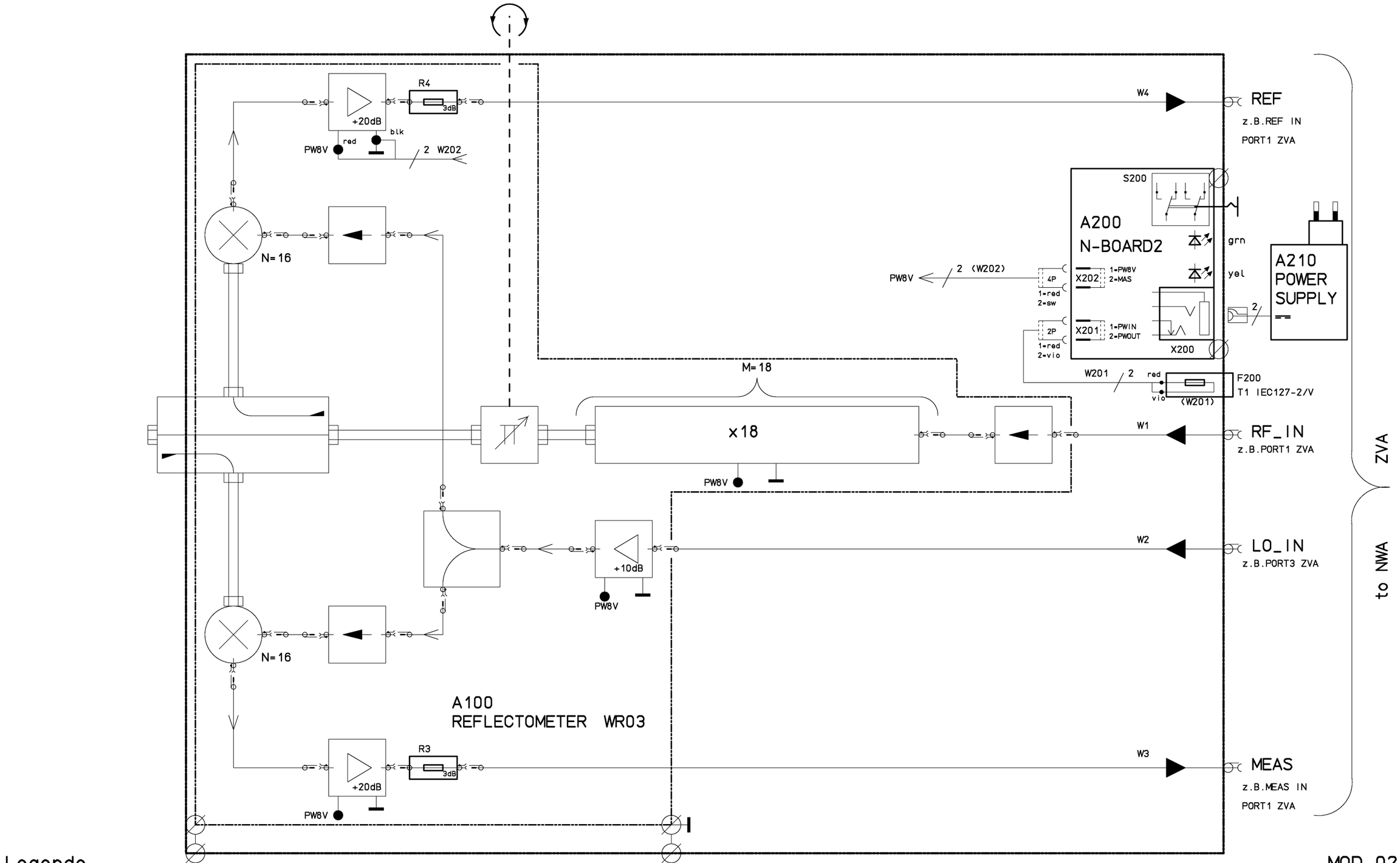
For binding information on models, trimming and components values and nonfitted components see parts list.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.
ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

MOD.02

ROHDE&SCHWARZ	Benennung / Designat.: ZVA-Z220 REFLEKTOMETER WR05-BAND ZVA-Z220 REFLECTOMETER WR05-BAND				Spr.:/Lang.: de	Aei:/C.l.: 05.00	Blatt:/Sh.: 1 -
ZVA-Z220	Datum: Date: 2010-01-11	Abteilung: Dept.: 1ESK	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.8006.01 S		

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Legende

= WAVEGUIDE WR-03

= KOAX CON

Bindende Angaben ueber Varianten, Trimmwerte, Bauteile und nicht bestueckte Bauteile siehe SA.

For binding information on models, trimming, component values and not fitted components see SA.

ACHTUNG: ESD!
Elektrostatisch gefaehrdete Bauelemente erfordern eine besondere Handhabung.

ATTENTION: ESD!
Electrostatic sensitiv devices require a special handling.

MOD.02

ZVA-Z325	Benennung / Designat.: ZVA-Z325 REFLEKTOMETER WR03-BAND ZVA-Z325 REFLECTOMETER WR03-BAND				Spr.:/Lang.: de	Aei:/C.I.: 07.00	Blatt:/Sh.: 1 -
	Datum: Date: 2011-12-05	Abteilung: Dept.: 1EST1	Name: Name: smolinsk		Zeichn.Nr.:/Drawing No.: 1307.7200.01 S		

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A1 DISPLAY UNIT ZVB *
A70 & DISPLAY TFT-LCD
T10 & INVERTER DC-AC
B10 & ROT PULS
A19 & DISPL. CONNECT FMR-TOSHIBA
W100 &
OPTION ZVAB-B18 REMOVABLE FLASHDISC
A60 * SATA HARD DISK
A100 FREQUENCY REFERENCE MOD.04 without-B4
OPTION ZVAB-B4 OVENQUARZ
OPTION STANDARD PCI
OPTION COMPACT PCI
A130 NETWORK CONTROLLER (2) MOD.04 Switchable Dither Generator
A141 NETCON DIGITAL StockNo .02 MOD.02/04
A142 NETCON ANALOG StockNo .02 MOD.02
A140 NETWORK CONTROLLER (1) MOD.04 Switchable Dither Generator
A150 SYNTH-LO (2) MOD.20
A160 SYNTH-2S (1) MOD.02
A21* AC FUSE BOARD
W200 POW UN
(Z22)
(W200)
W201
X200 * LINE IN 100..240V 47...63 Hz 450 VA
GND
A20 POWER SUPPLY
REAR PANEL
A10 * MOTHERBOARD
A90 * FRONT MODULE CONTROLER
Data ISA X90
PCI X91
I/O X92
TEST X94
LAN1 LAN2 USB
A16 FLEX. SWITCHBOARD
A15 FLEX. SWITCH FOIL
A40 & USB X219
A30 * Floppy
W300 * 26
W241 W242
W12 *
X(E1) X(E2) X(E3)
W700
COMBINER X65
REF_10_OUTIN
DC MEAS X211/X212
EXT TRIGGER X225
DIGITAL INTERFACE X221
USER CONTROL X220
CASCADE X219
MONITOR X218
NOISE SOURCE X201
10 MHz REF X210
DC MEAS -10V...+10V X212
DC MEAS -1V...+1V X211
USB(2x) X215
IEC127 -F250L F5
IEC127 -F250L F4
BNC X201
BNC X202
PORT BIAS
(rear panel plate)
IEC BUS X68
OPTION UNIVERSAL IO
LAN2 X242
LAN1 X241

RM3_IF_MEAS RM3_IF_REF RM3 LOCAL RM3 SOURCE
to A530
X16 X8 X9 X10 X11
SOURCE_OUT REF_IN MEAS_IN PORT 3
FRONT PANEL TOP VIEW
PORT 3

RM1_IF_MEAS RM1_IF_REF RM1 LOCAL RM1 SOURCE
X18 to A510
X16 X8 X9 X10 X11
SOURCE_OUT REF_OUT MEAS_OUT PORT 1
SOURCE_IN REF_IN MEAS_IN
FRONT PANEL TOP VIEW
PORT 1

RM4_IF_MEAS RM4_IF_REF RM4 LOCAL RM4 SOURCE
to A540
X16 X8 X9 X10 X11
SOURCE_OUT REF_IN MEAS_IN PORT 4
FRONT PANEL TOP VIEW
PORT 4

RM2_IF_MEAS RM2_IF_REF RM2 LOCAL RM2 SOURCE
X18 to A520
X16 X8 X9 X10 X11
SOURCE_OUT REF_OUT MEAS_OUT PORT 2
SOURCE_IN REF_IN MEAS_IN
TOP VIEW
FRONT PANEL TOP VIEW
PORT 2

Sheet 1
DISPLAY-MB-REARPANEL
Sheet 2
PORT1 / 3
without OPTIONS
Sheet 3
PORT2 / 4
without OPTIONS

Legende / legend

Cables to RM n
enthalten in / contained in
KABELSATZ ZVA80
SET OF CABLE ZVA80
1312.6566.01

RM n = REFLECTOMETER n
semi rigid cable
flex koax cable

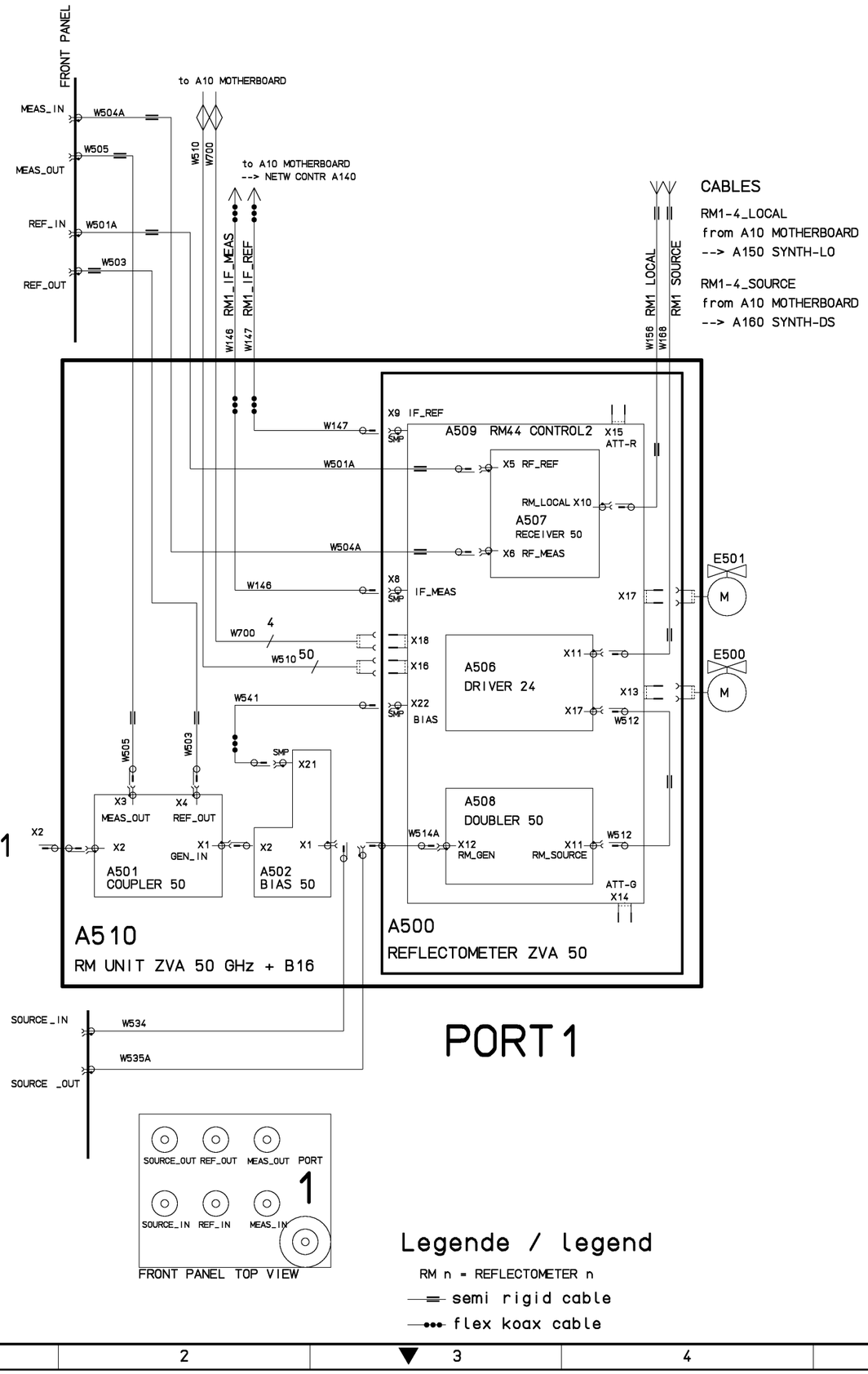
* enthalten in / contained in GRUNDEINHEIT ZVA / FUNDAMENTAL UNIT 1145.1310.01

& enthalten in / contained in DISPLAYEINHEIT ZVA / DISPLAY UNIT ZVA 1145.1390.01

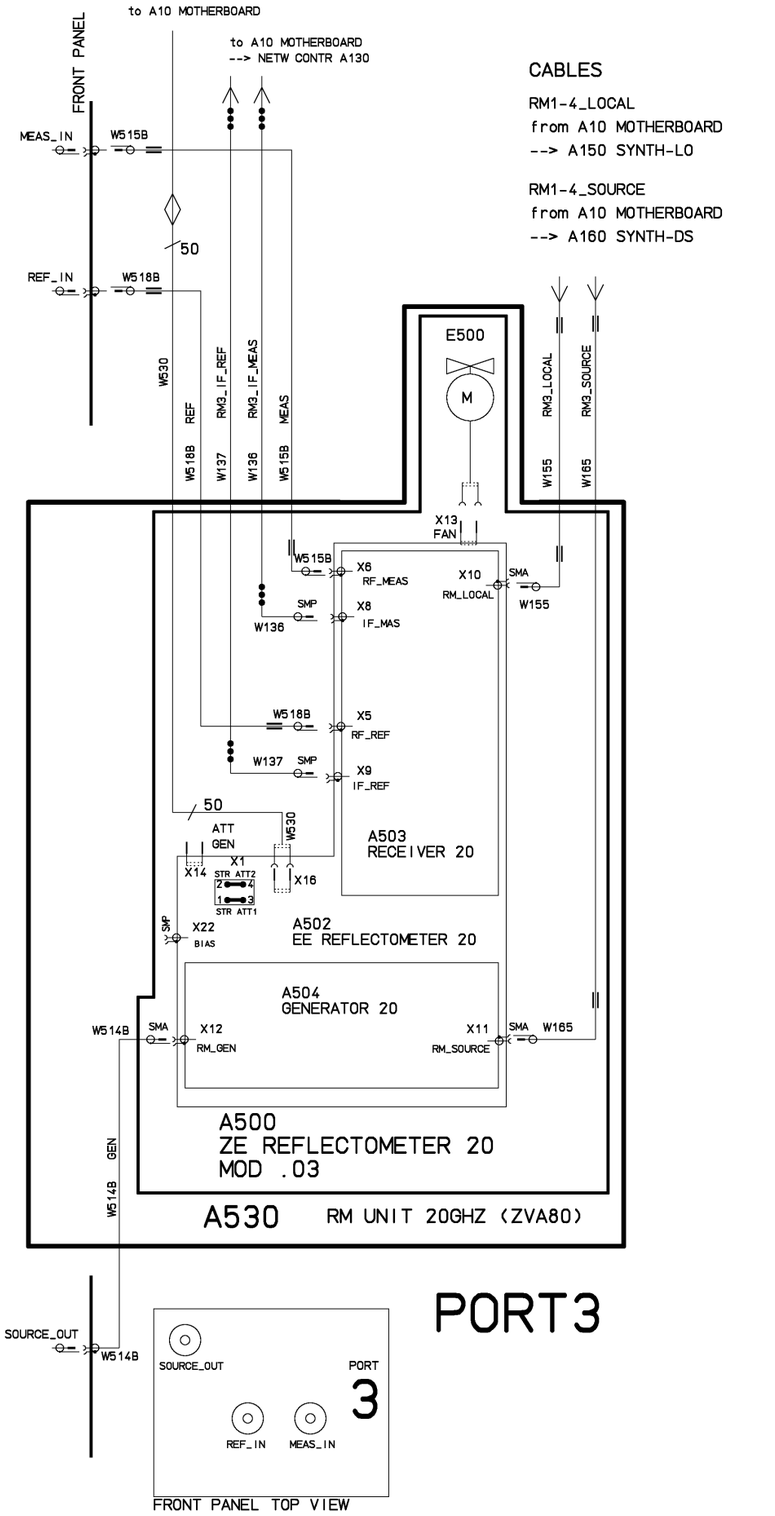
X = E1, E2, E3 enthalten in / contained in GERAETERAHMEN/ DEVICE FRAME 1145.1355.00

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80-BU ZVA80-BU			Spr.:/Lang.: de	Aei:/C.I.: 06.00	Blatt:/Sh.: 1 +
ZVA	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6508.01 S		

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PORT 1



PORT 3

Legende / legend

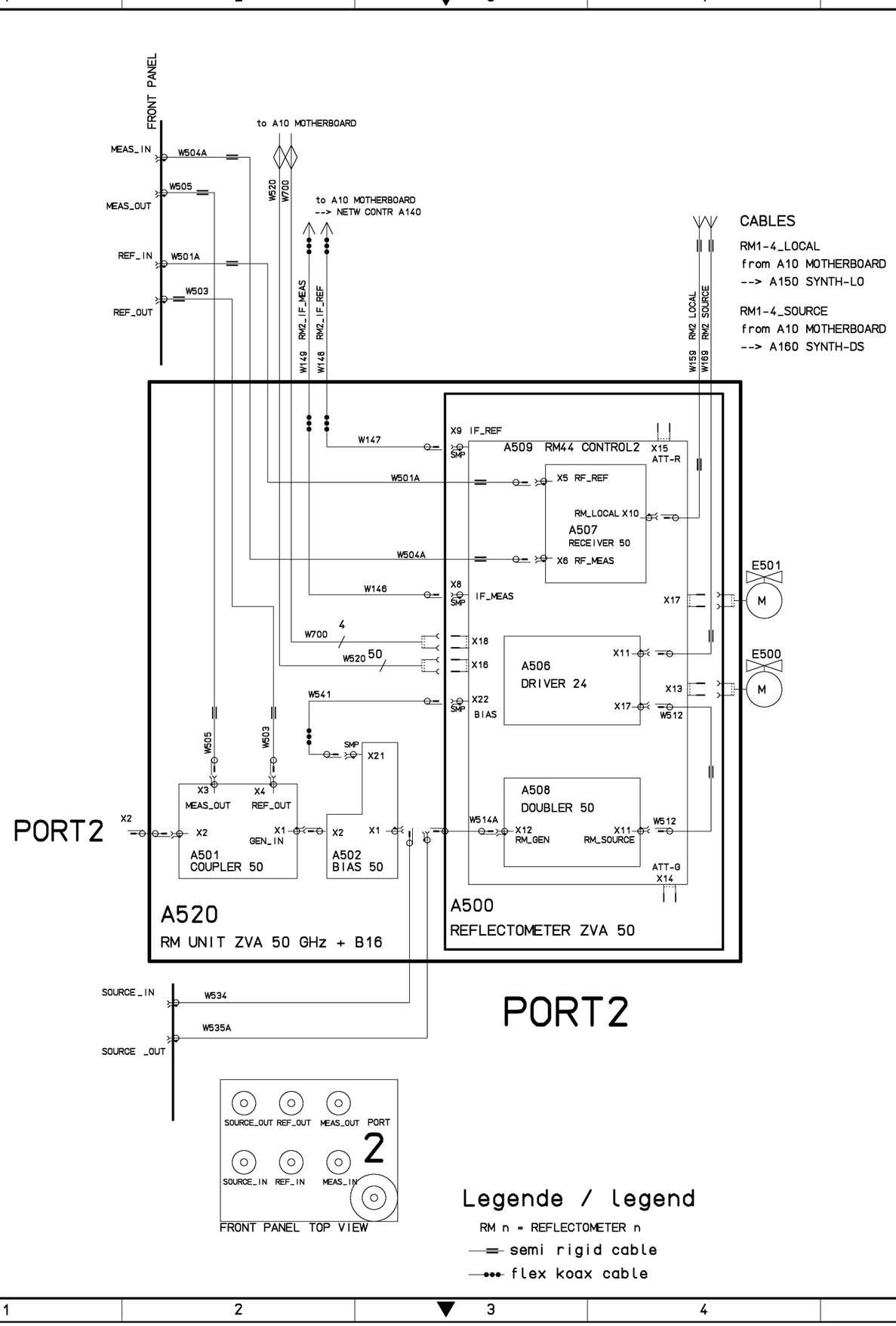
RM n = REFLECTOMETER n

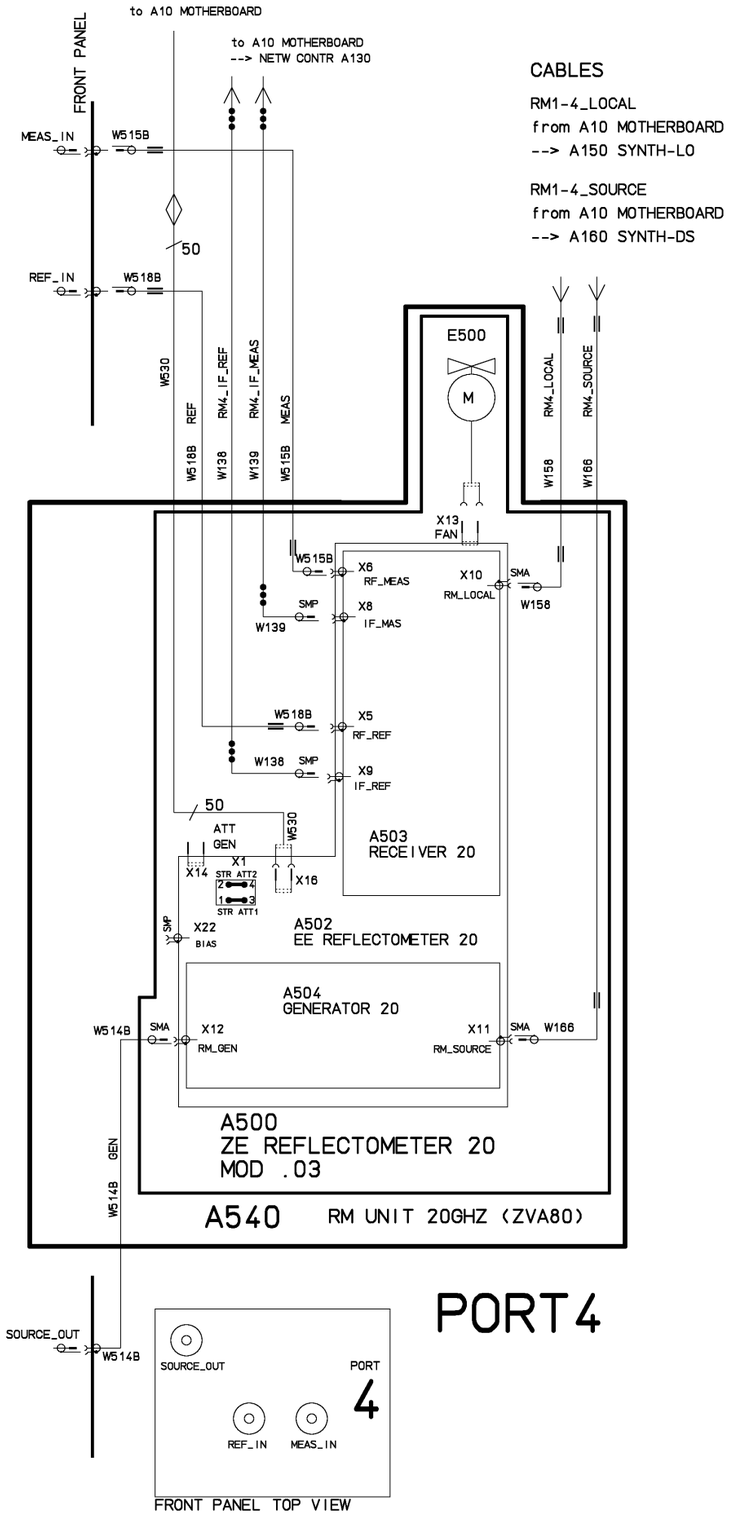
semi rigid cable

flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80-BU ZVA80-BU			Spr.:/Lang.: de	Aei:/C.I.: 06.00	Blatt:/Sh.: 2 +
ZVA	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6508.01 S		

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Legende / legend

RM n = REFLECTOMETER n

semi rigid cable

flex koax cable

ROHDE&SCHWARZ	Benennung / Designat.: ZVA80-BU ZVA80-BU			Spr.:/Lang.: de	Aei:/C.l.: 06.00	Blatt:/Sh.: 3 -
ZVA	Datum: Date: 2009-07-09	Abteilung: Dept.: 1ESK	Name: Name: smolinsk	Zeichn.Nr.:/Drawing No.: 1312.6508.01 S		