Table 1-1. HP 8562A/B Specifications (1 of 8)

FREQUENCY

Frequency Range
Internal Mixing

1 kHz to 22 GHz
Option 026: 1 kHz to 26.5 GHz

Internal Mixing Bands

Frequency Band	Harmonic Mixing Mode (N)*
1 kHz to 2.9 GHz	1–
2.75 GHz to 6.46 GHz	1–
5.86 GHz to 13.0 GHz	2–
12.4 GHz to 19.7 GHz	3–
19.1 GHz to 22.0 GHz	4–
Opt. 026: 19.1 GHz to 26.5 GHz	

External Mixing

18 to 325 GHz

External Mixing Bands

Frequency Band	Frequency Range (GHz)	Harmonic Mixing Mode (N)*
K	18.0 to 26.5	6–
A	26.5 to 40.0	8–
Q	33.0 to 50.0	10–
U	40.0 to 60.0	10–
V	50.0 to 75.0	14–
E	60.0 to 90.0	16–
W	75.0 to 110.0	18–
F	90.0 to 140.0	24–
D	110.0 to 170.0	30–
G	140.0 to 220.0	36–
Y	170.0 to 260.0	44–
J	220.0 to 325.0	54–

Frequency Readout Accuracy (accuracy of Start, Center, Stop, or Marker frequency)

< ± (frequency readout × frequency reference accuracy + 5% of frequency span + 15% of resolution bandwidth + 250 Hz)

Frequency Count Marker
Resolution

Selectable from 10 Hz to 1 MHz

Frequency Count Marker Accuracy (for signal-to-noise ratio ≥ 25 dB)

< ± (marker frequency × frequency reference accuracy + 50 Hz × N + 1 LSD)*

Delta Frequency Count Accuracy (for signal-to-noise ratio ≥ 25 dB)

< ± (delta frequency × frequency reference accuracy + 100 Hz × N + 2 LSD)*

Frequency Reference Accuracy
Includes aging, temperature drift, and settability.

< ±4 × 10^{-6} per year

Stability
Residual FM (zero span)

< 50 Hz × N* peak-to-peak in 100 ms

Spectral Purity
Noise sidebands (30 kHz offset)

< (–100 + 20logN) dBc/Hz*

* N is the harmonic mixing mode. The desired 1st LO harmonic is always higher than the tuned frequency by the 1st IF frequency (3.9107 GHz for the 1 kHz to 2.9 GHz band, and 310.7 MHz for all other bands).

COPYRIGHT AND DISCLAIMER NOTICE

Table 1-1. HP 8562A/B Specifications (2 of 8)

FREQUENCY (Continued)	
Frequency Span	
Range	
Internal Mixing	0 Hz, 2.5* kHz × N† to 19.25 GHz *(Opt. 026: to 23.75 GHz)* over the 10-division CRT horizontal axis, variable in approximately 1% increments or in a 1,2,5 sequence
External Mixing	Minimum span = 2.5 kHz × N†
Accuracy (Spans ≥ 10 kHz)	< ±5%
Resolution Bandwidths (–3 dB)	
Range	100 Hz to 1 MHz selectable in a 1, 3, 10 sequence; and 2 MHz‡
Accuracy	
1 and 2‡ MHz RES BW	< ±25%
300 kHz to 300 Hz RES BW	< ±10%
100 Hz RES BW	< ±30%
Selectivity (60 dB/3 dB bandwidth ratio)	< 15:1
Bandwidth Shape	Synchronously tuned, 4-pole filters
Video Bandwidth	
Post-detection low-pass filter averages displayed noise for a smooth trace.	
Range	1 Hz to 3 MHz in a 1, 3, 10 sequence

AMPLITUDE	
MEASUREMENT RANGE	
Maximum Safe Input Power	
Average Continuous Power (input attenuation ≥ 10 dB)	+30 dBm (1 watt)
Peak Pulse Power (input attn. ≥ 30 dB)	+50 dBm (100 watts) for pulse widths < 10 μs and < 1% duty cycle
DC	0 volts
Gain Compression	< 1.0 dB
10 MHz to 22 GHz (≤ –5 dBm§ at input mixer)	
2.9 GHz to 22 GHz (≤ –3 dBm at input mixer)	
Opt. 026: 2.9 GHz to 26.5 GHz (≤ –3 dBm at input mixer)	

* Minimum span is 10 kHz for spectrum analyzers with serial prefix of 2724A and below.

† N is the harmonic mixing mode. The desired 1st LO harmonic is always higher than the tuned frequency by the 1st IF frequency (3.9107 GHz for the 1 kHz to 2.9 GHz band, and 310.7 MHz for all other bands).

‡ The 2 MHz resolution bandwidth is specified only for HP 8562A analyzers with serial prefix of 2805A and above, and for HP 8562B analyzers with serial prefix of 2809A and above.

§ With ≤ –3 dBm at input mixer for HP 8562A with serial prefix 2805A and below, and HP 8562B with serial prefix 2750A and below.

Table 1-1. HP 8562A/B Specifications (3 of 8)

AMPLITUDE (Continued)		
Displayed Average Noise Level with no signal at input, 100 Hz RES BW, 1 Hz video BW, and 0 dB input attenuation		
Frequency Range	**HP 8562A**	**HP 8562B**
10 kHz	<–90 dBm	<–90 dBm
100 kHz	<–100 dBm	<–100 dBm
1 MHz to 2.9 GHz	<–120 dBm	<–120 dBm
2.9 GHz to 6.46 GHz	<–121 dBm	<–121 dBm
6.46 GHz to 13.0 GHz	<–110 dBm	<–110 dBm
13.0 GHz to 19.7 GHz	<–105 dBm	<–105 dBm
19.7 GHz to 22.0 GHz	<–100 dBm	<–100 dBm
Opt. 026: 19.7 GHz to 26.5 GHz		
Spurious Responses (All input-related spurious reponses, except as noted below, with ≤–40 dBm mixer level*)	**HP 8562A** <–60 dBc 10 MHz to 6.46 GHz	**HP 8562B** <–60 dBc 10 MHz to 2.9 GHz
Second Harmonic Distortion		
Frequency Range	**HP 8562A**	**HP 8562B**
10 MHz to 2.9 GHz	<–72 dBc, –40 dBm mixer level*	<–72 dBc, –40 dBm mixer level*
2.75 GHz to 22.0 GHz	<–100 dBc, –10 dBm mixer level*	<–60 dBc, –40 dBm mixer level*
Opt 026: 2.75 GHz to 26.5 GHz		
Third Order Intermodulation Distortion (with –30 dBm total power at input mixer*)		
Frequency Range	**HP 8562A**	**HP 8562B**
10 MHz to 2.9 GHz	<–70 dBc	<–70 dBc
2.75 GHz to 22 GHz	<–75 dBc	<–75 dBc
Opt. 026: 2.75 GHz to 26.5 GHz		
Image, Multiple, and Out-of-Band Responses		
Frequency Range	**HP 8562A**	**HP 8562B**
10 MHz to 18 GHz	<–70 dBc	unspecified
10 MHz to 22 GHz	<–60 dBc	unspecified
Opt. 026: 10 MHz to 26.5 GHz		
Residual Responses 200 kHz to 6.46 GHz, with no signal at input, 0 dB input attenuation	<–90 dBm	
DISPLAY RANGE		
Amplitude Scale	10 vertical CRT divisions with the reference level (0 dB) at the top graticule line	

* Mixer level = input level – input attenuation

Table 1-1. HP 8562A/B Specifications (4 of 8)

AMPLITUDE (Continued)

DISPLAY RANGE (Continued)

Calibration

Log

10 dB/Div for 90 dB display from reference level
5 dB/Div for 50 dB display expanded from reference level*
2 dB/Div for 20 dB display expanded from reference level
1 dB/Div for 10 dB display expanded from reference level*

Linear

10% of reference level per division when calibrated in voltage

Reference Level Range

Log, adjustable in 0.1 dB steps

Frequency Band	Range
10 kHz to 2.9 GHz	–120 dBm to +30 dBm
2.75 GHz to 6.46 GHz	–120 dBm to +30 dBm
5.86 GHz to 13.0 GHz	–115 dBm to +30 dBm
12.4 GHz to 19.7 GHz	–105 dBm to +30 dBm
19.1 GHz to 22.0 GHz	–100 dBm to +30 dBm
Opt. 026: 19.1 GHz to 26.5 GHz	

Linear, settable in 1% steps

Frequency Band	Range
10 kHz to 2.9 GHz	2.2 μV to 7.07V
2.75 GHz to 6.46 GHz	2.2 μV to 7.07V
5.86 GHz to 13.0 GHz	4.0 μV to 7.07V
12.4 GHz to 19.7 GHz	12.6 μV to 7.07V
19.1 GHz to 22.0 GHz	22 μV to 7.07V
Opt. 026: 19.1 GHz to 26.5 GHz	

AMPLITUDE ACCURACY

REFERENCE LEVEL UNCERTAINTY

Frequency Response (with 10 dB input attenuation)

In-Band

Frequency Range	HP 8562A	HP 8562B
1 kHz to 2.9 GHz	< ±1.2 dB	< ±1.2 dB
2.9 GHz to 6.46 GHz	< ±2.5 dB	< ±2.0 dB
6.46 GHz to 13.0 GHz	< ±3.5 dB	< ±2.5 dB
13.0 GHz to 19.7 GHz	< ±4.0 dB	< ±3.0 dB
19.7 GHz to 22.0 GHz	< ±4.3 dB	< ±4.3 dB
Opt. 026: 19.7 GHz to 26.5 GHz		

Referenced to CAL OUTPUT (300 MHz)

1 kHz to 22.0 GHz	< ±5.1 dB	< ±5.1 dB
Opt. 026: 1 kHz to 26.5 GHz		

* These scales are available only in sweeptimes ≥ 30 ms (digital display mode)

Table 1-1. HP 8562A/B Specifications (5 of 8)

AMPLITUDE ACCURACY (Continued)		
	HP 8562A	**HP 8562B**
Band Switching Uncertainty Additional uncertainty added to In-Band Frequency Response for measurements between any two bands.	< +0.5 dB	< +0.5 dB
Calibrator Uncertainty (–10 dBm, 300 MHz)	< ±0.3 dB	
Input Attenuator Switching Uncertainty 20 to 70 dB settings, referenced to 10 dB input attenuation		
Frequency Range 1 kHz to 2.9 GHz	< ±0.6 dB/10 dB step, 1.8 dB max.	
IF Gain Uncertainty 0 dBm to –80 dBm reference levels with 10 dB input attenuation	< ±1.0 dB	
Resolution Bandwidth Switching Uncertainty Referenced to 300 kHz RES BW	< ±0.5 dB	
IF Alignment Uncertainty (uncertainty when using 100 Hz and 300 Hz RES BW)		
300 Hz RES BW	< ±0.5 dB	
100 Hz RES BW	< ±2.0 dB	
Pulse Digitization Uncertainty Pulse response mode, PRF > 720/sweeptime		
Log	< 1.25 dB peak-to-peak for res BW ≤ 1 MHz < 3 dB peak-to-peak for res BW of 2 MHz*	
Linear	< 4% of reference level peak-to-peak for res BW ≤ 1 MHz < 12% of reference level peak-to-peak for res BW of 2 MHz*	
SCALE FIDELITY		
Log	< ±0.4 dB/4 dB from reference level to a maximum of ±1.5 dB over 0 to 90 dB range	
Linear	< ±3% of reference level	

* The 2 MHz RES BW is specified only for HP 8562A spectrum analyzers with serial prefix of 2805A and above, and for HP 8562B spectrum analyzers with serial prefix of 2809A and above.

Table 1-1. HP 8562A/B Specifications (6 of 8)

SWEEP	
Sweep Time	
Range	
Span = 0	50 µs to < 30 ms (analog display)
Span = 0	30 ms to 60s (digital display)
Span ≥ 2.5* kHz × N†	50 ms to 100s (digital display)
Accuracy (Span = 0)	
30 ms ≤ sweep time ≤ 60 seconds	< ±1%
Sweep time < 30 ms	< ±15%
Sweep Trigger	Free Run, Single, Line, Video, External
INPUTS AND OUTPUTS	
IF INPUT	
Connector	SMA female, front panel
Input level for full-screen deflection (external mixing mode, 0 dBm reference level, 30 dB conversion loss)	–30 dBm ±1.5 dB
HP-IB	
Connector	IEEE-488 bus connector
Interface Functions	SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP1, DC1, DT0, C1, C28, E1
Direct Plotter Output	Supports HP 7225A, HP 7440A, HP 7470A, HP 7475A, HP 7550A, HP 9872A/B/C/T
CAL OUTPUT	
Connector	BNC female, front panel
Frequency	300 MHz ±(300 MHz × frequency reference accuracy)
Amplitude	–10 dBm ±0.3 dB
1ST LO OUTPUT	
Connector	SMA female, front panel
Amplitude	+16.5 dBm ±2.0 dB (20°C to 30°C)
10 MHz REF IN/OUT	
Connector	BNC female, rear panel
Frequency	10 MHz ±(10 MHz × frequency reference accuracy)
GENERAL	
Environmental	
Military Specification	Per MIL-T-28800C, Type III, Class 3 Style C as follows:
Calibration Interval	1 year
Warmup	5 minutes from ambient conditions‡

* Minimum span is 10 kHz for spectrum analyzers with serial prefix 2724A and below.

† N is the harmonic mixing mode. The desired 1st LO harmonic is always higher than the tuned frequency by the 1st IF frequency (3.9107 GHz for the 1 kHz to 2.9 GHz band, and 310.7 MHz for all other bands).

‡ 2 hours for conditions of internal condensation, 30 minutes to meet frequency response specifications without preselector peaking.

Table 1-1. HP 8562A/B Specifications (7 of 8)

GENERAL (Continued)	
Environmental (Continued)	
Temperature	
Operating	−10°C to +55°C
Non-operating	−62°C to +85°C
Humidity	95% at 40°C for 5 days
Altitude	
Operating	15000 feet
Non-operating	50000 feet
Rain Resistance	Drip-proof at 16 liters/hour/square foot
Vibration	
5 to 15 Hz	0.059 inch peak-to-peak excursion
15 to 25 Hz	0.039 inch peak-to-peak excursion
25 to 55 Hz	0.020 inch peak-to-peak excursion
Pulse Shock	
Half Sine	30 g for 11 ms duration
Transit Drop	8-inch drop on 6 faces and 8 corners
Electromagnetic Compatibility	Conducted and radiated interference is in compliance with CISPR publication 11 (1985) and Messempfaenger-Posrverfuegung 526/527/79 (Kennzeichnung Mit F-Nummer/Funkschutzzeichen). Meets the requirements of MIL-STD-461B, Part 4, with the exceptions shown below. Conducted Emissions CE01 (Narrowband): 1 kHz to 15 kHz only CE03 (Narrowband): Full limits CE03 (Broadband): 20 dB relaxation from 15 kHz to 100 kHz Conducted Susceptibility CS01: Full limits (limited to 36 Hz for HP 8562B) CS02: Full limits CS06: Full limits Radiated Emissions RE01: 15 dB relaxation to 30 kHz and exceptioned from 30 kHz to 50 kHz RE02: Full limits to 1 GHz Radiated Susceptibility RS01: Full limits RS02: Exceptioned RS03: Limited to 1 V/m from 14 kHz to 1 GHz, with 20 dB relaxation at IF frequencies (30 dB relaxation at IF frequencies for Option 001 instruments)

Table 1-1. HP 8562A/B Specifications (8 of 8)

GENERAL (Continued)		
Power Requirements		
115 Vac Operation		
Voltage	90 to 140V rms	
Current	3.2A rms max	
Frequency	47 to 440 Hz	
230 Vac Operation		
Voltage	180 to 250V rms	
Current	1.8A rms max	
Frequency	47 to 66 Hz	
Maximum Power Dissipation	180 Watts	
Weight	**HP 8562A**	**HP 8562B**
	20 kg (44 lbs)	19 kg (41.8 lbs)
Dimensions		
Without handle or cover	184 mm high x 337 mm wide x 460.5 mm deep	
With handle and cover	200 mm high x 373 mm wide x 500 mm deep	

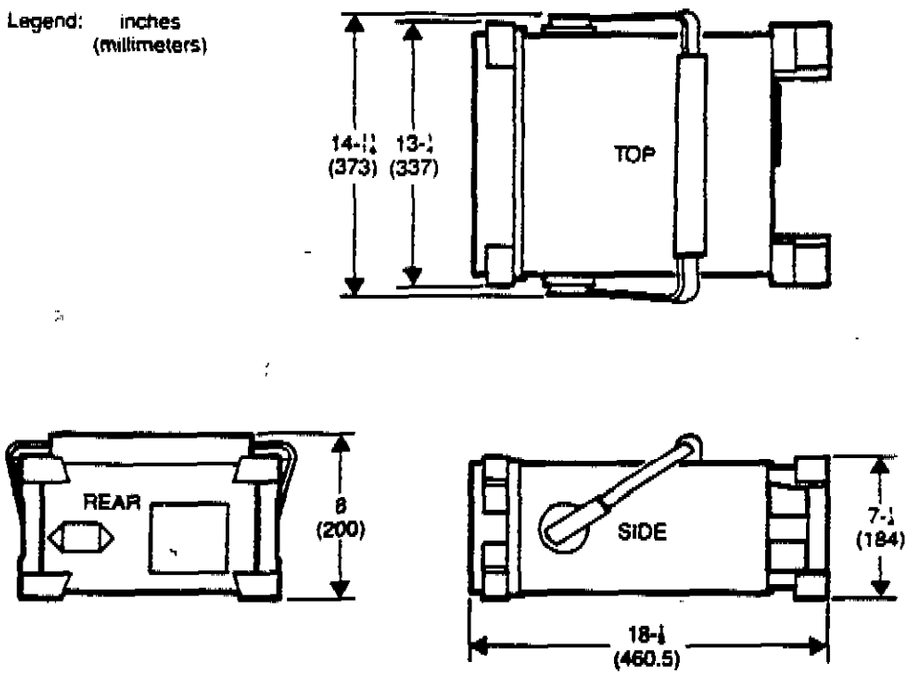

Table 1-2. HP 8562A/B Characteristics (1 of 3)

NOTE: These are not specifications. Characteristics provide useful, but non-warranted, information about instrument performance.

FREQUENCY

Frequency Reference Accuracy	
Aging	$< \pm 1 \times 10^{-6}$/year
Temperature drift (−10°C to +55°C)	$< \pm 2 \times 10^{-6}$
Settability	$< \pm 1 \times 10^{-6}$

DYNAMIC RANGE

Nominal Sensitivity (100 Hz Res BW, 1 Hz video BW, 0 dB input attenuation)	
Frequency Range	**Nominal Sensitivity**
1 MHz to 2.9 GHz	−128 dBm
2.9 GHz to 6.46 GHz	−126.5 dBm
6.46 GHz to 13.0 GHz	−119 dBm
13.0 GHz to 19.7 GHz	−114 dBm
19.7 GHz to 22.0 GHz	−108 dBm
Opt. 026: 19.7 GHz to 26.5 GHz	

AMPLITUDE ACCURACY

Band-to-Band Frequency Response
Frequency response uncertainty for measurements between any two bands. Equivalent to the sum of the two In-Band Frequency Response values plus Band Switching Uncertainty. (Values in parentheses apply to HP 8562B.)

Band-to-Band Frequency Response (dB)

Band	0	1	2	3	4
0	——	4.2 (3.7)	5.2 (4.2)	5.7 (4.7)	6.0 (6.0)
1	4.2 (3.7)	——	6.5 (5.0)	7.0 (5.5)	7.3 (6.8)
2	5.2 (4.2)	6.5 (5.0)	——	8.0 (6.0)	8.3 (7.3)
3	5.7 (4.7)	7.0 (5.5)	8.0 (6.0)	——	8.8 (7.8)
4	6.0 (6.0)	7.3 (6.8)	8.3 (7.3)	8.8 (7.8)	——

Input Attenuator Repeatability: $< \pm 0.2$ dB

Pulse Digitization Uncertainty (Pulse response mode, PRF >720/sweeptime) Standard Deviation: <0.2 dB

Table 1-2. HP 8562A/B Characteristics (2 of 3)

NOTE: These are not specifications. Characteristics provide useful, but non-warranted, information about instrument performance.

SWEEP	
Sweep Time Accuracy (span ≥ 2.5 kHz* × N†)	< ±15%
DEMODULATION	
Spectrum Demodulation Modulation Type Audio Output Marker Pause Time	 AM and FM Internal speaker and phone jack with volume control 100 ms to 60s
INPUTS AND OUTPUTS	
INPUT 50Ω Connector Type	 Precision Type N female, front panel *Opt. 026: APC 3.5 male*
Impedance VSWR (At tuned frequency)	50 ohms < 1.5:1 for < 2.9 GHz and ≥ 10 dB input attenuation < 2.3:1 for > 2.9 GHz and ≥ 10 dB input attenuation < 3.0:1 for 0 dB input attenuation
LO Emission Level (Average) 10 dB input attenuation	**HP 8562A** / **HP 8562B** < –70 dBm / < –10 dBm
IF INPUT Connector Type Impedance Frequency Noise Figure 1 dB Gain Compression Level Full Screen Level (Gain Compression and Full Screen Levels apply with 30 dB conversion loss setting and 0 dBm reference level.)	 SMA female, front panel 50 ohms 310.7 MHz 7 dB –23 dBm –30 dBm
1ST LO OUTPUT Connector Impedance Frequency Range	 SMA female, front panel 50 ohms 3.0000 GHz to 6.8107 GHz
CAL OUTPUT Connector Impedance	 BNC female, front panel 50 ohms

* Minimum span is 10 kHz for spectrum analyzers with serial prefix 2724A and below.

† N is the harmonic mixing mode. The desired 1st LO harmonic is always higher than the tuned frequency by the 1st IF frequency (3.9107 GHz for the 1 kHz to 2.9 GHz band, and 310.7 MHz for all other bands.)

Table 1-2. HP 8562A/B Characteristics (3 of 3)

NOTE: These are not specifications. Characteristics provide useful, but non-warranted, information about instrument performance.

INPUTS AND OUTPUTS (Continued)

10 MHz REF IN/OUT	
Connector	BNC female, rear panel
Impedance	50 ohms
Output Amplitude	0 dBm
Input Amplitude	–2 to +10 dBm
VIDEO OUTPUT	
Connector	BNC female, rear panel
Impedance (dc coupled)	50 ohms
Amplitude (into 50-ohm load)	0 to +1 volt full-scale
LO SWP | 0.5 V/GHz OUTPUT	
Connector	BNC female, rear panel
Impedance (dc coupled)	2 kohms
LO SWP OUTPUT (no load)	0 to +10V
0.5 V/GHz OUTPUT (no load)	0.5V/GHz of tuned frequency
BLANKING OUTPUT	
Connector	BNC female, rear panel
Amplitude	
During Retrace	Low TTL Level (sink 150 mA max.)
During Sweep	High TTL Level (source 0.5 mA max.)
Maximum Input (High TTL State)	+40V
EXT TRIG INPUT	
Connector	BNC female, rear panel
Impedance	10 kohms
Trigger Level	Rising edge of TTL Level
PROBE POWER (front panel)	
Voltage	+15 Vdc, –12.6 Vdc
Current	150 mA max., each
EARPHONE	
Connector	1/8-inch miniature monophonic jack, rear panel
Power Output	0.25 watts into 4 ohms
2ND IF OUT *(Opt. 001 instruments only)*	
Connector	SMA female, rear panel
Impedance	50 ohms
Frequency	310.7 MHz

Frequency Range	3 dB BW	Noise Figure	Conversion Gain
1 kHz to 2.9 GHz	>30 MHz	24 dB	–5.6 dB
2.75 GHz to 6.46 GHz	>20 MHz	24 dB	–3.6 dB
5.86 GHz to 6.46 GHz	>30 MHz	33.6 dB	–3.7 dB
12.4 GHz to 19.7 GHz	>30 MHz	39.8 dB	–9.9 dB
19.1 GHz to 22.0 GHz	>35 MHz	44.4 dB	–14.8 dB
(Opt. 026: 19.1 GHz to 26.5 GHz)			

3-24. 10 MHz Reference Output Accuracy

SPECIFICATION

Frequency: $<\pm 4 \times 10^{-6}$/year

RELATED ADJUSTMENT

10 MHz Frequency Reference Adjustment

DESCRIPTION

The 10 MHz reference signal is measured for frequency accuracy by measuring the frequency of the 300 MHz CAL OUTPUT signal. The CAL OUTPUT signal is referenced to the 10 MHz reference. Measuring the CAL OUTPUT signal yields higher resolution than measuring the 10 MHz reference directly.

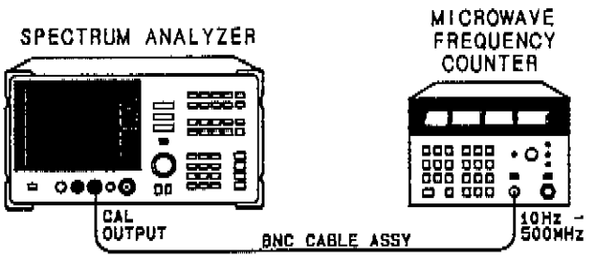

Figure 3-1. Frequency Reference Accuracy Test Setup

EQUIPMENT

Microwave Frequency Counter	HP 5343A
Cables:	
BNC, 122 cm (48 in.)	HP 10503A

PROCEDURE

1. Connect the equipment as shown in Figure 3-1.

2. Set the HP 5343A controls as follows:

SAMPLE RATE	Midrange
50Ω–1 MΩ SWITCH	50Ω
10 Hz–500 MHz/500 MHz–26.5 GHz SWITCH	10 Hz–500 MHz

NOTE

The HP 5343A should have either an Option 001 timebase or be connected to a house standard with an aging rate better than 5 x 10^{-10}/day.

3. On the HP 8562A/B, press the PRESET key.

NOTE

The HP 8562A/B must be allowed to warm up for at least ten minutes with the frequency reference set to INTERNAL. If the HP 8562A/B has warmed up but the frequency reference has been set to EXTERNAL, wait at least five minutes after pressing [PRESET] before proceeding with step 4.

4. Wait for the frequency counter to settle. This may take two or three gate times.

5. Read the frequency counter display. The frequency should be within the following limits (±4 ppm with standard timebase):

299.998800 MHz ≤ _____ ≤ 300.001200 MHz

NOTE

The frequency reading will be invalid if any error message is displayed, especially a synthesizer-related error message.

3-25. Calibrator Amplitude and Frequency Accuracy

SPECIFICATION

Amplitude: −10 dBm ±0,3 dB
Frequency: 300 MHz ±1,2 kHz (using standard timebase)

RELATED ADJUSTMENT

Calibrator Amplitude Adjustment
10 MHz Frequency Reference Adjustment

DESCRIPTION

The amplitude and frequency accuracy of the CAL OUTPUT signal are checked for −10 dBm ±0,3 dB and 300 MHz ±1,2 kHz, respectively.

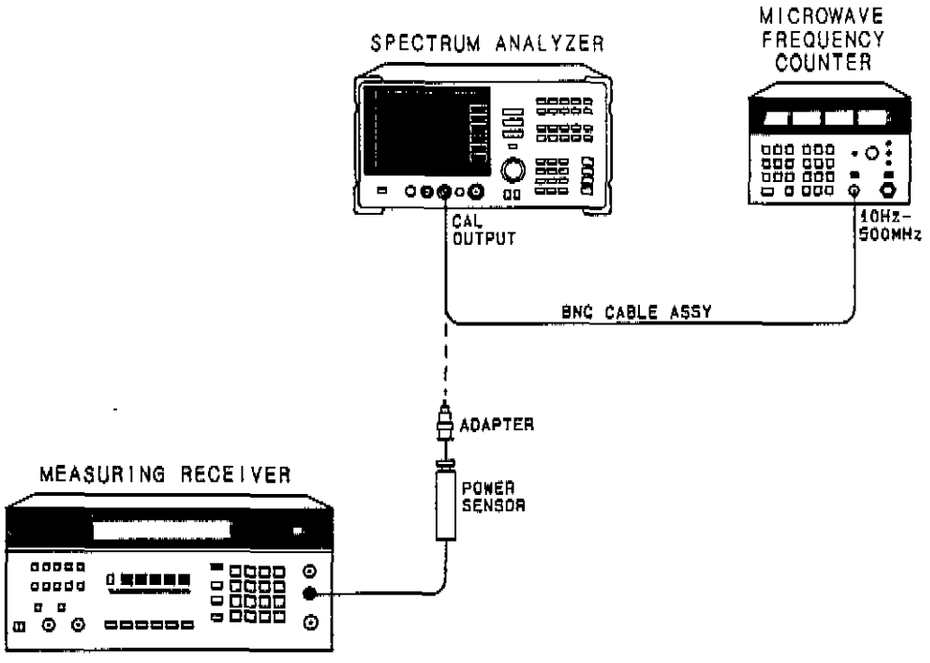

Figure 3-2. Calibrator Accuracy Test Setup

EQUIPMENT

Measuring Receiver . . . . . HP 8902A
Microwave Frequency Counter . . . . . HP 5343A
Power Sensor . . . . . HP 8482A

Adapters:
Type N (f) to BNC (m) . . . . . HP 1250-1477

Cables:
BNC, 122 cm (48 in.) . . . . . HP 10503A

PROCEDURE

1. Connect the equipment as shown in Figure 3-2. The HP 5343A 10 Hz–500 MHz input should be connected to the CAL OUTPUT of the HP 8562A/B.

Calibrator Frequency Accuracy

2. Set the HP 5343A controls as follows:

SAMPLE RATE . . . . . Midrange
50Ω–1 MΩ SWITCH 50Ω
10 Hz–500 MHz/500 MHz–26.5 GHz SWITCH . . . . . 10 Hz–500 MHz

NOTE

The HP 5343A should have either an Option 001 timebase or be connected to a house standard with an aging rate better than 5 x 10^{-10}/day.

3. Wait for the frequency counter to settle. This may take two or three gate times.

4. Read the frequency counter display. The CAL OUTPUT frequency should be within the following limits (±4 ppm with standard timebase):

299.998800 MHz ≤ _____ ≤ 300.001200 MHz

Calibrator Amplitude Accuracy

5. Zero the HP 8902A and calibrate the HP 8482A power sensor at 300 MHz as described in the HP 8902A Operation Manual. Enter the power sensor's 300 MHz calibration factor into the HP 8902A.

6. Connect the power sensor through an adapter directly to the CAL OUTPUT connector. Read the power meter display. The power level should be within the following limits (±0.3 dB):

−10.3 dBm ≤ _____ ≤ −9.7 dBm

3-26. Displayed Average Noise Level

SPECIFICATION

Frequency	Average Noise Level
10 kHz	–90 dBm
100 kHz	–100 dBm
1 MHz–2.9 GHz	–121 dBm
2.9–6.46 GHz	–121 dBm
6.46–13.0 GHz	–110 dBm
13.0–19.7 GHz	–105 dBm
19.7–22 GHz	–100 dBm
Option 026:	
19.7–26.5 GHz	*–100 dBm*

RELATED ADJUSTMENT

Frequency Response Adjustment

DESCRIPTION

This test measures the displayed average noise level in all five frequency bands. The analyzer's input is terminated in 50 ohms. In Band 0, the test first measures the average noise at 10 and 100 kHz in zero span. For the rest of Band 0, and for all the remaining bands, the test tunes the analyzer frequency across the band, uses the marker to locate the frequency with the highest response, and then reads the average noise in zero span.

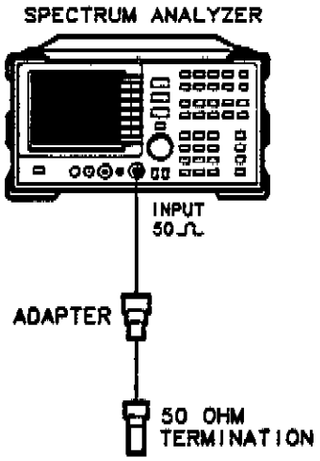

Figure 3-3. Displayed Average Noise Test Setup

EQUIPMENT

50Ω Termination . . . . . HP 909D

Adapters

Type N (m) to APC 3.5 (f) *(not necessary for Option 026)* . . . . . HP 1250-1744
Type N (m) to BNC (f) . . . . . HP 1250-1476
APC 3.5 (f) to APC 3.5 (f) *(required for Option 026)* . . . . . HP 5061-5311

Cables

BNC, 122 cm (48 in.) . . . . . HP 10503A

PROCEDURE

Displayed Average Noise, Band 0

1. Connect the CAL OUTPUT to the INPUT 50Ω. Press the PRESET key on the HP 8562A/B and set the controls as follows:

   SPAN . . . . . 0 Hz
   CENTER FREQ . . . . . 300 MHz
   REF LVL . . . . . –10 dBm
   ATTEN . . . . . 0 dB
   RES BW . . . . . 100 Hz
   VIDEO BW . . . . . 1 Hz

2. Press the MARKER ON key, the AMPLITUDE key, [MORE], and [REF LVL CAL].

3. Use the knob or step keys to adjust the REF LEVEL CAL # until the MKR amplitude is –10.00 dBm ±0.17 dB.

4. Connect the HP 909D 50Ω termination to the HP 8562A/B INPUT 50Ω as shown in Figure 3-3.

5. On the HP 8562A/B, press AMPLITUDE and set REF LVL to –50 dBm. Press FREQUENCY and set the CENTER FREQ to 10 kHz.

6. Press the TRIG key, [SINGLE], [SINGLE], and the MARKER ON key. Read the marker amplitude and record it in Table 3-6 as the Displayed Average Noise Level at 10 kHz.

7. Change the HP 8562A/B center frequency to 99 kHz* and press the TRIG key and [SINGLE]. Read the marker amplitude displayed at the upper right-hand corner of the screen and record it in Table 3-6 as the Displayed Average Noise Level at 100 kHz.

* A residual response exists at 100 kHz. Tuning to 99 kHz avoids this response's being displayed, while yielding a displayed average noise reading worse than the noise at 100 kHz.

8. Set the HP 8562A/B controls as follows:

START FREQ	1 MHz
STOP FREQ	2.9 GHz
MARKER	OFF
RES BW	1 MHz
VIDEO BW	10 kHz

9. Trigger a single sweep and press the MARKER ON key and [MKRNOISE ON]. Use the front-panel knob to move the marker to the highest average noise level.

10. Press the MKR→ key, [MARKER→CF], the SPAN key, [ZERO SPAN], and the MARKER OFF key. Set the RES BW to 100 Hz and the VIDEO BW to 1 Hz.

11. Press the TRIG key, [SINGLE], and the MARKER ON key.

12. Read the marker amplitude and record the amplitude in Table 3-6 as the Displayed Average Noise Level from 1 MHz to 2.9 GHz.

Displayed Average Noise, Band 1

13. Set the HP 8562A/B controls as follows:

START FREQ	2.9 GHz
STOP FREQ	6.46 GHz
MARKER	[OFF]
RES BW	1 MHz
VIDEO BW	10 kHz

14. Repeat steps 9 through 11.

15. Read the marker amplitude and record the amplitude in Table 3-6 as the Displayed Average Noise Level from 2.9 GHz to 6.46 GHz.

Displayed Average Noise, Band 2

16. Set the HP 8562A/B controls as follows:

START FREQ	6.46 GHz
STOP FREQ	13.0 GHz
MARKER	[OFF]
RES BW	1 MHz
VIDEO BW	10 kHz

17. Repeat steps 9 through 11.

18. Read the marker amplitude and record the amplitude in Table 3-6 as the Displayed Average Noise Level from 6.46 GHz to 13.0 GHz.

Displayed Average Noise, Band 3

19. Set the HP 8562A/B controls as follows:

START FREQ . . . . . 13.0 GHz
STOP FREQ . . . . . 19.7 GHz
MARKER . . . . . [OFF]
RES BW . . . . . 1 MHz
VIDEO BW . . . . . 10 kHz

20. Repeat steps 9 through 11.

21. Read the marker amplitude and record the amplitude in Table 3-6 as the Displayed Average Noise Level from 13.0 GHz to 19.7 GHz.

Displayed Average Noise, Band 4

22. Set the HP 8562A/B controls as follows:

START FREQ . . . . . 19.7 GHz
STOP FREQ . . . . . 22.0 GHz
Option 026: 26.5 GHz
MARKER . . . . . OFF
RES BW . . . . . 1 MHz
VIDEO BW . . . . . 10 kHz

23. Repeat steps 9 through 11.

24. Read the marker amplitude and record the amplitude in Table 3-6 as the Displayed Average Noise Level from 19.7 GHz to 22.0 GHz *(Option 026: 19.7 GHz to 26.5 GHz)*.

25. The displayed average noise level readings should be lower than the specifications listed in Table 3-6.

Table 3-6. Displayed Average Noise Level

Frequency	Displayed Average Noise Level (dBm)	Specification (dBm)		Measurement Uncertainty (dB)
		HP 8562A	HP 8562B	
10 kHz	_____	–90	–90	+1.74/–1.98
100 kHz	_____	–100	–100	+1.74/–1.98
1 MHz to 2.9 GHz	_____	–121	–121	+1.74/–1.98
2.9 GHz to 6.46 GHz	_____	–121	–121	+1.74/–1.98
6.46 GHz to 13.0 GHz	_____	–110	–110	+1.74/–1.98
13.0 GHz to 19.7 GHz	_____	–105	–105	+1.74/–1.98
19.7 GHz to 22 GHz *(Opt. 026: 19.7 GHz to 26.5 GHz)*	_____	–100	–100	+1.74/–1.98

3-27. Resolution Bandwidth Switching and IF Alignment Uncertainty

SPECIFICATION

Resolution Bandwidth Switching Uncertainty:
100 Hz to 2 MHz* RES BW: < ±0.5 dB (referenced to 300 kHz Res BW)

IF Alignment Uncertainty (additional uncertainty when using narrow resolution bandwidths):
300 Hz RES BW: < ±0.5 dB
100 Hz RES BW: < ±2 dB

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

This test utilizes the CAL OUTPUT signal for measuring the switching uncertainty and IF alignment uncertainty between resolution bandwidths. At each resolution bandwidth setting, the displayed amplitude variation of the signal is measured. All measurements are referenced to the 300 kHz bandwidth.

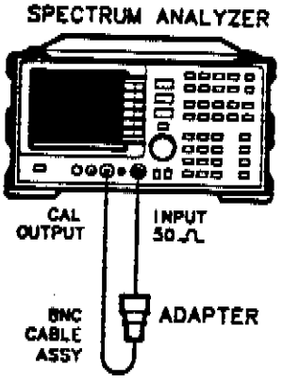

Figure 3-4. Resolution Bandwidth Switching and IF Alignment Uncertainty Test Setup

EQUIPMENT

Adapters

Type N (m) to BNC (f) . . . . . HP 1250-1476
Option 026: Type N (f) to APC 3.5 (f) . . . . . *HP 1250-1745*

Cables

BNC, 122 cm (48 in.) . . . . . HP 10503A

* The 2 MHz RES BW setting is specified only for HP 8562A analyzers with serial prefix of 2805A and above, and for HP 8562B analyzers with serial prefix of 2809A and above. On earlier units, the widest specified RES BW setting is 1 MHz.

PROCEDURE

Setting the Reference

1. Connect the HP 8562A/B CAL OUTPUT to the RF INPUT 50Ω as shown in Figure 3-4.

2. Press the PRESET key, the AMPLITUDE key, [MORE], [IF ADJUST], and [FULL IF ADJ]. Wait for the "IF ADJUST STATUS" message to disappear and set the instrument controls as follows:

   CENTER FREQ . . . . . 300 MHz
   SPAN . . . . . 1 MHz
   REF LVL . . . . . –5 dBm
   dB/DIV . . . . . 1 dB
   RES BW . . . . . 300 kHz
   TRIGGER . . . . . SINGLE

3. Press the AMPLITUDE key, [MORE], [IF ADJUST], [IF ADJ OFF], the TRIG key, [SINGLE], the PEAK SEARCH key, and [MARKER DELTA].

Measuring Switching Uncertainty

4. Set the frequency SPAN and RES BW to the values listed in the second row of Table 3-7. (SPAN 10 MHz, RES BW 2 MHz for HP 8562A with serial prefix of 2805A and above, and for HP 8562B with serial prefix of 2809A and above; SPAN 5 MHz and RES BW 1 MHz for serial prefixes below 2750A.)

5. Press the AMPLITUDE key, [MORE], [IF ADJUST], and [ADJ CURR IF STATE]. Wait for the "IF ADJUST STATUS" message to disappear and press the TRIG key, [SINGLE], and the PEAK SEARCH key. Record the Δ MKR amplitude in the Actual Δ MKR Reading column of Table 3-7. The Δ MKR reading should be within the limits shown.

6. Repeat step 5 for each set of frequency SPAN and RES BW settings in Table 3-7.

Table 3-7. Resolution Bandwidth Switching and IF Alignment Uncertainty

HP 8562A/B		Δ MKR Reading			Measurement Uncertainty (dB)
Span	RES BW	Min (dB)	Actual (dB)	Max (dB)	
1 MHz	300 kHz	0	0 (Ref.)	0	0
10 MHz	2 MHz*	–0.5	_____	+0.5	±0.06
5 MHz	1 MHz	–0.5	_____	+0.5	±0.06
500 kHz	100 kHz	–0.5	_____	+0.5	±0.06
100 kHz	30 kHz	–0.5	_____	+0.5	±0.06
50 kHz	10 kHz	–0.5	_____	+0.5	±0.06
10 kHz	3 kHz	–0.5	_____	+0.5	±0.06
10 kHz	1 kHz	–0.5	_____	+0.5	±0.06
10 kHz	300 Hz	–1.0	_____	+1.0	±0.11
10 kHz	100 Hz	–2.5	_____	+2.5	±0.27

* The 2 MHz RES BW setting is specified and tested only for HP 8562A analyzers with serial prefix of 2805A and above, and for HP 8562B analyzers with serial prefix 2809A and above.

3-28. Resolution Bandwidth Accuracy and Selectivity

SPECIFICATION

Accuracy: 100 Hz RES BW: < ±30%
300 Hz to 300 kHz RES BW: < ±10%
1 MHz and 2 MHz RES BW: < ±25%*

Selectivity (60 dB BW/3 dB BW): <15:1

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

The accuracy of each of the analyzer's 3 dB resolution bandwidths is measured. The 60 dB bandwidths are then determined and the results used to calculate the selectivity for each bandwidth (selectivity = 60 dB BW/3 dB BW). A frequency synthesizer, phase-locked to the spectrum analyzer's 10 MHz reference, provides a 40 MHz test signal.

The 2 MHz resolution bandwidth is specified and tested only for HP 8562A spectrum analyzers with serial prefix 2805A and above, and for HP 8562B spectrum analyzers with serial prefix 2809A and above.

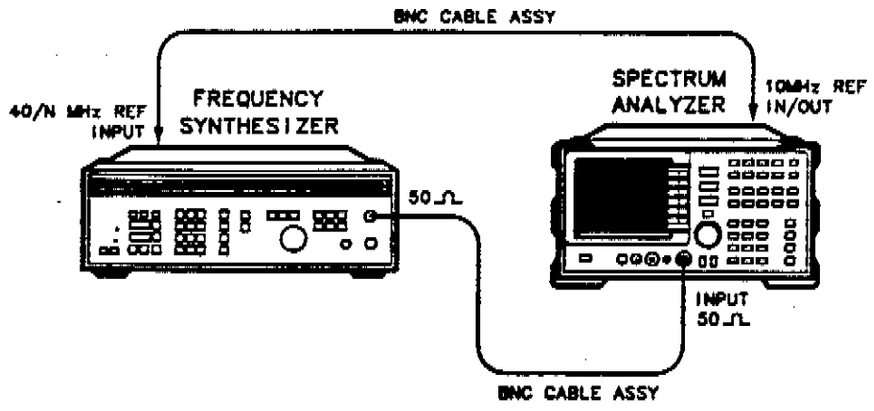

Figure 3-5. Resolution Bandwidth Accuracy and Selectivity Test Setup

* The 2 MHz RES BW setting is specified and tested only for HP 8562A spectrum analyzers with serial prefix 2805A and above, and for HP 8562B spectrum analyzers with serial prefix 2809A and above.

EQUIPMENT

Frequency Synthesizer . . . . . HP 3335A

Adapters

BNC (f) to Type N (m) . . . . . HP 1250-1476
Option 026: Type N (f) to APC 3.5 (f) . . . . . HP 1250-1745

Cables

BNC, 122 cm (48 in.) *(2 required)* . . . . . HP 10503A

PROCEDURE

Resolution Bandwidth Accuracy

1. Connect the equipment as shown in Figure 3-5. The HP 8562A/B provides the frequency reference for the HP 3335A.

2. Set the HP 3335A controls as follows:

   FREQUENCY . . . . . 40 MHz
   AMPLITUDE . . . . . –3 dBm
   AMPTD INCR . . . . . 1 dB

3. On the HP 8562A/B, press PRESET, AMPLITUDE, [MORE], [IF ADJUST], and [IF ADJ OFF]. Set the controls as follows:

   CENTER FREQ . . . . . 40 MHz
   SPAN . . . . . 0 Hz
   LOG dB/DIV . . . . . 1 dB
   RES BW . . . . . 2 MHz
   (1 MHz if HP 8562A/B has serial prefix 2750A or below)
   VIDEO BW . . . . . 300 Hz
   SWEEPTIME . . . . . 50 ms

4. Adjust the HP 3335A output amplitude to place the signal two to three divisions (2 dB to 3 dB) below the reference level. Set the HP 3335A AMPTD INCR to 3 dB.

5. On the HP 8562A/B, press AMPLITUDE, [MORE], [IF ADJUST], and [ADJ CURR IF STATE]. Wait for the "IF ADJUST STATUS" message to disappear before continuing.

6. Adjust the HP 3335A frequency to peak the signal amplitude displayed on the HP 8562A/B.

NOTE

Several minor peaks might be observed when finding the peak signal amplitude for the 2 MHz RES BW setting. Be sure that the peak found is the peak with the highest amplitude.

7. On the HP 3335A, press AMPLITUDE and [↓].

8. On the HP 8562A/B, press Marker ON and [MARKER DELTA].

9. On the HP 3335A, press [↑].

10. Increase the HP 3335A frequency until the HP 8562A/B Δ MKR reads 0 dB ±0.02 dB. In Table 3-8, record the HP 3335A frequency as the Upper 3 dB Frequency for the current RES BW setting.

11. Decrease the HP 3335A frequency until the peak of the signal is found. Decrease the frequency further until the Δ MKR again reads 0 dB ±0.02 dB. In Table 3-8, record the HP 3335A frequency as the Lower 3 dB Frequency for the current RES BW setting.

12. Subtract the Lower 3 dB Frequency from the Upper 3 dB Frequency. Record the result as the Actual 3 dB Bandwidth in Table 3-8, and as the 3 dB Bandwidth in Table 3-9, for the current RES BW setting. The bandwidth should be within the limits shown in Table 3-8.

13. Set the HP 3335A frequency to 40 MHz.

14. Press Marker OFF on the HP 8562A/B.

15. Repeat steps 5 through 14 for the rest of the RES BW settings listed in the first column of Table 3-8. For RES BW settings of 1 kHz and below, change the VIDEO BW to 1 Hz.

Resolution Bandwidth Selectivity

16. Set the HP 8562A/B controls as follows:

RES BW . . . . . 2 MHz
(1 MHz if HP 8562A/B has serial prefix 2750A or below)
LOG dB/DIV . . . . . 10 dB
VIDEO BW . . . . . 300 Hz

17. Set the HP 3335A amplitude to –3 dBm and AMPTD INCR to 60 dB.

18. On the HP 8562A/B, press AMPLITUDE, [MORE], [IF ADJUST], and [ADJ CURR IF STATE]. Wait for the "IF ADJUST STATUS" message to disappear before continuing.

19. Adjust the HP 3335A frequency for peak signal amplitude on the HP 8562A/B display.

NOTE

Several minor peaks might be observed when finding the peak signal amplitude for the 2 MHz RES BW setting. Be sure that the peak found is the peak with the highest amplitude.

20. On the HP 3335A, press [↓].

21. On the HP 8562A/B, press Marker ON and [MARKER DELTA].

22. On the HP 3335A, press [↑].

23. Increase the HP 3335A frequency until the HP 8562A/B Δ MKR reads 0 dB ±0.2 dB. In Table 3-9, record the HP 3335A frequency as the Upper 60 dB Frequency for the current RES BW setting.

24. Decrease the HP 3335A frequency until the peak signal amplitude is reached. Decrease the frequency further until the HP 8562A/B Δ MKR again reads 0 dB ±0.2 dB. In Table 3-9, record the HP 3335A frequency as the Lower 60 dB Frequency for the current RES BW setting.

25. Subtract the Lower 60 dB Frequency from the Upper 60 dB Frequency. Record the result as the 60 dB Bandwidth in Table 3-9 for the current RES BW setting.

26. Divide the 60 dB Bandwidth by the 3 dB Bandwidth and record the result as the Actual Shape Factor in Table 3-9 for the current RES BW setting. The Actual Shape Factor should be less than the limit shown in Table 3-9.

27. Set the HP 3335A frequency to 40 MHz.

28. Press Marker OFF on the HP 8562A/B.

29. Repeat steps 18 through 28 for the rest of the RES BW settings listed in Table 3-9. For RES BW settings of 1 kHz and below, change the VIDEO BW to 1 Hz.

Table 3-8. Resolution Bandwidth Accuracy

RES BW Setting	HP 3335A Frequency		3 dB Bandwidth			Measurement Uncertainty
	Upper 3 dB	Lower 3 dB	Min	Actual	Max	
2 MHz*	_____	_____	1.5 MHz	_____	2.5 MHz	+13.6/–14 kHz
1 MHz	_____	_____	750 kHz	_____	1.25 MHz	+6.8/–7.0 kHz
300 kHz	_____	_____	270 kHz	_____	330 kHz	+2.04/–2.1 kHz
100 kHz	_____	_____	90 kHz	_____	110 kHz	+680/–700 Hz
30 kHz	_____	_____	27 kHz	_____	33 kHz	+204/–210 Hz
10 kHz	_____	_____	9 kHz	_____	11 kHz	+68/–70 Hz
3 kHz	_____	_____	2.7 kHz	_____	3.3 kHz	+20.4/–21 Hz
1 kHz	_____	_____	900 Hz	_____	1.1 kHz	+6.8/–7.0 Hz
300 Hz	_____	_____	270 Hz	_____	330 Hz	+2.04/–2.1 Hz
100 Hz	_____	_____	70 Hz	_____	130 Hz	+0.68/–0.7 Hz

* The 2 MHz RES BW setting is specified and tested only for HP 8562A spectrum analyzers with serial prefix 2805A and above, and for HP 8562B spectrum analyzers with serial prefix 2809A and above.

Table 3-9. Resolution Bandwidth Selectivity

RES BW Setting	HP 3335A Frequency		60 dB BW	3 dB BW	Shape Factor		Measurement Uncertainty (of 60 dB BW)
	Upper 60 dB	Lower 60 dB			Actual	Max	
2 MHz*						15	+126/–132 kHz
1 MHz						15	+63/–66 kHz
300 kHz						15	+19/–20 kHz
100 kHz						15	+6.3/–6.6 kHz
30 kHz						15	+1.9/–2.0 kHz
10 kHz						15	+630/–660 Hz
3 kHz						15	+190/–200 Hz
1 kHz						15	+63/–66 Hz
300 Hz						15	+19/–20 Hz
100 Hz						15	+6.3/–6.6 Hz

* The 2 MHz RES BW setting is specified and tested only for HP 8562A spectrum analyzers with serial prefix 2805A and above, and for HP 8562B spectrum analyzers with serial prefix 2809A and above.

3-29. Input Attenuator Accuracy

SPECIFICATION

Accuracy (referenced to 10 dB input attenuation, for 20 to 70 dB settings):
1 kHz to 2.9 GHz: < ±0.6 dB/10 dB step to a maximum of ±1.8 dB

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

This test measures the input attenuator's switching accuracy and step-to-step accuracy over the full 70 dB range at 50 MHz. The frequency synthesizer is phase-locked to the spectrum analyzer's 10 MHz reference. Switching accuracy is referenced to the 10 dB attenuator setting. The attenuator in the synthesizer/level generator is the measurement standard. Step-to-step accuracy is calculated from switching accuracy data.

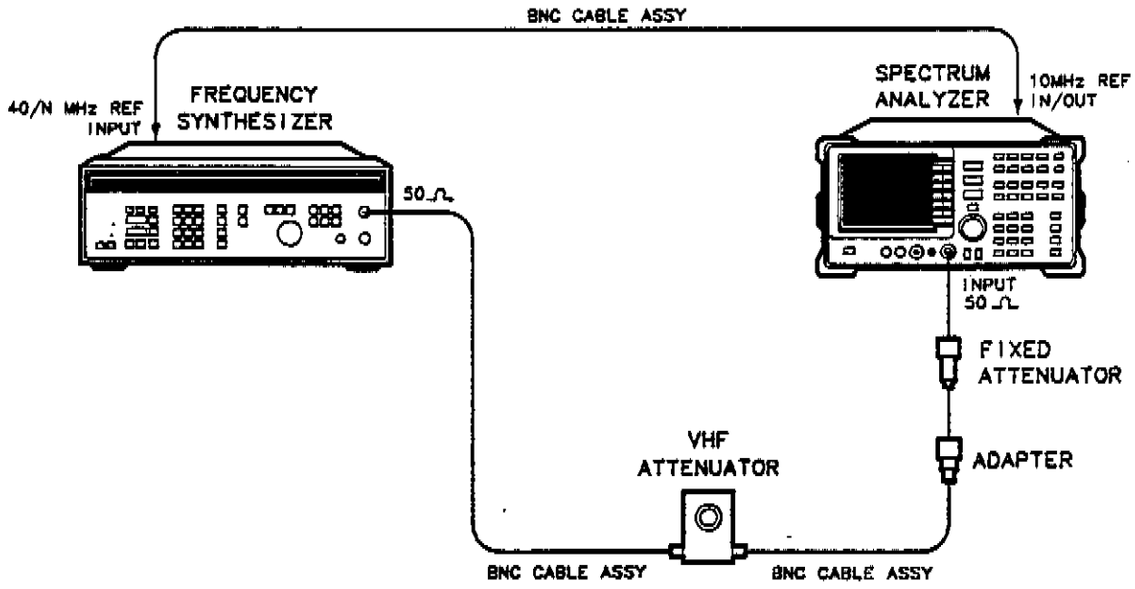

Figure 3-6. Input Attenuator Test Setup, 50 MHz

EQUIPMENT

Synthesized Sweeper	HP 8340A
Synthesizer/Level Generator	HP 3335A
20 dB Coaxial Fixed Attenuator	HP 8491B, Option 020
1 dB VHF Step Attenuator	HP 355C

Adapters

Type N (m) to BNC (f)	HP 1250-1476
Type N (f) to APC 3.5 (f) *(Option 026)*	HP 1250-1745

Cables

BNC, 122 cm (48 in.) *(3 required)*	HP 10503A
SMA, 61 cm (24 in.)	HP 8120-1578

PROCEDURE

Attenuator Switching Accuracy

1. Connect the equipment as shown in Figure 3-6. The HP 8562A/B provides the frequency reference for the HP 3335A.

2. Set the HP 3335A controls as follows:

FREQUENCY	50 MHz
AMPLITUDE	–50 dBm
AMPTD INCR	10 dB
OUTPUT	50Ω

3. On the HP 8562A/B, press the PRESET key and [REALIGN LO & IF] and set the controls as follows:

CENTER FREQ	50 MHz
SPAN	0 Hz
REF LVL	–70 dBm
dB/DIV	1 dB
RES BW	3 kHz
VIDEO BW	1 Hz

4. Set the HP 355C to 0 dB.

5. Adjust the HP 355C step attenuator to place the peak of the signal two to three divisions below the HP 8562A/B reference level.

6. On the HP 8562A/B, press the TRIG key, [SINGLE], and [SINGLE] and wait for a new sweep to finish. Press the MARKER ON key and [MARKER DELTA].

7. Set the HP 3335A amplitude to –40 dBm as indicated in row 2 of Table 3-10.

8. Set the HP 8562A/B REF LVL to –60 dBm and input attenuation to 20 dB as indicated in row 2 of Table 3-10.

9. On the HP 8562A/B, press the TRIG key and [SINGLE] and wait for a sweep to finish. Record the Δ MKR amplitude in Table 3-10 as the Actual Δ MKR Reading. The Δ MKR amplitude reading should be within the limits shown.

10. Repeat step 9 using the HP 3335A Amplitude and HP 8562A/B Ref Lvl and Atten settings listed in Table 3-10.

11. Calculate the Step-to-Step Accuracy as described in the following steps and record the results in Table 3-10. Step-to-Step Accuracy should be within the limits shown in Table 3-10.

Step-to-Step Accuracy Calculation

NOTE

Step-to-Step Accuracy is the measure of how accurate a 10 dB step is. The calculation of Step-to-Step Accuracy is based on the Actual Δ MKR readings in Table 3-10.

12. For the 20 dB ATTEN setting, subtract 10 dB from the Actual Δ MKR Reading to obtain the Step-to-Step Accuracy.

    20 dB ATTEN: Step-to-Step Accuracy = Actual Δ MKR Reading – 10 dB

13. For the 30, 40, 50, 60, and 70 dB ATTEN settings, subtract the previous Actual Δ MKR Reading from the current Actual Δ MKR Reading. Subtract 10 dB from the result above to obtain the Step-to-Step Accuracy.

    Accuracy = (Current Actual Δ MKR – Previous Actual Δ MKR) – 10 dB

Table 3-10. Input Attenuator Accuracy, 50 MHz

HP 3335A Amplitude (dBm)	HP 8562A/B Ref Lvl (dBm)	HP 8562A/B Atten (dBm)	Δ MKR Reading			Step-to-Step Accuracy		Measurement Uncertainty (dB)
			Min (dB)	Actual (dB)	Max (dB)	Actual (dB)	Spec (dB)	
–50	–70	10	0 (Ref.)	0 (Ref.)	0 (Ref.)	0 (Ref.)	0 (Ref.)	0 (Ref.)
–40	–60	20	+8.2	____	+11.8	____	±0.6	±0.178
–30	–50	30	+18.2	____	+21.8	____	±0.6	±0.178
–20	–40	40	+28.2	____	+31.8	____	±0.6	±0.178
–10	–30	50	+38.2	____	+41.8	____	±0.6	±0.178
0	–20	60	+48.2	____	+51.8	____	±0.6	±0.178
+10	–10	70	+58.2	____	+61.8	____	±0.6	±0.178

NOTE

This page replaces pages 3-28 through 3-36 in your manual.

3-30. IF Gain Uncertainty

SPECIFICATION

< ± 1.0 dB, reference levels 0 dBm to –80 dBm with 10 dB input attenuation

RELATED ADJUSTMENT

IF Amplitude Adjustment

DESCRIPTION

This test measures the log (10 dB and 1 dB) and linear IF gain uncertainties. A 0 dBm signal is displayed near the reference level for each test. The input signal level is decreased as the spectrum analyzer's reference level is decreased (IF gain increased). Since the signal level decreases in accurate steps, any error between the reference level and the signal level is caused by the analyzer's IF gain. The frequency synthesizer is phase-locked to the spectrum analyzer's 10 MHz reference.

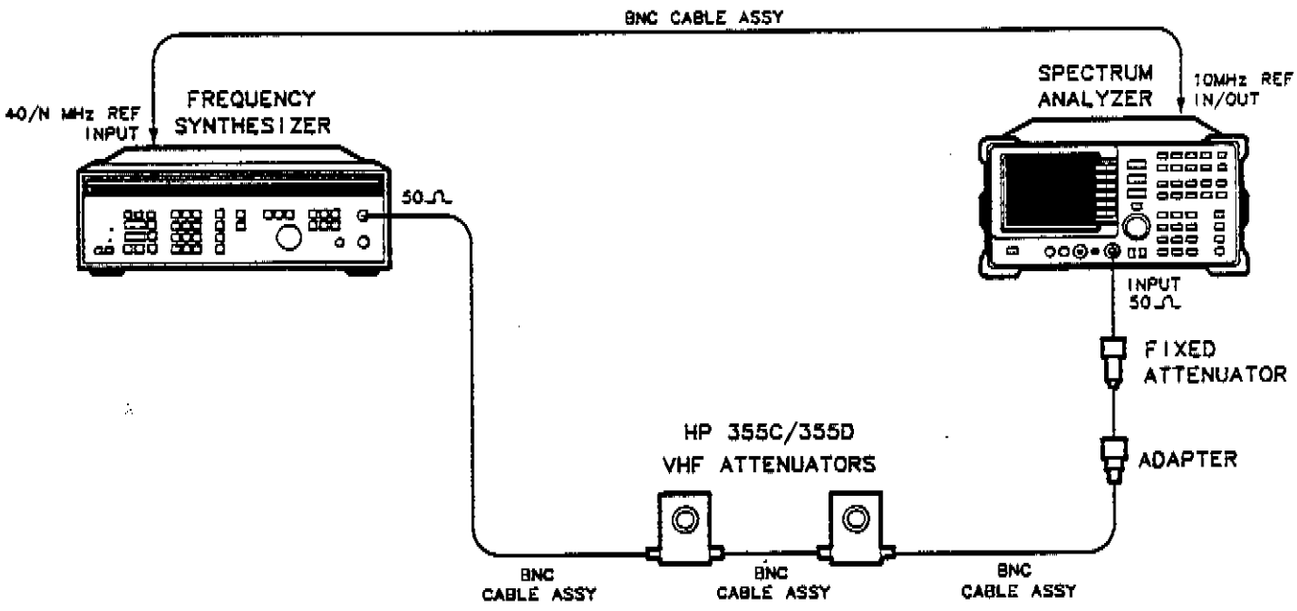

Figure 3-8. IF Gain Uncertainty Test Setup

EQUIPMENT

Frequency Synthesizer	HP 3335A
10 dB Coaxial Fixed Attenuator	HP 8491B, Option 010
1 dB VHF Step Attenuator	HP 355C

Adapters

Type N (m) to BNC (f) . . . . . HP 1250-1476
Type N (f) to APC 3.5 (f) *(Option 026)* . . . . . HP 1250-1745

Cables

BNC, 122 cm (48 in.) *(3 required)* . . . . . HP 10503A

PROCEDURE

1. Connect the equipment as shown in Figure 3-8. The HP 8562A/B provides the frequency reference for the HP 3335A.

Log Gain Uncertainty (10 dB Steps)

2. Set the HP 3335A controls as follows:

FREQUENCY . . . . . 50 MHz
AMPLITUDE . . . . . +10 dBm
AMPTD INCR . . . . . 10 dB
OUTPUT 50Ω

3. On the HP 8562A/B, press the PRESET key and [REALIGN LO & IF]. Set the controls as follows:

CENTER FREQ . . . . . 50 MHz
SPAN . . . . . 0 Hz
dB/DIV . . . . . 1 dB
RES BW . . . . . 1 kHz
VIDEO BW . . . . . 1 Hz

4. Set the HP 355C to 0 dB attenuation.

5. On the HP 8562A/B, press the MARKER ON key.

6. Adjust the HP 355C to place the signal 2 to 3 dB (two to three divisions) below the HP 8562A/B reference level.

7. On the HP 8562A/B, press the TRIG key, [SINGLE], [SINGLE], the MARKER ON key, and [MARKER DELTA].

8. Press the AMPLITUDE key on the HP 3335A.

9. Press the ↓ key on the HP 3335A.

10. Set the HP 8562A/B REF LVL to -10 dBm.

11. On the HP 8562A/B, press the TRIG key and [SINGLE].

12. Record the HP 8562A/B Δ MKR amplitude reading in Table 3-15 as the Actual Δ MKR reading. The Δ MKR reading should be within the limits shown.

13. Repeat steps 9 through 12 for the remaining HP 8562A/B REF LVL settings listed in Table 3-15.

Log Gain Uncertainty (1 dB Steps)

14. Set the HP 3335A the AMPLITUDE key to +10 dBm and the AMPTD INCR key to 1 dB.

15. Set the HP 8562A/B controls as follows:

MARKER	MARKER NORMAL
REF LVL	0 dBm
dB/DIV	1 dB
TRIG	CONT

16. Adjust the HP 355C to place the signal 2 to 3 dB (two to three divisions) below the HP 8562A/B reference level.

17. On the HP 8562A/B, press the TRIG key, [SINGLE], [SINGLE], the MARKER ON key, and [MARKER DELTA].

18. Press the AMPLITUDE key on the HP 3335A.

19. Press the ↓ key on the HP 3335A.

20. On the HP 8562A/B, press the AMPLITUDE key and the ↓ key.

21. Press the TRIG key and [SINGLE] on the HP 8562A/B.

22. Record the HP 8562A/B Δ MKR amplitude reading in Table 3-16 as the Actual Δ MKR reading. The Δ MKR reading should be within the limits shown.

23. Repeat steps 19 through 22 for the remaining HP 8562A/B REF LVL settings listed in Table 3-16.

Linear Gain Uncertainty

24. Set the HP 3335A the AMPLITUDE key to +10 dBm and the AMPTD INCR key to 10 dB.

25. Set the HP 8562A/B controls as follows:

MARKER	MARKER NORMAL
REF LVL	0 dBm
AMPLITUDE SCALE	LINEAR
UNITS	dBm
TRIG	CONT

26. Adjust the HP 355C to place the signal two to three divisions below the HP 8562A/B reference level. The marker should read between −2 dBm and −3 dBm.

27. On the HP 8562A/B, press the TRIG key, [SINGLE], [SINGLE], the MARKER ON key, and [MARKER DELTA].

28. Press the AMPLITUDE key on the HP 3335A.

29. Press the ↓ key on the HP 3335A.

30. Set the HP 8562A/B REF LVL to −10 dBm.

31. On the HP 8562A/B, press the TRIG key and [SINGLE].

32. Record the HP 8562A/B Δ MKR amplitude reading in Table 3-17 as the Actual Δ MKR reading. The Δ MKR reading should be within the limits shown.

33. Repeat steps 29 through 32 for the remaining HP 8562A/B REF LVL settings listed in Table 3-17.

34. In Table 3-15, locate the Actual Δ MKR Reading with the greatest deviation from its corresponding REF LVL setting. Subtract the REF LVL setting from the Δ MKR Reading and record the result below.

Maximum Log IF Gain Uncertainty (10 dB Steps): _____ dB

35. In Table 3-16, locate the Actual Δ MKR Reading with the greatest deviation from its corresponding REF LVL setting. Subtract the REF LVL setting from the Δ MKR Reading and record the result below.

Maximum Log IF Gain Uncertainty (1 dB Steps): _____ dB

36. In Table 3-17, locate the Actual Δ MKR Reading with the greatest deviation from its corresponding REF LVL setting. Subtract the REF LVL setting from the Δ MKR Reading and record the result below.

Maximum Linear Gain Uncertainty: _____ dB

Table 3-15. Log IF Gain Uncertainty (10 dB Steps)

HP 8562A/B Ref Lvl (dBm)	HP 3335A Amplitude (dBm)	Δ MKR Reading			Measurement Uncertainty (dB)
		Min (dB)	Actual (dB)	Max (dB)	
0	+10 (Ref)	0	0 (Ref)	0	±0.035
−10	0	−11	_____	−9	±0.035
−20	−10	−21	_____	−19	±0.035
−30	−20	−31	_____	−29	±0.035
−40	−30	−41	_____	−39	+.038/−.039
−50	−40	−51	_____	−49	+.038/−.039
−60	−50	−61	_____	−59	+.093/−.095
−70	−60	−71	_____	−69	+.093/−.095
−80	−70	−81	_____	−79	+.093/−.095

Table 3-16. Log IF Gain Uncertainty (1 dB Steps)

HP 8562A/B Ref Lvl (dBm)	HP 3335A Amplitude (dBm)	Δ MKR Reading			Measurement Uncertainty (dB)
		Min (dB)	Actual (dB)	Max (dB)	
0	+10 (Ref)	0	0 (Ref)	0	±0.035
−1	+9	−2	_____	0	±0.035
−2	+8	−3	_____	−1	±0.035
−3	+7	−4	_____	−2	±0.035
−4	+6	−5	_____	−3	±0.035
−5	+5	−6	_____	−4	±0.035
−6	+4	−7	_____	−5	±0.035
−7	+3	−8	_____	−6	±0.035
−8	+2	−9	_____	−7	±0.035
−9	+1	−10	_____	−8	±0.035
−10	0	−11	_____	−9	±0.035
−11	−1	−12	_____	−10	±0.035
−12	−2	−13	_____	−11	±0.035

Table 3-17. Linear IF Gain Uncertainty

HP 8562A/B Ref Lvl (dBm)	HP 3335A Amplitude (dBm)	Δ MKR Reading			Measurement Uncertainty (dB)
		Min (dB)	Actual (dB)	Max (dB)	
0	+10 (Ref)	0	0 (Ref)	0	±0.038
−10	0	−11.0	_____	−9.0	±0.038
−20	−10	−21.0	_____	−19.0	±0.038
−30	−20	−31.0	_____	−29.0	±0.038
−40	−30	−41.0	_____	−39.0	±0.041
−50	−40	−51.0	_____	−49.0	±0.041
−60	−50	−61.0	_____	−59.0	+.094/−.097
−70	−60	−71.0	_____	−69.0	+.094/−.097
−80	−70	−81.0	_____	−79.0	+.094/−.097

3-31. Scale Fidelity

SPECIFICATION

Log Scale Fidelity: <±0.4 dB/4 dB to a maximum of ±1.5 dB over 0 to 90 dB range

Linear Scale Fidelity: <±3% of Reference Level

RELATED ADJUSTMENT

IF Amplitude Adjustment

DESCRIPTION

The 10 dB, 2 dB, and linear scales are tested for fidelity. A −10 dBm signal is displayed at the reference level for each scale. As the input signal level is decreased, the displayed signal level is compared to the reference level. The test also measures the incremental step errors. Figure 3-9 illustrates the test setup used for the test. The frequency synthesizer is phase-locked to the spectrum analyzer's 10 MHz reference.

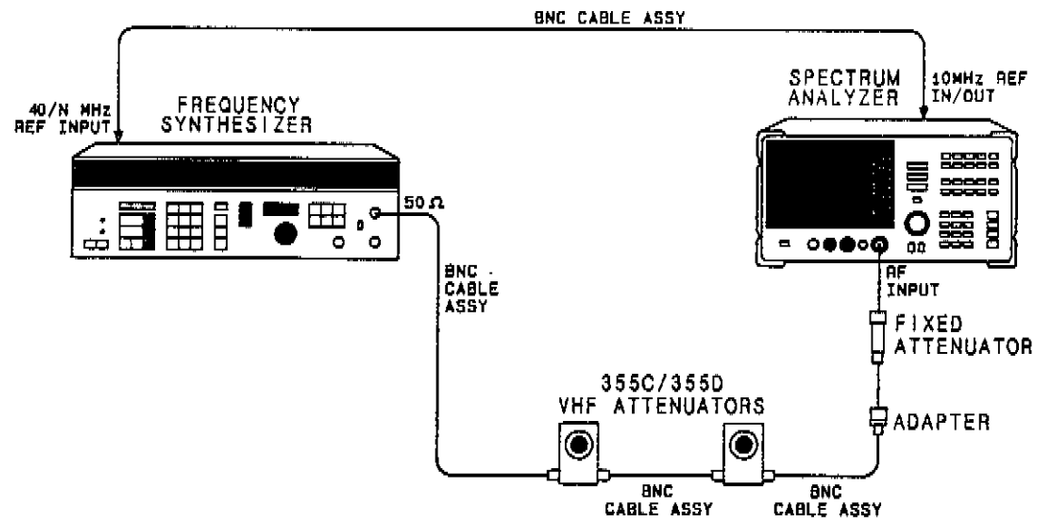

Figure 3-9. Scale Fidelity Test Setup

EQUIPMENT

Frequency Synthesizer	HP 3335A
10 dB Coaxial Fixed Attenuator	HP 8491B, Option 010
1 dB VHF Step Attenuator	HP 355C
10 dB VHF Step Attenuator	HP 355D

Adapters

Type N (m) to BNC (f)	HP 1250-1476
Type N (f) to APC 3.5 (f) *(Option 026)*	HP 1250-1745

Cables

BNC, 122 cm (48 in.) *(3 required)*	HP 10503A

PROCEDURE

1. Connect the equipment as shown in Figure 3-9. The HP 8562A/B provides the frequency reference for the HP 3335A.

2. Set the HP 3335A controls as follows:

FREQUENCY	50 MHz
AMPLITUDE	+10 dBm
AMPL INCR	0.05 dB
OUTPUT	50Ω

3. On the HP 8562A/B, press the PRESET key and [REALIGN LO & IF]. Set the controls as follows:

CENTER FREQ	50 MHz
SPAN	0 Hz
REF LVL	-10 dBm
ATTEN	0 dB
RES BW	1 kHz
VIDEO BW	30 Hz

4. Set the HP 335C and HP 355D to 0 dB.

5. On the HP 8562A/B, press the MARKER ON key.

6. Adjust the HP 355C and HP 355D until the HP 8562A/B marker reads between -10 dBm and -11 dBm.

10 dB/DIV Log Scale

7. On the HP 3335A, press the AMPLITUDE key and use the INCR keys to adjust the amplitude until the HP 8562A/B marker reads exactly -10.00 dBm.

8. On the HP 3335A, set the AMPL INCR to 4 dB and press the AMPLITUDE key.

9. On the HP 8562A/B, press the TRIG key, [SINGLE], [SINGLE], the MARKER ON key, and [MARKER DELTA].

10. Set the HP 3335A amplitude to the next value listed in Table 3-18 using the INCR ↓ key. Set the AMPTD INCR to 2 dB before setting the HP 3335A AMPLITUDE to the last power level. Press the TRIG key and [SINGLE] on the HP 8562A/B. Record the Δ MKR amplitude reading in Table 3-18 column 4. The Δ MKR amplitude should be within the limits shown. Repeat this step for each HP 3335A setting.

11. For each Δ MKR reading, subtract the previous Δ MKR reading. Add 4 dB to this number and record the result as the Incremental Error in Table 3-18. The Incremental Error should not exceed ±0.4 dB.

Incremental Error = current Δ MKR − previous Δ MKR + 4 dB

For the last step:

Incremental Error = current Δ MKR − previous Δ MKR + 2 dB

2 dB/DIV Log Scale

12. Set the HP 8562A/B controls as follows:

TRIG	CONT
dB/DIV	2 dB

13. Set the HP 3335A controls as follows:

AMPLITUDE	+10 dBm
AMPL INCR	0.01 dB

14. On the HP 8562A/B, press the MARKER ON key and [MARKER NORMAL].

15. Adjust the HP 355C and HP 355D until the HP 8562A/B marker reads between −10 dBm and −11 dBm.

16. On the HP 3335A, press the AMPLITUDE key. Use the HP 3335A INCR keys to adjust the amplitude until the HP 8562A/B marker reads exactly −10.00 dBm.

17. Set the HP 3335A AMPL INCR key to 4 dB and press the AMPLITUDE key.

18. On the HP 8562A/B, press the TRIG key, [SINGLE], [SINGLE], the MARKER ON key, and [MARKER DELTA].

19. Set the HP 3335A amplitude to the next value listed in Table 3-19 using INCR ↓ key. Set the AMPTD INCR to 2 dB before setting the HP 3335A AMPLITUDE to the last power level. Press the TRIG key and [SINGLE] on the HP 8562A/B. Record the Δ MKR amplitude reading in Table 3-19 column 4. The Δ MKR amplitude should be within the limits shown. Repeat this step for each HP 3335A setting.

20. For each Δ MKR reading in Table 3-19, subtract the previous Δ MKR reading. Add 4 dB to this number and record the result as the Incremental Error in Table 3-19. The Incremental Error should not exceed ±0.4 dB.

Incremental Error = current Δ MKR − previous Δ MKR + 4 dB

For the last step:

Incremental Error = current Δ MKR − previous Δ MKR + 2 dB

Linear Scale

21. Set the HP 8562A/B controls as follows:

TRIG	CONT
LINEAR/LOG	LINEAR
UNITS	dBm

22. Set the HP 3335A controls as follows:

AMPLITUDE	+10 dBm
AMPL INCR	0.01 dB

23. On the HP 8562A/B, press the MARKER ON key and [MARKER NORMAL].

24. Adjust the HP 355C and HP 355D until the HP 8562A/B marker reads between −10 dBm and −11 dBm.

25. On the HP 3335A, press the AMPLITUDE key and use the INCR keys to adjust the HP 3335A amplitude until the HP 8562A/B marker reads exactly −10.00 dBm.

26. Set the HP 3335A the AMPL INCR key to 2 dB and press the AMPLITUDE key.

27. On the HP 8562A/B, press the TRIG key, [SINGLE], [SINGLE], the MARKER ON key, and [MARKER DELTA].

28. Set the HP 3335A amplitude to the next value listed in Table 3-20 using the the INCR ↓ key. Press the TRIG key and [SINGLE] on the HP 8562A/B. Record the Δ MKR amplitude reading in Table 3-20 column 4. The Δ MKR amplitude should be within the limits shown. Repeat this step for each HP 3335A setting.

29. In Table 3-18, locate the Actual Δ MKR Reading with the greatest deviation from its corresponding "(nominal) dB from REF LVL". Add the dB from REF LVL to the Actual Δ MKR Reading and record the result below.

Maximum Cumulative 10 dB Log Scale Fidelity: _____ dB

30. Record below the Incremental Error in Table 3-18 with the greatest deviation from 0 dB.

Maximum 10 dB Log Scale Incremental Error: _____ dB

31. In Table 3-19, locate the Actual Δ MKR Reading with the greatest deviation from its corresponding "(nominal) dB from REF LVL". Add the dB from REF LVL to the Actual Δ MKR Reading and record the result below.

Maximum Cumulative 2 dB Log Scale Fidelity: _____ dB

32. Record below the Incremental Error in Table 3-19 with the greatest deviation from 0 dB.

Maximum 2 dB Log Scale Incremental Error: _____ dB

Table 3-18. 10 dB/Div Log Scale Fidelity

HP 3335A Amplitude (dBm, nominal)	dB from Ref Level (nominal)	Δ MKR Reading			Incremental Error (dB)	Measurement Uncertainty (dB)
		Min (dB)	Actual (dB)	Max (dB)		
+10	0	0	0 (Ref)	0	0 (Ref)	0
+6	−4	−4.4	_____	−3.6	_____	+0.24/−0.25
+2	−8	−8.8	_____	−7.2	_____	+0.24/−0.25
−2	−12	−13.2	_____	−10.8	_____	+0.24/−0.25
−6	−16	−17.5	_____	−14.5	_____	+0.24/−0.25
−10	−20	−21.5	_____	−18.5	_____	+0.24/−0.25
−14	−24	−25.5	_____	−22.5	_____	+0.24/−0.25
−18	−28	−29.5	_____	−26.5	_____	+0.24/−0.25
−22	−32	−33.5	_____	−30.5	_____	+0.241/−0.255
−26	−36	−37.5	_____	−34.5	_____	+0.241/−0.255
−30	−40	−41.5	_____	−38.5	_____	+0.241/−0.255
−34	−44	−45.5	_____	−42.5	_____	+0.241/−0.255
−38	−48	−49.5	_____	−46.5	_____	+0.241/−0.255
−42	−52	−53.5	_____	−50.5	_____	+0.255/−0.270
−46	−56	−57.5	_____	−54.5	_____	+0.255/−0.270
−50	−60	−61.5	_____	−58.5	_____	+0.255/−0.270
−54	−64	−65.5	_____	−62.5	_____	+0.255/−0.270
−58	−68	−69.5	_____	−66.5	_____	+0.255/−0.270
−62	−72	−73.5	_____	−70.5	_____	+0.255/−0.270
−66	−76	−77.5	_____	−74.5	_____	+0.255/−0.270
−70	−80	−81.5	_____	−78.5	_____	+0.255/−0.270
−74	−84	−85.5	_____	−72.5	_____	+0.255/−0.270
−78	−88	−89.5	_____	−86.5	_____	+0.255/−0.270
−80[1]	−90	−91.5	_____	−88.5	_____[2]	+0.255/−0.270

[1] INCR keys cannot be used to set this step; key in the AMPLITUDE from the previous (−78 dBm, nominal) step minus 2 dB.

[2] This value should not exceed ±0.2 dB.

Table 3-19. 2 dB/Div Log Scale Fidelity

HP 3335A Amplitude (dBm, nominal)	dB from Ref Level (nominal)	Δ MKR Reading			Incremental Error (dB)	Measurement Uncertainty (dB)
		Min (dB)	Actual (dB)	Max (dB)		
+10	0	0	0 (Ref.)	0	0 (Ref.)	0
+6	4	–4.4	_____	–3.6	_____	±0.06
+2	8	–8.8	_____	–7.2	_____	±0.06
–2	12	–13.2	_____	–10.8	_____	±0.06
–6	16	–17.5	_____	–14.5	_____	±0.06
–8	18	–19.5	_____	–16.5	_____	±0.06

Table 3-20. Linear Scale Fidelity

HP 3335A Amplitude (dBm, nominal)	dB from Ref Level (nominal)	Δ MKR Reading			Measurement Uncertainty (dB)
		Min (dB)	Actual (dB)	Max (dB)	
+10	0	0	0 (Ref.)	0	0
+8	2	–2.33	_____	–1.68	+0.033/–0.033
+6	4	–4.42	_____	–3.60	+0.034/–0.034
+4	6	–6.54	_____	–5.50	+0.037/–0.037
+2	8	–8.68	_____	–7.37	+0.041/–0.041
0	10	–10.87	_____	–9.21	+0.046/–0.047
–2	12	–13.10	_____	–11.02	+0.054/–0.054
–4	14	–15.42	_____	–12.78	+0.064/–0.065
–6	16	–17.82	_____	–14.49	+0.078/–0.079
–8	18	–20.36	_____	–16.14	+0.118/–0.12

3-32. Residual FM

SPECIFICATION

Residual FM: <50 Hz × N p-p in 100 ms in zero span

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

The Residual FM Test measures the inherent short-term instability of the spectrum analyzer's LO system. With the analyzer placed in zero span, a stable signal is applied to the input and slope-detected on the linear portion of the IF bandwidth filter skirt. Any instability in the LO system transfers to the IF signal in the mixing process. The test determines the slope of the IF filter in Hz/dB and then measures the signal amplitude variation caused by the residual FM. Multiplying these two values gives the residual FM in Hz.

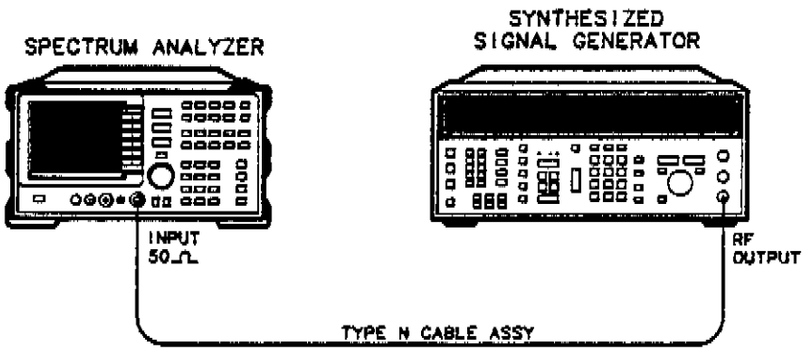

Figure 3-10. Residual FM Test Setup

EQUIPMENT

Synthesized Signal Generator . . . . . HP 8663A

Adapter

Type N (f) to APC 3.5 (f) *(Option 026)* . . . . . HP 1250-1745

Cable

Type N, 183 cm (72 in.) . . . . . HP 11500A

PROCEDURE

Determining the IF Filter Slope

1. Connect the equipment as shown in Figure 3-10.

2. Set the HP 8663A controls as follows:

FREQUENCY	2500 MHz
CW OUTPUT	−10 dBm

3. On the HP 8562A/B, press the PRESET key and set the controls as follows:

CENTER FREQ	2.5 GHz
SPAN	1 MHz
REF LEVEL	−5 dBm
dB/DIV	1 dB
RES BW	3 kHz

4. On the HP 8562A/B, press the PEAK SEARCH key, [SIGNAL TRK ON], and the SPAN key. Press the ↓ key six times. Press the BW key, the 1 key, the kHz key, the MKR-> key, [MARKER->CF], [MARKER->REF LVL], the MARKER ON key, [SIG TRK OFF], and the MARKER OFF key.

5. On the HP 8562A/B press the TRIG key, [SINGLE], the PEAK SEARCH key, and [MARKER DELTA].

6. Rotate the HP 8562A/B data entry knob counterclockwise until the Δ MKR reads −1 dB ±0.1 dB. Press [MARKER DELTA]. Rotate the data entry knob counterclockwise until the Δ MKR reads −4 dB ±0.1 dB.

7. Divide the Δ MKR frequency in Hertz by the Δ MKR amplitude in dB to obtain the slope of the RES BW filter. For example if the Δ MKR frequency is 380 Hz and the Δ MKR amplitute is 3.92 dB, the slope would be equal to 97 Hz/dB. Record the result below:

Slope: _____ Hz/dB

Measuring the Residual FM

8. On the HP 8562A/B, press the MARKER OFF key, the PEAK SEARCH key, and [MARKER DELTA]. Rotate the data entry knob counterclockwise until the Δ MKR reads −3 dB ±0.1 dB.

9. On the HP 8562A/B, press the MKR-> key, [MARKER NORMAL], [MARKER->CF], the SPAN key, and [ZERO SPAN]. Set the sweep time to 100 ms. Press the TRIG key, and [SINGLE].

NOTE

The displayed trace should be about three divisions below the reference level. If it is not, press [CONT], the FREQUENCY key, and use the data entry knob to place the displayed trace about three divisions below the reference level. Press the TRIG key and [SINGLE] then continue with step 10.

10. On the HP 8562A/B, press the PEAK SEARCH key and [MARKER DELTA]. Rotate the data entry knob to position the active marker at the lowest point on the displayed trace. Read the Δ MKR amplitude, take its absolute value, and record the result as the Deviation.

Deviation: _____ dB

11. Calculate the Residual FM by multiplying the Slope recorded in step 7 by the Deviation recorded in step 10. Record the result below. The Residual FM should be less than 50 Hz.

Residual FM: _____ Hz.

3-33. Noise Sidebands

SPECIFICATION

Noise Sidebands: <(–100 + 20 Log N) dBc/Hz

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

The noise sidebands of a 2.5 GHz, –10 dBm signal are measured at an offset of 30 kHz from the carrier with a 1 kHz resolution bandwidth.

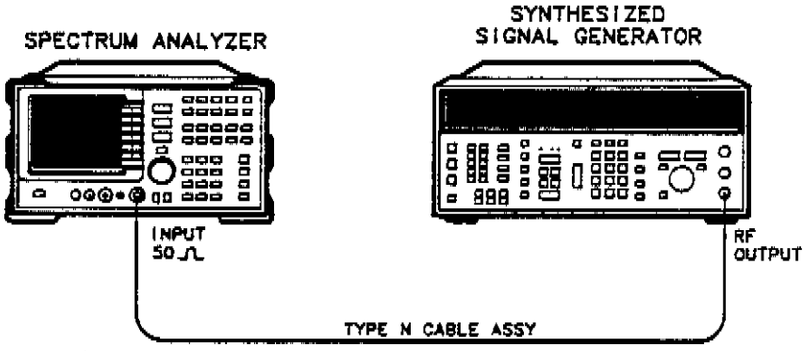

Figure 3-11. Noise Sidebands Test Setup

EQUIPMENT

Synthesized Signal Generator . . . . . HP 8663A

Adapter

Type N (f) to APC 3.5 (f) *(Option 026)* . . . . . HP 1250-1745

Cable

Type N, 183 cm (72 in.) . . . . . HP 11500A

PROCEDURE

1. Connect the equipment as shown in Figure 3-11.

2. Set the HP 8663A controls as follows:

FREQUENCY	2500 MHz
CW OUTPUT	–15 dBm

3. On the HP 8562A/B, press the PRESET key and set the controls as follows:

CENTER FREQ	2.5 GHz
SPAN	1 MHz
REF LEVEL	–10 dBm
ATTEN	0 dB
CF STEP	30 kHz

4. On the HP 8562A/B, press PEAK SEARCH, [SIG TRK ON], and SPAN. Set the [SPAN WIDTH] to 10 kHz. Wait for the completion of two sweeps with the SPAN set to 10 kHz, then press Marker ON and [SIG TRK OFF]. Press BW and set [RES BW] to 1 kHz. Press SPAN and [ZERO SPAN]. Press BW and set [VIDEO BW] to 1 Hz.

5. Adjust the HP 8663A amplitude as necessary to place the peak of the signal at the HP 8562A/B reference level.

6. On the HP 8562A/B, press the TRIG key, [SINGLE], and [SINGLE]. Wait for the completion of the sweep and press the MARKER ON key, [MKR NOISE ON], and [MARKER DELTA].

7. On the HP 8562A/B, press the FREQUENCY key, [CF STEP], the 3 key, the 0 key, the kHz key, [CENTER FREQ], and the ↑ key.

8. Press the TRIG key and [SINGLE] on the HP 8562A/B. Wait for the completion of the sweep and then record the Δ MKR amplitude in Table 3-21 column 2 as the Single Sideband Noise for +30 kHz offset.

9. On the HP 8562A/B, press the FREQUENCY key, the ↓ key, and the ↓ key.

10. Press the TRIG key and [SINGLE] on the HP 8562A/B. Wait for the completion of the sweep and then record the Δ MKR amplitude in Table 3-21 column 2 as the Single Sideband Noise for –30 kHz offset.

11. The values recorded in steps 8 and 10 should be less than –100 dBc/Hz.

Table 3-21. Noise Sidebands

Offset (kHz)	Δ MKR Reading		Measurement Uncertainty (dB)
	Actual (dBc/Hz)	Max (dBc/Hz)	
+30	_____	–100	+1.51/–1.53
–30	_____	–100	+1.51/–1.53

3-34. Image, Multiple, and Out-of-Band Responses

SPECIFICATION

Image, Multiple, and Out-of-Band Responses:
< 18 GHz: <–70 dBc
< 22 GHz: <–60 dBc
Option 026: <26.5 GHz: <–60 dBc

RELATED ADJUSTMENT

YTF Adjustment (HP 8562A)

DESCRIPTION

This performance test applies only to HP 8562A analyzers. Image, multiple, and out-of-band responses are tested in each of the five frequency bands.

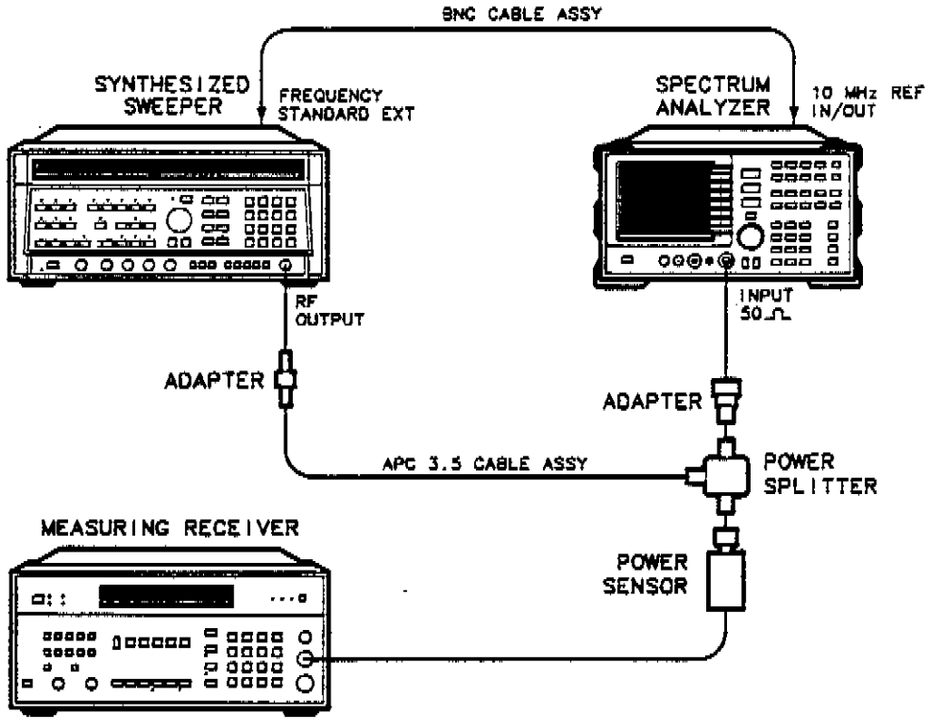

Figure 3-12. Image, Multiple, and Out-of-Band Responses Test Setup

EQUIPMENT

Synthesized Sweeper	HP 8340A
Measuring Receiver	HP 8902A
Power Sensor	HP 8485A
Power Splitter	HP 11667B

Adapters

Type N (m) to APC 3.5 (m) *(not necessary for Option 026)* . . . . . HP 1250-1743
Type APC 3.5 (f) to APC 3.5 (f) *(2 required for Option 026)* . . . . . HP 5061-5311

Cables

BNC, 122 cm (48 in.) . . . . . HP 10503A
APC 3.5, 91 cm (36 in.) . . . . . HP 8120-4921

PROCEDURE

Band 0

1. Connect the equipment as shown in Figure 3-12, but do not connect the power sensor to the power splitter.

2. Press the INSTR PRESET key on the HP 8340A, and set the controls as follows:

   CW . . . . . 2 GHz
   POWER LEVEL . . . . . –10 dBm
   FREQUENCY STANDARD SWITCH (rear panel) . . . . . EXT

3. On the HP 8562A, press the PRESET key, the RECALL key, [MORE], and [FACTORY PRESEL PK]. Set the HP 8562A controls as follows:

   CENTER FREQ . . . . . 2 GHz
   SPAN . . . . . 10 kHz
   REF LEVEL . . . . . –10 dBm
   ATTEN . . . . . 0 dB
   RES BW . . . . . 1 kHz

4. Zero and calibrate the HP 8902A and HP 8485A. Enter the power sensor's 2 GHz calibration factor into the HP 8902A. Connect the HP 8485A to the HP 11667B Power Splitter.

5. Adjust the HP 8340A POWER LEVEL for a –10 dBm ±0.1 dB reading on the HP 8902A.

6. On the HP 8562A, press the PEAK SEARCH key, the MKR→ key, [MKR→REF LVL], the TRIG key, [SINGLE], the PEAK SEARCH key, and [MARKER DELTA].

7. For each of the frequencies listed in Table 3-22 for Band 0, do the following:

   a. Set the HP 8340A to the listed CW key frequency.

   b. Enter the appropriate power sensor calibration factor into the HP 8902A.

   c. Set the HP 8340A POWER LEVEL key for a –10 dBm reading on the HP 8902A.

   d. Press the TRIG key and [SINGLE] on the HP 8562A. Wait for the completion of the sweep before continuing.

   e. On the HP 8562A, press the PEAK SEARCH key and record the Δ MKR amplitude in Table 3-22 as the Response Amplitude. The Response Amplitude should be less than the specification listed in the table.

8. On the HP 8562A, press the MARKER OFF key, the TRIG key and [CONT].

Band 1

9. Set the HP 8562A center frequency to 4 GHz. Set the HP 8340A CW to 4 GHz.

10. Enter the power sensor's 4 GHz calibration factor into the HP 8902A.

11. On the HP 8562A, press the PEAK SEARCH key, the INT key, and [PRESEL AUTO PK]. Wait for the *PEAKING* message to disappear and press the MARKER OFF key.

12. Repeat steps 5 through 8 for the HP 8340A frequencies listed in Table 3-22 for Band 1.

Band 2

13. Set the HP 8562A center frequency to 9 GHz. Set the HP 8340A CW to 9 GHz.

14. Enter the power sensor's 9 GHz calibration factor into the HP 8902A.

15. On the HP 8562A, press the PEAK SEARCH key, the INT key, and [PRESEL AUTO PK]. Wait for the *PEAKING* message to disappear and press the MARKER OFF key.

16. Repeat steps 5 through 8 for the HP 8340A frequencies listed in Table 3-22 for Band 2.

Band 3

17. Set the HP 8562A center frequency to 15 GHz. Set the HP 8340A CW to 15 GHz.

18. Enter the power sensor's 15 GHz calibration factor into the HP 8902A.

19. On the HP 8562A, press the PEAK SEARCH key, the INT key, and [PRESEL AUTO PK]. Wait for the *PEAKING* message to disappear and press the MARKER OFF key.

20. Repeat steps 5 through 8 for the HP 8340A frequencies listed in Table 3-22 for Band 3.

Band 4

21. Set the HP 8562A center frequency to 21 GHz. Set the HP 8340A CW to 21 GHz.

22. Enter the power sensor's 21 GHz calibration factor into the HP 8902A.

23. On the HP 8562A, press the PEAK SEARCH key, the INT key, and [PRESEL AUTO PK]. Wait for the *PEAKING* message to disappear and press the MARKER OFF key.

24. Repeat steps 5 through 8 for the HP 8340A frequencies listed in Table 3-22 for Band 4.

25. Record the maximum Response Amplitude from Table 3-22 for Band 0, 1, 2, and 3 entries.

Maximum Response Amplitude (< 18 GHz): _____ dBc

26. Record the maximum Response Amplitude from Table 3-22 for Band 4.

Maximum Response Amplitude (< 22 GHz): _____ dBc
(Option 026: < 26.5 GHz:)

Table 3-22. Image, Multiple, and Out-of-Band Responses

Band	HP 8562A/B Center Freq (GHz)	HP 8340A [CW] (MHz)	Response Amplitude (dBc)	Specification (dBc)	Measurement Uncertainty (dB)
0	2.0	1978.6*	_____	–70	+1.52/–1.57
	2.0	2021.4*	_____	–70	+1.52/–1.57
	2.0	1378.6*	_____	–70	+1.52/–1.57
	2.0	2621.4*	_____	–70	+1.52/–1.57
	2.0	9821.6†	_____	–70	+1.52/–1.57
	2.0	7910.7†	_____	–70	+1.52/–1.57
	2.0	1810.7‡	_____	–70	+1.52/–1.57
	2.0	289.3‡	_____	–70	+1.52/–1.57
1	4.0	3978.6*	_____	–70	+1.52/–1.56
	4.0	4021.4*	_____	–70	+1.52/–1.56
	4.0	3378.6*	_____	–70	+1.52/–1.56
	4.0	4621.4*	_____	–70	+1.52/–1.56
	4.0	289.3†	_____	–70	+1.52/–1.56
	4.0	3721.4‡	_____	–70	+1.52/–1.56
2	9.0	8978.6*	_____	–70	+1.52/–1.57
	9.0	9021.4*	_____	–70	+1.52/–1.57
	9.0	8378.6*	_____	–70	+1.52/–1.57
	9.0	9621.4*	_____	–70	+1.52/–1.57
	9.0	289.3†	_____	–70	+1.52/–1.57
	9.0	9921.4‡	_____	–70	+1.52/–1.57
3	15.0	14978.6*	_____	–70	+1.53/–1.57
	15.0	15021.4*	_____	–70	+1.53/–1.57
	15.0	14378.6*	_____	–70	+1.53/–1.57
	15.0	15621.4*	_____	–70	+1.53/–1.57
	15.0	289.3†	_____	–70	+1.53/–1.57
	15.0	14721.4‡	_____	–70	+1.53/–1.57
4	21.0	20978.6*	_____	–60	+1.53/–1.59
	21.0	21021.4*	_____	–60	+1.53/–1.59
	21.0	20378.6*	_____	–60	+1.53/–1.59
	21.0	21621.4*	_____	–60	+1.53/–1.59
	21.0	289.3†	_____	–60	+1.53/–1.59
	21.0	21921.4‡	_____	–60	+1.53/–1.59

* Image Response
† Out-of-Band Response
‡ Multiple Response

3-35. Frequency Readout Accuracy/ Frequency Count Marker Accuracy

SPECIFICATION

Frequency Readout Accuracy: $< \pm$[(Center Frequency $\times 4 \times 10^{-6}$) + (5% of Span) + (15% of RES BW) + 250 Hz]

Frequency Count Marker Accuracy: $< \pm$[(Marker Freq. $\times 4 \times 10^{-6}$) + (50 Hz $\times$ N) + 1 LSD]

RELATED ADJUSTMENT

YTO Adjustment
10 MHz Frequency Reference Adjustment

DESCRIPTION

The accuracy of the HP 8562A/B frequency readout and frequency count marker is tested with an input signal of known frequency.

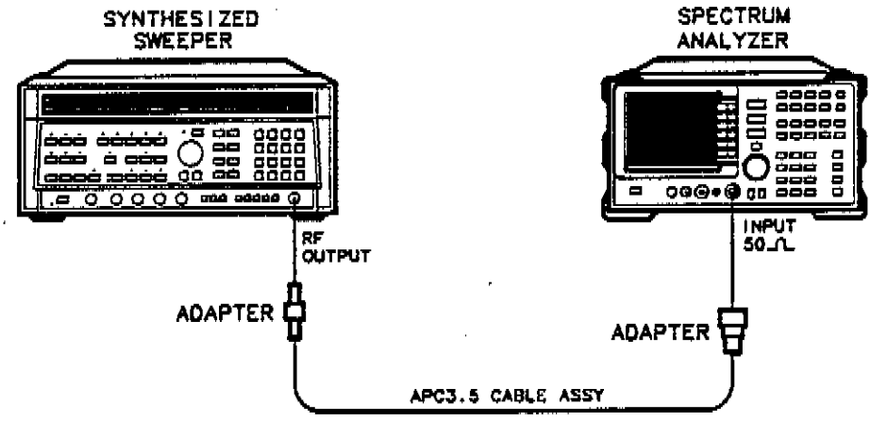

Figure 3-13. Frequency Readout and Frequency Count Accuracy Test Setup

EQUIPMENT

Synthesized Sweeper . . . . . HP 8340A

Adapters

Type N (m) to APC 3.5 (f) *(not necessary for Option 026)* . . . . . HP 1250-1744
Type APC 3.5 (f) to APC 3.5 (f) *(2 required for Option 026)* . . . . . HP 5061-5311

Cable

APC 3.5, 91 cm (36 in.) . . . . . HP 8120-4921

PROCEDURE

1. Connect the equipment as shown in Figure 3-13.

Frequency Readout Accuracy

2. Press the INSTR PRESET key on the HP 8340A. Set the HP 8340A controls as follows:

   CW . . . . . 1.5 GHz
   POWER LEVEL . . . . . -10 dBm

3. On the HP 8562A/B, press the PRESET key and set the controls as follows:

   CENTER FREQ . . . . . 1.5 GHz
   SPAN . . . . . 1 MHz

4. *Omit this step if spectrum analyzer is an HP 8562B.* On HP 8562A analyzers, press the RECALL key, [MORE], and [FACTORY PRSEL PK].

5. On the HP 8562A/B, press the PEAK SEARCH key. Record the MKR frequency in Table 3-23 as the Actual Marker Reading. The reading should be within the limits shown.

6. Repeat step 5 for all the frequency and span combinations listed in Table 3-23. Peak the HP 8562A preselector after tuning the analyzer's center frequency and HP 8340A the CW key to frequencies of 4 GHz and above.

Frequency Count Marker Accuracy

7. Set the HP 8562A/B SPAN to 1 MHz. Press the FREQ COUNT key and set [COUNTER RES] to 10 Hz.

8. Key in the HP 8340A CW frequencies and the HP 8562A/B center frequencies as indicated in Table 3-24. For each pair of settings, press the PEAK SEARCH key and record the MKR frequency at each point in Table 3-24. The marker readings should be within the limits shown.

Table 3-23. Frequency Readout Accuracy

HP 8340A Frequency (GHz)	HP 8562A		Marker Reading			Measurement Uncertainty (kHz)
	Span	Center Freq	Min (GHz)	Actual	Max (GHz)	
1.5	1 MHz	1.5 GHz	1.499942	_____	1.500058	±2.045
1.5	10 MHz	1.5 GHz	1.49948	_____	1.50052	±17.075
1.5	20 MHz	1.5 GHz	1.49895	_____	1.50105	±33.675
1.5	50 MHz	1.5 GHz	1.49745	_____	1.50255	±83.675
1.5	100 MHz	1.5 GHz	1.4948	_____	1.5052	±167.375
1.5	1 GHz	1.5 GHz	1.450	_____	1.550	±1670.375
4.0	1 MHz	4 GHz	3.999932	_____	4.000068	±2.67
4.0	10 MHz	4 GHz	3.99947	_____	4.00053	±17.7
4.0	20 MHz	4 GHz	3.99894	_____	4.00106	±34.3
4.0	50 MHz	4 GHz	3.99744	_____	4.00256	±84.3
4.0	100 MHz	4 GHz	3.9948	_____	4.0052	±168.0
4.0	1 GHz	4 GHz	3.950	_____	4.050	±1.671
9.0	1 MHz	9.0 GHz	8.999912	_____	9.000088	±3.92
9.0	10 MHz	9.0 GHz	8.99945	_____	9.00055	±18.95
9.0	20 MHz	9.0 GHz	8.99892	_____	9.00108	±35.55
9.0	50 MHz	9.0 GHz	8.99742	_____	9.00258	±85.55
9.0	100 MHz	9.0 GHz	8.9948	_____	9.0052	±169.25
9.0	1 GHz	9.0 GHz	8.950	_____	9.050	±1672.95
16.0	1 MHz	16.0 GHz	15.99984	_____	16.000116	±5.67
16.0	10 MHz	16.0 GHz	15.99942	_____	16.00058	±20.70
16.0	20 MHz	16.0 GHz	15.99889	_____	16.00111	±37.3
16.0	50 MHz	16.0 GHz	15.99739	_____	16.00261	±87.3
16.0	100 MHz	16.0 GHz	15.9948	_____	16.0052	±171.0
16.0	1 GHz	16.0 GHz	15.950	_____	16.050	±1674.0
21.0	1 MHz	21.0 GHz	20.999864	_____	21.000136	±6.92
21.0	10 MHz	21.0 GHz	20.99940	_____	21.00060	±21.95
21.0	20 MHz	21.0 GHz	20.99887	_____	21.00113	±38.55
21.0	50 MHz	21.0 GHz	20.99737	_____	21.00263	±88.55
21.0	100 MHz	21.0 GHz	20.9948	_____	21.0052	±172.25
21.0	1 GHz	21.0 GHz	20.950	_____	21.050	±1675.25

Table 3-24. Frequency Count Marker Accuracy

HP 8340A Frequency (GHz)	HP 8562A Frequency (GHz)	Marker Frequency			Measurement Uncertainty (Hz)
		Min (GHz)	Actual (GHz)	Max (GHz)	
1.5	1.5	1.49999394	_____	1.50000606	±375
4.0	4.0	3.99998394	_____	4.00001606	±1000
9.0	9.0	8.99996389	_____	9.00003611	±2250
16.0	16.0	15.99993584	_____	16.00006416	±4000
21.0	21.0	20.99991579	_____	21.00008421	±5250

3-36. Pulse Digitization Uncertainty

SPECIFICATION

Pulse digitization uncertainty (PDU) for pulse repetition frequency (PRF) >720/Sweeptime

LOG: <1.25 dB for RES BW ≤1 MHz
<3 dB for 2 MHz RES BW*

LINEAR: <4% of reference level for RES BW ≤1 MHz
<12% of reference level for 2 MHz RES BW*

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

This test measures the ability of the analyzer's analog-to-digital circuitry to respond to pulsed RF signals. The synthesized sweeper is phase-locked to the spectrum analyzer's 10 MHz reference. The only log scale tested is 5 dB/DIV, since this is the worst case. Linear scale is also tested.

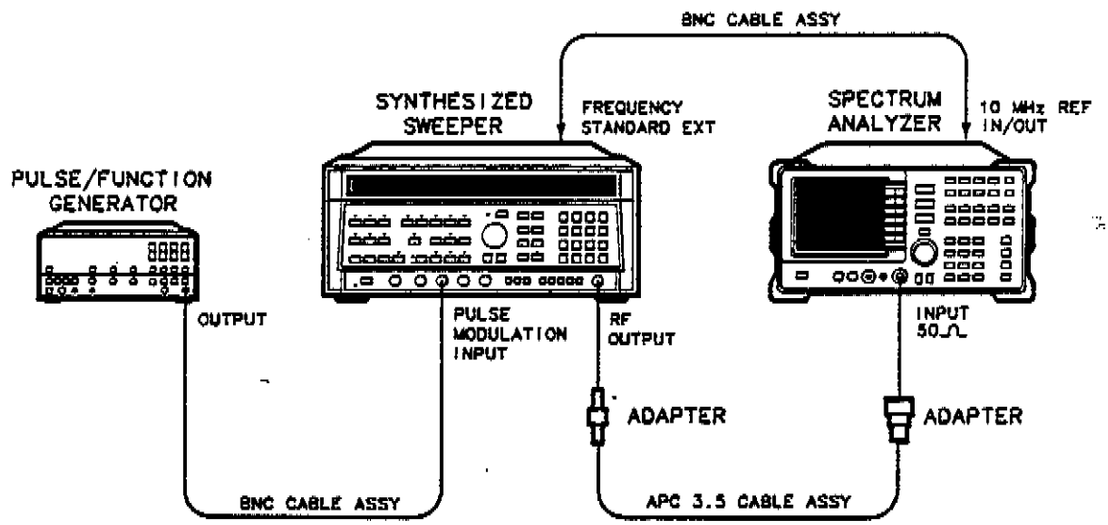

Figure 3-14. Pulse Digitization Uncertainty Test Setup

* Pulse digitization uncertainty is specified in the 2 MHz RES BW setting only for HP 8562A spectrum analyzers with serial prefix of 2805A and above, and for HP 8562B spectrum analyzers with serial prefix of 2809A and above.

EQUIPMENT

Synthesized Sweeper	HP 8340A
Pulse/Function Generator	HP 8116A

Adapters

Type N (m) to APC 3.5 (f) *(not necessary for Option 026)*	HP 1250-1744
APC 3.5 (f) to APC 3.5 (f) *(2 required for Option 026)*	HP 5061-5311

Cables

BNC, 122 cm (48 in.) *(2 required)*	HP 10503A
APC 3.5, 91 cm (36 in.)	HP 8120-4921

PROCEDURE

1. Connect the equipment as shown in figure 3-14.

2. Press INSTR PRESET on the HP 8340A. Set the HP 8340A controls as follows:

CW	2500 MHz
POWER LEVEL	−15 dBm
MODULATION	PULSE
RF	ON
LEVELING	INT
FREQUENCY STANDARD SWITCH (rear panel)	EXT

3. Set the HP 8116A controls as follows:

FUNCTION	PULSE
FREQ	144 kHz
WID	200 ns
AMP	5.0V
OFS	0.0V
MODE	NORM
CTRL	OFF

4. On the HP 8562A/B, press PRESET, TRACE, [MORE], [DETECTOR MODES], and [DETECTOR POS PEAK]. Set the controls as follows:

CENTER FREQ	2500 MHz
SPAN	0 Hz
REF LVL	−10 dBm
RES BW	1 MHz
VIDEO BW	3 MHz
SWEEPTIME	50 ms
dB/DIV	5 dB

5. On the HP 8116A, use the RANGE switch to set FREQ to 144 kHz.

6. On the HP 8562A/B, press TRIG, [SINGLE], [SINGLE], and PEAK SEARCH. In Table 3-24a, record the Marker Amplitude reading as the MAX level for 144 kHz PRF.

7. Press Marker ON. Move the marker using the knob (RPG) until the marker is at the lowest point on the trace. In Table 3-24a, record the Marker Amplitude reading as the MIN level for 144 kHz PRF.

8. On the HP 8116A, use the RANGE switch to set FREQ to 14.4 kHz.

9. On the HP 8562A/B, press TRIG, [SINGLE], [SINGLE], and PEAK SEARCH. In Table 3-24a, record the Marker Amplitude reading as the MAX level for 14.4 kHz PRF.

10. Press Marker ON. Move the marker using the knob (RPG) until the marker is at the lowest point on the trace. In Table 3-24a, record the Marker Amplitude reading as the MIN level for 14.4 kHz PRF.

(Omit steps 11 and 12 if the spectrum analyzer has serial prefix 2750A or below.)

11. On the HP 8562A/B, press BW and set [RES BW] to 2 MHz.

12. Repeat steps 5 through 10.

13. On the HP 8562A/B, press BW and set [RES BW] to 1 MHz. Press AMPLITUDE and [LINEAR].

14. Repeat steps 5 through 10.

(Omit steps 15 and 16 if the spectrum analyzer has serial prefix 2750A or below.)

15. On the HP 8562A/B, press BW and set [RES BW] to 2 MHz.

16. Repeat steps 5 through 10.

17. For each row of entries in Table 3-24a for the LOG 5 dB/DIV scale, subtract the lowest MIN Marker Amplitude reading from the highest MAX Marker Amplitude reading. Record the result as the PDU (pulse digitization uncertainty). The PDU should be less than the listed specification.

18. For each row of entries in Table 3-24a for the LINEAR scale, calculate the PDU as a percentage of reference level using the equation below. The PDU should be less than the listed specification.

$$PDU = 100 \times [(\text{highest MAX Marker Amplitude}/\text{lowest MIN Marker Amplitude}) - 1]$$

Table 3-24a. Pulse Digitization Uncertainty

RES BW	Scale	Marker Amplitude Readings				PDU	Spec
		144 kHz PRF		14.4 kHz PRF			
		Max	Min	Max	Min		
1 MHz	LOG 5 dB/DIV	_____ dBm	_____ dBm	_____ dBm	_____ dBm	____ dB	1.25 dB
2 MHz*	LOG 5 dB/DIV	_____ dBm	_____ dBm	_____ dBm	_____ dBm	____ dB	3 dB
1 MHz	LINEAR	_____ mV	_____ mV	_____ mV	_____ mV	____ %	4%
2 MHz*	LINEAR	_____ mV	_____ mV	_____ mV	_____ mV	____ %	12%

* Pulse digitization uncertainty is only specified in the 2 MHz RES BW setting for HP 8562A analyzers with serial prefix of 2805A and above, and for HP 8562B analyzers with serial prefix 2809A and above.

3-37. Second Harmonic Distortion

SPECIFICATION

For frequencies <2.9 GHz: <–72 dBc for a –40 dBm mixer level*

(HP8562A) For frequencies >2.9 GHz: <–100 dBc for a –10 dBm mixer level*

(HP8562B) For frequencies >2.9 GHz: <–60 dBc for a –40 dBm mixer level*

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

A synthesized sweeper and low-pass filter provide the signal for measuring second harmonic distortion. The low-pass filter eliminates any harmonic distortion originating at the signal source. The HP 8562A/B's frequency response is calibrated out for the >2.9 GHz test. The synthesized sweeper is phase-locked to the spectrum analyzer's 10 MHz reference.

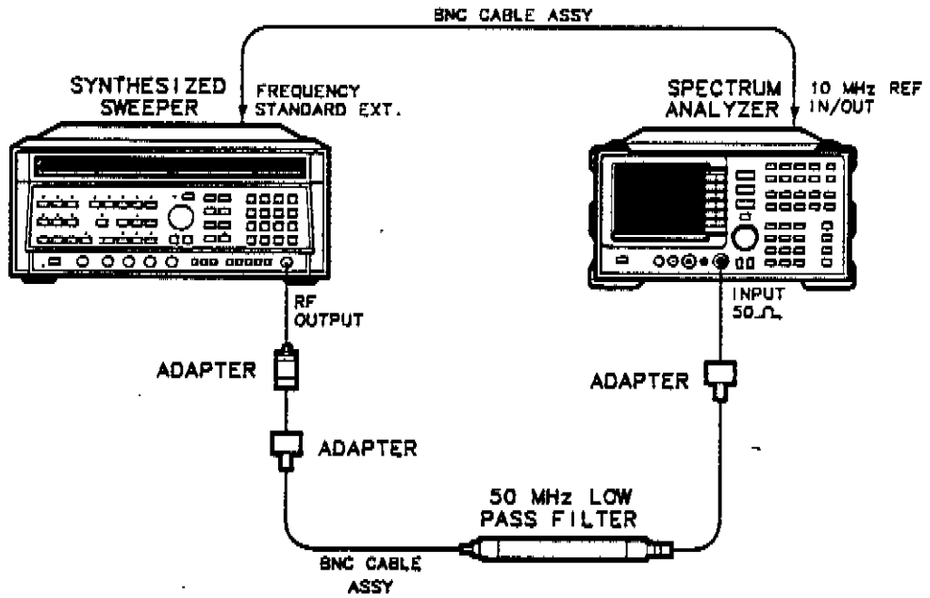

Figure 3-15. Second Harmonic Distortion Test Setup, Band 0

* Mixer Level = Input Level – Input Attenuation

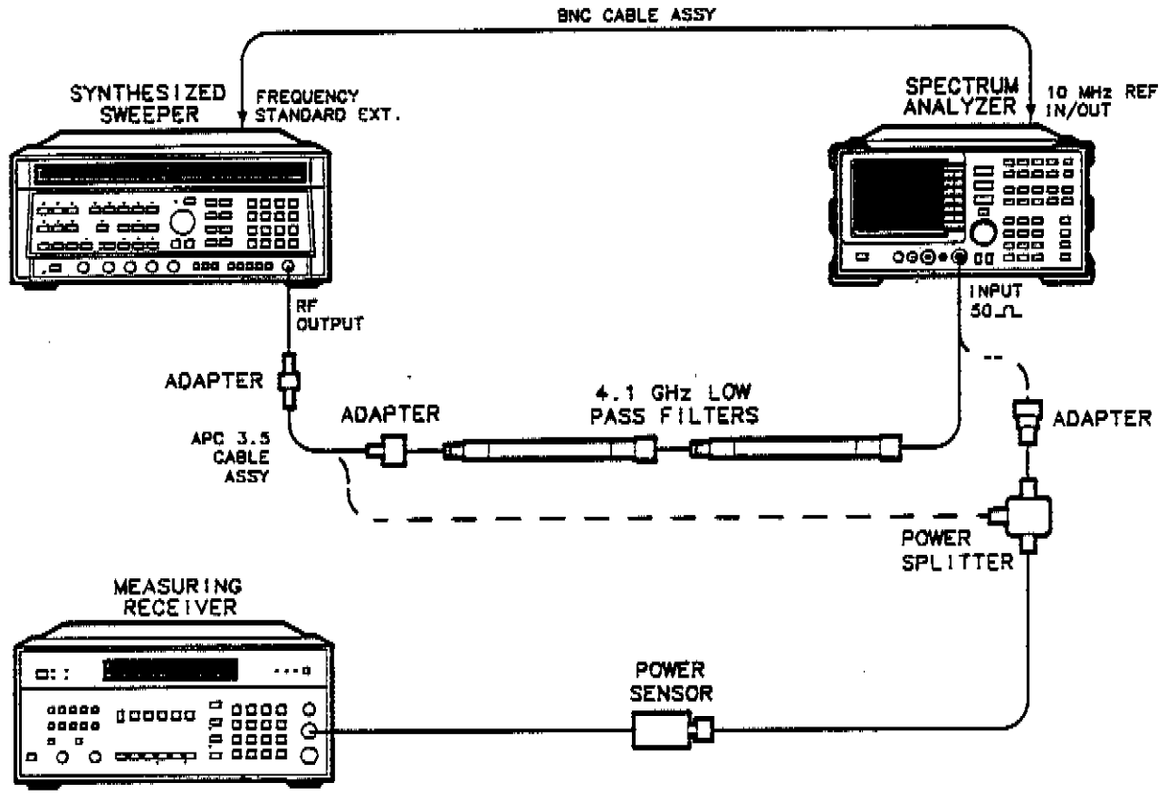

Figure 3-16. Second Harmonic Distortion Test Setup, Bands 1–4

EQUIPMENT

Synthesized Sweeper	HP 8340A
Measuring Receiver	HP 8902A
Power Sensor	HP 8485A
50 MHz low-pass filter	HP 0955-0306
4.1 GHz low-pass filter *(2 required)*	HP 360D
Power Splitter	HP 11667B

Adapters

Type N (m) to BNC (f) *(2 required)*	HP 1250-1476
Type N (m) to SMA (f)	HP 1250-1250
Type N (f) to APC 3.5 (f)	HP 1250-1745
Type N (m) to APC 3.5 (m) *(not necessary for Option 026)*	HP 1250-1743
APC 3.5 (f) to APC 3.5 (f)	HP 5061-5311
Type N (f) to APC 3.5 (f) *(required for Option 026)*	HP 1250-1745

Cables

BNC, 122 cm (48 in.) *(2 required)*	HP 10503A
APC 3.5, 91 cm (36 in.)	HP 8120-4921

PROCEDURE

Distortion, Band 0

1. Connect the equipment as shown in Figure 3-15, using the 50 MHz low-pass filter and BNC cable.

2. Press the INSTR PRESET key on the HP 8340A. Set the HP 8340A controls as follows:

CW	30 MHz
POWER LEVEL	−30 dBm
FREQUENCY STANDARD SWITCH (rear panel)	EXT

3. On the HP 8562A/B press the PRESET key and set the controls as follows:

CENTER FREQ	30 MHz
SPAN	10 kHz
REF LEVEL	−30 dBm

4. On the HP 8562A/B, press the PEAK SEARCH key. Adjust the HP 8340A power level for a HP 8562A/B marker amplitude reading of −30 dBm.

5. On the HP 8562A/B, press the TRIG key, [SINGLE], the PEAK SEARCH key, the MKR-> key, and [MARKER->CF STEP]. Press [MARKER DELTA], the FREQUENCY key, and the ↑ key.

6. On the HP 8562A/B, press the TRIG key and [SINGLE]. After the HP 8562A/B completes a new sweep, press the PEAK SEARCH key. The Δ MKR should read less than −72 dB (<−72 dBc).

Second Harmonic Distortion (Band 0): _____ dBc

Distortion, Bands 1-4

7. Zero and calibrate the HP 8902A/ HP 8485A combination in log mode (readout in dBm). Enter the power sensor's 3 GHz calibration factor into the HP 8902A.

8. Connect the equipment as shown in Figure 3-16 without the filters in place.

9. Set the HP 8562A/B controls as follows:

CENTER FREQ	2.95 GHz
CF STEP	2.95 GHz
REF LVL	0 dBm

10. Set the HP 8340A controls as follows:

CW	2.95 GHz
POWER LEVEL	0 dBm

11. On the HP 8562A/B, press the TRIG key, [CONT], the MARKER OFF key, and the PEAK SEARCH key.

12. *Omit this step if spectrum analyzer is an HP 8562B.* On the HP 8562A, press the INT key and [PRESEL AUTO PK]. Wait for PEAKING message to disappear before continuing to the next step.

13. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B MKR reading of −5 dBm.

14. Press the RATIO key on the HP 8902A. Enter the power sensor's 6 GHz calibration factor into the HP 8902A.

15. Set the HP 8340A CW to 5.9 GHz.

16. On the HP 8562A/B, press the FREQUENCY key, the ↑ key, and the PEAK SEARCH key.

17. *Omit this step if spectrum analyzer is an HP 8562B.* On the HP 8562A, press the INT key and [PRESEL AUTO PK]. Wait for the PEAKING message to disappear before continuing to the next step.

18. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B MKR reading of −5 dBm.

19. Record the HP 8902A reading below as the Frequency Response Error.

Frequency Response Error: _____ dB

20. Connect the equipment as shown in Figure 3-16 with the filters in place.

21. Set the HP 8340A controls as follows:

CW . . . . . 2.95 GHz
POWER LEVEL . . . . . −5 dBm
HP 8562B: −30 dBm

22. On the HP 8562A/B, press the FREQUENCY key, the ↓ key, and the PEAK SEARCH key.

23. *Omit this step if spectrum analyzer is an HP 8562A.* On the HP 8562B, press the AMPLITUDE key, the 3 key, the 0 key, and the −dBm key.

24. *Omit this step if spectrum analyzer is an HP 8562B.* On the HP 8562A, press the INT key and [PRESEL AUTO PK]. Wait for the PEAKING message to disappear before continuing to the next step.

25. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B marker amplitude reading of 0 dBm. *HP 8562B: −30 dBm.*

26. On the HP 8562A/B, press the TRIG key, [SINGLE], [SINGLE], the PEAK SEARCH key, [MARKER DELTA], the FREQUENCY key, and the ↑ key.

27. *Omit this step if spectrum analyzer is an HP 8562B.* On the HP 8562A, press the AMPLITUDE key, the 3 key, the 0 key, and the −dBm key.

28. Press the TRIG key and [SINGLE] on the HP 8562A/B.

29. *Omit this step if spectrum analyzer is an HP 8562B.* On the HP 8562A, press the PEAK SEARCH key, the INT key, and [PRESEL AUTO PK]. Wait for the PEAKING message to disappear before continuing to the next step.

30. Wait for the completion of a new sweep, then press the PEAK SEARCH key. Record the Δ MKR amplitude reading below.

Δ MKR Amplitude Reading: _____ dBc

31. Algebraically add the Frequency Response Error recorded in step 19 to the Δ MKR Amplitude Reading in step 30. Record the result below as the Second Harmonic Distortion (>2.9 GHz). The distortion should be less than –100 dBc *(HP 8562B: less than –60 dBc).*

Second Harmonic Distortion (>2.9 GHz): _____ dBc

3-38. Frequency Response

SPECIFICATION

In-band Frequency Response (10 dB Input Attenuation):

	HP 8562A	HP 8562B
1 kHz–2.90 GHz	±1.2 dB	±1.2 dB
2.75–6.46 GHz	±2.5 dB	±2.0 dB
6.46–13.0 GHz	±3.5 dB	±2.5 dB
13.0–19.7 GHz	±4.0 dB	±3.0 dB
19.7–22.0 GHz	±4.3 dB	±4.3 dB
Option 026:		
19.7–26.5 GHz	*±4.3 dB*	*±4.3 dB*

Frequency Response relative to the calibrator (300 MHz): < ±5.1 dB
Band Switching Uncertainty: < ±0.5 dB

RELATED ADJUSTMENT

YTF Adjustment (HP 8562A)
Frequency Response Adjustment

DESCRIPTION

The output of the synthesized sweeper is fed through a power splitter to a power sensor and the HP 8562A/B. The synthesized sweeper's power level is adjusted at 300 MHz to place the displayed signal at the HP 8562A/B's center horizontal graticule line. The measuring receiver, used as a power meter, is placed in RATIO mode. At each new synthesized sweeper frequency, and HP 8562A/B center frequency, the sweeper's power level is adjusted to place the signal at the center horizontal graticule line. The measuring receiver displays the inverse of the frequency response relative to the calibrator.

EQUIPMENT

Measuring Receiver	HP 8902A
Synthesized Sweeper	HP 8340A
Frequency Synthesizer	HP 3335A
Power Sensor	HP 8485A
Power Splitter	HP 11667B
Coaxial 50-Ohm Termination	HP 909D
Adapters	
Type N (m) to APC 3.5 (m) *(2 required) (Option 026: 1 required)*	HP 1250-1743
Type N (f) to BNC (f)	HP 1250-1474
APC 3.5 (m) to APC 3.5 (m)	HP 1250-1748
Cables	
BNC, 122 cm (48 in.)	HP 10503A
APC 3.5, 91 cm (36 in.)	HP 8120-4921

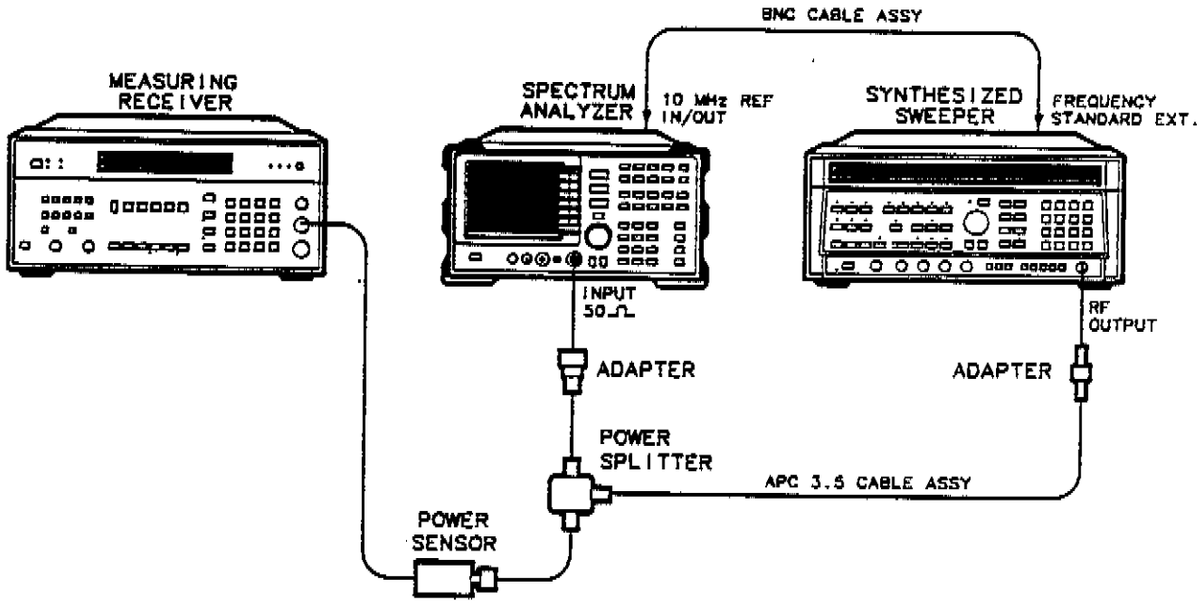

Figure 3-17. Frequency Response Test Setup, 50 MHz to 22 GHz

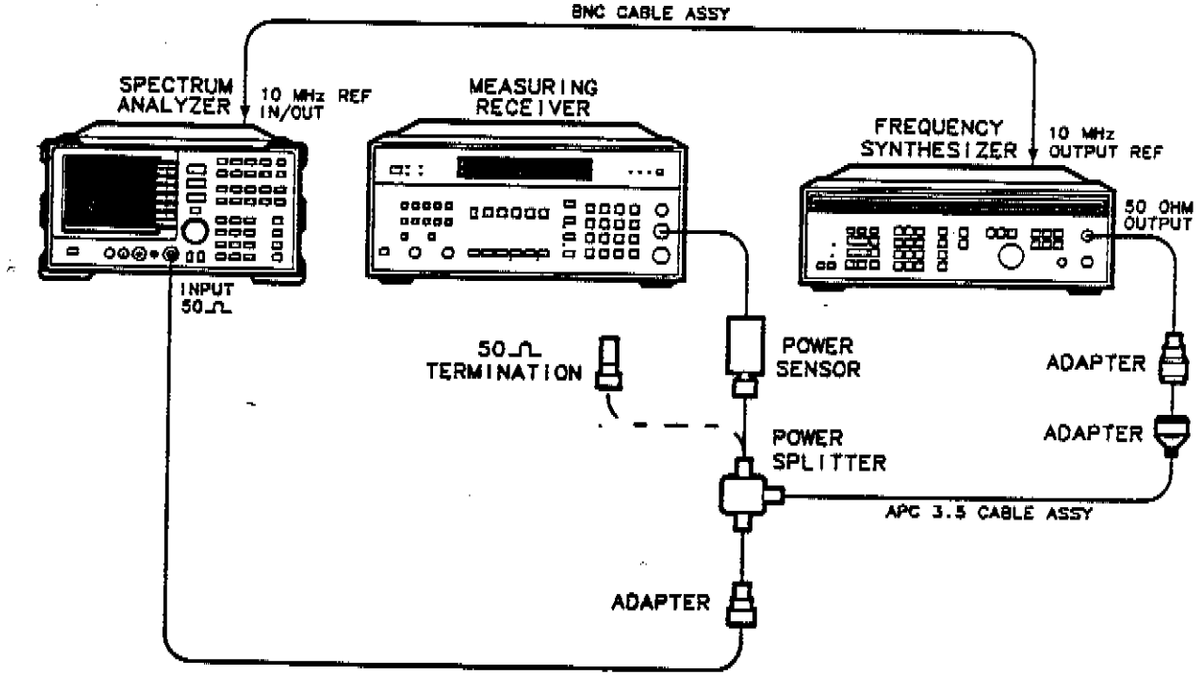

Figure 3-18. Frequency Response Test Setup, <50 MHz

PROCEDURE

1. Zero and calibrate the HP 8902A and HP 8485A in log mode as described in the HP 8902A Operation Manual.

2. Connect the equipment as shown in Figure 3-17.

3. Press the INSTR PRESET key on the HP 8340A. Set the HP 8340A controls as follows:

CW	300 MHz
FREQ STEP	100 MHz
POWER LEVEL	–4 dBm
FREQUENCY STANDARD SWITCH (rear panel)	EXT

4. On the HP 8562A/B, press the PRESET key. *If the analyzer is an HP 8562A, press the RECALL key, [MORE], and [FACTORY PRESEL PK].* Set the HP 8562A/B controls as follows:

CENTER FREQ	300 MHz
CF STEP	100 MHz
SPAN	0 Hz
REF LVL	–5 dBm
dB/DIV	1 dB
RES BW	300 kHz

5. On the HP 8562A/B, press the AMPLITUDE key, [MORE], [IF ADJUST], [IF ADJ ON], and the MARKER ON key.

6. Adjust the HP 8340A POWER LEVEL for a MKR amplitude reading of –10 dBm ±0.05 dB.

7. Press the RATIO key on the HP 8902A.

Frequency Response, Band 0 (≥50 MHz)

8. Set the HP 8340A CW to 50 MHz.

9. Set the HP 8562A/B [CENTER FREQ] to 50 MHz.

10. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B MKR amplitude reading of –10 dBm ±0.05 dB.

11. Record the power ratio displayed on the HP 8902A here. Record the negative of the power ratio in Table 3-25.

HP 8902A reading at 50 MHz: _____dB

12. Set the HP 8340A CW to 100 MHz.

13. Set the HP 8562A/B [CENTER FREQ] to 100 MHz.

14. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B MKR amplitude reading of –10 dBm ±0.05 dB.

15. Record the negative of the power ratio displayed on the HP 8902A in Table 3-25 as the HP 8902A Reading.

16. On the HP 8340A, press the CW key and the ↑ key and press the FREQUENCY key and the ↑ key on the HP 8562A/B to step through the remaining frequencies listed in Table 3-25. At each new frequency repeat steps 13 through 15, entering the power sensor's calibration factors into the HP 8902A as indicated in Table 3-25.

Frequency Response, Band 1

17. On the HP 8562A/B, press the FREQUENCY key, the 2 key, the . key, the 9 key, the 5 key, and the GHz key.

18. Set the HP 8340A CW to 2.95 GHz.

19. *If the spectrum analyzer is an HP 8562A, press the INT key and [PRESEL AUTO PK].* Wait for the *PEAKING* message to disappear.

20. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B MKR amplitude reading of –10 dBm ±0.05 dB.

21. Record the negative of the power ratio displayed on the HP 8902A in Table 3-26.

22. On the HP 8340A, press CW and the ↑ key and on the HP 8562A/B press the FREQUENCY key and the ↑ key to step through the remaining frequencies listed in Table 3-26. At each new frequency repeat steps 19 through 21, entering the power sensor's calibration factors into the HP 8902A as indicated in Table 3-26.

Frequency Response, Band 2

23. On the HP 8562A/B, press the FREQUENCY key, the 6 key, the . key, the 5 key, the GHz key, [CF STEP], the 2 key, the 0 key, the 0 key, and the MHz key.

24. Set the HP 8340A CW to 6.5 GHz and the FREQ STEP to 200 MHz.

25. *If the spectrum analyzer is an HP 8562A, press the INT key and [PRESEL AUTO PK].* Wait for the *PEAKING* message to disappear.

26. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B MKR amplitude reading of –10 dBm ±0.05 dB.

27. Record the negative of the power ratio displayed on the HP 8902A in Table 3-27 as the HP 8902A Reading.

28. Set the HP 8340A CW and the HP 8562A/B CENTER FREQ to 6.6 GHz. Repeat steps 25 through 27.

29. On the HP 8340A, press CW and the ↑ key and on the HP 8562A/B press the FREQUENCY key and the ↑ key to step through the remaining frequencies listed in Table 3-27. At each new frequency repeat steps 25 through 27, entering the power sensor's calibration factors into the HP 8902A as indicated in Table 3-27.

Frequency Response, Band 3

30. On the HP 8562A/B, press the FREQUENCY key, the 1 key, the 3 key, the . key, the 1 key, and the GHz key.

31. Set the HP 8340A CW to 13.1 GHz.

32. *If the spectrum analyzer is an HP 8562A, press the INT key and [PRESEL AUTO PK].* Wait for the *PEAKING* message to disappear.

33. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B MKR amplitude reading of –10 dBm ±0.05 dB.

34. Record the negative of the power ratio displayed on the HP 8902A in Table 3-28 as the HP 8902A Reading.

35. Press CW and the ↑ key on the HP 8340A and the FREQUENCY key and the ↑ key on the HP 8562A/B to step through the remaining frequencies listed in Table 3-28. At each new frequency repeat steps 32 through 34, entering the power sensor's calbration factors into the HP 8902A as indicated in Table 3-28.

Frequency Response, Band 4

36. On the HP 8562A/B, press the FREQUENCY key, the 1 key, the 9 key, the . key, the 7 key, the 1 key, the GHz key, [CF STEP], and set the [CF STEP] to 100 MHz.

37. Set the HP 8340A CW to 19.71 GHz and the FREQ STEP to 100 MHz. *If spectrum analyzer is an Option 026, set FREQ STEP to 200 MHz.*

38. *If the spectrum analyzer is an HP 8562A, press the INT key and [PRESEL AUTO PK].* Wait for the *PEAKING* message to disappear.

39. Adjust the HP 8340A POWER LEVEL for an HP 8562A/B MKR amplitude reading of –10 dBm ±0.05 dB.

40. Record the negative of the power ratio displayed on the HP 8902A in Table 3-29 as the HP 8902A Reading.

41. Set the HP 8340A CW and the HP 8562A/B CENTER FREQ to 19.8 GHz *(Option 026: 19.9 GHz)*. Repeat steps 38 through 40.

42. Press CW and the ↑ key on the HP 8340A and the FREQUENCY key and the ↑ key on the HP 8562A/B to step through the remaining frequencies listed in Table 3-29. At each new frequency repeat steps 38 through 40, entering the power sensor's calibration factors into the HP 8902A as indicated in Table 3-29.

Frequency Response, Band 0 (<50 MHz)

43. Set the HP 8562A/B controls as follows:

CENTER FREQ	50 MHz
RES BW	100 Hz
MARKER	OFF
VIDEO BW	1 Hz

44. Connect the equipment as shown in Figure 3-18. Set the HP 3335A controls as follows:

FREQUENCY	50 MHz
AMPLITUDE	−4 dBm
AMPTD INCR	0.1 dB

45. Enter the power sensor's 50 MHz calibration factor into the HP 8902A.

46. Adjust the HP 3335A AMPLITUDE until the HP 8902A display reads the same value as recorded in step 11. Record the HP 3335A amplitude here and in Table 3-30.

HP 3335A Amplitude (50 MHz): _____ dB

47. Replace the HP 8485A power sensor with the HP 909D 50-ohm termination.

48. On the HP 8562A/B, press the MARKER ON key and [MARKER DELTA].

49. Set the HP 8562A/B [CENTER FREQ] and HP 3335A FREQUENCY to the frequencies listed in Table 3-30. At each frequency, adjust the HP 3335A AMPLITUDE for a Δ MKR amplitude reading of 0.00 ±0.05 dB. Record the HP 3335A AMPLITUDE setting in Table 3-30 as the HP 3335A Amplitude.

50. For each of the frequencies in Table 3-30, subtract the HP 3335A the AMPLITUDE Reading (column 2) from the HP 3335A AMPLITUDE (50 MHz) recorded in step 46. Record the result as the Response Relative to 50 MHz (column 3) of Table 3-30.

51. Add to each of the Response Relative to 50 MHz entries in Table 3-30 the HP 8902A Reading for 50 MHz listed in Table 3-25. Record the results as the Response Relative to 300 MHz in Table 3-30.

Test Results

52. Frequency Response, Band 0

a. Enter most positive number from Table 3-30, column 4 ..... _____ dB

b. Enter most positive number from Table 3-25, column 2 ..... _____ dB

c. Enter more positive of numbers from (a) and (b) ..... _____ dB

d. Enter most negative number from Table 3-30, column 4 ..... _____ dB

e. Enter most negative number from Table 3-25, column 2 ..... _____ dB

f. Enter more negative of numbers from (d) and (e) ..... _____ dB

g. Subtract (f) from (c). The result should be less than 2.4 dB ..... _____ dB

h. The absolute values in (c) and (f) should be less than 5.1 dB.

53. Frequency Response, Band 1

a. Enter most positive number from Table 3-26, column 2 ..... _____ dB
The absolute value of this number should be less than 5.1 dB.

b. Enter most negative number from Table 3-26, column 2 ..... _____ dB
The absolute value of this number should be less than 5.1 dB.

c. Subtract (b) from (a) ..... _____ dB
The result should be less than 5.0 dB. *HP 8562B: 4.0 dB*

54. Frequency Response, Band 2

a. Enter most positive number from Table 3-27, column 2 ..... _____ dB
The absolute value of this number should be less than 5.1 dB.

b. Enter most negative number from Table 3-27, column 2 ..... _____ dB
The absolute value of this number should be less than 5.1 dB.

c. Subtract (b) from (a) ..... _____ dB
The result should be less than 7.0 dB. *HP 8562B: 5.0 dB*

55. Frequency Response, Band 3

a. Enter most positive number from Table 2-28, column 2 ..... _____ dB
The absolute value of this number should be less than 5.1 dB.

b. Enter most negative number from Table 2-28, column 2 ..... _____ dB
The absolute value of this number should be less than 5.1 dB.

c. Subtract (b) from (a) ..... _____ dB
The result should be less than 8.0 dB. *HP 8562B: 6.0 dB*

56. Frequency Response, Band 4

a. Enter most positive number from Table 3-29, column 2 ..... _____ dB
The absolute value of this number should be less than 5.1 dB.

b. Enter most negative number from Table 3-29, column 2 ..... _____ dB
The absolute value of this number should be less than 5.1 dB.

c. Subtract (b) from (a) ..... _____ dB
The result should be less than 8.6 dB.

Band Switching Uncertainty

57. In the top row of Table 3-31, enter the values recorded in the indicated steps. For example, if step 54(a) has a value of 1.22 dB, enter 1.22 dB in the top row of the Band 2 column.

58. In the left column of Table 3-31, enter the values recorded in the indicated steps. For example, if step 52(b) has a value of –0.95 dB, enter –0.95 dB in the left column of the Band 1 row.

59. Compute the other entries of Table 3-31 by taking the absolute value of the difference between the values in the left column and the top row.

60. Each computed entry should be less than the limit shown directly below the entry for HP 8562A analyzers. Limits shown in parentheses apply to HP 8562B analyzers.

Table 3-25. Frequency Response Band 0 (≥50 MHz)

Column 1	Column 2	Column 3	Column 4
Frequency (GHz)	HP 8902A Reading (dB)	Cal Factor Frequency (GHz)	Measurement Uncertainty (dB)
50	_____	0.05	+0.29/–0.31
100	_____	0.05	+0.29/–0.31
200	_____	0.05	+0.29/–0.31
300	_____	0.05	0 (Ref.)
400	_____	0.05	+0.29/–0.31
500	_____	0.05	+0.29/–0.31
600	_____	0.05	+0.29/–0.31
700	_____	0.05	+0.29/–0.31
800	_____	0.05	+0.29/–0.31
900	_____	0.05	+0.29/–0.31
1000	_____	0.05	+0.29/–0.31
1100	_____	2.0	+0.29/–0.31
1200	_____	2.0	+0.29/–0.31
1300	_____	2.0	+0.29/–0.31
1400	_____	2.0	+0.29/–0.31
1500	_____	2.0	+0.29/–0.31
1600	_____	2.0	+0.29/–0.31
1700	_____	2.0	+0.29/–0.31
1800	_____	2.0	+0.29/–0.31
1900	_____	2.0	+0.29/–0.31
2000	_____	2.0	+0.29/–0.31
2100	_____	2.0	+0.29/–0.31
2200	_____	2.0	+0.29/–0.31
2300	_____	2.0	+0.29/–0.31
2400	_____	2.0	+0.29/–0.31
2500	_____	3.0	+0.29/–0.31
2600	_____	3.0	+0.29/–0.31
2700	_____	3.0	+0.29/–0.31
2800	_____	3.0	+0.29/–0.31
2900	_____	3.0	+0.29/–0.31

Table 3-26. Frequency Response, Band 1

Column 1	Column 2	Column 3	Column 4
Frequency (GHz)	HP 8902A Reading (dB)	Cal Factor Frequency (GHz)	Measurement Uncertainty (dB)
2.95	_____	3.0	+0.43/–0.47
3.05	_____	3.0	+0.43/–0.47
3.15	_____	3.0	+0.43/–0.47
3.25	_____	3.0	+0.43/–0.47
3.35	_____	3.0	+0.43/–0.47
3.45	_____	3.0	+0.43/–0.47
3.55	_____	4.0	+0.43/–0.47
3.65	_____	4.0	+0.43/–0.47
3.75	_____	4.0	+0.43/–0.47
3.85	_____	4.0	+0.43/–0.47
3.95	_____	4.0	+0.43/–0.47
4.05	_____	4.0	+0.43/–0.47
4.15	_____	4.0	+0.43/–0.47
4.25	_____	4.0	+0.43/–0.47
4.35	_____	4.0	+0.43/–0.47
4.45	_____	4.0	+0.43/–0.47
4.55	_____	5.0	+0.43/–0.47
4.65	_____	5.0	+0.43/–0.47
4.75	_____	5.0	+0.43/–0.47
4.85	_____	5.0	+0.43/–0.47
4.95	_____	5.0	+0.43/–0.47
5.05	_____	5.0	+0.43/–0.47
5.15	_____	5.0	+0.43/–0.47
5.25	_____	5.0	+0.43/–0.47
5.35	_____	5.0	+0.43/–0.47
5.45	_____	5.0	+0.43/–0.47
5.55	_____	6.0	+0.43/–0.47
5.65	_____	6.0	+0.43/–0.47
5.75	_____	6.0	+0.43/–0.47
5.85	_____	6.0	+0.43/–0.47
5.95	_____	6.0	+0.43/–0.47
6.05	_____	6.0	+0.43/–0.47
6.15	_____	6.0	+0.43/–0.47
6.25	_____	6.0	+0.43/–0.47
6.35	_____	6.0	+0.43/–0.47
6.45	_____	6.0	+0.43/–0.47

Table 3-27. Frequency Response, Band 2

Column 1	Column 2	Column 3	Column 4
Frequency (GHz)	HP 8902A Reading (dB)	Cal Factor Frequency (GHz)	Measurement Uncertainty (dB)
6.5	_____	6.0	+0.43/–0.48
6.6	_____	7.0	+0.43/–0.48
6.8	_____	7.0	+0.43/–0.48
7.0	_____	7.0	+0.43/–0.48
7.2	_____	7.0	+0.43/–0.48
7.4	_____	7.0	+0.43/–0.48
7.6	_____	8.0	+0.43/–0.48
7.8	_____	8.0	+0.43/–0.48
8.0	_____	8.0	+0.43/–0.48
8.2	_____	8.0	+0.43/–0.48
8.4	_____	8.0	+0.43/–0.48
8.6	_____	9.0	+0.43/–0.48
8.8	_____	9.0	+0.43/–0.48
9.0	_____	9.0	+0.43/–0.48
9.2	_____	9.0	+0.43/–0.48
9.4	_____	9.0	+0.43/–0.48
9.6	_____	10.0	+0.43/–0.48
9.8	_____	10.0	+0.43/–0.48
10.0	_____	10.0	+0.43/–0.48
10.2	_____	10.0	+0.43/–0.48
10.4	_____	10.0	+0.43/–0.48
10.6	_____	11.0	+0.43/–0.48
10.8	_____	11.0	+0.43/–0.48
11.0	_____	11.0	+0.43/–0.48
11.2	_____	11.0	+0.43/–0.48
11.4	_____	11.0	+0.43/–0.48
11.6	_____	12.0	+0.43/–0.48
11.8	_____	12.0	+0.43/–0.48
12.0	_____	12.0	+0.43/–0.48
12.2	_____	12.0	+0.43/–0.48
12.4	_____	12.0	+0.43/–0.48
12.6	_____	13.0	+0.43/–0.48
12.8	_____	13.0	+0.43/–0.48
13.0	_____	13.0	+0.43/–0.48

Table 2-28. Frequency Response, Band 3

Column 1	Column 2	Column 3	Column 4
Frequency (GHz)	HP 8902A Reading (dB)	Cal Factor Frequency (GHz)	Measurement Uncertainty (dB)
13.1	_____	13.0	0 (Ref.)
13.3	_____	13.0	+0.43/–0.48
13.5	_____	13.0	+0.43/–0.48
13.7	_____	14.0	+0.43/–0.48
13.9	_____	14.0	+0.43/–0.48
14.1	_____	14.0	+0.43/–0.48
14.3	_____	14.0	+0.43/–0.48
14.5	_____	14.0	+0.43/–0.48
14.7	_____	15.0	+0.43/–0.48
14.9	_____	15.0	+0.43/–0.48
15.1	_____	15.0	+0.43/–0.48
15.3	_____	15.0	+0.43/–0.48
15.5	_____	15.0	+0.43/–0.48
15.7	_____	16.0	+0.43/–0.48
15.9	_____	16.0	+0.43/–0.48
16.1	_____	16.0	+0.43/–0.48
16.3	_____	16.0	+0.43/–0.48
16.5	_____	16.0	+0.43/–0.48
16.7	_____	17.0	+0.43/–0.48
16.9	_____	17.0	+0.43/–0.48
17.1	_____	17.0	+0.43/–0.48
17.3	_____	17.0	+0.43/–0.48
17.5	_____	17.0	+0.43/–0.48
17.7	_____	18.0	+0.43/–0.48
17.9	_____	18.0	+0.43/–0.48
18.1	_____	18.0	+0.43/–0.48
18.3	_____	18.0	+0.43/–0.48
18.5	_____	18.0	+0.43/–0.48
18.7	_____	19.0	+0.43/–0.48
18.9	_____	19.0	+0.43/–0.48
19.1	_____	19.0	+0.43/–0.48
19.3	_____	19.0	+0.43/–0.48
19.5	_____	19.0	+0.43/–0.48
19.7	_____	20.0	+0.43/–0.48

Table 3-29. Frequency Response, Band 4

Column 1	Column 2	Column 3	Column 4
Frequency (GHz)	HP 8902A Reading (dB)	Cal Factor Frequency (GHz)	Measurement Uncertainty (dB)
19.71	_____	20.0	+0.55/–0.59
19.8	_____	20.0	+0.55/–0.59
19.9	_____	20.0	+0.55/–0.59
20.0	_____	20.0	+0.55/–0.59
20.1	_____	20.0	+0.55/–0.59
20.2	_____	20.0	+0.55/–0.59
20.3	_____	20.0	+0.55/–0.59
20.4	_____	20.0	+0.55/–0.59
20.5	_____	21.0	+0.55/–0.59
20.6	_____	21.0	+0.55/–0.59
20.7	_____	21.0	+0.55/–0.59
20.8	_____	21.0	+0.55/–0.59
20.9	_____	21.0	+0.55/–0.59
21.0	_____	21.0	+0.55/–0.59
21.1	_____	21.0	+0.55/–0.59
21.2	_____	21.0	+0.55/–0.59
21.3	_____	21.0	+0.55/–0.59
21.4	_____	21.0	+0.55/–0.59
21.5	_____	22.0	+0.55/–0.59
21.6	_____	22.0	+0.55/–0.59
21.7	_____	22.0	+0.55/–0.59
21.8	_____	22.0	+0.55/–0.59
21.9	_____	22.0	+0.55/–0.59
22.0	_____	22.0	+0.55/–0.59

Table 3-29a. Frequency Response, Band 4 (Option 026 only)

Column 1	Column 2	Column 3	Column 4
Frequency (GHz)	HP 8902A Reading (dB)	Cal Factor Frequency (GHz)	Measurement Uncertainty (dB)
19.71	_____	20.0	+0.55/–0.59
19.9	_____	20.0	+0.55/–0.59
20.1	_____	20.0	+0.55/–0.59
20.3	_____	20.5	+0.55/–0.59
20.5	_____	20.5	+0.55/–0.59
20.7	_____	20.5	+0.55/–0.59
20.9	_____	21.0	+0.55/–0.59
21.1	_____	21.0	+0.55/–0.59
21.3	_____	21.5	+0.55/–0.59
21.5	_____	21.5	+0.55/–0.59
21.7	_____	21.5	+0.55/–0.59
21.9	_____	22.0	+0.55/–0.59
22.1	_____	22.0	+0.55/–0.59
22.3	_____	22.5	+0.55/–0.59
22.5	_____	22.5	+0.55/–0.59
22.7	_____	22.5	+0.55/–0.59
22.9	_____	23.0	+0.55/–0.59
23.1	_____	23.0	+0.55/–0.59
23.3	_____	23.5	+0.55/–0.59
23.5	_____	23.5	+0.55/–0.59
23.7	_____	23.5	+0.55/–0.59
23.9	_____	24.0	+0.55/–0.59
24.1	_____	24.0	+0.55/–0.59
24.3	_____	24.5	+0.55/–0.59
24.5	_____	24.5	+0.55/–0.59
24.7	_____	24.5	+0.55/–0.59
24.9	_____	25.0	+0.55/–0.59
25.1	_____	25.0	+0.55/–0.59
25.3	_____	25.5	+0.55/–0.59
25.5	_____	25.5	+0.55/–0.59
25.7	_____	25.5	+0.55/–0.59
25.9	_____	26.0	+0.55/–0.59
26.1	_____	26.0	+0.55/–0.59
26.3	_____	26.5	+0.55/–0.59
26.5	_____	26.5	+0.55/–0.59

Table 3-30. Frequency Response, Band 0 (<50 MHz)

Column 1	Column 2	Column 3	Column 4	Column 5
Frequency	HP 3335A Amplitude (dBm)	Response Relative to 50 MHz	Response Relative to 300 MHz	Measurement Uncertainty (dB)
50 MHz	_____	0 (Ref.)	_____	+0.34/–0.37
20 MHz	_____	_____	_____	+0.34/–0.37
10 MHz	_____	_____	_____	+0.34/–0.37
1 MHz	_____	_____	_____	+0.34/–0.37
100 kHz	_____	_____	_____	+0.34/–0.37
10 kHz	_____	_____	_____	+0.34/–0.37
1 kHz	_____	_____	_____	+0.34/–0.37

Table 3-31. Band Switching Uncertainty

	Band 0 step 52(c) _____	Band 1 step 53(a) _____	Band 2 step 54(a) _____	Band 3 step 55(a) _____	Band 4 step 56(a) _____
Band 0 step 52(f) _____		4.2 dB (3.7 dB)	5.2 dB (3.7 dB)	5.7 dB (4.7 dB)	6.0 dB (6.0 dB)
Band 1 step 53(b) _____	4.2 dB (3.7 dB)		6.5 dB (5.0 dB)	7.0 dB (6.0 dB)	7.3 dB (6.8 dB)
Band 2 step 54(b) _____	5.2 dB (4.2 dB)	6.5 dB (5.0 dB)		8.0 dB (6.0 dB)	8.3 dB (7.3 dB)
Band 3 step 55(b) _____	5.7 dB (4.7 dB)	7.0 dB (6.0 dB)	8.0 dB (6.0 dB)		8.8 dB (7.8 dB)
Band 4 step 56(b) _____	6.0 dB (6.0 dB)	7.3 dB (6.8 dB)	8.3 dB (7.3 dB)	8.8 dB (7.8 dB)	

3-39. Frequency Span Accuracy

SPECIFICATION

< ±5% of actual frequency separation

RELATED ADJUSTMENT

YTO Adjustment

DESCRIPTION

Two synthesized sweepers provide the precise signals required to test the spectrum analyzer's frequency span accuracy. Signal separation, measured with the delta marker function, is checked for accuracy. Span accuracy at several different frequencies is tested. Both sweepers are phase-locked to the analyzer's 10 MHz reference.

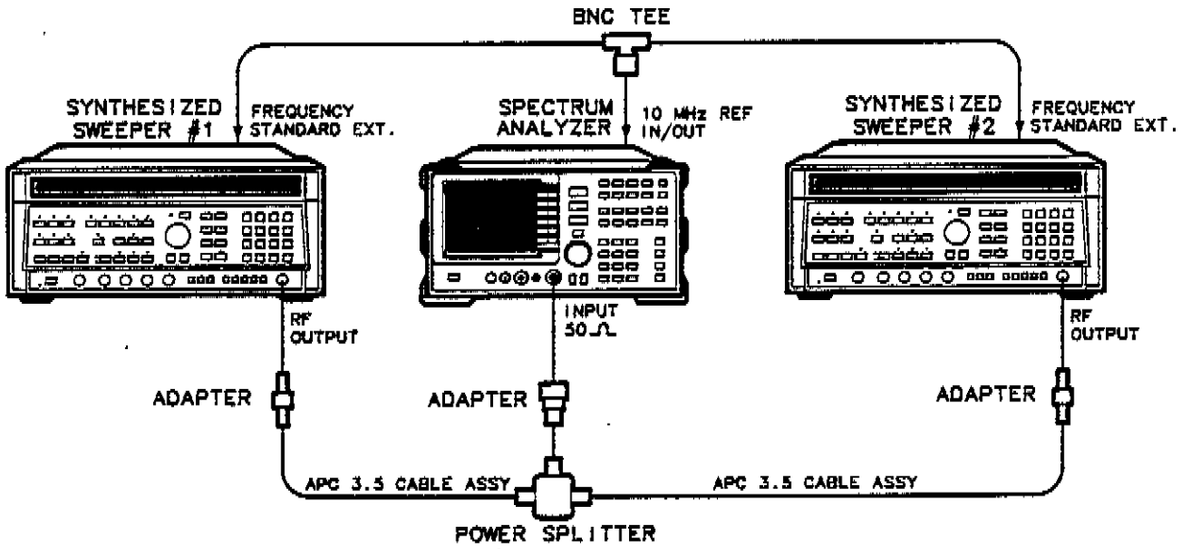

Figure 3-19. Frequency Span Accuracy Test Setup

EQUIPMENT

Synthesized Sweeper *(2 required)*	HP 8340A
Power Splitter	HP 11667B

Adapters

Type N (m) to APC 3.5 (m) *(not necessary for Option 026)* . . . . . HP 1250-1743
APC 3.5 (f) to APC 3.5 (f) *(2 required)* . . . . . HP 5061-5311
BNC tee (m) (f) (f) . . . . . HP 1250-0781

Cables

BNC, 122 cm (48 in.) *(2 required)* . . . . . HP 10503A
APC 3.5, 91 cm (36 in.) . . . . . HP 8120-4921

PROCEDURE

1. Connect the equipment as shown in Figure 3-19. Both HP 8340A's should be set for EXT FREQUENCY STANDARD. Connect the power splitter directly to the analyzer's INPUT 50Ω. Do not use a cable.

2. Set the HP 8340A #1 controls as follows:

   CW . . . . . 1.499996 GHz
   POWER LEVEL . . . . . -5 dBm
   FREQUENCY STANDARD SWITCH (rear panel) . . . . . EXT

3. Set the HP 8340A #2 controls as follows:

   CW . . . . . 1.500004 GHz
   POWER LEVEL . . . . . -10 dBm
   FREQUENCY STANDARD SWITCH (rear panel) . . . . . EXT

4. On the HP 8562A/B, press the PRESET key, the RECALL key, [MORE], and [FACTORY PRSEL PK]. Set the HP 8562A/B controls as follows:

   CENTER FREQ . . . . . 1.5 GHz
   SPAN . . . . . 10 kHz

NOTE

Use the procedure in steps 5 through 7 when testing all frequency spans of HP 8562A analyzers and spans up to 100 MHz of HP 8562B analyzers. Use the procedure in steps 8 through 19 when testing frequency spans of 5 GHz and above of HP 8562B analyzers.

5. On the HP 8562A/B, press the TRIG key, [SINGLE], [SINGLE], the MARKER OFF key, the PEAK SEARCH key, [MARKER DELTA], and [NEXT PEAK]. The active and anchor markers should be on the peaks of the signals near the second and tenth vertical graticule lines.

6. Record the HP 8562A/B Δ MKR frequency reading as the Actual Δ MKR reading in Table 3-32. The reading should be within the limits shown.

7. Repeat steps 5 and 6 above for the combinations of HP 8340A CW frequencies and HP 8562A/B center frequency and spans as indicated in Table 3-32. *When changing [CENTER FREQ] on the HP 8562A, do the following:*

a. Set the HP 8340A #1 CW to the HP 8562A center frequency.

b. On the HP 8562A, press the TRIG key, [CONT], the PEAK SEARCH key, the INT key, and [PRESEL AUTO PK]. Wait for the PEAKING message to disappear before continuing to the next step.

c. On the HP 8562A, press the TRIG key and [SINGLE].

d. Proceed with steps 5 and 6 above.

8. On the HP 8562B, press the TRIG key, [SINGLE], [SINGLE], the MARKER OFF key, and the PEAK SEARCH key.

9. Press the INT key and [SIG ID AT MKR]. Wait for the signal identification routine to finish.

10. If the frequency displayed in the active function block is within 50 MHz of the CW frequency of HP 8340A #1, and it is not identified as being an image, proceed to step 13.

11. If the frequency displayed in the active function block is more than 50 MHz from the CW frequency of HP 8340A #1 and/or is identified as being an image, press the MARKER ON key. Rotate the knob to place the marker on the peak of the next highest signal.

12. Repeat steps 9 through 11 until the conditions in step 10 are met.

13. Press the MARKER ON key and [MARKER DELTA]. Rotate the knob to place the active marker on a signal near the tenth vertical graticule line (one division from the rightmost graticule line).

14. Press the INT key and [SIG ID AT MKR]. Wait for the signal identification routine to finish.

15. If the frequency displayed in the active function block is within 50 MHz of the HP 8340A #2 CW frequency, and the signal has not been identified as being an image, proceed to step 18.

16. If the frequency displayed in the active function block is more than 50 MHz from the HP 8340A #2 CW frequency and/or is identified as being an image, press the MARKER ON key. Rotate the knob to place the active marker on the peak of the next highest signal.

17. Repeat steps 14 through 16 until the conditions in step 15 are met.

18. Record the HP 8562A/B Δ MKR frequency reading as the Actual Δ MKR reading in Table 3-32. The reading should be within the limits shown.

19. For all other frequency spans of 5 GHz or more on the HP 8562B, repeat steps 8 through 18 for the combinations of HP 8340A CW frequencies and HP 8562B center frequencies as indicated in Table 3-32.

Table 3-32. Frequency Span Accuracy

HP 8340A #1 Frequency (GHz)	HP 8340A #2 Frequency (GHz)	HP 8562A		Δ MKR Reading			Measurement Uncertainty
		Center Freq	Span Setting	Min	Actual	Max	
1.499996	1.500004	1.5 GHz	10 kHz	7.60 kHz		8.40 kHz	33 Hz
1.499992	1.500008	1.5 GHz	20 kHz	15.2 kHz		16.8 kHz	66 Hz
1.499980	1.500020	1.5 GHz	50 kHz	38.0 kHz		42.0 kHz	165 Hz
1.499960	1.500040	1.5 GHz	100 kHz	76.0 kHz		84.0 kHz	330 Hz
1.499960	1.500040	1.5 GHz	101 kHz	76.0 kHz		84.0 kHz	333.3 Hz
1.499920	1.500080	1.5 GHz	200 kHz	152 kHz		168 kHz	660 Hz
1.499800	1.500200	1.5 GHz	500 kHz	380 kHz		420 kHz	1.65 kHz
1.499600	1.500400	1.5 GHz	1.0 MHz	760 kHz		840 kHz	3.3 kHz
1.499600	1.500400	1.5 GHz	1.01 MHz	760 kHz		840 kHz	3.333 kHz
1.499200	1.500800	1.5 GHz	2.0 MHz	1.52 MHz		1.68 MHz	6.6 kHz
1.498000	1.502000	1.5 GHz	5.0 MHz	3.80 MHz		4.20 MHz	16.5 kHz
1.496	1.504	1.5 GHz	10.0 MHz	7.60 MHz		8.40 MHz	33 kHz
1.492	1.508	1.5 GHz	20.0 MHz	15.2 MHz		16.8 MHz	66 kHz
1.480	1.520	1.5 GHz	50.0 MHz	38 MHz		42.0 MHz	165 kHz
1.460	1.540	1.5 GHz	100 MHz	76 MHz		84.0 MHz	330 kHz
1.420	1.580	1.5 GHz	200 MHz	152 MHz		168.0 MHz	660 kHz
1.300	1.700	1.5 GHz	500 MHz	380 MHz		420 MHz	1.65 MHz
1.100	1.900	1.5 GHz	1.0 GHz	760 MHz		840 MHz	3.3 MHz
0.700	2.300	1.5 GHz	2.0 GHz	1.52 GHz		1.68 GHz	6.6 MHz
8.999996	9.000004	9.0 GHz	10 kHz	7.6 kHz		8.4 kHz	33 Hz
8.992	9.008	9.0 GHz	20 MHz	15.2 MHz		16.8 MHz	66 kHz
8.98	9.020	9.0 GHz	50 MHz	38.0 MHz		42.0 MHz	165 kHz
7.0	11.0	9.0 GHz	5 GHz	3.8 GHz		4.2 GHz	16.5 MHz
15.999996	16.000004	16.0 GHz	10 kHz	7.6 kHz		8.4 kHz	33 Hz
15.98	16.02	16.0 GHz	50 MHz	38.0 MHz		42 MHz	165 kHz
15.96	16.04	16.0 GHz	100 MHz	76.0 MHz		84.0 MHz	330 kHz
14.0	18.0	16.0 GHz	5 GHz	3.8 GHz		4.2 GHz	16.5 MHz
20.499996	20.500004	20.5 GHz	10 kHz	7.6 kHz		8.4 kHz	33 Hz
20.48	20.52	20.5 GHz	50 MHz	38 MHz		42 MHz	165 kHz
20.46	20.54	20.5 GHz	100 MHz	76.0 MHz		84.0 MHz	330 kHz
3.0	21.0	12.40 GHz	19.25 GHz	17.1 GHz		18.9 GHz	63.525 MHz

3-40. Third Order Intermodulation Distortion

SPECIFICATION

For a total mixer input level* of –30 dBm:

10 MHz–2.9 GHz: <–70 dBc
2.75–22 GHz *(Option 026: 2.75–26.5 GHz)*: <–75 dBc

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

Two synthesized sweepers provide the signals required for measuring third order intermodulation. Both synthesized sweepers are phase-locked to the analyzer's 10 MHz reference.

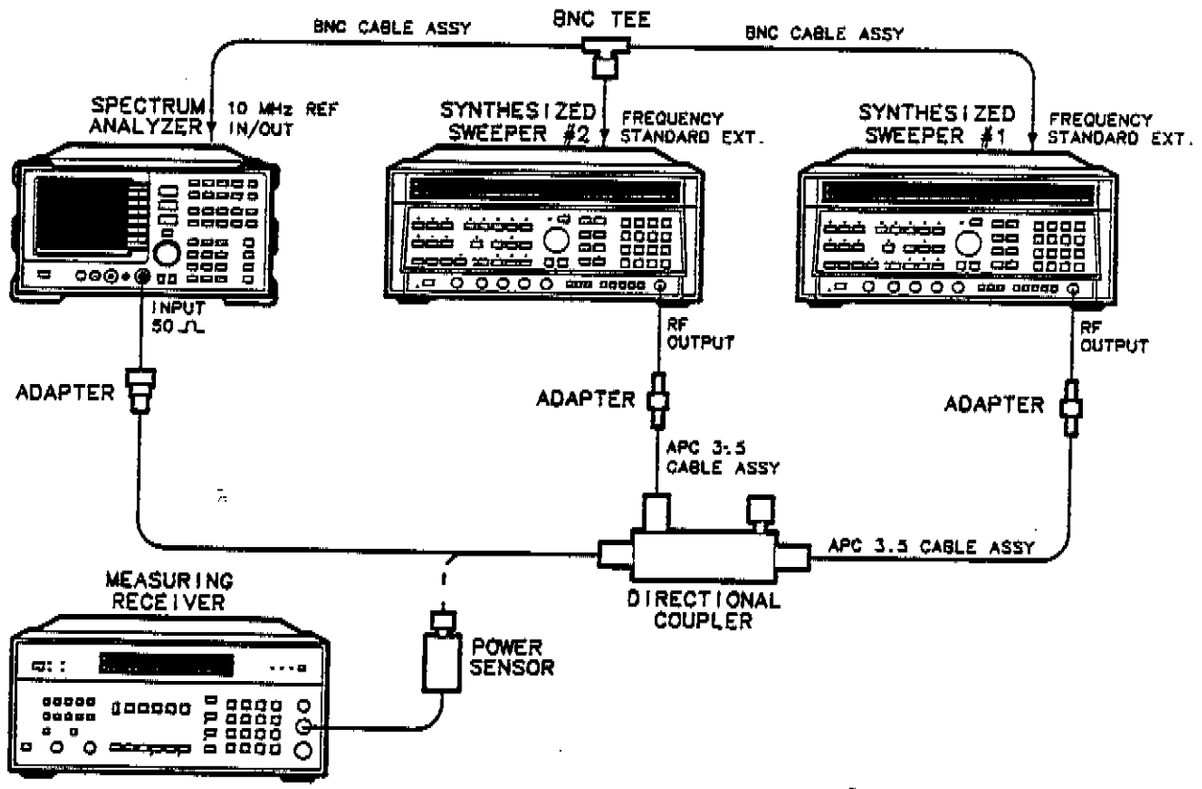

Figure 3-20. Third Order Intermodulation Test Setup

* Total mixer input level = Total Input Level – Input Attenuation

EQUIPMENT

Measuring Receiver	HP 8902A
Synthesized Sweeper *(2 required)*	HP 8340A
Directional Coupler	HP 0955-0125
Power Sensor	HP 8485A

Adapters

Type N (m) to APC 3.5 (m) *(not necessary for Option 026)*	HP 1250-1743
APC 3.5 (f) to APC 3.5 (f) *(2 required)*	HP 5061-5311
BNC tee (m) (f) (f)	HP 1250-0781

Cables

BNC, 122 cm (48 in.) *(2 required)*	HP 10503A
APC 3.5, 91 cm (36 in.) *(2 required)*	HP 8120-4921

PROCEDURE

Third Order Intermodulation (10 MHz – 2.9 GHz)

1. Connect the equipment as shown in Figure 3-20.

2. Press the INSTR PRESET key on each HP 8340A. Set each of the HP 8340A controls as follows:

POWER LEVEL	–20 dBm
CW (HP 8340A #1)	2.800 GHz
CW (HP 8340A #2)	2.80005 GHz
MODULATION	OFF
RF	OFF
FREQUENCY STANDARD SWITCH (rear panel)	EXT

3. Set the HP 8902A controls as follows:

FUNCTION	RF POWER
LOG/LIN	LOG

4. On the HP 8562A/B, press the PRESET key. *On HP 8562A analyzers, press the RECALL key, [MORE], and [FACTORY PRSEL PK].* Set the HP 8562A/B controls as follows:

CENTER FREQ	2.8 GHz
REF LVL	–20 dBm
SPAN	10 kHz
CF STEP	50 kHz
RES BW	1 kHz
VIDEO BW	100 Hz

5. Zero the HP 8902A and calibrate the HP 8485A power sensor at 50 MHz as described in the HP 8902A Operation Manual. Enter the power sensor's 3 GHz calibration factor into the HP 8902A.

6. Connect the HP 8485A Power Sensor to the output of the directional coupler.

7. On the HP 8340A #1, press the RF key on. Adjust the the POWER LEVEL key for a –23 dBm reading on the HP 8902A display.

8. Disconnect the power sensor from the directional coupler. Connect the directional coupler directly to the HP 8562A/B INPUT 50Ω using an adapter. (Do not use a cable.)

9. On the HP 8562A/B, press the following keys: the PEAK SEARCH key, the MKR→ key, and [MARKER→REF LVL]. Wait for a new sweep to finish, then press the following keys: [MARKER DELTA], the FREQUENCY key, and the ↑ key.

10. On the HP 8340A #2, press the RF key on.

11. On the HP 8562A/B, press the PEAK SEARCH key.

12. Adjust the the POWER LEVEL key of the HP 8340A #2 for a Δ MKR reading of 0.0 dB ±0.17 dB.

13. Press the following HP 8562A/B keys: the MARKER OFF key, the PEAK SEARCH key, [MARKER DELTA], the FREQUENCY key, and the ↑ key. Wait for a new sweep to finish, then press the PEAK SEARCH key.

14. Record the HP 8562A/B Δ MKR reading in Table 3-33 as the Upper Product Suppression. The suppression should be greater than 70 dB.

15. On the HP 8562A/B, press the FREQUENCY key, the ↓ key, the ↓ key, and the ↓ key. Wait for a new sweep to finish and press the PEAK SEARCH key.

16. Record the HP 8562A/B Δ MKR reading in Table 3-33 as the Lower Product Suppression. The suppression should be greater than 70 dB.

Third Order Intermodulation, >2.9 GHz

17. Disconnect the directional coupler from the HP 8562A/B. Connect the directional coupler to the power sensor.

18. On the HP 8340A #2, press the RF key off.

19. Set each of the HP 8340A frequencies, the CW key, to the next values listed in Table 3-33. Enter the appropriate power sensor calibration factor into the HP 8902A.

20. Adjust the the POWER LEVEL key on the HP 8340A #1 for a –23 dBm reading on the HP 8902A display.

21. Disconnect the power sensor from the directional coupler. Connect the directional coupler directly to the HP 8562A/B INPUT 50Ω using an adapter.

22. Set the HP 8562A/B center frequency to the same frequency as the HP 8340A #1. Press the MARKER OFF key.

23. *Omit this step if spectrum analyzer is an HP 8562B.* On the HP 8562A, set the reference level to –20 dBm then press the following keys: the PEAK SEARCH key, the INT key, and [PRESEL AUTO PK]. Wait for the *PEAKING* message to disappear.

24. On the HP 8562A/B, press the PEAK SEARCH key, the MKR-> key, and [MARKER->REF LVL]. Wait for the completion of a new sweep and press the following keys: [MARKER DELTA], the FREQUENCY key, and the ↑ key.

25. On the HP 8340A #2, press the RF key on.

26. On the HP 8562A/B, press the PEAK SEARCH key.

27. Adjust the the POWER LEVEL key of the HP 8540A #2 for a Δ MKR reading of 0.0 dB ±0.17 dB.

28. On the HP 8562A/B, press the FREQUENCY key and the ↑ key. Wait for the completion of a new sweep and press the PEAK SEARCH key. Record the HP 8562A/B Δ MKR reading in Table 3-33 as the Upper Product Suppression. The suppression should be greater than 75 dB.

29. Press the following keys on the HP 8562A/B: the FREQUENCY key, the ↓ key, the ↓ key, and the ↓ key. Wait for the completion of a new sweep and press the PEAK SEARCH key. Record the HP 8562A/B Δ MKR reading in Table 3-33 as the Lower Product Suppression. The suppression should be greater than 75 dB.

30. Record the maximum of the Lower Product Suppression and Upper Product Suppression for the 2.8 GHz entries in Table 3-33.

Third Order Intermodulation Distorion at 2.8 GHz: _____ dBc

31. Record the maximum of the Lower Product Suppression and Upper Product Suppression for the 4.0 GHz entries in Table 3-33.

Third Order Intermodulation Distorion at 4.0 GHz: _____ dBc

Table 3-33. Third Order Intermodulation Distortion

HP 8340A #1 [CW] (GHz)	HP 8340A #2 [CW] (GHz)	Lower Product		Upper Product		Measurement Uncertainty (dB)
		Frequency (GHz)	Supression (dB)	Frequency (GHz)	Supression (dB)	
2.80000	2.80005	2.79995	_____	2.8001	_____	±2.83
4.00000	4.00005	3.99995	_____	4.00010	_____	±2.83

3-41. Gain Compression

SPECIFICATION

10 MHz to 2.9 GHz: < 1.0 dB for total mixer power level* of –5 dBm†
2.9 GHz to 22 GHz (*Option 026: 2.9 GHz to 26.5 GHz*): < 1.0 dB for total mixer power level* of –3 dBm

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

This test measures gain compression in low band and high band. Two signals, separated by 3 MHz, are used. First the test places a –30 dBm signal at the input of the spectrum analyzer (the analyzer's reference level is also set to –30 dBm). Then a +7 dBm signal is placed on the analyzer, overdriving its input. The decrease in the first signal's amplitude (gain compression) caused by the second signal is the measured gain compression.

Figure 3-21. Gain Compression Test Setup

* Total mixer power level = total input power level – input attenuation

† < 1.0 dB for total mixer power level of –3 dBm for HP 8562A serial prefix 2805A and below, and for HP 8562B serial prefix 2750A and below.

EQUIPMENT

Synthesized Sweeper *(2 required)*	HP 8340A
Measuring Receiver	HP 8902A
Amplifier	HP 11975A
Power Sensor	HP 8485A
Power Splitter	HP 11667B

Adapters

Type APC 3.5 (f) to APC 3.5 (f) *(2 required)*	HP 5061-5311
Type APC 3.5 (m) to N (m) *(not necessary for Option 026)*	HP 1250-1743
Type BNC tee (m) (f) (f)	HP 1250-0781

Cables

BNC, 122 cm (48 in.) *(2 required)*	HP 10503A
APC 3.5, 91 cm (36 in.)	HP 8120-4921
RF Cable	HP 11975-20002

PROCEDURE

< 2.9 GHz

1. Zero the HP 8902A and calibrate the HP 8485A power sensor as described in the HP 8902A Operation Manual. Enter the power sensor's 2 GHz calibration factor into the HP 8902A.

2. Connect the equipment as shown in Figure 3-21, with the output of the power splitter connected to the HP 8485A Power Sensor.

3. Press the INSTR PRESET key on both HP 8340A's. Set the controls for the HP 8340A #1 as follows:

CW	2.0 GHz
POWER LEVEL	–24 dBm
FREQUENCY STANDARD SWITCH (rear panel)	EXT

4. Set the controls for the HP 8340A #2 as follows:

CW	2.003 GHz
POWER LEVEL	+8 dBm
FREQUENCY STANDARD SWITCH (rear panel)	EXT

5. On the HP 8562A/B, press the PRESET key. *On HP 8562A analyzers, press the RECALL key, [MORE], and [FACTORY PRESEL PK].* Set the HP 8562A/B controls as follows:

CENTER FREQ	2.0 GHz
REF LVL	–30 dBm
SPAN	10 MHz
RES BW	300 kHz
SCALE	1 dB/Div

6. Adjust the HP 11975A OUTPUT POWER LEVEL for a +5 dBm reading on the HP 8902A display.

7. Set the HP 8340A #2 POWER LEVEL key to –80 dBm.

8. Remove the power sensor from the power splitter. Connect the power splitter to the HP 8562A/B RF INPUT using an adapter. Do not use a cable.

9. Adjust the HP 8340A #1 POWER LEVEL key for a signal 1 dB below the HP 8562A/B reference level.

10. On the HP 8562A/B, press the PEAK SEARCH key and [MARKER DELTA].

11. Set the HP 8340A #2 POWER LEVEL key to +8 dBm.

12. On the HP 8562A/B, press the PEAK SEARCH key and [NEXT PEAK]. The active marker should be on the lower amplitude signal and not on the signal that is off the top of the screen. If it is not on the lower amplitude signal, reposition the marker to this peak using the front-panel function knob. Read the Δ MKR amplitude. The amplitude should read less than –1.0 dB.

Gain Compression Band 0 (< 1.0 dB): _____dB

> 2.9 GHz

13. Set the HP 8562A/B, HP 8340A #1, and HP 8340A #2 to the frequencies indicated in Table 3-34 for Band 1.

14. Enter the HP 8485A calibration factor at the HP 8562A/B center frequency value into the HP 8902A.

15. Disconnect the power splitter from the HP 8562A/B and reconnect it to the HP 8485A Power Sensor.

16. Adjust the HP 11975A OUTPUT POWER LEVEL for a +7 dBm reading on the HP 8902A display.

17. Set the HP 8340A #2 POWER LEVEL key to –80 dBm.

18. Reconnect the power splitter to the HP 8562A/B RF INPUT 50Ω.

19. Adjust the HP 8340A #1 POWER LEVEL key to bring the signal 1 dB (one division) below the HP 8562A reference level.

20. On the HP 8562A/B, press the MARKER OFF key and the PEAK SEARCH key.

21. *Omit this step if spectrum analyzer is an HP 8562B.* On the HP 8562A, press the INT key and [PRESEL AUTO PK]. Wait for the *PEAKING* message to disappear before continuing to the next step.

22. On the HP 8562A/B, press the PEAK SEARCH key and [MARKER DELTA].

23. Set the HP 8340A #2 POWER LEVEL key to +8 dBm.

24. On the HP 8562A/B, press the PEAK SEARCH key and [NEXT PEAK]. The active marker should be on the peak of the lower amplitude signal. If it is not, reposition the marker to this peak using the front-panel function knob. Read the Δ MKR amplitude and record this as the Gain Compression in Table 3-34. The gain compression should be less than 1 dB.

25. Repeat steps 14 through 24 until all the entries in Table 3-34 have been completed.

Table 3-34. Gain Compression

Band	HP 8562A Center Freq (GHz)	HP 8340A #1 [CW] (GHz)	HP 8340A #2 [CW] (GHz)	Gain Compression (dB)	Measurement Uncertainty (dB)
0	2.0	2.000	2.003	_____	±0.23
1	4.0	4.000	4.003	_____	±0.23
2	7.0	7.000	7.003	_____	±0.23

3-42. 1ST LO OUTPUT Amplitude

SPECIFICATION

Amplitude (3.0 – 6.7 GHz): +16.5 dBm ±2.0 dB, 20°C to 30°C

RELATED ADJUSTMENT

First LO Distribution Amplifier Adjustment

DESCRIPTION

The 1ST LO OUTPUT power is measured with a power meter. The analyzer is placed in external mixing mode and harmonic-locked to N = 6. This allows the broadest tuning range of the 1ST LO.

Figure 3-22. 1ST LO OUTPUT Amplitude Test Setup

EQUIPMENT

Measuring Receiver	HP 8902A
Power Sensor	HP 8485A

NOTE

The results of this test are valid only if the ambient temperature is between 20°C and 30°C.

PROCEDURE

1. Zero the HP 8902A and calibrate the HP 8485A Power Sensor at 50 MHz as described in the HP 8902A Operation Manual. Enter the power sensor's 3 GHz calibration factor into the HP 8902A. Set the HP 8902A for dBm output (LOG display).

2. Connect the equipment as shown in Figure 3-22.

3. Press the PRESET key, the SPAN key, and [ZERO SPAN] on the HP 8562A/B, and set the controls as follows:

   MIXING . . . . . EXT
   LOCK HARMONIC . . . . . #6
   CENTER FREQ . . . . . 18 GHz
   CF STEP . . . . . 1200 MHz

4. Read the RF Power displayed on the HP 8902A and record it as the 3.000 GHz entry in Table 3-35 column 5.

5. Use the [CENTER FREQ] and the ↑ keys to step the 1st LO frequency in 200 MHz steps (center frequency in 1200 MHz steps). At each step, record the power level displayed on the HP 8902A in Table 3-35. Enter the appropriate power sensor calibration factor into the HP 8902A as indicated in Table 3-35.

6. The power levels measured should be within the limits shown in Table 3-35.

7. Record the maximum 1ST LO OUTPUT POWER.

   Maximum 1ST LO OUTPUT POWER: _____ dB

8. Record the minimum 1ST LO OUTPUT POWER.

   Minimum 1ST LO OUTPUT POWER: _____ dB

Table 3-35. 1st LO Output Amplitude

1st LO Freq* (GHz)	Center Freq (n=6) (GHz)	CAL Factor Frequency (GHz)	1st LO Output Power			Measurement Uncertainty (dB)
			Min (dBm)	Actual (dBm)	Max (dBm)	
3.0	18	3.0	+14.5	_____	+18.5	±0.25
3.2	19.2	3.0	+14.5	_____	+18.5	±0.25
3.4	20.4	3.0	+14.5	_____	+18.5	±0.25
3.6	21.6	4.0	+14.5	_____	+18.5	±0.25
3.8	22.8	4.0	+14.5	_____	+18.5	±0.25
4.0	24.0	4.0	+14.5	_____	+18.5	±0.25
4.2	25.2	4.0	+14.5	_____	+18.5	±0.25
4.4	26.4	4.0	+14.5	_____	+18.5	±0.25
4.6	27.6	5.0	+14.5	_____	+18.5	±0.25
4.8	28.8	5.0	+14.5	_____	+18.5	±0.25
5.0	30.0	5.0	+14.5	_____	+18.5	±0.25
5.2	31.2	5.0	+14.5	_____	+18.5	±0.25
5.4	32.4	5.0	+14.5	_____	+18.5	±0.25
5.6	33.6	6.0	+14.5	_____	+18.5	±0.25
5.8	34.8	6.0	+14.5	_____	+18.5	±0.25
6.0	36.0	6.0	+14.5	_____	+18.5	±0.25
6.2	37.2	6.0	+14.5	_____	+18.5	±0.25
6.4	38.4	6.0	+14.5	_____	+18.5	±0.25
6.6	39.6	7.0	+14.5	_____	+18.5	±0.25
6.7	39.99997	7.0	+14.5	_____	+18.5	±0.25

* Nominal; actual 1st LO frequency is within 50 MHz of this frequency.

3-43. Sweep Time Accuracy

SPECIFICATION

For SPAN = 0 Hz:
Sweep time <30 ms: <–15%
60 s ≥ Sweep time ≥30 ms: <–1%

RELATED ADJUSTMENT

There is no related adjustment procedure for this performance test.

DESCRIPTION

For sweep times less than 30 ms, an amplitude-modulated signal is displayed on the analyzer in zero span, and the frequency of the modulating signal (triangle wave) is adjusted to space the peaks evenly across the display. The frequency of the modulating signal is counted and the actual sweep time is calculated and compared to the specification.

For sweep times of 30 ms to 60 seconds, the time interval of the BLANKING OUTPUT's low state is measured. This time interval corresponds to the sweep time. The measured sweep time is compared to the specification.

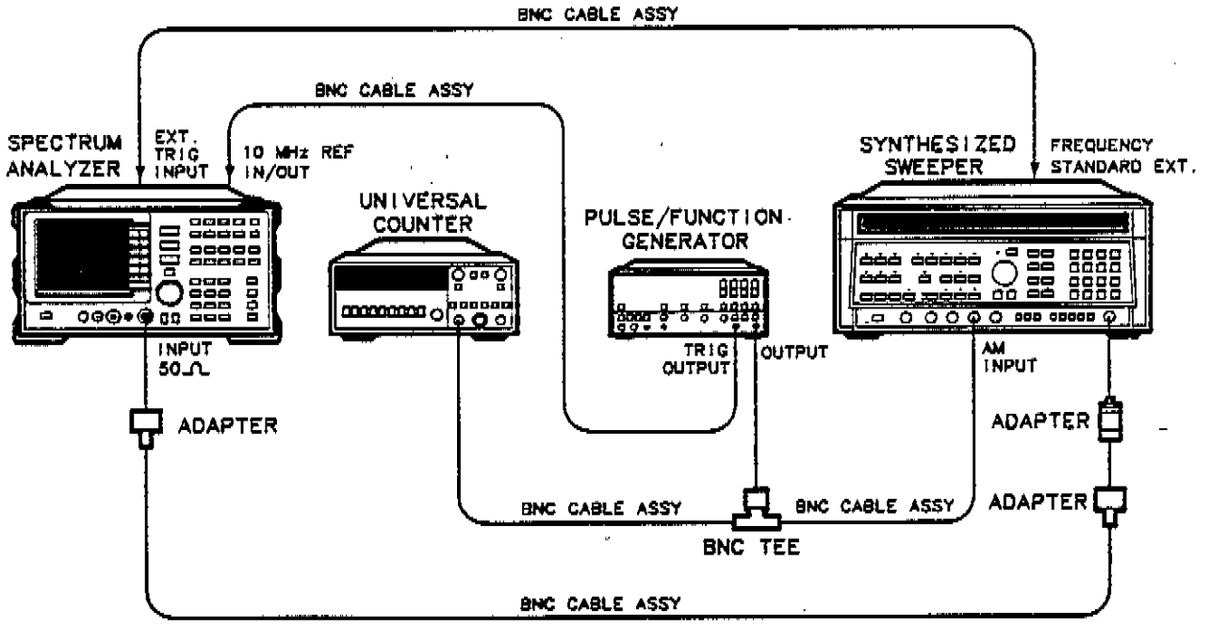

Figure 3-23. Sweep Time Accuracy Test Setup

EQUIPMENT

Synthesized Sweeper	HP 8340A
Universal Counter	HP 5316A
Pulse/Function Generator	HP 8116A

Adapters

APC 3.5 (f) to N (f) *(2 required for Option 026)*	HP 1250-1745
Type N (m) to BNC (f) *(2 required)*	HP 1250-1476
BNC tee (m) (f) (f)	HP 1250-0781

Cables

BNC, 122 cm (48 in.) *(5 required)*	HP 10503

PROCEDURE

1. Connect the equipment as shown in Figure 3-23, with the BNC cable from the HP 5316A connected to the HP 8562A/B EXT TRIG INPUT.

2. On the HP 8562A/B, press the PRESET key and set the controls as follows:

CENTER FREQ	300 MHz
SPAN	0 Hz
SWEEP TIME	50 μs
SCALE	LINEAR

3. Set all buttons on the HP 5816A out, including the blue SHIFT button. Set the LEVEL/SENS control for Channel A to midrange and the LEVEL/SENS control for Channel B fully counterclockwise. Set the GATE TIME Control to MIN.

   a. Push the FREQ A button in.

   b. Push the AC/DC buttons for Channels A and B in.

   c. Push the Channel A TRIGGER LEVEL/SENSITIVITY button in.

4. Set the HP 5116A controls as follows:

FRQ	200 kHz
DTY	50%
AMP	500 mV
OFS	0V
FUNCTION	TRIANGLE

5. Press the INSTR PRESET key on the HP 8340A. Set the controls as follows:

CW	300 MHz
POWER LEVEL	–5 dBm
MODULATION	AM

6. On the HP 8562A/B, press the TRIG key and [EXTERNAL].

7. Adjust the HP 8116A frequency for 10 cycles evenly spaced relative to the vertical graticule lines on the analyzer. For example, if the peak of the first cycle is 0.2 divisions to the right of the first graticule line, the peak of the tenth cycle should be set 0.2 divisions to the right of the tenth graticule line.

8. Read the frequency displayed on the HP 5316A. Calculate the measured sweep time using the equation below. Record the result as the Measured Sweep Time in Table 3-36 for the 50 μs Sweep Time Setting. The Measured Sweep Time should lie within the limits shown in Table 3-36.

   Measured Sweep Time = 10 / HP 5316A Frequency Reading

9. Repeat steps 7 and 8 above for sweep times between 100 μs and 20 ms listed in Table 3-36. Set the initial HP 8116A frequency according to the equation below.

   Initial HP 8116A Frequency = 10 / Sweep Time Setting

10. Disconnect the BNC cable between the HP 5316A and the HP 8116A. Connect a BNC cable from the BLANKING OUTPUT on the HP 8562A/B to the Channel A input of the HP 5316A.

11. On the HP 8562A/B, press the TRIG key, [FREE RUN], the SWEEP key, the 3 key, the 0 key, and the ms key.

12. On the HP 5316A, set the controls as follows:

    a. Set the Channel A LEVEL/SENS control fully counterclockwise.

    b. Press the TI A→B button.

    c. Push the SEP/COM A button in.

    d. Set the Channel A TRIGGER LEVEL/SENSITIVITY button out.

    e. Push the Channel A SLOPE button in (negative edge trigger).

13. On the HP 5316A, slowly rotate the Channel A LEVEL/SENS control clockwise until the yellow LED next to it begins to flash. Repeat for the Channel B LEVEL/SENS control.

14. Repeat the following steps for each sweep time listed in Table 3-36.

15. Set the HP 8562A/B to the sweep time listed in the first column of Table 3-36.

16. Wait for the HP 5316A display to settle (usually about three sweeps). Record the HP 5316A reading as the Measured Sweep Time in Table 3-36. The Measured Sweep Time should fall within the limits shown in Table 3-36.

NOTE

It might be necessary to readjust the LEVEL/SENS controls slightly for a stable display.

Table 3-36. Sweep Time Accuracy

Sweep Time Setting	Minimum Reading	Measured Sweep Time	Maximum Reading	Measurement Uncertainty
50 µs	42.5 µs	_____	57.5 µs	±101 ns
100 µs	85 µs	_____	115 µs	±101 ns
200 µs	170 µs	_____	230 µs	±102 ns
500 µs	425 µs	_____	575 µs	±103 ns
1 ms	850 µs	_____	1.15 ms	±105 ns
2 ms	1.70 ms	_____	2.30 ms	±108 ns
5 ms	4.25 ms	_____	5.75 ms	±119 ns
10 ms	8.5 ms	_____	11.5 ms	±137 ns
20 ms	17.0 ms	_____	23.0 ms	±171 ns
30 ms	29.7 ms	_____	30.3 ms	±209 ns
50 ms	49.5 ms	_____	50.5 ms	±281 ns
100 ms	99.0 ms	_____	101.0 ms	±461 ns
200 ms	198.0 ms	_____	202.0 ms	±821 ns
500 ms	495.0 ms	_____	505.0 ms	±1.901 µs
1s	990.0 ms	_____	1010.0 ms	±3.7 µs
2s	1.980s	_____	2.020s	±7.3 µs
5s	4.95s	_____	5.05s	±18.1 µs
10s	9.90s	_____	10.1s	±36.1 µs
20s	19.8s	_____	20.2s	±72.1 µs
50s	49.5s	_____	50.5s	±180.1 µs
60s	59.4s	_____	60.6s	±216.1 µs

3-44. Residual Responses

SPECIFICATION

200 kHz to 6.46 GHz: <–90 dBm with no signal at input and 0 dB input attenuation

RELATED ADJUSTMENT

There is no related adjustment for this performance test.

DESCRIPTION

This test checks for residual responses in Bands 0 and 1 (N = 1). Any response located above the display line is measured in a narrow frequency span and resolution bandwidth. The spectrum analyzer INPUT 50Ω is terminated in 50 ohms.

EQUIPMENT

Coaxial 50-Ohm Termination . . . . . HP 909D

Adapters

Type N (m) to APC 3.5 (f) . . . . . HP 1250-1744
Type N (m) to BNC (f) . . . . . HP 1250-1476
Type N (f) to APC 3.5 (f) *(Option 026)* . . . . . HP 1250-1745

Cables

BNC, 122 cm (48 in.) . . . . . HP 10503A

PROCEDURE

1. On the HP 8562A/B, press the PRESET key and set the controls as follows:

   CENTER FREQ . . . . . 300 MHz
   SPAN . . . . . 10 kHz
   RES BW . . . . . 300 Hz
   REF LEVEL . . . . . –10 dBm
   ATTEN . . . . . 0 dB

2. On the HP 8562A/B, connect a BNC cable between the CAL OUTPUT and INPUT 50Ω and press the PEAK SEARCH key, the AMPLITUDE key, [MORE], and [REF LEVEL CAL]. Use the data entry knob or step keys to change the REF LEVEL CAL value until the marker amplitude reads –10.00 dBm ±0.17 dB.

Residual Responses, Band 0

3. Remove the BNC cable and adapter from the INPUT 50Ω. Install the Type N to APC 3.5 adapter and 50-ohm termination on the INPUT 50Ω. Press the PRESET key and set the controls as follows:

CENTER FREQ	15.2 MHz
SPAN	30 MHz
CF STEP	28.5 MHz
REF LEVEL	–50 dBm
ATTEN	0 dB
RES BW	10 kHz
TRIG	SINGLE
DISPLAY LINE	–90 dBm

4. Press the TRIG key and [SINGLE] to trigger a sweep. The noise level should be at least 6 dB below the display line. If it is not, it will be necessary to reduce the SPAN and RES BW to reduce the noise level. If the SPAN is reduced, reduce the [CF STEP] to no more than 95% of the SPAN.

5. If a residual is suspected, press [SINGLE] again. A residual response will persist, but a noise peak will not. Record the frequency and amplitude of any responses above the display line.

6. If a response is marginal, verify the response amplitude as follows:

   a. Press the SAVE key, [SAVE STATE], and [STATE 0].

   b. Press MARKER ON. Place the marker on the peak of the response in question.

   c. Press the MKR→ key and [MARKER→CF].

   d. Press the SPAN key, the ↓ key four times, the TRIG key, and [CONT].

   e. Press the BW key and [RES BW AUTO].

   f. Continue to reduce the SPAN until a RES BW of 300 Hz is reached. If the response is a synthesis-related residual, it might disappear as the SPAN is reduced. If this is the case, measure the amplitude with the narrowest span possible and a 300 Hz RES BW.

   g. Record the frequency and amplitude of any residual response above the display line.

   h. Press the RECALL key, [RECALL STATE], and [STATE 0].

7. Check for residuals up to 2.9 GHz using the procedure of steps 4 through 6 above. To change the center frequency, press [CENTER FREQ] and the ↑ key.

Residual Responses, Band 1

8. Set the HP 8562A/B CENTER FREQ to 2.915 GHz.

9. Check for residuals from 2.9 GHz to 6.46 GHz using the procedure of steps 4 through 6 above. To change the center frequency, press [CENTER FREQ] and the ↑ key.

3-45. IF Input Amplitude Accuracy

SPECIFICATION

For a signal at the reference level (EXTernal mixing mode, REF LVL of 0 dBm, CONVersion LOSS of 30 dB), the power applied to the IF INPUT shall be −30 dBm ±1.5 dB.

RELATED ADJUSTMENT

External Mixer Amplitude Adjustment

DESCRIPTION

The user-loaded conversion losses for K-band are recorded and reset to 30 dB. A 310.7 MHz signal is applied to the IF INPUT. The power level of the source is adjusted for a signal at the reference level. The power applied to the analyzer is measured with a power meter and the measured power is compared to the specification. The previously recorded conversion losses are re-entered.

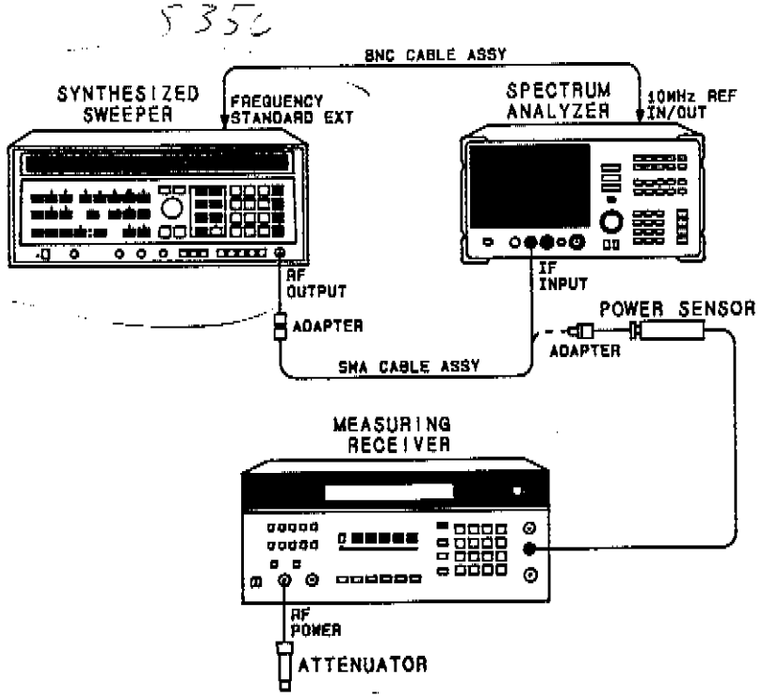

Figure 3-24. IF Input Amplitude Test Setup

EQUIPMENT

Synthesized Sweeper	HP 8340A
Measuring Receiver	HP 8902A
Power Sensor	HP 8484A
50 MHz Reference Attenuator (supplied with HP 8484A)	HP 11708A

Adapters:

Type N (f) to SMA (f)	HP 1250-1772
Type APC 3.5 (f) to APC 3.5 (f)	HP 5061-5311

Cables:

BNC, 122 cm (48 in.)	HP 10503A
SMA, 61 cm (24 in.)	HP 8120-1578

PROCEDURE

1. Connect the equipment as shown in Figure 3-24. The HP 8562A/B provides the frequency reference for the HP 8340A.

2. On the HP 8562A/B, press the PRESET key.

3. On the HP 8562A/B, press the AMPLITUDE key, [LOG dB/DIV], the 1 key, the dB key, and the MARKER ON key.

4. Press the MIXER EXT key, the SPAN key, [ZERO SPAN], the EXT key, [AMPTD CORRECT], and [CNV LOSS VS FREQ].

5. Note the conversion loss displayed in the active function block. Use the ↑ key and the ↓ key to step through the conversion losses for the other frequencies. If all conversion losses are 30.0 dB, proceed to step 11.

6. Press [CNV LOSS VS FREQ] on the HP 8562A/B.

7. Record the 18 GHz conversion loss in Table 3-37.

8. Enter a conversion loss of 30 dB.

9. Press the ↑ key on the HP 8562A/B.

10. Repeat steps 7 through 9 for the remaining frequencies listed in Table 3-37.

11. Press the INSTR PRESET key on the HP 8340A and set the controls as follows:

CW	310.7 MHz
POWER LEVEL	−30 dBm

12. Zero and calibrate the HP 8902A/HP 8484A combination in log mode. Enter the power sensor's 50 MHz calibration factor into the HP 8902A.

13. Adjust the HP 8340A POWER LEVEL key until the marker amplitude reads 0 dBm ±0.05 dB.

14. Disconnect the SMA cable from the HP 8562A/B IF INPUT and connect the cable, through an adapter, to the power sensor.

15. Read the power displayed on the HP 8902A and note the value below. The displayed power should read −30 dBm ±1.5 dB.

IF INPUT Amplitude: _____ dBm

NOTE

The following steps should be performed only if it was necessary to change the conversion loss values found in step 5.

16. Press [CNV LOSS VS FREQ] on the HP 8562A/B.

17. Enter the conversion loss at 18 GHz recorded in Table 3-37.

18. Press the ↑ key on the HP 8562A/B.

19. Repeat steps 17 and 18 for the remaining frequencies listed in Table 3-37.

Table 3-37. IF Input Amplitude Accuracy

Frequency (GHz)	Conversion Loss (dB)
18	_____
20	_____
22	_____
24	_____
26	_____
27	_____

Table 3-38. Performance Test Record (1 of 8)

Hewlett-Packard Company
Model _____ HP 8562A
_____ HP 8562B (Check one)

Tested by_____

Serial No._____

Date_____

Para. No.	Test Description	Results		
		Min	Actual	Max
3-24	10 MHz Reference Output Accuracy			
	5. 10 MHz Reference Frequency	299.998800 MHz	_____	300.001200 MHz
3-25	Calibrator Amplitude and Freq. Accuracy			
	4. Calibrator Frequency	299.998800 MHz	_____	300.001200 MHz
	5. Calibrator Amplitude	–10.3 dBm	_____	–9.7 dBm
3-26	Displayed Average Noise Level			
	25. 10 kHz		_____	–90 dBm
	100 kHz		_____	–100 dBm
	1 MHz to 2.9 GHz		_____	–120 dBm
	2.9 GHz to 6.46 GHz		_____	–121 dBm
	6.46 GHz to 13.0 GHz		_____	–110 dBm
	13.0 GHz to 19.7 GHz		_____	–105 dBm
	19.7 GHz to 22.0 GHz		_____	–100 dBm
	(Option 026: 19.7 GHz to 26.5 GHz)		_____	–100 dBm
3-27	Resolution Bandwidth Switching and IF Alignment Uncertainty			
	5. 2 MHz*	–0.5 dB	_____	+0.5 dB
	1 MHz	–0.5 dB	_____	+0.5 dB
	100 kHz	–0.5 dB	_____	+0.5 dB
	30 kHz	–0.5 dB	_____	+0.5 dB
	10 kHz	–0.5 dB	_____	+0.5 dB
	3 kHz	–0.5 dB	_____	+0.5 dB
	1 kHz	–0.5 dB	_____	+0.5 dB
	300 Hz	–1.0 dB	_____	+1.0 dB
	100 Hz	–2.5 dB	_____	+2.5 dB

* Performance of the 2 MHz RES BW setting is specified only for HP 8562A spectrum analyzers with serial prefix 2805A and above, and for HP 8562B spectrum analyzers with serial prefix 2809A and above.

Table 3-38. Performance Test Record (2 of 8)

Para. No.	Test Description	Results		
		Min	Actual	Max
3-28	Resolution Bandwidth Accuracy and Selectivity			
	13. 2 MHz*	1.5 MHz	_____	2.5 MHz
	1 MHz	750 kHz	_____	1.25 MHz
	300 kHz	270 kHz	_____	330 kHz
	100 kHz	90 kHz	_____	110 kHz
	30 kHz	27 kHz	_____	33 kHz
	10 kHz	9 kHz	_____	11 kHz
	3 kHz	2.7 kHz	_____	3.3 kHz
	1 kHz	900 Hz	_____	1.1 kHz
	300 Hz	270 Hz	_____	330 Hz
	100 Hz	70 Hz	_____	130 Hz
	28. 2 MHz*		_____	15
	1 MHz		_____	15
	300 kHz		_____	15
	100 kHz		_____	15
	30 kHz		_____	15
	10 kHz		_____	15
	3 kHz		_____	15
	1 kHz		_____	15
	300 Hz		_____	15
	100 Hz		_____	15
3-29	Input Attenuator Accuracy			
	9. Cumulative Accuracy at 50 MHz			
	20 dB ATTEN	+8.2 dB	_____	+11.8 dB
	30 dB ATTEN	+18.2 dB	_____	+21.8 dB
	40 dB ATTEN	+28.2 dB	_____	+31.8 dB
	50 dB ATTEN	+38.2 dB	_____	+41.8 dB
	60 dB ATTEN	+48.2 dB	_____	+51.8 dB
	70 dB ATTEN	+58.2 dB	_____	+61.8 dB
	11. Step-to-step Accuracy at 50 MHz			
	20 dB ATTEN	–0.6 dB	_____	+0.6 dB
	30 dB ATTEN	–0.6 dB	_____	+0.6 dB
	40 dB ATTEN	–0.6 dB	_____	+0.6 dB
	50 dB ATTEN	–0.6 dB	_____	+0.6 dB
	60 dB ATTEN	–0.6 dB	_____	+0.6 dB
	70 dB ATTEN	–0.6 dB	_____	+0.6 dB

* Performance of the 2 MHz RES BW setting is specified only for HP 8562A spectrum analyzers with serial prefix 2805A and above, and for HP 8562B spectrum analyzers with serial prefix 2809A and above.

Table 3-38. Performance Test Record (3 of 8)

Para. No.	Test Description	Results		
		Min	Actual	Max
3-30	IF Gain Uncertainty			
	34. Log IF Gain Uncertainty (10 dB steps)	−1.0 dB	_____	+1.0 dB
	35. Log IF Gain Uncertainty (1 dB steps)	−1.0 dB	_____	+1.0 dB
	36. Linear IF Gain Uncertainty	−1.0 dB	_____	+1.0 dB
3-31	Scale Fidelity			
	28. Linear Scale Fidelity			
	2 dB from REF LVL	−2.33 dB	_____	−1.68 dB
	4 dB from REF LVL	−4.42 dB	_____	−3.60 dB
	6 dB from REF LVL	−6.54 dB	_____	−5.50 dB
	8 dB from REF LVL	−8.68 dB	_____	−7.37 dB
	10 dB from REF LVL	−10.87 dB	_____	−9.21 dB
	12 dB from REF LVL	−13.10 dB	_____	−11.02 dB
	14 dB from REF LVL	−15.42 dB	_____	−12.78 dB
	16 dB from REF LVL	−17.82 dB	_____	−14.49 dB
	18 dB from REF LVL	−20.36 dB	_____	−16.14 dB
	29. Maximum Cumulative 10 dB Log Scale Fidelity	−1.5 dB	_____	+1.5 dB
	30. Maximum Incremental 10 dB Log Scale Fidelity	−0.4 dB	_____	+0.4 dB
	31. Maximum Cumulative 2 dB Log Scale Fidelity	−1.5 dB	_____	+1.5 dB
	32. Maximum Incremental 2 dB Log Scale Fidelity	−0.4 dB	_____	+0.4 dB
3-32	Residual FM			
	11. Residual FM		_____	50 Hz
3-33	Noise Sidebands			
	11. −30 kHz Offset		_____	−100 dBc/Hz
	+30 kHz Offset		_____	−100 dBc/Hz
3-34	Image, Multiple, and Out-of-Band Responses			
	25. Maximum Response Amplitude <18 GHz		_____	−70 dBc
	26. Maximum Response Amplitude <22 GHz		_____	−60 dBc
	Opt. 026: <26.5 GHz			

Table 3-38. Performance Test Record (4 of 8)

Para. No.	Test Description	Results		
		Min	Actual	Max
3-35	Frequency Readout Accuracy and Frequency Count Marker Accuracy			
	5. 1.5 GHz CENTER FREQ			
	1 MHz SPAN	1.499942 GHz	_____	1.500058 GHz
	10 MHz SPAN	1.49948 GHz	_____	1.50052 GHz
	20 MHz SPAN	1.49895 GHz	_____	1.50105 GHz
	50 MHz SPAN	1.49745 GHz	_____	1.50255 GHz
	100 MHz SPAN	1.4948 GHz	_____	1.5052 GHz
	1 GHz SPAN	1.450 GHz	_____	1.550 GHz
	4.0 GHz CENTER FREQ			
	1 MHz SPAN	3.999932 GHz	_____	4.000068 GHz
	10 MHz SPAN	3.99947 GHz	_____	4.00053 GHz
	20 MHz SPAN	3.99894 GHz	_____	4.00106 GHz
	50 MHz SPAN	3.99744 GHz	_____	4.00256 GHz
	100 MHz SPAN	3.9948 GHz	_____	4.0052 GHz
	1 GHz SPAN	3.950 GHz	_____	4.050 GHz
	9.0 GHz CENTER FREQ			
	1 MHz SPAN	8.999912 GHz	_____	9.000088 GHz
	10 MHz SPAN	8.99945 GHz	_____	9.00055 GHz
	20 MHz SPAN	8.99892 GHz	_____	9.00108 GHz
	50 MHz SPAN	8.99742 GHz	_____	9.00258 GHz
	100 MHz SPAN	8.9948 GHz	_____	9.0052 GHz
	1 GHz SPAN	8.950 GHz	_____	9.050 GHz
	16.0 GHz CENTER FREQ			
	1 MHz SPAN	15.99984 GHz	_____	16.000116 GHz
	10 MHz SPAN	15.99942 GHz	_____	16.00058 GHz
	20 MHz SPAN	15.99889 GHz	_____	16.00111 GHz
	50 MHz SPAN	15.99739 GHz	_____	16.00261 GHz
	100 MHz SPAN	15.9948 GHz	_____	16.0052 GHz
	1 GHz SPAN	15.950 GHz	_____	16.050 GHz
	22.0 GHz CENTER FREQ			
	1 MHz SPAN	20.999864 GHz	_____	21.000136 GHz
	10 MHz SPAN	20.99940 GHz	_____	21.00060 GHz
	20 MHz SPAN	20.99887 GHz	_____	21.00113 GHz
	50 MHz SPAN	20.99737 GHz	_____	21.00263 GHz
	100 MHz SPAN	20.9948 GHz	_____	21.0052 GHz
	1 GHz SPAN	20.950 GHz	_____	21.050 GHz
	8. Frequency Count Marker Accuracy			
	1.5 GHz CENTER FREQ	1.49999394 GHz	_____	1.50000606 GHz
	4.0 GHz CENTER FREQ	3.99998394 GHz	_____	4.00001606 GHz
	9.0 GHz CENTER FREQ	8.99996389 GHz	_____	9.00003611 GHz
	16.0 GHz CENTER FREQ	15.99993584 GHz	_____	16.00006416 GHz
	21.0 GHz CENTER FREQ	20.99991579 GHz	_____	21.00008421 GHz

Table 3-38. Peformance Test Record (5 of 8)

Para. No.	Test Description	Results		
		Min	Actual	Max
3-36	Pulse Digitization Uncertainty			
	17. LOG, 1 MHz RES BW		_____	1.25 dB
	17. LOG, 2 MHz* RES BW		_____	3.0 dB
	18. Linear, 1 MHz RES BW		_____	4%
	18. Linear, 2 MHz* RES BW		_____	12%
3-37	Second Harmonic Distortion			
	6. < 2.9 GHz		_____	–72 dBc
	31. > 2.9 GHz		_____	–100 dBc (HP 8562B: –60 dBc)
3-38	Frequency Response			
	Band 0			
	51(c) Maximum Positive Response		_____	+5.1 dB
	51(f) Maximum Negative Response	–5.1 dB	_____	
	51(h) Peak-to-Peak Response		_____	+2.4 dB
	Band 1			
	52(a) Maximum Positive Response		_____	+5.1 dB
	52(b) Maximum Negative Response	–5.1 dB	_____	
	52(c) Peak-to-Peak Response		_____	+5.0 dB
	(HP 8562B:			+4.0 dB)
	Band 2			
	53(a) Maximum Positive Response		_____	+5.1 dB
	53(b) Maximum Negative Response	–5.1 dB	_____	
	53(c) Peak-to-Peak Response		_____	+7.0 dB
	(HP 8562B:			+5.0 dB)
	Band 3			
	54(a) Maximum Positive Response		_____	+5.1 dB
	54(b) Maximum Negative Response	–5.1 dB	_____	
	54(c) Peak-to-Peak Response		_____	+8.0 dB
	(HP 8562B:			+6.0 dB)
	Band 4			
	55(a) Maximum Positive Response		_____	+5.1 dB
	55(b) Maximum Negative Response	–5.1 dB	_____	
	55(c) Peak-to-Peak Response		_____	+8.6 dB

* Performance of the 2 MHz RES BW setting is specified only for HP 8562A spectrum analyzers with serial prefix 2805A and above, and for HP 8562B spectrum analyzers with serial prefix 2809A and above.

Table 3-38. Performance Test Record (6 of 8)

Para. No.	Test Description	Results		
		Min	Actual	Max
3-38	Frequency Response (Cont'd)			
	Band Switching Uncertainty			
	59. Band 0 to Band 1		_____	4.2 dB (3.7)
	Band 0 to Band 2		_____	5.2 dB (4.2)
	Band 0 to Band 3		_____	5.7 dB (4.7)
	Band 0 to Band 4		_____	6.0 dB
	Band 1 to Band 2		_____	6.5 dB (5.0)
	Band 1 to Band 3		_____	7.0 dB (6.0)
	Band 1 to Band 4		_____	7.3 dB (6.8)
	Band 2 to Band 3		_____	8.0 dB (6.0)
	Band 2 to Band 4		_____	8.3 dB (7.3)
	Band 3 to Band 4		_____	8.8 dB (7.8)
	(Limits in parentheses apply to HP 8562B)			
3-39	Frequency Span Accuracy			
	6. 1.5 GHz CENTER FREQ			
	10 kHz SPAN	7.60 kHz	_____	8.40 kHz
	20 kHz SPAN	15.20 kHz	_____	16.80 kHz
	50 kHz SPAN	38.00 kHz	_____	42.00 kHz
	100 kHz SPAN	76.0 kHz	_____	84.0 kHz
	101 kHz SPAN	76.0 kHz	_____	84.0 kHz
	200 kHz SPAN	152.0 kHz	_____	168.0 kHz
	500 kHz SPAN	380.0 kHz	_____	420.0 kHz
	1 MHz SPAN	760 kHz	_____	840 kHz
	1.01 MHz SPAN	760 kHz	_____	840 kHz
	2 MHz SPAN	1.520 MHz	_____	1.680 MHz
	5 MHz SPAN	3.800 MHz	_____	4.200 MHz
	10 MHz SPAN	7.60 MHz	_____	8.40 MHz
	20 MHz SPAN	15.20 MHz	_____	16.80 MHz
	50 MHz SPAN	38.00 MHz	_____	42.00 MHz
	100 MHz SPAN	76.0 MHz	_____	84.0 MHz
	200 MHz SPAN	152.0 MHz	_____	168.0 MHz
	500 MHz SPAN	380.0 MHz	_____	420.0 MHz
	1 GHz SPAN	760 MHz	_____	840 MHz
	2 GHz SPAN	1.520 GHz	_____	1.680 GHz
	9.0 GHz CENTER FREQ			
	10 kHz SPAN	7.60 kHz	_____	8.40 kHz
	20 MHz SPAN	15.20 MHz	_____	16.80 MHz
	50 MHz SPAN	38.00 MHz	_____	42.00 MHz
	5 GHz SPAN	3.800 GHz	_____	4.200 GHz
	16.0 GHz CENTER FREQ			
	10 kHz SPAN	7.60 kHz	_____	8.40 kHz
	50 MHz SPAN	38.00 MHz	_____	42.00 MHz
	100 MHz SPAN	76.0 MHz	_____	84.0 MHz
	5 GHz SPAN	3.800 GHz	_____	4.200 GHz

Table 3-38. Performance Test Record (7 of 8)

Para. No.	Test Description	Results		
		Min	Actual	Max
3-39	Frequency Span Accuracy (Cont'd)			
	20.5 GHz CENTER FREQ			
	10 kHz SPAN	7.60 kHz	_____	8.40 kHz
	50 MHz SPAN	38.00 MHz	_____	42.00 MHz
	100 MHz SPAN	76.0 MHz	_____	84.0 MHz
	12.4 GHz CENTER FREQ			
	19.25 GHz SPAN	17.10 GHz	_____	18.90 GHz
3-40	Third Order Intermodulation Distortion			
	30. TOI Distortion at 2.8 GHz		_____	–70 dBc
	31. TOI Distortion at 4.0 GHz		_____	–75 dBc
3-41	Gain Compression			
	12. Gain Compression at 2 GHz		_____	1.0 dB
	24. Gain Compression at 4 GHz		_____	1.0 dB
	Gain Compression at 7 GHz		_____	1.0 dB
3-42	1ST LO OUTPUT Amplitude			
	7. Maximum 1ST LO OUTPUT Power		_____	+18.5 dBm
	8. Minimum 1ST LO OUTPUT Power	+14.5 dBm	_____	
3-43	Sweep Time Accuracy			
	8. 50 µs SWEEP TIME	42.5 µs	_____	57.5 µs
	100 µs SWEEP TIME	85 µs	_____	115 µs
	200 µs SWEEP TIME	170 µs	_____	230 µs
	500 µs SWEEP TIME	425 µs	_____	575 µs
	1 ms SWEEP TIME	850 µs	_____	1.15 ms
	2 ms SWEEP TIME	1.70 ms	_____	2.30 ms
	5 ms SWEEP TIME	4.25 ms	_____	5.75 ms
	10 ms SWEEP TIME	8.5 ms	_____	11.5 ms
	20 ms SWEEP TIME	17.0 ms	_____	23.0 ms
	16. 30 ms SWEEP TIME	29.7 ms	_____	30.3 ms
	50 ms SWEEP TIME	49.5 ms	_____	50.5 ms
	100 ms SWEEP TIME	99.0 ms	_____	101.0 ms
	200 ms SWEEP TIME	198.0 ms	_____	202.0 ms
	500 ms SWEEP TIME	495.0 ms	_____	505.0 ms
	1 s SWEEP TIME	990.0 ms	_____	1010.0 ms
	2 s SWEEP TIME	1.980 s	_____	2.020 s
	5 s SWEEP TIME	4.95 s	_____	5.05 ms
	10 s SWEEP TIME	9.90 s	_____	10.1 s
	20 s SWEEP TIME	19.8 s	_____	20.2 s
	50 s SWEEP TIME	49.5 s	_____	50.5 s
	60 s SWEEP TIME	59.4 s	_____	60.6 s

Table 3-38. Performance Test Record (8 of 8)

Para. No.	Test Description	Results		
		Min	Actual	Max
3-44	Residual Responses			
	7. 200 kHz to 2.9 GHz		_____	−90 dBm
	9. 2.9 GHz to 6.46 GHz		_____	−90 dBm
3-45	IF INPUT Amplitude Accuracy			
	15. IF INPUT Amplitude	−31.5 dBm	_____	−28.5 dBm