



HEWLETT
PACKARD

OPERATING AND SERVICE MANUAL
MODIFICATION

MODEL 8902A
OPTION H15
MEASURING RECEIVER

How To Use This Insert

This Manual Modification Insert should be used in conjunction with the 8902A Operating and Calibration Manual, HP Part Number 08902-90029 (printed December 1985) and 8902A Service Manual, HP Part number 08902-90031 (printed April 1986). Make the changes described in this Insert to the indicated Sections of the Operating and Calibration Manual.

Applicable Serial Numbers

This Manual Modification Insert applies to instruments with serial number prefixes greater than or equal to 2621A.

Updates to this Manual Insert

Periodically, changes are made to this Manual Insert to correct errors in the original printing and to include Option improvements. Corrections are indicated by a mark at the right-hand edge of the modified text. The mark used is keyed to the date the corrections are added (found on this cover page below the issue date).

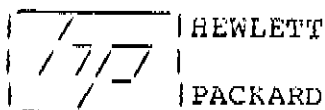
Manual Modification Insert
HP Part Number 08902-92009

Issued October 1986
HEWLETT
PACKARD

COPYRIGHT AND DISCLAIMER NOTICE

Copyright – Agilent Technologies, Inc. Reproduced with the permission of Agilent Technologies Inc. Agilent Technologies, Inc. makes no warranty of any kind with regard to this material including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Agilent Technologies, Inc. is not liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material or data.





SECTION I. GENERAL INFORMATION

Option H15 for the HP Model 8902A Measuring Receiver provides better than standard specifications for Frequency Modulation, Amplitude Modulation, Phase Modulation, and Tuned RF Level measurements.

The HP 8902A Option H15 is an integral part of the HP 8902MS Microwave Measurement System. This System consists of an HP 8902A Option H15 Measuring Receiver, an HP 11792A Option H15 Sensor Module, an HP 11792A Option H16 Sensor Module, an HP 11793A Option H15 Microwave Converter, two HP 8673D Option H15 Synthesized Signal Generators, miscellaneous accessories, and two System Cabinets with power and signal cabling.

On page 1-20, in Table 1-1, Specifications (1 of 7), under FREQUENCY MODULATION, make the following changes and additions:

ACCURACY

FM Accuracy (± 1 digit)	Frequency Range	Rates	Peak Deviation
$\pm 1.75\%$ of reading	250 kHz to 10 MHz	50 Hz to 10 kHz	≤ 40 kHz
$\pm 2\%$ of reading	250 kHz to 10 MHz	20 Hz to 10 kHz	≤ 40 kHz
$\pm 0.75\%$ of reading	10 MHz to 1300 MHz	50 Hz to 100 kHz	≤ 400 kHz
$\pm 5\%$ of reading	10 MHz to 1300 MHz	20 Hz to 200 kHz	≤ 400 kHz

DEMODULATED OUTPUT DISTORTION

THD	Frequency Range	Rates	Deviations
$< 0.25\%$	400 kHz to 10 MHz	50 Hz to 10 kHz	≤ 40 kHz
$< 0.1\%$	400 kHz to 10 MHz	20 Hz to 10 kHz	≤ 10 kHz
$< 0.25\%$	10 MHz to 1300 MHz	50 Hz to 100 kHz	≤ 400 kHz
$< 0.01\%$	10 MHz to 1300 MHz	20 Hz to 100 kHz	≤ 100 kHz

Also on page 1-20, under AMPLITUDE MODULATION, make the following additions:

ACCURACY: RF Carrier Power Level \geq -10 dBm

AM Accuracy (\pm 1 digit)	Frequency Range	Rates	Depths
\pm 1.75% of reading	150 kHz to 10 MHz	50 Hz to 10 kHz	5% to 99%
\pm 0.75% of reading	10 MHz - 1300 MHz	50 Hz to 50 kHz	5% to 99%
\pm 0.4% of reading	108 MHz - 112 MHz	90 Hz	5% to 40%
\pm 0.4% of reading	108 MHz - 112 MHz	150 Hz	5% to 40%
\pm 0.4% of reading	332 MHz - 335 MHz	90 Hz	5% to 40%
\pm 0.4% of reading	332 MHz - 335 MHz	150 Hz	5% to 40%
\pm 0.45% of reading	332 MHz - 335 MHz	90 Hz	41% to 80%
\pm 0.45% of reading	332 MHz - 335 MHz	150 Hz	41% to 80%

On page 1-21, in Table 1-1, Specifications (2 of 7), under PHASE MODULATION, make the following changes:

PHASE MODULATION

PM Accuracy (\pm 1 digit)	Frequency Range	Peak Deviations (to 1 kHz rates)
\pm 3.5% of reading	150 kHz - 10 MHz	\leq 40 radians
\pm 2.75% of reading	10 MHz - 1300 MHz	\leq 400 radians

DEMODULATED OUTPUT DISTORTION: $<$ 0.25% THD.

On page 1-22, in Table 1-1, Specifications (3 of 7), under TUNED RF LEVEL, make the following changes:

POWER RANGE: -100 dBm to +5 dBm, using IF synchronous detector
(200 Hz BW)

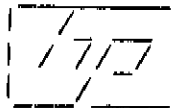
FREQUENCY RANGE: 10 MHz to 1300 MHz

On page 1-23, in Table 1-1, Specifications (4 of 7), under TUNED RF LEVEL, continued, make the following changes:

DETECTOR LINEARITY:

for IF Synchronous Detector:

\pm 0.02 dB \pm (accuracy for appropriate dynamic range as noted below) \pm 1 digit, (add \pm 0.18 dB for power levels $>$ -10 dBm).



Dynamic Range	Frequency Range	Accuracy
0 - 80 dB	10 MHz - 1300 MHz	+/-0.01 dB / 10 dB Step
80.01 - 105 dB	10 MHz - 1300 MHz	+/-0.02 dB / 10 dB Step

On page 1-24, in Table 1-1, Specifications (5 of 7), under CARRIER NOISE (OPTIONS 030-037), make the following changes:

RELATIVE MEASUREMENT ACCURACY: +/-0.5 dB; levels >=-95 dBc; 12.5 kHz, 25 kHz and 30 kHz filters. +/-0.5 dB; levels >=-129 dBc/Hz, and +/-2 dB; levels >=-140 dBc/Hz; carrier noise filter.

NOISE FLOOR: -150 dBc/Hz, excluding LO contribution

On page 1-26, in Table 1-1, Specifications (7 of 7), under GENERAL SPECIFICATIONS, make the following change:

TEMPERATURE: Operating: 15 to 30 degrees C (59 to 85 degrees F)

SECTION IV. PERFORMANCE TESTS

On page 4-2, Performance Test 1 - AM, incorporate the following into the specification table:

Characteristic	Performance Limit	Conditions
Accuracy		Option H15 Only
	+/-1.75% of reading +/-1 digit	150 kHz to 10 MHz; 50 Hz to 10 kHz rates; 5% to 99% depth
	+/-0.75% of reading +/-1 digit	10 MHz - 1300 MHz; 50 Hz to 50 kHz rates; 5% to 99% depth
	+/-0.4% of reading +/-1 digit	108 MHz to 112 MHz and 332 MHz to 335 MHz; 90 Hz and 150 Hz rates; 5% to 40% depth
	+/-0.45% of reading	332 MHz to 335 MHz; 90 and 150 Hz rates; 41% to 80% depth

On page 4-6, under AM Accuracy, step 18, change the Lower and Upper AM Limits for 50 kHz and 50 Hz to 99.2 and 100.9, respectively.

On page 4-8, Performance Test 2 - FM, incorporate the following into the specification table:

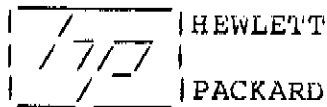
Characteristic	Performance Limit	Conditions
Accuracy		Option H15 Only
	+/-1.75% of reading +/-1 digit	250 kHz to 10 MHz; 50 Hz to 10 kHz rates; <=40 kHz peak deviation
	+/-0.75% of reading +/-1 digit	10 MHz to 1300 MHz; 50 Hz to 100 kHz rates; <=400 kHz peak deviation
Demodulated Output Distortion	<0.25% THD	400 kHz to 10 MHz carrier; 50 Hz to 10 kHz rates; <=40 kHz peak dev.
	<0.25% THD	10 MHz to 1300 MHz carrier; 50 Hz to 100 kHz rates; <=400 kHz peak dev.

On page 4-12, under FM Distortion, Accuracy, and Rejection - 1.5 MHz IF, change the Lower and Upper FM Limits for 50 kHz and 50 Hz to 99.2 and 100.9, respectively.

On page 4-13, under FM Distortion, Accuracy, and Rejection - 455 kHz IF, change the Lower and Upper FM Limits for 10 kHz to 9.82 and 10.19, respectively.

On page 4-14, Performance Test 3 - ϕ M, incorporate the following into the specification table:

Characteristic	Performance Limits	Conditions
Accuracy		Option H15 Only
	+/-3.5% of reading +/-1 digit	150 kHz to 10 MHz; <=40 radians (up to 1 kHz rates)
	+/-2.75% of reading +/-1 digit	10 MHz to 1300 MHz; <=400 radians (up to 1 kHz rates)



On page 4-16, under \emptyset M Accuracy, in Step 6, change the Lower and Upper \emptyset M Limits for 200 Hz and 1 kHz, to 243.0 and 257.0, respectively. Change the Limits for 20 kHz, 250 kHz deviation, to 12.1 and 12.9, respectively. Also, change the Lower Limit for 20 kHz, 4 kHz deviation, to 0.194.

Also on page 4-16, in Step 7, change the Lower and \emptyset M Limits for 10 kHz, 25 kHz deviation, to 2.40 and 2.60, respectively. Change the Limits for 10 kHz, 2.5 kHz deviation, to 0.240 and 0.260, respectively.