Notice

Hewlett-Packard to Agilent Technologies Transition

This documentation supports a product that previously shipped under the Hewlett-Packard company brand name. The brand name has now been changed to Agilent Technologies. The two products are functionally identical, only our name has changed. The document still includes references to Hewlett-Packard products, some of which have been transitioned to Agilent Technologies.

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Operating and Service Manual Special Supplement

11757/8, B/V Option H04 Digital Radio Test Set

Agilent Technologies

Manufacturing Part Number: 11757-90052

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11757/8,B/V Option H04

Description

The HP 11757/8,B/V Option H04 is a standard digital radio test set or multipath fading simulator that has been modified so it can accept higher IF input power, as well as the normal input power, by switching the jumper cables on the back of the instrument.

Specification Changes:

Specifications for the HP 11757/8,B/V are also applied to the Option H04 except for the following:

1. Noise figure specification which is typically <=30 dB when measured with the gain =12 dB.
2. Intermodulation distortion products are typically 48 dBc for 70 MHz band, and 44 dBc for 140 MHz band.

Modification

This modification is in three parts.

1. An attenuator is added to the IF Input so that the multipath fading simulator can handle a higher IF Input power (+4 dBm typical).
2. Following the output module, an amplifier is added to bring the IF power level back up, and a matching transformer is use to convert the 50Ω output impedance of the amplifier to a 75Ω IF Output at the front panel.
3. A set of seven BNC connectors has been added to the rear panel. These allow the user to configure the instrument for either high power input, or low (standard) power input, by proper connection of the jumper cables.

Operation

The HP 11757/8,B/V Option H04 operates similarly to that of the standard HP 11757/8,B/V except for the following differences:

1. The HP 11757/8,B/V Option H04 can handle higher IF Input Power, up to 20mU maximum.
2. Changing the jumpers on the rear panel from 1-2, 3-4, and 6-7, to 1-4, 2-3, and 5-6 respectively, the unit will revert back to standard operation.
3. With the added circuitry, the typical noise figure specification has changed from 15 dB to typically 30 dB.

In all other respects this instrument is the came as the standard HP 11757/8,B/V and the information in the Operating and Service Manual also applies.

Performance Tests

1. Noise Figure Test

Equipment	Qty	Description
Noise Figure Meter	1	HP 8970B or Equivalent
Noise Source	1	HP 346 or Equivalent
Matching Transformer	1	HP 11694A or Equivalent

Standard adapters and 50Ω coax cables as needed for interconnections.

2. Configure rear panel jumpers for high power operation
3. Test Set Up. Set Jump and connectors 1 - 2, 3 - 4 and 6 - 7. Configure the test equipment as shown in figure 1-1 below.

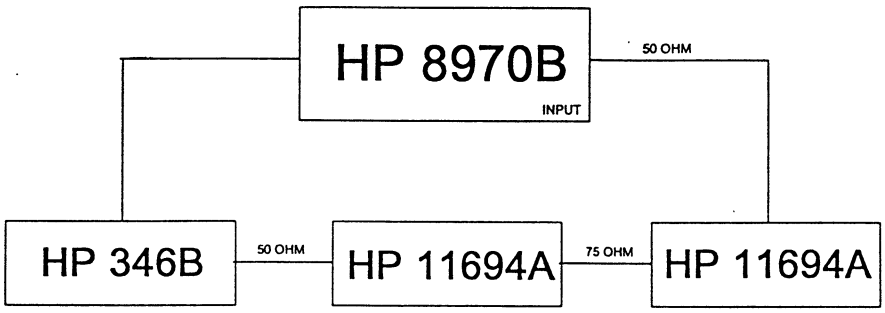

Figure 1-1.

4. Calibrate the HP 8970B at 70 and 140 MHz. See HP 8970B Operating Manual for detailed calibration procedure.
5. Set the HP 11757/8,B/V for 79 MHz, 0 dB notch, -12 dB attenuation. Connect it between the two HP 11794A transformers. Measure the noise figure. The specification is 30 dB.

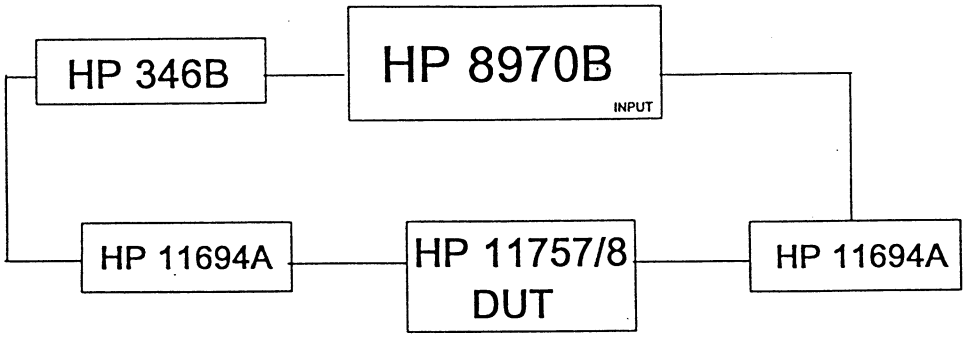

Figure 1-2.

6. If the MFS has the 140 MHz band, set the HP 11757/8,B/V for 140 MHz,0 dB notch, -12 dB attenuation. Measure the noise figure. The specification is 30 dB.

3 - Three Tone Intermodulation Test

1. Test Equipment Required.

Equipment	Qty	Description
Signal Generator	3	HP 8662 or Equivalent
Three way 0° Power Combiner	1	Mini Circuit ZSC-3-1
100 MHz Low Pass Filter	1	For H04 in 70MHz IF only
200 MHz Low Pass Filter	1	For Option H04 with Options 140 or 147
Power Meter	1	HP 436A or Equivelant
Spectrum Analyzer	1	8566B or Equivelant

Standard adapter and 50Ω coax cables as needed for interconnections.

2. Preset the MFS.
   Set the three sources to 67, 70 and 75 MHz respectively.

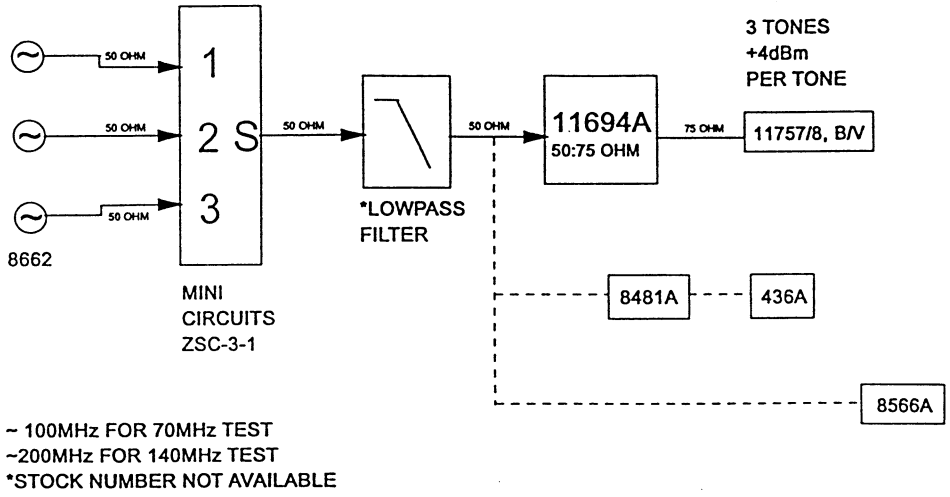

Figure 1-3.

3. Measure the power of each tone at the output of the low pass filter cable. Use a power sensor/power meter. (A Spectrum Analyzer is not accurate enough).

   Power should be +4 dBm per tone (the 50:75Ω transformer has about 0.3 dB loss).

4. Reconnect the transformer. Examine the three tone signal with a Spectrum Analyzer. All intermodulation distortion products should be >65 dB below the level of the tones.

5. Set the DUT for 0dB notch at 70 or 140 MHz as appropriate.

6. Connect the three tone source through as HP 11679A 50:75Ω transformer to the HP 11757/8,B/V IF Input. Use a 50Ω BNC cable between the low pass filter and the transformer. Use the same cable that was used in 3 above when setting signal levels.

7. Connect the IF Out to a Spectrum Analyzer. Set up the Spectrum Analyzer for:

CENTRE FREQUENCY	70 (or 140 MHz)
SPAN	150 MHz
RES BW	100 kHz
ATTEN	30 dB

8. Adjust REF level to place the three tones at the top of the screen (REF level should be +4 dBm).
9. Measure the intermodulation distortion product's amplitude, relative to the tone amplitude:

    70 MHz Typical 48dBc

    140 MHz Typical 44dBc

10. If the DUT has the 140 MHz band set, the three sources (HP 8654B) to 137, 140 and 145 MHz respectively. Repeat steps 3 - 9.