

3.3 MGC, Output Power & OIP3 Test

3.3.1 Equipment

Equipment Name	Number	Remarks
Spectrum Analyzer	1	Agilent 8595E or the equivalent
Signal Generator	2	Agilent E4432B or the equivalent
2-Way Combiner	1	General Purpose
Power Attenuator	1	Over 30dB (For protection of measurer)
Band Pass Filter (BPF)	1	For protection of measurer

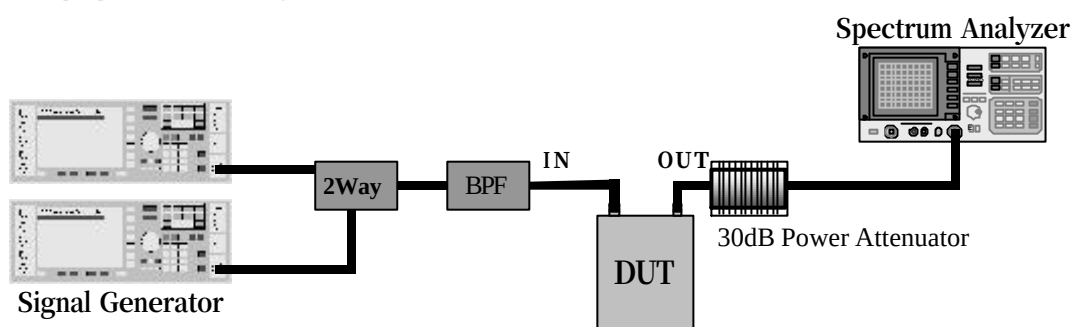
3.3.2 Criterion

MGC Range : 20dB

Output Power : +27dBm $\pm$ 0.5dB

OIP3 : +45dBm(@14dBm/Tone)

3.3.3 Equipment Setting



3.3.4 Test Procedures

- Common Measurement
 - 1) Measures the path loss from the Signal Generator output to the Repeater input.(IN_{loss})
 - 2) Measures the path loss from the Repeater output to the Spectrum Analyzer input.(OUT_{loss})
 - 3) Set the apparatus as drawings above.

Warning: The BPF is used to protect the Signal Generator and the 30dB Power Attenuator is used to protect the Spectrum Analyzer.

- 4) Set the Signal Generator output as $(-46+IN_{loss})$ dBm, and frequency as

860 MHz(@ Down link Case, 815MHz @ Uplink Case).

5) Set the Spectrum Analyzer as follows.

[RBW : 30KHz, VBW : 300Hz, SWP : AUTO, SPAN : 2MHz,

CF : 860MHz Amplitude Offset : (30 + OUT_{loss}) dB]

- MGC and Output Power Measurement

1) Check the selection switch as MGC mode.

2) Turn off one of signal generators.

3) Connect the power cord of the repeater to the AC line.

Warning: Use a 3-wire AC Line and check the line voltage.

4) Measure and confirm that the output power is 27dBm $\pm$ 0.5dB.

5) Turning the variable resistor and measure gain variation.

6) Disconnect the power cord of the repeater to the AC line.

7) Repeat the same test to the Uplink frequency.

MGC Gain Reference Table(Check 9 Pin D-Sub Pin 7 & 9)

Gain	Voltage	Attenuation
70 dB - 3 dB	3.09 V	0 dB
65 dB $\pm$ 3 dB	1.31 V	5 dB
60 dB $\pm$ 3 dB	0.99 V	10 dB
55 dB $\pm$ 3 dB	0.83 V	15 dB
50 dB $\pm$ 3 dB	0.75 V	20 dB
40 dB $\pm$ 3 dB	0.63 V	30 dB

Pin 7 is for Down Link, Pin 9 is for Up Link

- OIP3 Measurement

1) Connect the power cord of the repeater to the AC line.

2) Set 2 Tone Spacing as 250KHz.

3) Set output power to +14dBm each tone.

4) Measure 3rd harmonics value.

5) Calculate OIP3 using the following formula.

$$OIP3 = P_{out} + IMD/2$$

6) Repeat the same test to the Uplink frequency.