

Test Procedure of Dual Band Home Booster (DBHB 20)**1.0 General Description:**

This unit consists of down link (Forward path) and up link (Reverse path). Both links has Duplexer, LNA, Digital Attenuator, BPFs and PA with no frequency conversion UP link & DOWN link. It works at 9.0V DC. The Downlink RF received from outdoors antenna and Uplink RF is received from integrated mobile server antenna. BPFs are select band and cutoff the out band undesired frequency. The RSL is greater than -40, glow the RSL High (Red LED). When the RSL in between -60 & -40, glow the RSL Medium LED (Green) & the RSL is less than -60, glow the RSL Low LED (Yellow). D/L Align LED will blink when the system insert/release attenuation. U/L Align LED and D/L Align LED will glow when alignment was over.

2.0 Reference Documents

2.1 PTS

3.0 Test Instruments Required & Equivalent: -

S.No.	TYPE	MODEL / MAKE	QTY.
1	Synthesized Signal Generator	AGILENT/MS3633A / ANRITSU or Equivalent	02
2	Spectrum Analyzer	AGILENT/MS2602A / ANRITSU or Equivalent	01
3	Regulated Power Supply (9.0V/ 2 Amps)	Aplab /PULSE or DC ADOPTER	01
5	Multimeter	Equivalent	01
6	Power Combiner, & 10 dB Pad		01 Each

4.0 Visual Inspection before Connecting to the supply

4.1 Check for proper mounting of the components. [Polarity of Tantalum or electrolytic cap].

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- 4.2 Check for +220V AC and +9.0V DC supply short with ground.
- 4.3 Ensure that PCB Partition plate is in complete contact with the Heat Sink.
Tighten all the screws properly.
- 4.4 First ensure that all the DC levels are as per PTS sheet 1 of the production test Specification.
- 4.5 Give 15 minute warm up time to all instruments in use.
- 4.6 Use DC block with Spectrum Analyzer

Test Procedure**5.0 UP LINK TEST**

5.1 Measure the Gate & Drain voltage of ATF 55143 as per inspection sheet in No.4

5.2 I/P & O/P voltage of ASG201 as per inspection sheet in No.5

5.3 **GAIN Measurement:** - Set Synthesized signal generator on desired frequency within band with RF level -60 dBm and connect it to SMA-type input connector of UP link path. Its total gain should be more than 65dB. For measuring full gain of UP link path put the jumper of 3Pin berg con. Open loop side. The total gain of this path should be around carrier as per RF tests no 7. (Refer Setup Diagram No. 01 for settings).

5.4 **BANDWIDTH, FLATNESS AND REJECTION MEASUREMENT:** - For this measurement network analyzer is used. The output of this path should connect to RF i/p of network analyzer and I / p of this path is connecting to RF output port of network analyzer. Then check **flatness** 3dB bandwidth and specified **rejection**. These parameters should be as per RF Test No 8. (Refer Setup Diagram No. 03 for settings).

5.5 **OUTPUT POWER Measurement:** - Connect SMA-type output connector to Spectrum analyzer to measure the UP link out put. The max output of this chain

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is more than +10dBm as per RF test no 9. (Refer Setup Diagram No. 01 for settings).

5.6 ALC Setting: - In this unit, **ALC** (Automatic Level Control), controls the output power and system gain automatically. Set the POT VR201 10 dBm o/p power. And checked the dc voltage range at 3Pin berg con. Pin No. 3 increasing RF levels as per RF tests no 10.

5.7 Set Spectrum Analyzer and Signal Analyzer as: -

Center Frequency: As desired
Span: As per Requirement
RBW / VBW / SWEEP / ATTn: AUTO

5.8 IN-BAND IMD & SPURIOUS Measurement: - For intermods measurement connect two Signal generator for two carrier output to a combiner and its output connect to Uplink input and set 7dBm level per tone by varying the RF level. Measure its intermods on same setting as per PTS RF test no 11, 12 & 13. (Refer Setup Diagram No. 02 for settings). Set start and stop frequency As per RF test no 9&10 and measure out band spurious on 100KHz RBW.

6.0 DOWN LINK TEST

6.1 Measure the Gate & Drain voltage of ATF 55143 as per inspection sheet in No.4

6.2 I/P & O/P voltage of ASG201 as per inspection sheet in No.5

6.3 GAIN Measurement: - Set Synthesized signal generator on desired frequency with RF level -60 dBm and connect it to SMA-type input connector of UP link

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side. Its total gain should be more than 65dB. For measuring full gain of DOWN link path put the jumper of 3Pin berg con. Open loop side. The total gain of this path should be RF tests no 7. (Refer Setup Diagram No. 01 for settings).

6.4 BANDWIDTH, FLATNESS AND REJECTION MEASUREMENT: - For this measurement network analyzer is used. The output of this path should connect to RF i/p of network analyzer and I / p of this path is connecting to RF output port of network analyzer. Then check **flatness**, 3dB bandwidth and specified **rejection**. These parameters should be as per RF Test No 8. (Refer Setup Diagram No. 03 for settings).

6.5 OUTPUT POWER Measurement: - Connect SMA-type output connector to Spectrum analyzer to measure the Downlink out put. The max output of this chain is more than +10dBm as per RF test no 9. (Refer Setup Diagram No. 01 for settings).

6.6 Set Spectrum Analyzer and Signal Analyzer as: -

- 6.6.1 Center Frequency: As desired
- 6.6.2 Span: As per Requirement
- 6.6.3 RBW / VBW / SWEEP / ATT. AUTO

6.7 OUT PUT POWER SETTING: - After getting max. Gain of chain adjusts the both link O/P POWER (Equivalent to +10dBm o/p power) tune the POT VR3 to get a dc voltage of 1.5 Volt \pm 0.02 at Microcontroler Pin No.02. As per RF test no. 9.

6.8 ALC SETTING: - In this unit, **ALC** (Automatic Level Control), controls the output power and system gain automatically. Set the POT **VR4** 10 dBm o/p power. And

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checked the dc voltage range at 3Pin berg con. Pin No. 3 increasing RF levels as per RF tests no 10.

6.9 IN-BAND IMD & SPURIOUS Measurement: - For intermods measurement connect two Signal generator for two carrier output to a combiner and its output connect to Uplink input and set 7dBm level per tone by varying the RF level. Measure its intermods on same setting as per PTS RF test no 11, 12 & 13. (Refer Setup Diagram No. 02 for settings). Set start and stop frequency As per RF test no 9 & 10 and measure out band spurious on 100KHz RBW.

6.10 RSL Setting: - Set Synthesized signal generator on desired Downlink frequency with RF level -60 dBm and tune the POT VR1 & VR2 to get a dc voltage of 1.5 Volt \pm 0.02 at Microcontroler Pin No.05.

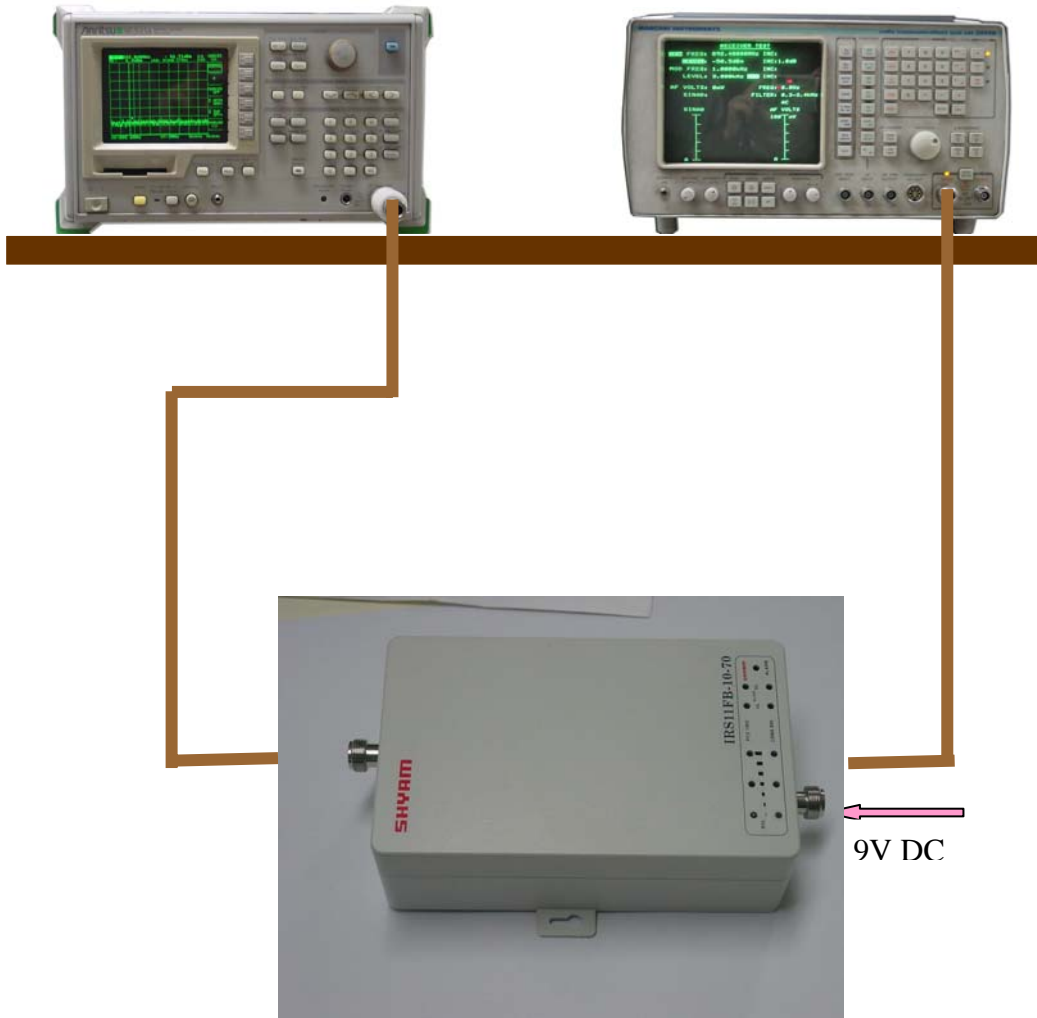
6.11 SHUT DOWN: - The system will automatically control the attenuation to keep the both link o/p power at desired stable level when the signal power exceeds. Shut down LED will glow when the downlink power is more then the desired level after inserting the all attenuation. The systems will shutdown the PA and then restart after 30 seconds.

SETUP FOR GAIN AND POWER MEASUREMENT

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Spectrum Analyzer

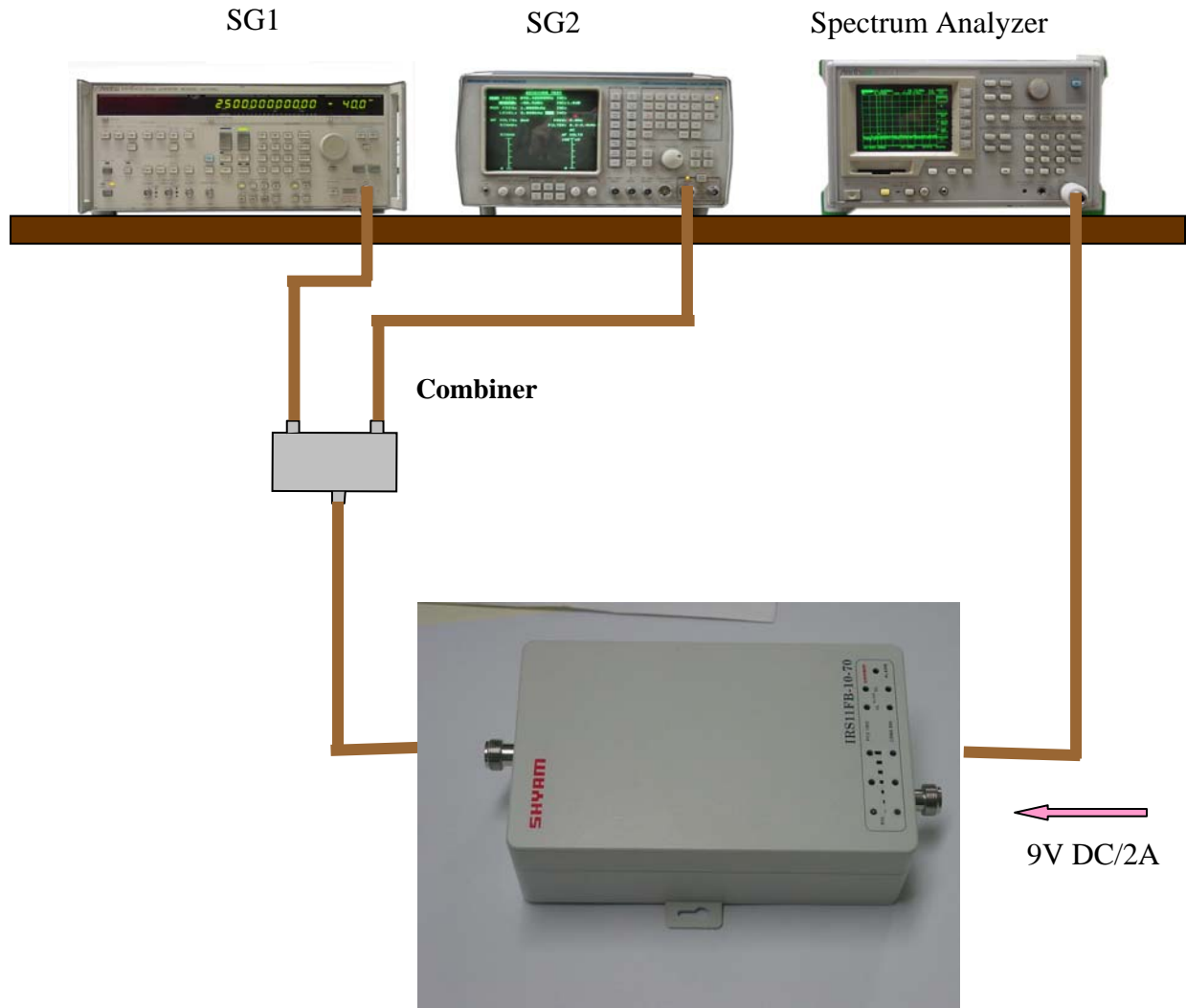
Signal Generator



DBHB-20 DIAGRAM No. 1

SETUP FOR INTERMOD IN INBAND AND SPURIOUS MEASUREMENT

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DUAL BAND HOME BOOSTER SETUP DIAGRAM

SETUP FOR BANDWIDTH, FLATNESS AND REJECTION MEASUREMENT

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SETUP FOR BANDWIDTH, FLATNESS AND REJECTION MEASUREMENT



Network Analyzer



DAUL BANDHOME BOOSTER SETUP DIAGRAM No. 3

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