

MST-0421

MWA ASC PCB

Test: Preliminary RF Gain and Frequency Response

Serial number: 001

Tester: Julian Schneider

Date: 13 Dec 2010

Jig details

1. Use ASC control jig
 - MWA JIG-010

Test procedure

1. Loosely fit the PCB into the housing.
2. For each channel connect a multimeter on current range in place of R33.
3. Power up board
 - *Check current is in range 400mA to 600mA and record for later test.*
 - *Ch 1 current _512__ mA*
 - *Ch 2 current _505__ mA*
 - *Ch 3 current _500__ mA*
 - *Ch 4 current _505__ mA*
 - *Ch 5 current _507__ mA*
 - *Ch 6 current _503__ mA*
 - *Ch 7 current _500__ mA*
 - *Ch 8 current _520__ mA*
4. Power down board.
5. Insert 0R link in place of R33 on channel under test
6. Connect VNA port 1 to input via 50Ω - 75Ω impedance matching pad and quick-F connector.
7. Connect VNA port 2 to output via quick-SMA connector and a 10dB pad.
8. Set VNA power level to -20dBm, start 10MHz stop 600MHz
9. Power up board.
 - *Verify 1Hz blinking LED on test jig, press ZERO button if required*
10. Measure frequency response of channel (*relative to 230MHz*)
 - *Verify lower 3dB point 80 MHz +/- 5 MHz*
 - *Verify upper 3dB point 300 MHz +/- 15 MHz*
 - *Verify passband is flat to +/- 1dB*
 - *Verify gain in passband is in range 15 dB to 25 dB*
11. Increase attenuation of alternate DAT-31PPs either via buttons or I2C

- ***Verify gain decreases 1dB***
- ***Verify frequency response remains flat +/-1dB in pass band***

12. Repeat last step until gain reaches -10dB.

13. Remove OR link and go to next channel.

Gain calculations for reference:

Input	-10 dBm
After matching pad	-16 dBm
After 1st gain stage	-1.5 to 1.5 dBm (gain 14.5dB to 17.5dB, P1dB 16.5dBm)
After transformer	-2 to +1 dBm
After DAT-31PP #1	-3.5 to -0.5 dBm
After 2nd gain stage	8.5 to 14 dBm (gain 12dB to 13.5dB, P1dB 26.5dBm)
After DAT-31PP #2	6 to 12.5 dBm
After third gain stage	18 to 26 dBm (gain 12dB to 13.5dB, P1dB 26.5dBm)
After filter	15 to 23 dBm
After 10dB pad	5 to 13 dBm = 15 to 23 dB gain

Comments

Requires PSI test code to be programmed into PIC.

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Channel	dB @ 230Mhz	lower 1dB / MHz	lower 3dB / MHz	upper 1dB / MHz	upper 3dB / MHz	passband flat +/- 1dB	gain decreases 1dB	remains flat +/- 1dB
1	24.80	78.96	73.06	260.68	299.03	yes	yes	yes
2	25.34	77.97	71.88	260.68	297.65	yes	yes	yes
3	25.67	79.94	73.45	259.89	297.85	yes	yes	yes
4	25.43	78.76	72.27	260.48	296.67	yes	yes	yes
5	25.11	79.35	73.45	267.36	297.85	yes	yes	yes
6	25.20	79.74	73.65	258.32	292.54	yes	yes	yes
7	25.70	78.56	72.47	262.05	296.47	yes	yes	yes
8	25.41	79.15	72.86	261.07	296.67	yes	yes	yes

50Ohm source into 75Ohm
subtract 1.6 dB