6.5 COMPLIANCE WITH THE BAND EDGE – FCC §15.247(C), §15.205; RSS-210 §6.6.2(Q1)

6.5.1 LIMITS OF BAND EDGE MEASUREMENT

Below -20 dB of the highest emission level of operating band (in 100 kHz resolution bandwidth).

6.5.2 BAND EDGE TEST PROCEDURE

The transmitter output was connected to a spectrum analyzer through a low loss cable. The RBW was set to 1 MHz and the VBW was set to 10 Hz with a suitable span including 100 MHz bandwidth from band edge.

For signals in the restricted band above and below 5150 and 5350 MHz, a measurement of the amplitude of the spurious emissions was made with respect to the intentional signal. The relative amplitude, in dBc, was applied to the average measurement using the peak field strength which was measured on the OATS site to calculate the field strength of the unintentional signals.

TABLE 6-9: BAND EDGE TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	6/23/05

6.5.3 RESTRICTED BAND EDGE TEST RESULTS

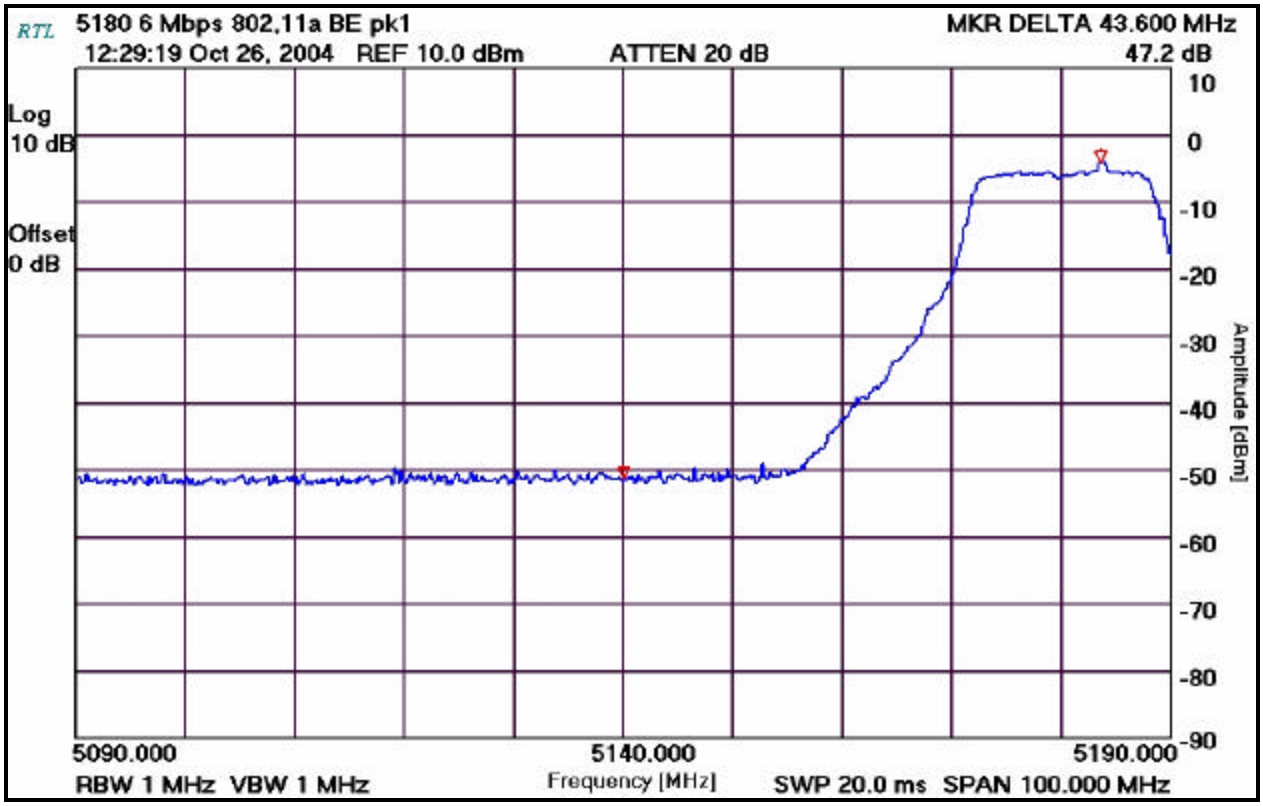
6.5.3.1 CALCULATION OF LOWER BAND EDGE

72.2 dBuV/m is the field strength measurement, from which the delta measurement of 48.6 dB is subtracted (reference plots), resulting in a level of 23.6 dB. This level has a margin of 30.4 dB below the limit of 54 dBuV/m.

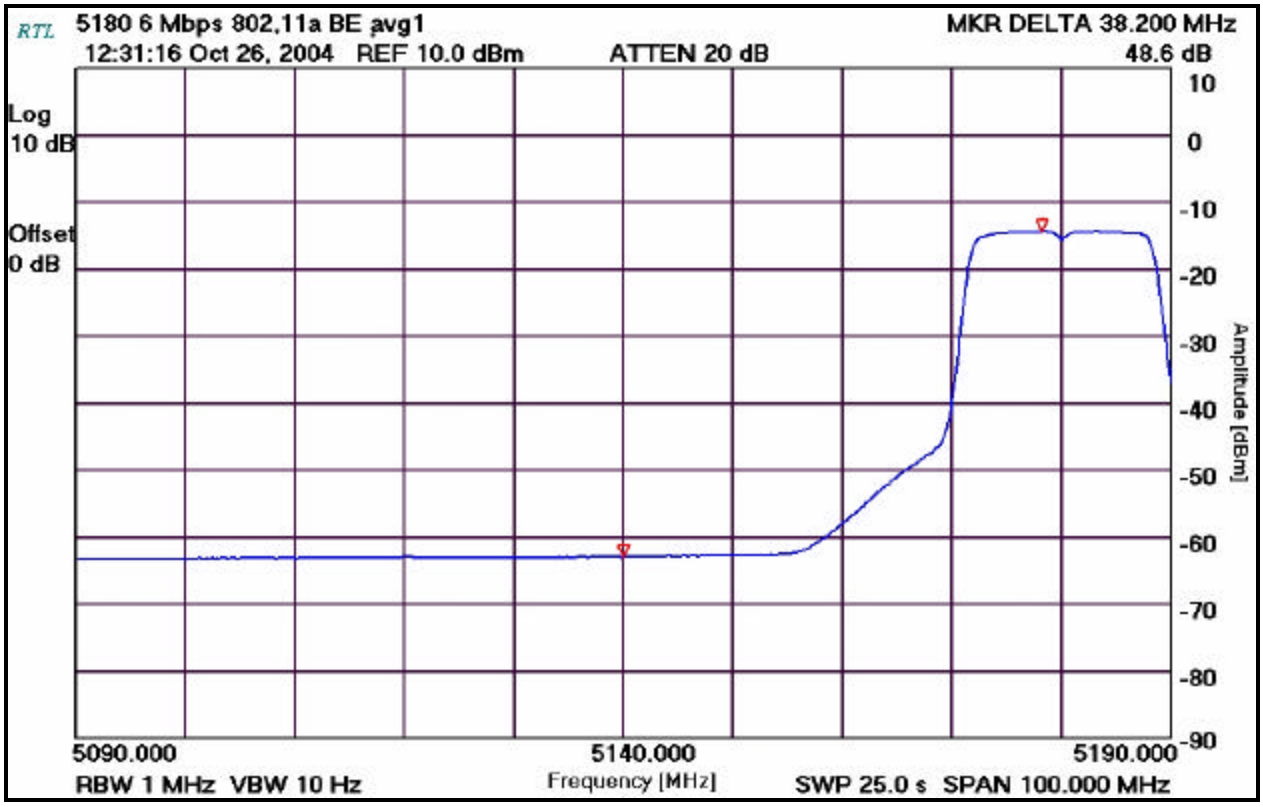
Calculation: 72.2 dBuV/m – 48.6 dB – 54 dBuV/m = -30.4 dB

Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 72.2 dBuV/m
Delta measurement = 48.6 dB

PLOT 6-11: LOWER BAND EDGE: PEAK MEASUREMENT CHANNEL 1 (TX FREQUENCY: 5180 MHZ)



PLOT 6-12: LOWER BAND EDGE: AVERAGE MEASUREMENT CHANNEL 1 (TX FREQUENCY: 5180 MHZ)



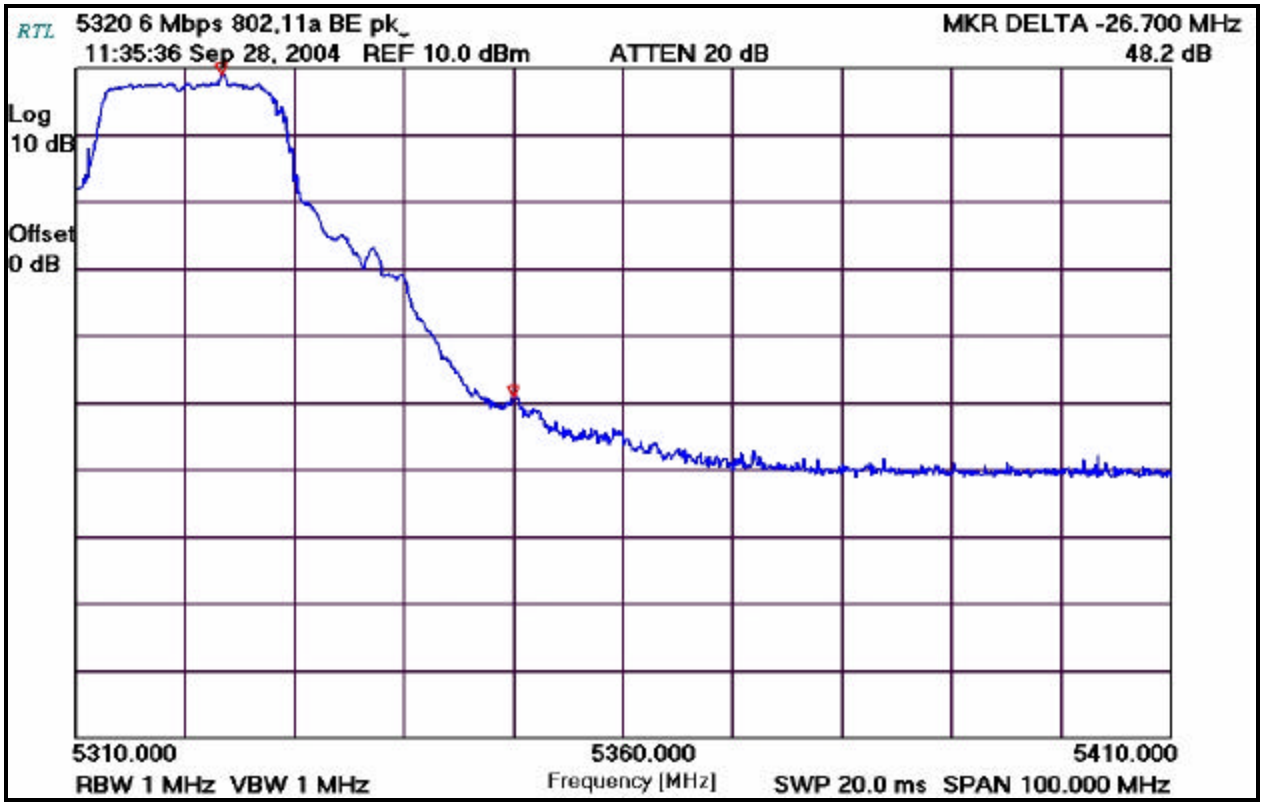
6.5.3.2 CALCULATION OF UPPER BAND EDGE

95.27 dBuV/m is the field strength measurement, from which the delta measurement of 54.4 dB is subtracted (reference plots), resulting in a level of 40.76 dB. This level has a margin of 13.23 dB below the limit of 54 dBuV/m.

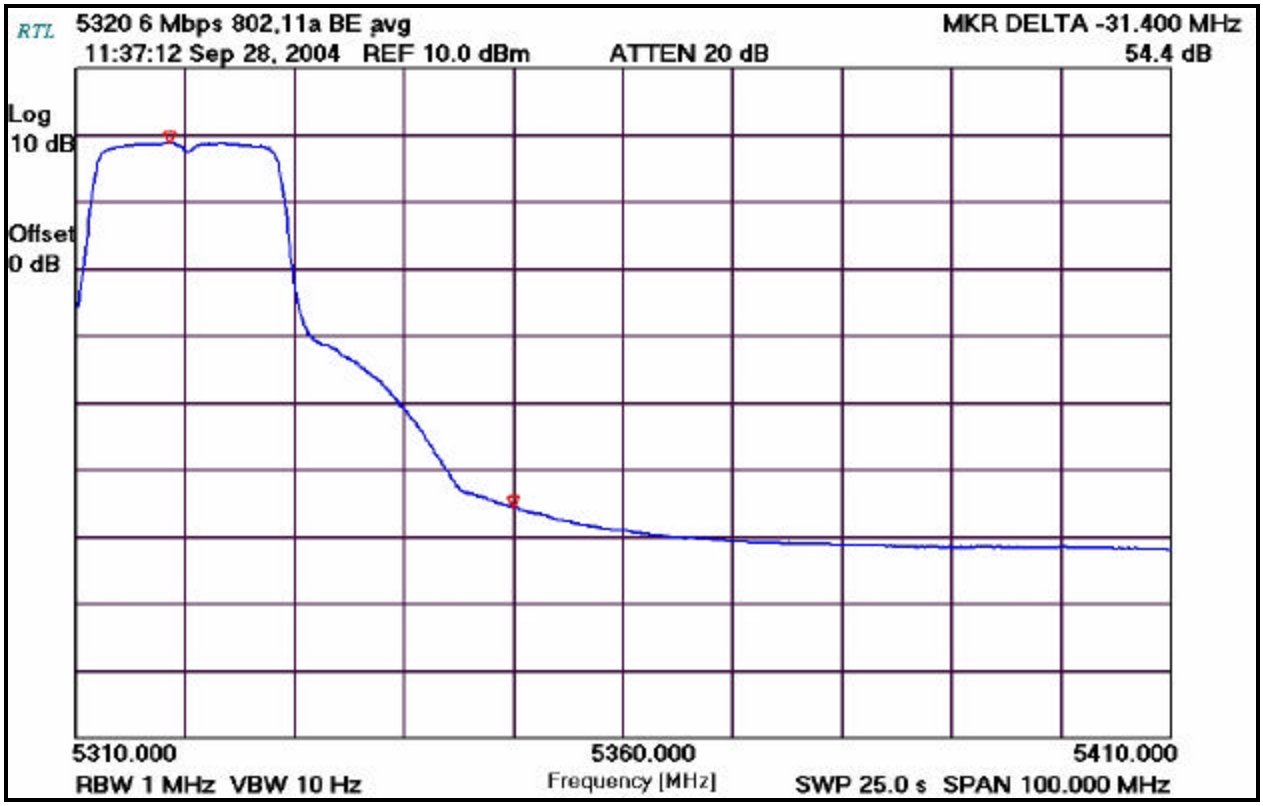
Calculation: 95.27 dBuV/m – 54.4 dB – 54 dBuV/m = -13.23 dB

Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 95.27 dBuV/m
Delta measurement = 54.4 dB

PLOT 6-13: UPPER BAND EDGE: PEAK MEASUREMENT CHANNEL 8 (TX FREQUENCY: 5320 MHZ)



PLOT 6-14: UPPER BAND EDGE: AVERAGE MEASUREMENT CHANNEL 8 (TX FREQUENCY: 5320 MHZ)



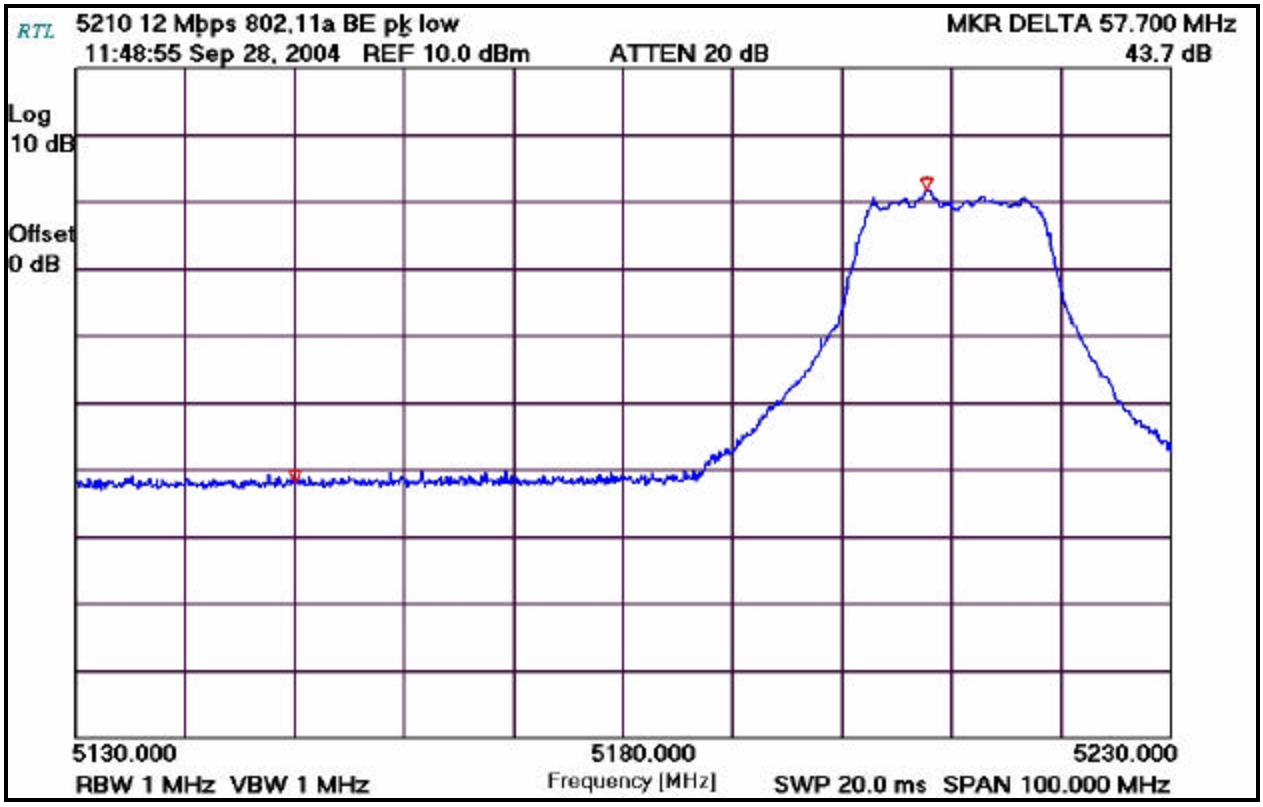
6.5.3.3 CALCULATION OF LOWER BAND EDGE

72.71 dBuV/m is the field strength measurement, from which the delta measurement of 45.1 dB is subtracted (reference plots), resulting in a level of 27.61 dB. This level has a margin of 26.39 dB below the limit of 54 dBuV/m.

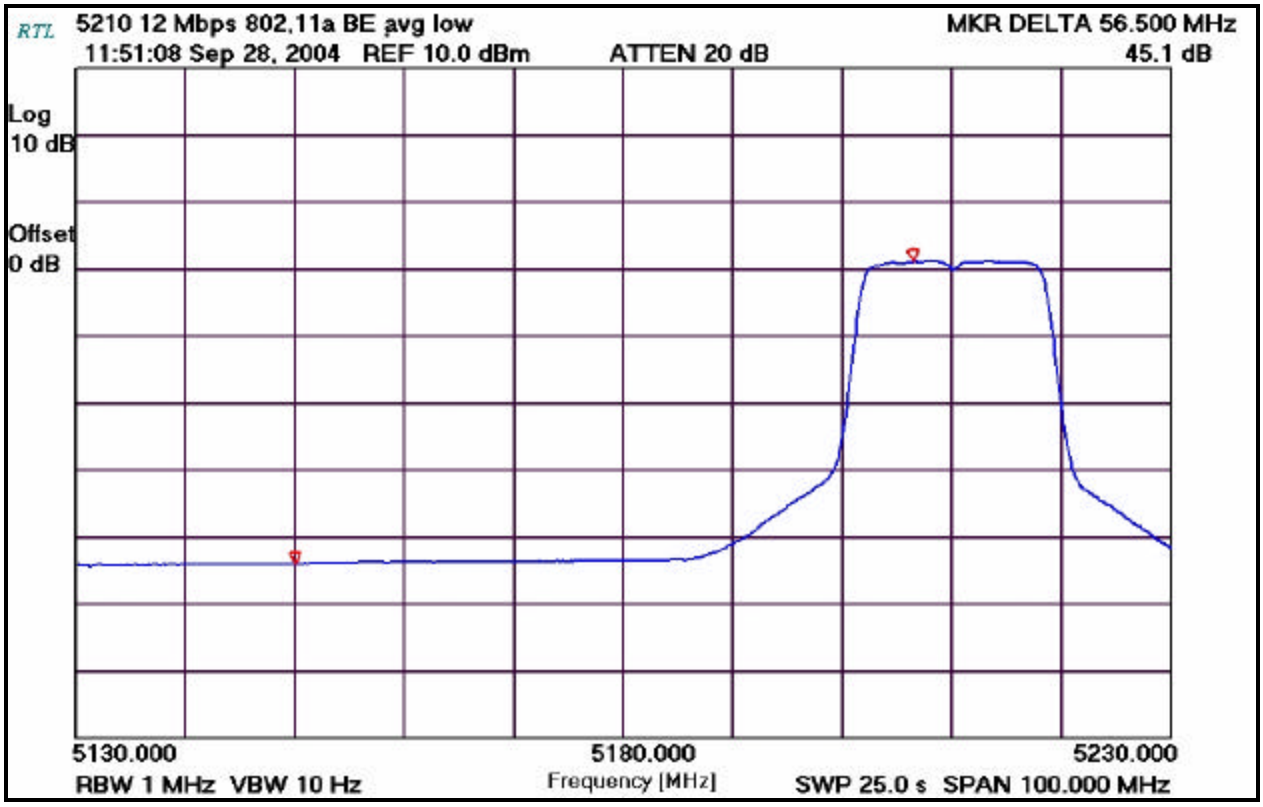
Calculation: 103.4 dBuV/m – 45.1 dB – 54 dBuV/m = -26.39 dB

Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 72.71 dBuV/m
Delta measurement = 45.1 dB

PLOT 6-15: LOWER BAND EDGE: PEAK MEASUREMENT CHANNEL 1 TURBO (TX FREQUENCY: 5210 MHZ)



PLOT 6-16: LOWER BAND EDGE: AVERAGE MEASUREMENT CHANNEL 1 TURBO (TX FREQUENCY: 5210 MHZ)



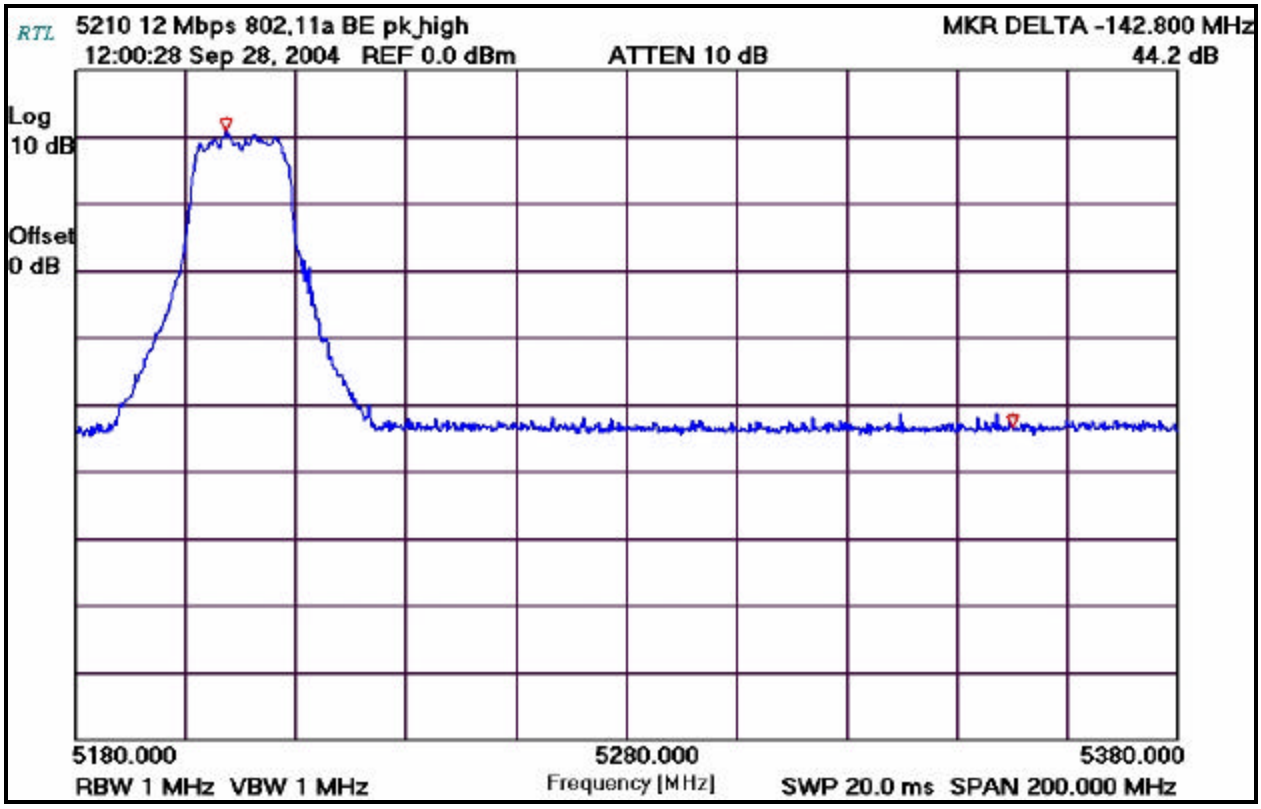
6.5.3.4 CALCULATION OF UPPER BAND EDGE

72.71 dBuV/m is the field strength measurement, from which the delta measurement of 47.4 dB is subtracted (reference plots), resulting in a level of 25.31 dB. This level has a margin of 28.69 dB below the limit of 54 dBuV/m.

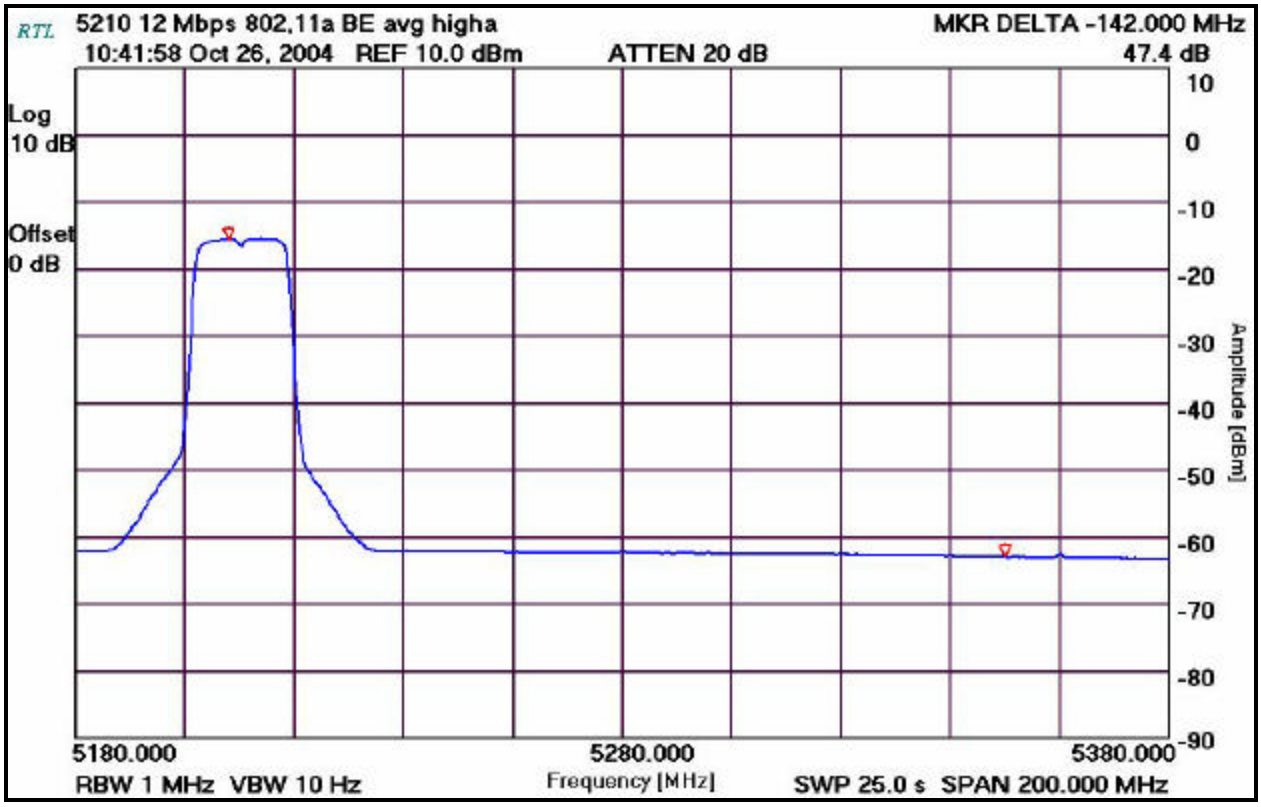
Calculation: 72.71 dBuV/m – 47.4 dB – 54 dBuV/m = -28.69 dB

Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 72.71 dBuV/m
Delta measurement = 47.4 dB

PLOT 6-17: UPPER BAND EDGE: PEAK MEASUREMENT CHANNEL 1 TURBO (TX FREQUENCY: 5210 MHZ)



PLOT 6-18: UPPER BAND EDGE: AVERAGE MEASUREMENT CHANNEL 1 TURBO (TX FREQUENCY: 5210 MHZ)



TEST PERSONNEL:

Daniel W. Biggs	Daniel Biggs	September 28 & October 26, 2004
EMC Test Engineer	Signature	Dates Of Tests

6.6 ANTENNA CONDUCTED SPURIOUS EMISSIONS - §15.247(C); RSS-210 §6.6.2(Q1)

6.6.1 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST PROCEDURES

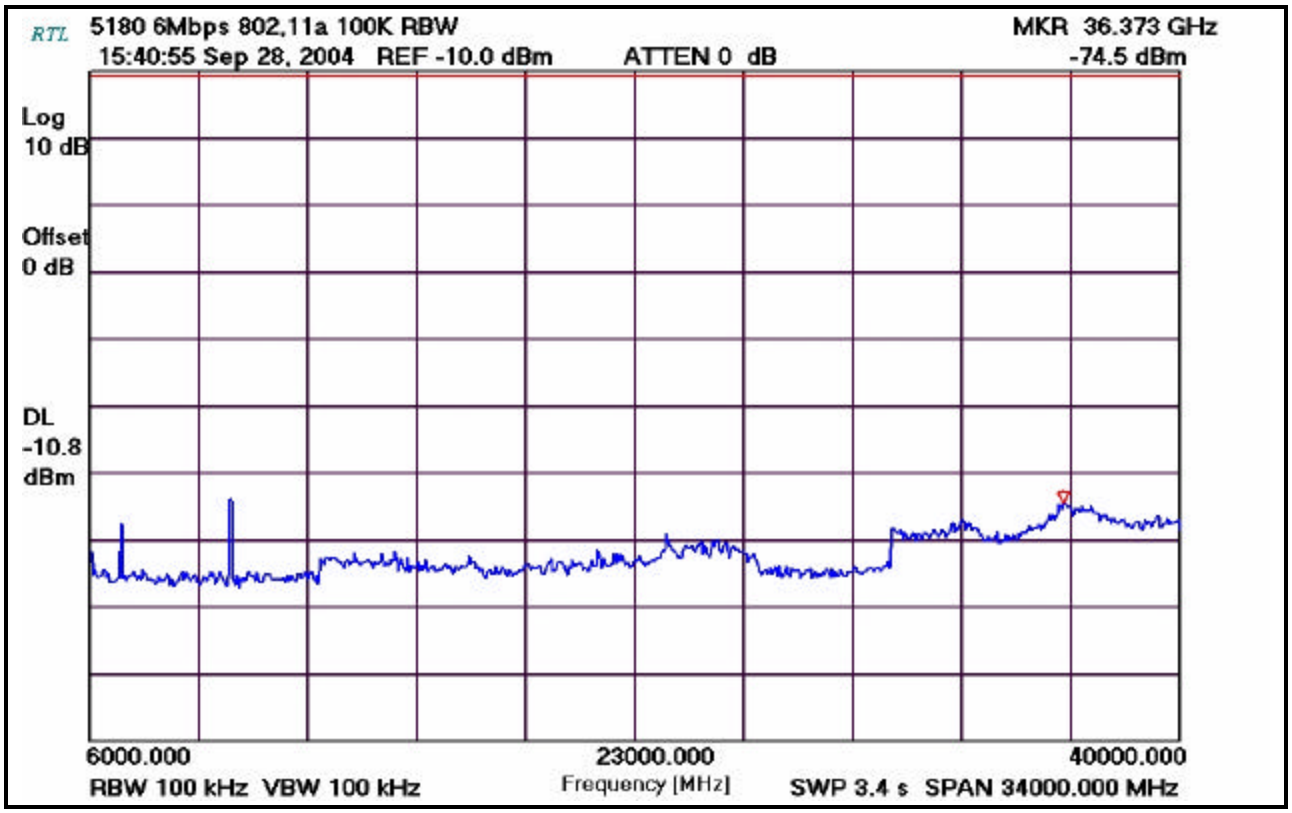
Antenna spurious emissions per FCC 15.247(c) was measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. The modulated carrier was identified at the following frequencies: 5180, 5210 (Turbo), and 5320 MHz.

TABLE 6-10: ANTENNA CONDUCTED SPURIOUS TEST EQUIPMENT

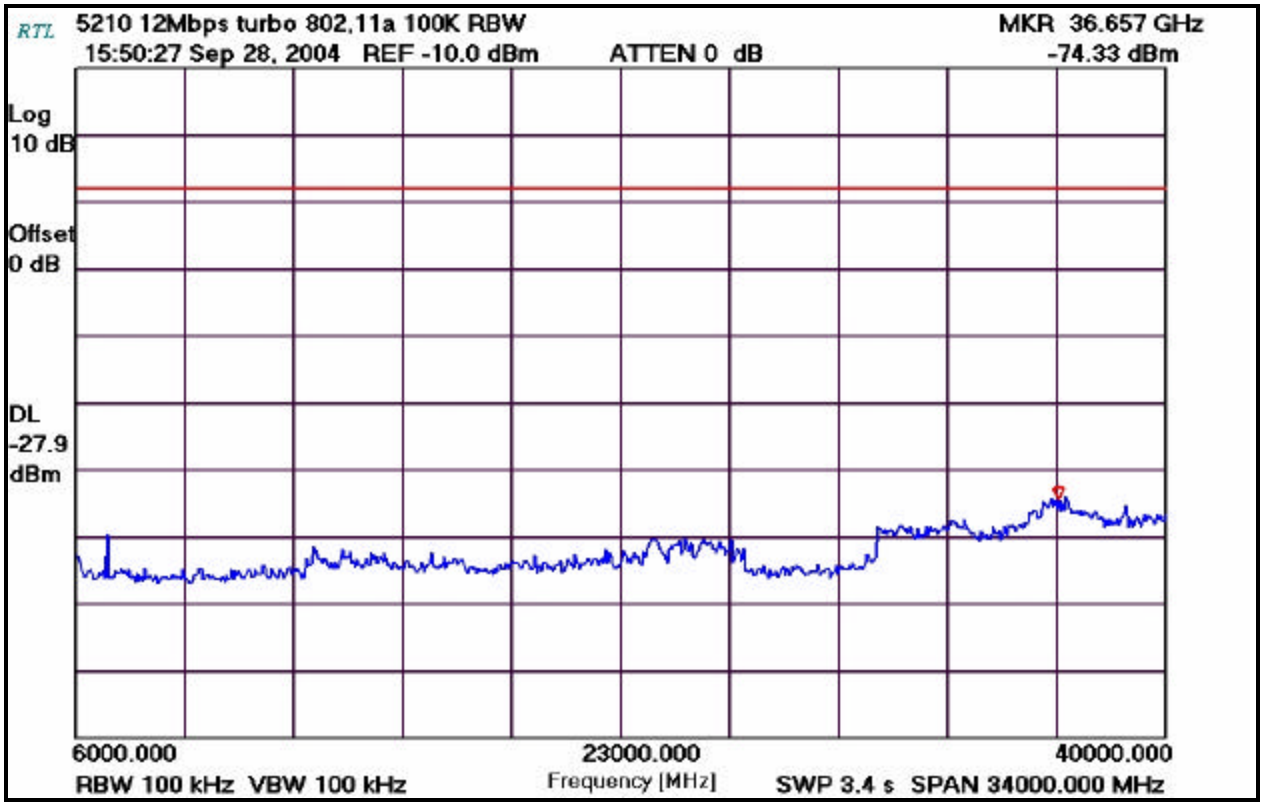
RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	8/11/05

6.6.2 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST RESULTS

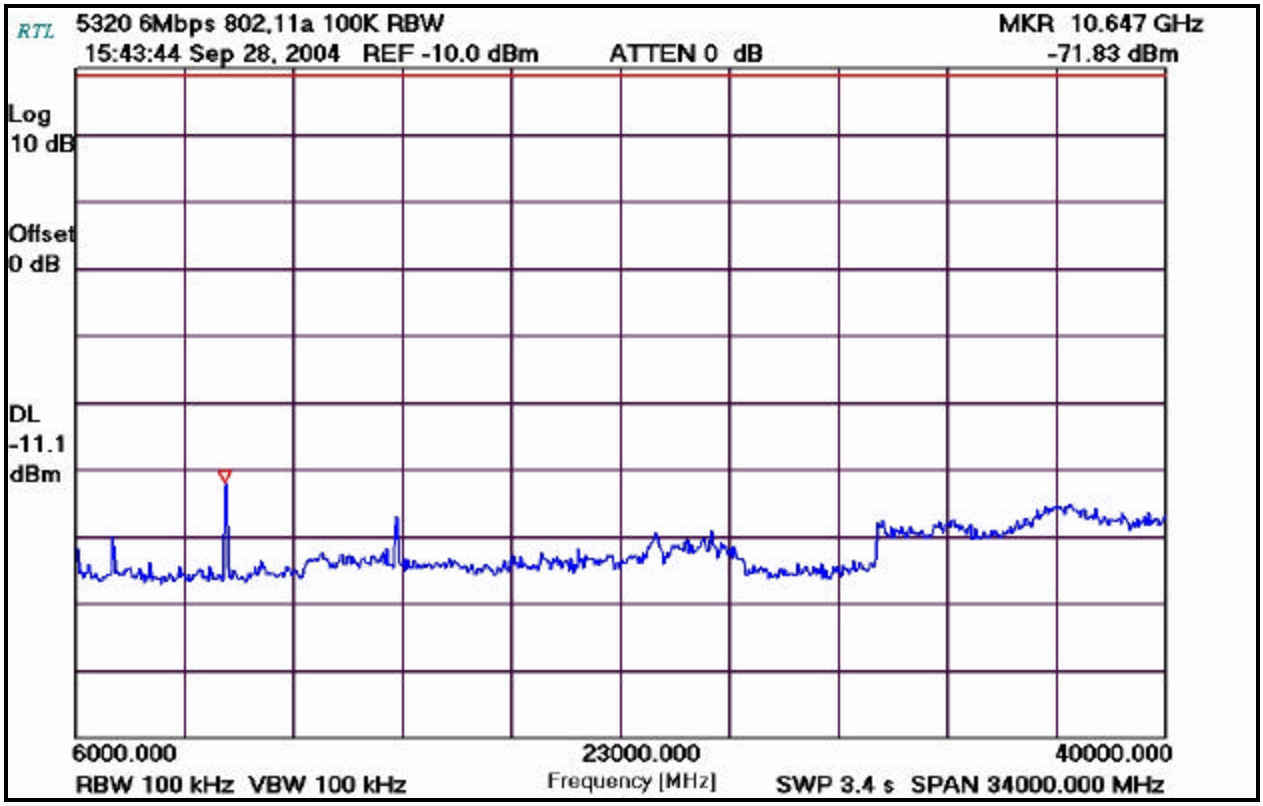
PLOT 6-19: CONDUCTED SPURIOUS EMISSIONS CHANNEL 1 (TX FREQUENCY: 5180 MHZ)



PLOT 6-20: CONDUCTED SPURIOUS EMISSIONS CHANNEL 1 TURBO (TX FREQUENCY: 5210 MHZ)



PLOT 6-21: CONDUCTED SPURIOUS EMISSIONS CHANNEL 8 (TX FREQUENCY: 5320 MHZ)



TEST PERSONNEL:

Daniel W. Biggs	Daniel Biggs	September 28, 2004
EMC Test Engineer	Signature	Date Of Test

7 TEST RESULTS FOR 802.11A – 5725 - 5850 MHZ

7.1 6 DB BANDWIDTH - §15.247(A)(2); RSS-210 §6.1.1(C)

7.1.1 6 DB BANDWIDTH TEST PROCEDURE – MINIMUM 6 DB BANDWIDTH

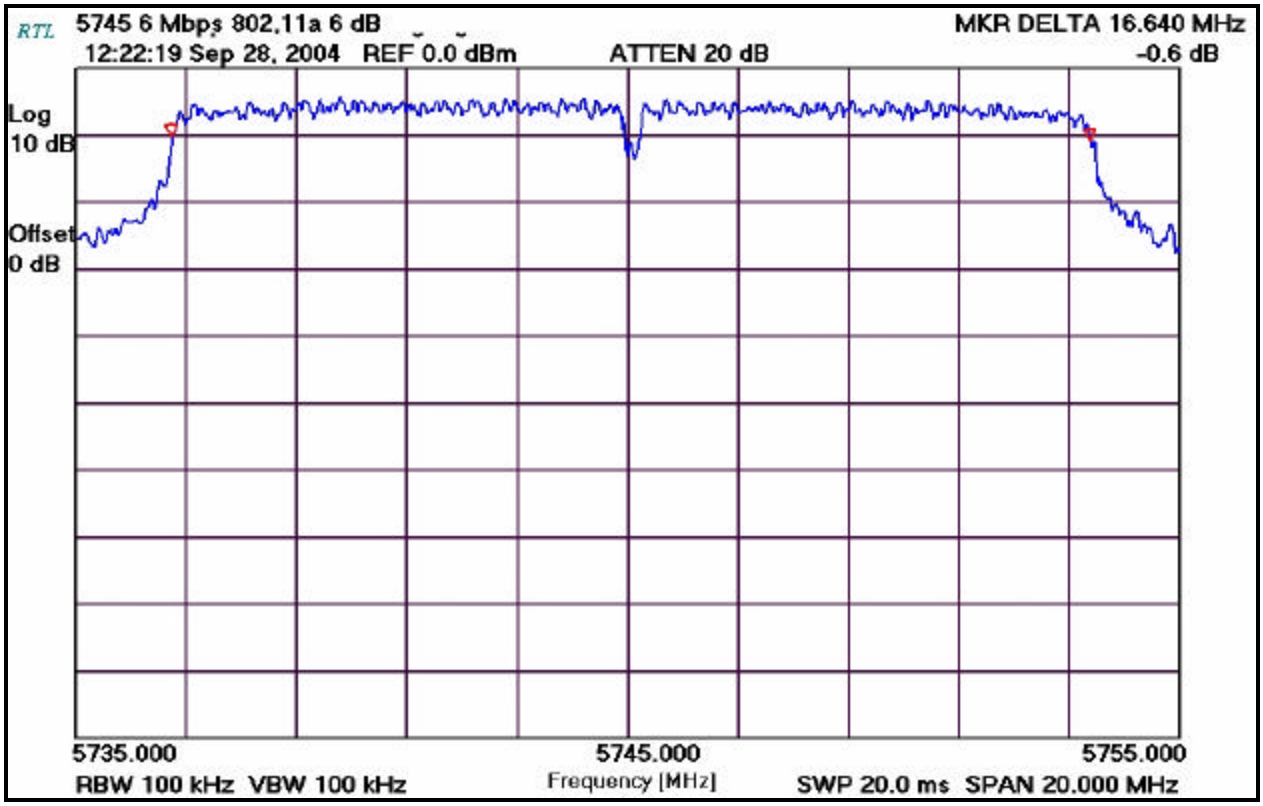
The minimum 6 dB bandwidths per FCC 15.247 (a)(2) were measured using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 1 MHz. The device was modulated using the maximum 6 Mbps data rate. The minimum 6 dB bandwidths are presented in Table 7-1.

7.1.2 6 DB BANDWIDTH TEST RESULTS

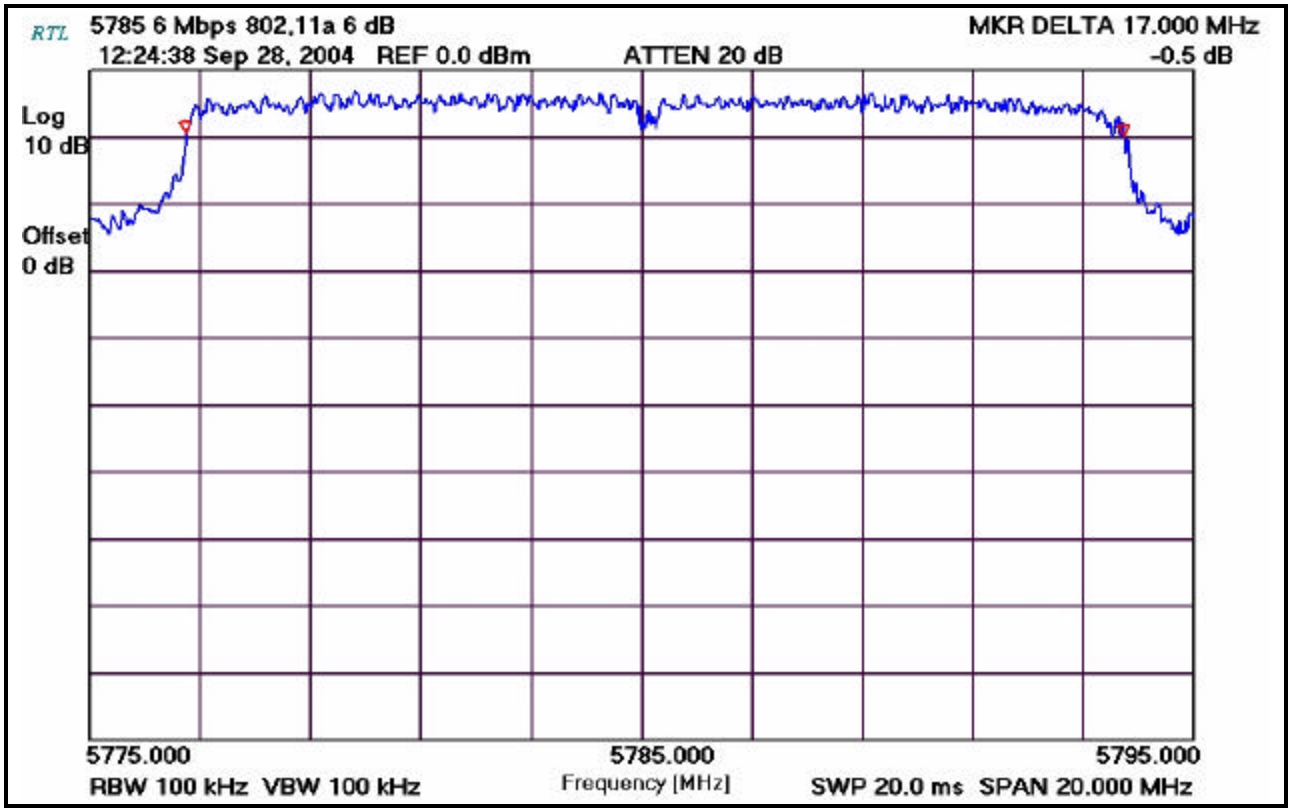
TABLE 7-1: 6DB BANDWIDTH TEST DATA 802.11 A

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum limit (MHz)	Pass/ Fail
9	5745	16.64	0.5	Pass
11	5785	17.0	0.5	Pass
13	5825	16.64	0.5	Pass

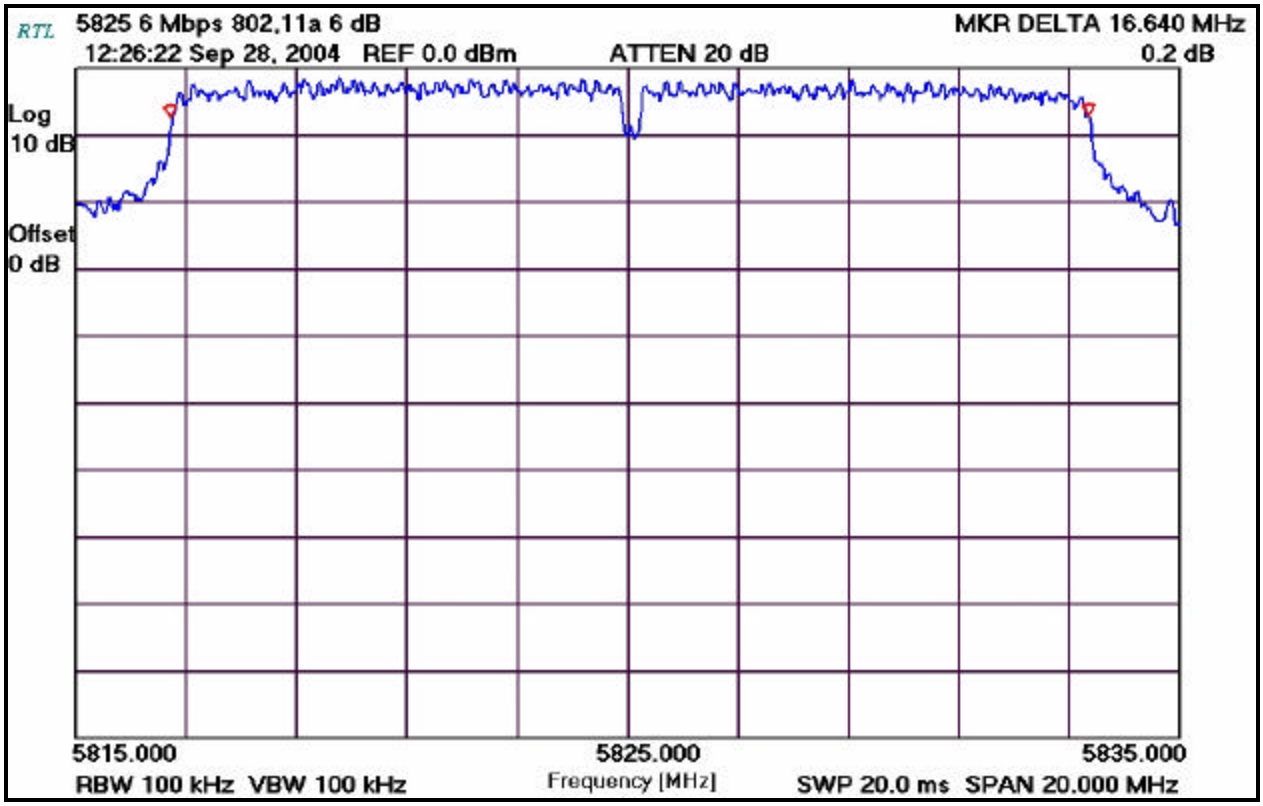
PLOT 7-1: 6 DB BANDWIDTH (TX FREQUENCY: 5745 MHZ – 6 MB/S)



PLOT 7-2: 6 DB BANDWIDTH (TX FREQUENCY: 5785 MHZ – 6 MB/S)



PLOT 7-3: 6 DB BANDWIDTH CHANNEL 13 (TX FREQUENCY: 5825 MHZ – 6 MB/S)



7.2 PEAK OUTPUT POWER - §15.247(B)(1); RSS-210 §6.6.2(Q1)(O)

7.2.1 POWER OUTPUT TEST PROCEDURE

A conducted power measurement of the EUT was measured using an Agilent 4416A EPM-P Series Power Meter with an E9323A Peak and Average Power Sensor.

TABLE 7-2: POWER OUTPUT TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
901186	Agilent Technologies	E9323A	Peak & Average Power Sensor (50 MHz - 6 GHz)	US40410380	8/2/05
901184	Agilent Technologies	E4416A	EPM-P Power Meter, Single Channel	GB41050573	8/2/05
901140	Weinschel Corp.	47-10-34 DC-18GHz	Attenuator, 50W 10dB	BK6203	5/13/05

7.2.2 POWER OUTPUT TEST DATA

TABLE 7-3: POWER OUTPUT TEST DATA - 802.11A

FREQUENCY (MHZ)	CHANNEL	PEAK POWER CONDUCTED OUTPUT (dBm)
5745	9	13.2
5785	11	13.2
5825	13	13.0

TEST PERSONNEL:

Daniel W. Biggs	Daniel Biggs	October 1, 2004
EMC Test Engineer	Signature	Date Of Test

7.3 POWER SPECTRAL DENSITY - §15.247(D); RSS-210 §6.6.2(Q1)(O)

7.3.1 POWER SPECTRAL DENSITY TEST PROCEDURE

The power spectral density per FCC 15.247(d) was measured using a 50 ohm spectrum analyzer with the resolution bandwidth set at 3 kHz, the video bandwidth set at 10 kHz, and the sweep time set at 1000 seconds. The spectral lines were resolved for the modulated carriers at 5.745 GHz, 5.785 GHz, and 5.825 GHz respectively. These levels are below the +8 dBm limit. See the power spectral density table and plots that follow.

TABLE 7-4: POWER SPECTRAL DENSITY TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900931	Hewlett Packard	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771	6/23/05

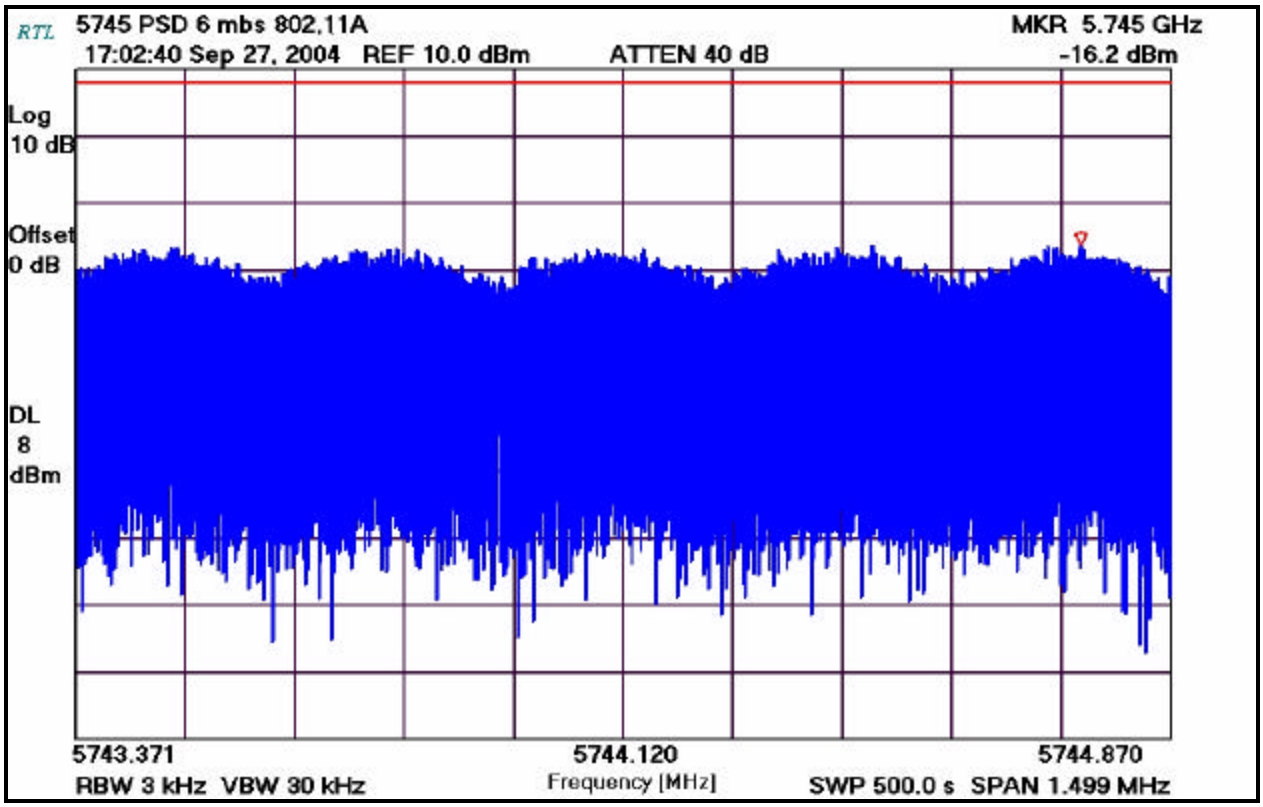
7.3.2 POWER SPECTRAL DENSITY TEST DATA

TABLE 7-5: POWER SPECTRAL DENSITY TEST DATA 802.11A

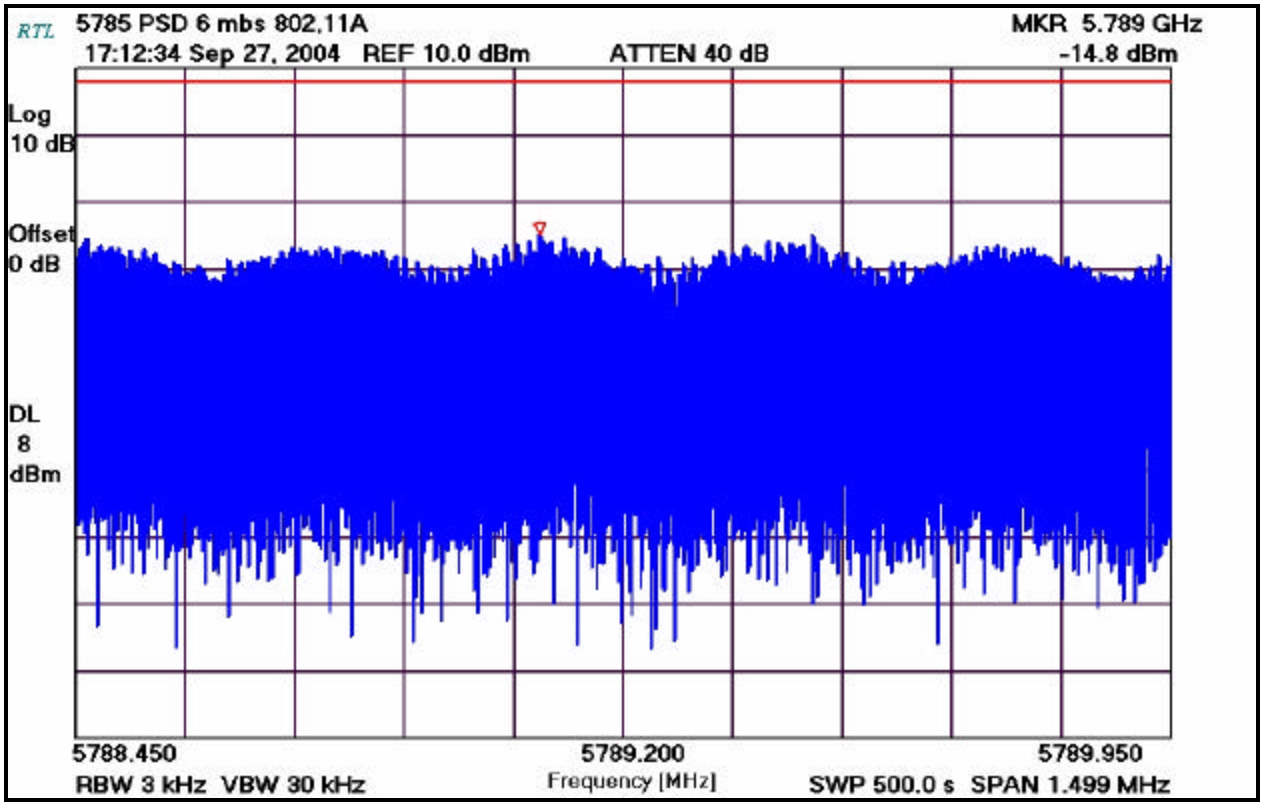
Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
9	5745	-16.2	8	**Pass**
11	5785	-14.8	8	**Pass**
13	5825	-12.9	8	**Pass**

7.3.3 POWER SPECTRAL DENSITY PLOTS - 802.11A

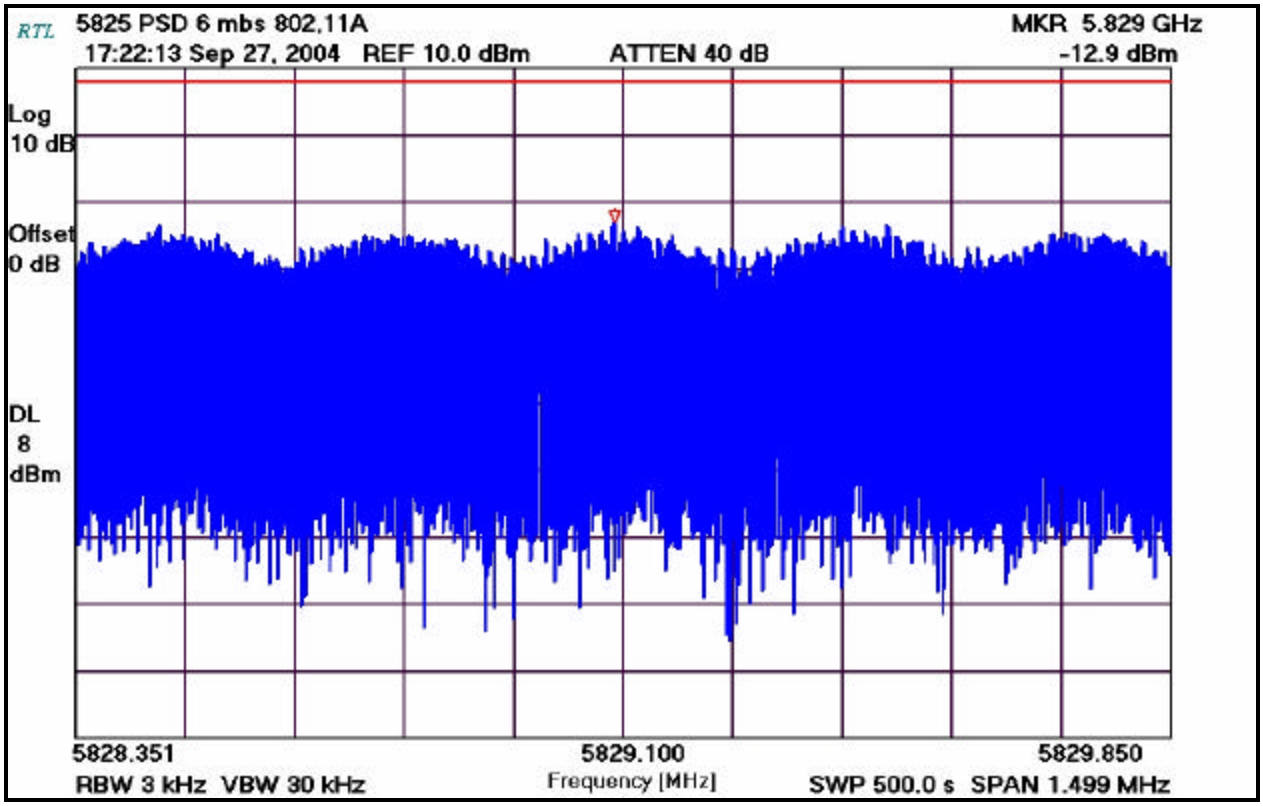
PLOT 7-4: POWER SPECTRAL DENSITY: CHANNEL 9 (5745 MHZ – 6 MB/S)



PLOT 7-5: POWER SPECTRAL DENSITY: CHANNEL 11 (5785 MHZ – 6 MB/S)



PLOT 7-6: POWER SPECTRAL DENSITY: CHANNEL 13 (5825 MHZ – 6 MB/S)



TEST PERSONNEL:

Daniel W. Biggs	Daniel Biggs	September 27, 2004
EMC Test Engineer	Signature	Date Of Test

7.4 COMPLIANCE WITH THE BAND EDGE – FCC §15.247(C), §15.205 RSS-210 §6.6.2(Q1)(O)

7.4.1 LIMITS OF BAND EDGE MEASUREMENT

Below -20 dB of the highest emission level of operating band (in 100 kHz resolution bandwidth).

7.4.2 BAND EDGE TEST PROCEDURE

The transmitter output was connected to a spectrum analyzer through a low loss cable. The RBW was set to 1 MHz and the VBW was set to 10 Hz with a suitable span including 100 MHz bandwidth from band edge.

TABLE 7-6: BAND EDGE TEST EQUIPMENT

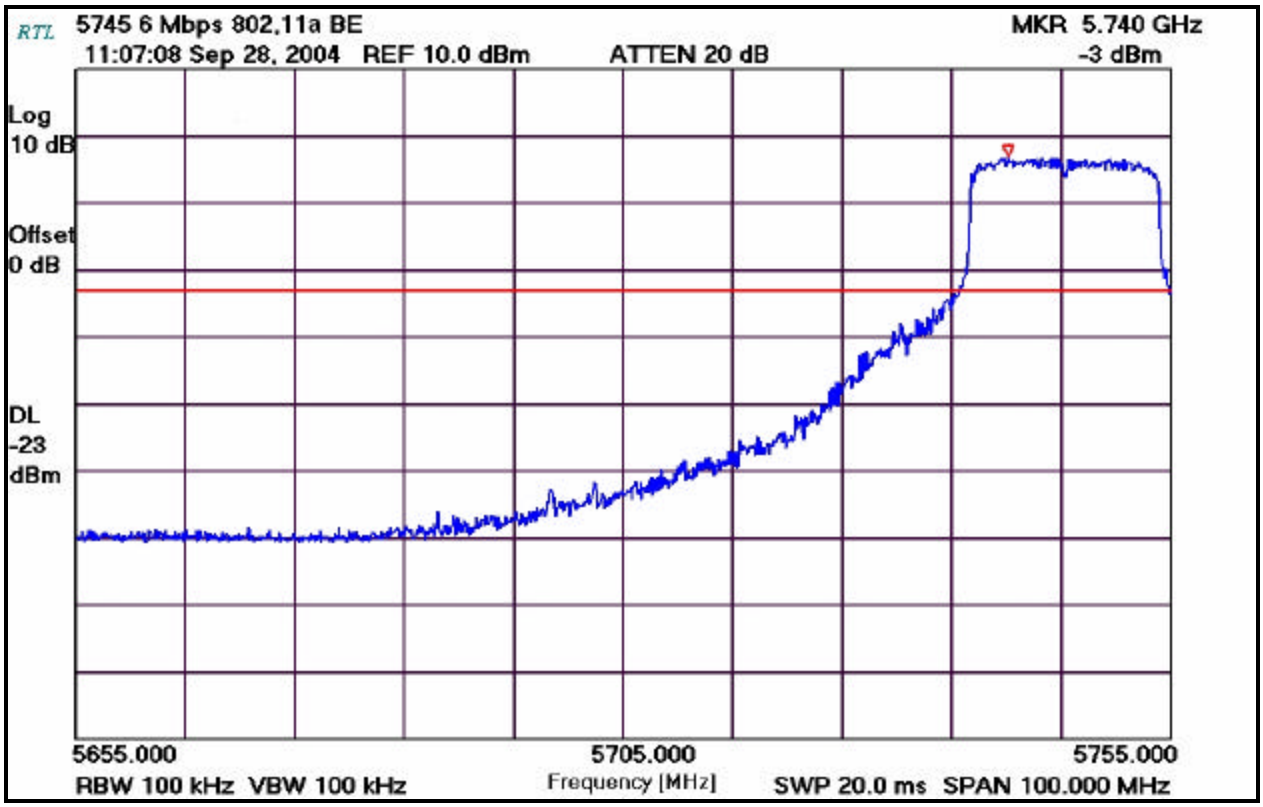
RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	6/23/05

7.4.3 BAND EDGE TEST RESULTS

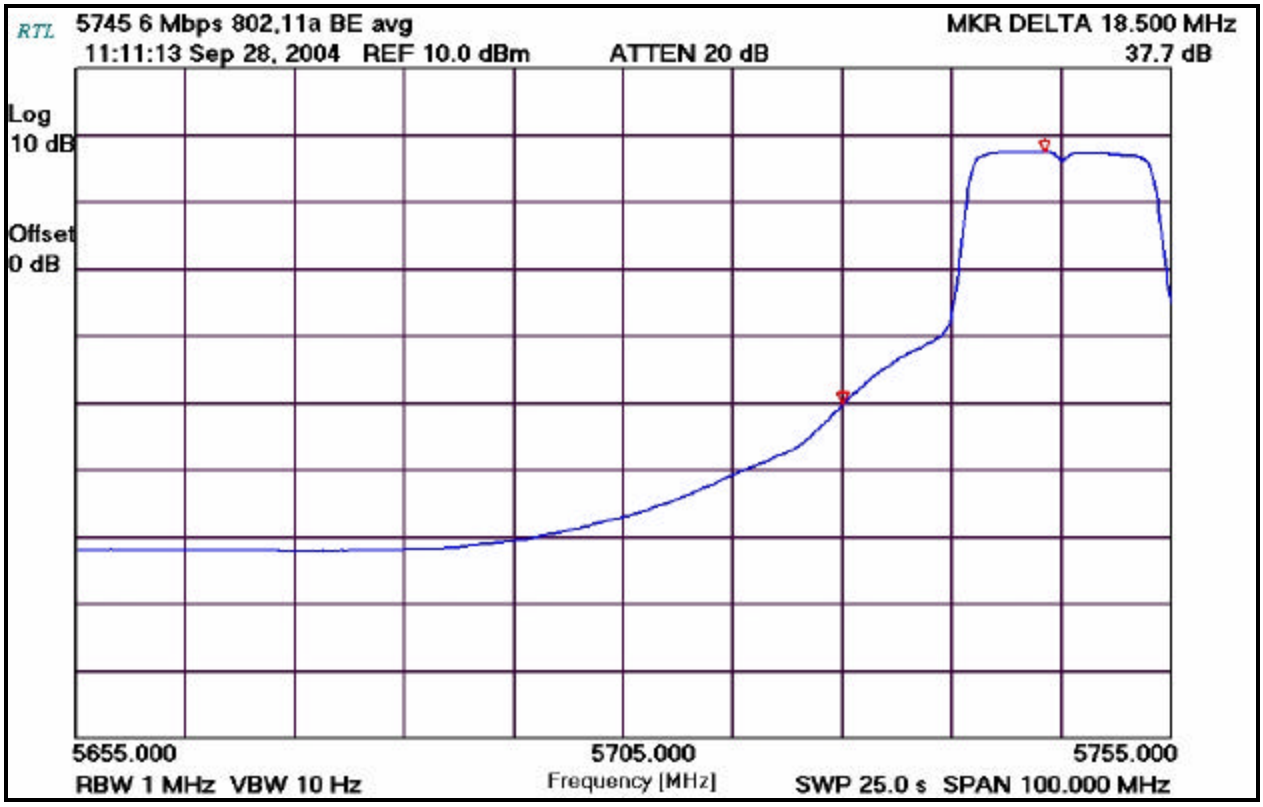
7.4.3.1 LOW CHANNEL BAND EDGE

The spectrum plots show the display line 20 dB offset from the maximum signal level. It shows compliance with the Part 15.247 requirement.

PLOT 7-7: LOWER BAND EDGE: PEAK MEASUREMENT CHANNEL 9 (TX FREQUENCY: 5745 MHZ – 6 MB/S)



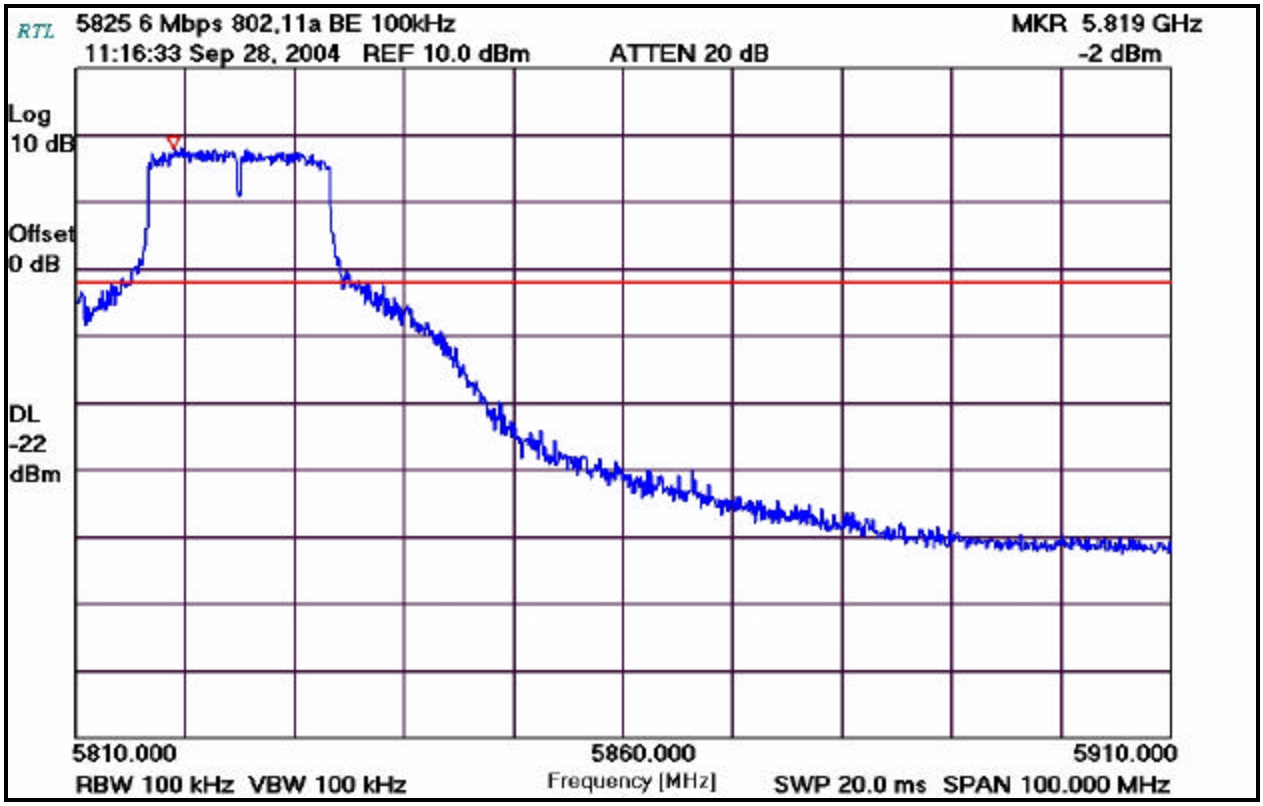
PLOT 7-8: LOWER BAND EDGE: AVERAGE MEASUREMENT CHANNEL 9 (TX FREQUENCY: 5745 MHZ – 6 MB/S)



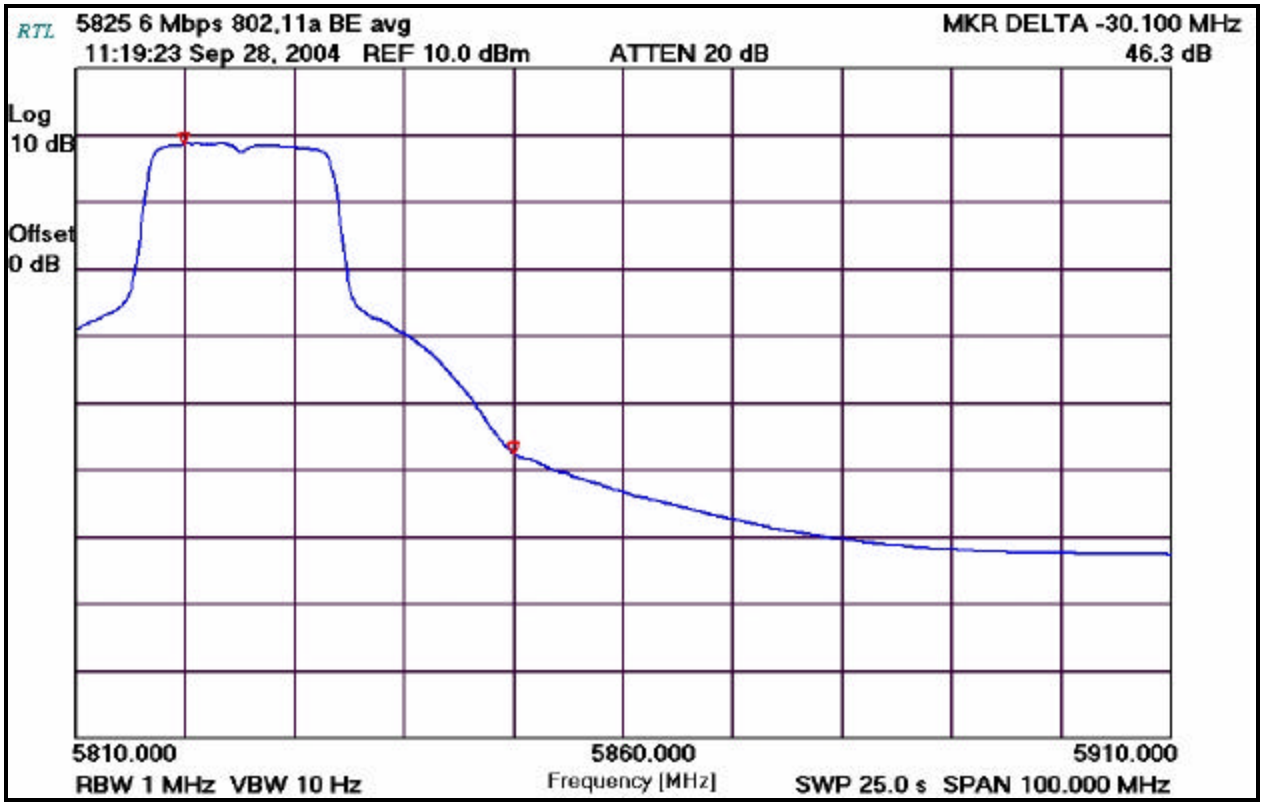
7.4.3.2 HIGH CHANNEL BAND EDGE

The spectrum plots show the display line 20 dB offset from the maximum signal level. It shows compliance with the Part 15.247 requirement.

PLOT 7-9: UPPER BAND EDGE: PEAK MEASUREMENT CHANNEL 13 (TX FREQUENCY: 5825 MHZ – 6 MB/S)



PLOT 7-10: UPPER BAND EDGE: AVERAGE MEASUREMENT CHANNEL 13 (TX FREQUENCY: 5825 MHZ – 6 MB/S)



TEST PERSONNEL:

Daniel W. Biggs	Daniel Biggs	September 28, 2004
EMC Test Engineer	Signature	Date Of Test

7.5 ANTENNA REQUIREMENT – FCC §15.203

7.5.1 APPLICABLE STANDARD

According to Part 25.203, an intentional radiating device shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with this device. According to Part 15.247(b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.5.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is a dipole antenna with a connector. The maximum gain is stated as 5 dBi.

7.6 ANTENNA CONDUCTED SPURIOUS EMISSIONS - §15.247(C); RSS-210 §6.6.2(Q1)(O)

7.6.1 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST PROCEDURES

Antenna spurious emissions per FCC 15.247(c) was measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. The modulated carrier was identified at the following frequencies: 5745 MHz and 5825 MHz.

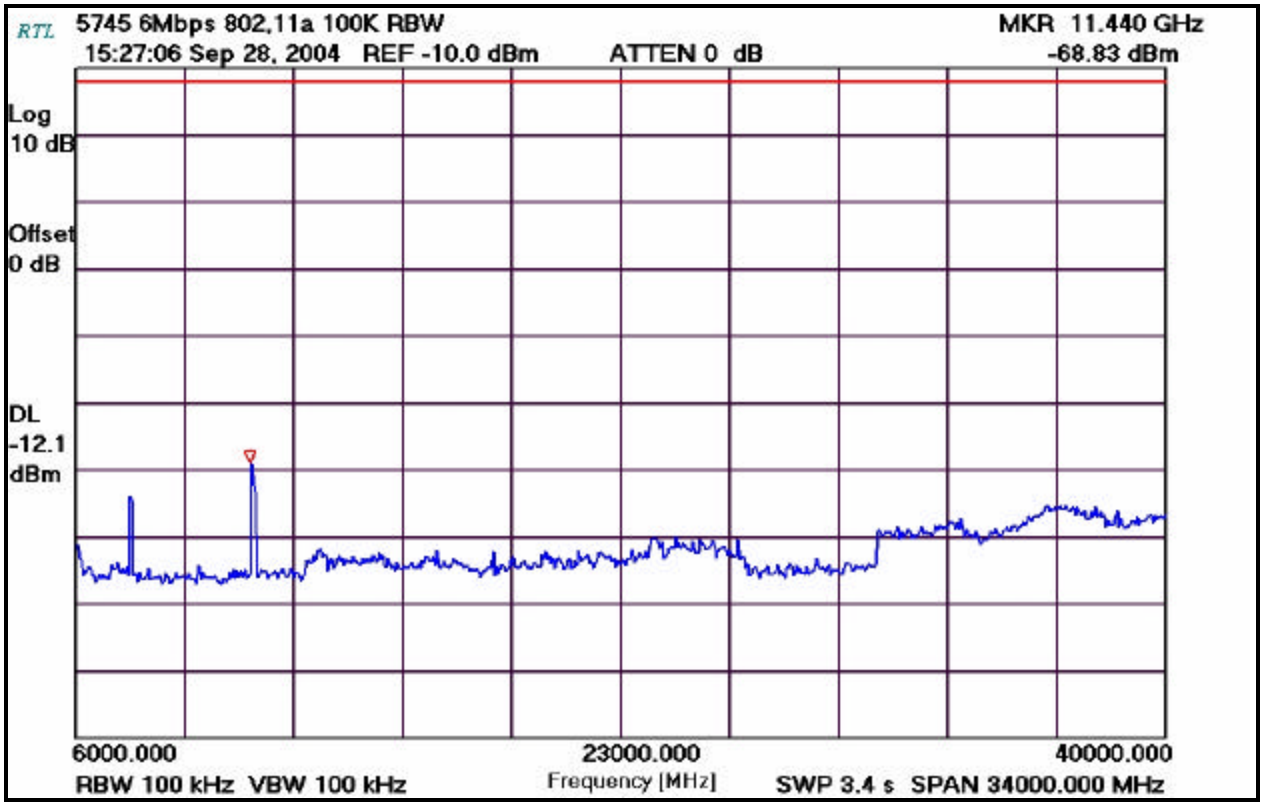
TABLE 7-7: ANTENNA CONDUCTED SPURIOUS TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	8/11/05

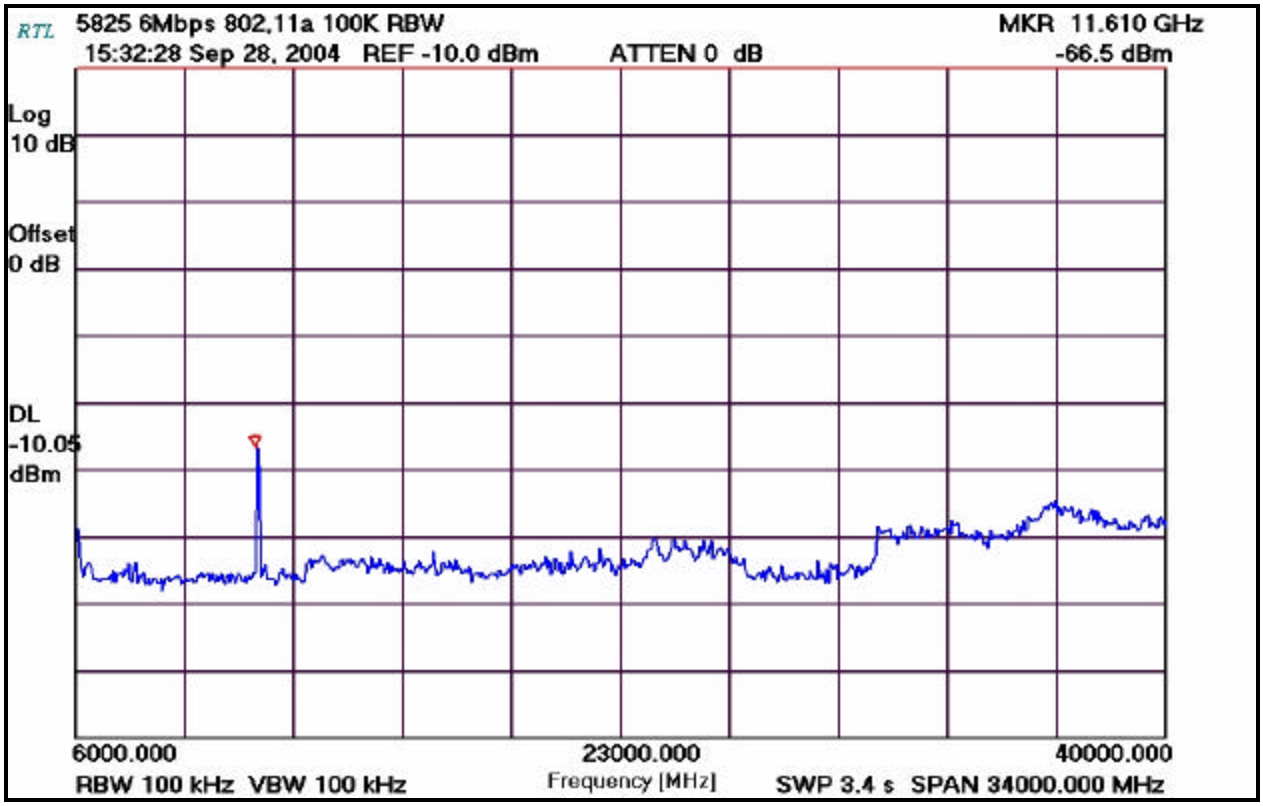
7.6.2 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST RESULTS

7.6.2.1 802.11A

PLOT 7-11: CONDUCTED SPURIOUS EMISSIONS CHANNEL 9 (TX FREQUENCY: 5745 MHZ – 6 MB/S)



PLOT 7-12: CONDUCTED SPURIOUS EMISSIONS CHANNEL 13 (TX FREQUENCY: 5825 MHZ – 6 MB/S)



TEST PERSONNEL:

Daniel W. Biggs	Daniel Biggs	September 28, 2004
EMC Test Engineer	Signature	Date Of Test

8 CONCLUSION

The data in this measurement report shows that the EUT as tested, ADI Engineering Model: Pronghorn, FCC ID: SNR-830-00000-00, complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations, and Industry Canada RSS-210.