Engineering and Testing for EMC and Safety Compliance

CERTIFICATION APPLICATION REPORT
FCC Part 15.247 & INDUSTRY CANADA RSS-210

Test Lab:	Applicant:
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FCC ID/ IC ID:	GM39160RA2050 / 2739D-91602050	**Date of Test Report:**	November 3, 2005
PlatForm:	802.11 Application Platform	**RTL Work Order Number:**	2005076B
Model(s):	9160-RA2050	**RTL Quote Number:**	QRTL05-022E

American National Standard Institute:	ANSI C63.4: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
FCC Classification:	DTS – Part 15 Digital Transmission System
FCC Rule Part(s):	FCC Rules Part 15.247: Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System 97-114: Amendment of Parts 2 and 15 of the Commission's Rules Regarding Spread Spectrum Transmitters, ET Docket No. 96-8 FCC Rules Part 15.407 General Technical Requirements
Industry Canada:	RSS-210: Low Power License-Exempt Communications Devices
Digital Interface Information	Digital Interface was found to be compliant

Frequency Range (MHz)	Output Power (W)	Frequency Tolerance	Emission Designator
2412-2462	0.100	N/A	N/A
5150-5250	0.050	N/A	N/A
5250-5350	0.091	N/A	N/A

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, FCC 97-114, ANSI C63.4, and Industry Canada RSS-210.

Signature: 

Date: November 3, 2005

Typed/Printed Name: Desmond A. Fraser

Position: President

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1 General Information

1.1 Scope

Applicable Standards:

- FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.
- FCC Rules Part 15.407: General Technical Requirements.
- Industry Canada RSS-210: Low Power License-Exempt Communications Devices

1.2 Description of EUT

Equipment Under Test	802.11 Application Platform
Model	9160-RA2050
Modulation Type	DBPSK, DQPSK, CCK, OFDM
Modulation Technology	DSSS, CCK
Transfer Rate	54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, and 1 Mbps (option: Enhanced Proprietary Turbo Mode up to 108 Mbps)
Frequency Range	802.11a, b & g: 2412–2462 MHz; 5.15-5.35 GHz, 5.725-5.825 GHz
Output Power	20 dBm typical
Power Supply	110-230 VAC
Antenna Connector Type	Dual U.FL connected to reverse thread SMA
Antenna Types	Mobile Mark OD12-2400 Collinear Omni 12 dBi Centurion CAF94180 Patch 8.5 dBi Maxrad MYP24014 Yagi 14 dBi Gabriel QF2-52-N Dish 28 dBi Pacific OD58-12 Collinear Omni 12 dBi MaxRad MP52010NF Panel 10 dBi MaxRad MFB51510 Collinear Omni 10 dBi Radiall R380600201 Collinear Omni 6 dBi

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 2003).

1.4 Related Submittal(s)/Grant(s)

This is an original application for certification Psion Teklogix, Inc., Model: 9160-RA2050, FCC ID: GM39160RA2050.

1.5 Modifications

No physical modifications were made to the EUT, but power level settings had to be specifically adjusted for band edge compliance for each of the antennas. The manufacturer understands that this product must be configured as tested when the product is sold in the marketplace. A separate attestation letter has been provided.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested for 802.11b, 802.11g, and 802.11a:

Table 2-1: Channels Tested for 802.11b – 1 Mbps

Channel	Frequency
1	2412
6	2437
11	2462

Table 2-2: Channels Tested for 802.11g – 6 Mbps

Channel	Frequency
1	2412
6	2437
11	2462

Table 2-3: Channels Tested for 802.11a – 6 Mbps/12Mbps Turbo Mode

Channel	Frequency
36	5180
42	5210 (turbo)
48	5240
50	5250 (turbo)
52	5260
58	5290 (turbo)
64	5320
149	5745
152	5760 (turbo)
157	5785
160	5800 (turbo)
161	5805
165	5825

2.2 Exercising the EUT

The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted. There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

2.3 Test Result Summary

Table 2-4: Test Result Summary For FCC Rules and Regulations – FCC Part 15, Subpart C (Section 15.247)

Standard	Test	Pass/Fail or N/A
FCC 15.207/15.407(b)(5)	AC Power Conducted Emissions	Pass
FCC 15.247(a)(2)	Spectrum Bandwidth of DSSS System – Limit: 500 kHz Minimum	Pass
FCC 15.247(b)	Maximum Peak Power Output - Limit: 30 dBm max.	Pass
FCC 15.247(c)	Antenna Conducted Spurious Emissions – Limit: 15.209	Pass
FCC 15.247(d)	Power Spectral Density – Limit: 8 dBm max.	Pass
FCC 15.247(c)	Band Edge Measurement – Limit: 20 dB less than peak level of fundamental	Pass
FCC 15.407 (b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30 MHz – 40 GHz	Pass
FCC 15.407	Band Edge Measurement	Pass
15.407 (a/1/2/3)	Peak Transmit Power	Pass
15.407(a)(6)	Peak Power Excursion	Pass
15.407(a/1/2/3)	Peak Power Spectral Density – Limit: 5180; 5240; 5210 - 4 dBm; 5260, 5320 - 11 dBm	Pass
15.407(g)	Frequency Stability	Pass

2.4 Test System Details

The test sample was received on April 11, 2005. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following tables.

Table 2-5: Equipment Under Test (EUT)

Part	Manufacturer	Model	Serial #	FCC ID	Cable Description	RTL Bar Code
Wireless Access Point	Psion	9160	ES0-0006	GM39160 RA2050	1.7 m shielded power; 1 m unshielded serial; 1 m unshielded Ethernet; 36" shielded RT SMA m-N m RG223/U antenna cable; 18" RT SMA m-Nm LMR240 antenna cable	16720
Collinear OMNI Antenna	Mobile Mark	OD12-2400	N/A	N/A	N/A	16731
Collinear Omni Antenna	Pacific	OD58-12	N/A	N/A	N/A	16623
Collinear Omni Antenna	MaxRad	MFB51510	N/A	N/A	N/A	16674
Collinear Omni Antenna	Radiall	R380600201	N/A	N/A	N/A	16673
YAGI Antenna	MaxRad	MYP24014PTNR	N/A	N/A	34" Shielded	16663
Patch Antenna	Centurion	CAF94180	NA	N/A	10.5" Shielded	16732
Dish Antenna	Gabriel	Quickfire QF2-52-N	N/A	N/A	N/A	16676
Panel Antenna	MaxRad	MP52010NF	N/A	N/A	N/A	16677

Table 2-6: Support Equipment

Part	Manufacturer	Model	Serial #	FCC ID	Cable Description	RTL Bar Code
Laptop	Toshiba	Satellite 1905-S301	92043315C	N/A	3 m unshielded power	16621
USB Mobile Port Replicator	Targus	PA070	430-0019-001B	N/A	0.9 m unshielded I/O	16622
19V 4.74A AC Adaptor	EDA Power Elec.	EA1060B	N/A	N/A	1.9 m unshielded AC power, 1.2 m unshielded DC power	16672
Power Over LAN Hub	ADI Engineering	POWERDSINE 6001	10443604002008 0B03	N/A	2.1 m unshielded Ethernet	16646

2.5 Configuration of Tested System

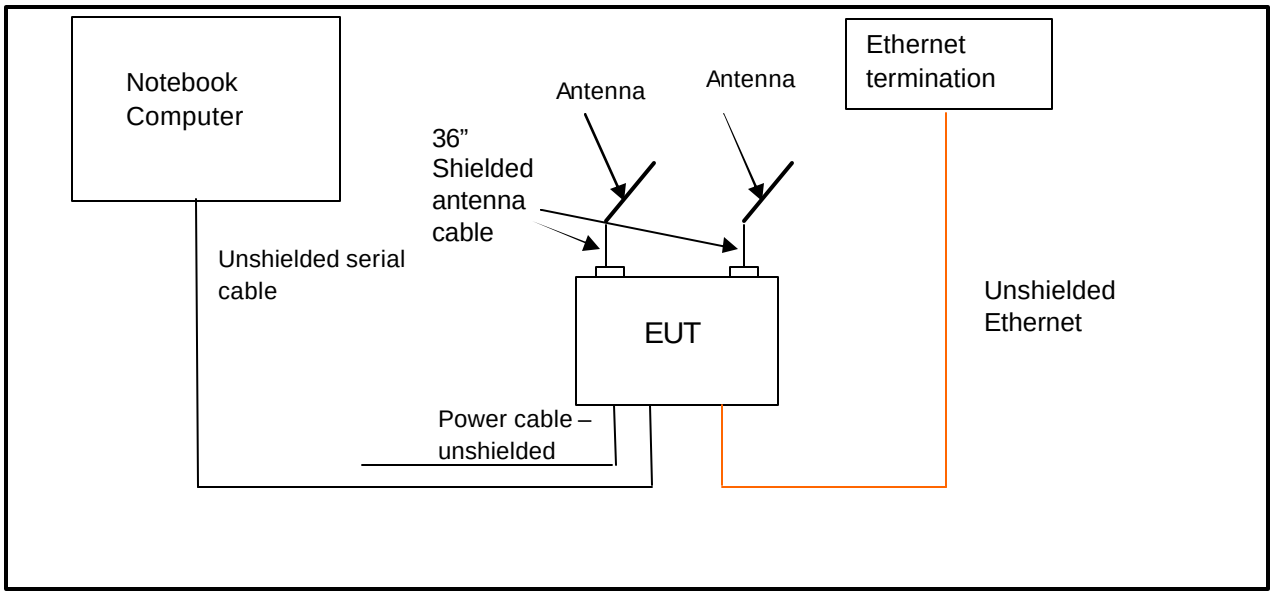


Figure 2-1: Configuration of System Under Test

3 Peak Output Power - §15.247(b)(1); RSS-210 §A8.4(4)

3.1 Power Output Test Procedure

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

Power level settings had to be specifically adjusted for band edge compliance for each of the antennas. The manufacturer understands that this product must be configured as tested when the product is sold in the marketplace. A separate attestation letter has been provided.

Table 3-1: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial #	Calibration Due Date
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573	9/10/06
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	9/10/06

3.2 Power Output Test Data

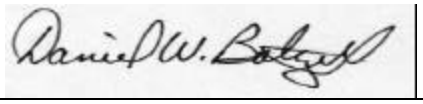
Table 3-2: Power Output Test Data – 802.11b

Channel	Frequency (MHz)	Peak Power Conducted Output (dBm)		
		8.5 dBi Patch	12 dBi Collinear Omni	14 dBi YAGI
1	2412	17.6	17.6	12.5
6	2437	19.7	19.7	19.7
11	2462	17.3	17.3	8.8

Table 3-3: Power Output Test Data - 802.11g

Channel	Frequency (MHz)	Peak Power Conducted Output (dBm)		
		8.5 dBi Patch	12 dBi Collinear Omni	14 dBi YAGI
1	2412	16.4	19.9	15.8
6	2437	19.4	19.4	19.4
11	2462	15.0	20.0	12.6

Test Personnel:

Daniel W. Baltzell		September 13, 2005
EMC Test Engineer	Signature	Date Of Test

4 Compliance with the Band Edge – FCC §15.247(c); RSS-210 §A8.5

4.1 Band Edge Test Procedure

The transmitter output was connected to its appropriate antenna. Peak (1 MHz RBW/VBW) and average (1 MHz RBW/10 Hz VBW) radiated measurements were taken with a suitable span to encompass the peak of the fundamental. A delta measurement was performed from the highest peak in the restricted band to the peak of the fundamental, and subtracted from the field strength; the result was compared to the limit in the restricted band (54 dBuV/m).

Table 4-1: Band Edge 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	9/14/06
900878	Rhein Tech Labs	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901231	IW Microwave Products	KPS-1503-2400-KPS	High frequency RF cables	240"	9/1/06
901232	IW Microwave Products	KPS-1503-2400-KPS	High frequency RF cables	240"	9/1/06
901235	IW Microwave Products	KPS-1503-360-KPS	High frequency RF cables	36"	9/1/06
901242	Rhein Tech Labs	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	5/20/07

4.2 Band Edge Test Results for 802.11b/g card

4.2.1 802.11b Test Results

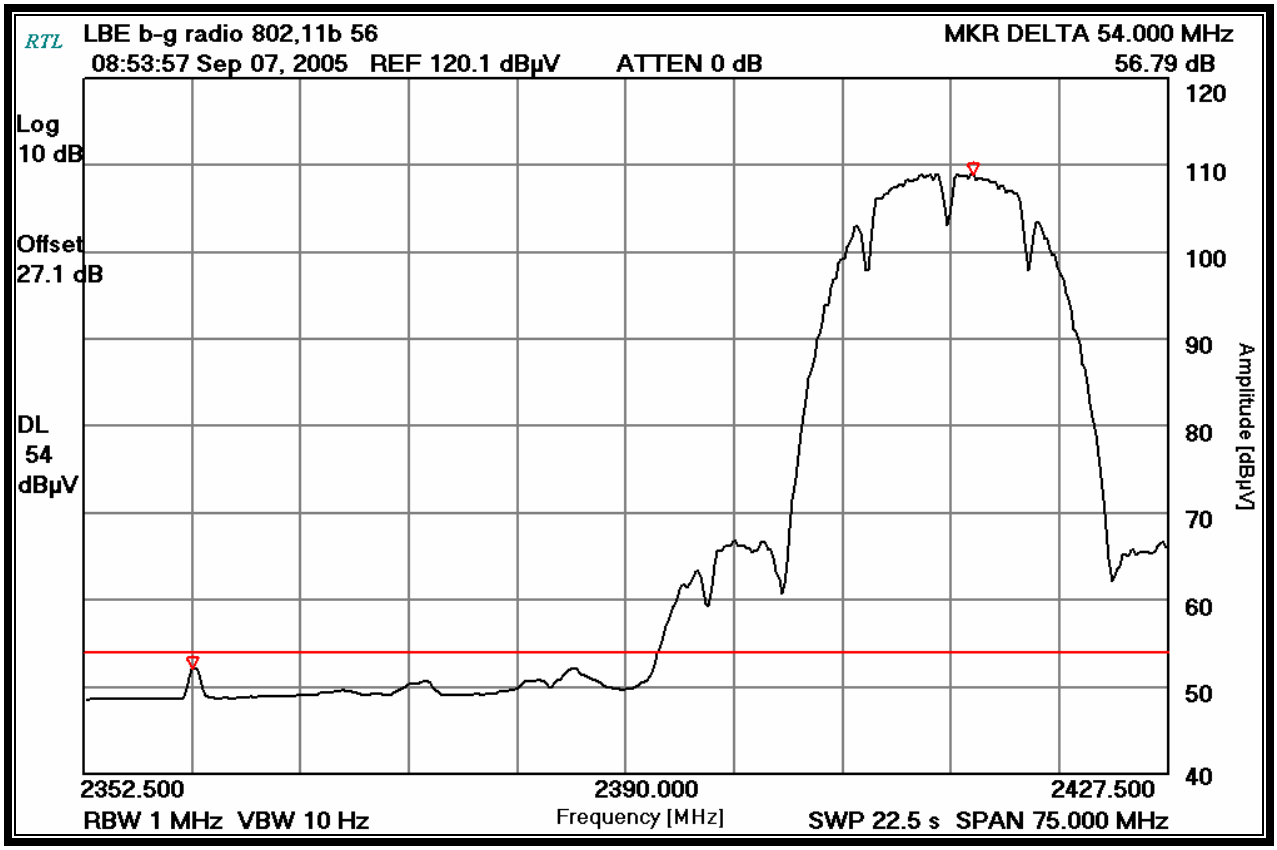
4.2.1.1 Calculation of Lower Band Edge Mobile Mark Collinear Omni 12 dBi Antenna

109.0 dBuV/m is the field strength measurement, from which the delta measurement of 56.8 dB is subtracted (reference plots), resulting in a level of 52.2 dB. This level has a margin of 1.8 dB below the limit of 54 dBuV/m.

Calculation: 109.0 dBuV/m – 56.8 dB – 54 dBuV/m = -1.8 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 113.2 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 109.0 dBuV/m
Delta measurement = 56.8 dB

Plot 4-1: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 1 Mbps) Omni Antenna



4.2.1.2 Calculation of Upper Band Edge Mobile Mark Collinear Omni 12 dBi Antenna

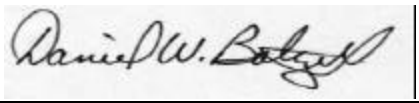
109.0 dBuV/m is the field strength measurement, from which the delta measurement of 57.2 dB is subtracted (reference plots), resulting in a level of 51.8 dB. This level has a margin of 7.3 dB below the limit of 54 dBuV/m.

Calculation: 109.0 dBuV/m – 57.2 dB – 54 dBuV/m = -2.2 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 112.6 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 109.0 dBuV/m
Delta measurement = 57.2 dB

Plot 4-2: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 1 Mbps) Omni Antenna

Test Personnel:

Daniel W. Baltzell		September 6 & 7, 2005
Test Engineer	Signature	Dates Of Test

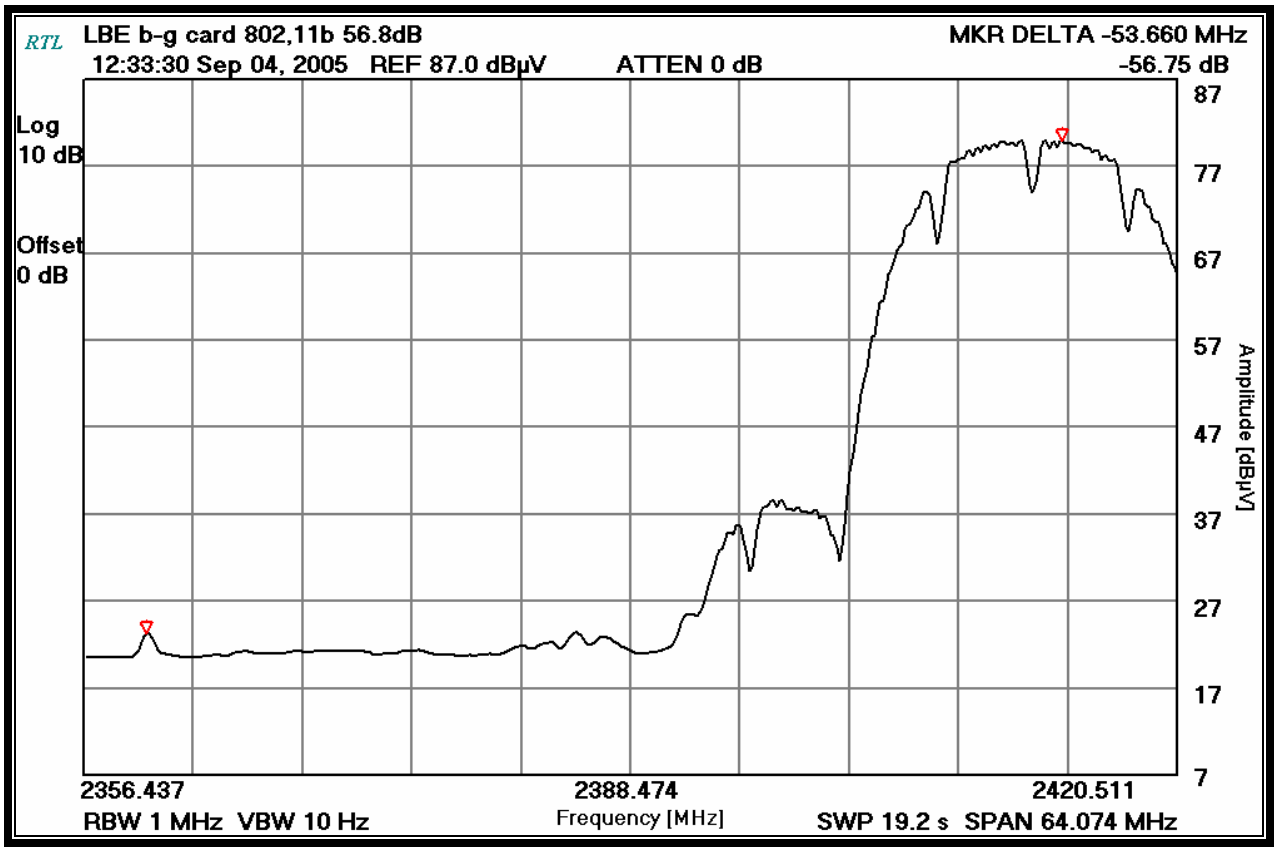
4.2.1.3 Calculation of Lower Band Edge Centurion Patch 8.5 dBi Antenna

107.1 dBuV/m is the field strength measurement, from which the delta measurement of 56.8 dB is subtracted (reference plots), resulting in a level of 50.3 dB. This level has a margin of 3.7 dB below the limit of 54 dBuV/m.

Calculation: 107.1 dBuV/m – 56.8 dB – 54 dBuV/m = -3.7 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 111.7 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 107.1 dBuV/m
Delta measurement = 56.8 dB

Plot 4-3: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 1 Mbps) Patch Antenna



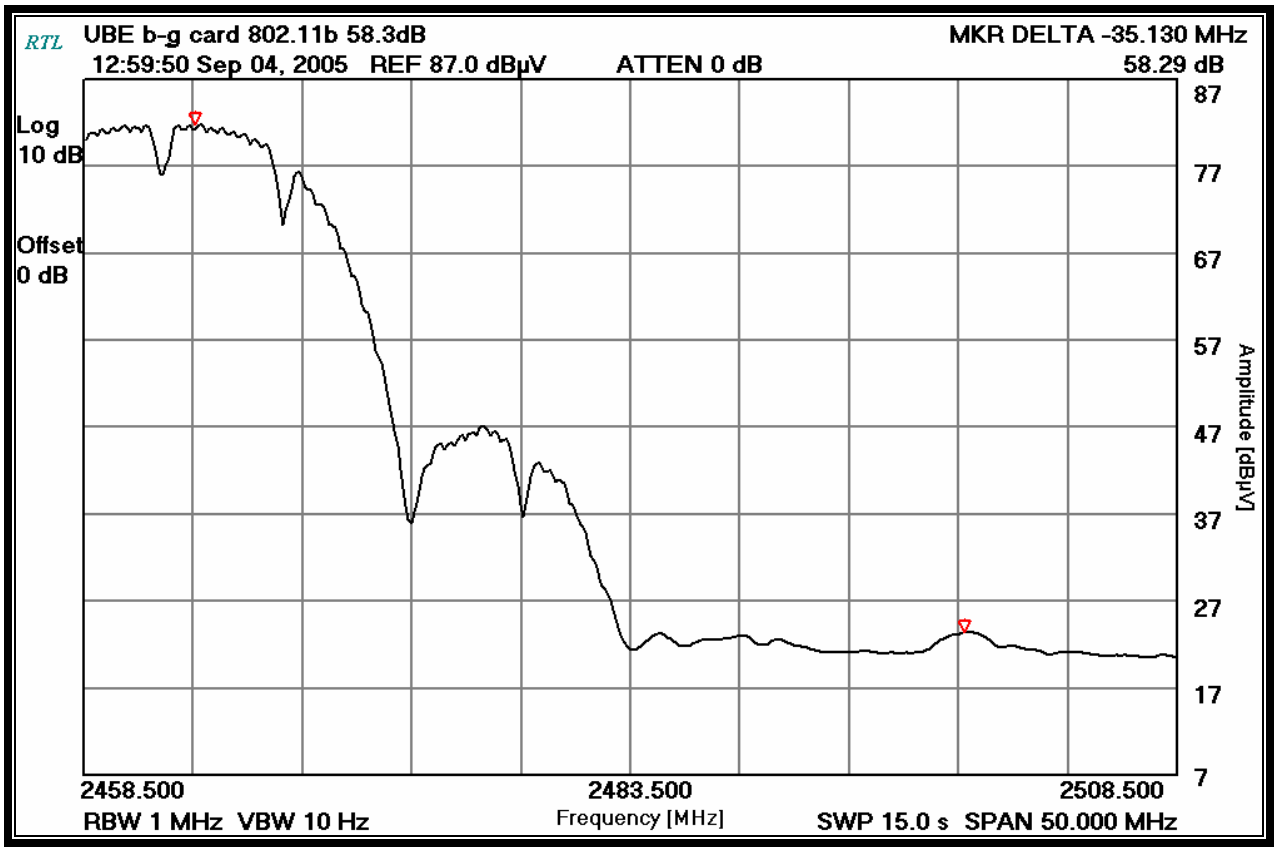
4.2.1.4 Calculation of Upper Band Edge Centurion Patch 8.5 dBi Antenna

109.0 dBuV/m is the field strength measurement, from which the delta measurement of 58.3 dB is subtracted (reference plots), resulting in a level of 50.7 dB. This level has a margin of 3.3 dB below the limit of 54 dBuV/m.

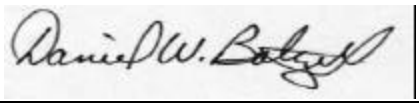
Calculation: 109.0 dBuV/m – 58.3 dB – 54 dBuV/m = -3.3 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 113.2 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 109.0 dBuV/m
Delta measurement = 58.3 dB

Plot 4-4: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 1 Mbps) Patch Antenna



Test Personnel:

Daniel W. Baltzell		September 4, 2005
Test Engineer	Signature	Date Of Test

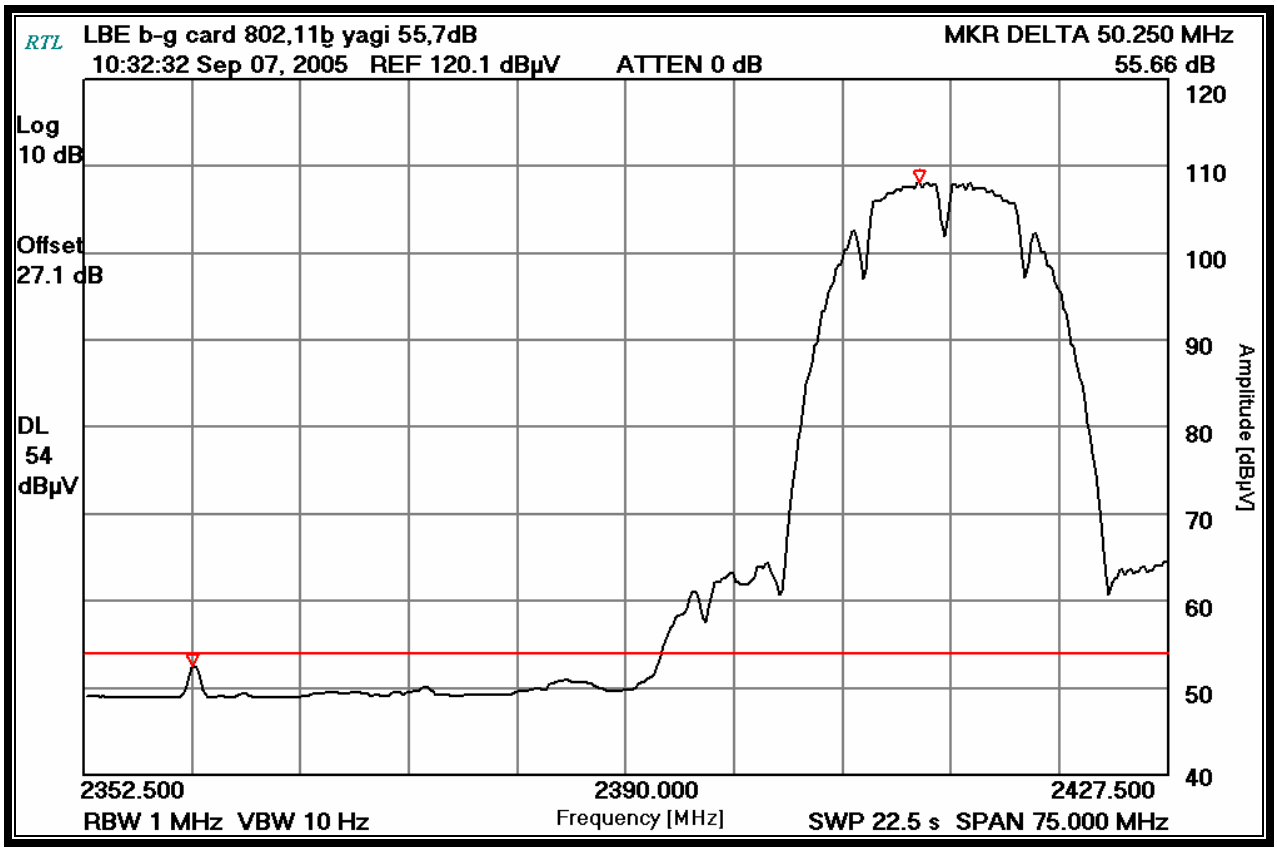
4.2.1.5 Calculation of Lower Band Edge MaxRad YAGI 14 dBi Antenna

108.2 dBuV/m is the field strength measurement, from which the delta measurement of 55.7 dB is subtracted (reference plots), resulting in a level of 52.5 dB. This level has a margin of 1.5 dB below the limit of 54 dBuV/m.

Calculation: 108.2 dBuV/m – 55.7 dB – 54 dBuV/m = -1.5 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 111.9 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 108.2 dBuV/m
Delta measurement = 55.7 dB

Plot 4-5: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 1 Mbps) YAGI Antenna



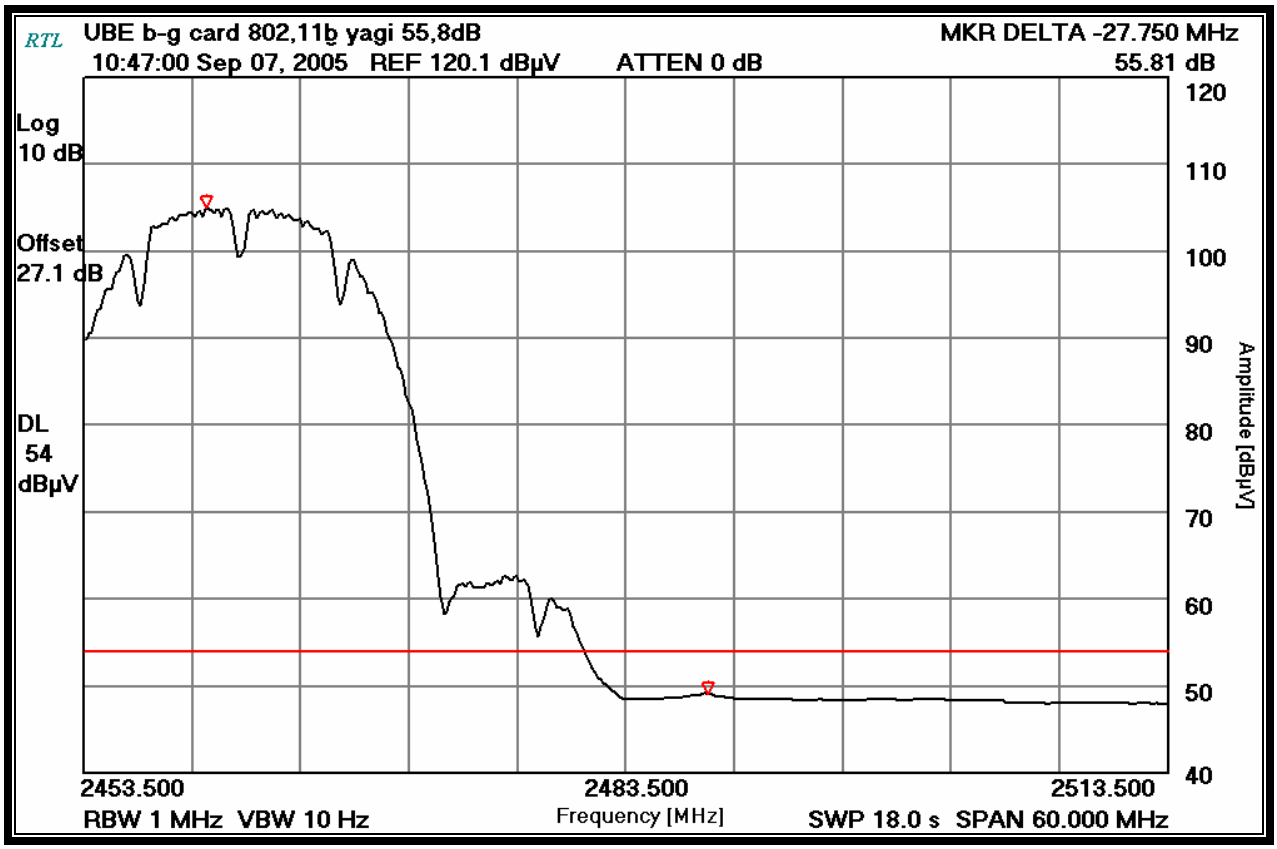
4.2.1.6 Calculation of Upper Band Edge MaxRad YAGI 14 dBi Antenna

104.9dBuV/m is the field strength measurement, from which the delta measurement of 55.8 dB is subtracted (reference plots), resulting in a level of 49.1 dB. This level has a margin of 4.9 dB below the limit of 54 dBuV/m.

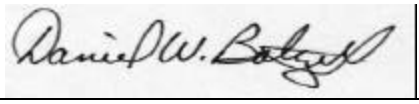
Calculation: 104.9 dBuV/m – 55.8 dB – 54 dBuV/m = -4.9 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 108.6 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 104.9 dBuV/m
Delta measurement = 55.8 dB

Plot 4-6: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 1 Mbps) YAGI Antenna



Test Personnel:

Daniel W. Baltzell		September 7, 2005
Test Engineer	Signature	Date Of Test

4.2.2 802.11g Test Results

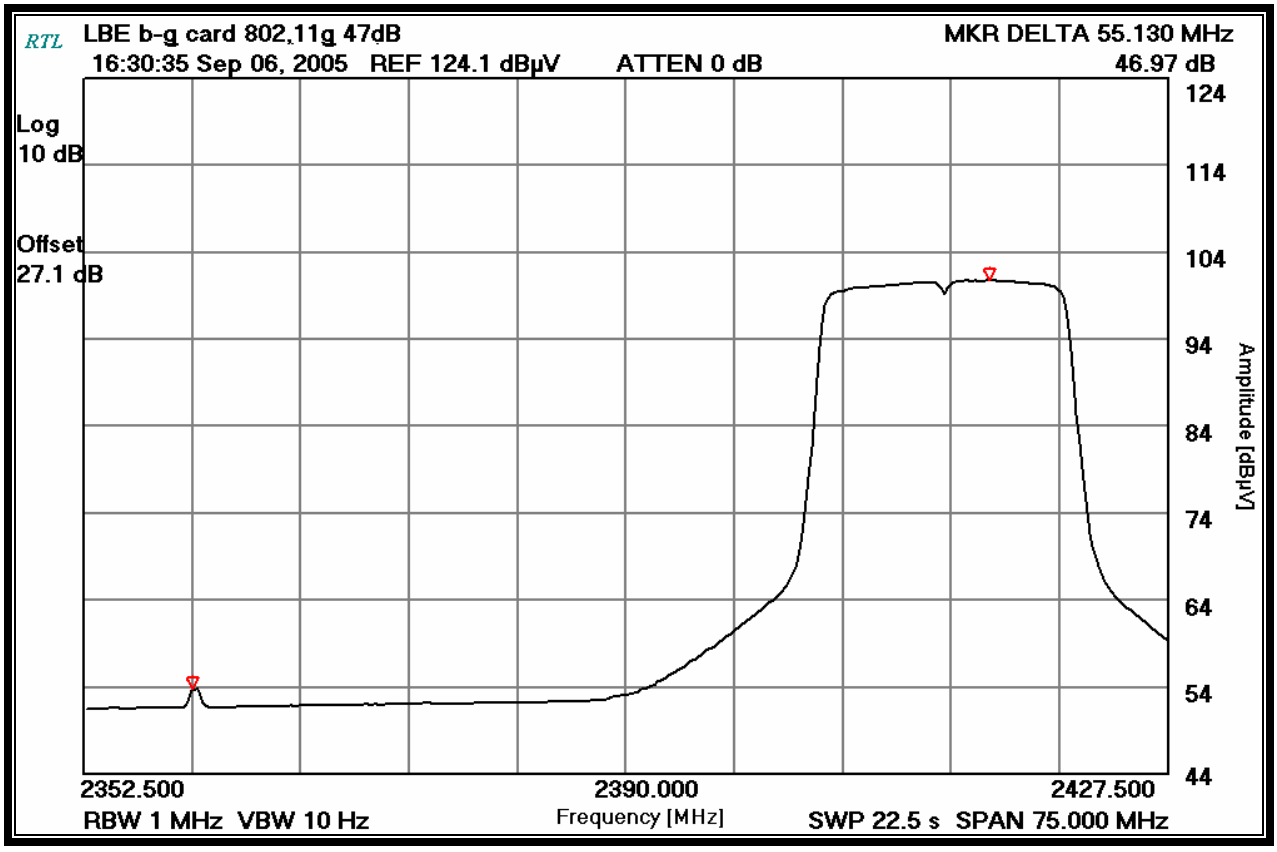
4.2.2.1 Calculation of Lower Band Edge Mobile Mark Collinear Omni 12 dBi Antenna

100.8 dBuV/m is the field strength measurement, from which the delta measurement of 47.0 dB is subtracted (reference plots), resulting in a level of 53.8 dB. This level has a margin of 0.2 dB below the limit of 54 dBuV/m.

Calculation: 100.8 dBuV/m – 47.0 dB – 54 dBuV/m = -0.2 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 112.0 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 100.8 dBuV/m
Delta measurement = 47.0 dB

Plot 4-7: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 6 Mbps) Omni Antenna



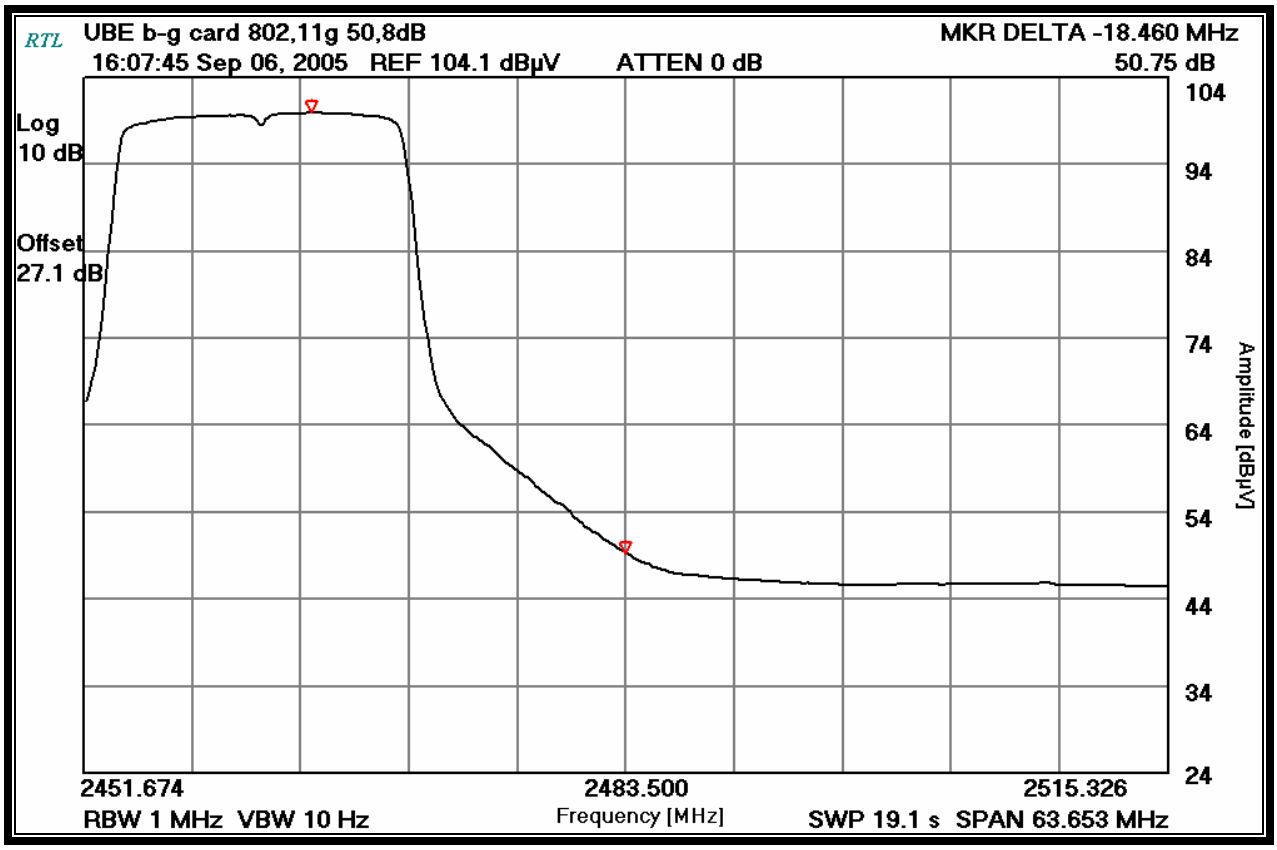
4.2.2.2 Calculation of Upper Band Edge Mobile Mark Collinear Omni 12 dBi Antenna

102.9 dBuV/m is the field strength measurement, from which the delta measurement of 50.8 dB is subtracted (reference plots), resulting in a level of 52.1 dB. This level has a margin of 1.9 dB below the limit of 54 dBuV/m.

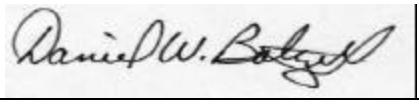
Calculation: 102.9 dBuV/m – 50.8 dB – 54 dBuV/m = -1.9 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 114.2 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 102.9 dBuV/m
Delta measurement = 50.8 dB

Plot 4-8: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 6 Mbps) Omni Antenna



Test Personnel:

Daniel W. Baltzell		September 6, 2005
Test Engineer	Signature	Dates Of Test

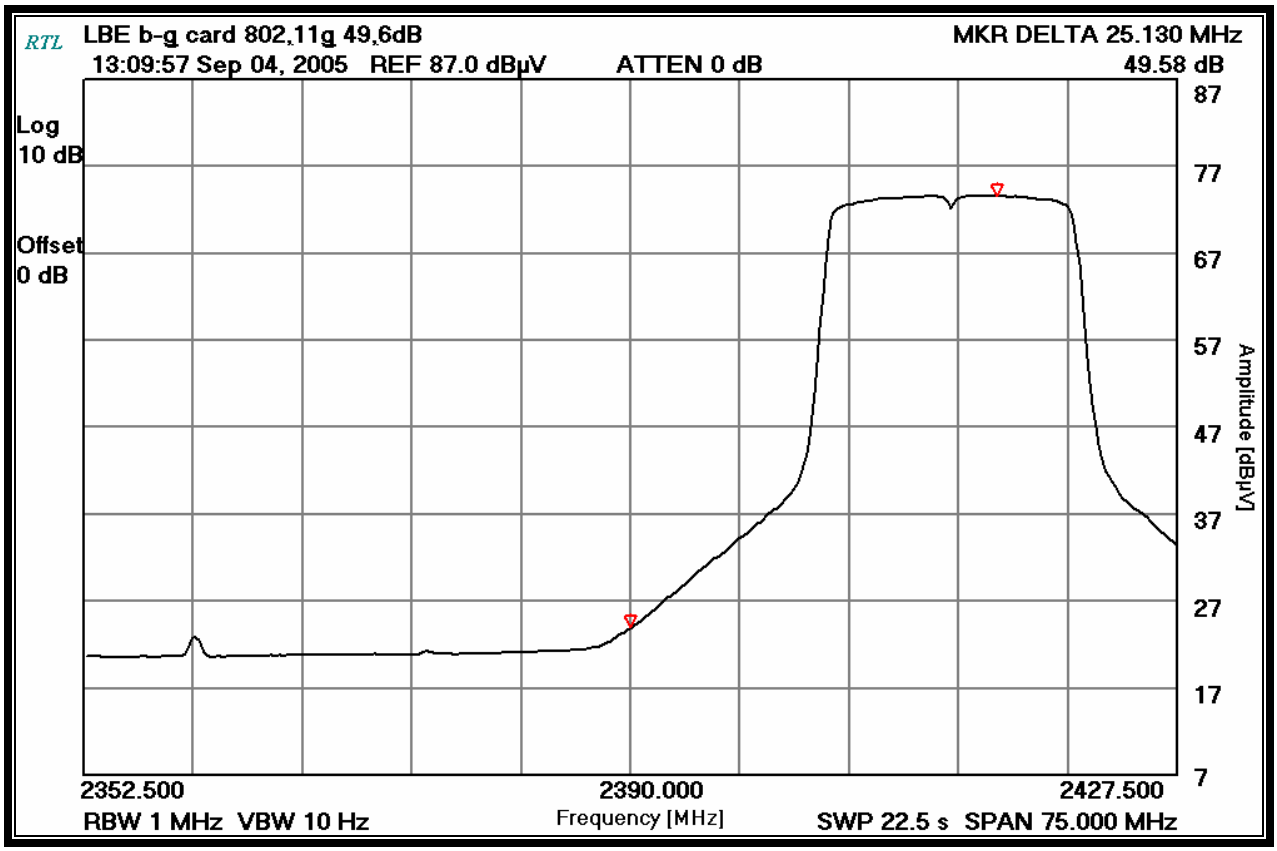
4.2.2.3 Calculation of Lower Band Edge Centurion Patch 8.5 dBi Antenna

101.4 dBuV/m is the field strength measurement, from which the delta measurement of 49.6 dB is subtracted (reference plots), resulting in a level of 51.8 dB. This level has a margin of 2.2 dB below the limit of 54 dBuV/m.

Calculation: 101.4 dBuV/m – 49.6 dB – 54 dBuV/m = -2.2 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 113.4 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 101.4 dBuV/m
Delta measurement = 49.6 dB

Plot 4-9: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 6 Mbps) Patch Antenna



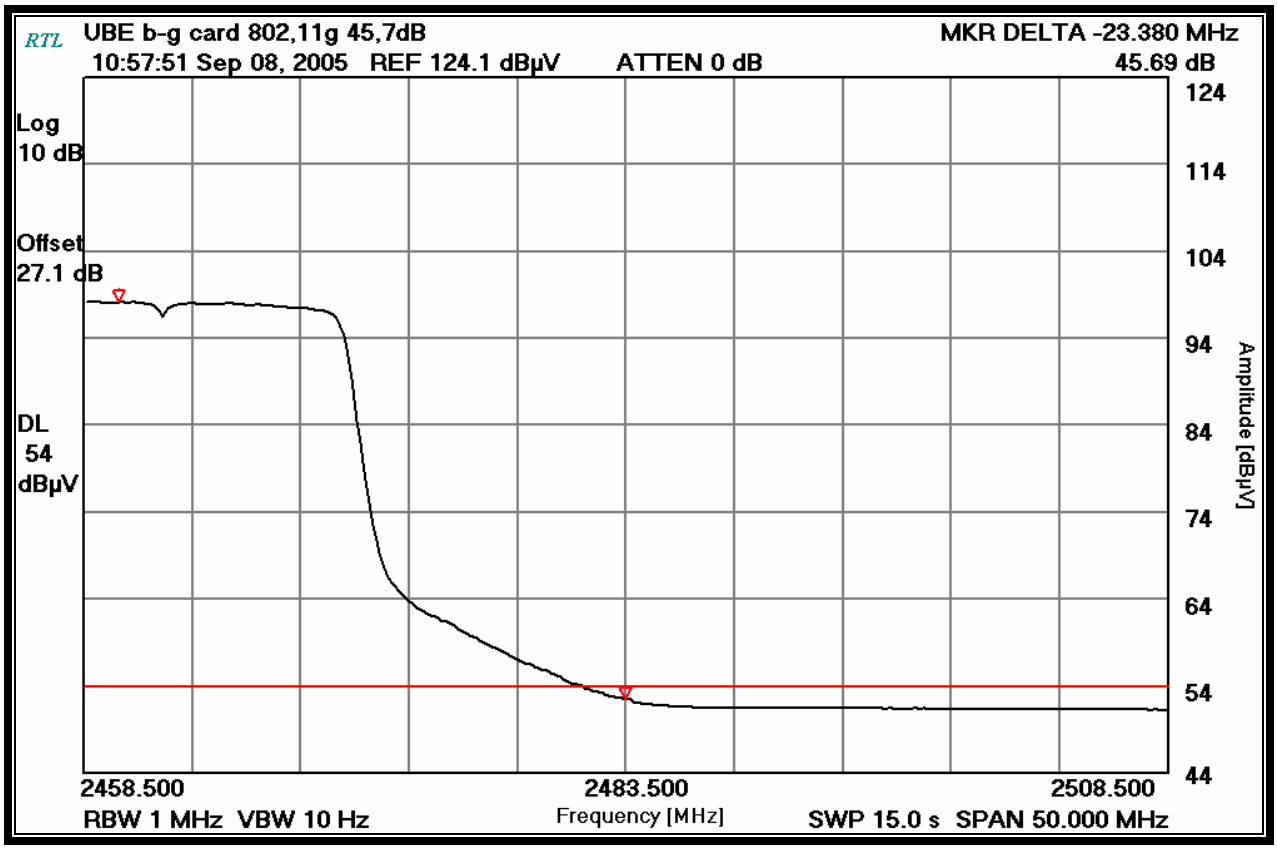
4.2.2.4 Calculation of Upper Band Edge Centurion Patch 8.5 dBi Antenna

98.5 dBuV/m is the field strength measurement, from which the delta measurement of 45.7 dB is subtracted (reference plots), resulting in a level of 52.8 dB. This level has a margin of 1.2 dB below the limit of 54 dBuV/m.

Calculation: 98.5 dBuV/m – 45.7 dB – 54 dBuV/m = -1.2 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 109.4 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 98.5 dBuV/m
Delta measurement = 45.7 dB

Plot 4-10: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 6 Mbps) Patch Antenna



Test Personnel:

Daniel W. Baltzell	Daniel W. Baltzell	September 4, 6 & 8, 2005
Test Engineer	Signature	Dates Of Test

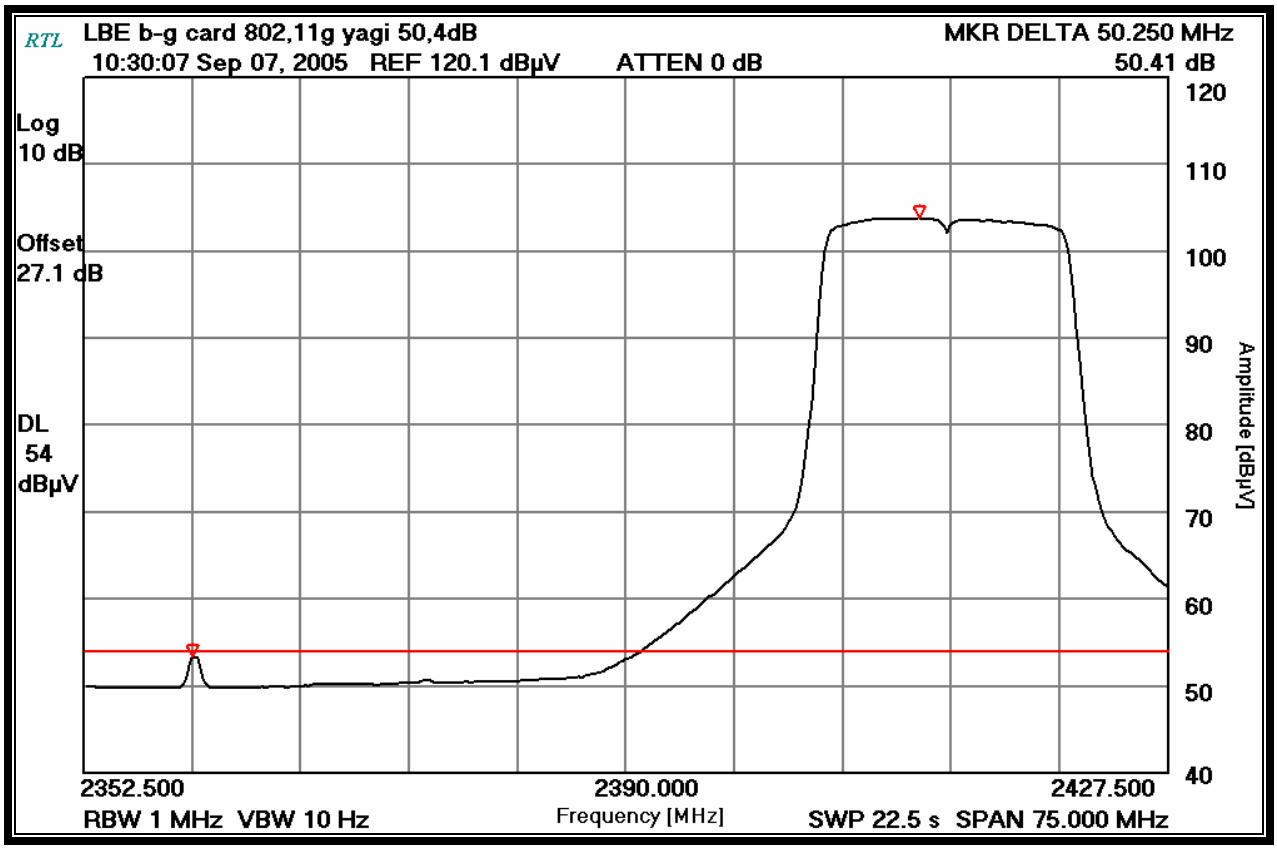
4.2.2.5 Calculation of Lower Band Edge MaxRad YAGI 14 dBi Antenna

103.9 dBuV/m is the field strength measurement, from which the delta measurement of 50.4 dB is subtracted (reference plots), resulting in a level of 53.5 dB. This level has a margin of 0.5 dB below the limit of 54 dBuV/m.

Calculation: 103.9 dBuV/m – 50.4 dB – 54 dBuV/m = -0.5 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 114.9 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 103.9 dBuV/m
Delta measurement = 50.4 dB

Plot 4-11: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 6 Mbps) YAGI Antenna



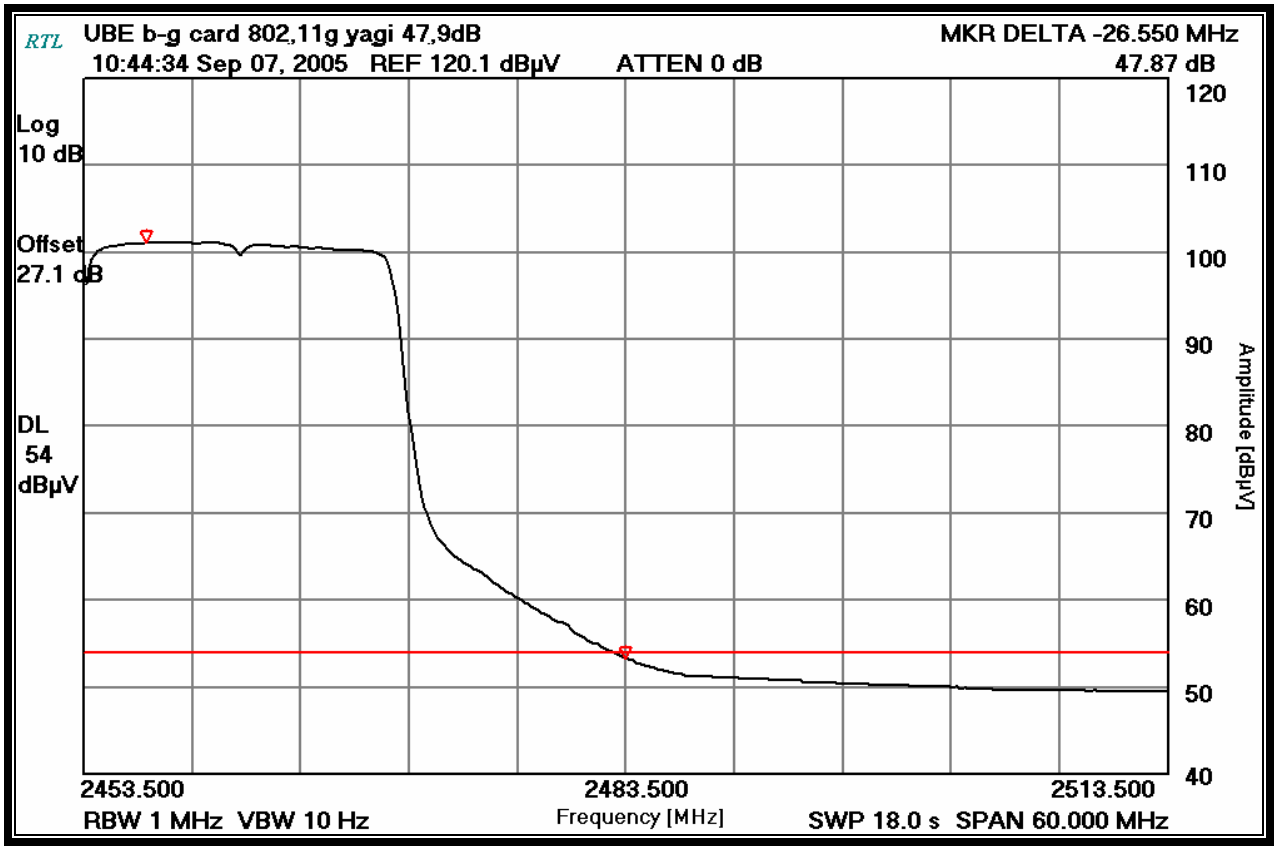
4.2.2.6 Calculation of Upper Band Edge MaxRad YAGI 14 dBi Antenna

101.2 dBuV/m is the field strength measurement, from which the delta measurement of 47.9 dB is subtracted (reference plots), resulting in a level of 53.3 dB. This level has a margin of 0.7 dB below the limit of 54 dBuV/m.

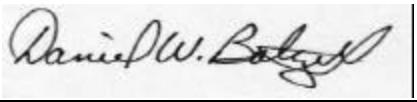
Calculation: 101.2 dBuV/m – 47.9 dB – 54 dBuV/m = -0.7 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 111.0 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 101.2 dBuV/m
Delta measurement = 47.9 dB

Plot 4-12: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 6 Mbps) YAGI Antenna



Test Personnel:

Daniel W. Baltzell		September 7, 2005
Test Engineer	Signature	Dates Of Test

4.3 Band Edge Test Results for 802.11a/b/g card

4.3.1 802.11b Test Results

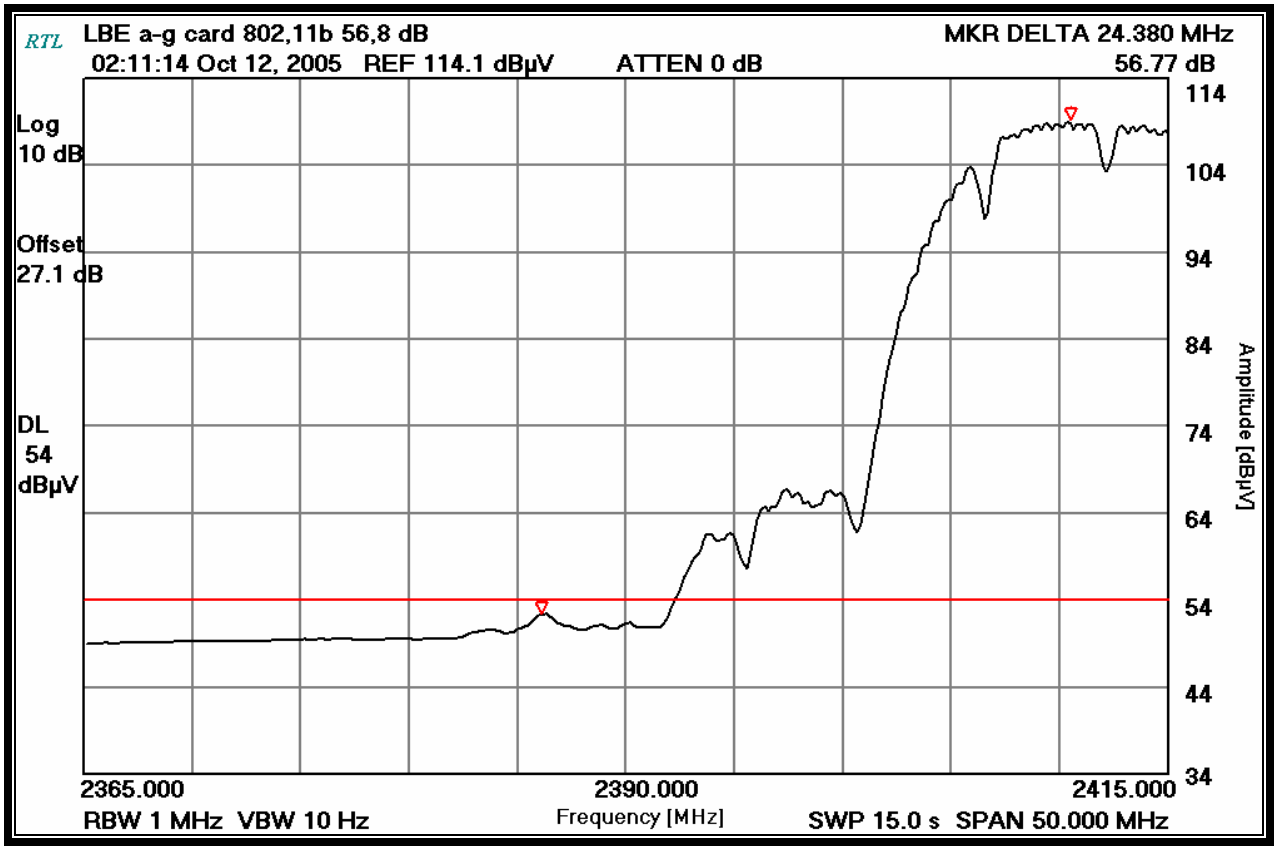
4.3.1.1 Calculation of Lower Band Edge Mobile Mark Collinear Omni 12 dBi Antenna

109.5 dBuV/m is the field strength measurement, from which the delta measurement of 56.8 dB is subtracted (reference plots), resulting in a level of 52.7 dB. This level has a margin of 1.3 dB below the limit of 54 dBuV/m.

Calculation: 109.5 dBuV/m – 56.8 dB – 54 dBuV/m = -1.3 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 112.3 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 109.5 dBuV/m
Delta measurement = 56.8 dB

Plot 4-13: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 1 Mbps) Omni Antenna



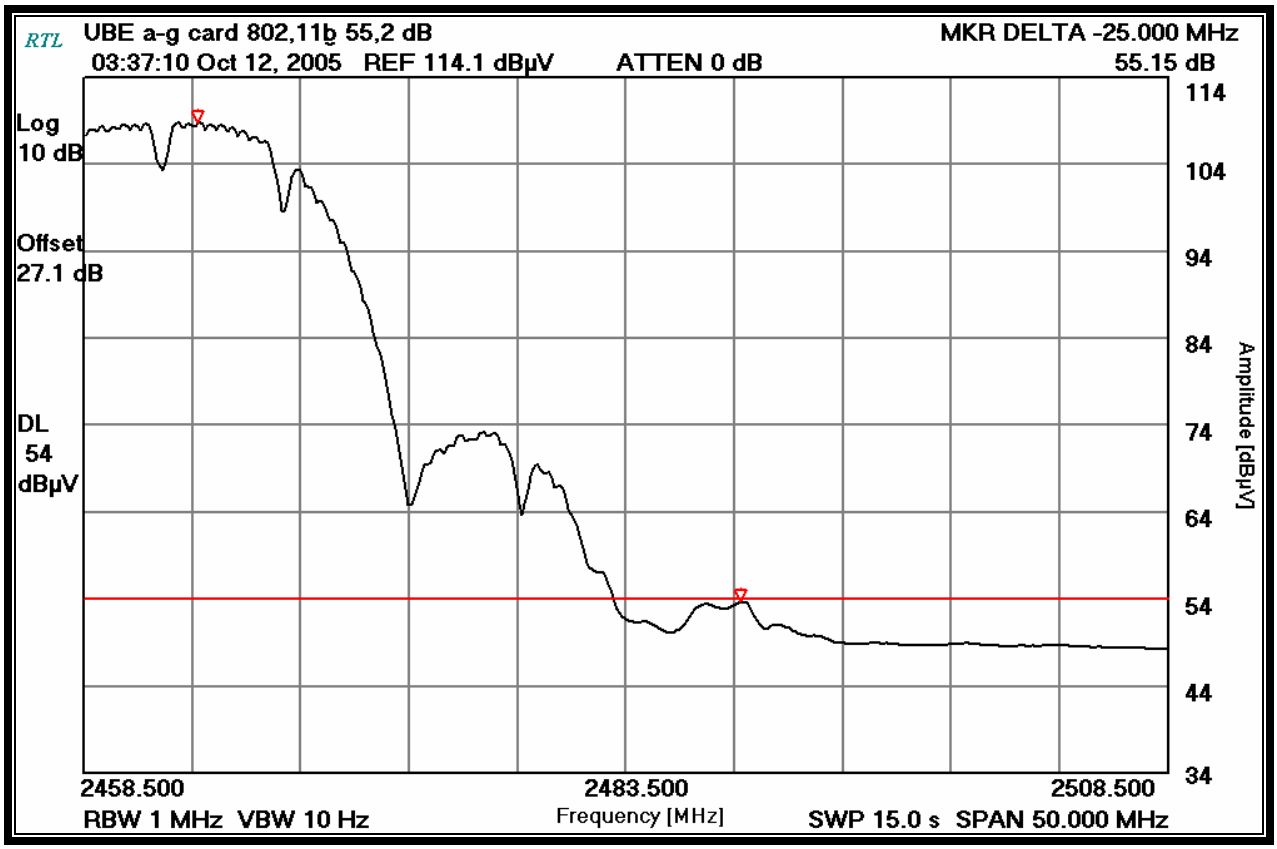
4.3.1.2 Calculation of Upper Band Edge Mobile Mark Collinear Omni 12 dBi Antenna

108.9 dBuV/m is the field strength measurement, from which the delta measurement of 55.2 dB is subtracted (reference plots), resulting in a level of 53.7 dB. This level has a margin of 0.3 dB below the limit of 54 dBuV/m.

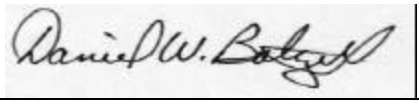
Calculation: 108.9 dBuV/m – 55.2 dB – 54 dBuV/m = -0.3 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 112.7 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 108.9 dBuV/m
Delta measurement = 55.2 dB

Plot 4-14: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 1 Mbps) Omni Antenna



Test Personnel:

Daniel W. Baltzell		October 12, 2005
Test Engineer	Signature	Dates Of Test

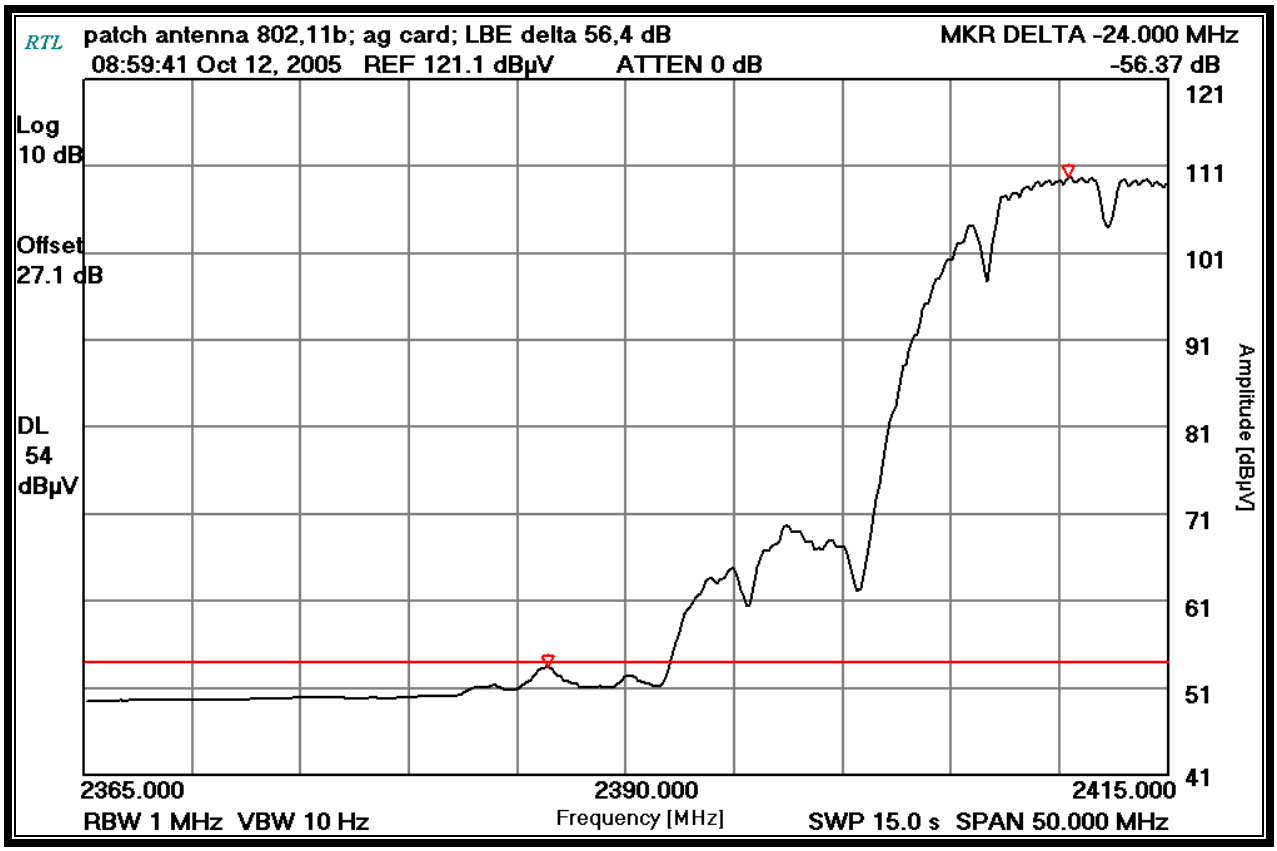
4.3.1.3 Calculation of Lower Band Edge Centurion Patch 8.5 dBi Antenna

109.8 dBuV/m is the field strength measurement, from which the delta measurement of 56.4 dB is subtracted (reference plots), resulting in a level of 53.4 dB. This level has a margin of 0.6 dB below the limit of 54 dBuV/m.

Calculation: 109.8 dBuV/m – 56.4 dB – 54 dBuV/m = -0.6 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 112.8 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 109.8 dBuV/m
Delta measurement = 56.4 dB

Plot 4-15: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 1 Mbps) Patch Antenna



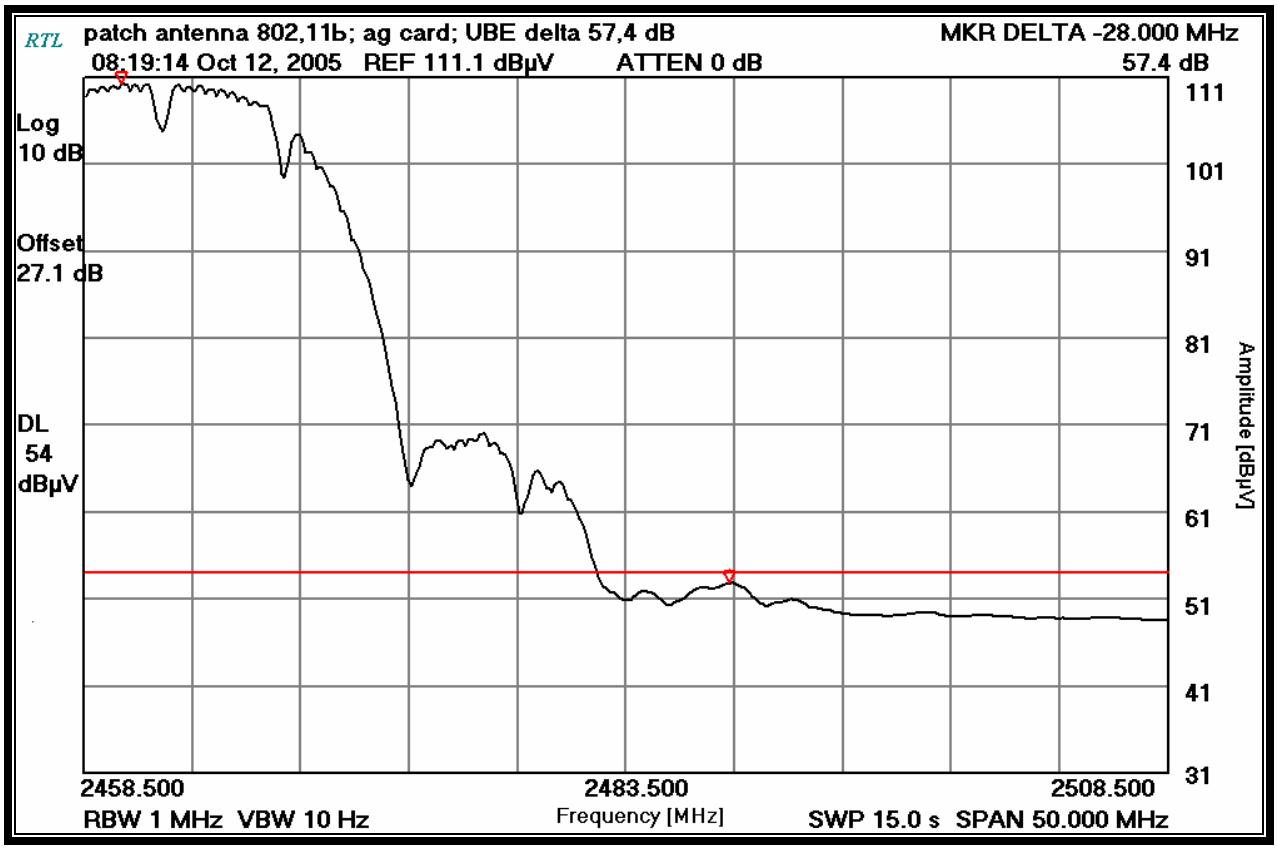
4.3.1.4 Calculation of Upper Band Edge Centurion Patch 8.5 dBi Antenna

110.3 dBuV/m is the field strength measurement, from which the delta measurement of 57.4 dB is subtracted (reference plots), resulting in a level of 52.9 dB. This level has a margin of 1.1 dB below the limit of 54 dBuV/m.

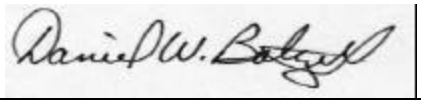
Calculation: 110.3 dBuV/m – 57.4 dB – 54 dBuV/m = -1.1 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 113.8 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 110.3 dBuV/m
Delta measurement = 57.4 dB

Plot 4-16: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 1 Mbps) Patch Antenna



Test Personnel:

Daniel W. Baltzell		October 12, 2005
Test Engineer	Signature	Dates Of Test

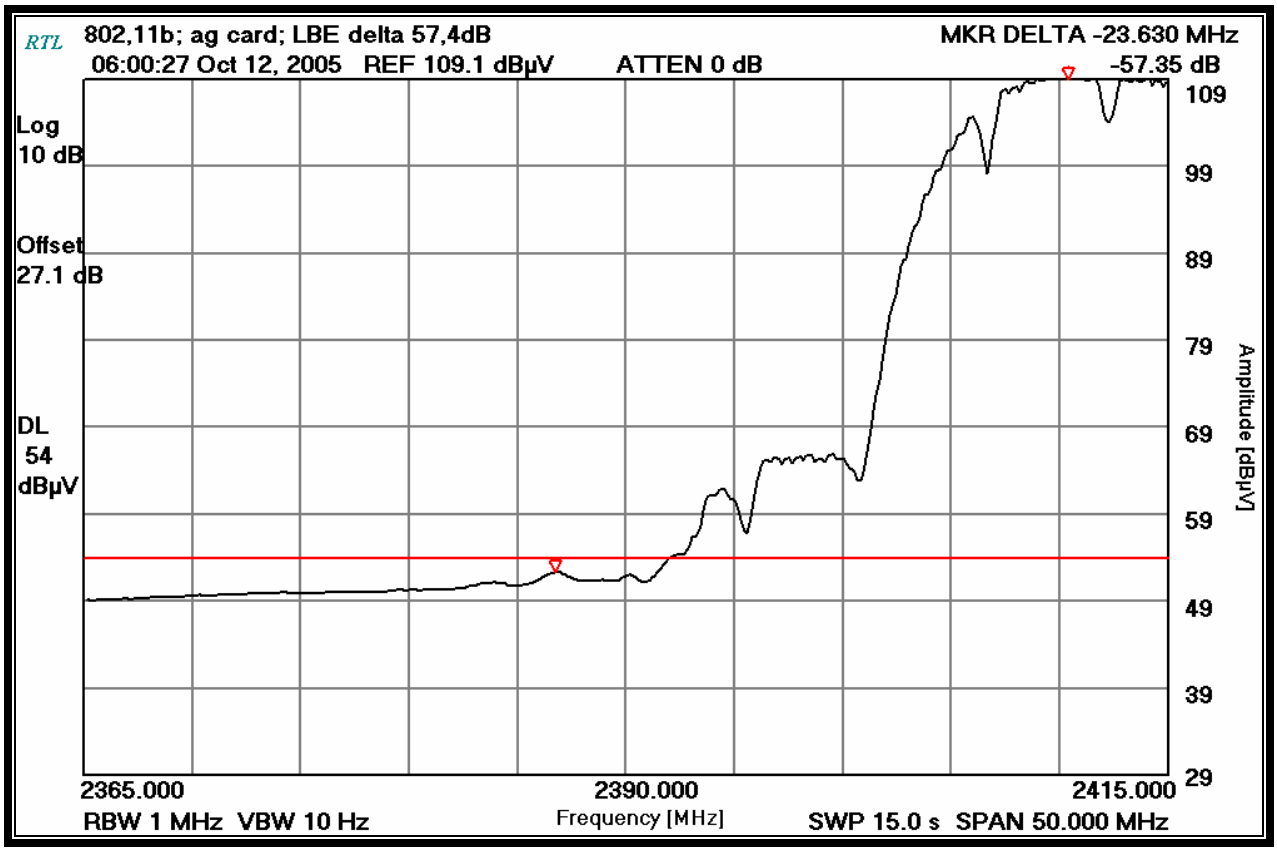
4.3.1.5 Calculation of Lower Band Edge MaxRad YAGI 14 dBi Antenna

109.7 dBuV/m is the field strength measurement, from which the delta measurement of 57.4 dB is subtracted (reference plots), resulting in a level of 52.3 dB. This level has a margin of 1.7 dB below the limit of 54 dBuV/m.

Calculation: 109.7 dBuV/m – 57.4 dB – 54 dBuV/m = -1.7 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 113.2 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 109.7 dBuV/m
Delta measurement = 57.4 dB

Plot 4-17: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 1 Mbps) YAGI Antenna



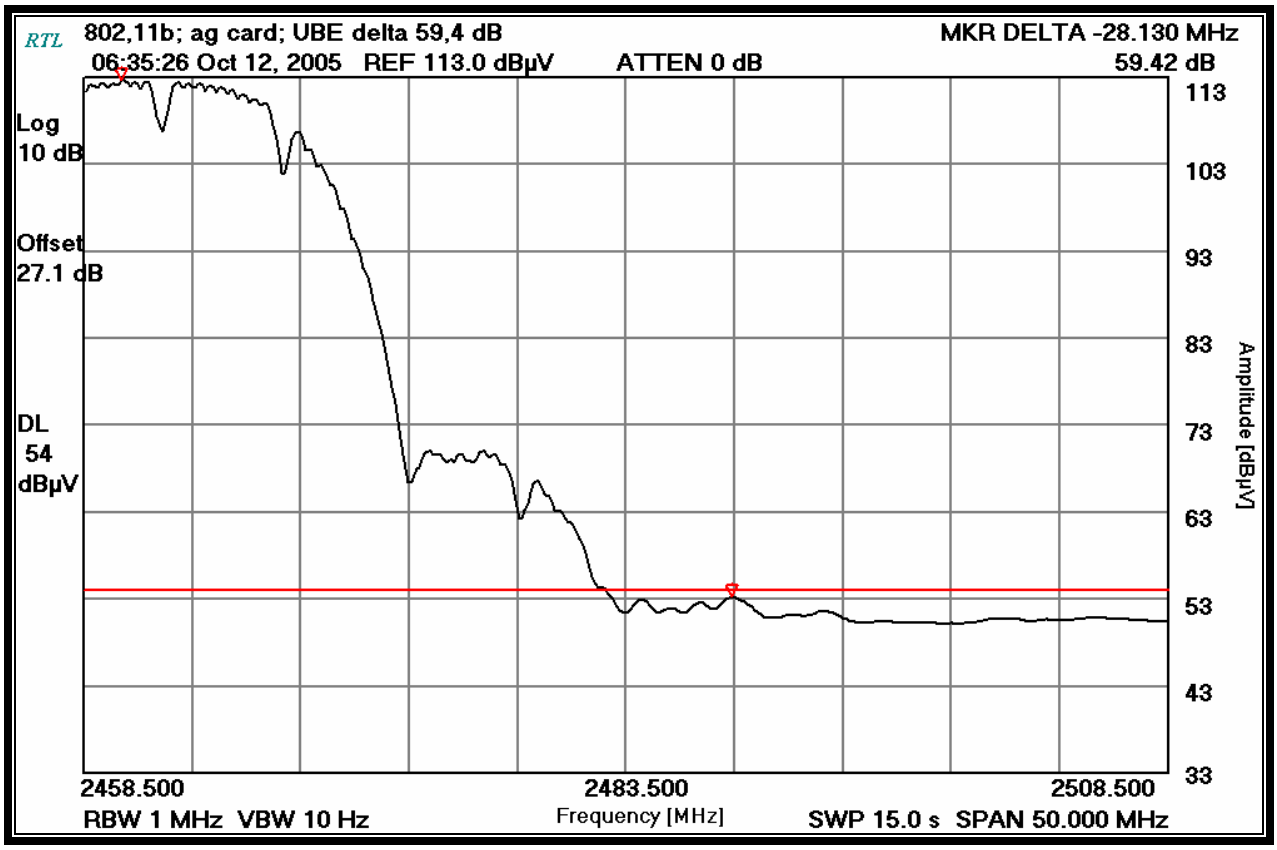
4.3.1.6 Calculation of Upper Band Edge MaxRad YAGI 14 dBi Antenna

112.7 dBuV/m is the field strength measurement, from which the delta measurement of 59.4 dB is subtracted (reference plots), resulting in a level of 53.3 dB. This level has a margin of 0.7 dB below the limit of 54 dBuV/m.

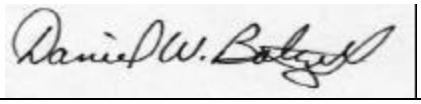
Calculation: 112.7 dBuV/m – 59.4 dB – 54 dBuV/m = -0.7 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 115.7 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 112.7 dBuV/m
Delta measurement = 59.4 dB

Plot 4-18: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 1 Mbps) YAGI Antenna



Test Personnel:

Daniel W. Baltzell		October 12, 2005
Test Engineer	Signature	Dates Of Test

4.3.2 802.11g Test Results

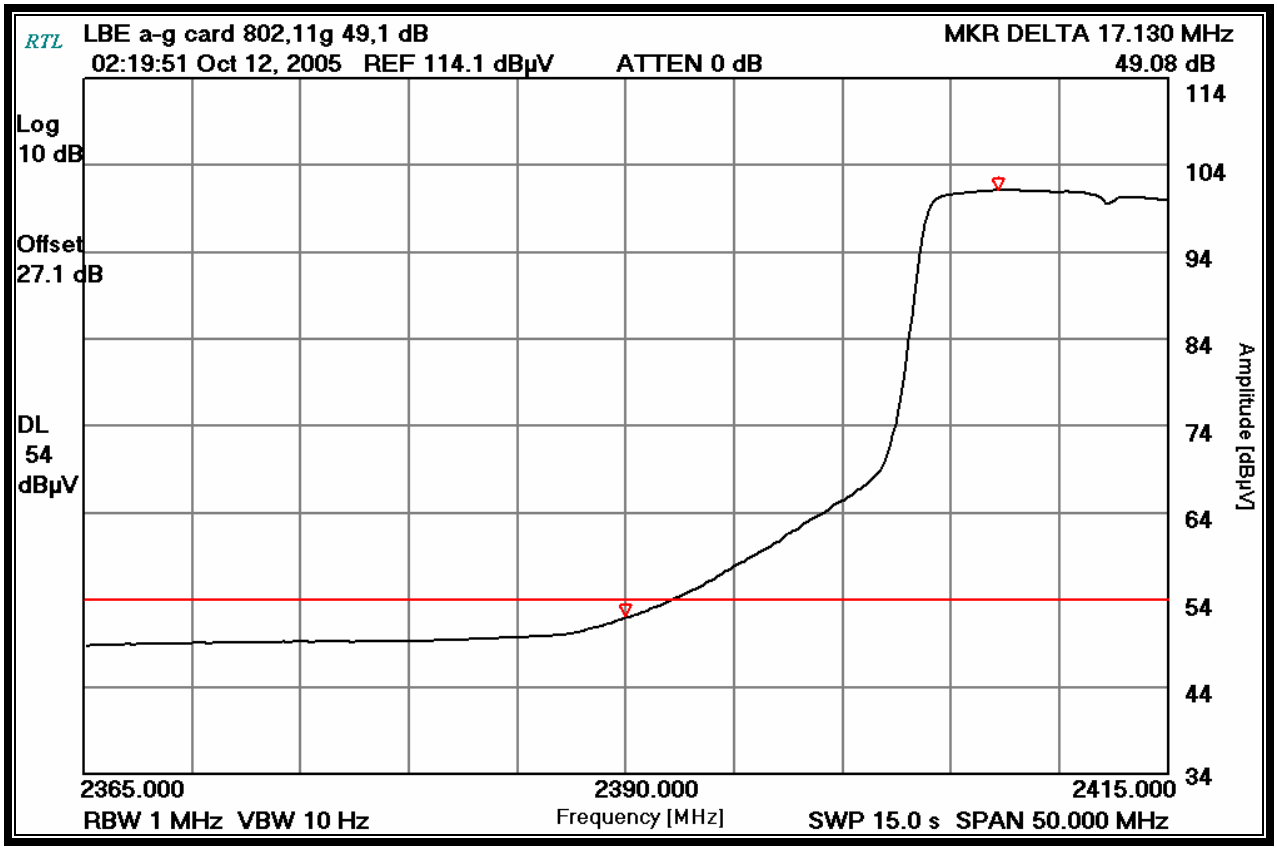
4.3.2.1 Calculation of Lower Band Edge Mobile Mark Collinear Omni 12 dBi Antenna

101.2 dBuV/m is the field strength measurement, from which the delta measurement of 49.1 dB is subtracted (reference plots), resulting in a level of 52.1 dB. This level has a margin of 1.9 dB below the limit of 54 dBuV/m.

Calculation: 101.2 dBuV/m – 49.1 dB – 54 dBuV/m = -1.9 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 110.5 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 101.2 dBuV/m
Delta measurement = 49.1 dB

Plot 4-19: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 6 Mbps) Omni Antenna



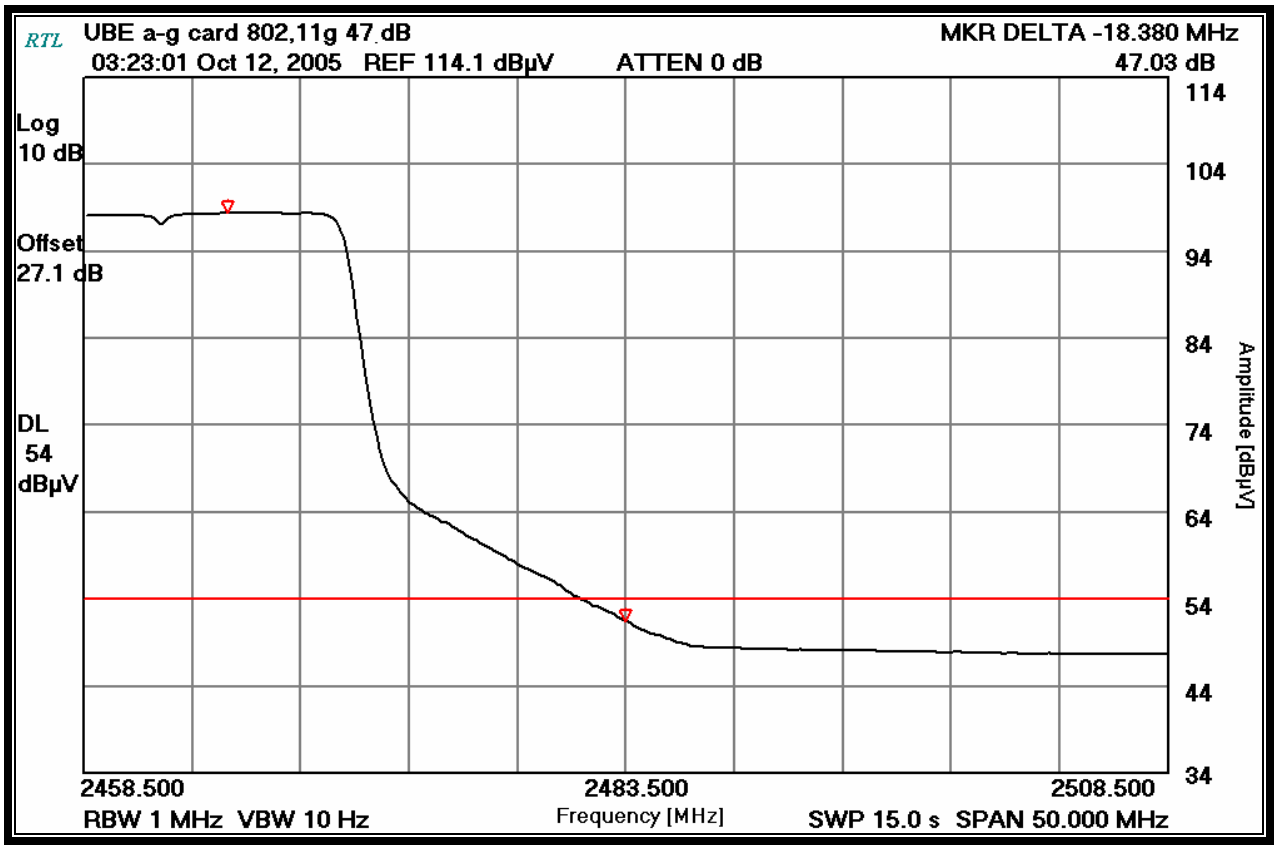
4.3.2.2 Calculation of Upper Band Edge Mobile Mark Collinear Omni 12 dBi Antenna

98.6 dBuV/m is the field strength measurement, from which the delta measurement of 47.0 dB is subtracted (reference plots), resulting in a level of 51.6 dB. This level has a margin of 2.4 dB below the limit of 54 dBuV/m.

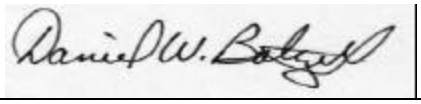
Calculation: 98.6 dBuV/m – 47.0 dB – 54 dBuV/m = -2.4 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 108.7 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 98.6 dBuV/m
Delta measurement = 47.0 dB

Plot 4-20: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 6 Mbps) Omni Antenna



Test Personnel:

Daniel W. Baltzell		October 12, 2005
Test Engineer	Signature	Dates Of Test

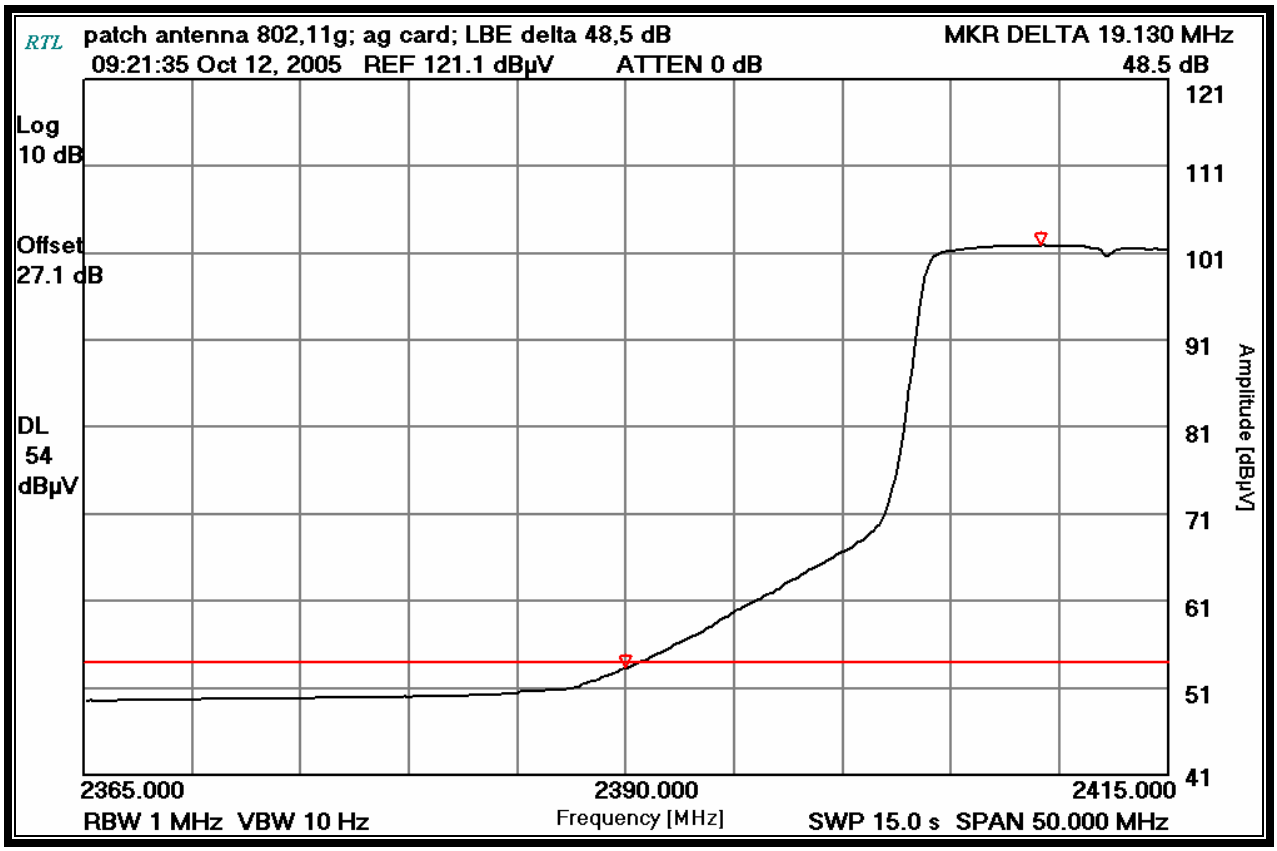
4.3.2.3 Calculation of Lower Band Edge Centurion Patch 8.5 dBi Antenna

101.9 dBuV/m is the field strength measurement, from which the delta measurement of 48.5 dB is subtracted (reference plots), resulting in a level of 53.4 dB. This level has a margin 0.6 dB below the limit of 54 dBuV/m.

Calculation: 101.9 dBuV/m – 48.5 dB – 54 dBuV/m = -0.6 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 110.7dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 101.9 dBuV/m
Delta measurement = 48.5 dB

Plot 4-21: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 6 Mbps) Patch Antenna



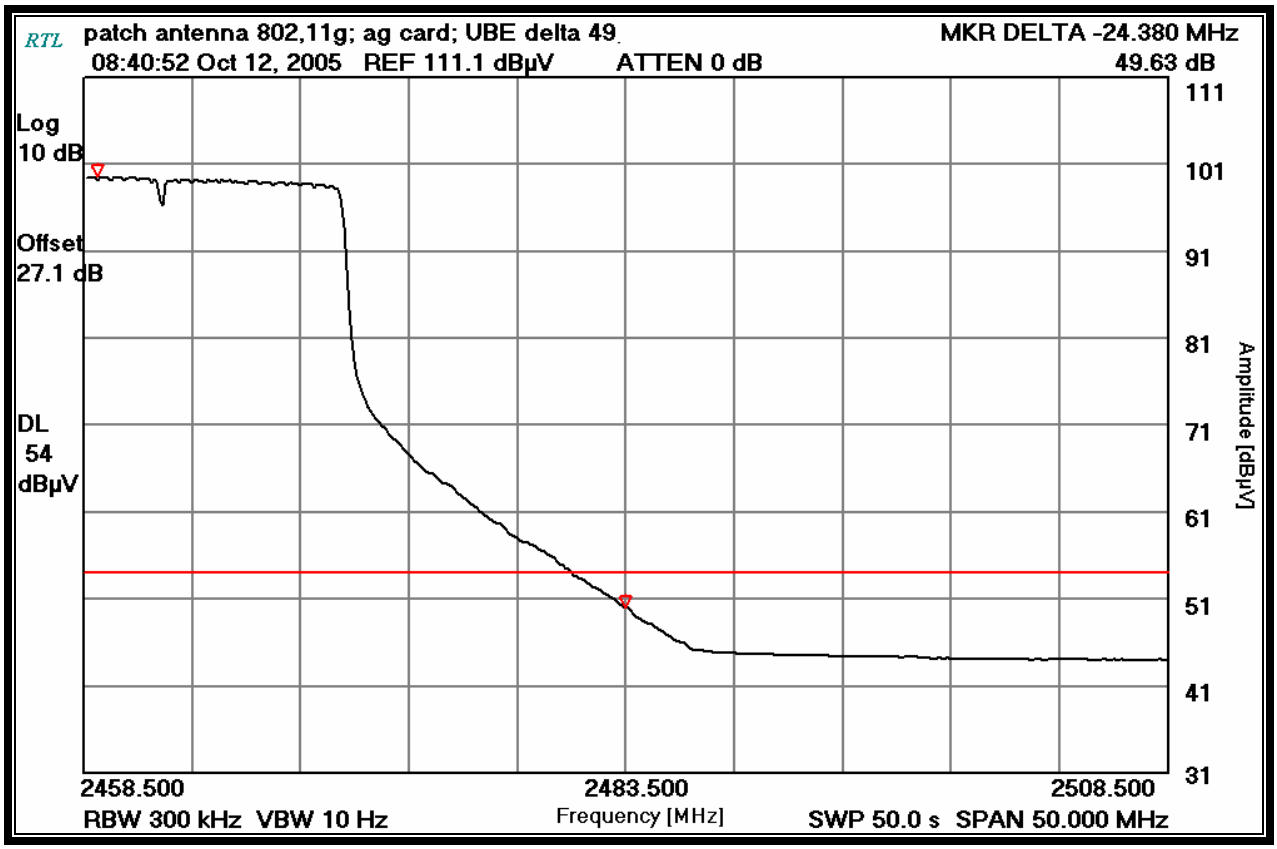
4.3.2.4 Calculation of Upper Band Edge Centurion Patch 8.5 dBi Antenna

102.3 dBuV/m is the field strength measurement, from which the delta measurement of 49.6 dB is subtracted (reference plots), resulting in a level of 52.7 dB. This level has a margin of 1.3 dB below the limit of 54 dBuV/m.

Calculation: 102.3 dBuV/m – 49.6 dB – 54 dBuV/m = -1.3 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 112.6 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 102.3 dBuV/m
Delta measurement = 49.6 dB

Plot 4-22: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 6 Mbps) Patch Antenna



Test Personnel:

Daniel W. Baltzell	Daniel W. Baltzell	October 12, 2005
Test Engineer	Signature	Dates Of Test

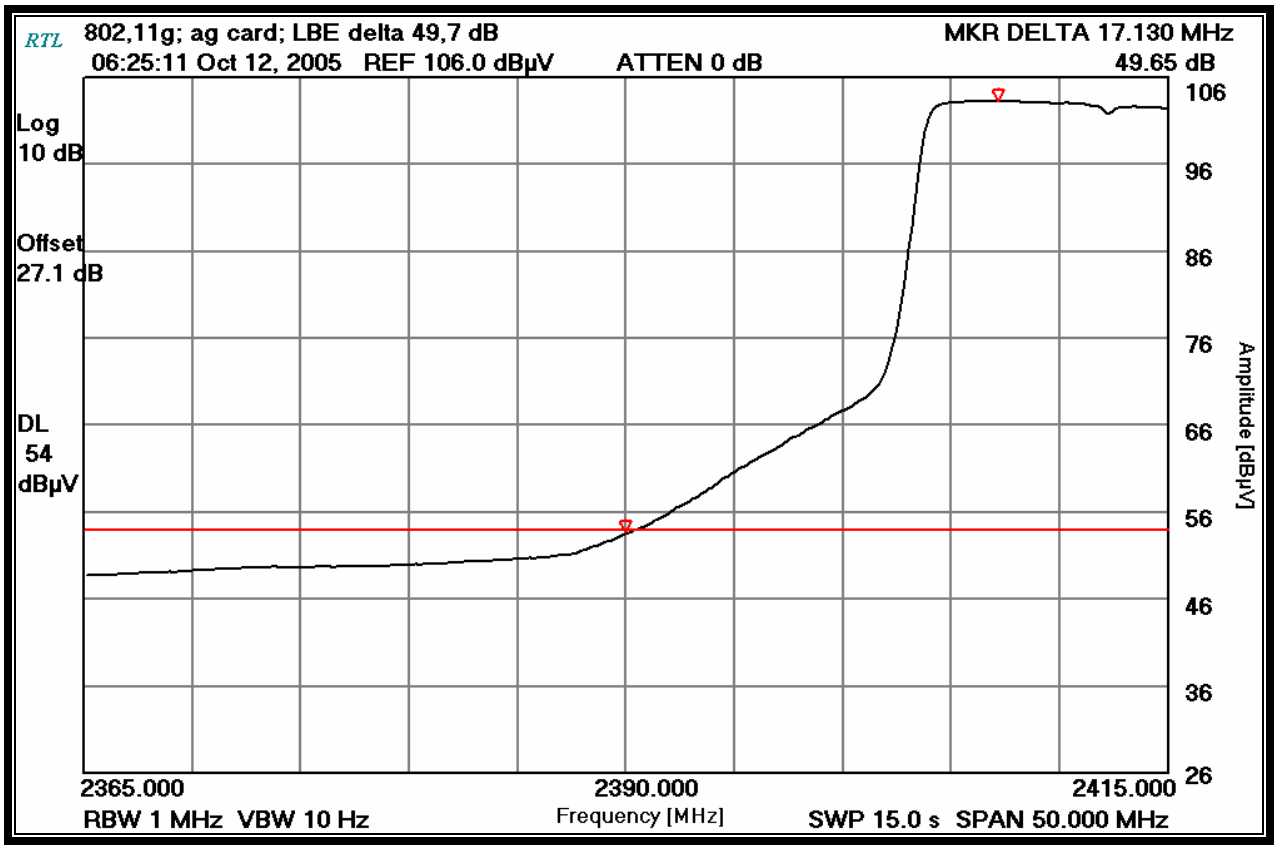
4.3.2.5 Calculation of Lower Band Edge MaxRad YAGI 14 dBi Antenna

103.2 dBuV/m is the field strength measurement, from which the delta measurement of 49.7 dB is subtracted (reference plots), resulting in a level of 53.5 dB. This level has a margin of 0.5 dB below the limit of 54 dBuV/m.

Calculation: 103.2 dBuV/m – 49.7 dB – 54 dBuV/m = -0.5 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 112.7 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 103.2 dBuV/m
Delta measurement = 49.7 dB

Plot 4-23: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz – 6 Mbps) YAGI Antenna



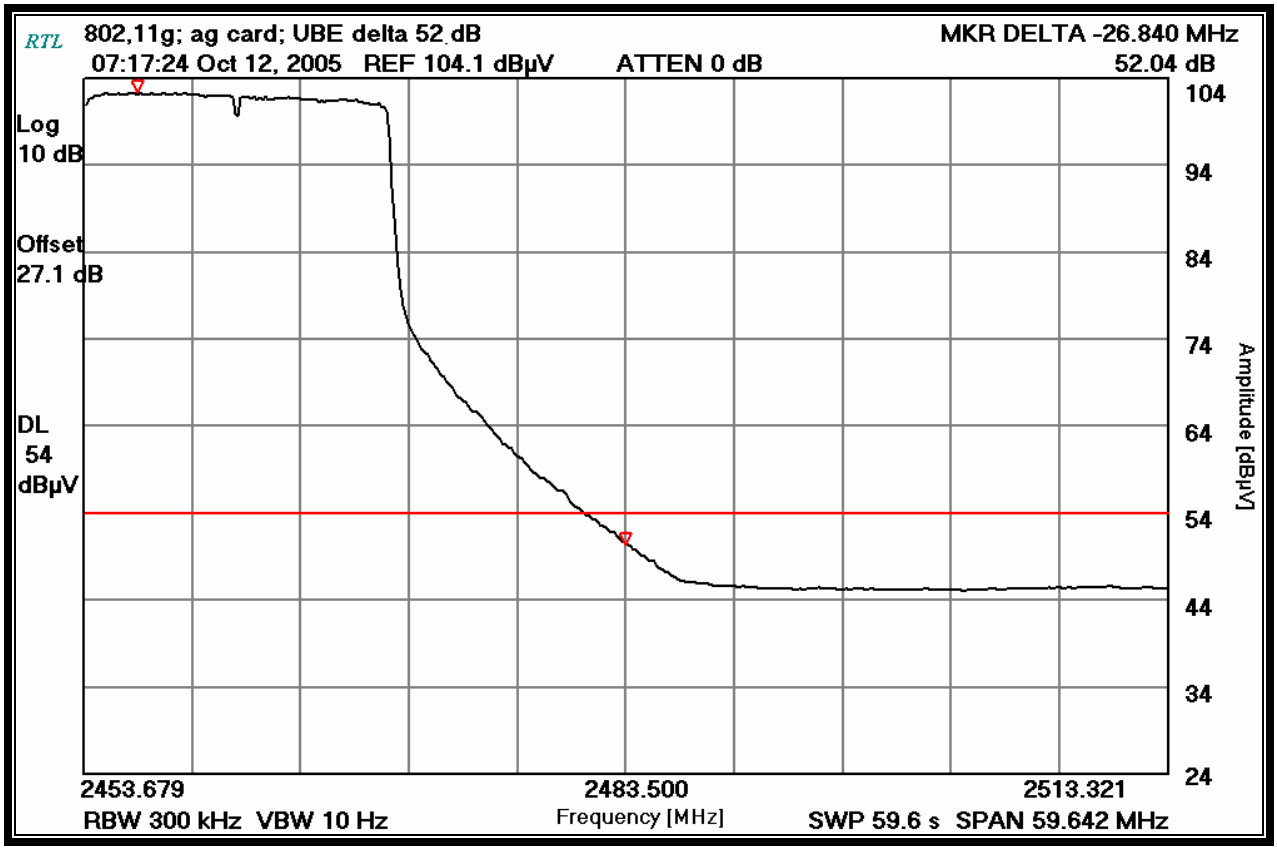
4.3.2.6 Calculation of Upper Band Edge MaxRad YAGI 14 dBi Antenna

105.4 dBuV/m is the field strength measurement, from which the delta measurement of 52.0 dB is subtracted (reference plots), resulting in a level of 53.4 dB. This level has a margin of 0.6 dB below the limit of 54 dBuV/m.

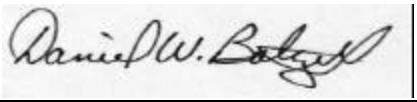
Calculation: 105.4 dBuV/m – 52.0 dB – 54 dBuV/m = -0.6 dB

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 114.1 dBuV/m
Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 105.4 dBuV/m
Delta measurement = 52.0 dB

Plot 4-24: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz – 6 Mbps) YAGI Antenna



Test Personnel:

Daniel W. Baltzell		October 12, 2005
Test Engineer	Signature	Dates Of Test

5 Antenna Conducted Spurious Emissions - §15.247(c); RSS-210 §A8.5

5.1 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: 2412 MHz, 2437 MHz and 2462 MHz. No other harmonics or spurs were found within 20 dB of the carrier level from 2.5 GHz to 24 GHz. See the Antenna Conducted Spurious Noise Table below. The low, middle, and high frequencies were investigated and tested.

Table 5-1: Antenna Conducted Spurious Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	8/03/06

5.2 Antenna Conducted Spurious Emissions Test Results for 802.11b/g card

5.2.1 802.11b Test Results

Table 5-2: Antenna Conducted Spurious Emissions - Channel 1 - 2412 MHz 802.11b

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
601.268	-54.3	59.2	20.0	-39.2
1607.988	-70.8	75.7	20.0	-55.7
2210.634	-59.0	63.9	20.0	-43.9
2239.983	-57.3	62.2	20.0	-42.2
2279.966	-53.4	58.3	20.0	-38.3
2359.974	-50.3	55.2	20.0	-35.2
2396.959	-33.4	38.3	20.0	-18.3
2412.000	4.9	**Fundamental**		
2426.969	-32.6	37.5	20.0	-17.5
2439.990	-49.9	54.8	20.0	-34.8
2479.976	-54.6	59.5	20.0	-39.5
3040.000	-79.7	84.6	20.0	-64.6
3216.000	-67.0	71.9	20.0	-51.9
4813.000	-77.4	82.3	20.0	-62.3
4816.000	-78.4	83.3	20.0	-63.3
4824.000	-64.6	69.5	20.0	-49.5
4832.050	-78.1	83.0	20.0	-63.0
4835.050	-76.5	81.4	20.0	-61.4
7236.000	-83.2	88.1	20.0	-68.1
9647.890	-75.1	80.0	20.0	-60.0
12059.890	-83.2	88.1	20.0	-68.1
14471.890	-78.8	83.7	20.0	-63.7
16883.890	-80.7	85.6	20.0	-65.6
19295.890	-75.0	79.9	20.0	-59.9
21707.890	-75.0	79.9	20.0	-59.9
24119.890	-71.1	76.0	20.0	-56.0

Table 5-3: Antenna Conducted Spurious Emissions - Channel 6 - 2437 MHz 802.11b

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
65.971	-77.7	84.1	20.0	-64.1
88.006	-75.8	82.2	20.0	-62.2
810.100	-72.3	78.7	20.0	-58.7
1624.641	-69.6	76.0	20.0	-56.0
2233.500	-58.1	64.5	20.0	-44.5
2240.000	-58.5	64.9	20.0	-44.9
2280.000	-53.3	59.7	20.0	-39.7
2359.974	-49.4	55.8	20.0	-35.8
2422.200	-32.6	39.0	20.0	-19.0
2437.000	6.4	**Fundamental**		
2449.600	-35.6	42.0	20.0	-22.0
2462.460	-49.4	55.8	20.0	-35.8
2473.540	-50.8	57.2	20.0	-37.2
3039.000	-78.8	85.2	20.0	-65.2
3249.000	-65.9	72.3	20.0	-52.3
4862.900	-72.3	78.7	20.0	-58.7
4866.000	-74.1	80.5	20.0	-60.5
4873.950	-63.4	69.8	20.0	-49.8
4882.050	-72.5	78.9	20.0	-58.9
4885.000	-71.9	78.3	20.0	-58.3
7311.000	-73.0	79.4	20.0	-59.4
9736.900	-66.9	73.3	20.0	-53.3
9739.900	-66.0	72.4	20.0	-52.4
9748.000	-58.6	65.0	20.0	-45.0
9756.000	-66.1	72.5	20.0	-52.5
9758.950	-66.9	73.3	20.0	-53.3
12185.000	-71.0	77.4	20.0	-57.4
14621.800	-66.1	72.5	20.0	-52.5
17058.800	-80.2	86.6	20.0	-66.6
19495.800	-72.9	79.3	20.0	-59.3
21932.800	-74.1	80.5	20.0	-60.5
24369.800	-74.5	80.9	20.0	-60.9

Table 5-4: Antenna Conducted Spurious Emissions - Channel 11 - 2462 MHz 802.11b

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
65.980	-76.9	82.4	20.0	-62.4
88.030	-76	81.5	20.0	-61.5
822.700	-71.5	77.0	20.0	-57.0
938.800	-66.3	71.8	20.0	-51.8
1641.314	-69.7	75.2	20.0	-55.2
2239.900	-56.7	62.2	20.0	-42.2
2256.050	-56.5	62.0	20.0	-42.0
2257.000	-56.2	61.7	20.0	-41.7
2279.500	-55.4	60.9	20.0	-40.9
2360.000	-52.0	57.5	20.0	-37.5
2462.000	5.5	**Fundamental**		
2559.000	-59.4	64.9	20.0	-44.9
2815.000	-71.3	76.8	20.0	-56.8
2990.000	-70.9	76.4	20.0	-56.4
3039.900	-79.4	84.9	20.0	-64.9
3282.630	-61.8	67.3	20.0	-47.3
4912.950	-78.8	84.3	20.0	-64.3
4915.950	-79.9	85.4	20.0	-65.4
4924.000	-69.0	74.5	20.0	-54.5
4932.100	-80.3	85.8	20.0	-65.8
4935.100	-78.9	84.4	20.0	-64.4
7311.000	-80.5	86.0	20.0	-66.0
9836.850	-77.4	82.9	20.0	-62.9
9839.850	-77.2	82.7	20.0	-62.7
9847.900	-71.8	77.3	20.0	-57.3
9855.900	-78.2	83.7	20.0	-63.7
9858.900	-79.7	85.2	20.0	-65.2
12310.000	-83.7	89.2	20.0	-69.2
14772.000	-76.5	82.0	20.0	-62.0
17234.000	-77.8	83.3	20.0	-63.3
19696.000	-74.9	80.4	20.0	-60.4
22158.000	-74.4	79.9	20.0	-59.9
24620.000	-73.9	79.4	20.0	-59.4

5.2.2 802.11g Test Results

Table 5-5: Antenna Conducted Spurious Emissions - Channel 1 - 2412 MHz 802.11g

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
213.330	-70.9	71.1	20.0	-51.1
1607.988	-68.9	69.1	20.0	-49.1
2210.634	-60.4	60.6	20.0	-40.6
2239.983	-59.8	60.0	20.0	-40.0
2279.966	-55.8	56.0	20.0	-36.0
2359.974	-52.1	52.3	20.0	-32.3
2401.096	-24.3	24.5	20.0	-4.5
2412.000	0.2	**Fundamental**		
2423.200	-24.8	25.0	20.0	-5.0
2439.870	-48.9	49.1	20.0	-29.1
2479.976	-54.2	54.4	20.0	-34.4
3040.000	-79.3	79.5	20.0	-59.5
3216.000	-65.0	65.2	20.0	-45.2
4825.860	-74.0	74.2	20.0	-54.2
7237.860	-80.3	80.5	20.0	-60.5
9647.890	-74.3	74.5	20.0	-54.5
12059.890	-81.0	81.2	20.0	-61.2
14471.890	-76.2	76.4	20.0	-56.4
16883.890	-76.1	76.3	20.0	-56.3
19295.890	-71.9	72.1	20.0	-52.1
21707.890	-71.2	71.4	20.0	-51.4
24119.890	-71.0	71.2	20.0	-51.2

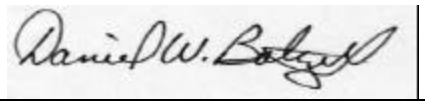
Table 5-6: Antenna Conducted Spurious Emissions - Channel 6 - 2437 MHz 802.11g

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
43.930	-78.4	81.1	20.0	-61.1
88.100	-76.1	78.8	20.0	-58.8
816.400	-68.3	71.0	20.0	-51.0
1624.638	-65.7	68.4	20.0	-48.4
2233.400	-56.1	58.8	20.0	-38.8
2280.100	-53.1	55.8	20.0	-35.8
2288.400	-54.0	56.7	20.0	-36.7
2320.300	-52.4	55.1	20.0	-35.1
2360.100	-49.4	52.1	20.0	-32.1
2425.362	-20.6	23.3	20.0	-3.3
2437.000	2.7	**Fundamental**		
2450.040	-21.9	24.6	20.0	-4.6
3039.000	-80.4	83.1	20.0	-63.1
3249.000	-66.7	69.4	20.0	-49.4
4871.700	-68.8	71.5	20.0	-51.5
7306.500	-69.4	72.1	20.0	-52.1
9750.700	-59.2	61.9	20.0	-41.9
12192.600	-68.1	70.8	20.0	-50.8
14621.800	-66.4	69.1	20.0	-49.1
17058.800	-78.7	81.4	20.0	-61.4
19495.800	-73.1	75.8	20.0	-55.8
21932.800	-75.1	77.8	20.0	-57.8
24369.800	-73.5	76.2	20.0	-56.2

Table 5-7: Antenna Conducted Spurious Emissions - Channel 11 - 2462 MHz 802.11g

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
88.170	-73.3	78.6	20.0	-58.6
828.100	-66.5	71.8	20.0	-51.8
1641.000	-67.1	72.4	20.0	-52.4
2160.000	-68.3	73.6	20.0	-53.6
2240.000	-63.7	69.0	20.0	-49.0
2257.500	-59.7	65.0	20.0	-45.0
2280.500	-58.4	63.7	20.0	-43.7
2360.000	-49.4	54.7	20.0	-34.7
2462.000	5.3	**Fundamental**		
2501.000	-42.4	47.7	20.0	-27.7
2759.500	-75.4	80.7	20.0	-60.7
2815.500	-74.3	79.6	20.0	-59.6
2839.500	-75.0	80.3	20.0	-60.3
2919.500	-76.3	81.6	20.0	-61.6
2960.000	-75.4	80.7	20.0	-60.7
2992.000	-73.2	78.5	20.0	-58.5
3040.000	-79.0	84.3	20.0	-64.3
3282.620	-65.5	70.8	20.0	-50.8
4921.900	-62.2	67.5	20.0	-47.5
7386.550	-75.9	81.2	20.0	-61.2
9845.400	-54.6	59.9	20.0	-39.9
12307.400	-63.0	68.3	20.0	-48.3
14770.000	-59.6	64.9	20.0	-44.9
17234.000	-79.1	84.4	20.0	-64.4
19696.000	-73.5	78.8	20.0	-58.8
22158.000	-73.8	79.1	20.0	-59.1
24620.000	-73.7	79.0	20.0	-59.0

Test Personnel:



Daniel W. Baltzell		September 13, 2005
EMC Test Engineer	Signature	Date Of Test

5.3 Antenna Conducted Spurious Emissions Test Results for 802.11a/b/g card

5.3.1 802.11b Test Results

Table 5-8: Antenna Conducted Spurious Emissions - Channel 1 - 2412 MHz 802.11b

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
457.283	-50.0	54.3	20.0	-34.3
1656.300	-52.2	56.5	20.0	-36.5
2015.980	-40.2	44.5	20.0	-24.5
2135.980	-56.0	60.3	20.0	-40.3
2279.968	-52.7	57.0	20.0	-37.0
2359.968	-47.7	52.0	20.0	-32.0
2396.960	-38.4	42.7	20.0	-22.7
2412.000	4.3	**Fundamental**		
2424.499	-40.4	44.7	20.0	-24.7
2439.975	-49.2	53.5	20.0	-33.5
2479.965	-52.2	56.5	20.0	-36.5
2519.968	-51.0	55.3	20.0	-35.3
2687.973	-48.2	52.5	20.0	-32.5
4813.000	-66.6	70.9	20.0	-50.9
4816.000	-70.0	74.3	20.0	-54.3
4824.000	-53.3	57.6	20.0	-37.6
4832.050	-67.0	71.3	20.0	-51.3
4835.050	-64.8	69.1	20.0	-49.1
7236.000	-78.5	82.8	20.0	-62.8
9647.890	-72.4	76.7	20.0	-56.7
12059.890	-79.0	83.3	20.0	-63.3

Table 5-9: Antenna Conducted Spurious Emissions - Channel 6 - 2437 MHz 802.11b

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
476.301	-56.1	54.6	20.0	-34.6
1764.983	-62.4	60.9	20.0	-40.9
2015.000	-41.7	40.2	20.0	-20.2
2185.000	-55.8	54.3	20.0	-34.3
2280.000	-56.9	55.4	20.0	-35.4
2360.000	-49.8	48.3	20.0	-28.3
2424.463	-46.5	45.0	20.0	-25.0
2437.000	-1.5	**Fundamental**		
2448.965	-45.4	43.9	20.0	-23.9
2522.000	-53.3	51.8	20.0	-31.8
2602.000	-61.9	60.4	20.0	-40.4
2692.000	-49.9	48.4	20.0	-28.4
2860.000	-69.3	67.8	20.0	-47.8
2915.000	-66.2	64.7	20.0	-44.7
4866.000	-71.4	69.9	20.0	-49.9
4874.000	-57.7	56.2	20.0	-36.2
4877.000	-72.3	70.8	20.0	-50.8
4882.000	-70.2	68.7	20.0	-48.7
7311.000	-70.0	68.5	20.0	-48.5
9748.000	-78.9	77.4	20.0	-57.4
12185.000	-78.6	77.1	20.0	-57.1

Table 5-10: Antenna Conducted Spurious Emissions - Channel 11 - 2462 MHz 802.11b

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
361.400	-65.7	64.0	20.0	-44.0
448.700	-63.8	62.1	20.0	-42.1
561.900	-63.3	61.6	20.0	-41.6
1792.000	-63.2	61.5	20.0	-41.5
2017.000	-41.3	39.6	20.0	-19.6
2202.000	-60.0	58.3	20.0	-38.3
2237.000	-54.3	52.6	20.0	-32.6
2280.000	-55.8	54.1	20.0	-34.1
2322.000	-55.5	53.8	20.0	-33.8
2360.000	-50.2	48.5	20.0	-28.5
2462.000	-1.7	**Fundamental**		
2522.000	-51.2	49.5	20.0	-29.5
2602.000	-60.3	58.6	20.0	-38.6
2690.000	-49.5	47.8	20.0	-27.8
4916.070	-72.8	71.1	20.0	-51.1
4921.030	-74.5	72.8	20.0	-52.8
4924.070	-58.0	56.3	20.0	-36.3
4927.100	-72.3	70.6	20.0	-50.6
4931.130	-73.3	71.6	20.0	-51.6
4932.170	-69.7	68.0	20.0	-48.0
7386.830	-78.5	76.8	20.0	-56.8
9848.000	-80.8	79.1	20.0	-59.1
12310.000	-83.3	81.6	20.0	-61.6
14772.000	-86.0	84.3	20.0	-64.3
17234.000	-84.2	82.5	20.0	-62.5
19696.000	-83.8	82.1	20.0	-62.1
22158.000	-82.8	81.1	20.0	-61.1
24620.000	-79.5	77.8	20.0	-57.8

5.3.2 802.11g Test Results

Table 5-11: Antenna Conducted Spurious Emissions - Channel 1 - 2412 MHz 802.11g

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
450.830	-63.4	56.4	20.0	-36.4
1739.950	-59.9	52.9	20.0	-32.9
2015.963	-40.7	33.7	20.0	-13.7
2135.973	-59.4	52.4	20.0	-32.4
2200.000	-59.8	52.8	20.0	-32.8
2255.950	-56.3	49.3	20.0	-29.3
2279.963	-54.7	47.7	20.0	-27.7
2359.963	-48.4	41.4	20.0	-21.4
2412.000	-0.7	**Fundamental**		
2439.963	-49.2	42.2	20.0	-22.2
2519.975	-51.3	44.3	20.0	-24.3
2560.200	-58.2	51.2	20.0	-31.2
2600.000	-61.7	54.7	20.0	-34.7
2687.975	-48.8	48.8	20.0	-28.8
4822.960	-70.3	63.3	20.0	-43.3
7237.860	-79.2	72.2	20.0	-52.2
9647.890	-78.9	71.9	20.0	-51.9
12059.890	-78.2	71.2	20.0	-51.2

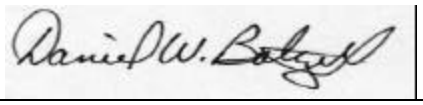
Table 5-12: Antenna Conducted Spurious Emissions - Channel 6 - 2437 MHz 802.11g

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
560.003	-62.3	59.3	20.0	-39.3
1765.025	-60.5	57.5	20.0	-37.5
2017.000	-41.5	38.5	20.0	-18.5
2080.000	-66.0	63.0	20.0	-43.0
2160.000	-61.2	58.2	20.0	-38.2
2187.000	-58.5	55.5	20.0	-35.5
2240.000	-59.8	56.8	20.0	-36.8
2280.100	-56.3	53.3	20.0	-33.3
2320.300	-55.2	52.2	20.0	-32.2
2360.000	-50.0	47.0	20.0	-27.0
2437.000	-3.0	**Fundamental**		
2522.000	-51.5	48.5	20.0	-28.5
2562.000	-61.0	58.0	20.0	-38.0
2600.000	-61.8	58.8	20.0	-38.8
2690.000	-49.5	46.5	20.0	-26.5
4874.000	-66.2	63.2	20.0	-43.2
7311.000	-82.5	79.5	20.0	-59.5
9748.000	-85.7	82.7	20.0	-62.7
12185.000	-86.3	83.3	20.0	-63.3
14622.000	-83.5	80.5	20.0	-60.5
17059.000	-82.3	79.3	20.0	-59.3
19496.000	-83.0	80.0	20.0	-60.0
21933.000	-81.8	78.8	20.0	-58.8
24370.000	-83.0	80.0	20.0	-60.0

Table 5-13: Antenna Conducted Spurious Emissions - Channel 11 - 2462 MHz 802.11g

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
448.700	-65.3	60.0	20.0	-40.0
481.100	-63.7	58.4	20.0	-38.4
521.500	-64.7	59.4	20.0	-39.4
560.300	-63.5	58.2	20.0	-38.2
1792.000	-63.0	57.7	20.0	-37.7
2017.000	-40.8	35.5	20.0	-15.5
2281.000	-53.2	47.9	20.0	-27.9
2361.000	-49.8	44.5	20.0	-24.5
2462.000	-5.3	**Fundamental**		
2521.000	-50.5	45.2	20.0	-25.2
2689.000	-47.7	42.4	20.0	-22.4
4924.000	-70.8	65.5	20.0	-45.5
7386.000	-76.8	71.5	20.0	-51.5
9848.000	-82.5	77.2	20.0	-57.2
12310.000	-82.7	77.4	20.0	-57.4
14772.000	-80.3	75.0	20.0	-55.0
17234.000	-80.5	75.2	20.0	-55.2
19696.000	-80.8	75.5	20.0	-55.5
22158.000	-80.3	75.0	20.0	-55.0
24620.000	-77.2	71.9	20.0	-51.9
2521.000	-50.5	45.2	20.0	-25.2
2689.000	-47.7	42.4	20.0	-22.4
4924.000	-70.8	65.5	20.0	-45.5
7386.000	-76.8	71.5	20.0	-51.5
9848.000	-82.5	77.2	20.0	-57.2
12310.000	-82.7	77.4	20.0	-57.4
14772.000	-80.3	75.0	20.0	-55.0

Test Personnel:

Daniel W. Baltzell		October 20, 2005
EMC Test Engineer	Signature	Date Of Test

6 6 dB Bandwidth - §15.247(a)(2); RSS-210 §A8.2(1)

6.1 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 100 kHz. The device was modulated using the maximum 1 Mbps data rate for 802.11b and 6 Mbps for 802.11g. The minimum 6 dB bandwidths are presented below.

Table 6-1: 6 dB Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz – 12.8 GHz)	3826A00142	9/22/06

6.2 6 dB Bandwidth Test Results for 802.11b/g card

6.2.1 6 db Bandwidth Test Results

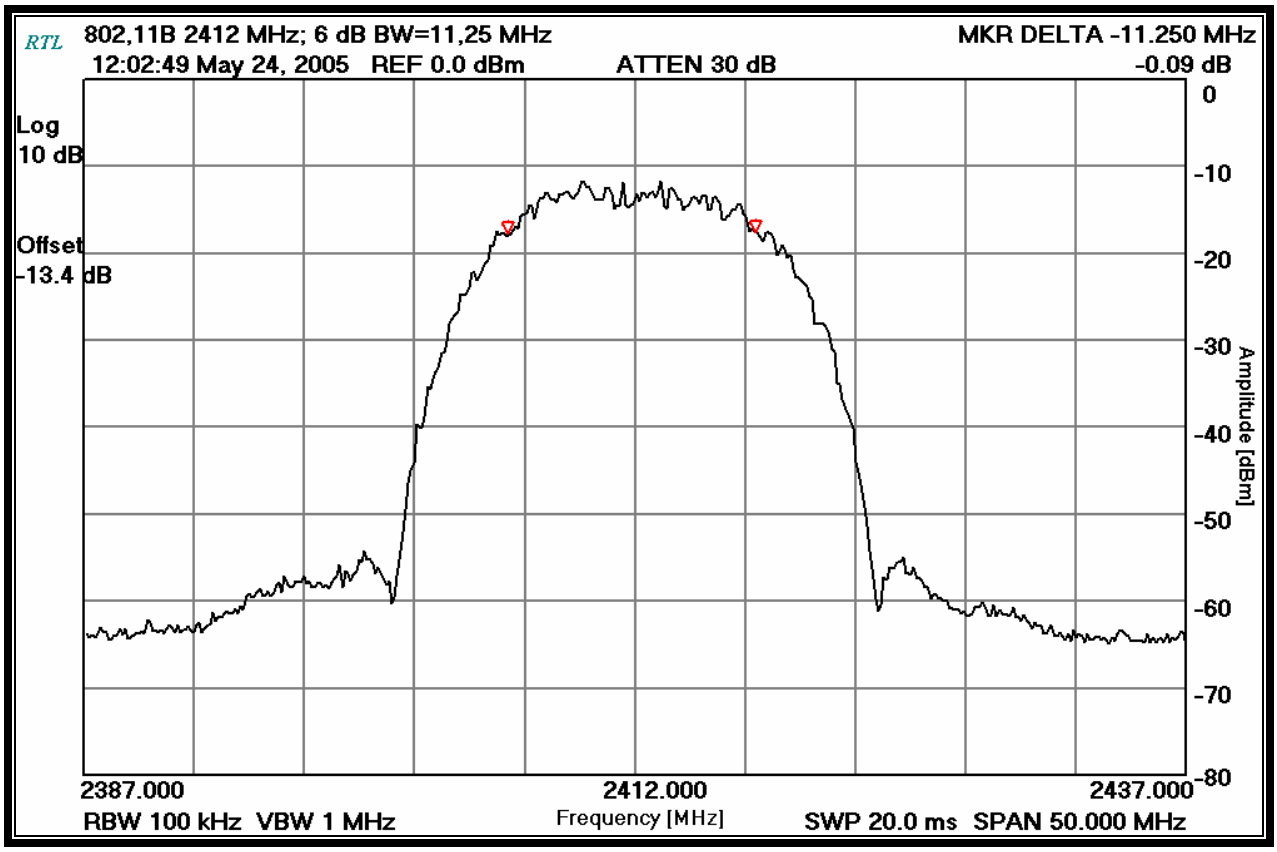
Table 6-2: 6 db Bandwidth Test Data - 802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	11.25	0.5	Pass
6	2437	11.25	0.5	Pass
11	2462	11.75	0.5	Pass

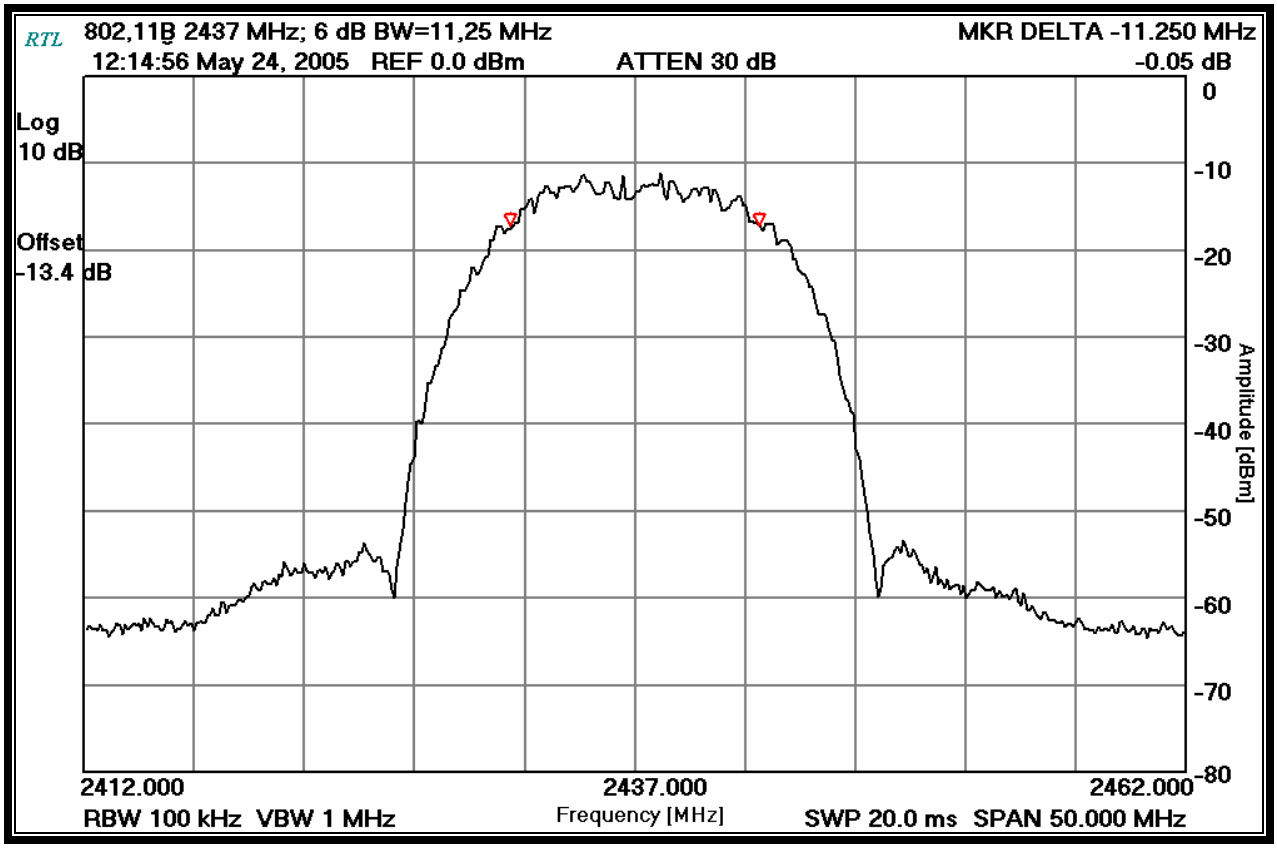
Table 6-3: 6 db Bandwidth Test Data - 802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	16.75	0.5	Pass
6	2437	16.75	0.5	Pass
11	2462	16.75	0.5	Pass
6 turbo	2437	16.75	0.5	Pass

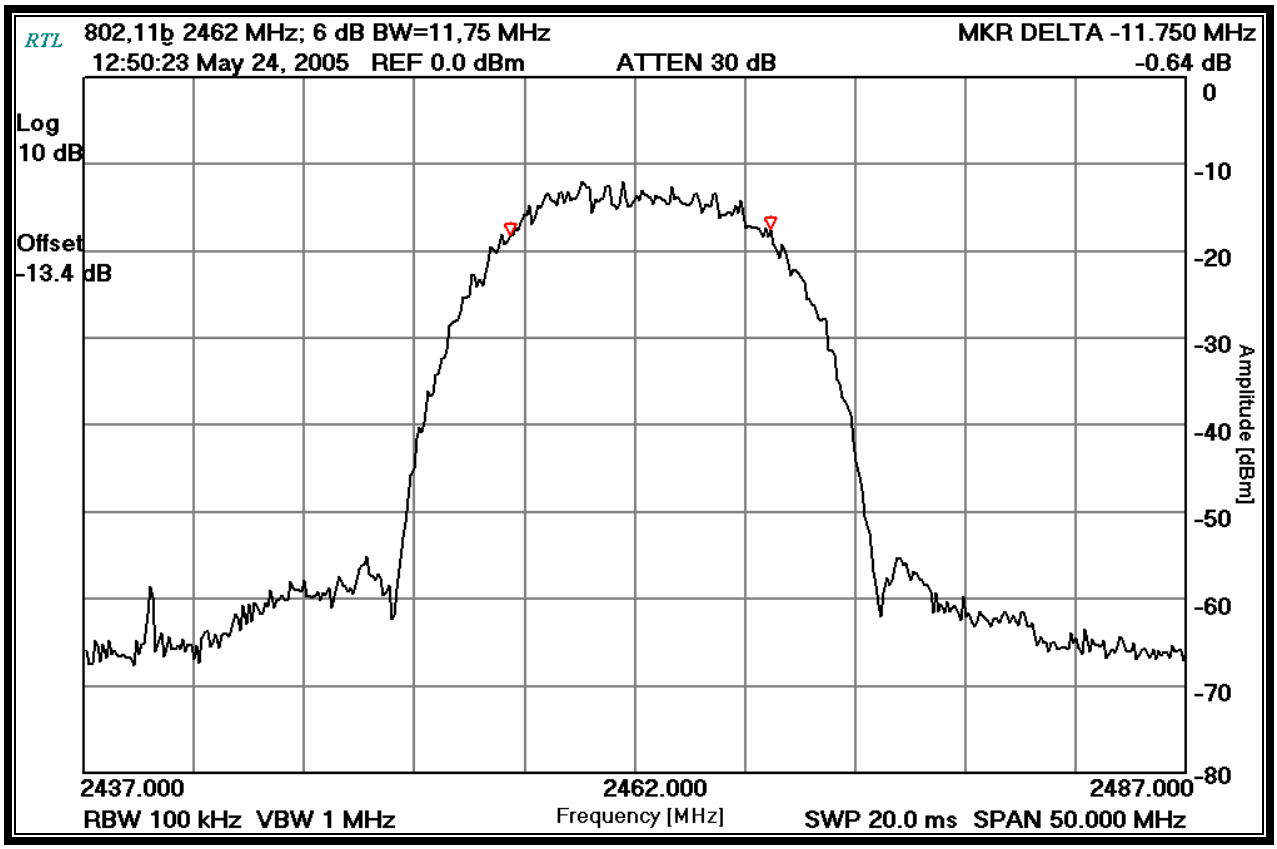
Plot 6-1: 6 dB Bandwidth Channel 1 (TX Frequency: 2412 MHz – 1 Mbps) 802.11b



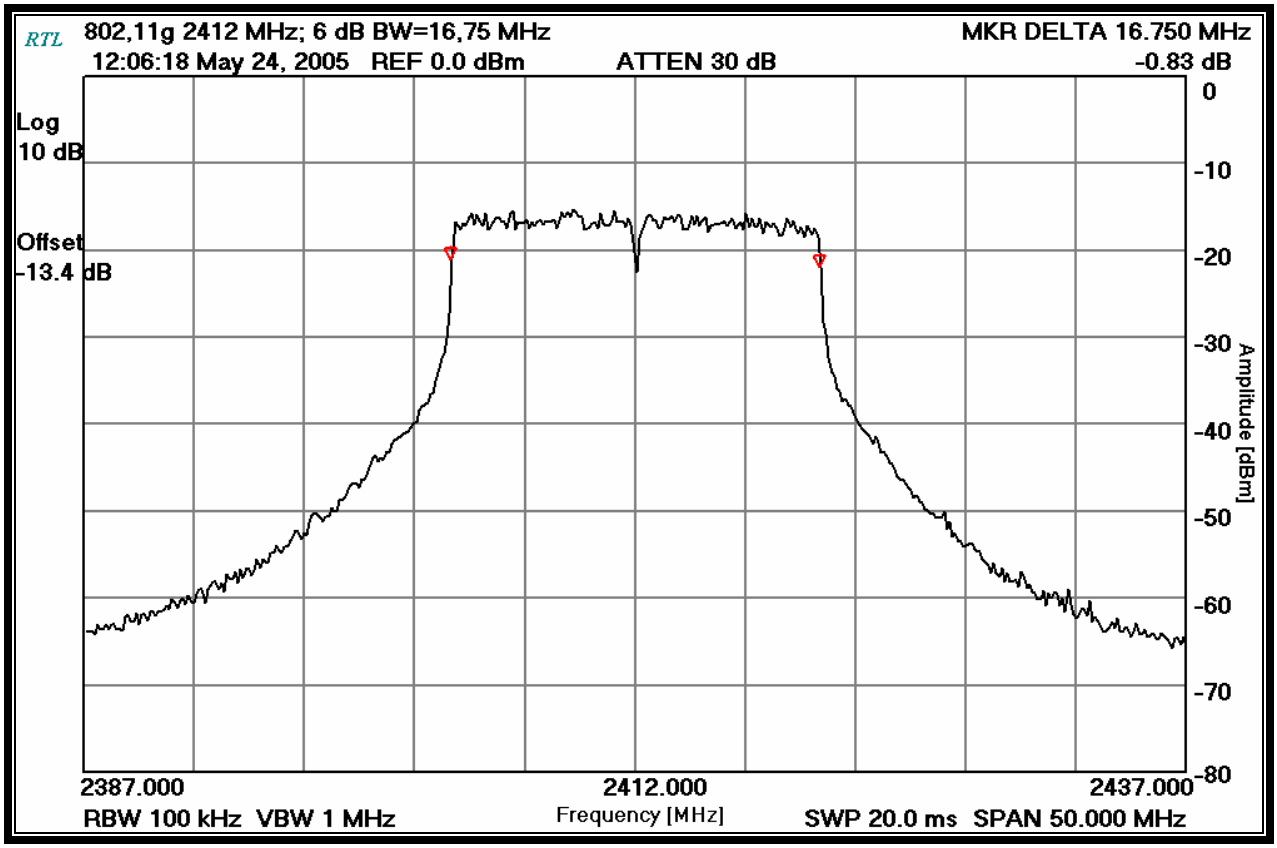
Plot 6-2: 6 dB Bandwidth Channel 6 (TX Frequency: 2437 MHz – 1 Mbps) 802.11b



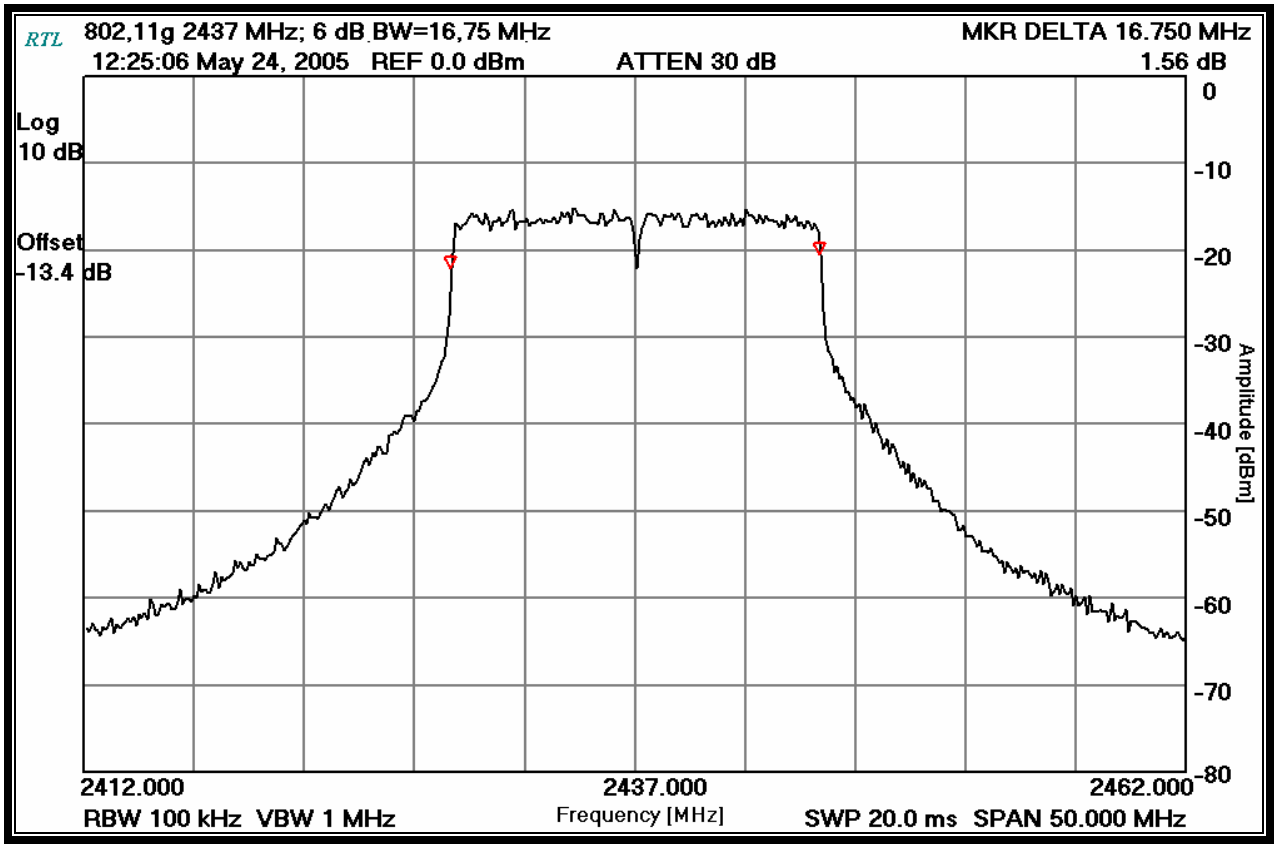
Plot 6-3: 6 dB Bandwidth Channel 11 (TX Frequency: 2462 MHz – 1 Mbps) 802.11b



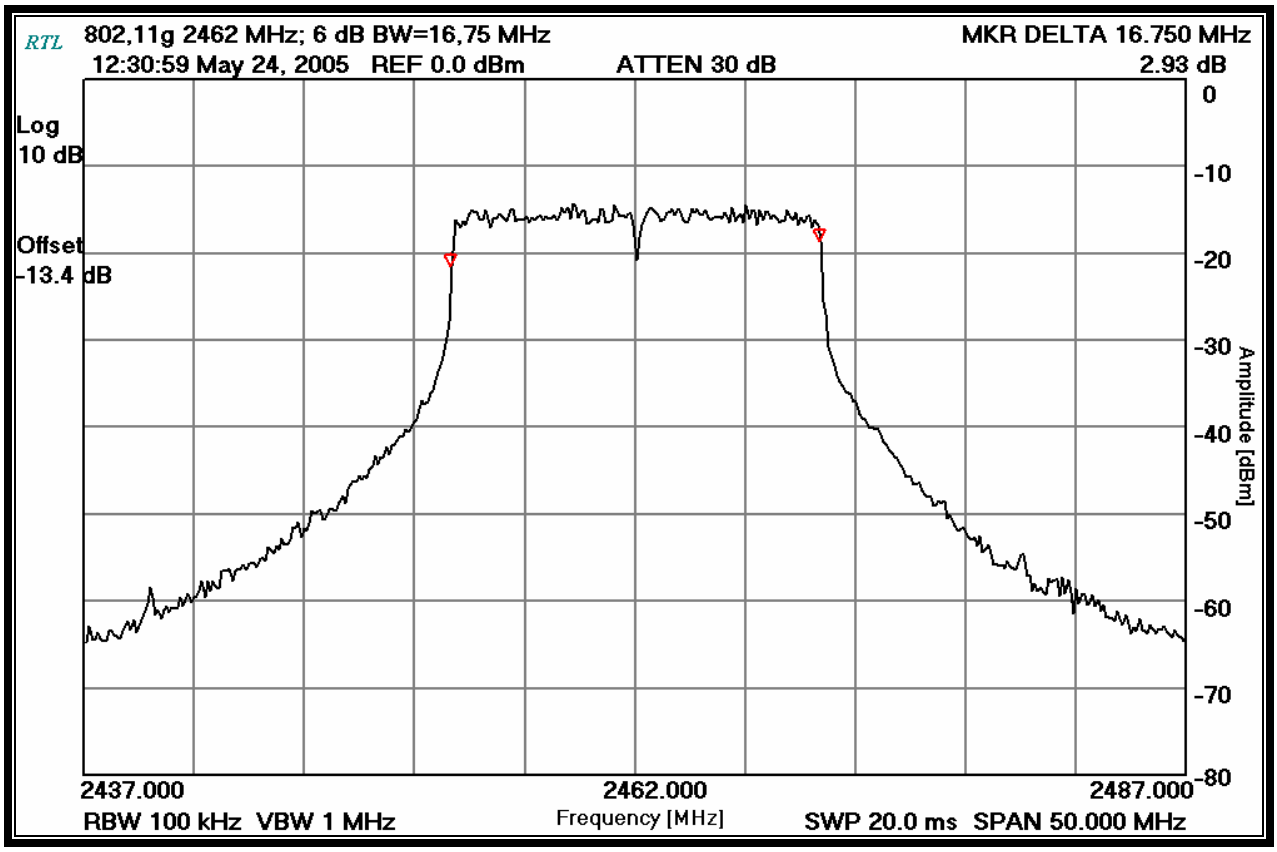
Plot 6-4: 6 dB Bandwidth Channel 1 (TX Frequency: 2412 MHz – 6 Mbps) 802.11g



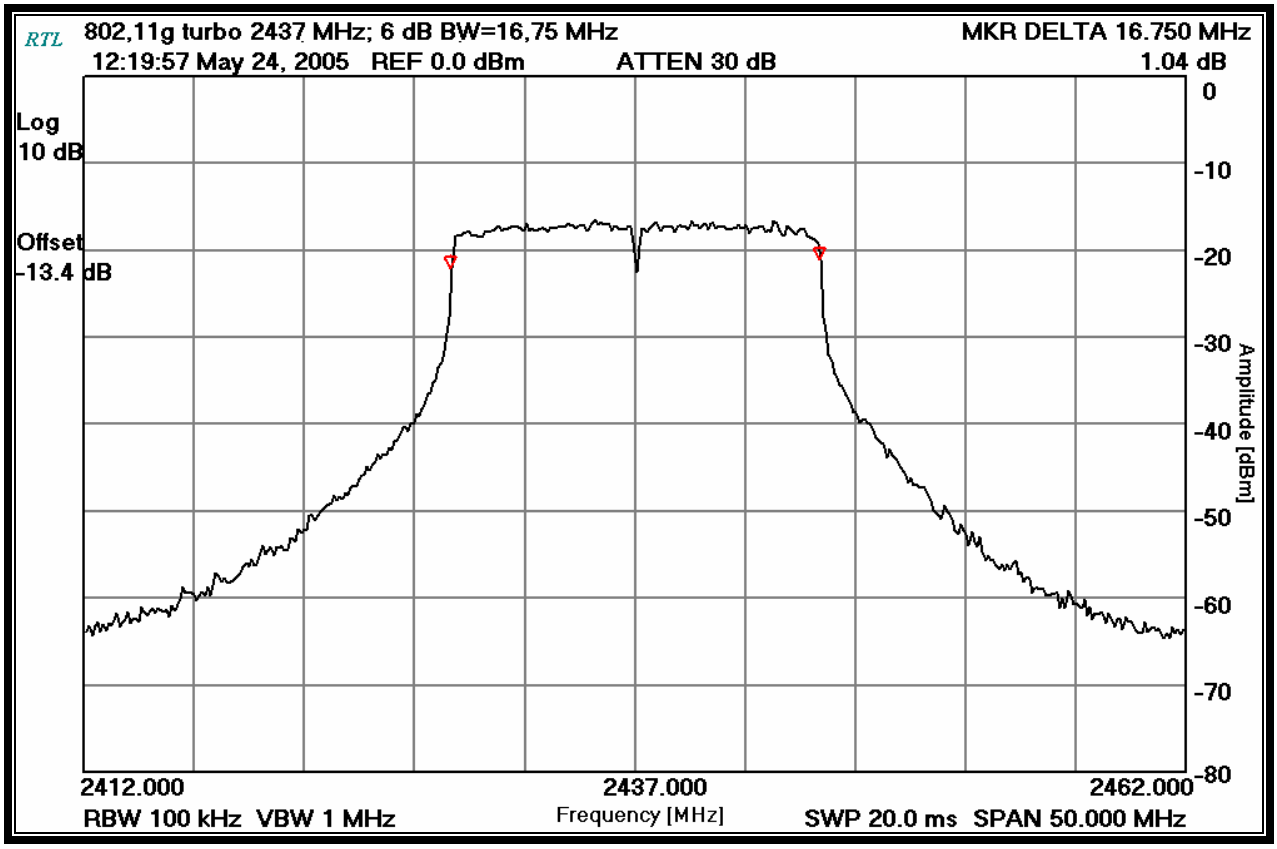
Plot 6-5: 6 dB Bandwidth Channel 6 (TX Frequency: 2437 MHz – 6 Mbps) 802.11g



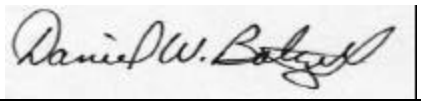
Plot 6-6: 6 dB Bandwidth Channel 11 (TX Frequency: 2462 MHz - 6 Mbps) 802.11g



Plot 6-7: 6 dB Bandwidth Channel 6 (TX Frequency: 2437 MHz – Turbo 12 Mbps) 802.11g



Test Personnel:

Daniel W. Baltzell		May 24, 2005
EMC Test Engineer	Signature	Date Of Test

6.3 6 dB Bandwidth Test Results for 802.11a/b/g card

6.3.1 6 db Bandwidth Test Results

Table 6-4: 6 db Bandwidth Test Data - 802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	10.25	0.5	Pass
6	2437	10.25	0.5	Pass
11	2462	10.25	0.5	Pass

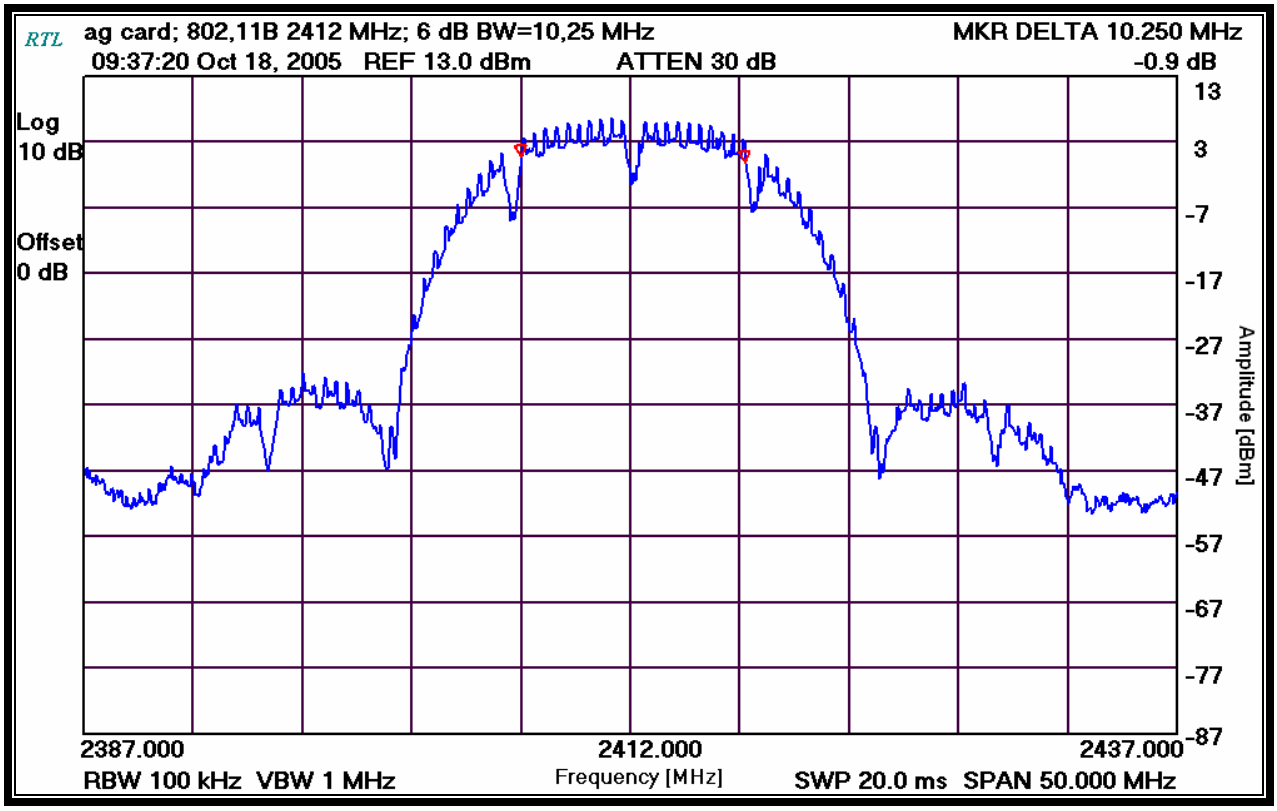
Table 6-5: 6 db Bandwidth Test Data - 802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	16.7	0.5	Pass
6	2437	16.6	0.5	Pass
11	2462	16.65	0.5	Pass
6 turbo	2437	16.65	0.5	Pass

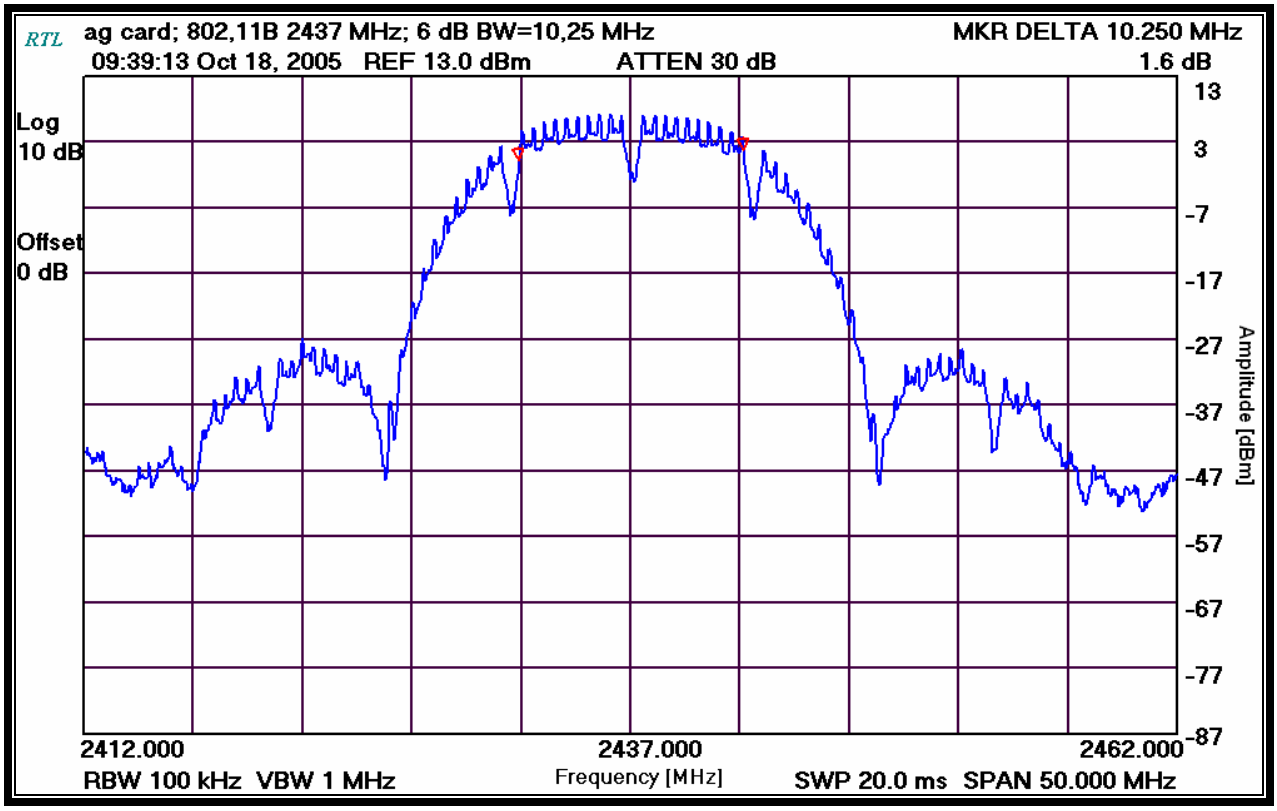
Table 6-6: 6 db Bandwidth Test Data - 802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
149	5745	16.65	0.5	Pass
157	5785	16.6	0.5	Pass
165	5825	16.6	0.5	Pass
160 turbo	5800	33.15	0.5	Pass
152 turbo	5760	33.3	0.5	Pass

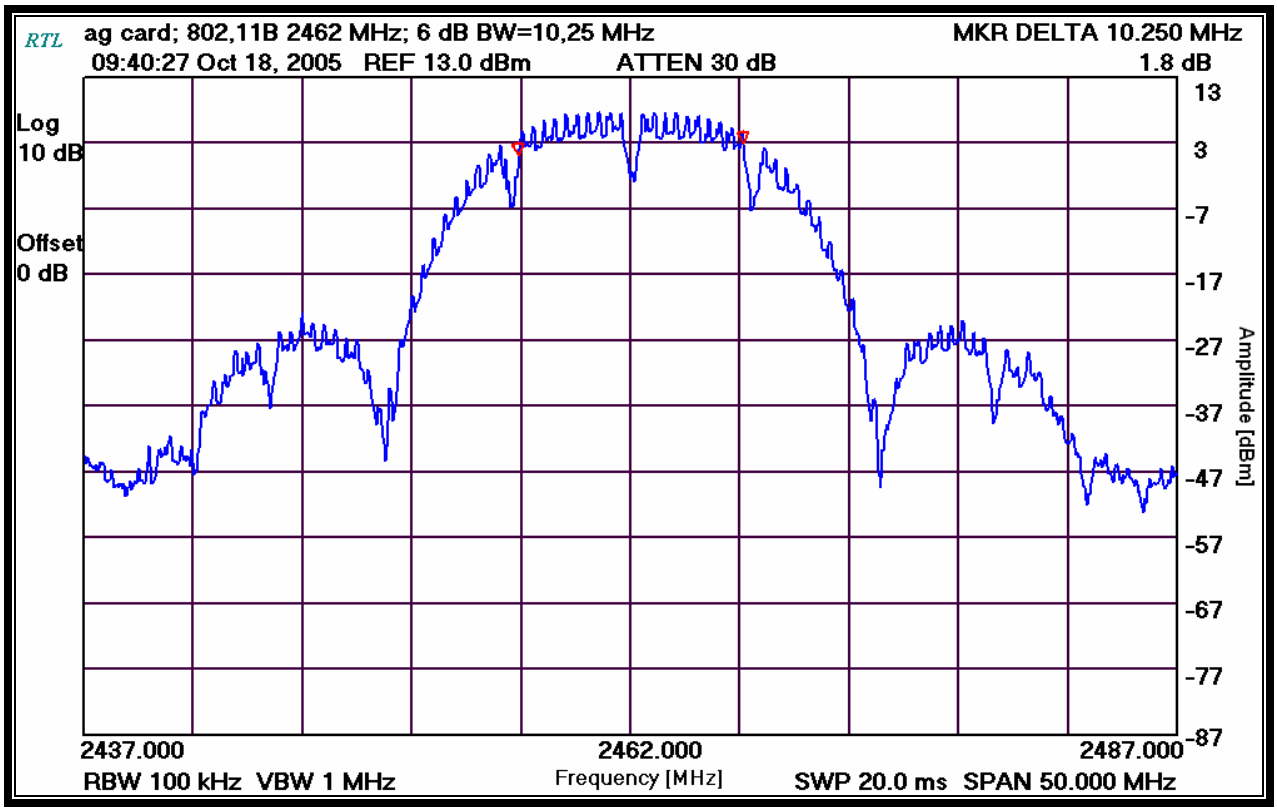
Plot 6-8: 6 dB Bandwidth Channel 1 (TX Frequency: 2412 MHz – 1 Mbps) 802.11b



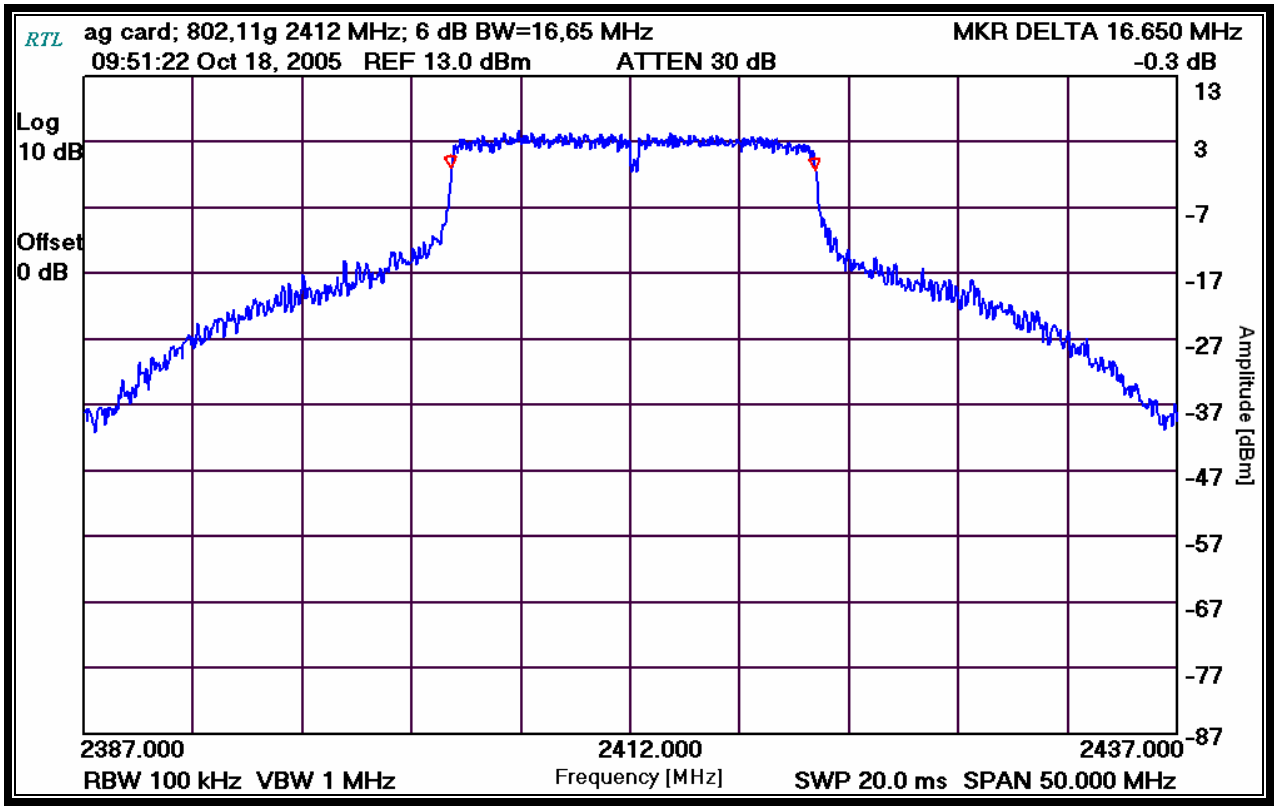
Plot 6-9: 6 dB Bandwidth Channel 6 (TX Frequency: 2437 MHz – 1 Mbps) 802.11b



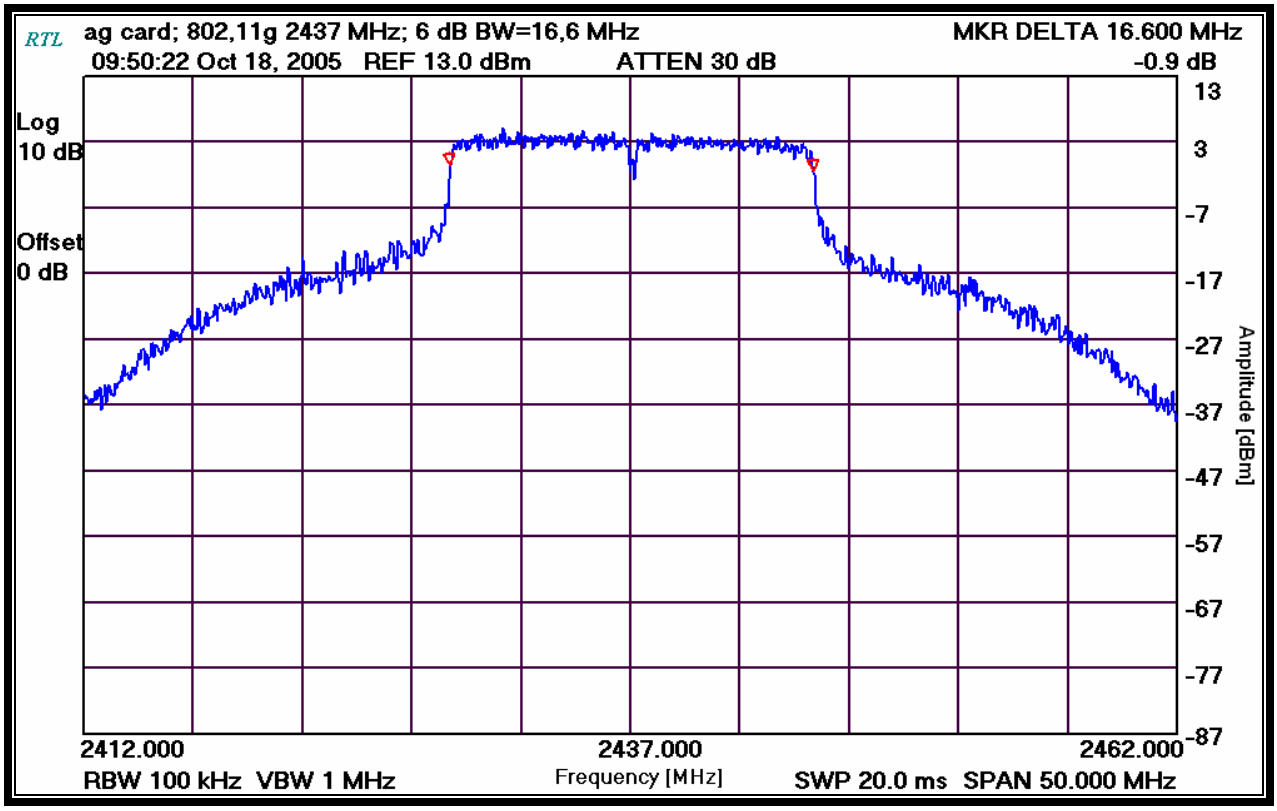
Plot 6-10: 6 dB Bandwidth Channel 11 (TX Frequency: 2462 MHz – 1 Mbps) 802.11b



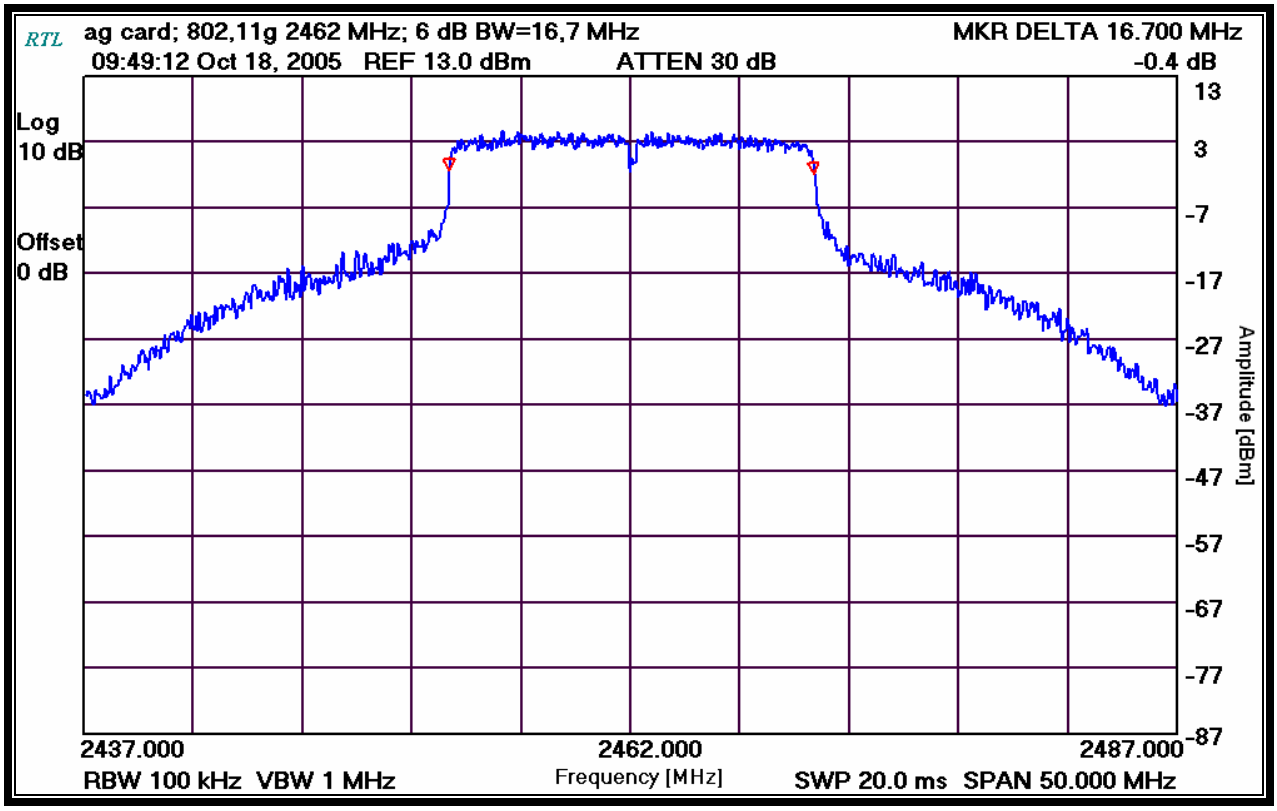
Plot 6-11: 6 dB Bandwidth Channel 1 (TX Frequency: 2412 MHz – 6 Mbps) 802.11g



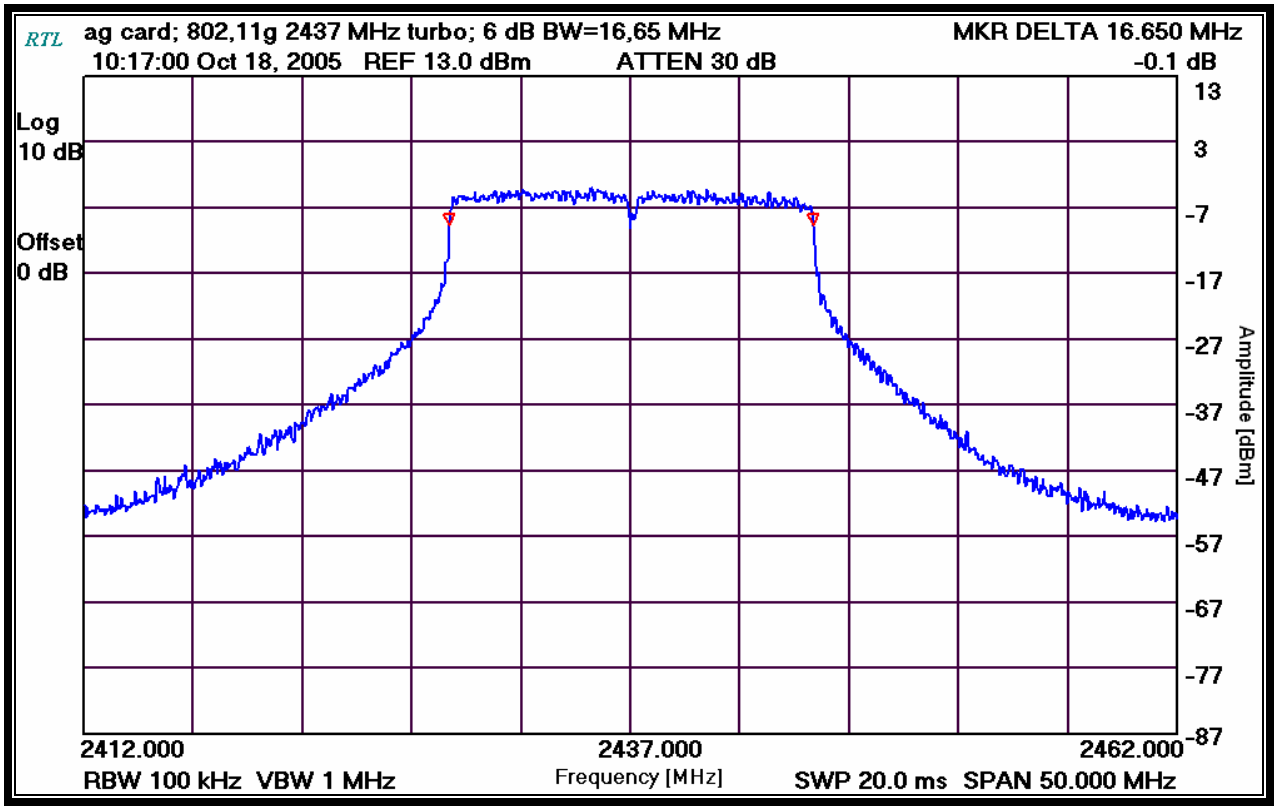
Plot 6-12: 6 dB Bandwidth Channel 6 (TX Frequency: 2437 MHz – 6 Mbps) 802.11g



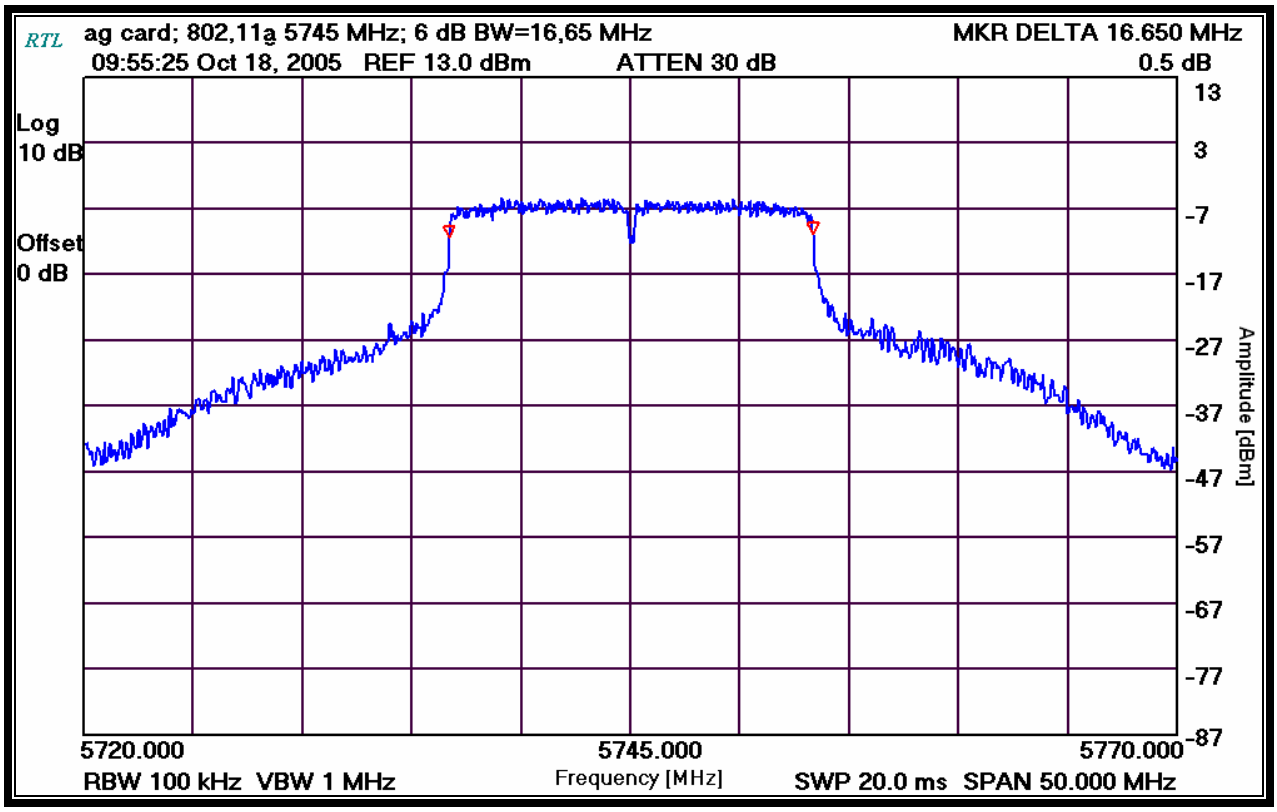
Plot 6-13: 6 dB Bandwidth Channel 11 (TX Frequency: 2462 MHz - 6 Mbps) 802.11g



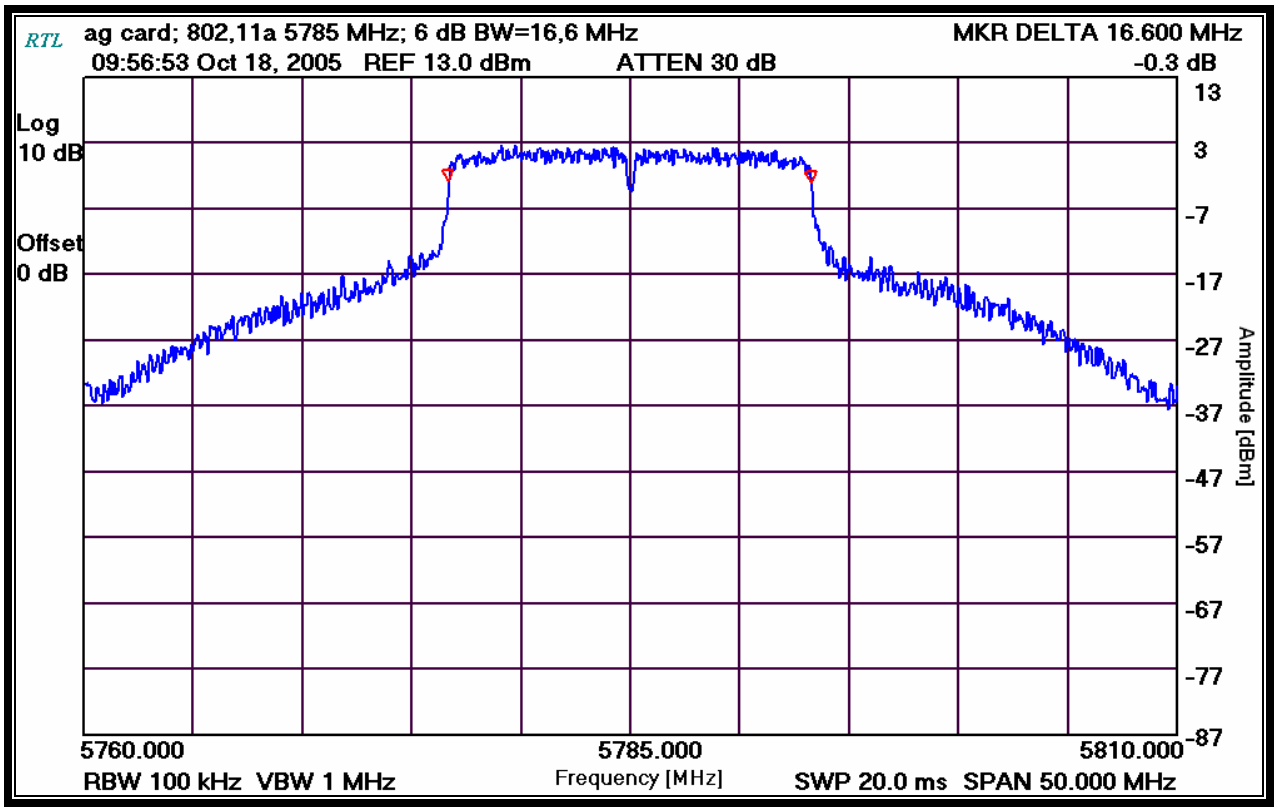
Plot 6-14: 6 dB Bandwidth Channel 6 (TX Frequency: 2437 MHz – Turbo 12 Mbps) 802.11g



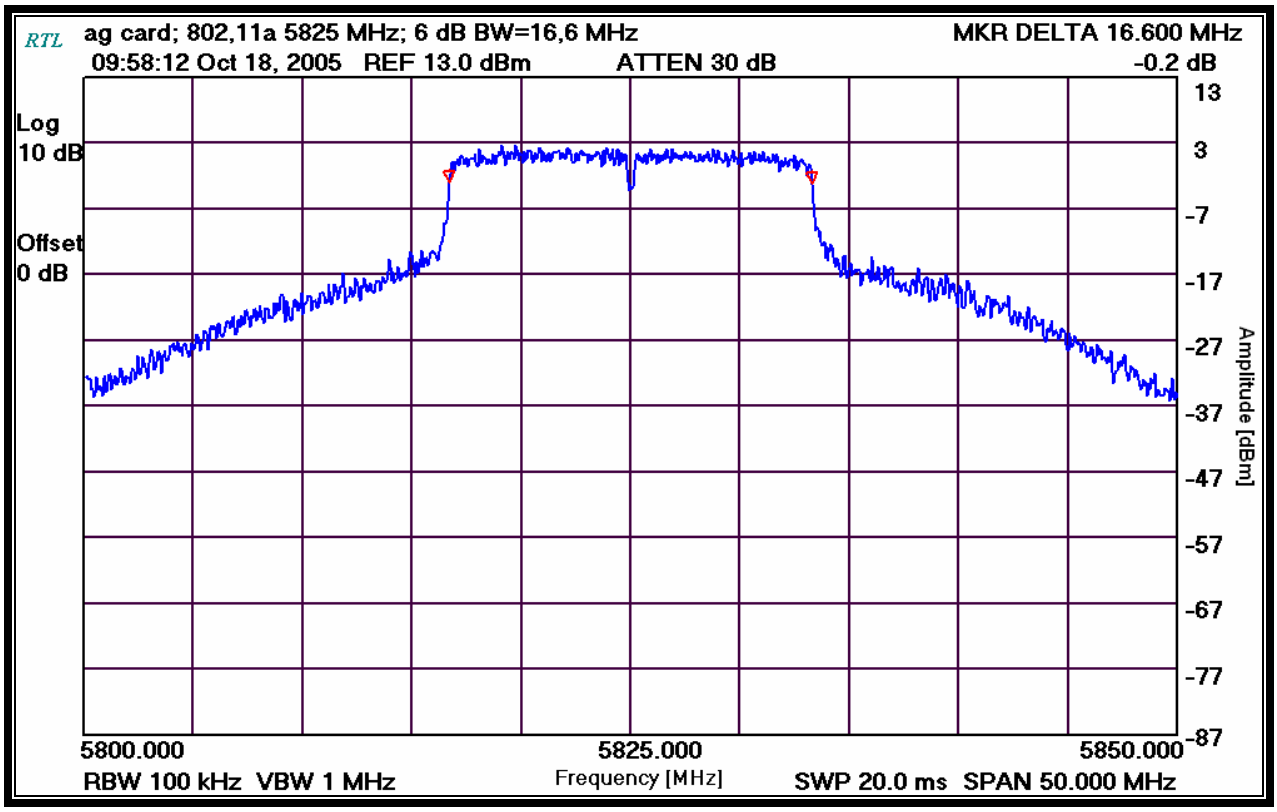
Plot 6-15: 6 dB Bandwidth Channel 149 (TX Frequency: 5745 MHz – 6 Mbps) 802.11a



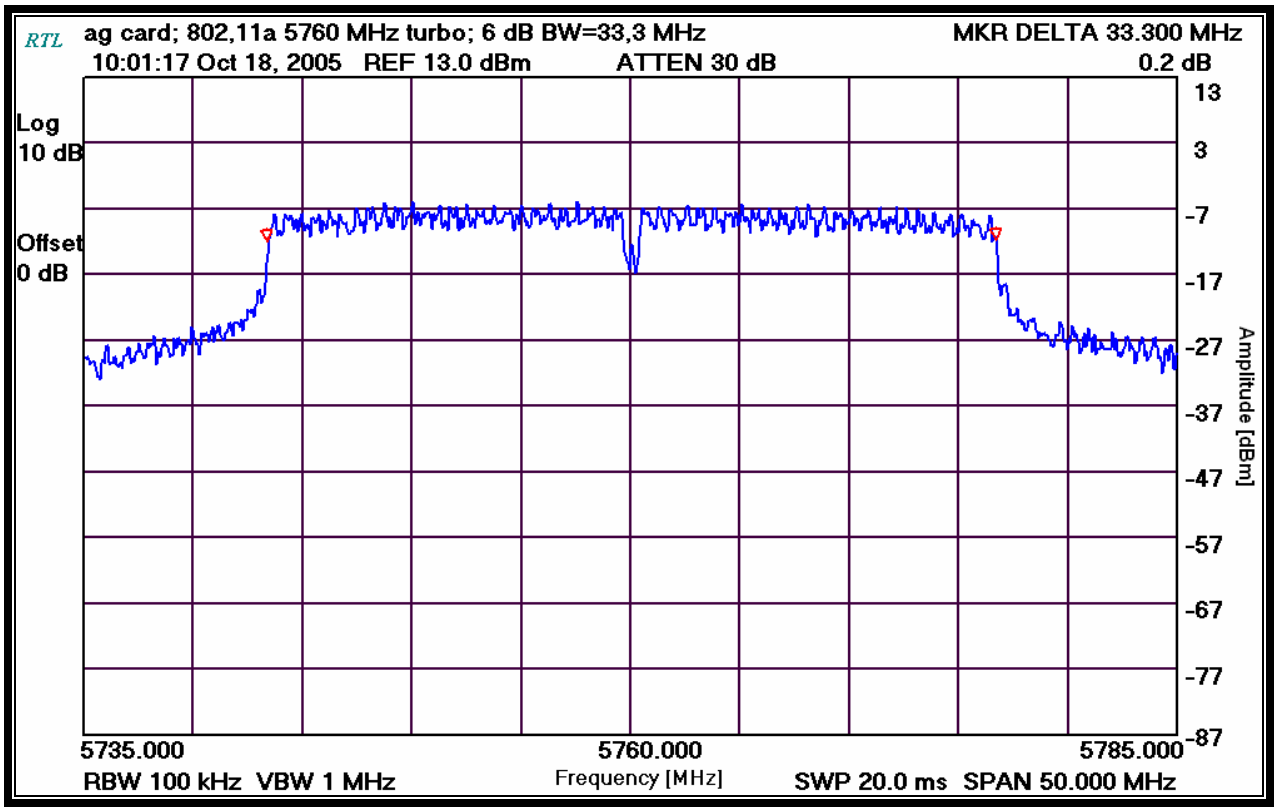
Plot 6-16: 6 dB Bandwidth Channel 157 (TX Frequency: 5785 MHz – 6 Mbps) 802.11a



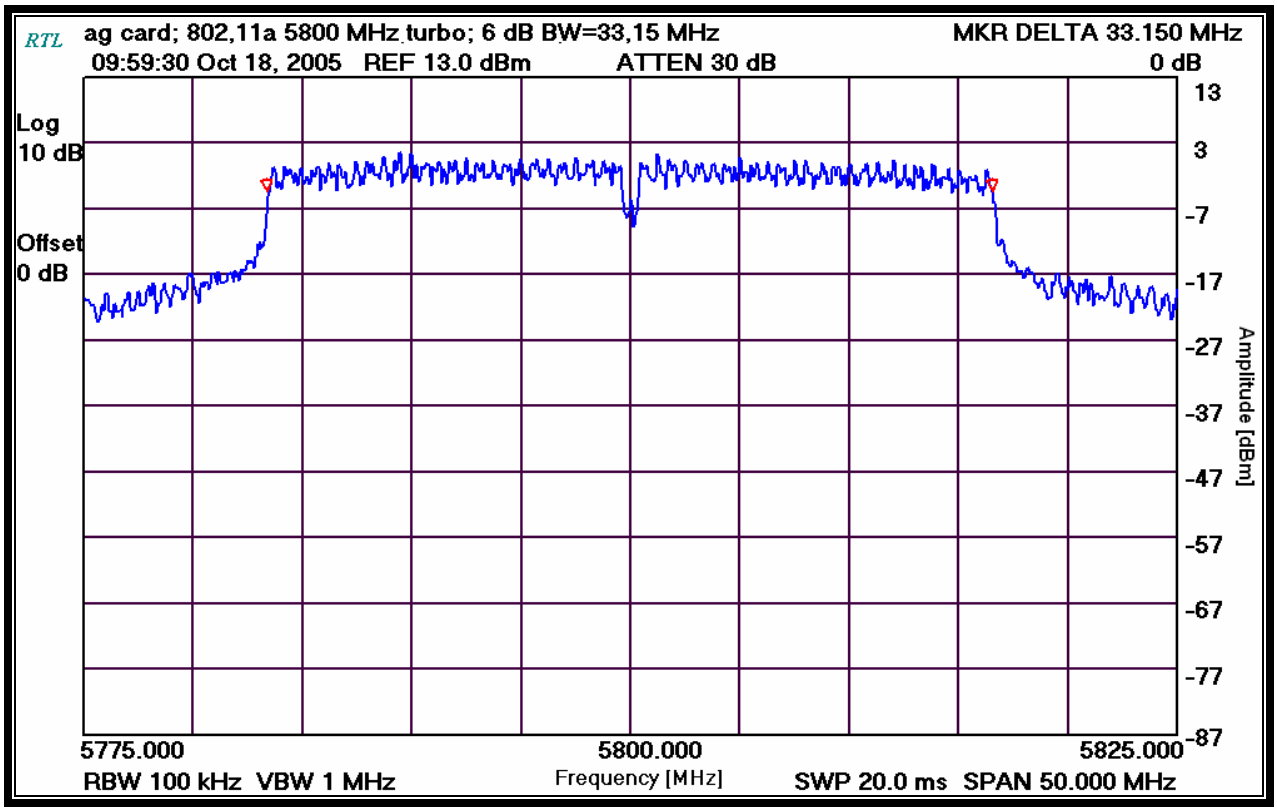
Plot 6-17: 6 dB Bandwidth Channel 165 (TX Frequency: 5825 MHz –6 Mbps) 802.11a



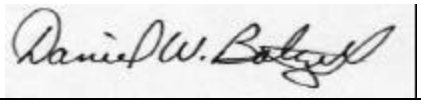
Plot 6-18: 6 dB Bandwidth Channel 152 (TX Frequency: 5760 MHz – Turbo 12 Mbps) 802.11a



Plot 6-19: 6 dB Bandwidth Channel 160 (TX Frequency: 5800 MHz – Turbo 12 Mbps) 802.11a



Test Personnel:

Daniel W. Baltzell		October 18, 2005
EMC Test Engineer	Signature	Date Of Test

7 Power Spectral Density - §15.247(d); RSS-210 §A8.2(2)

7.1 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 30 kHz, and the sweep time set at 500 seconds. The spectral lines were resolved for the modulated carriers at 2.412 GHz, 2.437 GHz, and 2.462 GHz respectively. These levels are below the +8 dBm limit. See the power spectral density table and plots.

Table 7-1: Power Spectral Density Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	8/3/06

7.2 Power Spectral Density Test Results for 802.11b/g card

7.2.1 Power Spectral Density Test Data

Table 7-2: Power Spectral Density Test Data - 802.11b

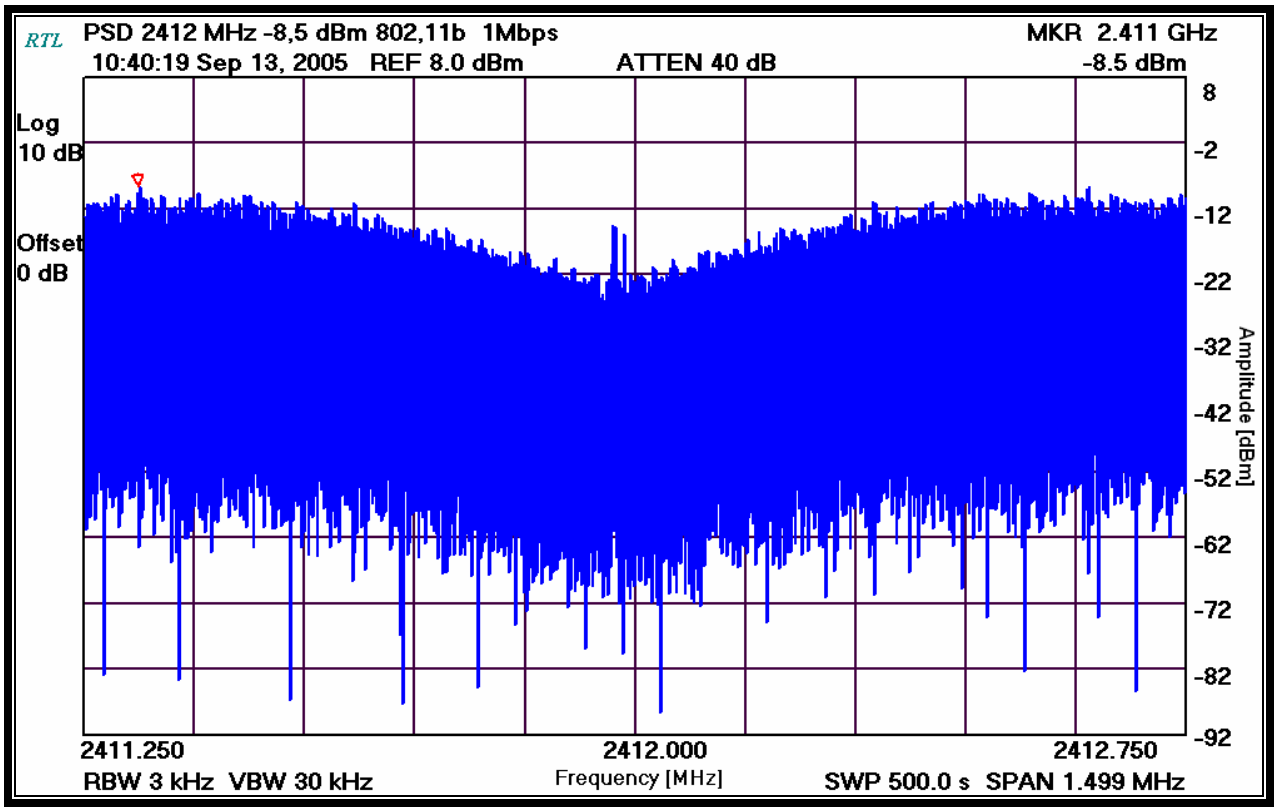
Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
1	2412	-8.5	8	Pass
6	2437	-8.1	8	Pass
11	2462	-8.1	8	Pass

Table 7-3: Power Spectral Density Test Data - 802.11g

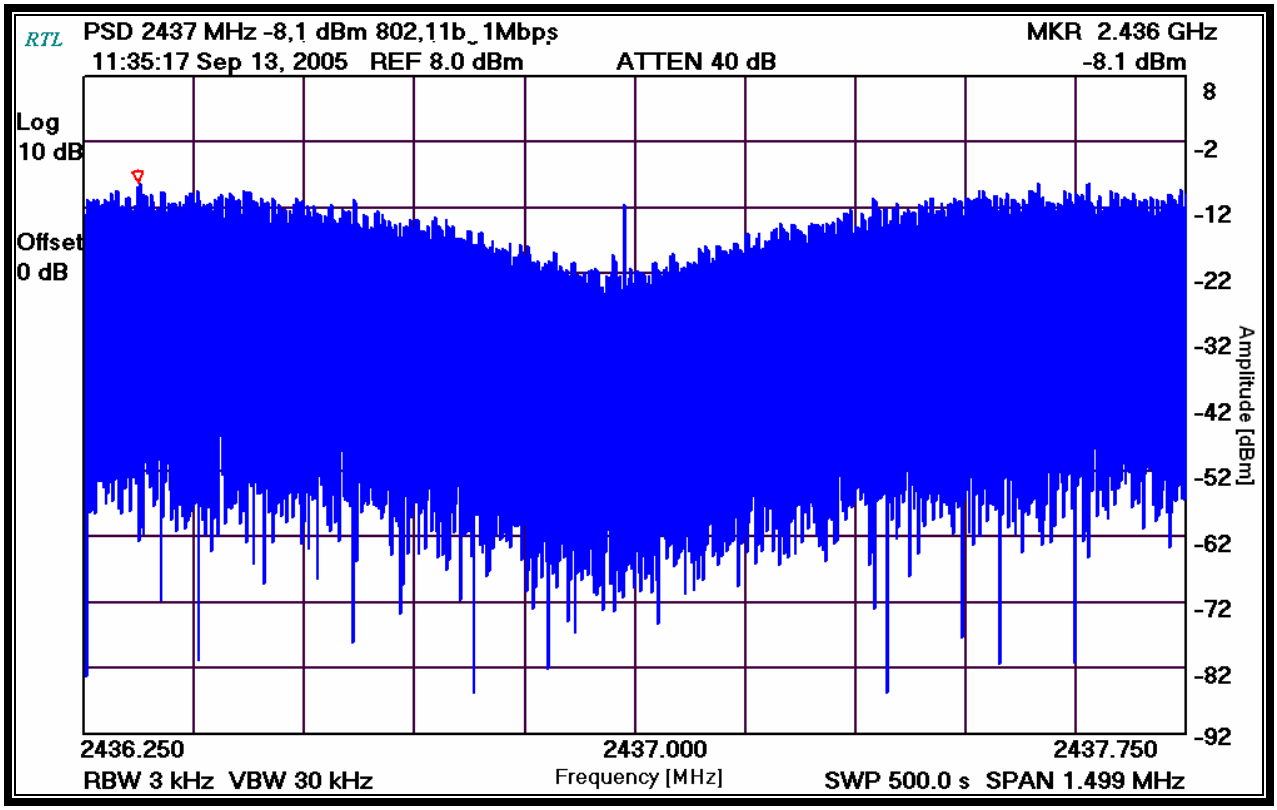
Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
1	2412	-15.3	8	Pass
6	2437	-10.9	8	Pass
11	2462	-9.8	8	Pass
6 turbo	2437	-10.4	8	Pass

7.3 Power Spectral Density Plots - 802.11b

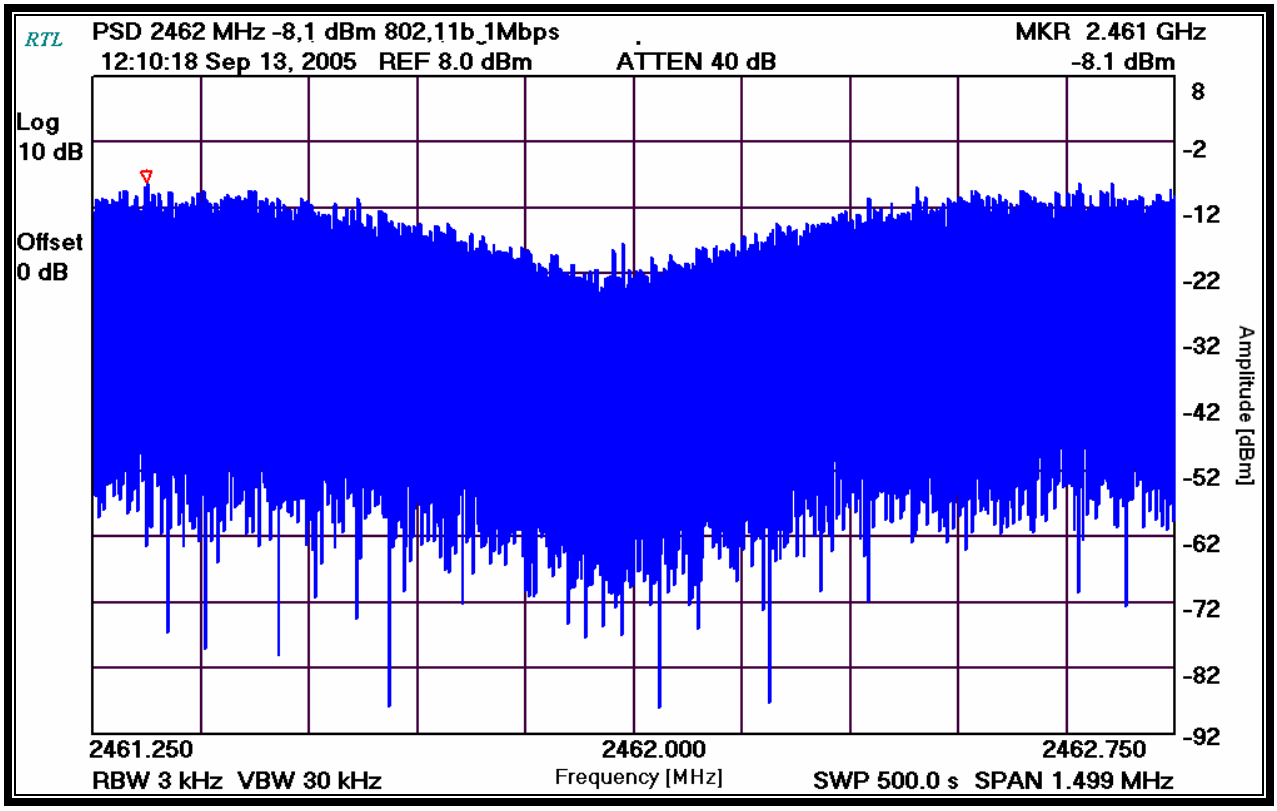
Plot 7-1: Power Spectral Density: Channel 1 (2412 MHz – 1 Mbps)



Plot 7-2: Power Spectral Density: Channel 6 (2437 MHz – 1 Mbps)

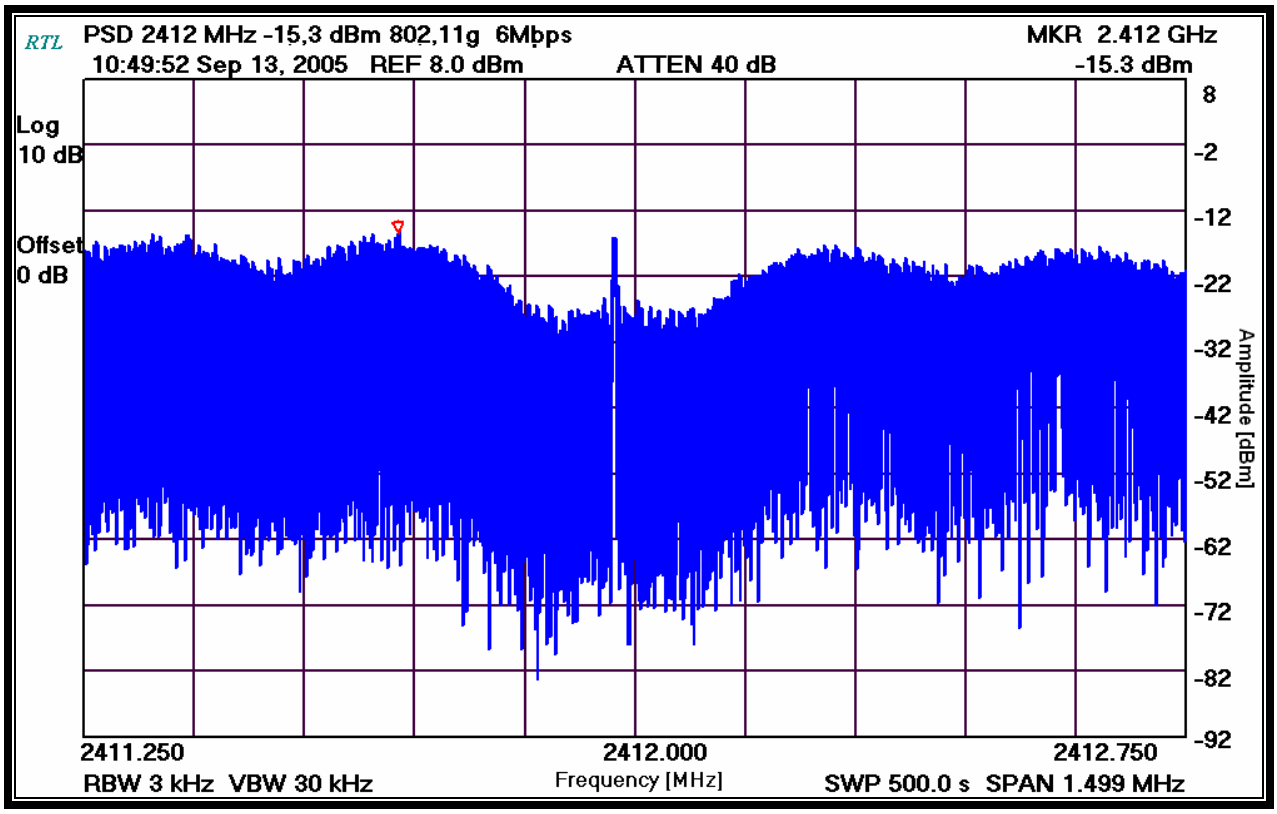


Plot 7-3: Power Spectral Density: Channel 11 (2462 MHz – 1 Mbps)

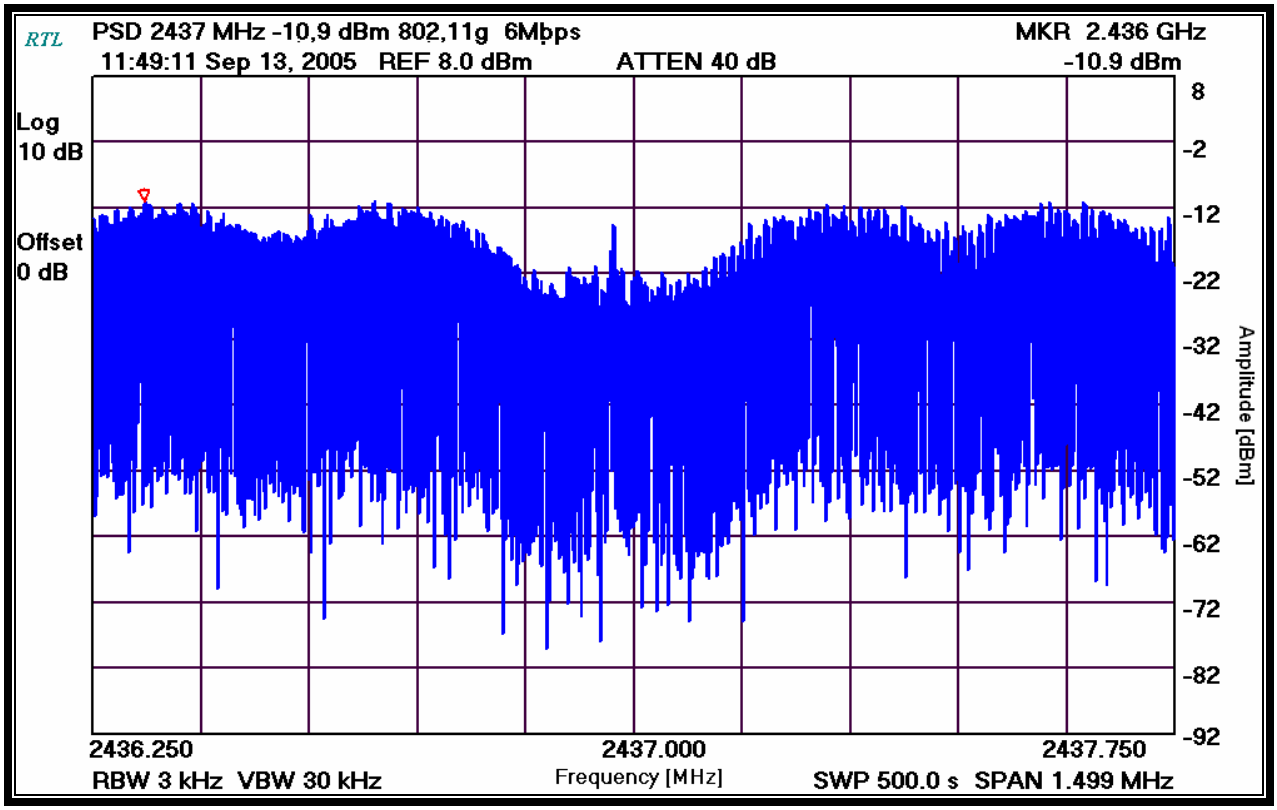


7.4 Power Spectral Density Plots - 802.11g

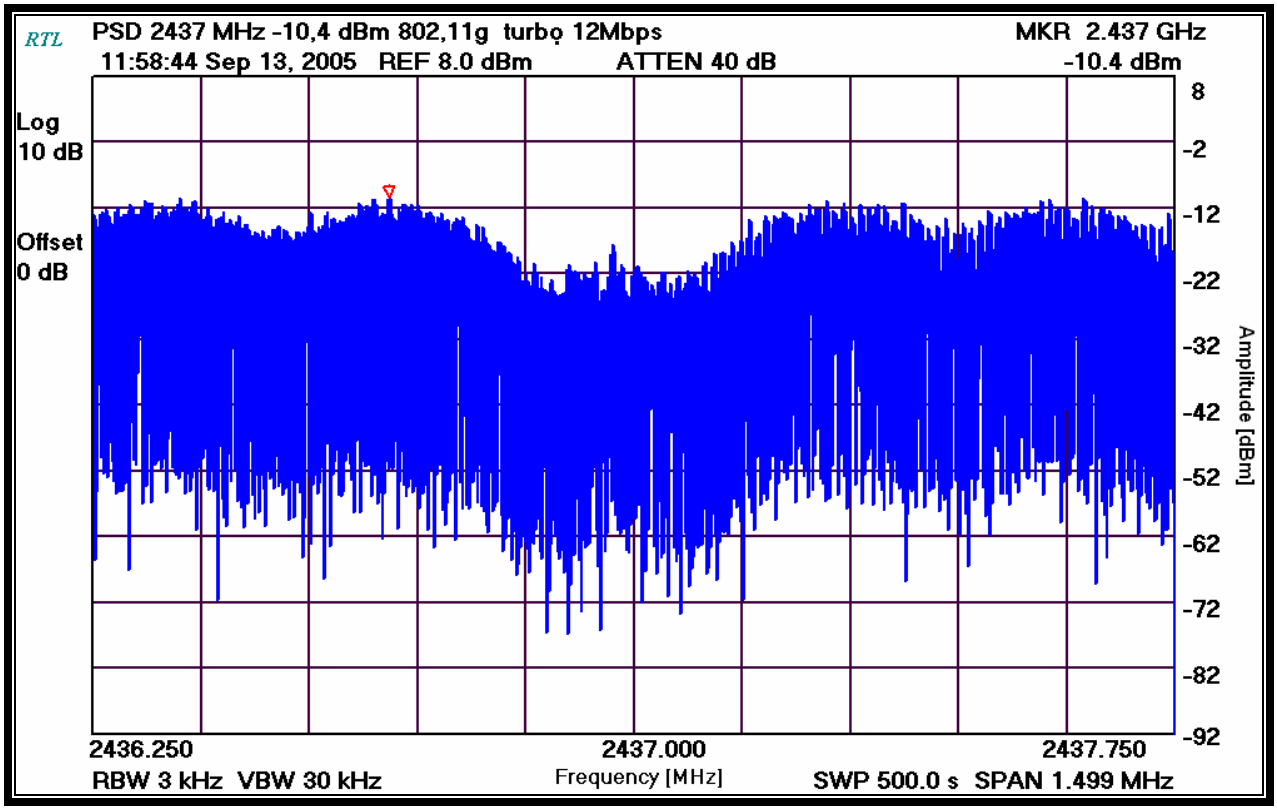
Plot 7-4: Power Spectral Density: Channel 1 (2412 MHz – 6 Mbps)



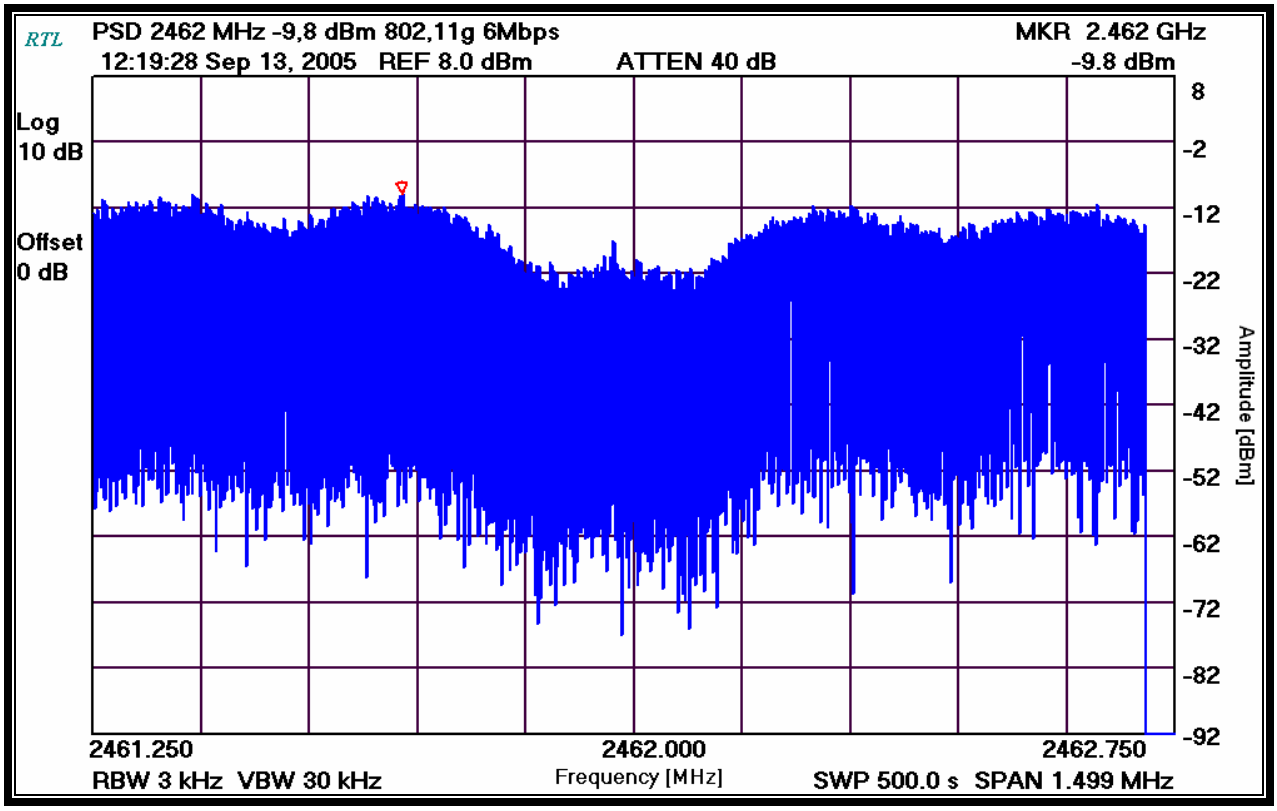
Plot 7-5: Power Spectral Density: Channel 6 (2437 MHz – 6 Mbps)



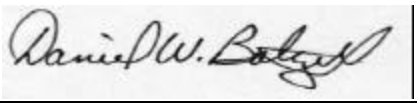
Plot 7-6: Power Spectral Density: Channel 6 Turbo (2437 MHz – 12 Mbps)



Plot 7-7: Power Spectral Density: Channel 11 (2462 MHz – 6 Mbps)



Test Personnel:

Daniel W. Baltzell		September 13, 2005
EMC Test Engineer	Signature	Date Of Test

7.5 Power Spectral Density Test Results for 802.11a/b/g card

7.5.1 Power Spectral Density Test Data

Table 7-4: Power Spectral Density Test Data - 802.11b

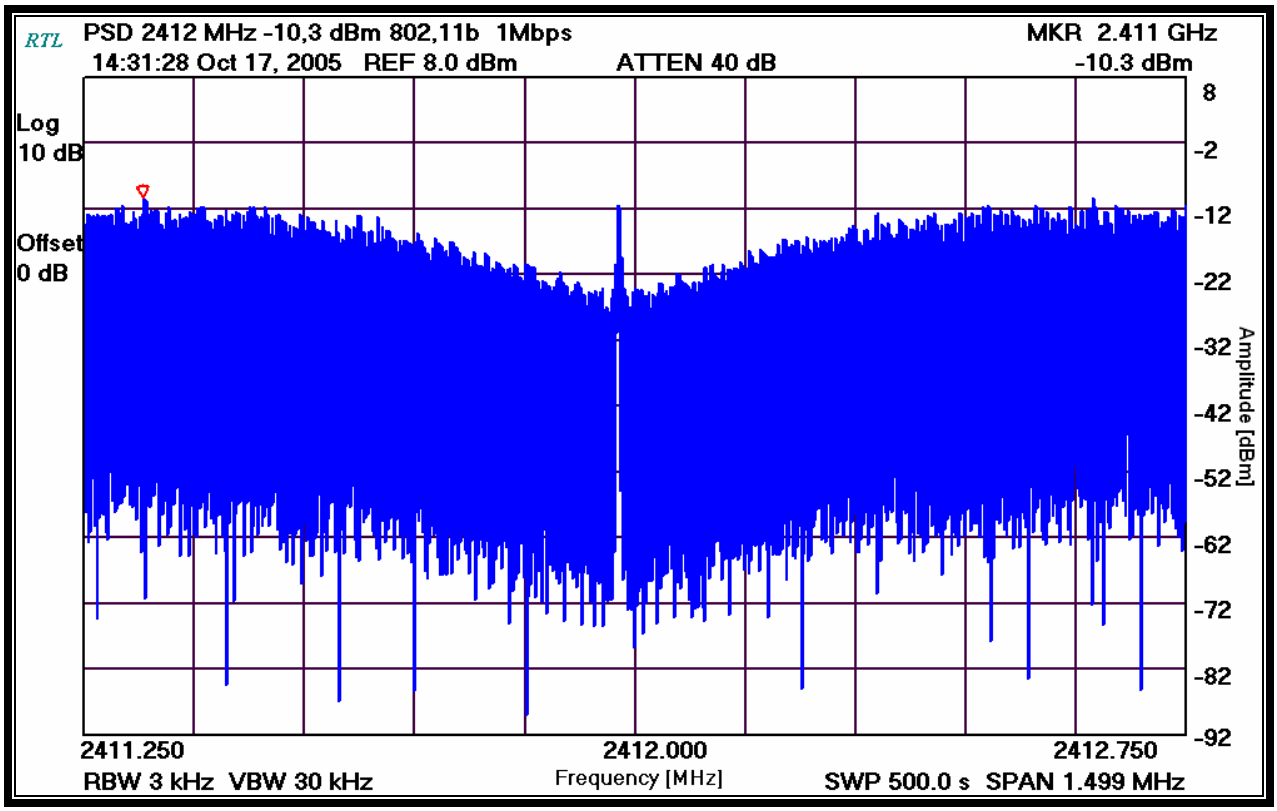
Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
1	2412	-10.3	8	Pass
6	2437	-9.5	8	Pass
11	2462	-9.6	8	Pass

Table 7-5: Power Spectral Density Test Data - 802.11g

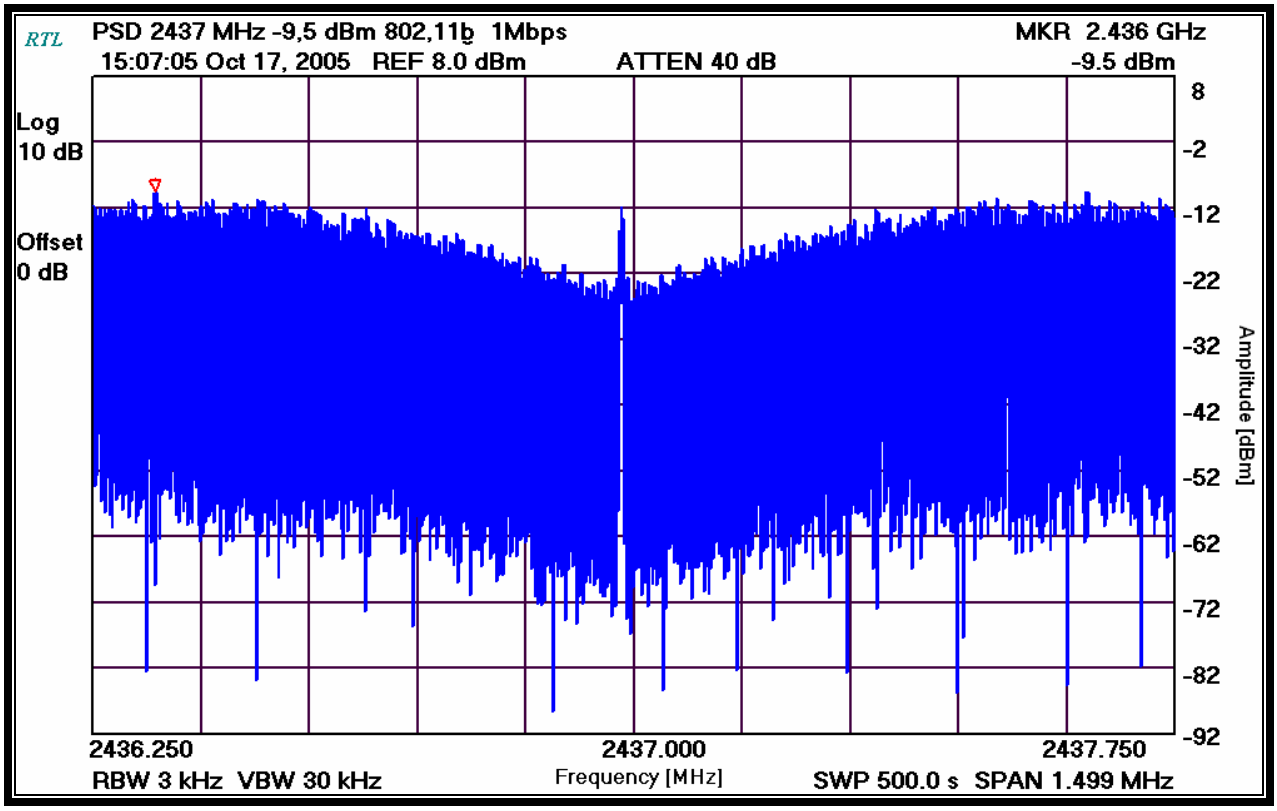
Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
1	2412	-9.7	8	Pass
6	2437	-8.5	8	Pass
11	2462	-9.2	8	Pass
6 turbo	2437	-13.3	8	Pass

7.6 Power Spectral Density Plots - 802.11b

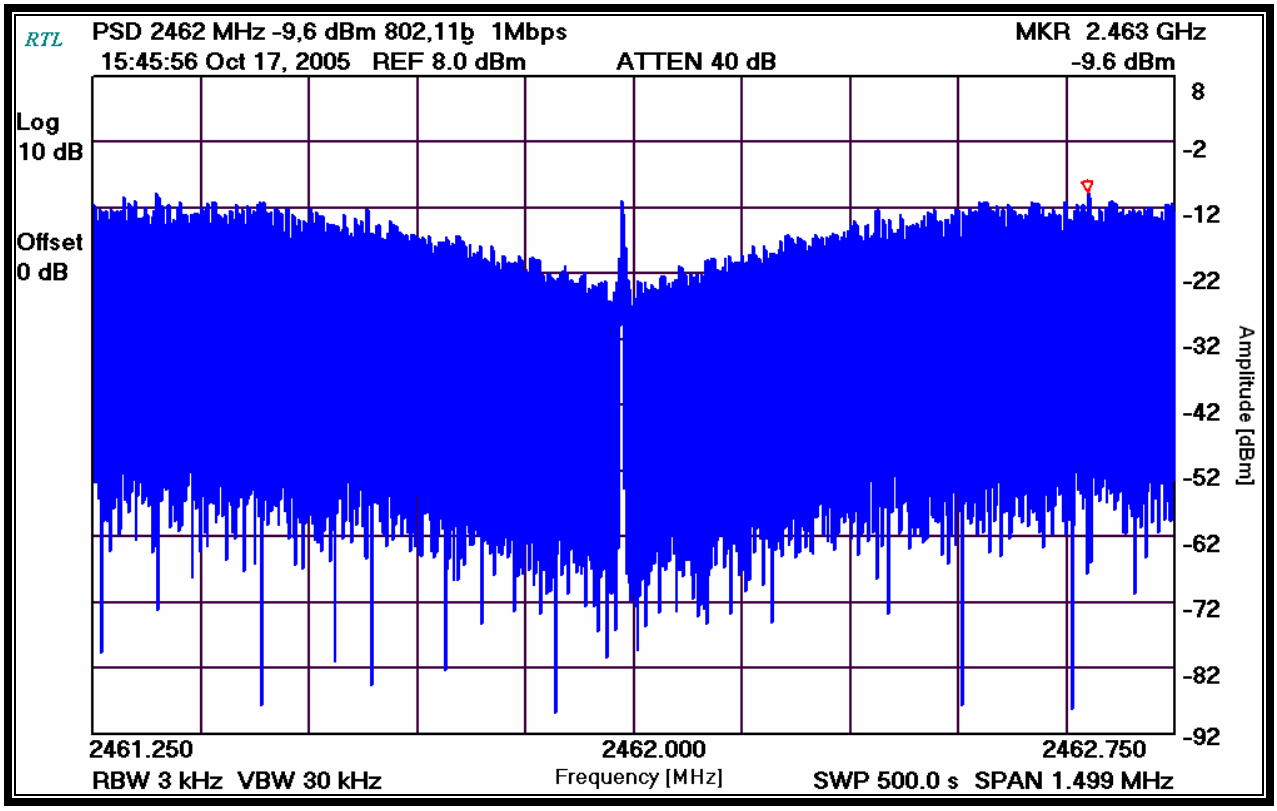
Plot 7-8: Power Spectral Density: Channel 1 (2412 MHz – 1 Mbps)



Plot 7-9: Power Spectral Density: Channel 6 (2437 MHz – 1 Mbps)

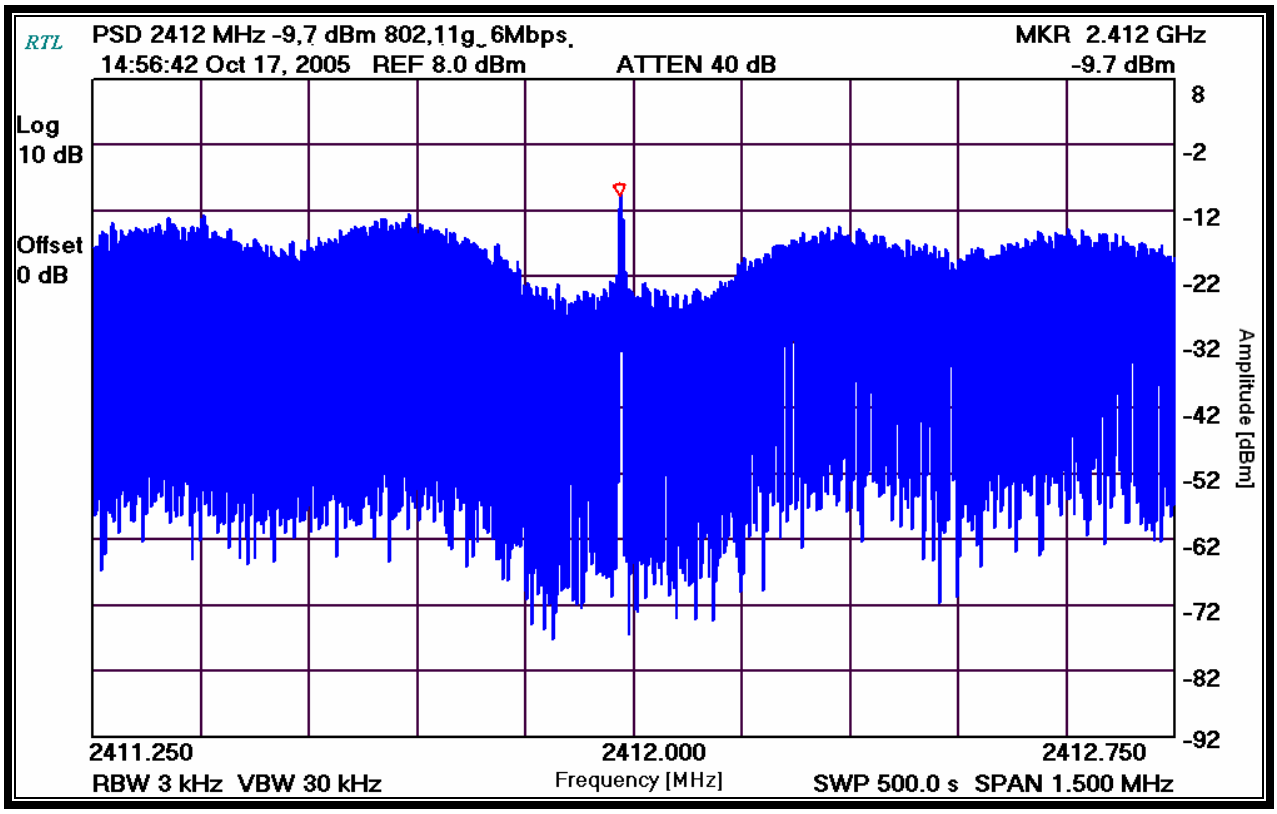


Plot 7-10: Power Spectral Density: Channel 11 (2462 MHz – 1 Mbps)

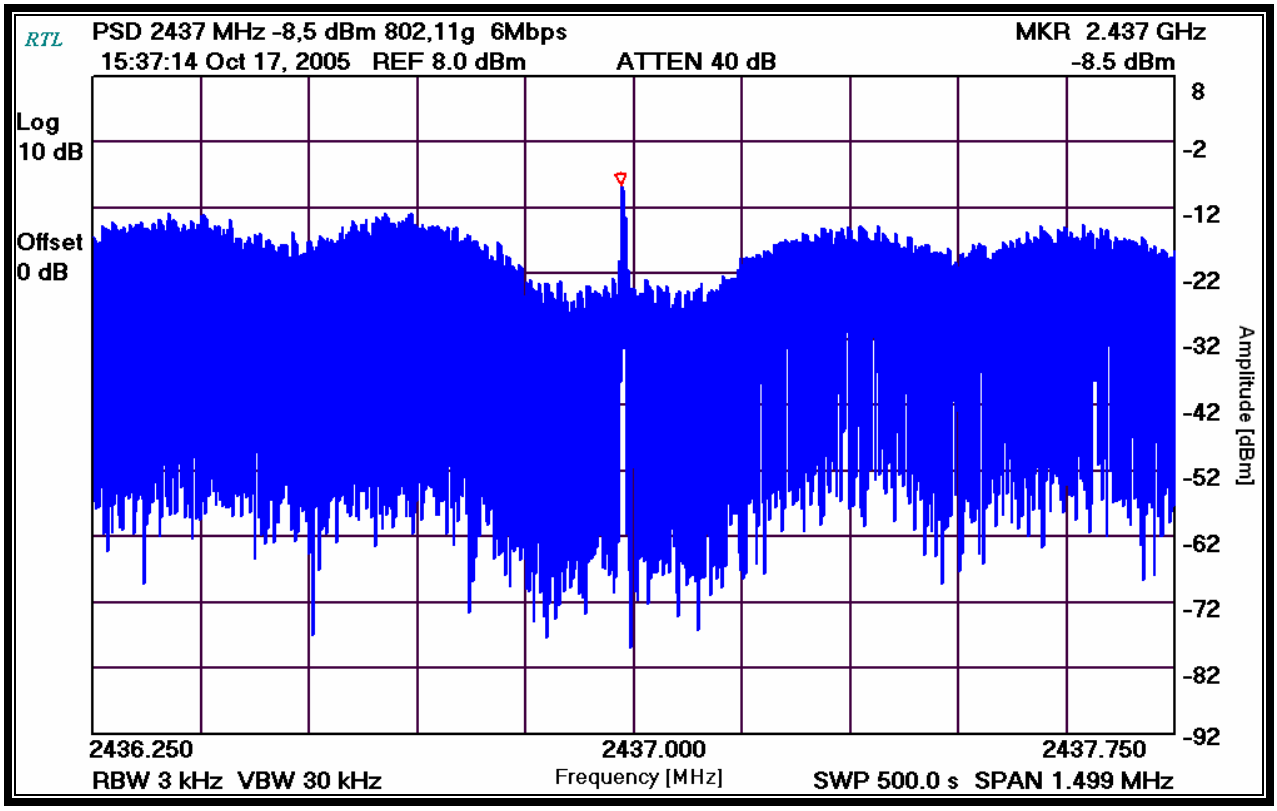


7.7 Power Spectral Density Plots - 802.11g

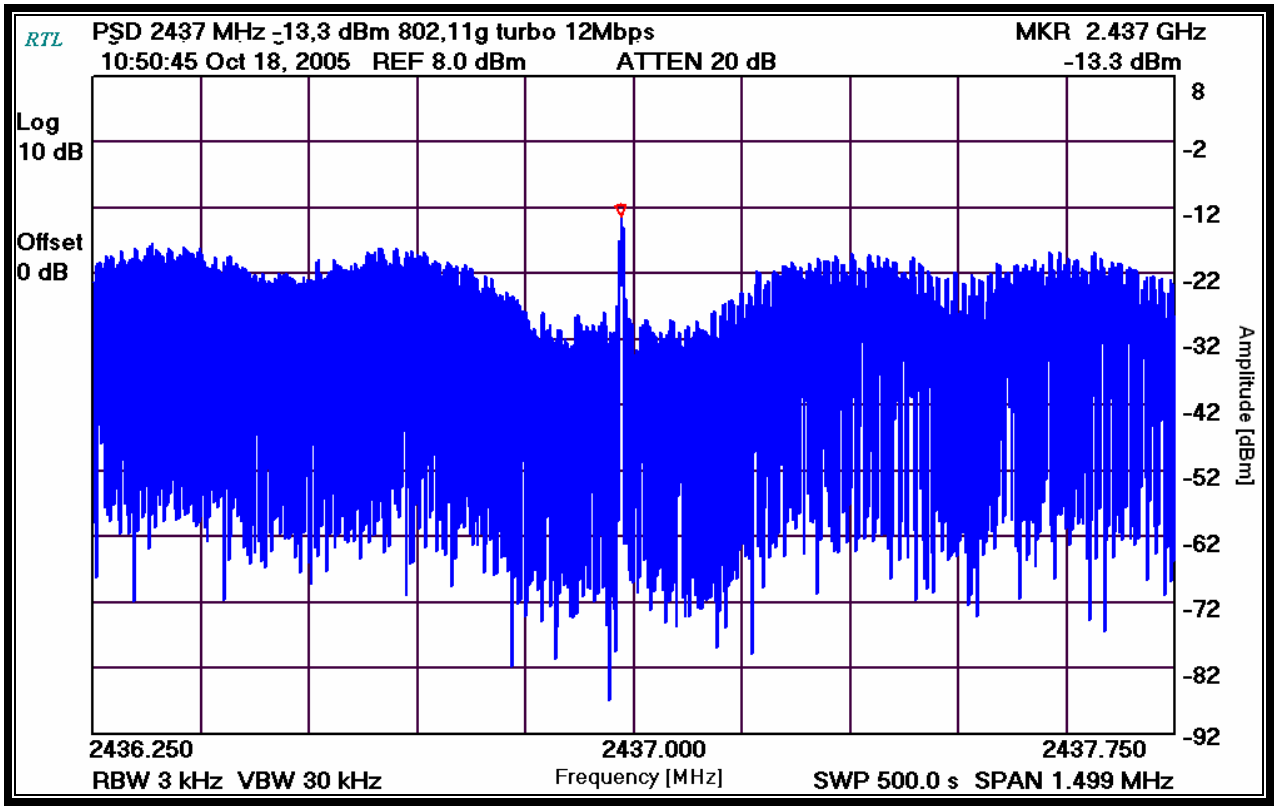
Plot 7-11: Power Spectral Density: Channel 1 (2412 MHz – 6 Mbps)



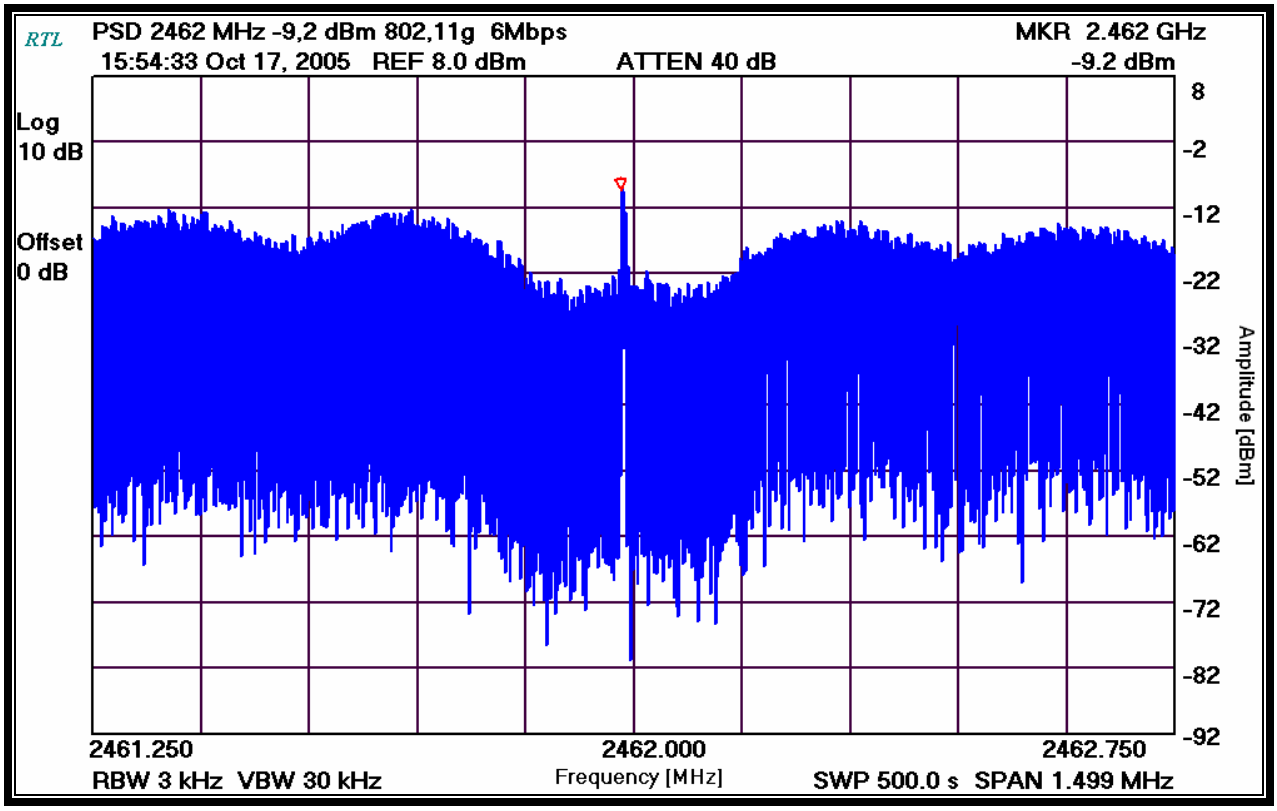
Plot 7-12: Power Spectral Density: Channel 6 (2437 MHz – 6 Mbps)



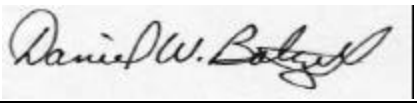
Plot 7-13: Power Spectral Density: Channel 6 Turbo (2437 MHz – 12 Mbps)



Plot 7-14: Power Spectral Density: Channel 11 (2462 MHz – 6 Mbps)



Test Personnel:

Daniel W. Baltzell		October 17 and 18, 2005
EMC Test Engineer	Signature	Dates Of Test

8 Conducted Emissions Measurement Limits – FCC §15.207; RSS-GEN §7.2.2

8.1 Limits of Conducted Emissions Measurement

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

8.2 Conducted Emissions Measurement Test Procedure

The EUT was placed 0.4 meters from the conducting bulkhead of the shielded room. The EUT was connected to mains through a line impedance stabilization network (LISN). The LISN provides 50 ohm/50 uH coupling impedance to the measuring receiver.

The test frequency range was from 150 kHz to 30 MHz.

Table 8-1: Conducted Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	8/3/06
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	8/3/06
900728	Solar	8130	Filter	947305	N/A
901084	AFJ International	LS16	16A LISN	16010020082	12/24/05
900889	Hewlett Packard	85685A	RF Preselector (20 Hz - 2 GHz)	3146A01309	4/5/06

8.3 Conducted Emissions Test Data

Table 8-2: Conducted Emissions Test Data; TX Mid Ch. 802.11b; Neutral Side (Line 1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)	Pass/ Fail
0.152	Pk	44.4	0.2	44.6	65.9	-21.3	55.9	-11.3	Pass
0.197	Pk	46.2	0.2	46.4	63.7	-17.3	53.7	-7.3	Pass
0.269	Pk	44.6	0.2	44.8	61.1	-16.3	51.1	-6.3	Pass
0.333	Pk	38.6	0.2	38.8	59.4	-20.6	49.4	-10.6	Pass
0.399	Pk	36.1	0.3	36.4	57.9	-21.5	47.9	-11.5	Pass
5.070	Pk	37.7	1.2	38.9	60.0	-21.1	50.0	-11.1	Pass

Table 8-3: Conducted Emissions Test Data; TX Mid Ch. 802.11b; Hot Side (Line 2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)	Pass/ Fail
0.153	Pk	43.5	0.2	43.7	65.8	-22.1	55.8	-12.1	Pass
0.199	Pk	46.2	0.2	46.4	63.7	-17.3	53.7	-7.3	Pass
0.266	Pk	43.0	0.2	43.2	61.2	-18.0	51.2	-8.0	Pass
0.399	Pk	31.0	0.3	31.3	57.9	-26.6	47.9	-16.6	Pass
0.465	Pk	33.3	0.2	33.5	56.6	-23.1	46.6	-13.1	Pass
4.840	Pk	34.9	1.2	36.1	56.0	-19.9	46.0	-9.9	Pass

Table 8-4: Conducted Emissions Test Data; TX Mid Ch. 802.11g; Neutral Side (Line 1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)	Pass/ Fail
0.150	Pk	41.7	0.2	41.9	66.0	-24.1	56.0	-14.1	Pass
0.201	Pk	48.6	0.2	48.8	63.6	-14.8	53.6	-4.8	Pass
0.268	Pk	44.4	0.2	44.6	61.2	-16.6	51.2	-6.6	Pass
0.330	Pk	37.5	0.2	37.7	59.5	-21.8	49.5	-11.8	Pass
0.400	Pk	35.6	0.3	35.9	57.9	-22.0	47.9	-12.0	Pass
5.040	Pk	37.7	1.2	38.9	60.0	-21.1	50.0	-11.1	Pass

Table 8-5: Conducted Emissions Test Data; TX Mid Ch. 802.11g; Hot Side (Line 2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)	Pass/ Fail
0.160	Pk	43.4	0.2	43.6	65.5	-21.9	55.5	-11.9	Pass
0.200	Pk	45.9	0.2	46.1	63.6	-17.5	53.6	-7.5	Pass
0.268	Pk	43.2	0.2	43.4	61.2	-17.8	51.2	-7.8	Pass
0.398	Pk	31.9	0.3	32.2	57.9	-25.7	47.9	-15.7	Pass
0.465	Pk	34.1	0.2	34.3	56.6	-22.3	46.6	-12.3	Pass
5.040	Pk	36.2	1.2	37.4	60.0	-22.6	50.0	-12.6	Pass

Table 8-6: Conducted Emissions Test Data; VAC; Neutral Side (Line 1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)	Pass/ Fail
0.198	Pk	48.7	0.2	48.9	63.7	-14.8	53.7	-4.8	Pass
0.266	Pk	45.8	0.2	46.0	61.2	-15.2	51.2	-5.2	Pass
0.332	Pk	38.2	0.2	38.4	59.4	-21.0	49.4	-11.0	Pass
0.398	Pk	37.7	0.3	38.0	57.9	-19.9	47.9	-9.9	Pass
0.466	Pk	33.8	0.2	34.0	56.6	-22.6	46.6	-12.6	Pass
5.040	Pk	34.7	1.2	35.9	60.0	-24.1	50.0	-14.1	Pass

Table 8-7: Conducted Emissions Test Data; VAC; Hot Side (Line 2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)	Pass/ Fail
0.153	Pk	43.7	0.2	43.9	65.8	-21.9	55.8	-11.9	Pass
0.201	Pk	46.1	0.2	46.3	63.6	-17.3	53.6	-7.3	Pass
0.266	Pk	43.2	0.2	43.4	61.2	-17.8	51.2	-7.8	Pass
0.332	Pk	35.6	0.2	35.8	59.4	-23.6	49.4	-13.6	Pass
0.464	Pk	31.8	0.2	32.0	56.6	-24.6	46.6	-14.6	Pass
27.910	Pk	39.4	2.3	41.7	60.0	-18.3	50.0	-8.3	Pass

Table 8-8: Conducted Emissions Test Data; Power over Ethernet Injector, Neutral Side (Line 1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)	Pass/ Fail
0.223	Pk	44.2	0.2	44.4	62.7	-18.3	52.7	-8.3	Pass
0.395	Pk	39.2	0.3	39.5	58.0	-18.5	48.0	-8.5	Pass
2.180	Pk	41.2	0.8	42.0	56.0	-14.0	46.0	-4.0	Pass
8.230	Pk	38.9	1.5	40.4	60.0	-19.6	50.0	-9.6	Pass
16.840	Pk	37.8	2.2	40.0	60.0	-20.0	50.0	-10.0	Pass
24.990	Pk	37.2	2.6	39.8	60.0	-20.2	50.0	-10.2	Pass

Table 8-9: Conducted Emissions Test Data; Mode TX, Channel 1, Hot Side (Line 2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC B QP Limit (dBuV)	FCC B QP Margin (dBuV)	FCC B AV Limit (dBuV)	FCC B AV Margin (dBuV)	Pass/ Fail
0.221	Pk	45.1	0.2	45.3	62.8	-17.5	52.8	-7.5	Pass
0.390	Pk	42.2	0.3	42.5	58.1	-15.6	48.1	-5.6	Pass
2.150	Pk	39.8	0.8	40.6	56.0	-15.4	46.0	-5.4	Pass
8.230	Pk	37.7	1.5	39.2	60.0	-20.8	50.0	-10.8	Pass
16.900	Pk	38.1	2.2	40.3	60.0	-19.7	50.0	-9.7	Pass
24.840	Pk	36.4	2.6	39.0	60.0	-21.0	50.0	-11.0	Pass

9 Radiated Emissions - §15.209; RSS-210 §A8.5, RSS-GEN §4.8, 6

9.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	2400/F (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

9.2 Radiated Emissions Measurement Test Procedure

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10^{th} harmonic of the highest fundamental transmitter frequency (24.62 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 9-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900791	Chase	CBL6111B	Bilog antenna (30 MHz – 1000 MHz)	N/A	8/3/06
900151	Rohde and Schwarz	HFH2-Z2	Loop Antenna (9 kHz - 30 MHz)	827525/019	8/25/06
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	5/20/06
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	9/14/06
900811	Rhein Tech Labs	PR-1040	Amplifier	1003	3/8/06
900878	Rhein Tech Labs	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901231	IW Microwave Products	KPS-1503-2400-KPS	High frequency RF cables	240"	9/1/06
901232	IW Microwave Products	KPS-1503-2400-KPS	High frequency RF cables	240"	9/1/06
901235	IW Microwave Products	KPS-1503-360-KPS	High frequency RF cables	36"	9/1/06
901242	Rhein Tech Labs	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	5/20/07
900321	EMCO	3161-03	Horn Antennas (4 - 8,2GHz)	9508-1020	5/20/07
900323	EMCO	3160-7	Horn Antennas (8,2 - 12,4 GHz)	9605-1054	5/20/07
900356	EMCO	3160-08	Horn Antenna (12.4 - 18 GHz)	9607-1044	5/20/07
900325	EMCO	3160-9	Horn Antennas (18 - 26.5 GHz)	9605-1051	5/20/07
901218	EMCO	3301B	Horn Antenna (18 - 26.5 GHz)	960281-003	5/20/07
900392	Hewlett Packard	1197OK	Harmonic Mixer (18 – 26.5 GH)z	3525A00159	11/27/07
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	8/3/06
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	8/3/06
900889	Hewlett Packard	85685A	RF Preselector (20 Hz - 2 GHz)	3146A01309	4/5/06

9.3 Radiated Emissions Test Results

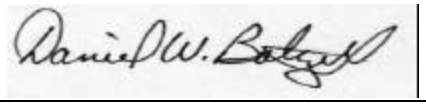
9.3.1 Test Results for 802.11b/g card

9.3.1.1 Frequency Range – Below 1000 MHz

Table 9-2: Radiated Emissions Test Results – Below 1000 MHz Using Power over Ethernet Injector

Temperature: 76°F Humidity: 65%										
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Pass/ Fail**
30.616	Qp	H	170	2.0	43.3	-13.2	30.1	40.0	-9.9	Pass
53.936	Qp	V	230	1.0	63.8	-26.1	37.7	40.0	-2.3	Pass
55.872	Qp	V	270	1.4	62.1	-26.1	36.0	40.0	-4.0	Pass
56.636	Qp	H	190	2.5	59.4	-25.1	34.3	40.0	-5.7	Pass
60.232	Qp	H	180	3.0	62.1	-25.6	36.5	40.0	-3.5	Pass
69.015	Qp	H	230	1.2	53.8	-25.5	28.3	40.0	-11.7	Pass
108.799	Qp	V	35	1.0	59.9	-18.5	41.4	43.5	-2.1	Pass
145.208	Qp	H	225	1.8	46.9	-19.5	27.4	43.5	-16.1	Pass
154.210	Qp	H	0	1.5	55.5	-20.0	35.5	43.5	-8.0	Pass
156.398	Qp	H	0	1.5	43.8	-20.2	23.6	43.5	-19.9	Pass
263.757	Qp	H	120	1.5	46.7	-15.7	31.0	46.0	-15.0	Pass
264.250	Qp	V	185	1.0	41.2	-16.8	24.4	46.0	-21.6	Pass
269.080	Qp	V	220	1.0	37.4	-16.8	20.6	46.0	-25.4	Pass
329.707	Qp	H	100	1.4	44.7	-14.6	30.1	46.0	-15.9	Pass
333.530	Qp	H	220	1.3	44.3	-14.4	29.9	46.0	-16.1	Pass
400.225	Qp	H	28	1.0	49.8	-12.2	37.6	46.0	-8.4	Pass
433.601	Qp	H	270	1.0	38.9	-11.0	27.9	46.0	-18.1	Pass
494.510	Qp	H	350	1.0	43.3	-9.7	33.6	46.0	-12.4	Pass

Test Personnel:

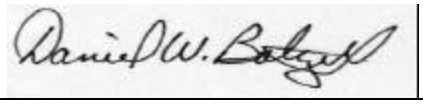


Daniel W. Baltzell		June 5, 2005
EMC Test Engineer	Signature	Date Of Test

Table 9-3: Radiated Emissions Test Results – Below 1000 MHz using AC Power

Temperature: 84°F Humidity: 69%										
Emission Frequency (MHz)	**Test Detector**	**Antenna Polarity (H/V)**	**Turntable Azimuth (deg)**	**Antenna Height (m)**	**Analyzer Reading (dBuV)**	**Site Correction Factor (dB/m)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Pass/ Fail**
266.903	Qp	V	180	1.0	60.3	-24.0	36.3	46.0	-9.7	Pass
300.228	Qp	V	90	1.0	53.0	-24.1	28.9	46.0	-17.1	Pass
333.623	Qp	V	180	1.0	57.5	-23.0	34.5	46.0	-11.5	Pass
366.978	Qp	H	225	1.5	53.0	-22.2	30.8	46.0	-15.2	Pass
400.338	Qp	H	180	1.5	48.1	-21.4	26.7	46.0	-19.3	Pass
433.718	Qp	V	180	1.0	51.0	-20.1	30.9	46.0	-15.1	Pass
500.448	Qp	V	121	1.0	54.1	-19.2	34.9	46.0	-11.1	Pass
533.813	Qp	H	121	1.5	48.6	-19.3	29.3	46.0	-16.7	Pass

Test Personnel:



Daniel W. Baltzell		August 17, 2005
EMC Test Engineer	Signature	Date Of Test

9.3.1.2 Frequency Range – 1000 MHz – 25000 MHz

Table 9-4: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 1 Mbps) 8.5 dBi Patch Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1473.130	61.9	Pk	-11.1	50.8	74.0	-23.2
1473.130	48.0	Av	-11.1	36.9	54.0	-17.1
1552.210	64.9	Pk	-10.5	54.4	74.0	-19.6
1552.210	50.2	Av	-10.5	39.7	54.0	-14.3
2280.000	45.3	Pk	10.2	55.5	74.0	-18.5
2280.000	33.0	Av	10.2	43.2	54.0	-10.8
2320.000	48.0	Pk	10.9	58.9	74.0	-15.1
2320.000	36.0	Av	10.9	46.9	54.0	-7.1
2360.000	47.7	Pk	10.7	58.4	74.0	-15.6
2360.000	36.8	Av	10.7	47.5	54.0	-6.5
2376.000	46.3	Pk	10.6	56.9	74.0	-17.1
2376.000	33.8	Av	10.6	44.4	54.0	-9.6
4824.000	40.7	Pk	14.2	54.9	74.0	-19.1
4824.000	27.3	Av	14.2	41.5	54.0	-12.5
7236.000	39.6	Pk	13.1	52.7	107.1	-54.4
7236.000	27.1	Av	13.1	40.2	87.1	-46.9
9648.000	41.1	Pk	18.6	59.7	107.1	-47.4
9648.000	28.4	Av	18.6	47.0	87.1	-40.1
12060.000	40.6	Pk	19.9	60.5	74.0	-13.5
12060.000	28.3	Av	19.9	48.2	54.0	-5.8

Table 9-5: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 1 Mbps) 8.5 dBi Patch Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1498.500	61.3	Pk	-10.6	50.7	74.0	-23.3
1498.500	48.5	Av	-10.6	37.9	54.0	-16.1
1581.150	63.8	Pk	-10.6	53.2	74.0	-20.8
1581.150	49.4	Av	-10.6	38.8	54.0	-15.2
2280.000	47.4	Pk	10.2	57.6	74.0	-16.4
2280.000	35.7	Av	10.2	45.9	54.0	-8.1
2320.000	48.4	Pk	10.9	59.3	74.0	-14.7
2320.000	35.7	Av	10.9	46.6	54.0	-7.4
2360.000	47.1	Pk	10.7	57.8	74.0	-16.2
2360.000	36.3	Av	10.7	47.0	54.0	-7.0
4874.000	40.9	Pk	14.4	55.3	74.0	-18.7
4874.000	27.9	Av	14.4	42.3	54.0	-11.7
7311.000	40.3	Pk	13.1	53.4	74.0	-20.6
7311.000	27.4	Av	13.1	40.5	54.0	-13.5
9748.000	42.1	Pk	18.1	60.2	103.9	-43.7
9748.000	28.3	Av	18.1	46.4	83.9	-37.5
12185.000	39.9	Pk	18.5	58.4	74.0	-15.6
12185.000	27.5	Av	18.5	46.0	54.0	-8.0

Table 9-6: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 1 Mbps) 8.5 dBi Patch Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1523.700	61.4	Pk	-10.7	50.7	74.0	-23.3
1523.700	49.0	Av	-10.7	38.3	54.0	-15.7
1601.630	62.1	Pk	-9.3	52.8	74.0	-21.2
1601.630	47.9	Av	-9.3	38.6	54.0	-15.4
2280.000	45.5	Pk	10.2	55.7	74.0	-18.3
2280.000	33.0	Av	10.2	43.2	54.0	-10.8
2320.000	47.6	Pk	10.9	58.5	74.0	-15.5
2320.000	35.3	Av	10.9	46.2	54.0	-7.8
2360.000	48.1	Pk	10.7	58.8	74.0	-15.2
2360.000	37.2	Av	10.7	47.9	54.0	-6.1
4924.000	41.1	Pk	14.7	55.8	74.0	-18.2
4924.000	28.2	Av	14.7	42.9	54.0	-11.1
7386.000	40.4	Pk	13.3	53.7	74.0	-20.3
7386.000	27.3	Av	13.3	40.6	54.0	-13.4
9848.000	42.0	Pk	18.1	60.1	109.0	-48.9
9848.000	28.8	Av	18.1	46.9	89.0	-42.1
12310.000	40.0	Pk	18.7	58.7	74.0	-15.3
12310.000	27.1	Av	18.7	45.8	54.0	-8.2

Table 9-7: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 6 Mbps) 8.5 dBi Patch Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1657.000	60.8	Pk	-9.8	51.0	101.4	-50.4
1657.000	47.6	Av	-9.8	37.8	81.4	-43.6
1476.000	60.1	Pk	-11.1	49.0	74.0	-25.0
1476.000	47.0	Av	-11.1	35.9	54.0	-18.1
1552.210	66.5	Pk	-10.5	56.0	74.0	-18.0
1552.210	54.6	Av	-10.5	44.1	54.0	-9.9
2280.000	46.2	Pk	10.2	56.4	74.0	-17.6
2280.000	33.5	Av	10.2	43.7	54.0	-10.3
2320.000	48.2	Pk	10.9	59.1	74.0	-14.9
2320.000	36.4	Av	10.9	47.3	54.0	-6.7
2360.000	48.5	Pk	10.7	59.2	74.0	-14.8
2360.000	38.0	Av	10.7	48.7	54.0	-5.3
2376.000	47.2	Pk	10.6	57.8	74.0	-16.2
2376.000	34.5	Av	10.6	45.1	54.0	-8.9
4824.000	40.4	Pk	14.2	54.6	74.0	-19.4
4824.000	27.5	Av	14.2	41.7	54.0	-12.3
7236.000	38.4	Pk	13.1	51.5	101.4	-49.9
7236.000	27.6	Av	13.1	40.7	81.4	-40.7
9648.000	41.2	Pk	18.6	59.8	101.4	-41.6
9648.000	29.3	Av	18.6	47.9	81.4	-33.5
12060.000	41.0	Pk	19.9	60.9	74.0	-13.1
12060.000	28.1	Av	19.9	48.0	54.0	-6.0

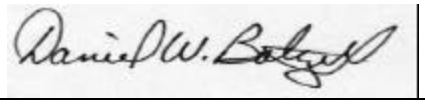
Table 9-8: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 6 Mbps) 8.5 dBi Patch Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1500.050	64.2	Pk	-10.5	53.7	74.0	-20.3
1500.050	50.5	Av	-10.5	40.0	54.0	-14.0
1579.150	65.2	Pk	-10.5	54.7	74.0	-19.3
1579.150	50.2	Av	-10.5	39.7	54.0	-14.3
2280.000	46.3	Pk	10.2	56.5	74.0	-17.5
2280.000	33.3	Av	10.2	43.5	54.0	-10.5
2320.000	48.4	Pk	10.9	59.3	74.0	-14.7
2320.000	36.5	Av	10.9	47.4	54.0	-6.6
2360.000	48.5	Pk	10.7	59.2	74.0	-14.8
2360.000	37.7	Av	10.7	48.4	54.0	-5.6
4874.000	40.8	Pk	14.4	55.2	74.0	-18.8
4874.000	27.8	Av	14.4	42.2	54.0	-11.8
7311.000	40.1	Pk	13.1	53.2	74.0	-20.8
7311.000	27.4	Av	13.1	40.5	54.0	-13.5
9748.000	42.0	Pk	18.1	60.1	100.2	-40.1
9748.000	28.4	Av	18.1	46.5	80.2	-33.7
12185.000	40.5	Pk	18.5	59.0	74.0	-15.0
12185.000	27.7	Av	18.5	46.2	54.0	-7.8

Table 9-9: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 6 Mbps) 8.5 dBi Patch Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1524.350	62.2	Pk	-10.7	51.5	74.0	-22.5
1524.350	47.4	Av	-10.7	36.7	54.0	-17.3
1601.250	60.6	Pk	-10.2	50.4	74.0	-23.6
1601.250	46.8	Av	-10.2	36.6	54.0	-17.4
2280.000	47.1	Pk	10.2	57.3	74.0	-16.7
2280.000	33.6	Av	10.2	43.8	54.0	-10.2
2320.000	48.4	Pk	10.9	59.3	74.0	-14.7
2320.000	36.2	Av	10.9	47.1	54.0	-6.9
2360.000	48.5	Pk	10.7	59.2	74.0	-14.8
2360.000	37.6	Av	10.7	48.3	54.0	-5.7
4924.000	41.4	Pk	14.7	56.1	74.0	-17.9
4924.000	28.3	Av	14.7	43.0	54.0	-11.0
7386.000	40.4	Pk	13.3	53.7	74.0	-20.3
7386.000	27.5	Av	13.3	40.8	54.0	-13.2
9848.000	41.9	Pk	18.1	60.0	98.5	-38.5
9848.000	28.1	Av	18.1	46.2	78.5	-32.3
12310.000	40.2	Pk	18.7	58.9	74.0	-15.1
12310.000	27.2	Av	18.7	45.9	54.0	-8.1

Test Personnel:



Daniel W. Baltzell		September 7, 2005
EMC Test Engineer	Signature	Date Of Test

Table 9-10: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 1 Mbps) 12 dBi Collinear Omni Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1470.0	59.0	Pk	-11.1	47.9	74.0	-26.1
1470.0	47.1	Av	-11.1	36.0	54.0	-18.0
1552.2	64.2	Pk	-10.5	53.7	74.0	-20.3
1552.2	48.8	Av	-10.5	38.3	54.0	-15.7
1656.9	60.4	Pk	-9.8	50.6	109.0	-58.4
1656.9	48.2	Av	-9.8	38.4	89.0	-50.6
2280.0	43.9	Pk	10.2	54.1	74.0	-19.9
2280.0	33.7	Av	10.2	43.9	54.0	-10.1
2320.0	49.5	Pk	10.9	60.4	74.0	-13.6
2320.0	37.6	Av	10.9	48.5	54.0	-5.5
2360.0	40.0	Pk	10.7	50.7	74.0	-23.3
2360.0	39.4	Av	10.7	50.1	54.0	-3.9
2376.0	46.9	Pk	10.6	57.5	74.0	-16.5
2376.0	36.7	Av	10.6	47.3	54.0	-6.7
2520.0	41.2	Pk	11.2	52.4	109.0	-56.6
2520.0	31.3	Av	11.2	42.5	89.0	-46.5
4824.0	40.9	Pk	14.2	55.1	74.0	-18.9
4824.0	27.6	Av	14.2	41.8	54.0	-12.2
7236.0	41.6	Pk	13.1	54.7	109.0	-54.3
7236.0	27.2	Av	13.1	40.3	89.0	-48.7
9648.0	41.0	Pk	18.6	59.6	109.0	-49.4
9648.0	27.7	Av	18.6	46.3	89.0	-42.7
12060.0	41.4	Pk	19.9	61.3	74.0	-12.7
12060.0	28.2	Av	19.9	48.1	54.0	-5.9

Table 9-11: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 1 Mbps) 12 dBi Collinear Omni Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1497.8	60.1	Pk	-10.6	49.5	74.0	-24.5
1497.8	47.4	Av	-10.6	36.8	54.0	-17.2
1581.2	62.9	Pk	-10.6	52.3	74.0	-21.7
1581.2	48.8	Av	-10.6	38.2	54.0	-15.8
1733.6	61.4	Pk	-9.8	51.6	109.7	-58.1
1733.6	46.9	Av	-9.8	37.1	89.7	-52.6
2280.0	46.0	Pk	10.2	56.2	74.0	-17.8
2280.0	34.8	Av	10.2	45.0	54.0	-9.0
2320.0	47.8	Pk	10.9	58.7	74.0	-15.3
2320.0	36.9	Av	10.9	47.8	54.0	-6.2
2360.0	48.7	Pk	10.7	59.4	74.0	-14.6
2360.0	38.4	Av	10.7	49.1	54.0	-4.9
4874.0	38.4	Pk	14.4	52.8	74.0	-21.2
4874.0	27.3	Av	14.4	41.7	54.0	-12.3
7311.0	40.5	Pk	13.1	53.6	74.0	-20.4
7311.0	27.2	Av	13.1	40.3	54.0	-13.7
9748.0	41.8	Pk	18.1	59.9	109.7	-49.8
9748.0	28.1	Av	18.1	46.2	89.7	-43.5
12185.0	40.2	Pk	18.5	58.7	74.0	-15.3
12185.0	27.4	Av	18.5	45.9	54.0	-8.1

Table 9-12: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 1 Mbps) 12 dBi Collinear Omni Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1523.5	63.5	Pk	-10.7	52.8	74.0	-21.2
1523.5	52.4	Av	-10.7	41.7	54.0	-12.3
1603.1	68.1	Pk	-9.3	58.8	74.0	-15.2
1603.1	53.9	Av	-9.3	44.6	54.0	-9.4
1753.8	60.5	Pk	-9.2	51.3	109.0	-57.7
1753.8	47.3	Av	-9.2	38.1	89.0	-50.9
2280.0	41.9	Pk	10.2	52.1	74.0	-21.9
2280.0	30.8	Av	10.2	41.0	54.0	-13.0
2320.0	43.5	Pk	10.9	54.4	74.0	-19.6
2320.0	31.5	Av	10.9	42.4	54.0	-11.6
2360.0	44.2	Pk	10.7	54.9	74.0	-19.1
2360.0	35.5	Av	10.7	46.2	54.0	-7.8
4924.0	41.4	Pk	14.7	56.1	74.0	-17.9
4924.0	27.9	Av	14.7	42.6	54.0	-11.4
7386.0	40.3	Pk	13.3	53.6	74.0	-20.4
7386.0	27.1	Av	13.3	40.4	54.0	-13.6
9848.0	41.1	Pk	18.1	59.2	109.0	-49.8
9848.0	28.6	Av	18.1	46.7	89.0	-42.3
12310.0	40.2	Pk	18.7	58.9	74.0	-15.1
12310.0	26.8	Av	18.7	45.5	54.0	-8.5

Table 9-13: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 6 Mbps) 12 dBi Collinear Omni Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1478.750	61.3	Pk	-11.1	50.2	74.0	-23.8
1478.750	48.6	Av	-11.1	37.5	54.0	-16.5
1552.210	66.8	Pk	-10.5	56.3	74.0	-17.7
1552.210	51.2	Av	-10.5	40.7	54.0	-13.3
1656.630	66.4	Pk	-9.8	56.6	100.8	-44.2
1656.630	49.6	Av	-9.8	39.8	80.8	-41.0
2280.000	46.9	Pk	10.2	57.1	74.0	-16.9
2280.000	35.9	Av	10.2	46.1	54.0	-7.9
2320.000	50.3	Pk	10.9	61.2	74.0	-12.8
2320.000	37.1	Av	10.9	48.0	54.0	-6.0
2360.000	49.5	Pk	10.7	60.2	74.0	-13.8
2360.000	39.2	Av	10.7	49.9	54.0	-4.1
2376.000	37.0	Pk	10.6	47.6	74.0	-26.4
2376.000	34.5	Av	10.6	45.1	54.0	-8.9
2520.000	31.5	Pk	11.2	42.7	100.8	-58.1
2520.000	23.1	Av	11.2	34.3	80.8	-46.5
4824.000	40.2	Pk	14.2	54.4	74.0	-19.6
4824.000	27.6	Av	14.2	41.8	54.0	-12.2
7236.000	40.4	Pk	13.1	53.5	100.8	-47.3
7236.000	28.0	Av	13.1	41.1	80.8	-39.7
9648.000	41.1	Pk	18.6	59.7	100.8	-41.1
9648.000	28.0	Av	18.6	46.6	80.8	-34.2
12060.000	40.9	Pk	19.9	60.8	74.0	-13.2
12060.000	28.2	Av	19.9	48.1	54.0	-5.9

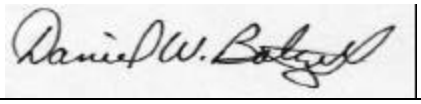
Table 9-14: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 6 Mbps) 12 dBi Collinear Omni Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1500.050	62.1	Pk	-10.5	51.6	74.0	-22.4
1500.050	48.7	Av	-10.5	38.2	54.0	-15.8
1579.150	67.3	Pk	-10.5	56.8	74.0	-17.2
1579.150	51.4	Av	-10.5	40.9	54.0	-13.1
1731.255	63.0	Pk	-9.7	53.3	105.9	-52.6
1731.255	48.6	Av	-9.7	38.9	85.9	-47.0
2280.000	45.4	Pk	10.2	55.6	74.0	-18.4
2280.000	33.3	Av	10.2	43.5	54.0	-10.5
2320.000	48.5	Pk	10.9	59.4	74.0	-14.6
2320.000	36.6	Av	10.9	47.5	54.0	-6.5
2360.000	50.2	Pk	10.7	60.9	74.0	-13.1
2360.000	39.2	Av	10.7	49.9	54.0	-4.1
4874.000	40.6	Pk	14.4	55.0	74.0	-19.0
4874.000	27.9	Av	14.4	42.3	54.0	-11.7
7311.000	40.4	Pk	13.1	53.5	74.0	-20.5
7311.000	27.9	Av	13.1	41.0	54.0	-13.0
9748.000	41.2	Pk	18.1	59.3	105.9	-46.6
9748.000	27.5	Av	18.1	45.6	85.9	-40.3
12185.000	40.5	Pk	18.5	59.0	74.0	-15.0
12185.000	27.5	Av	18.5	46.0	54.0	-8.0

Table 9-15: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 6 Mbps) 12 dBi Collinear Omni Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1528.850	65.3	Pk	-10.7	54.6	74.0	-19.4
1528.850	51.7	Av	-10.7	41.0	54.0	-13.0
1603.210	72.5	Pk	-10.2	62.3	74.0	-11.7
1603.210	55.0	Av	-10.2	44.8	54.0	-9.2
1755.530	61.6	Pk	-9.1	52.5	102.9	-50.4
1755.530	47.6	Av	-9.1	38.5	82.9	-44.4
2280.000	46.3	Pk	10.2	56.5	74.0	-17.5
2280.000	33.9	Av	10.2	44.1	54.0	-9.9
2320.000	46.9	Pk	10.9	57.8	74.0	-16.2
2320.000	35.0	Av	10.9	45.9	54.0	-8.1
2360.000	48.0	Pk	10.7	58.7	74.0	-15.3
2360.000	37.4	Av	10.7	48.1	54.0	-5.9
4924.000	41.5	Pk	14.7	56.2	74.0	-17.8
4924.000	28.3	Av	14.7	43.0	54.0	-11.0
7386.000	40.7	Pk	13.3	54.0	74.0	-20.0
7386.000	27.3	Av	13.3	40.6	54.0	-13.4
9848.000	41.7	Pk	18.1	59.8	102.9	-43.1
9848.000	28.8	Av	18.1	46.9	82.9	-36.0
12310.000	39.8	Pk	18.7	58.5	74.0	-15.5
12310.000	27.1	Av	18.7	45.8	54.0	-8.2

Test Personnel:



Daniel W. Baltzell		September 7, 2005
EMC Test Engineer	Signature	Date Of Test

Table 9-16: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 1 Mbps) 14 dBi YAGI Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1473.130	59.0	Pk	-10.0	49.0	74.0	-25.0
1473.130	47.3	Av	-10.0	37.3	54.0	-16.7
1552.500	56.6	Pk	-9.4	47.2	74.0	-26.8
1552.500	45.0	Av	-9.4	35.6	54.0	-18.4
2210.650	46.4	Pk	10.4	56.8	74.0	-17.2
2210.650	35.7	Av	10.4	46.1	54.0	-7.9
2240.000	46.1	Pk	10.5	56.6	74.0	-17.4
2240.000	37.2	Av	10.5	47.7	54.0	-6.3
2280.000	48.2	Pk	10.2	58.4	74.0	-15.6
2280.000	38.4	Av	10.2	48.6	54.0	-5.4
2288.000	50.0	Pk	10.3	60.3	74.0	-13.7
2288.000	40.6	Av	10.3	50.9	54.0	-3.1
2320.000	50.7	Pk	10.9	61.6	74.0	-12.4
2320.000	41.6	Av	10.9	52.5	54.0	-1.5
2360.000	50.3	Pk	10.7	61.0	74.0	-13.0
2360.000	42.0	Av	10.7	52.7	54.0	-1.3
2376.000	49.4	Pk	10.6	60.0	74.0	-14.0
2376.000	38.8	Av	10.6	49.4	54.0	-4.6
4824.000	40.1	Pk	14.2	54.3	74.0	-19.7
4824.000	27.4	Av	14.2	41.6	54.0	-12.4
7236.000	39.8	Pk	13.1	52.9	107.1	-54.2
7236.000	27.9	Av	13.1	41.0	87.1	-46.1
9648.000	40.9	Pk	18.6	59.5	107.1	-47.6
9648.000	29.1	Av	18.6	47.7	87.1	-39.4
12060.000	40.3	Pk	19.9	60.2	74.0	-13.8
12060.000	27.7	Av	19.9	47.6	54.0	-6.4

Table 9-17: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 1 Mbps) 14 dBi YAGI Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1505.500	59.4	Pk	-9.2	50.2	74.0	-23.8
1505.500	47.8	Av	-9.2	38.6	54.0	-15.4
1575.500	56.8	Pk	-9.3	47.5	74.0	-26.5
1575.500	44.8	Av	-9.3	35.5	54.0	-18.5
2280.000	48.2	Pk	10.2	58.4	74.0	-15.6
2280.000	36.2	Av	10.2	46.4	54.0	-7.6
2288.000	48.2	Pk	10.3	58.5	74.0	-15.5
2288.000	37.5	Av	10.3	47.8	54.0	-6.2
2320.000	49.9	Pk	10.9	60.8	74.0	-13.2
2320.000	38.2	Av	10.9	49.1	54.0	-4.9
2360.000	50	Pk	10.7	60.7	74.0	-13.3
2360.000	42.6	Av	10.7	53.3	54.0	-0.7
4874.000	41.5	Pk	14.4	55.9	74.0	-18.1
4874.000	28.2	Av	14.4	42.6	54.0	-11.4
7311.000	40.8	Pk	13.1	53.9	74.0	-20.1
7311.000	27.7	Av	13.1	40.8	54.0	-13.2
9748.000	41.3	Pk	18.1	59.4	103.9	-44.5
9748.000	28.1	Av	18.1	46.2	83.9	-37.7
12185.000	40.1	Pk	18.5	58.6	74.0	-15.4
12185.000	27.4	Av	18.5	45.9	54.0	-8.1

Table 9-18: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 1 Mbps) 14 dBi YAGI Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1528.300	58.0	Pk	-9.3	48.7	74.0	-25.3
1528.300	45.6	Av	-9.3	36.3	54.0	-17.7
1730.000	51.0	Pk	-8.3	42.7	109.0	-66.3
1730.000	44.5	Av	-8.3	36.2	89.0	-52.8
2280.000	46.7	Pk	10.2	56.9	74.0	-17.1
2280.000	35.3	Av	10.2	45.5	54.0	-8.5
2288.000	47.6	Pk	10.3	57.9	74.0	-16.1
2288.000	36.5	Av	10.3	46.8	54.0	-7.2
2320.000	46.6	Pk	10.9	57.5	74.0	-16.5
2320.000	36.6	Av	10.9	47.5	54.0	-6.5
2360.000	49.5	Pk	10.7	60.2	74.0	-13.8
2360.000	40.3	Av	10.7	51.0	54.0	-3.0
4924.000	41.6	Pk	14.7	56.3	74.0	-17.7
4924.000	28.2	Av	14.7	42.9	54.0	-11.1
7386.000	40.4	Pk	13.3	53.7	74.0	-20.3
7386.000	27.3	Av	13.3	40.6	54.0	-13.4
9848.000	41.8	Pk	18.1	59.9	109.0	-49.1
9848.000	28.8	Av	18.1	46.9	89.0	-42.1
12310.000	39.6	Pk	18.7	58.3	74.0	-15.7
12310.000	26.5	Av	18.7	45.2	54.0	-8.8

Table 9-19: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 6 Mbps) 14 dBi YAGI Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1476.000	60.1	Pk	-10.0	50.1	74.0	-23.9
1476.000	47.0	Av	-10.0	37.0	54.0	-17.0
1552.880	58.9	Pk	-9.4	49.5	74.0	-24.5
1552.880	44.7	Av	-9.4	35.3	54.0	-18.7
2210.650	45.1	Pk	10.4	55.5	74.0	-18.5
2210.650	34.5	Av	10.4	44.9	54.0	-9.1
2240.000	46.0	Pk	10.5	56.5	74.0	-17.5
2240.000	35.6	Av	10.5	46.1	54.0	-7.9
2280.000	46.2	Pk	10.2	56.4	74.0	-17.6
2280.000	37.3	Av	10.2	47.5	54.0	-6.5
2288.150	48.7	Pk	10.3	59.0	74.0	-15.0
2288.150	37.9	Av	10.3	48.2	54.0	-5.8
2320.000	50.0	Pk	10.9	60.9	74.0	-13.1
2320.000	39.3	Av	10.9	50.2	54.0	-3.8
2360.000	51.4	Pk	10.7	62.1	74.0	-11.9
2360.000	42.7	Av	10.7	53.4	54.0	-0.6
4824.000	39.9	Pk	14.2	54.1	74.0	-19.9
4824.000	27.5	Av	14.2	41.7	54.0	-12.3
7236.000	39.4	Pk	13.1	52.5	101.4	-48.9
7236.000	27.0	Av	13.1	40.1	81.4	-41.3
9648.000	40.7	Pk	18.6	59.3	101.4	-42.1
9648.000	27.7	Av	18.6	46.3	81.4	-35.1
12060.000	40.5	Pk	19.9	60.4	74.0	-13.6
12060.000	27.9	Av	19.9	47.8	54.0	-6.2

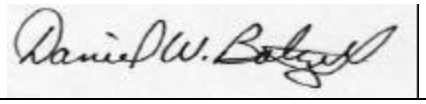
Table 9-20: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 6 Mbps) 14 dBi YAGI Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1694.380	56.9	Pk	-8.3	48.6	74.0	-25.4
1694.380	45.2	Av	-8.3	36.9	54.0	-17.1
2280.000	48.9	Pk	10.2	59.1	74.0	-14.9
2280.000	37.3	Av	10.2	47.5	54.0	-6.5
2288.000	49.2	Pk	10.3	59.5	74.0	-14.5
2288.000	38.3	Av	10.3	48.6	54.0	-5.4
2320.000	50.9	Pk	10.9	61.8	74.0	-12.2
2320.000	39.3	Av	10.9	50.2	54.0	-3.8
2360.000	52.9	Pk	10.7	63.6	74.0	-10.4
2360.000	43.2	Av	10.7	53.9	54.0	-0.1
4874.000	40.5	Pk	14.4	54.9	74.0	-19.1
4874.000	28.2	Av	14.4	42.6	54.0	-11.4
7311.000	39.7	Pk	13.1	52.8	74.0	-21.2
7311.000	27.8	Av	13.1	40.9	54.0	-13.1
9748.000	41.1	Pk	18.1	59.2	100.2	-41.0
9748.000	28.5	Av	18.1	46.6	80.2	-33.6
12185.000	40.6	Pk	18.5	59.1	74.0	-14.9
12185.000	27.1	Av	18.5	45.6	54.0	-8.4

Table 9-21: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 6 Mbps) 14 dBi YAGI Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1520.800	58.5	Pk	-9.3	49.2	74.0	-24.8
1520.800	45.7	Av	-9.3	36.4	54.0	-17.6
1729.900	59.9	Pk	-8.3	51.6	98.5	-46.9
1729.900	46.3	Av	-8.3	38.0	78.5	-40.5
2280.000	46.1	Pk	10.2	56.3	74.0	-17.7
2280.000	37.2	Av	10.2	47.4	54.0	-6.6
2288.000	48.9	Pk	10.3	59.2	74.0	-14.8
2288.000	37.9	Av	10.3	48.2	54.0	-5.8
2320.000	50.2	Pk	10.9	61.1	74.0	-12.9
2320.000	38.6	Av	10.9	49.5	54.0	-4.5
2360.000	52.5	Pk	10.7	63.2	74.0	-10.8
2360.000	43.1	Av	10.7	53.8	54.0	-0.2
4924.000	41.4	Pk	14.7	56.1	74.0	-17.9
4924.000	28.2	Av	14.7	42.9	54.0	-11.1
7386.000	40.2	Pk	13.3	53.5	74.0	-20.5
7386.000	27.4	Av	13.3	40.7	54.0	-13.3
9848.000	41.7	Pk	18.1	59.8	98.5	-38.7
9848.000	28.7	Av	18.1	46.8	78.5	-31.7
12310.000	39.1	Pk	18.7	57.8	74.0	-16.2
12310.000	26.8	Av	18.7	45.5	54.0	-8.5

Test Personnel:



Daniel W. Baltzell		September 7, 2005
EMC Test Engineer	Signature	Date Of Test

9.3.2 Test Results for 802.11a/b/g card

9.3.2.1 Frequency Range – 1000 MHz – 25000 MHz

Table 9-22: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 1 Mbps) 8.5 dBi Patch Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1473.130	74.4	Pk	-10.0	64.4	74.0	-9.6
1473.130	58.6	Av	-10.0	48.6	54.0	-5.4
1552.500	67.6	Pk	-9.4	58.2	74.0	-15.8
1552.500	56.4	Av	-9.4	47.0	54.0	-7.0
2210.650	45.5	Pk	10.4	55.9	74.0	-18.1
2210.650	36.1	Av	10.4	46.5	54.0	-7.5
2240.000	44.7	Pk	10.4	55.1	74.0	-18.9
2240.000	35.2	Av	10.4	45.6	54.0	-8.4
2280.000	46.5	Pk	10.4	56.9	74.0	-17.1
2280.000	36.6	Av	10.4	47.0	54.0	-7.0
2288.000	46.4	Pk	10.4	56.8	74.0	-17.2
2288.000	35.6	Av	10.4	46.0	54.0	-8.0
2320.000	48.6	Pk	9.5	58.1	74.0	-15.9
2320.000	35.9	Av	9.5	45.4	54.0	-8.6
2360.000	50.9	Pk	9.5	60.4	74.0	-13.6
2360.000	41.6	Av	9.5	51.1	54.0	-2.9
2385.850	48.6	Pk	9.5	58.1	74.0	-15.9
2385.850	37.4	Av	9.5	46.9	54.0	-7.1
2412.000	97.7	Pk	9.5	107.2	Fundamental	
2412.000	87.4	Av	9.5	96.9	Fundamental	
4824.000	33.3	Pk	14.2	47.5	74.0	-26.5
4824.000	23.9	Av	14.2	38.1	54.0	-15.9
7236.000	31.3	Pk	13.1	44.4	107.2	-62.8
7236.000	22.4	Av	13.1	35.5	87.2	-51.7
9648.000	32.8	Pk	18.6	51.4	107.2	-55.8
9648.000	22.9	Av	18.6	41.5	87.2	-45.7
12060.000	32.3	Pk	19.9	52.2	74.0	-21.8
12060.000	23.0	Av	19.9	42.9	54.0	-11.1

Table 9-23: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 1 Mbps) 8.5 dBi Patch Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1505.500	65.3	Pk	-9.2	56.1	74.0	-17.9
1505.500	53.9	Av	-9.2	44.7	54.0	-9.3
1575.500	65.8	Pk	-9.3	56.5	74.0	-17.5
1575.500	51.1	Av	-9.3	41.8	54.0	-12.2
2280.000	45.7	Pk	10.4	56.1	74.0	-17.9
2280.000	36.3	Av	10.4	46.7	54.0	-7.3
2288.000	45.6	Pk	10.4	56.0	74.0	-18.0
2288.000	35.3	Av	10.4	45.7	54.0	-8.3
2320.000	45.7	Pk	9.5	55.2	74.0	-18.8
2320.000	36.1	Av	9.5	45.6	54.0	-8.4
2360.000	50.3	Pk	9.5	59.8	74.0	-14.2
2360.000	41.6	Av	9.5	51.1	54.0	-2.9
2437.000	100.1	Pk	9.5	109.6	Fundamental	
2437.000	95.3	Av	9.5	104.8	Fundamental	
4874.000	41.2	Pk	14.4	55.6	74.0	-18.4
4874.000	30.4	Av	14.4	44.8	54.0	-9.2
7311.000	40.0	Pk	13.1	53.1	74.0	-20.9
7311.000	28.8	Av	13.1	41.9	54.0	-12.1
9748.000	41.8	Pk	18.1	59.9	109.6	-49.7
9748.000	30.7	Av	18.1	48.8	89.6	-40.8
12185.000	42.9	Pk	18.5	61.4	74.0	-12.6
12185.000	29.0	Av	18.5	47.5	54.0	-6.5

Table 9-24: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 1 Mbps) 8.5 dBi Patch Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1528.300	66.1	Pk	-9.3	56.8	74.0	-17.2
1528.300	52.8	Av	-9.3	43.5	54.0	-10.5
1730.000	62.6	Pk	-8.3	54.3	103.3	-49.0
1730.000	46.5	Av	-8.3	38.2	83.3	-45.1
2280.000	41.3	Pk	10.4	51.7	74.0	-22.3
2280.000	33.6	Av	10.4	44.0	54.0	-10.0
2288.000	37.1	Pk	10.4	47.5	74.0	-26.5
2288.000	27.0	Av	10.4	37.4	54.0	-16.6
2320.000	39.0	Pk	10.9	49.9	74.0	-24.1
2320.000	29.2	Av	10.9	40.1	54.0	-13.9
2360.000	46.0	Pk	10.7	56.7	74.0	-17.3
2360.000	42.0	Av	10.7	52.7	54.0	-1.3
2462.000	93.8	Pk	9.5	103.3	Fundamental	
2462.000	83.8	Av	9.5	93.3	Fundamental	
4924.000	41.7	Pk	14.7	56.4	74.0	-17.6
4924.000	30.3	Av	14.7	45.0	54.0	-9.0
7386.000	39.4	Pk	13.3	52.7	74.0	-21.3
7386.000	29.2	Av	13.3	42.5	54.0	-11.5
9848.000	42.0	Pk	18.1	60.1	103.3	-43.2
9848.000	30.8	Av	18.1	48.9	83.3	-34.4
12310.000	39.6	Pk	18.7	58.3	74.0	-15.7
12310.000	29.5	Av	18.7	48.2	54.0	-5.8

Table 9-25: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 6 Mbps) 8.5 dBi Patch Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1476.000	69.4	Pk	-10.0	59.4	74.0	-14.6
1476.000	56.3	Av	-10.0	46.3	54.0	-7.7
1552.880	65.2	Pk	-9.4	55.8	74.0	-18.2
1552.880	52.3	Av	-9.4	42.9	54.0	-11.1
2210.650	44.3	Pk	10.4	54.7	74.0	-19.3
2210.650	35.1	Av	10.4	45.5	54.0	-8.5
2240.000	44.6	Pk	10.5	55.1	74.0	-18.9
2240.000	35.0	Av	10.5	45.5	54.0	-8.5
2280.000	45.8	Pk	10.2	56.0	74.0	-18.0
2280.000	36.5	Av	10.2	46.7	54.0	-7.3
2288.150	45.9	Pk	10.3	56.2	74.0	-17.8
2288.150	35.1	Av	10.3	45.4	54.0	-8.6
2320.000	45.5	Pk	9.5	55.0	74.0	-19.0
2320.000	35.9	Av	9.5	45.4	54.0	-8.6
2360.000	50.4	Pk	9.5	59.9	74.0	-14.1
2360.000	41.5	Av	9.5	51.0	54.0	-3.0
2412.000	91.1	Pk	9.5	100.6	Fundamental	
2412.000	84.4	Av	9.5	93.9	Fundamental	
4824.000	41.2	Pk	14.2	55.4	74.0	-18.6
4824.000	29.9	Av	14.2	44.1	54.0	-9.9
7236.000	40.1	Pk	13.1	53.2	101.4	-48.2
7236.000	28.8	Av	13.1	41.9	81.4	-39.5
9648.000	40.4	Pk	18.6	59.0	100.6	-41.6
9648.000	29.7	Av	18.6	48.3	80.6	-32.3
12060.000	39.9	Pk	19.9	59.8	74.0	-14.2
12060.000	29.7	Av	19.9	49.6	54.0	-4.4

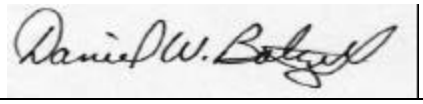
Table 9-26: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 6 Mbps) 8.5 dBi Patch Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1694.380	67.8	Pk	-8.3	59.5	74.0	-14.5
1694.380	52.8	Av	-8.3	44.5	54.0	-9.5
2280.000	40.0	Pk	10.4	50.4	74.0	-23.6
2280.000	33.5	Av	10.4	43.9	54.0	-10.1
2288.000	36.6	Pk	10.4	47.0	74.0	-27.0
2288.000	27.1	Av	10.4	37.5	54.0	-16.5
2320.000	38.2	Pk	9.5	47.7	74.0	-26.3
2320.000	27.6	Av	9.5	37.1	54.0	-16.9
2360.000	44.6	Pk	9.5	54.1	74.0	-19.9
2360.000	41.2	Av	9.5	50.7	54.0	-3.3
1694.380	67.8	Pk	-8.3	59.5	74.0	-14.5
1694.380	52.8	Av	-8.3	44.5	54.0	-9.5
2280.000	40.0	Pk	10.4	50.4	74.0	-23.6
2437.000	94.8	Pk	9.5	104.3	Fundamental	
2437.000	87.8	Av	9.5	97.3	Fundamental	
4874.000	41.9	Pk	14.4	56.3	74.0	-17.7
4874.000	30.4	Av	14.4	44.8	54.0	-9.2
7311.000	40.5	Pk	13.1	53.6	74.0	-20.4
7311.000	28.9	Av	13.1	42.0	54.0	-12.0
9748.000	40.6	Pk	18.1	58.7	104.3	-45.6
9748.000	30.8	Av	18.1	48.9	84.3	-35.4
12185.000	39.2	Pk	18.5	57.7	74.0	-16.3
12185.000	29.1	Av	18.5	47.6	54.0	-6.4

Table 9-27: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 6 Mbps) 8.5 dBi Patch Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1520.800	63.2	Pk	-9.3	53.9	74	-20.1
1520.800	50.6	Av	-9.3	41.3	54	-12.7
1730.100	62.4	Pk	-8.3	54.1	100.5	-46.4
1730.100	47.0	Av	-8.3	38.7	80.5	-41.8
2280.000	46.8	Pk	10.4	57.2	74	-16.8
2280.000	36.4	Av	10.4	46.8	54	-7.2
2288.000	46.5	Pk	10.4	56.9	74	-17.1
2288.000	35.2	Av	10.4	45.6	54	-8.4
2320.000	48.8	Pk	9.5	58.3	74	-15.7
2320.000	36.1	Av	9.5	45.6	54	-8.4
2360.000	50.5	Pk	9.5	60.0	74	-14.0
2360.000	41.9	Av	9.5	51.4	54	-2.6
2462.000	91.0	Pk	9.5	100.5	Fundamental	
2462.000	84.5	Av	9.5	94.0	Fundamental	
4924.000	41.1	Pk	14.7	55.8	74	-18.2
4924.000	30.6	Av	14.7	45.3	54	-8.7
7386.000	40.1	Pk	13.3	53.4	74	-20.6
7386.000	29.1	Av	13.3	42.4	54	-11.6
9848.000	41.3	Pk	18.1	59.4	100.5	-41.1
9848.000	30.7	Av	18.1	48.8	80.5	-31.7
12310.000	40.6	Pk	18.7	59.3	74	-14.7
12310.000	29.4	Av	18.7	48.1	54	-5.9

Test Personnel:



Daniel W. Baltzell		October 19, 2005
EMC Test Engineer	Signature	Date Of Test

Table 9-28: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 1 Mbps) 12 dBi Collinear Omni Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1473.130	67.0	Pk	-11.0	56.0	74.0	-18.0
1473.130	53.7	Av	-11.0	42.7	54.0	-11.3
1552.500	65.4	Pk	-10.2	55.2	74.0	-18.8
1552.500	53.4	Av	-10.2	43.2	54.0	-10.8
2320.000	39.4	Pk	9.5	48.9	74.0	-25.1
2320.000	26.5	Av	9.5	36.0	54.0	-18.0
2360.000	51.5	Pk	9.5	61.0	74.0	-13.0
2360.000	42.3	Av	9.5	51.8	54.0	-2.2
2385.850	40.2	Pk	9.5	49.7	74.0	-24.3
2385.850	29.1	Av	9.5	38.6	54.0	-15.4
95.4	Pk	9.5	104.9	95.4	Fundamental	
85.4	Av	9.5	94.9	85.4	Fundamental	
31.8	Pk	14.2	46.0	31.8	74.0	-28.0
21.5	Av	14.2	35.7	21.5	54.0	-18.3
39.7	Pk	13.1	52.8	39.7	104.9	-52.1
30.1	Av	13.1	43.2	30.1	84.9	-41.7

Table 9-29: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 1 Mbps) 12 dBi Collinear Omni Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1505.500	64.9	Pk	-9.8	55.1	74.0	-18.9
1505.500	52.5	Av	-9.8	42.7	54.0	-11.3
1575.500	67.3	Pk	-10.3	57.0	74.0	-17.0
1575.500	55.0	Av	-10.3	44.7	54.0	-9.3
2280.000	47.4	Pk	10.4	57.8	74.0	-16.2
2280.000	37.0	Av	10.4	47.4	54.0	-6.6
2360.000	51.2	Pk	9.5	60.7	74.0	-13.3
2360.000	43.2	Av	9.5	52.7	54.0	-1.3
2437.000	91.9	Pk	9.5	101.4	Fundamental	
2437.000	81.5	Av	9.5	91.0	Fundamental	
4874.000	31.5	Pk	14.4	45.9	74.0	-28.1
4874.000	21.3	Av	14.4	35.7	54.0	-18.3
7311.000	41.2	Pk	13.1	54.3	74.0	-19.7
7311.000	29.3	Av	13.1	42.4	54.0	-11.6

Table 9-30: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 1 Mbps) 12 dBi Collinear Omni Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1528.300	56.5	Pk	-10.2	46.3	74.0	-27.7
1528.300	45.3	Av	-10.2	35.1	54.0	-18.9
2280.000	45.7	Pk	10.4	56.1	74.0	-17.9
2280.000	36.0	Av	10.4	46.4	54.0	-7.6
2288.000	46.1	Pk	10.4	56.5	74.0	-17.5
2288.000	35.9	Av	10.4	46.3	54.0	-7.7
2320.000	47.7	Pk	9.5	57.2	74.0	-16.8
2320.000	36.3	Av	9.5	45.8	54.0	-8.2
2360.000	51.6	Pk	9.5	61.1	74.0	-12.9
2360.000	43.3	Av	9.5	52.8	54.0	-1.2
2462.000	91.6	Pk	9.5	101.1	Fundamental	
2462.000	81.4	Av	9.5	90.9	Fundamental	
4924.000	32.3	Pk	21.5	53.8	74.0	-20.2
4924.000	22.4	Av	21.5	43.9	54.0	-10.1

Table 9-31: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 6 Mbps) 12 dBi Collinear Omni Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1476.000	61.4	Pk	-10.9	50.5	74.0	-23.5
1476.000	47.9	Av	-10.9	37.0	54.0	-17.0
1552.880	66.6	Pk	-10.2	56.4	74.0	-17.6
1552.880	51.7	Av	-10.2	41.5	54.0	-12.5
2280.000	48.5	Pk	10.4	58.9	74.0	-15.1
2280.000	37.3	Av	10.4	47.7	54.0	-6.3
2320.000	38.2	Pk	9.5	47.7	74.0	-26.3
2320.000	26.8	Av	9.5	36.3	54.0	-17.7
2360.000	52.4	Pk	9.5	61.9	74.0	-12.1
2360.000	42.2	Av	9.5	51.7	54.0	-2.3
2412.000	90.5	Pk	9.5	100.0	Fundamental	
2412.000	83.9	Av	9.5	93.4	Fundamental	
4824.000	32.4	Pk	14.2	46.6	74.0	-27.4
4824.000	22.3	Av	14.2	36.5	54.0	-17.5
7236.000	40.3	Pk	13.1	53.4	100.0	-46.6
7236.000	29.7	Av	13.1	42.8	80.0	-37.2

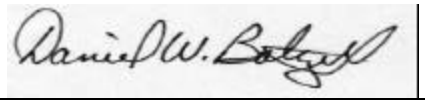
Table 9-32: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 6 Mbps) 12 dBi Collinear Omni Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1694.380	59.4	Pk	-8.9	50.5	74.0	-23.5
1694.380	46.5	Av	-8.9	37.6	54.0	-16.4
2280.000	47.4	Pk	10.4	57.8	74.0	-16.2
2280.000	37.2	Av	10.4	47.6	54.0	-6.4
2360.000	49.6	Pk	9.5	59.1	74.0	-14.9
2360.000	41.4	Av	9.5	50.9	54.0	-3.1
2437.000	89.2	Pk	9.5	98.7	Fundamental	
2437.000	82.2	Av	9.5	91.7	Fundamental	
4874.000	30.2	Pk	14.4	44.6	74.0	-29.4
4874.000	20.3	Av	14.4	34.7	54.0	-19.3
7311.000	42.2	Pk	13.1	55.3	74.0	-18.7
7311.000	30.4	Av	13.1	43.5	54.0	-10.5

Table 9-33: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 6 Mbps) 12 dBi Collinear Omni Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1729.900	55.6	Pk	-9.1	46.5	98.5	-52.0
1729.900	50.3	Av	-9.1	41.2	78.5	-37.3
2280.000	46.1	Pk	10.4	56.5	74.0	-17.5
2280.000	35.8	Av	10.4	46.2	54.0	-7.8
2288.000	46.5	Pk	10.4	56.9	74.0	-17.1
2288.000	35.9	Av	10.4	46.3	54.0	-7.7
2320.000	47.8	Pk	9.5	57.3	74.0	-16.7
2320.000	36.4	Av	9.5	45.9	54.0	-8.1
2360.000	51.3	Pk	9.5	60.8	74.0	-13.2
2360.000	42.8	Av	9.5	52.3	54.0	-1.7
2462.000	90.2	Pk	9.5	99.7	Fundamental	
2462.000	83.4	Av	9.5	92.9	Fundamental	
4924.000	30.4	Pk	14.7	45.1	74.0	-28.9
4924.000	20.1	Av	14.7	34.8	54.0	-19.2
7386.000	42.4	Pk	13.3	55.7	74.0	-18.3
7386.000	30.5	Av	13.3	43.8	54.0	-10.2

Test Personnel:



Daniel W. Baltzell		October 20, 2005
EMC Test Engineer	Signature	Date Of Test

Table 9-34: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 1 Mbps) 14 dBi YAGI Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1473.130	67.5	Pk	-11.2	56.3	74.0	-17.7
1473.130	54.7	Av	-11.2	43.5	54.0	-10.5
1552.500	69.4	Pk	-10.2	59.2	74.0	-14.8
1552.500	59.0	Av	-10.2	48.8	54.0	-5.2
2210.650	46.0	Pk	10.4	56.4	74.0	-17.6
2210.650	35.3	Av	10.4	45.7	54.0	-8.3
2240.000	45.3	Pk	10.5	55.8	74.0	-18.2
2240.000	35.3	Av	10.5	45.8	54.0	-8.2
2280.000	48.8	Pk	10.2	59.0	74.0	-15.0
2280.000	39.0	Av	10.2	49.2	54.0	-4.8
2288.000	45.3	Pk	10.3	55.6	74.0	-18.4
2288.000	36.2	Av	10.3	46.5	54.0	-7.5
2320.000	50.1	Pk	10.9	61.0	74.0	-13.0
2320.000	37.9	Av	10.9	48.8	54.0	-5.2
2360.000	53.1	Pk	9.5	62.6	74.0	-11.4
2360.000	44.2	Av	9.5	53.7	54.0	-0.3
2385.850	54.7	Pk	9.5	64.2	74.0	-9.8
2385.850	44.0	Av	9.5	53.5	54.0	-0.5
2412.000	100.5	Pk	9.5	110.0	Fundamental	
2412.000	91.0	Av	9.5	100.5	Fundamental	
4824.000	41.4	Pk	14.2	55.6	74.0	-18.4
4824.000	30.6	Av	14.2	44.8	54.0	-9.2
7236.000	39.8	Pk	13.1	52.9	110.0	-57.1
7236.000	29.7	Av	13.1	42.8	90.0	-47.2
9648.000	40.1	Pk	18.6	58.7	110.0	-51.3
9648.000	30.1	Av	18.6	48.7	90.0	-41.3
12060.000	40.6	Pk	19.9	60.5	74.0	-13.5
12060.000	30.4	Av	19.9	50.3	54.0	-3.7

Table 9-35: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 1 Mbps) 14 dBi YAGI Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1505.500	66.5	Pk	-9.8	56.7	74.0	-17.3
1505.500	54.8	Av	-9.8	45.0	54.0	-9.0
1575.500	70.8	Pk	-10.3	60.5	74.0	-13.5
1575.500	57.6	Av	-10.3	47.3	54.0	-6.7
2280.000	48.4	Pk	10.4	58.8	74.0	-15.2
2280.000	37.6	Av	10.4	48.0	54.0	-6.0
2288.000	45.4	Pk	10.4	55.8	74.0	-18.2
2288.000	36.1	Av	10.4	46.5	54.0	-7.5
2320.000	48.1	Pk	9.5	57.6	74.0	-16.4
2320.000	37.1	Av	9.5	46.6	54.0	-7.4
2360.000	51.6	Pk	9.5	61.1	74.0	-12.9
2360.000	44.0	Av	9.5	53.5	54.0	-0.5
2437.000	99.7	Pk	9.5	109.2	Fundamental	
2437.000	89.9	Av	9.5	99.4	Fundamental	
4874.000	41.2	Pk	14.4	55.6	74.0	
4874.000	30.7	Av	14.4	45.1	54.0	-8.9
7311.000	39.9	Pk	13.1	53.0	74.0	-21.0
7311.000	29.2	Av	13.1	42.3	54.0	-11.7
9748.000	41.9	Pk	18.1	60.0	109.2	-49.2
9748.000	30.9	Av	18.1	49.0	89.2	-40.2
12185.000	40.5	Pk	18.5	59.0	74.0	-15.0
12185.000	29.5	Av	18.5	48.0	54.0	-6.0

Table 9-36: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 1 Mbps) 14 dBi YAGI Antenna 802.11b

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1528.300	66.2	Pk	-10.2	56.0	74.0	-18.0
1528.300	57.8	Av	-10.2	47.6	54.0	-6.4
1730.000	65.3	Pk	-9.1	56.2	111.3	-55.1
1730.000	61.5	Av	-9.1	52.4	91.3	-38.9
2280.000	49.7	Pk	10.4	60.1	74.0	-13.9
2280.000	39.7	Av	10.4	50.1	54.0	-3.9
2288.000	48.6	Pk	10.4	59.0	74.0	-15.0
2288.000	38.7	Av	10.4	49.1	54.0	-4.9
2320.000	50.7	Pk	9.5	60.2	74.0	-13.8
2320.000	39.3	Av	9.5	48.8	54.0	-5.2
2360.000	52.7	Pk	9.5	62.2	74.0	-11.8
2360.000	44.3	Av	9.5	53.8	54.0	-0.2
2462.000	101.8	Pk	9.5	111.3	Fundamental	
2462.000	91.7	Av	9.5	101.2	Fundamental	
4924.000	41.8	Pk	14.7	56.5	74.0	-17.5
4924.000	30.6	Av	14.7	45.3	54.0	-8.7
7386.000	40.0	Pk	13.3	53.3	74.0	-20.7
7386.000	29.7	Av	13.3	43.0	54.0	-11.0
9848.000	42.3	Pk	18.1	60.4	111.3	-50.9
9848.000	30.8	Av	18.1	48.9	91.3	-42.4
12310.000	40.0	Pk	18.7	58.7	74.0	-15.3
12310.000	30.2	Av	18.7	48.9	54.0	-5.1

Table 9-37: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz 6 Mbps) 14 dBi YAGI Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1476.000	65.1	Pk	-10.9	54.2	74.0	-19.8
1476.000	54.2	Av	-10.9	43.3	54.0	-10.7
1552.880	65.3	Pk	-10.2	55.1	74.0	-18.9
1552.880	53.2	Av	-10.2	43.0	54.0	-11.0
2210.650	45.0	Pk	10.4	55.4	74.0	-18.6
2210.650	35.2	Av	10.4	45.6	54.0	-8.4
2240.000	46.2	Pk	10.5	56.7	74.0	-17.3
2240.000	35.3	Av	10.5	45.8	54.0	-8.2
2280.000	48.2	Pk	10.2	58.4	74.0	-15.6
2280.000	39.2	Av	10.2	49.4	54.0	-4.6
2288.150	45.6	Pk	10.3	55.9	74.0	-18.1
2288.150	35.9	Av	10.3	46.2	54.0	-7.8
2320.000	48.0	Pk	9.5	57.5	74.0	-16.5
2320.000	38.1	Av	9.5	47.6	54.0	-6.4
2360.000	46.7	Pk	9.5	56.2	74.0	-17.8
2360.000	43.7	Av	9.5	53.2	54.0	-0.8
2412.000	93.1	Pk	9.5	102.6	Fundamental	
2412.000	86.4	Av	9.5	95.9	Fundamental	
4824.000	41.3	Pk	14.2	55.5	74.0	-18.5
4824.000	31.0	Av	14.2	45.2	54.0	-8.8
7236.000	40.4	Pk	13.1	53.5	102.6	-49.1
7236.000	29.5	Av	13.1	42.6	82.6	-40.0
9648.000	40.4	Pk	18.6	59.0	102.6	-43.6
9648.000	30.3	Av	18.6	48.9	82.6	-33.7
12060.000	41.3	Pk	19.9	61.2	74.0	-12.8
12060.000	30.4	Av	19.9	50.3	54.0	-3.7

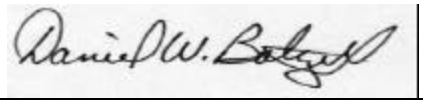
Table 9-38: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz 6 Mbps) 14 dBi YAGI Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1694.380	63.0	Pk	-8.8	54.2	74.0	-19.8
1694.380	50.0	Av	-8.8	41.2	54.0	-12.8
2280.000	41.5	Pk	10.4	51.9	74.0	-22.1
2280.000	37.0	Av	10.4	47.4	54.0	-6.6
2288.000	39.4	Pk	10.4	49.8	74.0	-24.2
2288.000	29.4	Av	10.4	39.8	54.0	-14.2
2320.000	38.2	Pk	9.5	47.7	74.0	-26.3
2320.000	30.2	Av	9.5	39.7	54.0	-14.3
2360.000	53.5	Pk	9.5	63.0	74.0	-11.0
2360.000	44.2	Av	9.5	53.7	54.0	-0.3
2437.000	94.0	Pk	9.5	103.5	Fundamental	
2437.000	87.4	Av	9.5	96.9	Fundamental	
4874.000	41.4	Pk	14.4	55.8	74.0	-18.2
4874.000	31.0	Av	14.4	45.4	54.0	-8.6
7311.000	39.9	Pk	13.1	53.0	74.0	-21.0
7311.000	29.4	Av	13.1	42.5	54.0	-11.5
9748.000	43.6	Pk	18.1	61.7	103.5	-41.8
9748.000	31.0	Av	18.1	49.1	83.5	-34.4
12185.000	40.3	Pk	18.5	58.8	74.0	-15.2
12185.000	30.0	Av	18.5	48.5	54.0	-5.5

Table 9-39: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz 6 Mbps) 14 dBi YAGI Antenna 802.11g

Emission Frequency (MHz)	Analyzer Reading (dBuV)	Detector Pk=1 MHz RBW/VBW; Av=1 MHz RBW/10 Hz VBW	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1520.800	62.2	Pk	-10.0	52.2	74.0	-21.8
1520.800	48.9	Av	-10.0	38.9	54.0	-15.1
1729.900	64.7	Pk	-9.1	55.6	103.5	-47.9
1729.900	50.3	Av	-9.1	41.2	83.5	-42.3
2280.000	39.9	Pk	10.2	10.4	74.0	-63.6
2280.000	36.3	Av	10.2	10.4	54.0	-43.6
2288.000	31.9	Pk	10.3	10.4	74.0	-63.6
2288.000	24.2	Av	10.3	10.4	54.0	-43.6
2320.000	33.1	Pk	10.9	9.5	74.0	-64.5
2320.000	27.3	Av	10.9	9.5	54.0	-44.5
2360.000	53.4	Pk	9.5	62.9	74.0	-11.1
2360.000	44.1	Av	9.5	53.6	54.0	-0.4
2462.000	94.0	Pk	9.5	103.5	Fundamental	
2462.000	88.0	Av	9.5	97.5	Fundamental	
4924.000	40.9	Pk	14.7	55.6	74.0	-18.4
4924.000	31.0	Av	14.7	45.7	54.0	-8.3
7386.000	41.2	Pk	13.3	54.5	74.0	-19.5
7386.000	29.6	Av	13.3	42.9	54.0	-11.1
9848.000	41.6	Pk	18.1	59.7	103.5	-43.8
9848.000	31.0	Av	18.1	49.1	83.5	-34.4
12310.000	40.2	Pk	18.7	58.9	74.0	-15.1
12310.000	30.2	Av	18.7	48.9	54.0	-5.1

Test Personnel:



Daniel W. Baltzell		October 21, 2005
EMC Test Engineer	Signature	Date Of Test

10 Test Results for 802.11a

11 Conducted Emissions Measurement – FCC §15.207; RSS-GEN §7.2.2

11.1 Limits of Conducted Emissions Measurement

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

11.2 Conducted Emissions Measurement Test Procedure

The EUT was placed 0.4 meters from the conducting bulkhead of the shielded room. The EUT was connected to mains through a line impedance stabilization network (LISN). The LISN provides 50 ohm/50 uH coupling impedance to the measuring receiver.

The test frequency range was from 150 kHz to 30 MHz.

Table 11-1: Conducted Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	8/3/06
900896	Hewlett Packard	85662A	Display Section	2816A16471	3/8/06
900897	Hewlett Packard	8567A	HP Spectrum Analyzer (10 kHz - 1.5 GHz)	2727A00535	3/5/06
900729	Solar	8130	Filter	947306	N/A
901083	AFJ International	LS16	LISN	16010020080	3/24/06
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20 Hz – 2 GHz)	3146A01309	4/5/06
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	8/3/06

11.3 Conducted Test Data

Table 11-2: Conducted Emissions Test Data; Transmit; Ch 48, AC line; Neutral Side (Line 1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.198	Pk	46.0	0.2	46.2	63.7	-17.5	53.7	-7.5	Pass
0.267	Pk	43.6	0.2	43.8	61.2	-17.4	51.2	-7.4	Pass
0.332	Pk	38.4	0.2	38.6	59.4	-20.8	49.4	-10.8	Pass
0.399	Pk	35.8	0.3	36.1	57.9	-21.8	47.9	-11.8	Pass
0.465	Pk	28.5	0.2	28.7	56.6	-27.9	46.6	-17.9	Pass
5.010	Pk	38.5	1.2	39.7	60.0	-20.3	50.0	-10.3	Pass

Table 11-3: Conducted Emissions Test Data; Transmit; Ch 48, AC line; Hot Side (Line 2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.198	Pk	48.3	0.2	48.5	63.7	-15.2	53.7	-5.2	Pass
0.266	Pk	42.8	0.2	43.0	61.2	-18.2	51.2	-8.2	Pass
0.331	Pk	30.6	0.2	30.8	59.4	-28.6	49.4	-18.6	Pass
0.398	Pk	30.9	0.3	31.2	57.9	-26.7	47.9	-16.7	Pass
0.464	Pk	33.1	0.2	33.3	56.6	-23.3	46.6	-13.3	Pass

Table 11-4: Conducted Emissions Test Data; Transmit; Ch 157, AC line; Neutral Side (Line 1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.150	Pk	53.6	0.2	53.8	66.0	-12.2	56.0	-2.2	Pass
0.222	Pk	50.6	0.2	50.8	62.7	-11.9	52.7	-1.9	Pass
0.296	Pk	46.6	0.3	46.9	60.4	-13.5	50.4	-3.5	Pass
0.369	Pk	41.0	0.2	41.2	58.5	-17.3	48.5	-7.3	Pass
0.442	Pk	45.7	0.2	45.9	57.0	-11.1	47.0	-1.1	Pass
0.650	Pk	37.4	0.2	37.6	56.0	-18.4	46.0	-8.4	Pass
5.010	Pk	36.0	1.2	37.2	60.0	-22.8	50.0	-12.8	Pass

Table 11-5: Conducted Emissions Test Data; Transmit; Ch 157, AC line; Hot Side (Line 2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.150	Pk	53.1	0.2	53.3	66.0	-12.7	56.0	-2.7	Pass
0.222	Pk	48.3	0.2	48.5	62.7	-14.2	52.7	-4.2	Pass
0.296	Pk	43.3	0.3	43.6	60.4	-16.8	50.4	-6.8	Pass
0.443	Pk	45.0	0.2	45.2	57.0	-11.8	47.0	-1.8	Pass
0.590	Pk	38.4	0.3	38.7	56.0	-17.3	46.0	-7.3	Pass
5.160	Pk	33.3	1.2	34.5	60.0	-25.5	50.0	-15.5	Pass

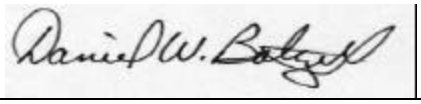
Table 11-6: Conducted Emissions Test Data; Receive; AC line; Neutral Side (Line 1)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.150	Pk	52.8	0.2	53.0	66.0	-13.0	56.0	-3.0	Pass
0.221	Pk	49.4	0.2	49.6	62.8	-13.2	52.8	-3.2	Pass
0.295	Pk	48.1	0.3	48.4	60.4	-12.0	50.4	-2.0	Pass
0.440	Av	44.0	0.2	44.2	57.1	-12.9	47.1	-2.9	Pass
0.440	Qp	46.4	0.2	46.6	57.1	-10.5	47.1	-0.5	Pass
0.800	Pk	36.1	0.3	36.4	56.0	-19.6	46.0	-9.6	Pass
4.630	Pk	35.4	1.1	36.5	56.0	-19.5	46.0	-9.5	Pass

Table 11-7: Conducted Emissions Test Data; Receive, AC line; Hot Side (Line 2)

Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.150	Pk	52.5	0.2	52.7	66.0	-13.3	56.0	-3.3	Pass
0.222	Pk	47.1	0.2	47.3	62.7	-15.4	52.7	-5.4	Pass
0.296	Pk	44.5	0.3	44.8	60.4	-15.6	50.4	-5.6	Pass
0.443	Pk	43.1	0.2	43.3	57.0	-13.7	47.0	-3.7	Pass
0.500	Pk	39.7	0.2	39.9	56.0	-16.1	46.0	-6.1	Pass
4.930	Pk	33.8	1.2	35.0	56.0	-21.0	46.0	-11.0	Pass

TEST PERSONNEL:

Daniel W. Baltzell		May 19, 2005 and October 28, 2005
EMC Test Engineer	Signature	Dates Of Test

12 Radiated Emissions Measurement - §15.209; §15.247; §15.407; RSS-GEN §4.7; RSS-210 §A9.5

12.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	2400/F (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

12.2 Radiated Emissions Measurement Test Procedure

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction, and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10^{th} harmonic of the highest fundamental frequency or 40 GHz (whichever is lower) for intentional radiator, or to the 5^{th} harmonic of the highest frequency generated for unintentional radiators as prescribed in 47 CFR, Part 15, §15.33.

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 12-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	5/20/07
900323	EMCO	3160-7	Horn Antennas (8.2 - 12.4 GHz)	9605-1054	5/20/07
900356	EMCO	3160-08	Horn Antennas (12.4 – 18 GHz)	9607-1044	5/20/07
900321	EMCO	3161-03	Horn Antenna (4.0 - 8.2 GHz)	9508-1020	5/20/07
900791	Chase	CBL6111B	Bilog antenna (30 MHz – 1000 MHz)	N/A	8/3/06
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	8/3/06
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	9/14/06

12.3 Radiated Emissions Harmonics/Spurious Data for 802.11a/b/g Radio

12.3.1 Radiated Emissions Harmonics/Spurious Data for 6 dBi Radiall Omni Antenna

Table 12-2: Radiated Emissions Harmonics/Spurious Channel 36 (5180 MHz); 6 dBi Radiall Omni Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5180.000	74.7	67.0	21.0	88.0	fundamental	
10360.000	32.4	19.8	19.2	39.0	68.0	-29.0
15540.000	32.6	21.0	21.9	42.9	54.0	-11.1
20720.000	19.6	10.3	32.9	43.2	54.0	-10.8
25900.000	19.6	9.3	33.8	43.1	68.0	-24.9
31080.000	21.5	10.0	36.7	46.7	68.0	-21.3
36260.000	20.4	10.5	37.4	47.9	68.0	-20.1

PEAK: RES.=1 MHZ, VID=1 MHZ; AVERAGE: RES.=1 MHZ, VID=10 HZ

Table 12-3: Radiated Emissions Harmonics/Spurious Channel 48 (5240 MHz); 6 dBi Radiall Omni Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5240.000	77.5	70.5	20.8	91.3	fundamental	
10480.000	28.9	20.0	18.4	38.4	71.3	-32.9
15720.000	31.7	21.1	22.8	43.9	54.0	-10.1
20960.000	20.4	10.4	32.9	43.3	54.0	-10.7
26200.000	18.0	9.3	33.8	43.1	71.3	-28.2
31440.000	20.8	10.3	36.8	47.1	54.0	-6.9
36680.000	20.9	10.6	37.4	48.0	71.3	-23.3

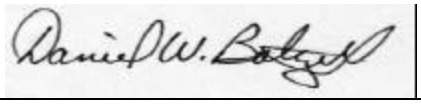
PEAK: RES.=1 MHZ, VID=1 MHZ; AVERAGE: RES.=1 MHZ, VID=10 HZ

Table 12-4: Radiated Emissions Harmonics/Spurious Channel 64 (5320 MHz); 6 dBi Radiall Omni Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5320.000	73.2	65.8	20.4	86.2	fundamental	
10640.000	22.3	12.4	18.6	31.0	54.0	-23.0
15960.000	23.5	13.2	22.8	36.0	54.0	-18.0
21280.000	19.3	10.7	33.0	43.7	54.0	-10.3
26600.000	23.8	10.5	36.2	46.7	66.2	-19.5
31920.000	20.3	8.9	36.8	45.7	66.2	-20.5
37240.000	24.7	12.4	37.5	49.9	66.2	-16.3

PEAK: RES.=1 MHZ, VID=1 MHZ; AVERAGE: RES.=1 MHZ, VID=10 HZ

TEST PERSONNEL:

Daniel W. Baltzell		October 24, 2005
EMC Test Engineer	Signature	Date Of Test

12.3.2 Radiated Emissions Harmonics/Spurious Data for 10 dBi MaxRad Panel Antenna

Table 12-5: Radiated Emissions Harmonics/Spurious Channel 36 (5180 MHz); 10 dBi MaxRad Panel Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5180.000	84.3	77.6	21.0	98.6	fundamental	
10360.000	32.5	20.1	19.2	39.3	78.6	-39.3
15540.000	32.7	21.1	21.9	43.0	54.0	-11.0
20720.000	19.8	10.5	32.9	43.4	54.0	-10.6
25900.000	19.6	9.2	33.8	43.0	78.6	-35.6
31080.000	21.5	10.3	36.7	47.0	78.6	-31.6
36260.000	20.3	10.6	37.4	48.0	78.6	-30.6

PEAK: RES. =1 MHz, VID=1MHz; AVERAGE: RES. =1 MHz, VID=10Hz

Table 12-6: Radiated Emissions Harmonics/Spurious Channel 48 (5240 MHz); 10 dBi MaxRad Panel Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5240.000	80.6	73.7	20.8	94.5	fundamental	
10480.000	29.2	20.2	18.4	38.6	74.5	-35.9
15720.000	31.7	21.0	22.8	43.8	54.0	-10.2
20960.000	20.2	10.5	32.9	43.4	54.0	-10.6
26200.000	17.8	9.3	33.8	43.1	74.5	-31.4
31440.000	21.3	10.3	36.8	47.1	54.0	-6.9
36680.000	20.7	10.6	37.4	48.0	74.5	-26.5

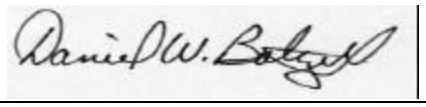
PEAK: RES. =1 MHz, VID=1MHz; AVERAGE: RES. =1 MHz, VID=10Hz

Table 12-7: Radiated Emissions Harmonics/Spurious Channel 64 (5320 MHz); 10 dBi MaxRad Panel Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5320.000	77.9	70.4	20.4	90.8	fundamental	
10640.000	28.8	19.9	18.4	38.3	54.0	-15.7
15960.000	31.4	21.0	22.8	43.8	54.0	-10.2
21280.000	19.7	10.3	32.9	43.2	54.0	-10.8
26600.000	17.8	9.0	33.8	42.8	70.8	-28.0
31920.000	20.5	10.1	36.8	46.9	70.8	-23.9
37240.000	20.6	10.6	37.4	48.0	70.8	-22.8

PEAK: RES. =1 MHZ, VID=1MHZ; AVERAGE: RES. =1 MHZ, VID=10HZ

TEST PERSONNEL:



Daniel W. Baltzell		October 25, 2005
EMC Test Engineer	Signature	Date Of Test

12.3.3 Radiated Emissions Harmonics/Spurious Data for 10 dBi MaxRad Omni Antenna

Table 12-8: Radiated Emissions Harmonics/Spurious Channel 36 (5180 MHz); 10 dBi MaxRad Omni Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5180.000	77.1	70.0	21.0	91.0	fundamental	
10360.000	32.8	19.8	19.2	39.0	71.0	-32.0
15540.000	32.6	21.8	21.9	43.7	54.0	-10.3
20720.000	19.8	10.5	32.9	43.4	54.0	-10.6
25900.000	19.7	9.3	33.8	43.1	71.0	-27.9
31080.000	21.7	10.3	36.7	47.0	71.0	-24.0
36260.000	10.2	10.7	37.4	48.1	71.0	-22.9

PEAK: RES. =1 MHZ, VID=1MHZ; AVERAGE: RES. =1 MHZ, VID=10 HZ

Table 12-9: Radiated Emissions Harmonics/Spurious Channel 48 (5240 MHz); 10 dBi MaxRad Omni Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5240.000	81.7	74.7	20.8	95.5	fundamental	
10480.000	28.8	20.2	18.4	38.6	75.5	-36.9
15720.000	31.8	21.2	22.8	44.0	54.0	-10.0
20960.000	20.0	10.3	32.9	43.2	54.0	-10.8
26200.000	18.0	9.3	33.8	43.1	75.5	-32.4
31440.000	21.0	10.1	36.8	46.9	54.0	-7.1
36680.000	20.5	10.7	37.4	48.1	75.5	-27.4

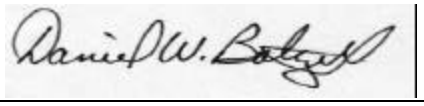
PEAK: RES. =1 MHZ, VID=1MHZ; AVERAGE: RES. =1 MHZ, VID=10 HZ

Table 12-10: Radiated Emissions Harmonics/Spurious Channel 64 (5320 MHz); 10 dBi MaxRad Omni Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5320.000	82.1	75.0	20.4	95.4	fundamental	
10640.000	29.0	19.9	18.4	38.3	54.0	-15.7
15960.000	31.8	21.0	22.8	43.8	54.0	-10.2
21280.000	20.3	10.3	32.9	43.2	54.0	-10.8
26600.000	18.0	9.0	33.8	42.8	75.4	-32.6
31920.000	20.9	10.3	36.8	47.1	75.4	-28.3
37240.000	20.9	10.6	37.4	48.0	75.4	-27.4

PEAK: RES. =1 MHZ, VID=1MHZ; AVERAGE: RES. =1 MHZ, VID=10 HZ

TEST PERSONNEL:

Daniel W. Baltzell		October 26, 2005
EMC Test Engineer	Signature	Date Of Test

12.3.4 Radiated Emissions Harmonics/Spurious Data for 12 dBi Pacific Collinear Omni Antenna

Table 12-11: Radiated Emissions Harmonics/Spurious Channel 149 (5745 MHz); 12 dBi Pacific Collinear Omni

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5745.000	81.5	74.3	19.5	93.8	fundamental	
11490.000	33.1	22.4	18.6	41.0	54.0	-13.0
17235.000	30.4	20.0	24.3	44.3	73.8	-29.5
22980.000	20.9	10.7	25.8	36.5	54.0	-17.5
28725.000	19.6	10.7	29.7	40.4	73.8	-33.4
34470.000	21.7	10.7	30.5	41.2	73.8	-32.6
40215.000	21.3	11.8	31.4	43.2	73.8	-30.6

PEAK: RES. =1 MHZ, VID=1MHZ; AVERAGE: RES. =1 MHZ, VID=10 HZ

Table 12-12: Radiated Emissions Harmonics/ Spurious Channel 157 (5785 MHz); 12 dBi Pacific Collinear Omni

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5785.000	84.8	77.3	19.6	96.9	fundamental	
11570.000	34.3	23.3	18.7	42.0	54.0	-12.0
17355.000	30.7	20.4	23.9	44.3	76.9	-32.6
23140.000	20.2	8.6	25.8	34.4	76.9	-42.5
28925.000	20.9	10.7	29.8	40.5	76.9	-36.4
34710.000	21.2	10.7	30.6	41.3	76.9	-35.6
40495.000	22.3	11.8	31.4	43.2	76.9	-33.7

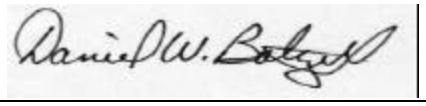
PEAK: RES. =1 MHZ, VID=1MHZ; AVERAGE: RES. =1 MHZ, VID=10 HZ

Table 12-13: Radiated Emissions Harmonics/ Spurious Channel 165 (5825 MHz); 12 dBi Pacific Collinear Omni

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5825.000	83.0	75.8	19.7	95.5	fundamental	
11650.000	33.2	22.4	18.9	41.3	54.0	-12.7
17475.000	35.7	21.1	23.9	45.0	75.5	-30.5
23300.000	20.8	9.4	25.9	35.3	75.5	-40.2
29125.000	21.0	10.6	29.8	40.4	75.5	-35.1
34950.000	20.0	10.8	30.6	41.4	75.5	-34.1
40775.000	22.6	11.8	31.5	43.3	75.5	-32.2

PEAK: RES. =1 MHz, VID=1MHz; AVERAGE: RES. =1 MHz, VID=10 Hz

TEST PERSONNEL:



Daniel W. Baltzell		October 27, 2005
EMC Test Engineer	Signature	Date Of Test

12.3.5 Radiated Emissions Harmonics/ Spurious Data for 28 dBi Gabriel Dish Antenna

Table 12-14: Radiated Emissions Harmonics/Spurious Channel 149 (5745 MHz); 28 dBi Gabriel Dish Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5745.000	108.3	100.5	14.2	114.7	fundamental	
11490.000	46.2	34.8	18.6	53.4	54.0	-0.6
17235.000	43.3	30.7	24.3	55.0	94.7	-39.7
22980.000	34.2	24.0	42.3	66.3	94.7	-28.4
28725.000	35.4	23.5	42.3	65.8	94.7	-28.9
34470.000	35.2	23.2	45.5	68.7	94.7	-26.0

PEAK: RES. =1 MHZ, VID= 1MHZ; AVERAGE: RES. =1 MHZ, VID= 10HZ

Table 12-15: Radiated Emissions Harmonics/Spurious Channel 157 (5785 MHz); 28 dBi Gabriel Dish Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5785.000	108.8	101.5	14.2	115.7	fundamental	
11570.000	48.2	35.0 @ 12ps	18.7	53.7	54.0	-0.3
17355.000	39.2	26.2	23.9	50.1	95.7	-45.6
23140.000	34.9	24.2	42.3	66.5	95.7	-29.2
28925.000	35.7	23.5	42.3	65.8	95.7	-29.9
34710.000	35.4	23.2	45.5	68.7	95.7	-27.0

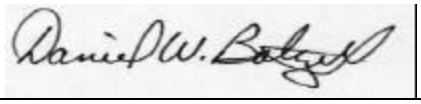
PEAK: RES. =1 MHZ, VID= 1MHZ; AVERAGE: RES. =1 MHZ, VID= 10HZ

Table 12-16: Radiated Emissions Harmonics/Spurious Channel 165 (5825 MHz); 28 dBi Gabriel Dish Antenna

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
5825.000	110.7	103.0	14.1	117.1	fundamental	
11650.000	46.2	34.7	18.9	53.6	54.0	-0.4
17475.000	45.2	33.3	42.3	75.6	97.1	-21.5
23300.000	36.7	24.2	42.3	66.5	97.1	-30.6
29125.000	37.8	23.5	45.5	69.0	97.1	-28.1
34950.000	37.5	23.4	45.5	68.9	97.1	-28.2

PEAK: RES. =1 MHZ, VID= 1MHZ; AVERAGE: RES. =1 MHZ, VID= 10HZ

TEST PERSONNEL:

Daniel W. Baltzell		November 16, 2005
EMC Test Engineer	Signature	Date Of Test

13 Test Results for 802.11a – 5150 – 5350 MHz

14 Peak Transmit Power Measurement – FCC §15.407(a/1/2/3); RSS-210 §A8.4(4)

14.1 Limits of Peak Transmit Power Measurement

Frequency Band	Limit
5.15-5.25 GHz	The lesser of 50 mW (17 dBm) or 4 dBm+10logB
5.25-5.35 GHz	The lesser of 250 mW (24 dBm) or 11 dBm+10logB

14.2 Peak Transmit Power Measurement Test Procedure

The EUT was connected to a power meter.

Table 14-1: Peak Transmit Power Measurement Test Equipment

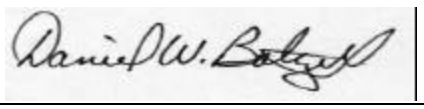
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573	9/21/06
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	9/21/06

14.3 Peak Transmit Power Test Data

Table 14-2: Power Output Test Data - 802.11a

Frequency (MHz)	Channel	Peak Power Conducted Output (dBm)	Limit (dBm)
5180	36	16.9	17
5240	48	14.7	17
5260	52	19.6	24
5320	64	19.0	24
5210 (Turbo)	42	13.2	17
5290 (Turbo)	58	18.6	24

TEST PERSONNEL:



Daniel W. Baltzell		October 16, 2005
EMC Test Engineer	Signature	Date Of Test

15 Peak Power Excursion Measurement – FCC §15.407(a)(6)

15.1 Limits of Peak Power Excursion

Frequency Band	Limit
5.15-5.25 GHz	13 dB
5.25-5.35 GHz	13 dB

15.2 Peak Power Excursion Measurement Test Procedure

1. The transmit output was connected to a spectrum analyzer.
2. Span was set to the entire emission bandwidth of signal.
3. Using peak detector and max hold function for trace A, set RBW to 1 MHz and VBW to 3 MHz. Set for trace B, RBW to 1 MHz and VBW to 300 kHz.
4. Record the largest difference between trace A and trace B in any 1 MHz band on any frequency.

Table 15-1: Peak Power Excursion Measurement Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	8/3/06

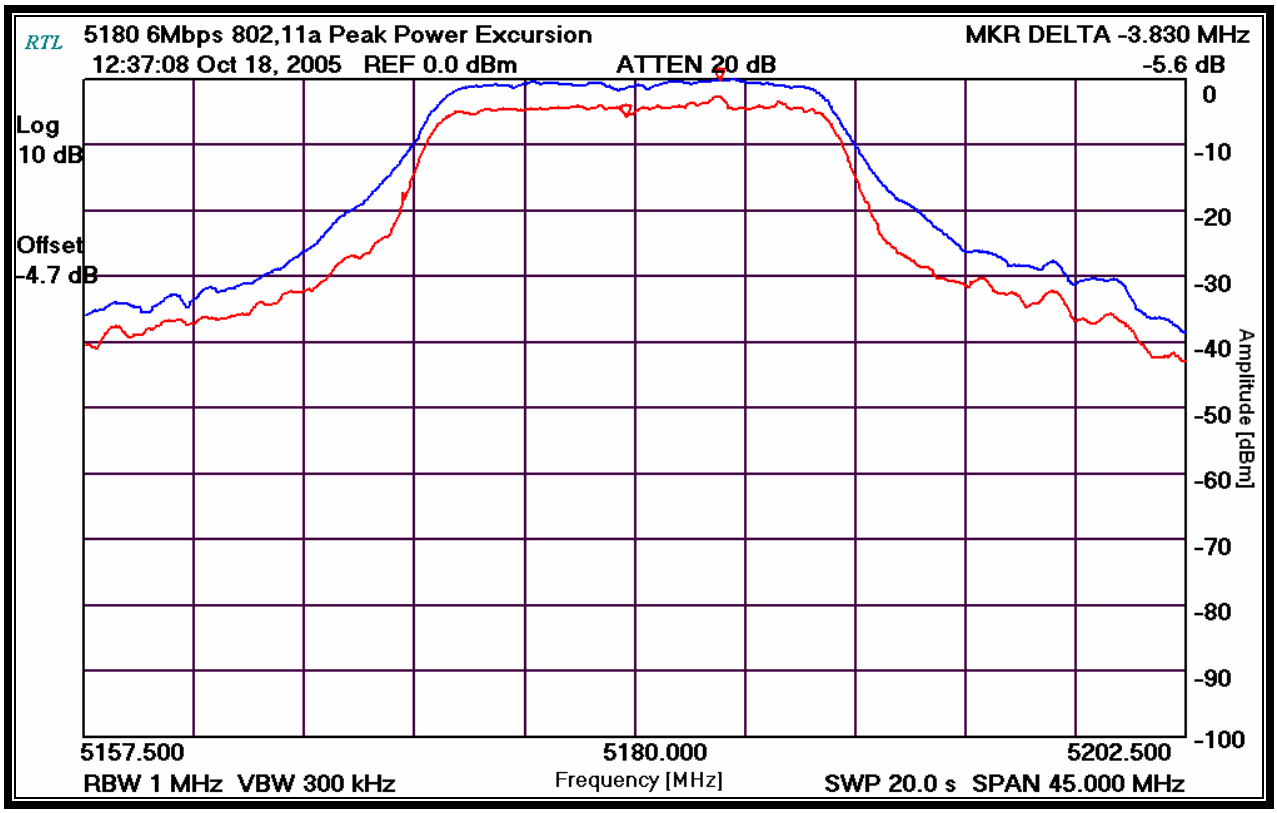
15.3 Peak Power Excursion Test Data

Table 15-2: Peak Power Excursion Test Data

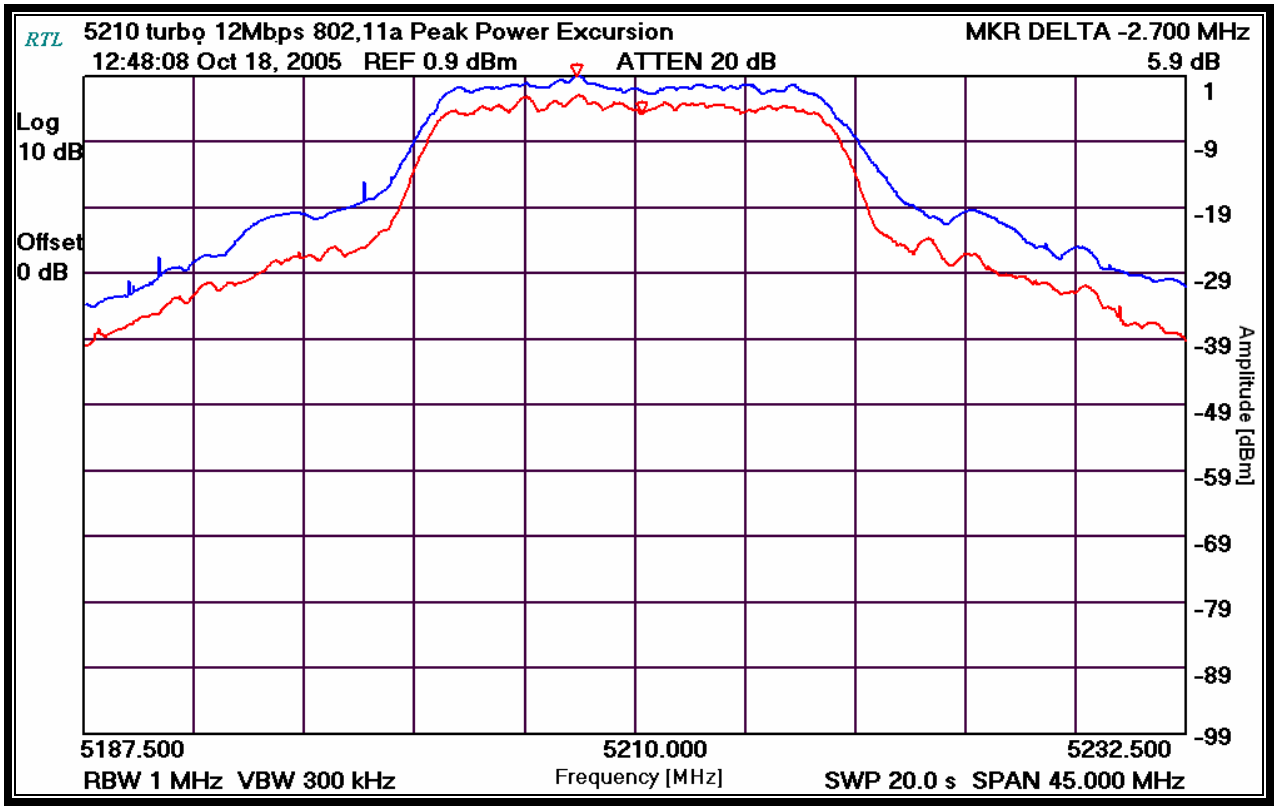
Channel	Frequency (MHz)	Peak Power Excursion (dB)	Peak to Avg Excursion Limit (dB)	Pass/Fail
36	5180	5.6	13.0	Pass
48	5240	5.4	13.0	Pass
52	5260	4.3	13.0	Pass
64	5320	5.7	13.0	Pass
42 (Turbo)	5210	5.9	13.0	Pass
58 (Turbo)	5290	6.9	13.0	Pass

15.4 Peak Power Excursion Test Plots

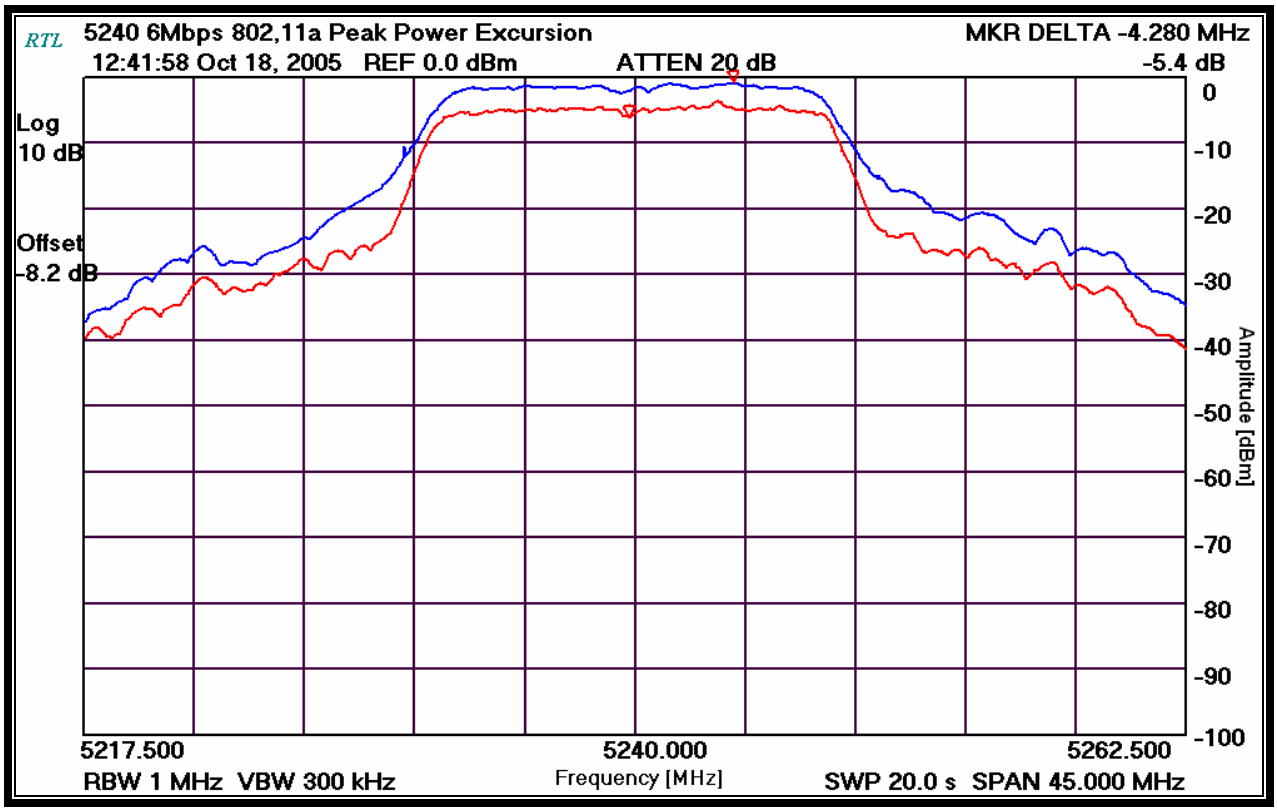
Plot 15-1: Peak Power Excursion: Channel 36 (5180 MHz – 6 Mb/s)



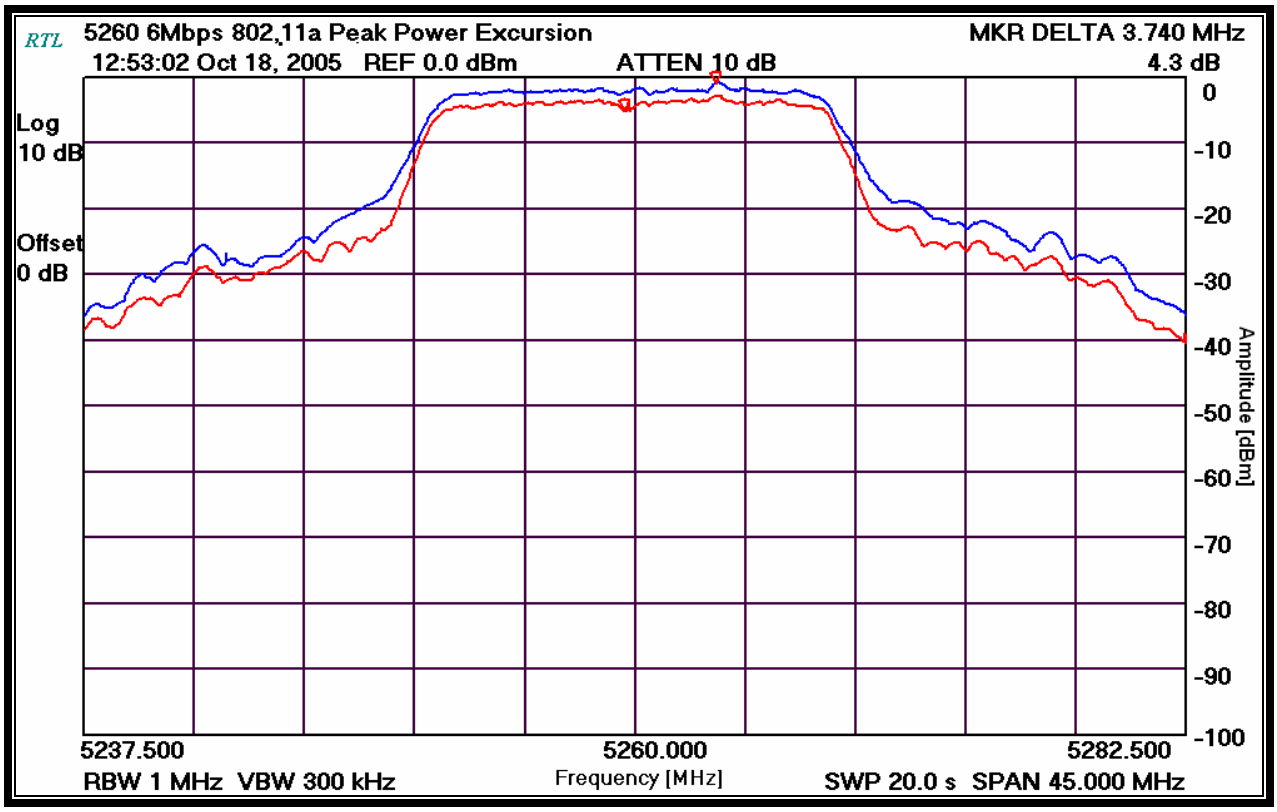
Plot 15-2: Peak Power Excursion: Channel 42 Turbo (5210 MHz – 12 Mb/s)



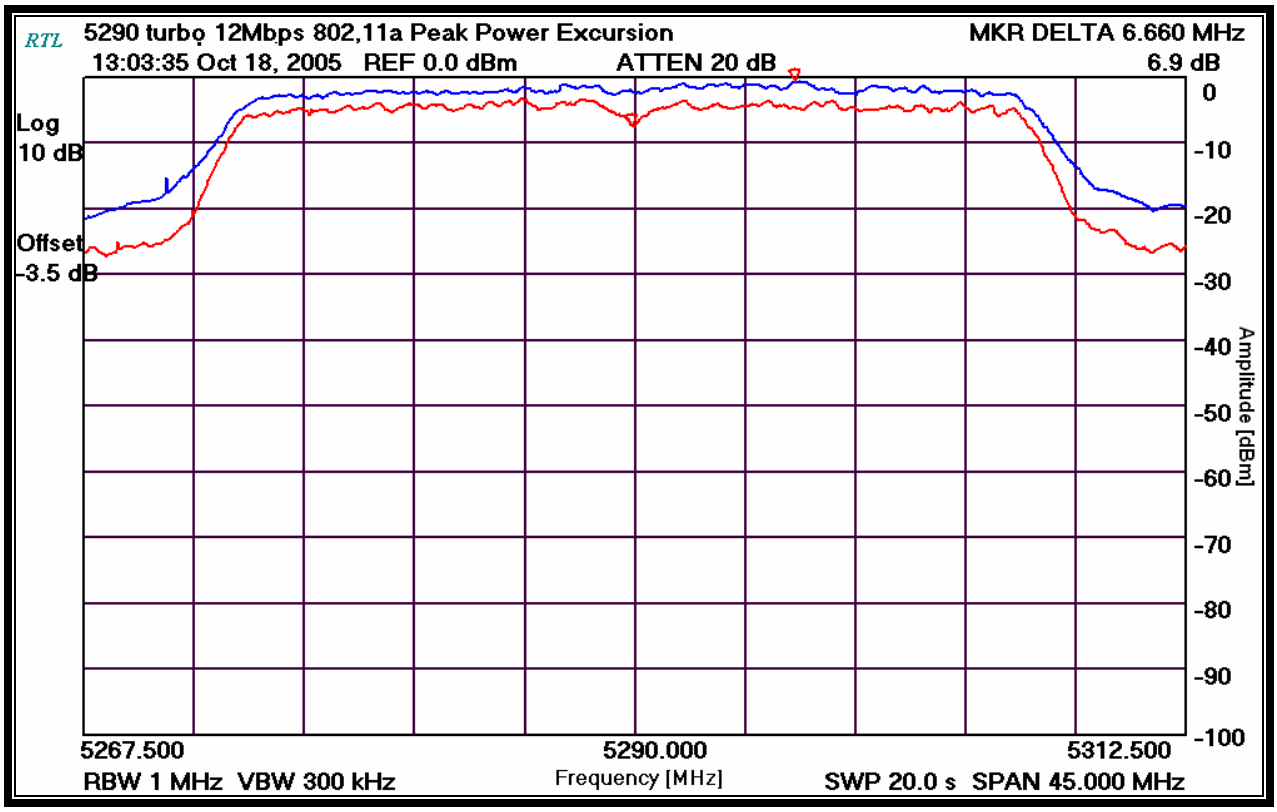
Plot 15-3: Peak Power Excursion: Channel 48 (5240 MHz – 6 Mb/s)



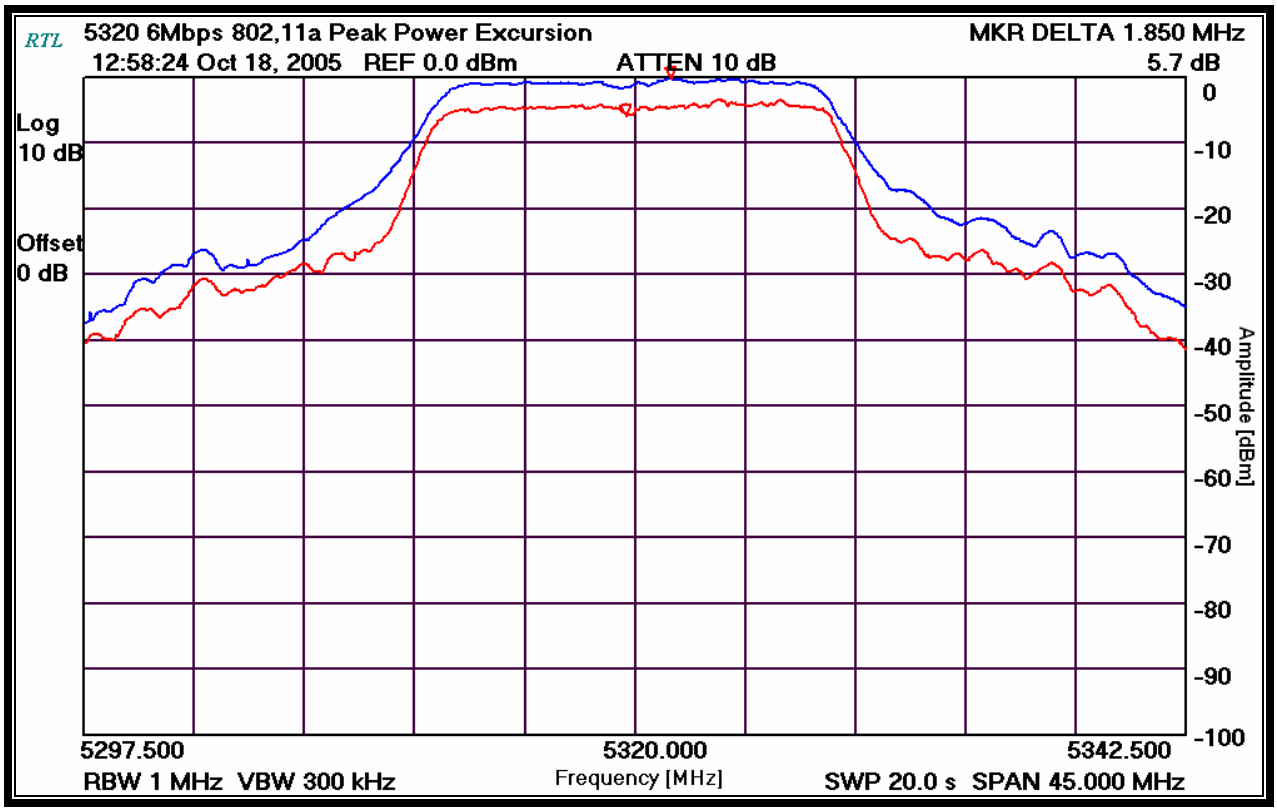
Plot 15-4: Peak Power Excursion: Channel 52 (5260 MHz – 6 Mb/s)



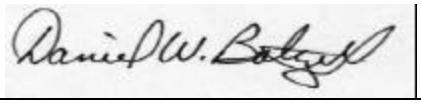
Plot 15-5: Peak Power Excursion: Channel 58 Turbo (5290 MHz – 12 Mb/s)



Plot 15-6: Peak Power Excursion: Channel 64 (5320 MHz – 6 Mb/s)



TEST PERSONNEL:

Daniel W. Baltzell		October 18, 2005
EMC Test Engineer	Signature	Date Of Test

16 Peak Power Spectral Density Measurement – FCC §15.407(a/1/2/3); RSS-210 §A8.2(2)

16.1 Limits of Peak Power Spectral Density

Frequency Band	Limit
5.15-5.25 GHz	4 dBm
5.25-5.35 GHz	11 dBm

16.2 Peak Power Spectral Density Measurement Test Procedure

1. The transmitter output was connected to a spectrum analyzer.
2. RBW was set to 1 MHz and VBW to 3 MHz. The highest level PPSD was measured across the emission in any 1 MHz band.

Table 16-1: Peak Power Spectral Density Measurement Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	8/3/06

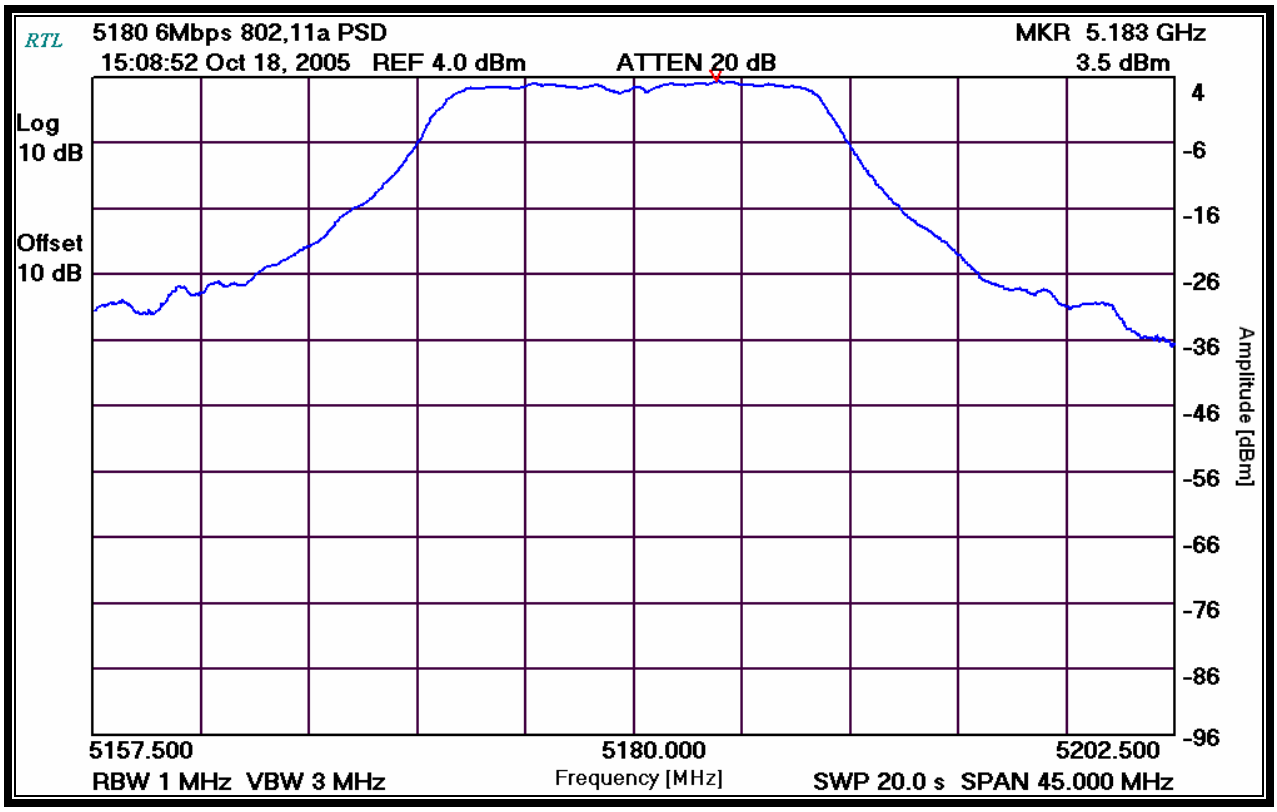
16.3 Peak Power Spectral Density Test Data

Table 16-2: Peak Power Spectral Density Test Data

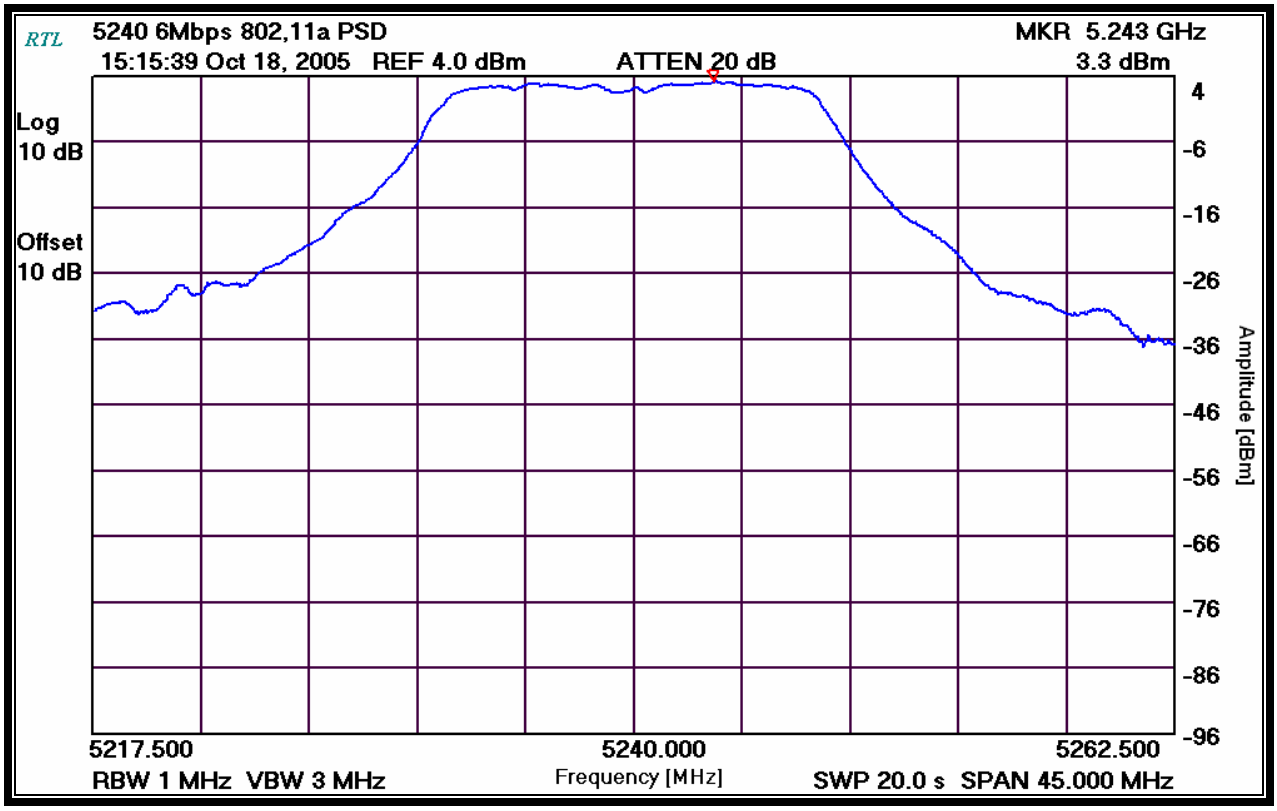
Channel	Frequency (MHz)	RF Power Level in 1MHz BW (dBm)	Maximum Limit (dBm)	Pass/Fail
36	5180	3.5	4	Pass
48	5240	3.3	4	Pass
52	5260	10.1	11	Pass
64	5320	8.9	11	Pass
42 (Turbo)	5210	3.5	4	Pass
58 (Turbo)	5290	3.2	11	Pass

16.4 Peak Power Spectral Density Plots

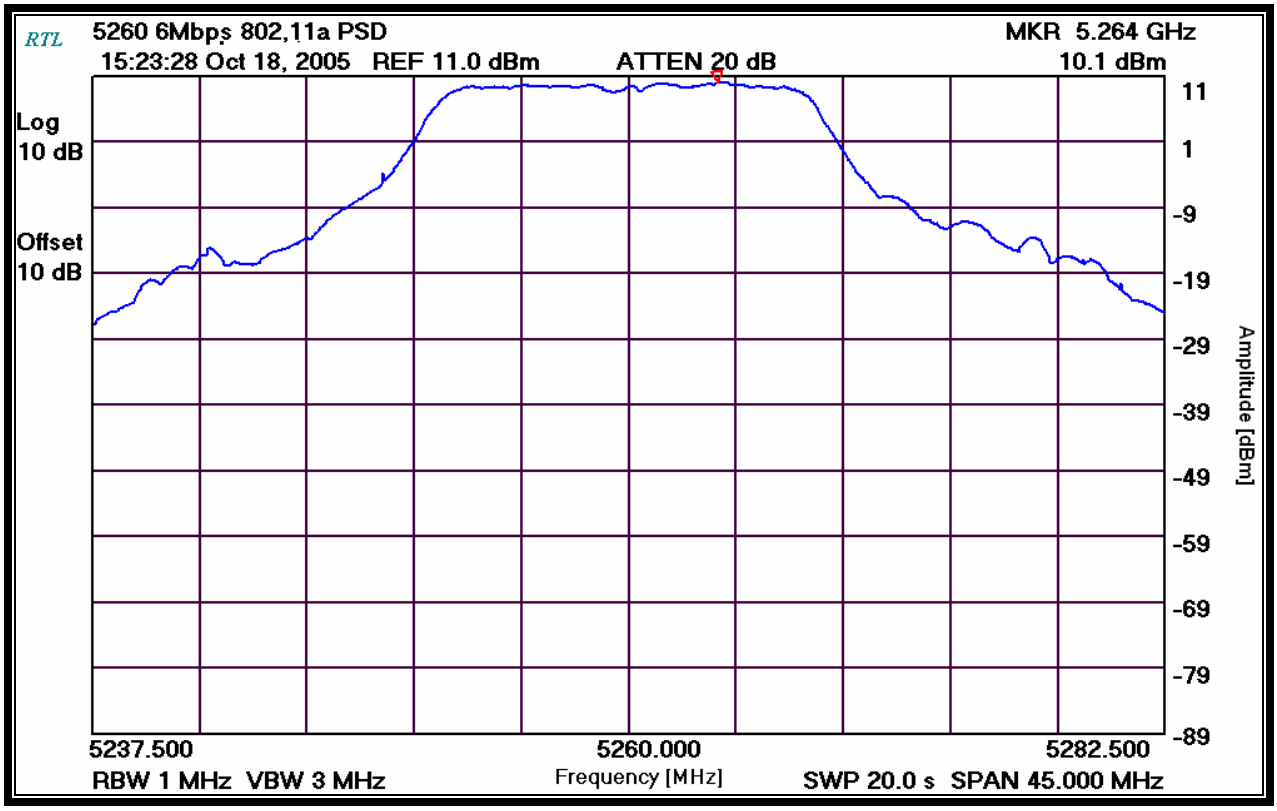
Plot 16-1: Peak Power Spectral Density: Channel 36 (5180 MHz – 6 Mb/s)



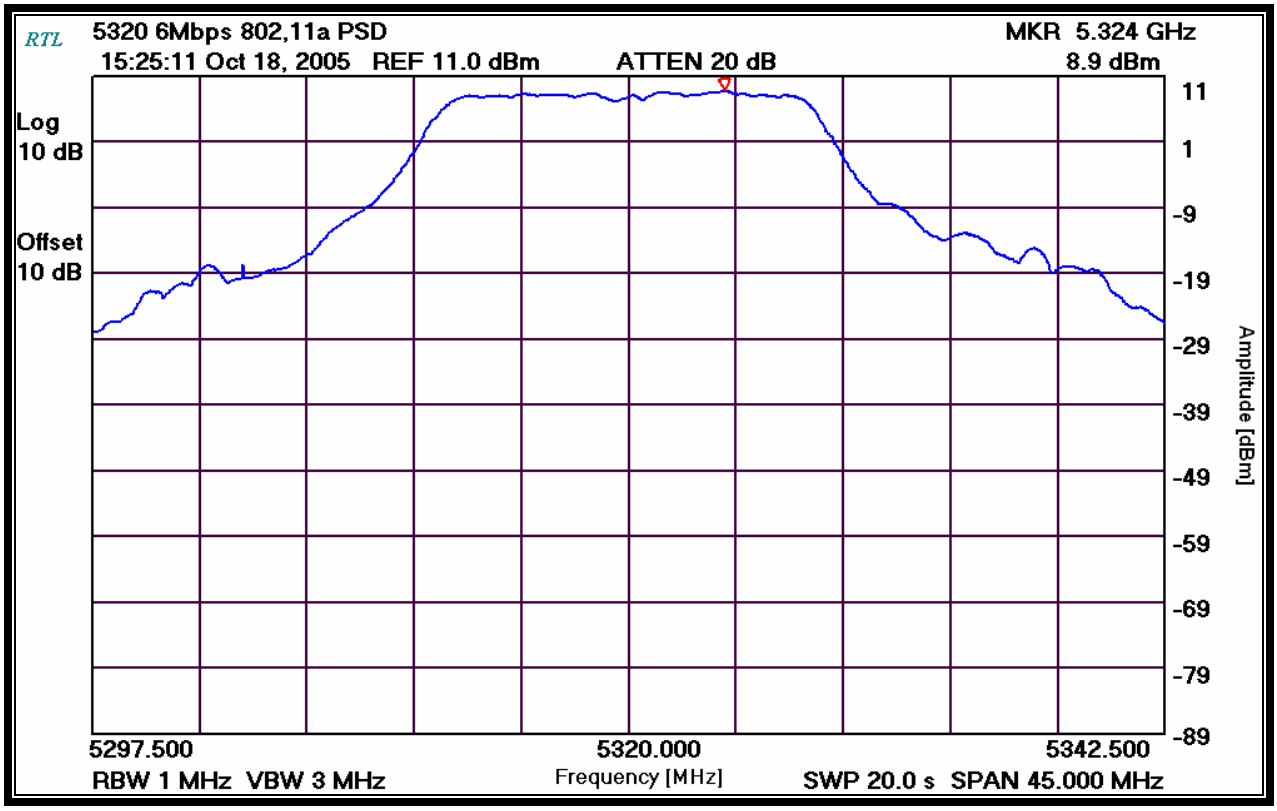
Plot 16-2: Peak Power Spectral Density: Channel 48 (5240 MHz – 6 Mb/s)



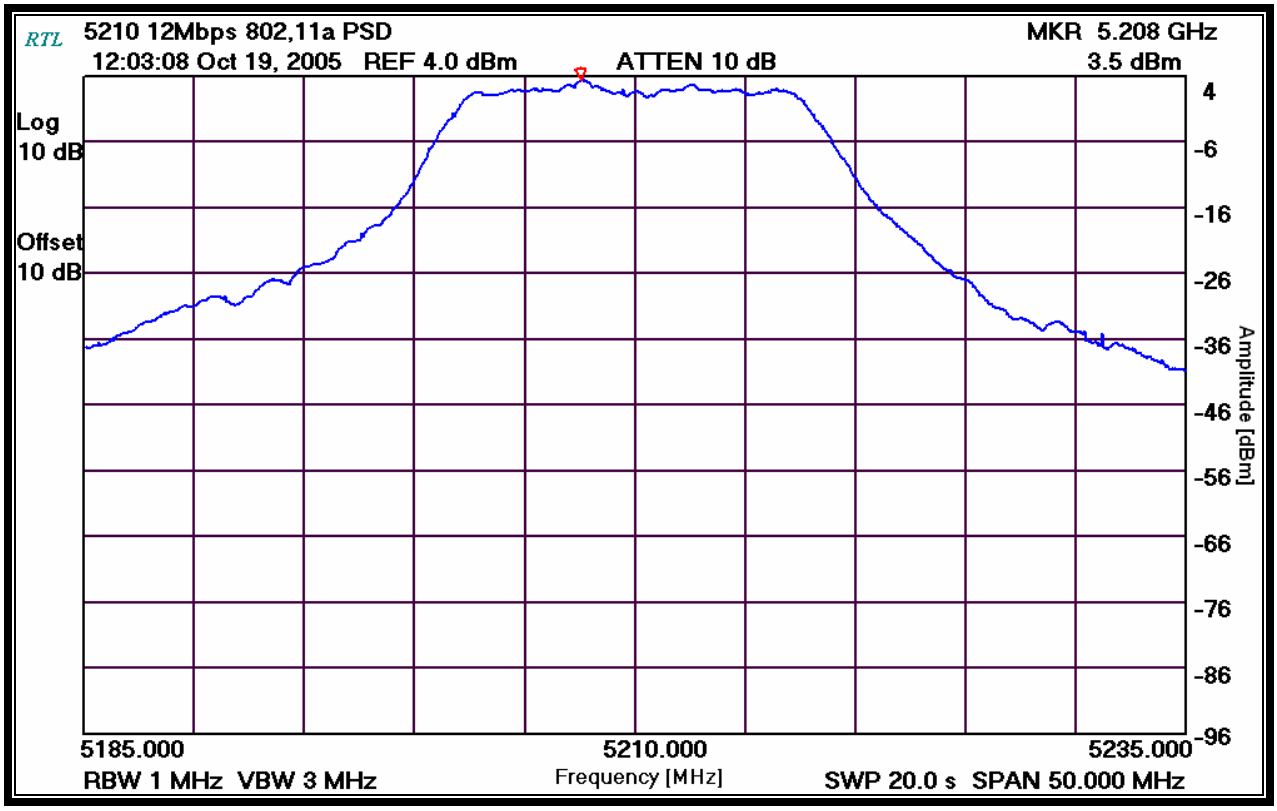
Plot 16-3: Peak Power Spectral Density: Channel 52 (5260 MHz – 6 Mb/s)



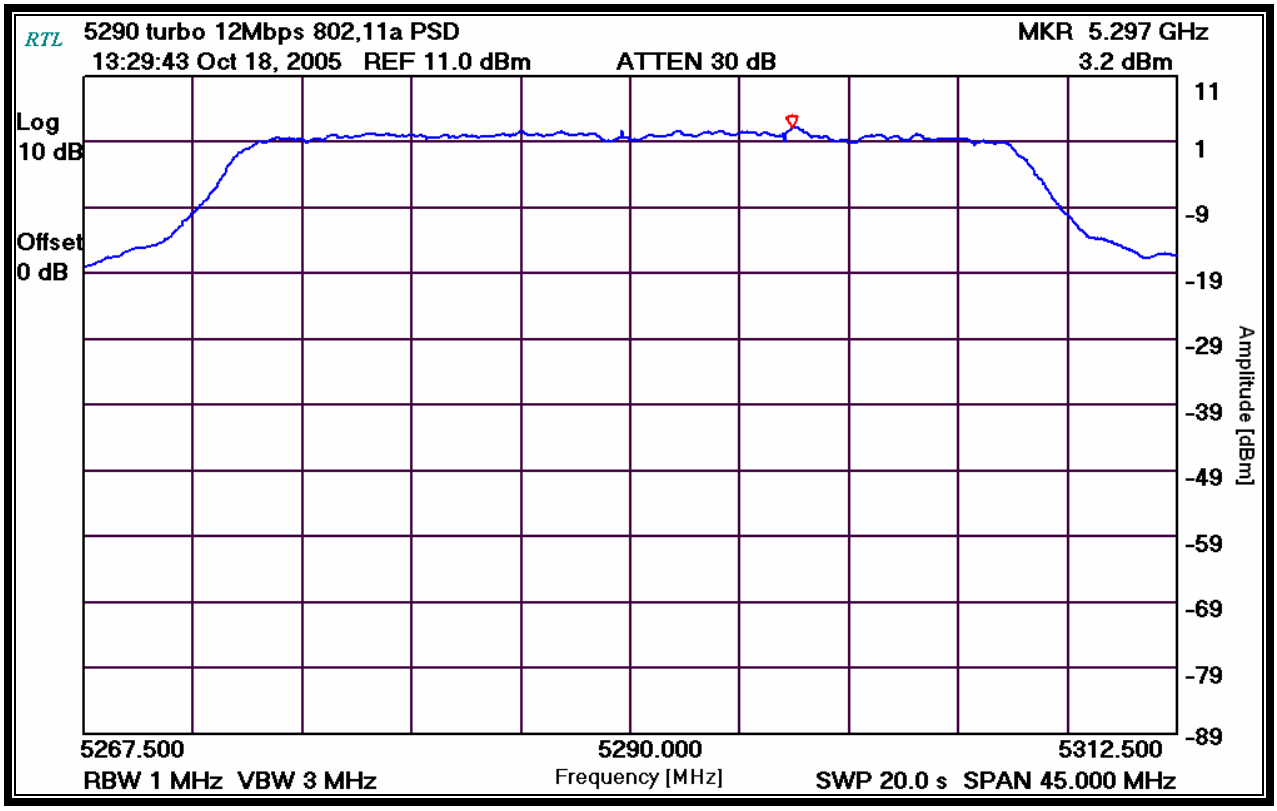
Plot 16-4: Peak Power Spectral Density: Channel 64 (5320 MHz – 6 Mb/s)



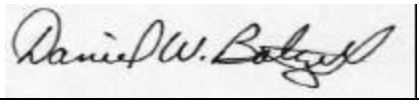
Plot 16-5: Peak Power Spectral Density: Channel 42 Turbo (5210 MHz – 12 Mb/s)



Plot 16-6: Peak Power Spectral Density: Channel 58 Turbo (5290 MHz – 12 Mb/s)



TEST PERSONNEL:

Daniel W. Baltzell		October 18 & 19, 2005
EMC Test Engineer	Signature	Dates Of Test

17 Frequency Stability Measurement – FCC §15.407(g); A9.5(e)

17.1 Limits of Frequency Stability

The frequency tolerance shall be maintained such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

17.2 Frequency Stability Measurement Test Procedure

1. The EUT was placed inside the temperature chamber and supplied by nominal AC power.
2. The EUT was connected to a spectrum analyzer which was located outside of test chamber.
3. The temperature was set to -30° C and the EUT was allowed to stabilize with power off for a period of 1 hour.
4. The EUT was then powered up and the frequency was measured at intervals of 2, 5, and 10 minutes.
5. Steps 3 and 4 were repeated at increased intervals of 10° until 50° C was achieved.
6. The chamber was then allowed to stabilize at each temperature for 30 minutes with the power off to the EUT. The EUT supply voltage was then adjusted to 85%, nominal, and 115% and the frequency was again recorded.

Table 17-1: Frequency Stability Measurement Test Equipment

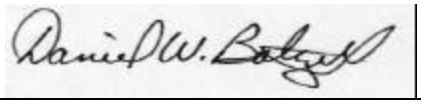
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901014	Kikusui	PCR4000L	Power Supply	DB001921	Not Required
901231	IW Microwave Products	KPW-1503-2400-KPS	High Frequency RF Cables	240"	9/5/06
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 KHz – 6.5 GHz)	3325A00159	2/19/06
901350	Meterman	33XR	Multimeter	040402802	8/3/06
900946	Tenney Engineering, Inc	TH65	Temperature Chamber with Humidity	11380	2/4/06

17.3 Frequency Stability Test Data

Table 17-2: Frequency Stability Test Data

Operating Frequency: 5180 MHz							
Temp	Supply	2 minutes		5 minutes		10 minutes	
(ºC)	(VDC)	MHz	Ppm	MHz	Ppm	MHz	Ppm
-30	97.75	5240.021937	4.2	5240.022474	4.3	5240.022374	4.3
-30	115.0	5240.020624	3.9	5240.022399	4.3	5240.022299	4.3
-30	132.25	5240.022124	4.2	5240.022437	4.3	5240.022324	4.3
-20	97.75	5240.019074	3.6	5240.021787	4.2	5240.020294	3.9
-20	115.0	5240.019912	3.8	5240.021887	4.2	5240.020407	3.9
-20	132.25	5240.020374	3.9	5240.021924	4.2	5240.020496	3.9
-10	97.75	5240.018375	3.5	5240.018150	3.5	5240.013750	2.6
-10	115.0	5240.020762	4.0	5240.017350	3.3	5240.013387	2.6
-10	132.25	5240.021150	4.0	5240.016987	3.2	5240.013062	2.5
0	97.75	5240.014700	2.8	5240.003813	0.7	5240.002775	0.5
0	115.0	5240.016288	3.1	5240.003613	0.7	5240.002963	0.6
0	132.25	5240.019450	3.7	5240.003363	0.6	5240.003138	0.6
10	97.75	5239.992250	-1.5	5239.987563	-2.4	5239.984626	-2.9
10	115.0	5239.991150	-1.7	5239.987101	-2.5	5239.984276	-3.0
10	132.25	5239.990313	-1.8	5239.986488	-2.6	5239.983863	-3.1
20	97.75	5239.995687	-0.8	5239.995387	-0.9	5239.999962	0.0
20	115.0	5239.995037	-0.9	5239.995774	-0.8	5240.000000	0.0
20	132.25	5239.994774	-1.0	5239.996099	-0.7	5240.000200	0.0
30	97.75	5239.995250	-0.9	5240.000175	0.0	5240.002325	0.4
30	115.0	5239.995513	-0.9	5240.000313	0.1	5240.002575	0.5
30	132.25	5239.995950	-0.8	5240.000450	0.1	5240.002750	0.5
40	97.75	5240.000450	0.1	5240.005113	1.0	5240.012313	2.3
40	115.0	5240.000938	0.2	5240.006300	1.2	5240.012588	2.4
40	132.25	5240.001425	0.3	5240.006888	1.3	5240.012938	2.5
50	97.75	5240.013283	2.5	5240.020808	4.0	5240.036120	6.9
50	115.0	5240.011170	2.1	5240.022333	4.3	5240.036908	7.0
50	132.25	5240.007270	1.4	5240.023433	4.5	5240.037833	7.2

TEST PERSONNEL:

Daniel W. Baltzell		May 18 and 19, 2005
EMC Test Engineer	Signature	Dates Of Test

18 Compliance with the Band Edge – FCC §15.205; RSS-210 §A8.5

18.1 Limits of Band Edge Measurement

FCC §15.205 lists restricted bands in which the limits are 54 dBuV/m. The plots in this section encompass the frequency band from 5150 MHz to 5350 MHz.

18.2 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 18-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz – 40 GHz)	3826A00144	9/22/06
901232	IW Microwave Products	KPS-1503-2400-KPS	High frequency RF cables	240"	9/1/06
901235	IW Microwave Products	KPS-1503-360-KPS	High frequency RF cables	36"	9/1/06
901242	Rhein Tech Labs	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	5/20/07
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	5/20/06

18.3 Restricted Band Edge Test Results

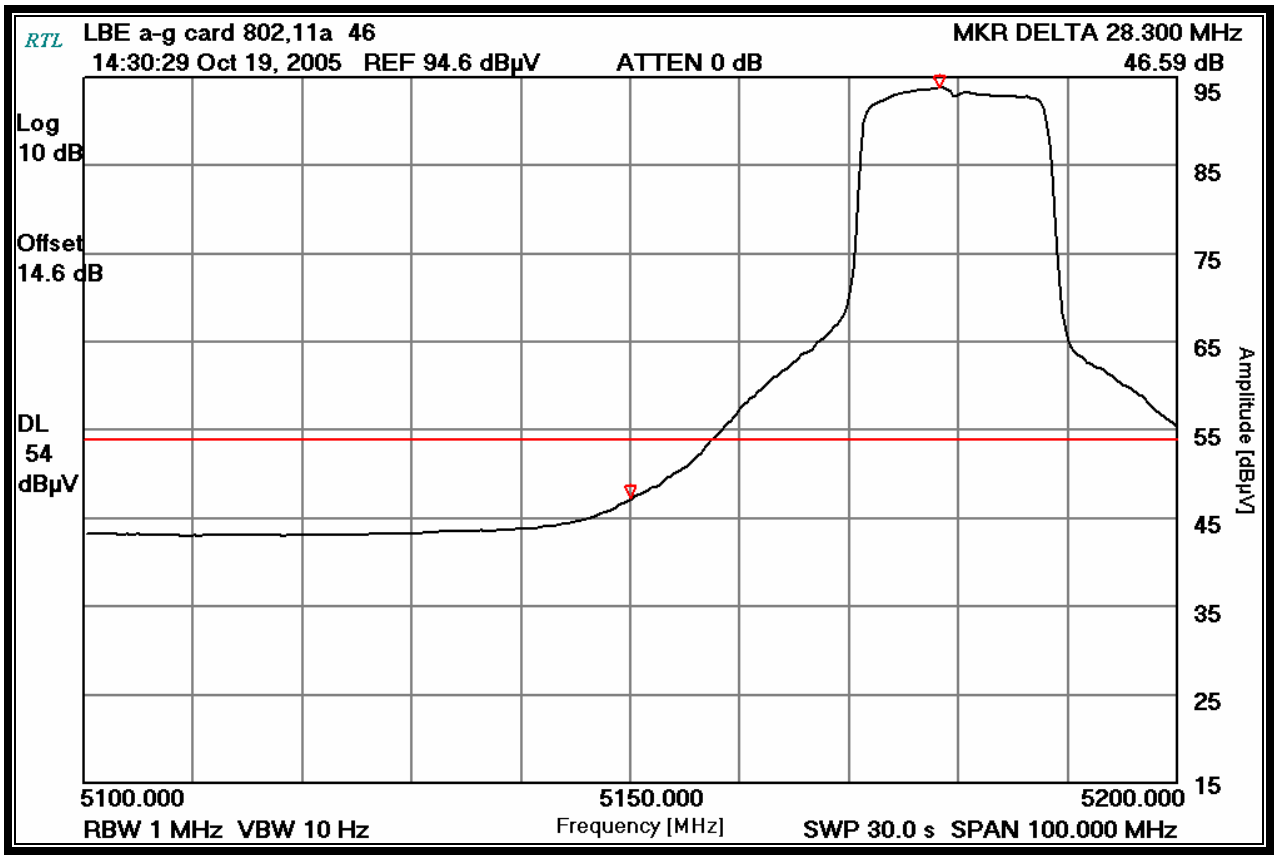
18.3.1 Calculation of Lower Band Edge for Radiall 6 dBi Omni antenna

93.9 dBuV/m is the field strength measurement, from which the delta measurement of 46.6 dB is subtracted (reference plots), resulting in a level of 47.3 dB. This level has a margin of 6.7 dB below the limit of 54 dBuV/m.

Calculation: 93.9 dBuV/m – 46.6 dB – 54 dBuV/m = -6.7 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 103.9 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 93.9 dBuV/m
Delta measurement = 46.6dB

Plot 18-1: Lower Band Edge: Channel 36 (TX Frequency: 5180 MHz)



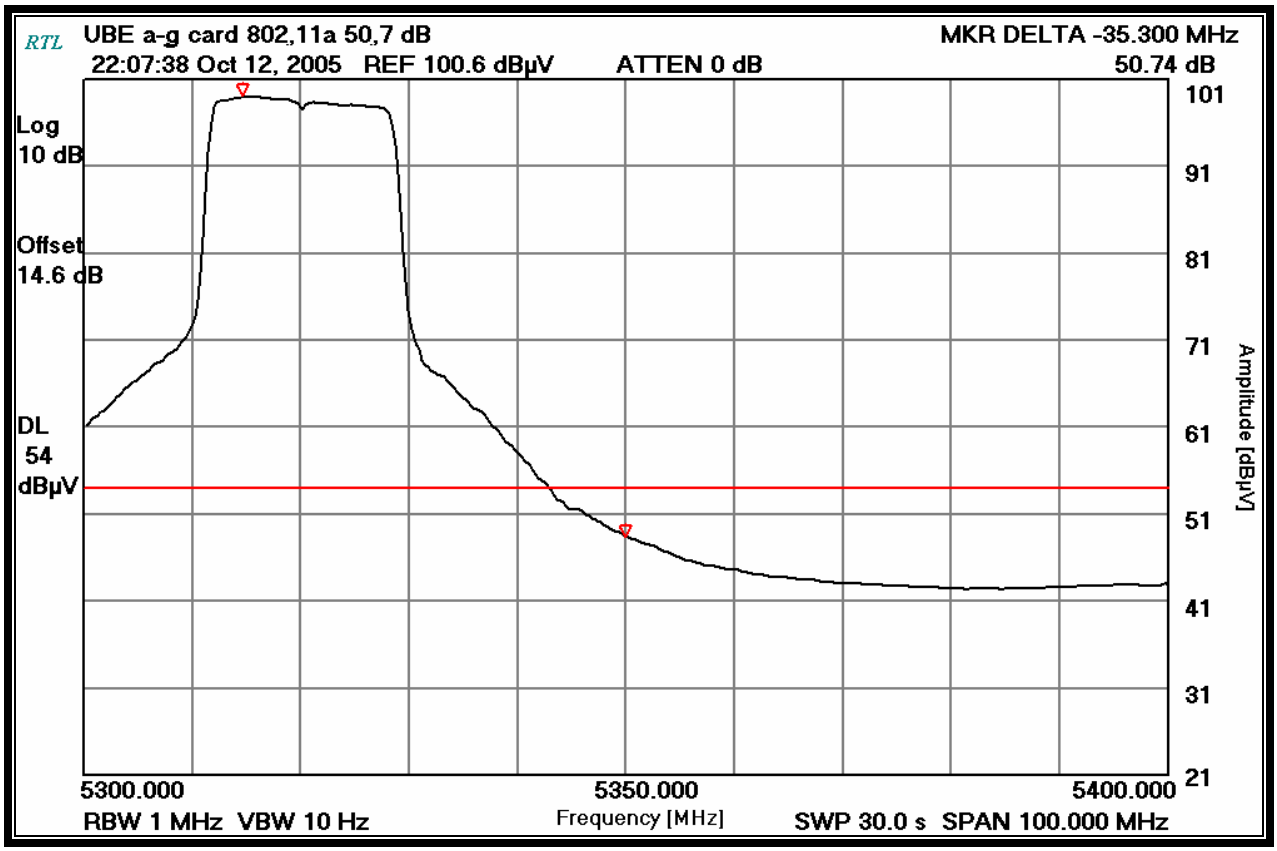
18.3.2 Calculation of Upper Band Edge for Radiall 6 dBi Omni Antenna

98.9 dBuV/m is the field strength measurement, from which the delta measurement of 50.7 dB is subtracted (reference plots), resulting in a level of 48.2 dB. This level has a margin of 5.8 dB below the limit of 54 dBuV/m.

Calculation: 98.9 dBuV/m – 50.7 dB – 54 dBuV/m = -5.8 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 107.6 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 98.9 dBuV/m
Delta measurement = 50.7dB

Plot 18-2: Upper Band Edge: Channel 64 (TX Frequency: 5320 MHz)



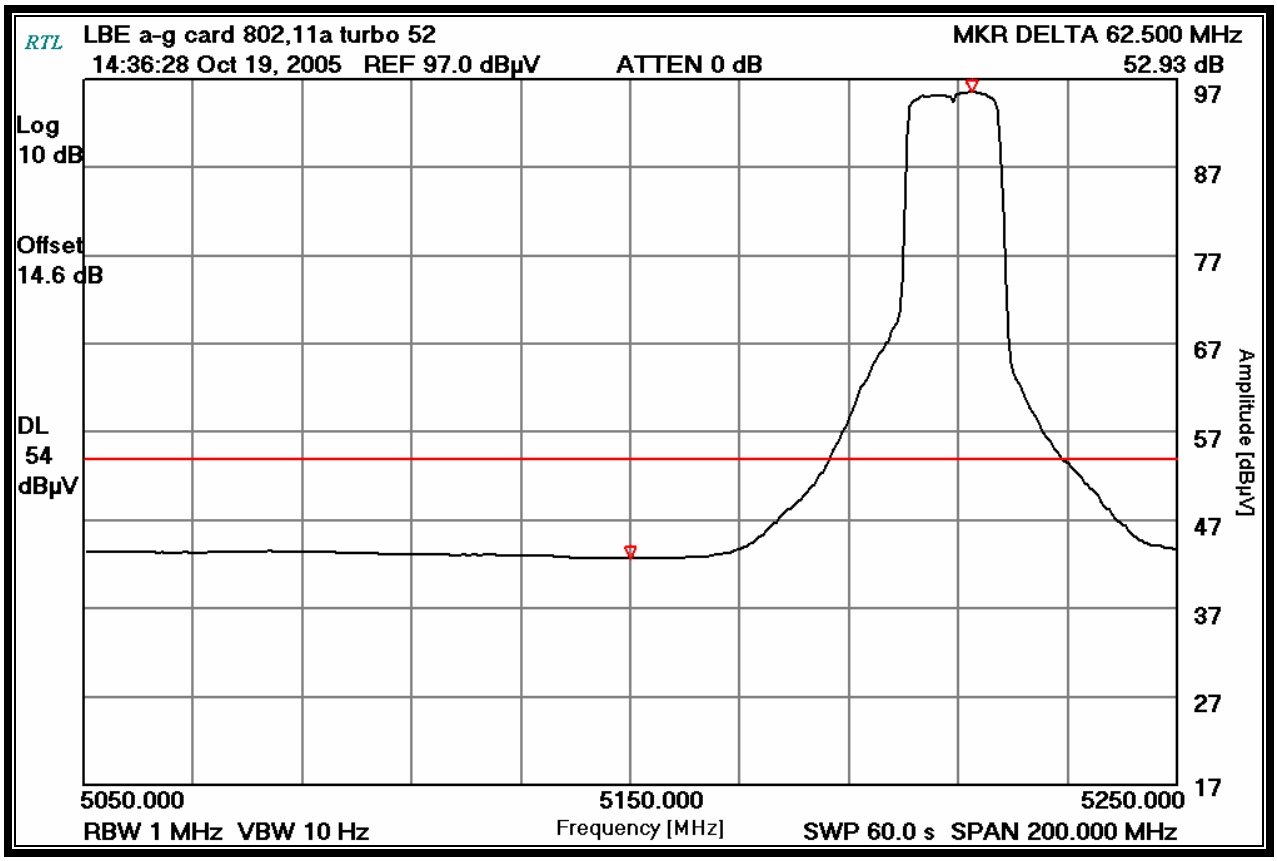
18.3.3 Calculation of Lower Band Edge Turbo Mode for Radiall 6 dBi Omni Antenna

95.6 dBuV/m is the field strength measurement, from which the delta measurement of 52.9 dB is subtracted (reference plots), resulting in a level of 42.7 dB. This level has a margin of 11.3 dB below the limit of 54 dBuV/m.

Calculation: 95.6 dBuV/m – 52.9 dB – 54 dBuV/m = -11.3 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 105.5 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 95.6 dBuV/m
Delta measurement = 52.9 dB

Plot 18-3: Lower Band Edge: Channel 42 Turbo (TX Frequency: 5210 MHz)



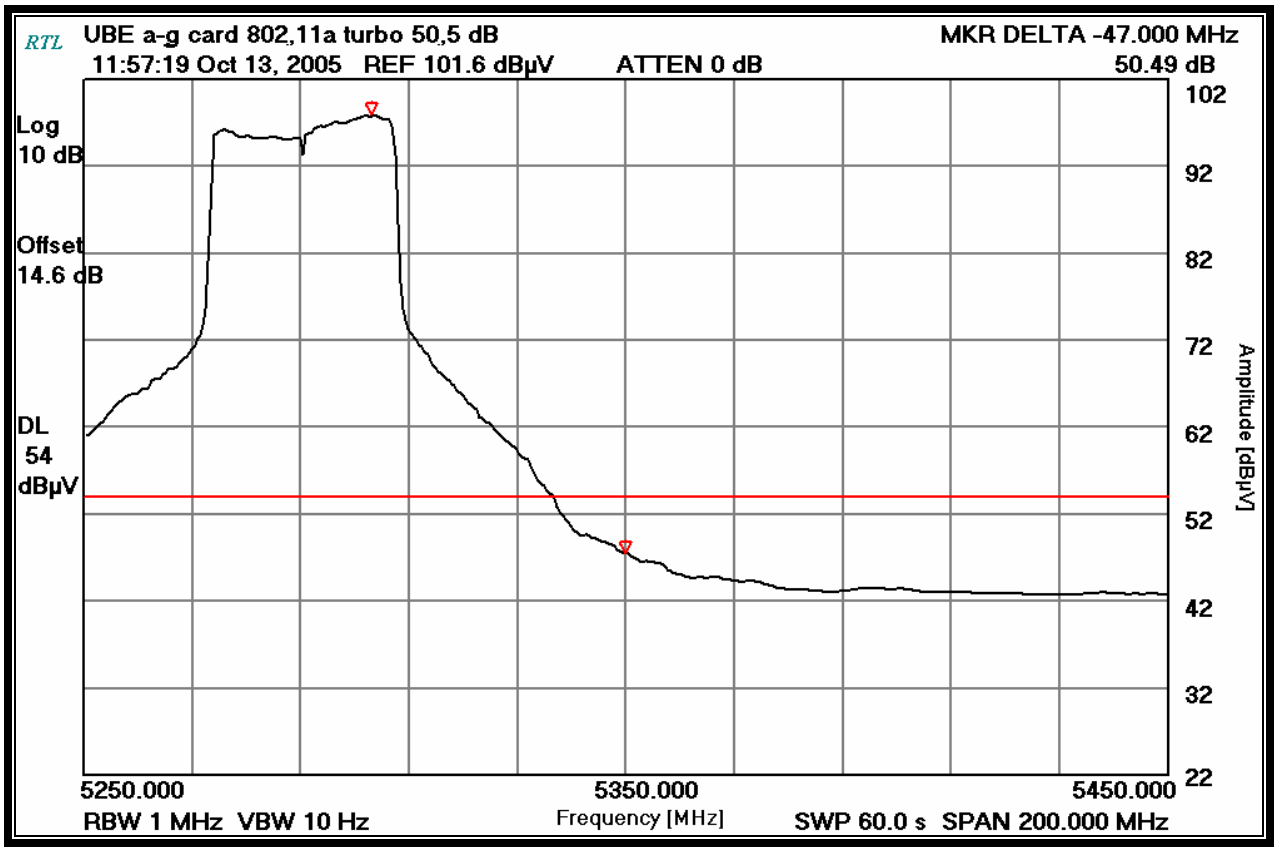
18.3.4 Calculation of Upper Band Edge Turbo Mode for Radiall 6 dBi Omni Antenna

98.0 dBuV/m is the field strength measurement, from which the delta measurement of 50.5 dB is subtracted (reference plots), resulting in a level of 47.5 dB. This level has a margin of 6.5 dB below the limit of 54 dBuV/m.

Calculation: 98.0 dBuV/m – 50.5 dB – 54 dBuV/m = -6.5 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 106.8 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 98.0 dBuV/m
Delta measurement = 50.5 dB

Plot 18-4: Upper Band Edge: Channel 58 Turbo (TX Frequency: 5290 MHz)



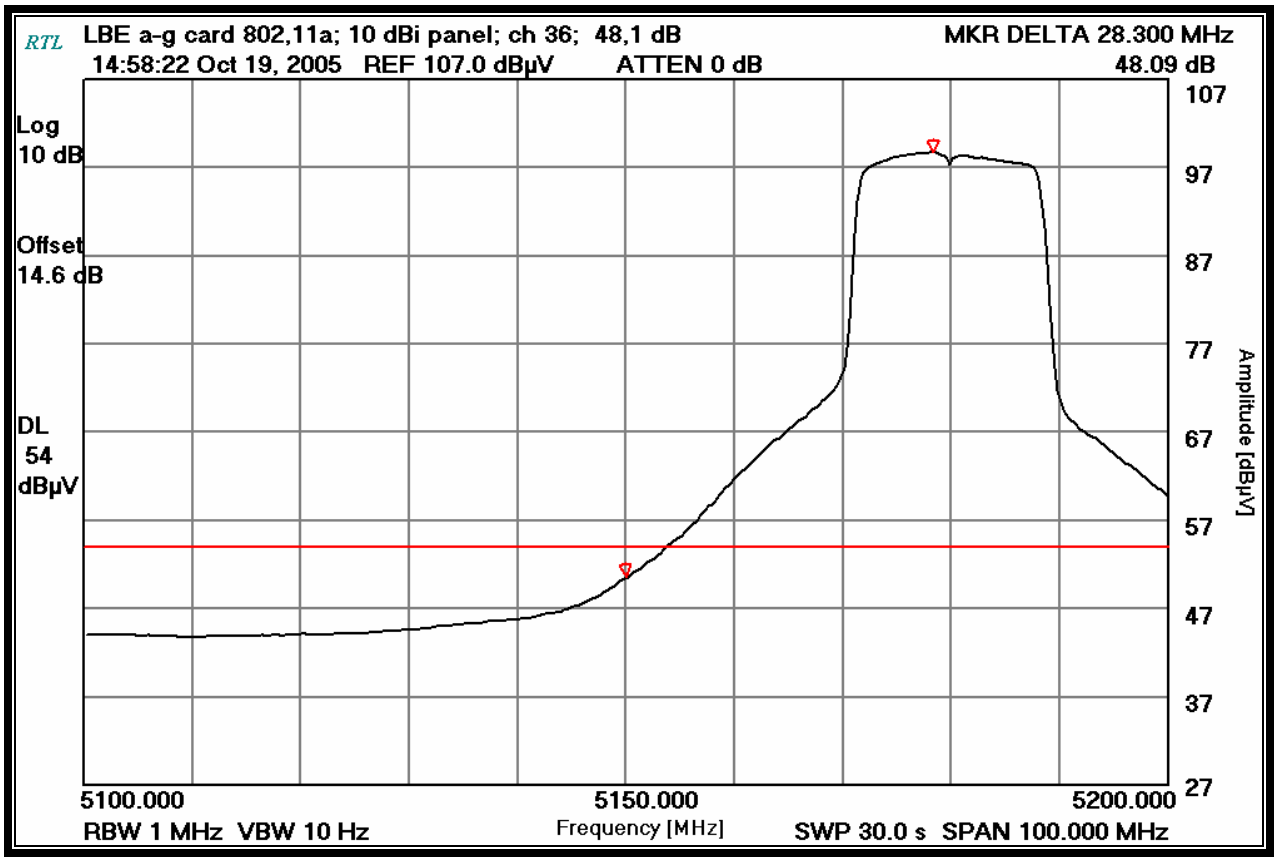
18.3.5 Calculation of Lower Band Edge for Maxrad 10 dBi Panel Antenna

98.8 dBuV/m is the field strength measurement, from which the delta measurement of 48.1 dB is subtracted (reference plots), resulting in a level of 50.7 dB. This level has a margin of 3.3 dB below the limit of 54 dBuV/m.

Calculation: 98.8 dBuV/m – 48.1 dB – 54 dBuV/m = -3.3 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 107.8 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 98.8 dBuV/m
Delta measurement = 48.1 dB

Plot 18-5: Lower Band Edge: Channel 36 (TX Frequency: 5180 MHz)



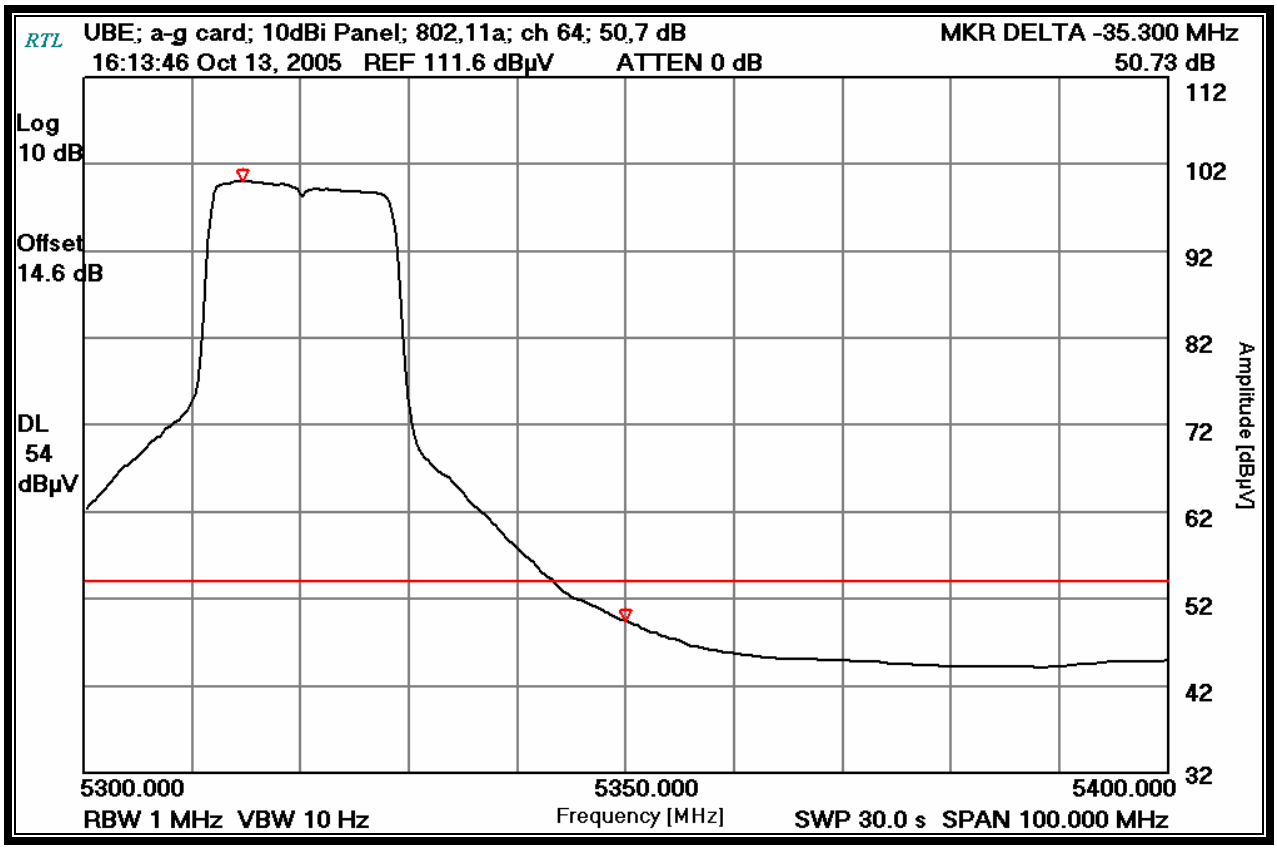
18.3.6 Calculation of Upper Band Edge for Maxrad 10 dBi Panel Antenna

99.9 dBuV/m is the field strength measurement, from which the delta measurement of 50.7 dB is subtracted (reference plots), resulting in a level of 49.2 dB. This level has a margin of 4.8 dB below the limit of 54 dBuV/m.

Calculation: 99.9 dBuV/m – 50.7 dB – 54 dBuV/m = -4.8 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 109.4 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 99.9 dBuV/m
Delta measurement = 50.7 dB

Plot 18-6: Upper Band Edge: Channel 64 (TX Frequency: 5320 MHz)



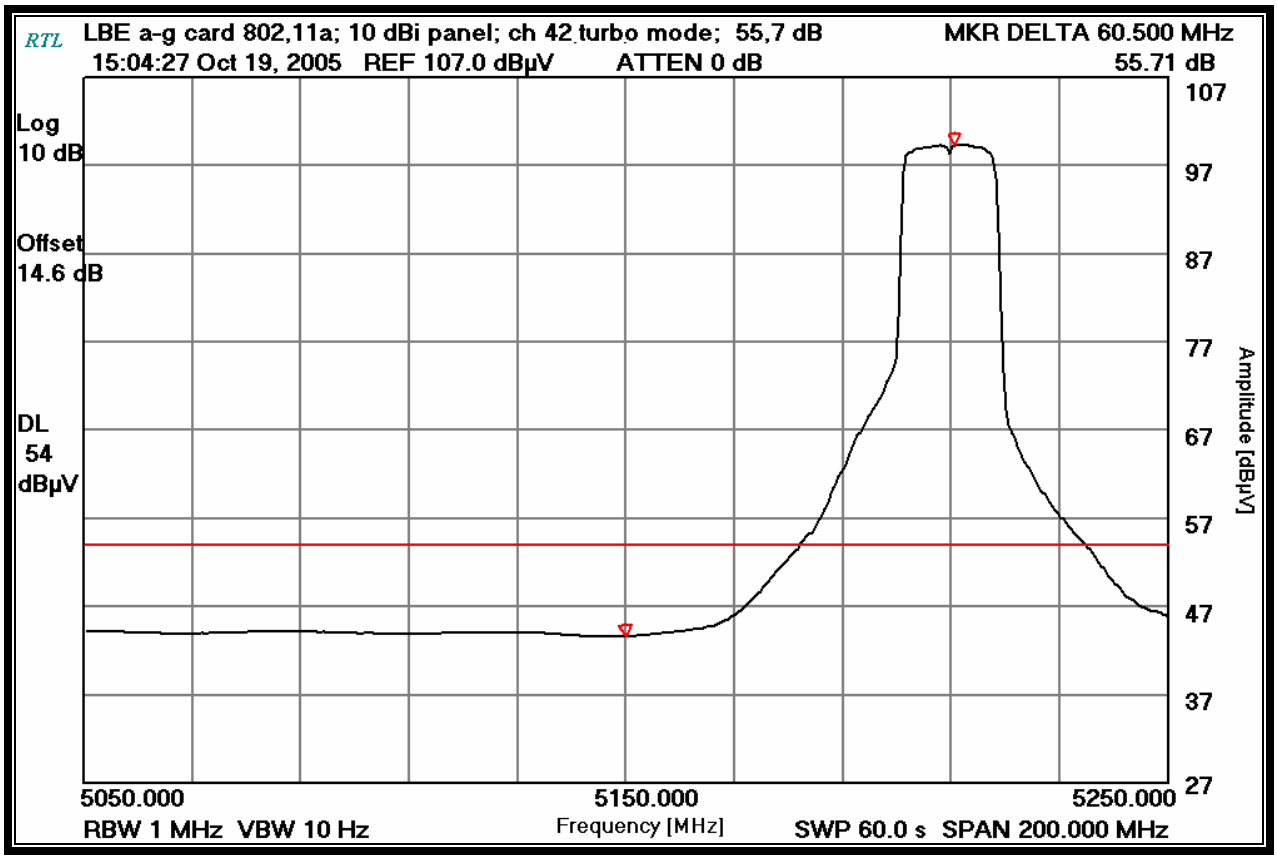
18.3.7 Calculation of Lower Band Edge Turbo Mode for Maxrad 10 dBi Panel Antenna

99.4 dBuV/m is the field strength measurement, from which the delta measurement of 55.7 dB is subtracted (reference plots), resulting in a level of 43.7 dB. This level has a margin of 10.3 dB below the limit of 54 dBuV/m.

Calculation: 99.4 dBuV/m – 55.7 dB – 54 dBuV/m = -10.3 dB

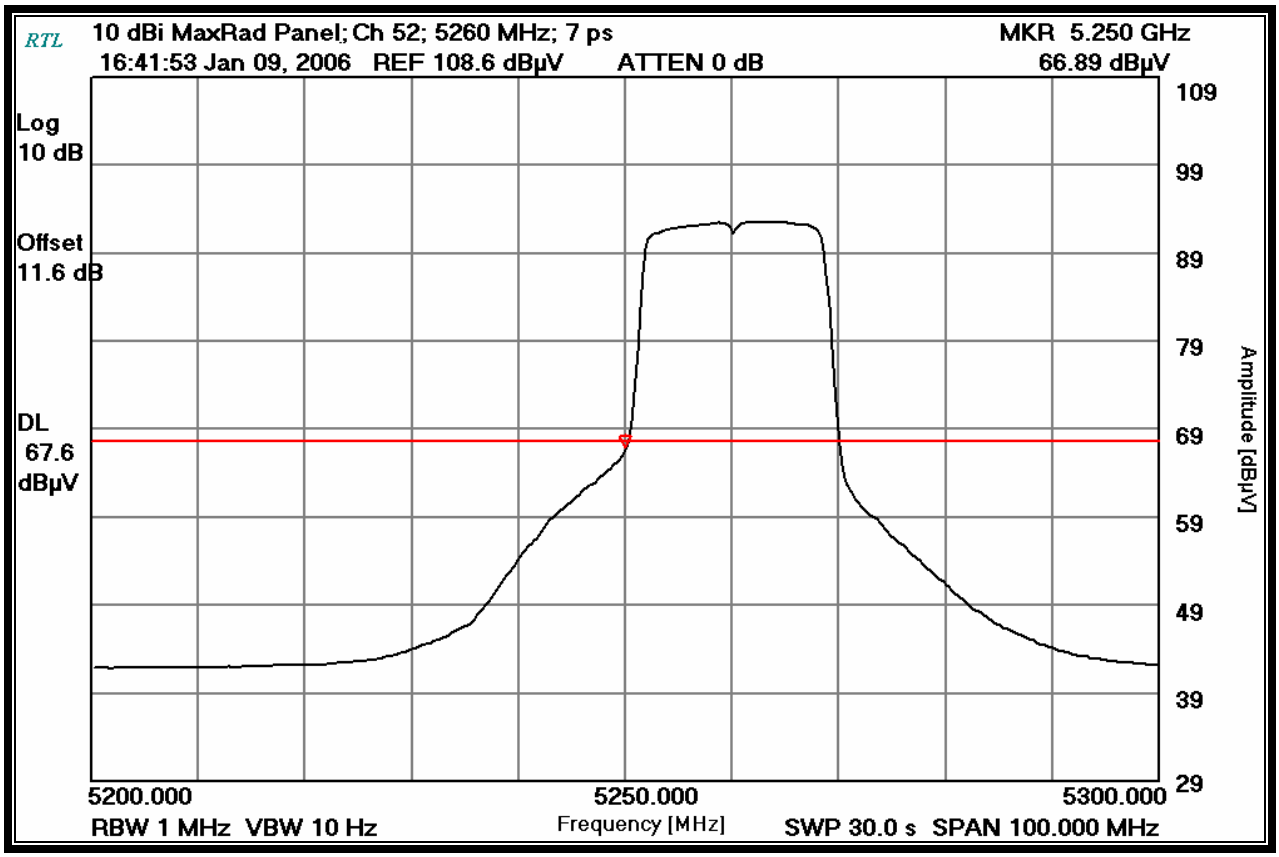
Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 108.5 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 99.4 dBuV/m
Delta measurement = 55.7 dB

Plot 18-7: Lower Band Edge: Channel 42 Turbo (TX Frequency: 5210 MHz)



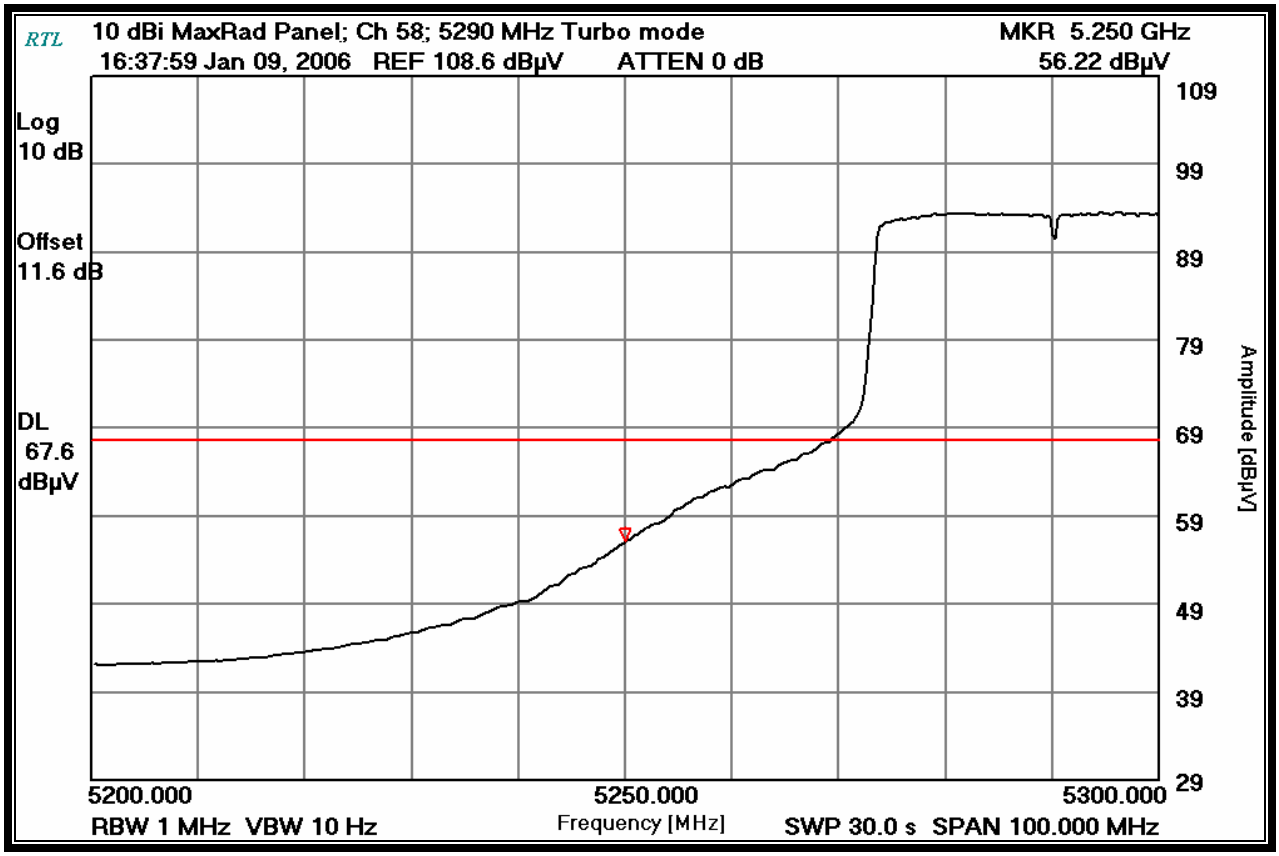
18.3.8 Lower Band Edge (5250-5350 MHz) for Maxrad 10 dBi Panel Antenna

Plot 18-8: Lower Band Edge: Channel 52 (TX Frequency: 5260 MHz)



18.3.9 Lower Band Edge (5250-5350 MHz) Turbo Mode for Maxrad 10 dBi Panel Antenna

Plot 18-9: Lower Band Edge: Channel 58 Turbo (TX Frequency: 5290 MHz)



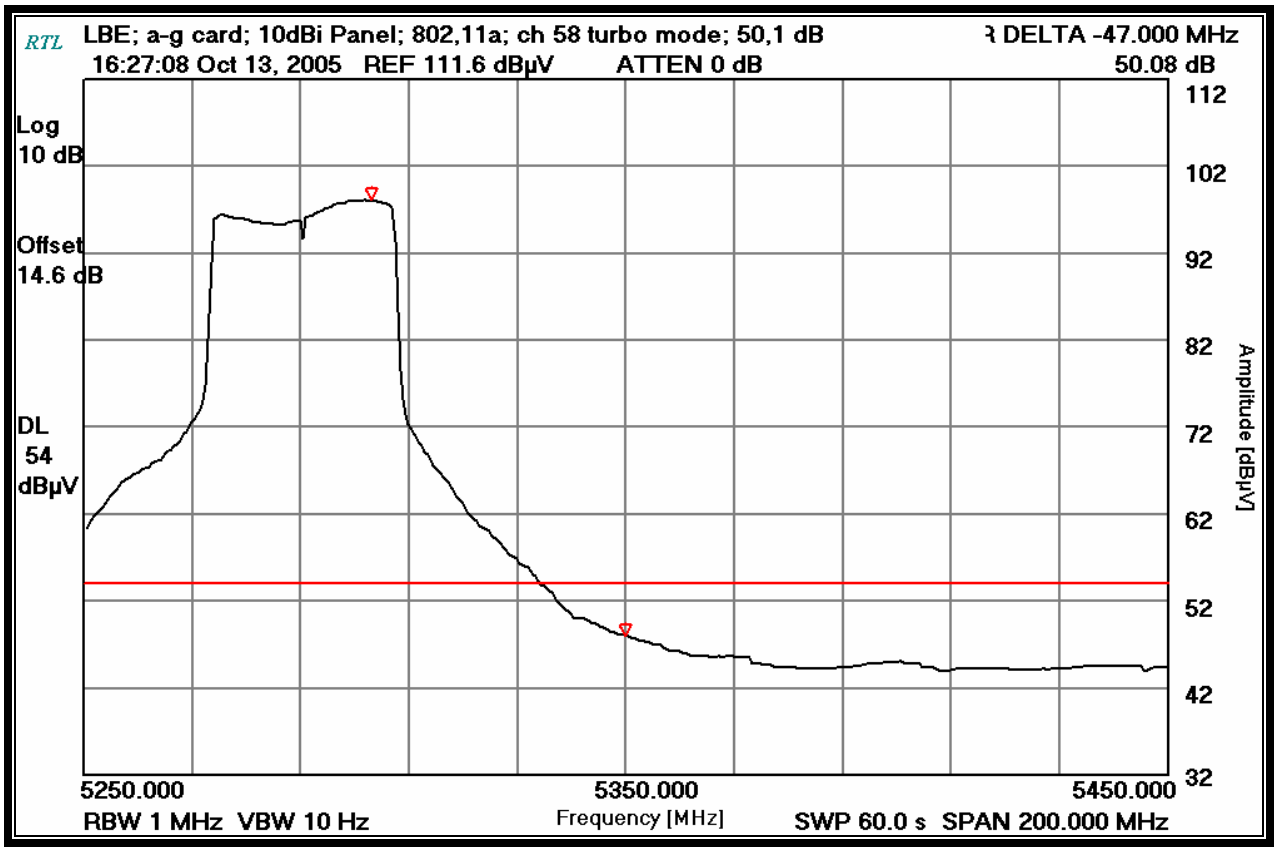
18.3.10 Calculation of Upper Band Edge Turbo Mode for Maxrad 10 dBi Panel Antenna

98.1 dBuV/m is the field strength measurement, from which the delta measurement of 50.1 dB is subtracted (reference plots), resulting in a level of 48.0 dB. This level has a margin of 6.0 dB below the limit of 54 dBuV/m.

Calculation: 98.1 dBuV/m – 50.1 dB – 54 dBuV/m = -6.0 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 106.8 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 98.0 dBuV/m
Delta measurement = 50.5 dB

Plot 18-10: Upper Band Edge: Channel 58 Turbo (TX Frequency: 5290 MHz)



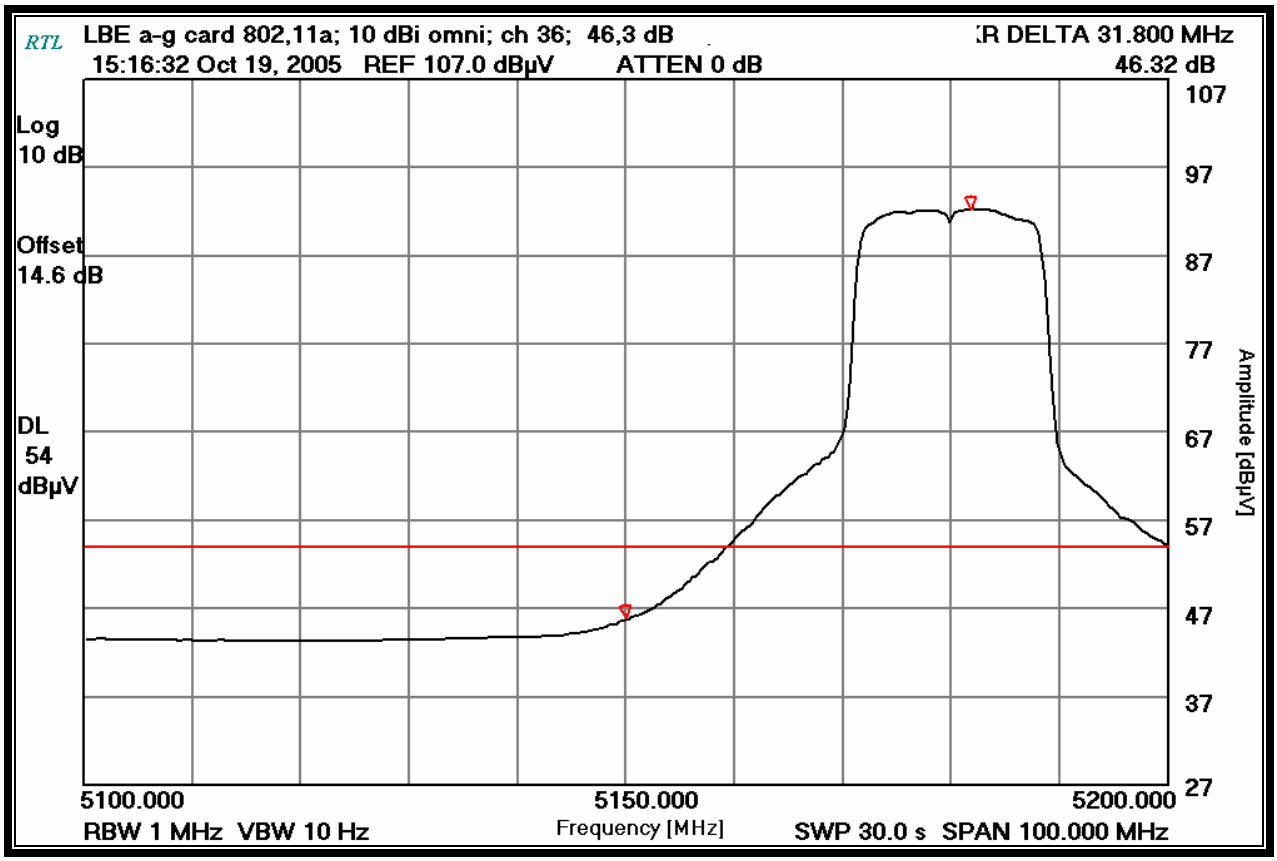
18.3.11 Calculation of Lower Band Edge for Maxrad 10 dBi Omni Antenna

92.3 dBuV/m is the field strength measurement, from which the delta measurement of 46.3 dB is subtracted (reference plots), resulting in a level of 46.0 dB. This level has a margin of 8.0 dB below the limit of 54 dBuV/m.

Calculation: 92.3 dBuV/m – 46.3 dB – 54 dBuV/m = -8.0 dB

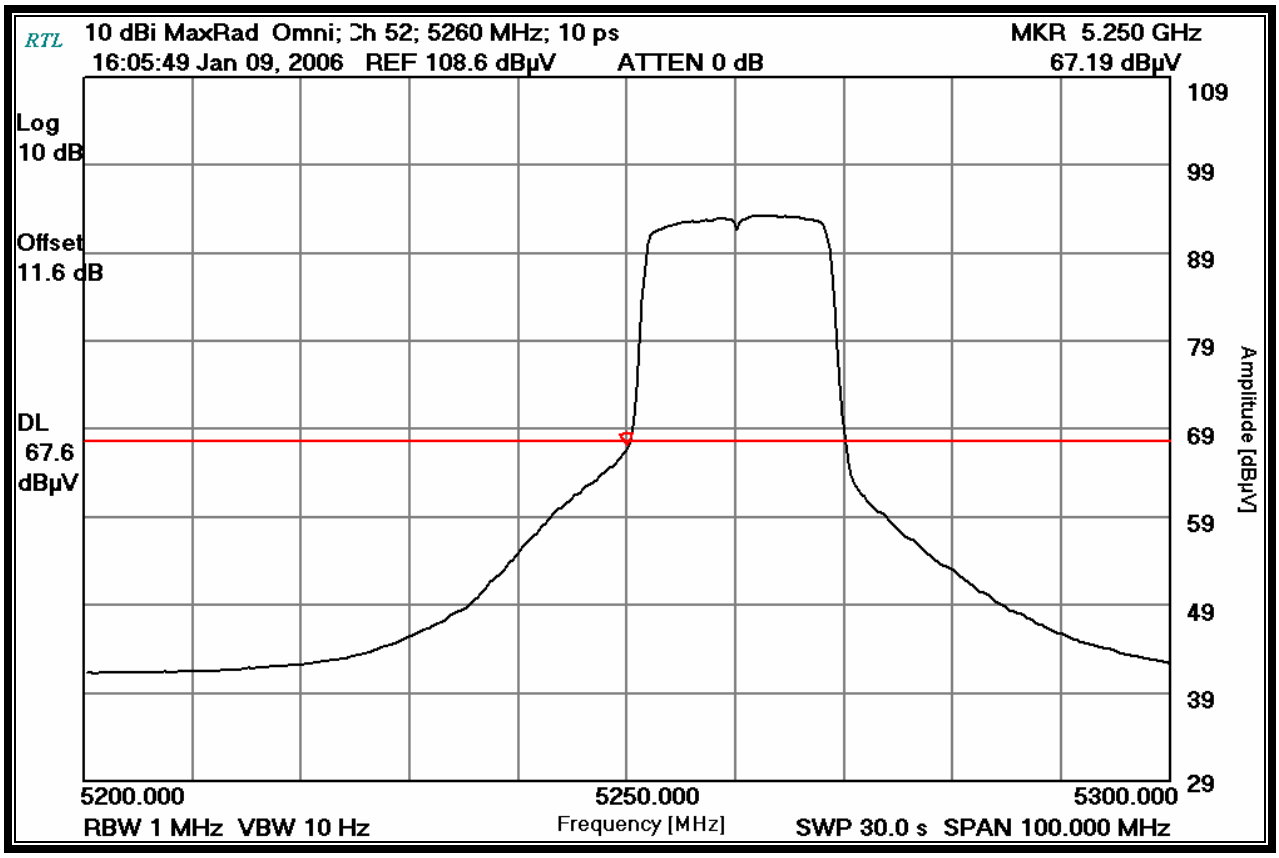
Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 102.4 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 92.3 dBuV/m
Delta measurement = 46.3 dB

Plot 18-11: Lower Band Edge: Channel 36 (TX Frequency: 5180 MHz)



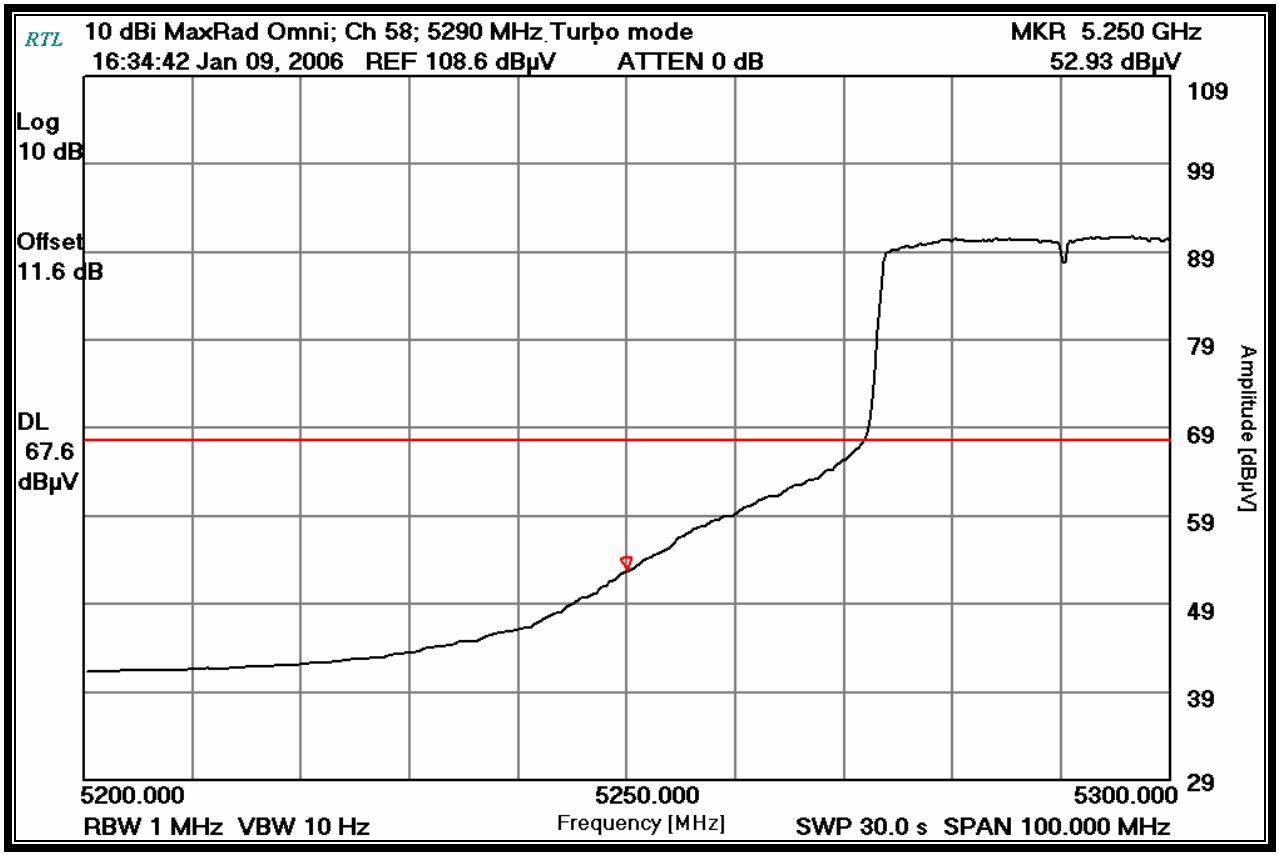
18.3.12 Lower Band Edge (5250-5350 MHz) for Maxrad 10 dBi Omni Antenna

Plot 18-12: Lower Band Edge: Channel 52 (TX Frequency: 5260 MHz)



18.3.13 Lower Band Edge (5250-5350 MHz) Turbo Mode for Maxrad 10 dBi Omni Antenna

Plot 18-13: Lower Band Edge: Channel 58 Turbo (TX Frequency: 5290 MHz)



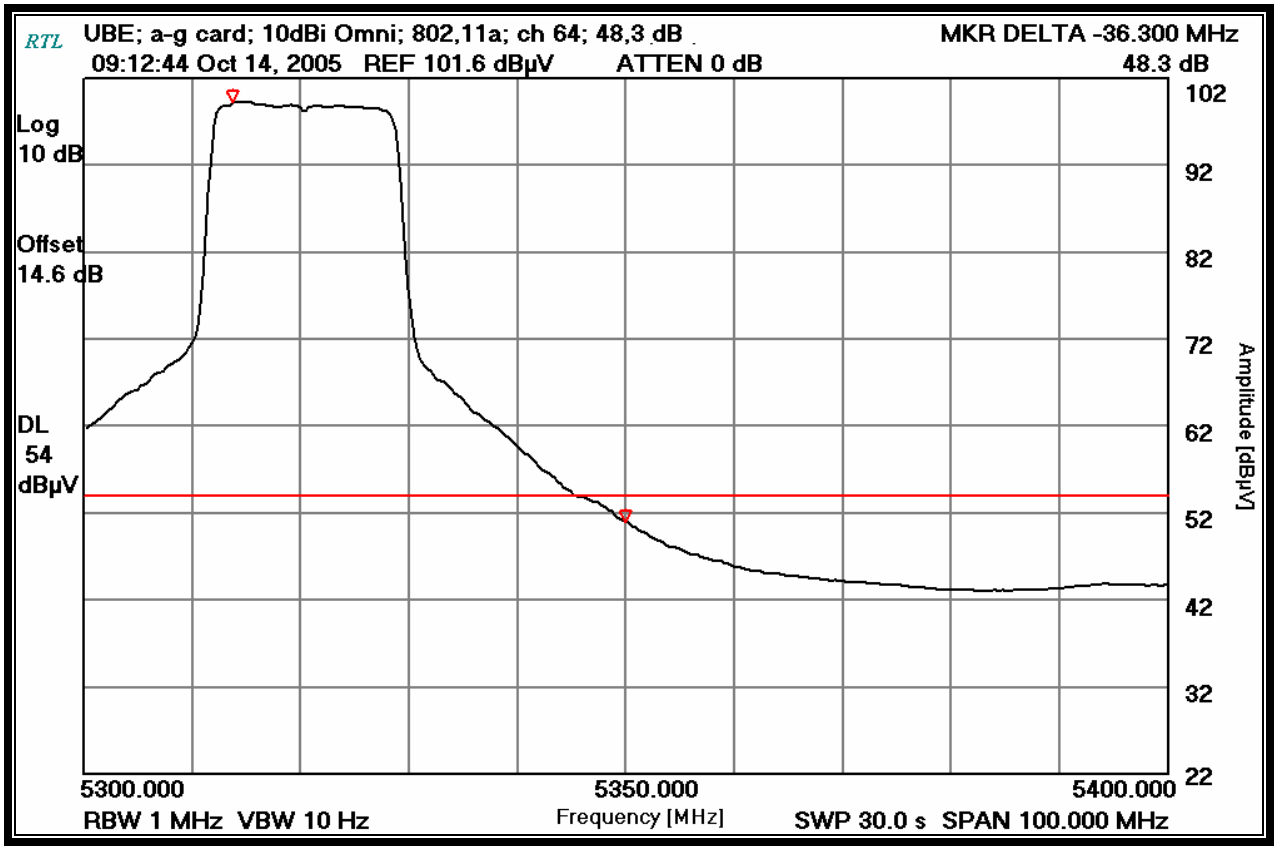
18.3.14 Calculation of Upper Band Edge for Maxrad 10 dBi Omni Antenna

99.2 dBuV/m is the field strength measurement, from which the delta measurement of 48.3 dB is subtracted (reference plots), resulting in a level of 50.9 dB. This level has a margin of 3.1 dB below the limit of 54 dBuV/m.

Calculation: 99.2 dBuV/m – 48.3 dB – 54 dBuV/m = -3.1 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 108.4 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 99.2 dBuV/m
Delta measurement = 48.3 dB

Plot 18-14: Upper Band Edge: Channel 64 (TX Frequency: 5320 MHz)



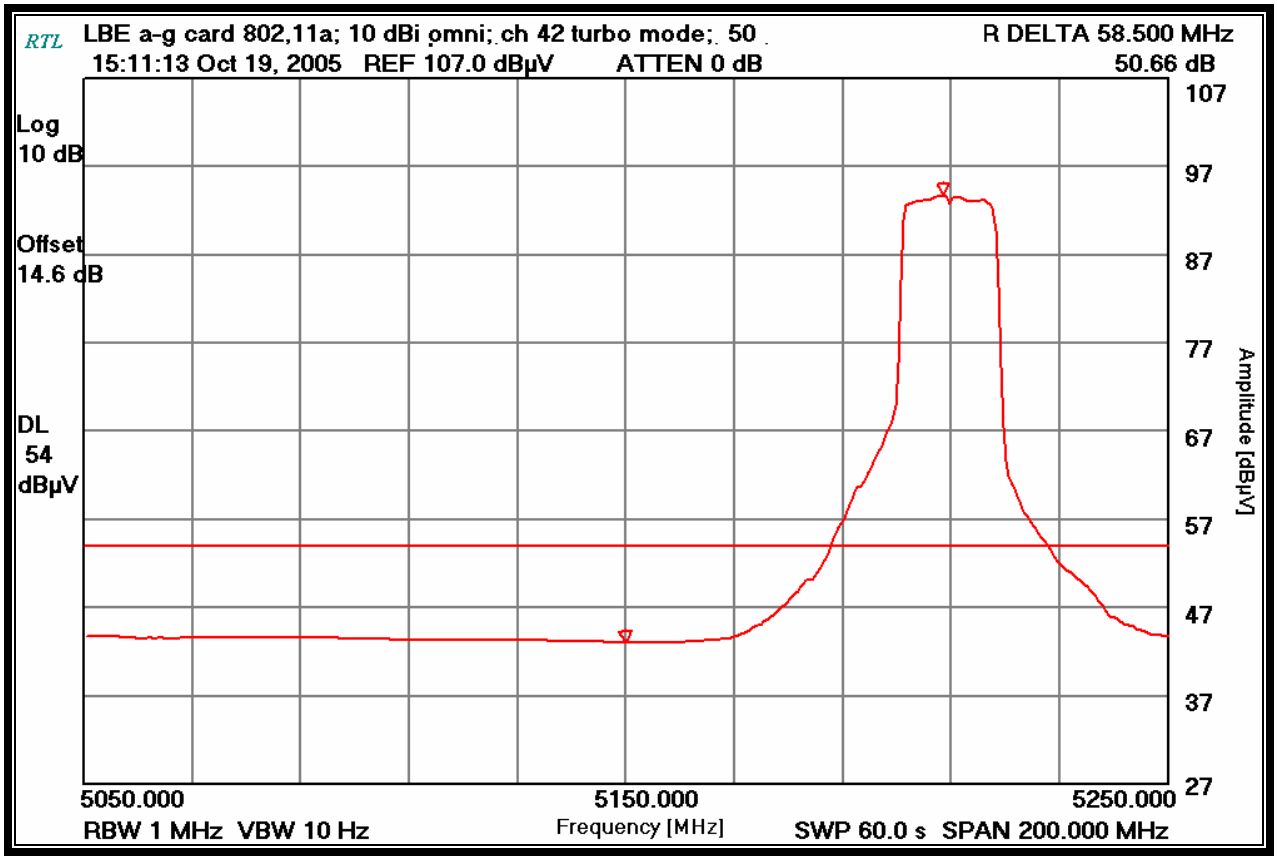
18.3.15 Calculation of Lower Band Edge Turbo Mode for Maxrad 10 dBi Omni Antenna

93.8 dBuV/m is the field strength measurement, from which the delta measurement of 50.7 dB is subtracted (reference plots), resulting in a level of 43.1 dB. This level has a margin of 10.9 dB below the limit of 54 dBuV/m.

Calculation: 93.8 dBuV/m – 50.7 dB – 54 dBuV/m = -10.9 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 103.1 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 93.8 dBuV/m
Delta measurement = 50.7 dB

Plot 18-15: Lower Band Edge: Channel 42 Turbo (TX Frequency: 5210 MHz)



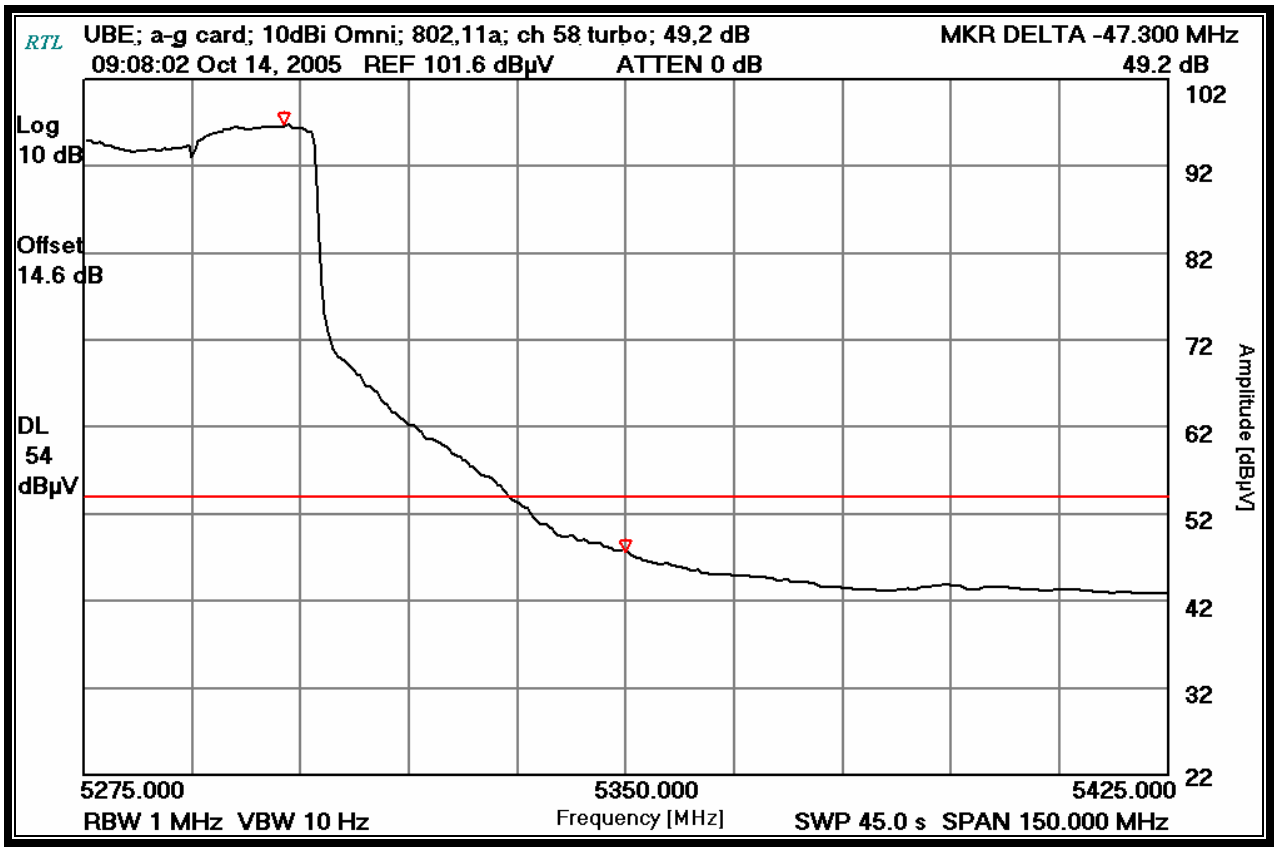
18.3.16 Calculation of Upper Band Edge Turbo Mode for Maxrad 10 dBi Omni Antenna

96.6 dBuV/m is the field strength measurement, from which the delta measurement of 49.2 dB is subtracted (reference plots), resulting in a level of 47.4 dB. This level has a margin of 6.6 dB below the limit of 54 dBuV/m.

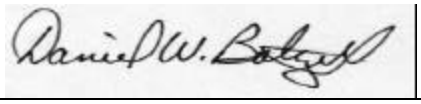
Calculation: 96.6 dBuV/m – 49.2 dB – 54 dBuV/m = -6.6 dB

Peak Field strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 105.5 dBuV/m
Average Field strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 96.6 dBuV/m
Delta measurement = 49.2 dB

Plot 18-16: Upper Band Edge: Channel 58 Turbo (TX Frequency: 5290 MHz)



TEST PERSONNEL:

Daniel W. Baltzell		October 12, 13, 14, & 19, 2005
EMC Test Engineer	Signature	Dates Of Tests

19 Test Results for 802.11a – 5725 - 5850 MHz

20 6 dB Bandwidth - §15.247(a)(2); RSS-210 §A8.2(1)

20.1 6 db Bandwidth Test Procedure – Minimum 6 db Bandwidth

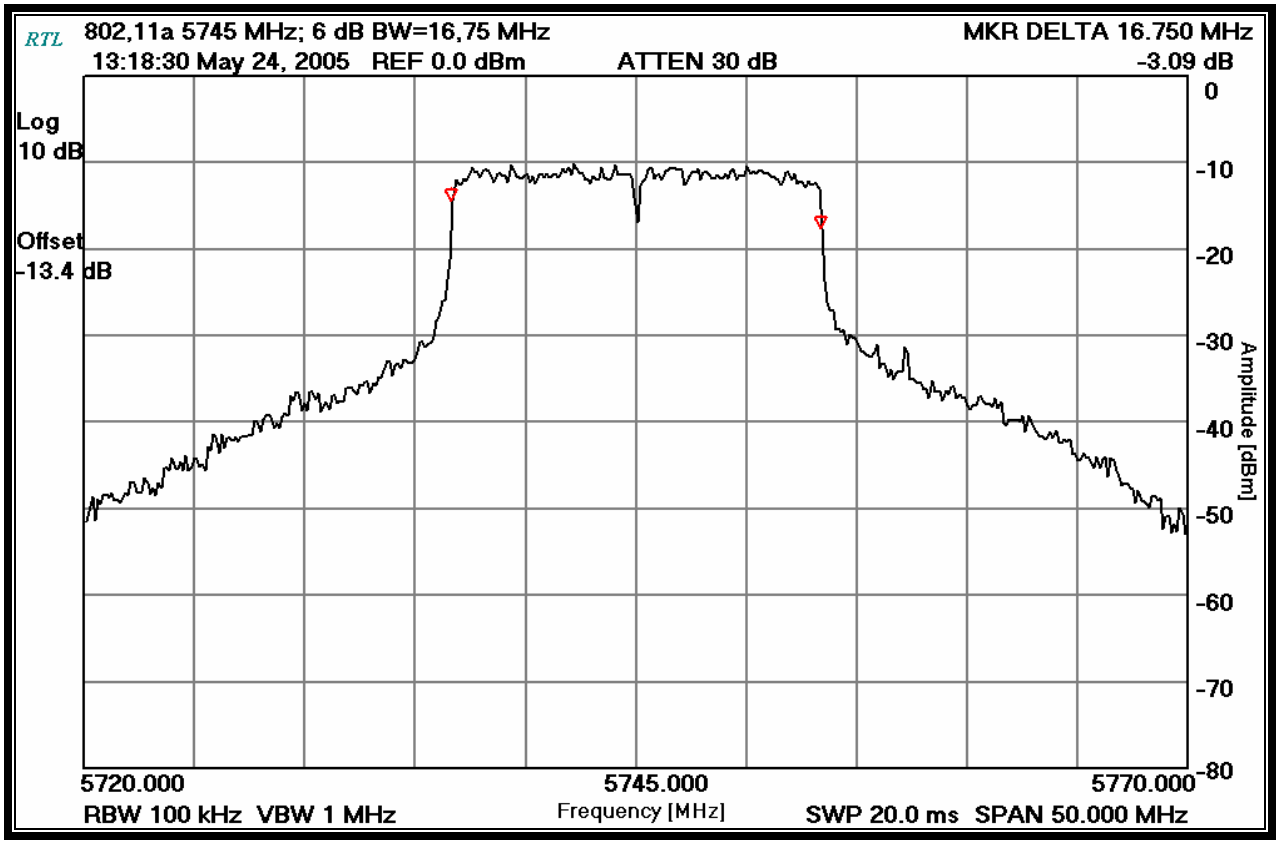
The minimum 6 dB bandwidths per FCC 15.247 (a)(2) were measured using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 1 MHz. The device was modulated using the maximum 6 Mbps data rate. The minimum 6 dB bandwidths are presented in Table 7-1.

20.2 6 db Bandwidth Test Results

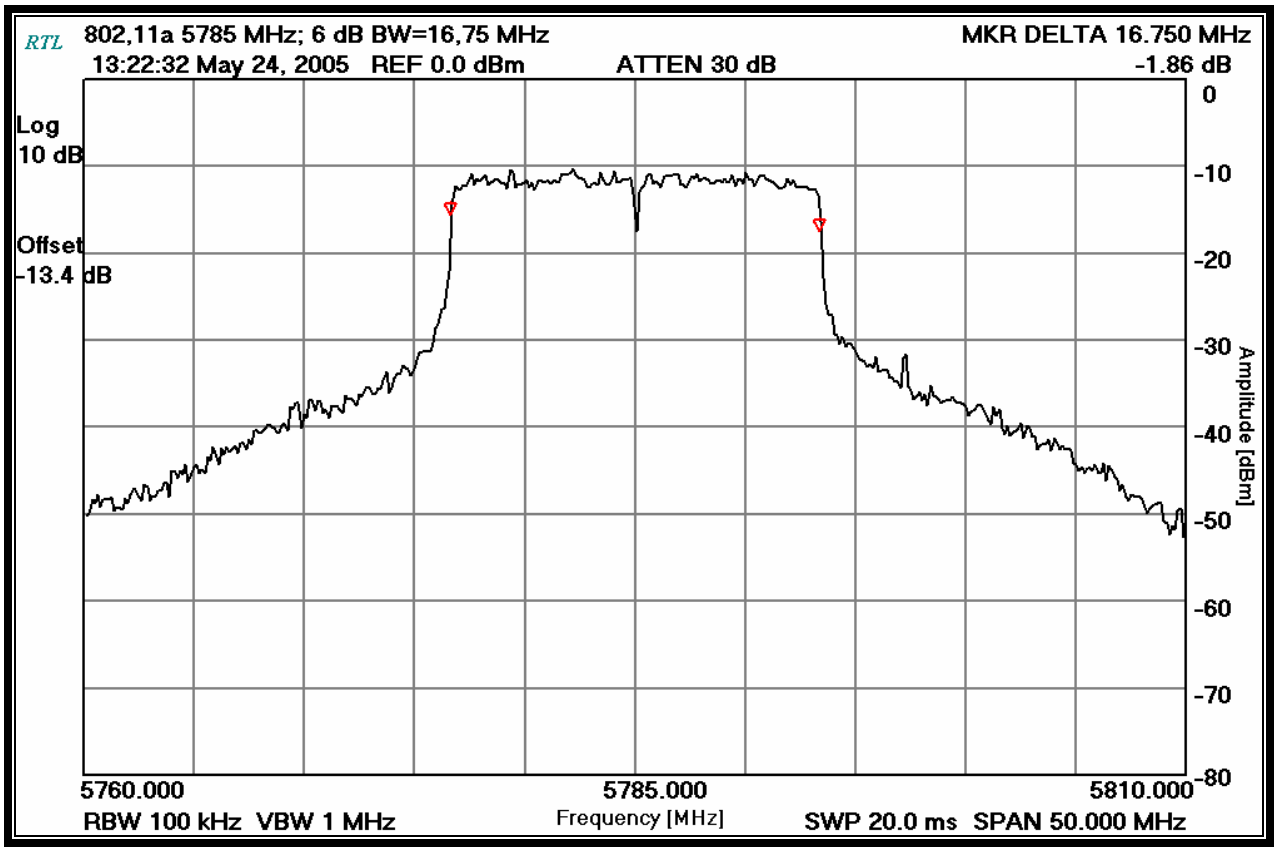
Table 20-1: 6 db Bandwidth Test Data 802.11a

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum limit (MHz)	Pass/ Fail
149	5745	16.75	0.5	Pass
152	5760	33.25	0.5	Pass
157	5785	16.75	0.5	Pass
160	5800	33.25	0.5	Pass
165	5825	16.75	0.5	Pass

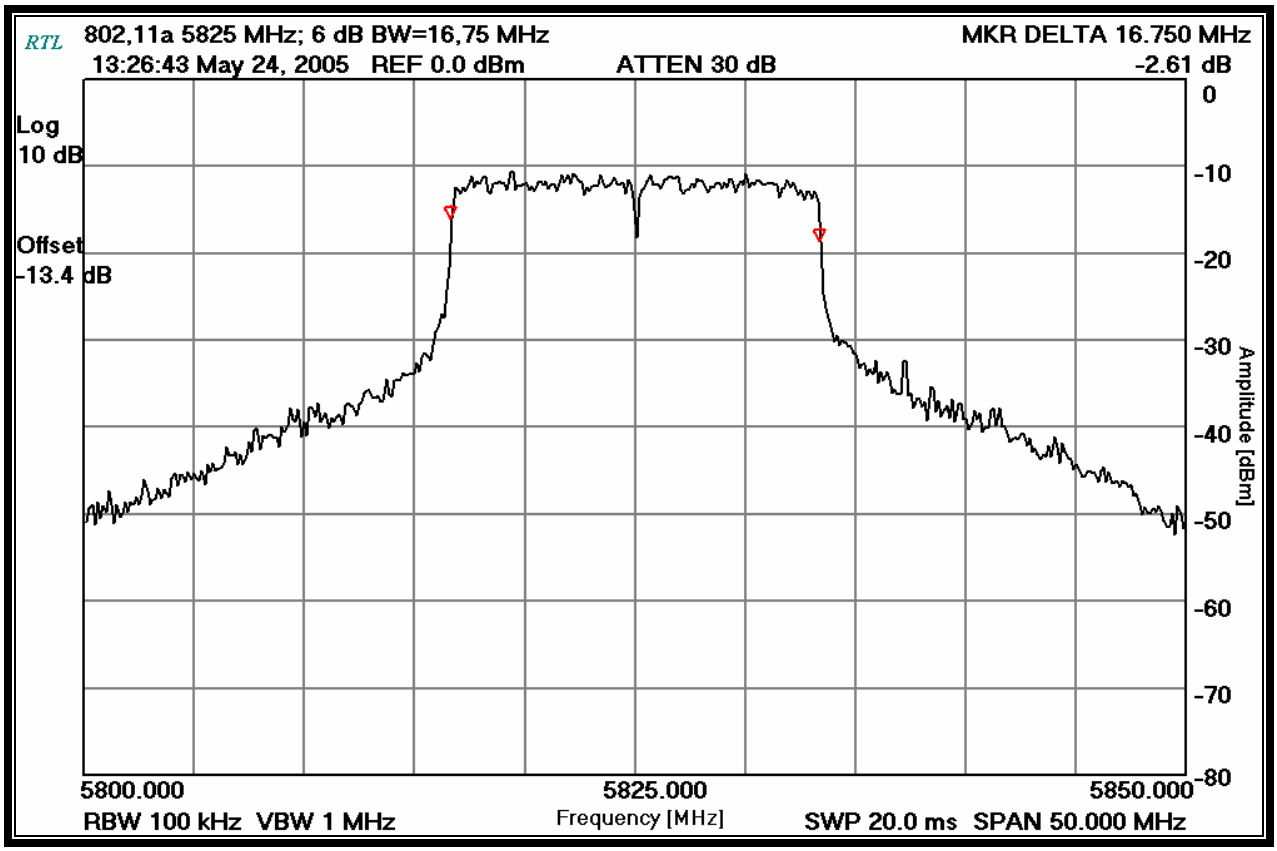
Plot 20-1: 6 dB Bandwidth (TX Frequency: 5745 MHz – 6 Mbs)



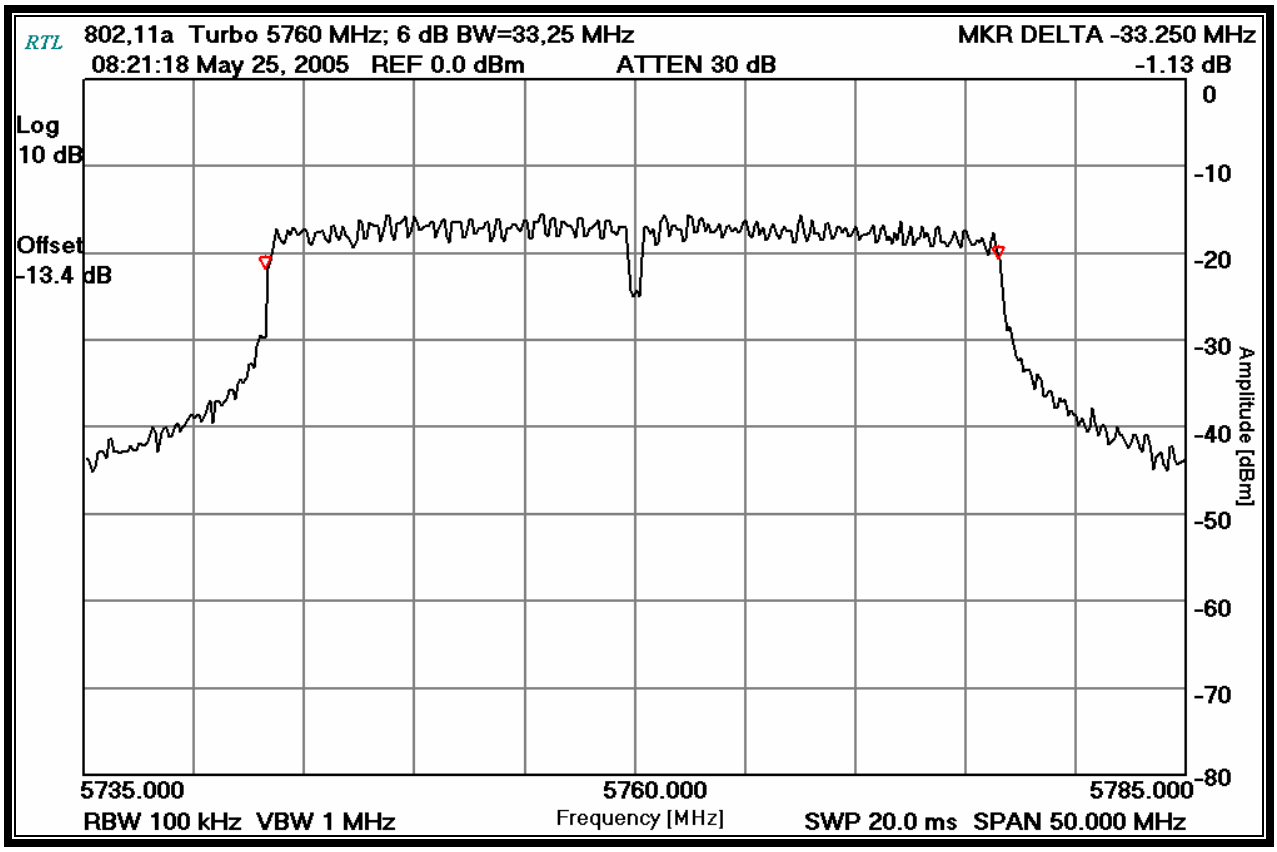
Plot 20-2: 6 dB Bandwidth (TX Frequency: 5785 MHz – 6 Mbs)



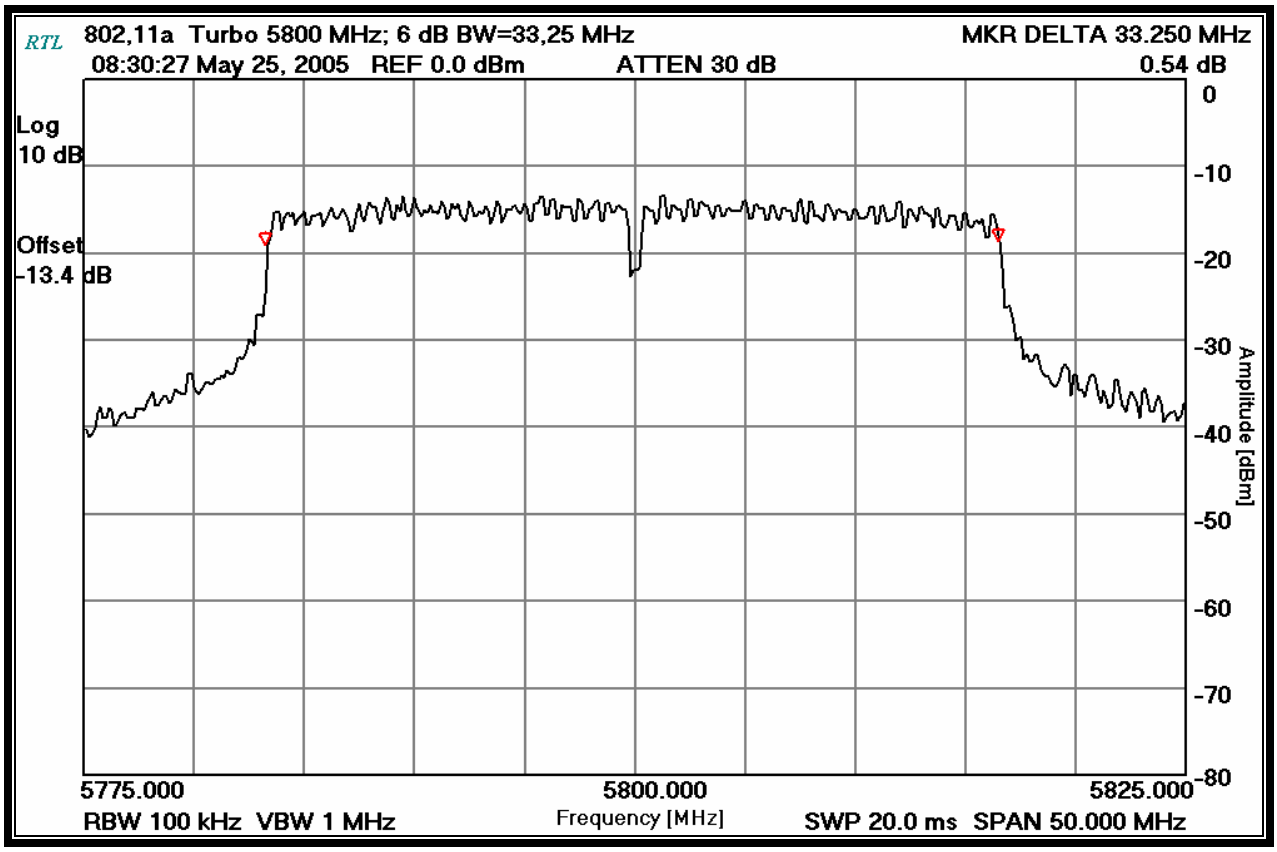
Plot 20-3: 6 dB Bandwidth (TX Frequency: 5825 MHz – 6 Mbs)



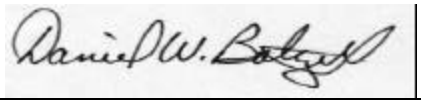
Plot 20-4: 6 dB Bandwidth (TX Frequency: 5760 MHz – 6 Mbs turbo mode)



Plot 20-5: 6 dB Bandwidth (TX Frequency: 5800 MHz – 6 Mbs turbo mode)



TEST PERSONNEL:

Daniel W. Baltzell		May 24 and 25, 2005
EMC Test Engineer	Signature	Dates Of Test

21 Peak Output Power - §15.247(b)(1); RSS-210 §A8.4(4)

21.1 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 21-1: Power Output Test Equipment

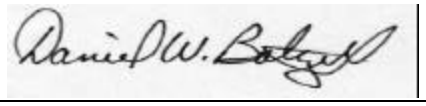
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573	9/21/06
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	9/21/06
901140	Weinschel Corp.	47-10-34 DC-18GHz	Attenuator, 50W 10 dB	BK6203	5/13/06

21.2 Power Output Test Data

Table 21-2: Power Output Test Data - 802.11a

Frequency (MHz)	Channel	Peak Power Conducted Output (dBm)
5745	149	19.0
5785	157	19.6
5825	165	18.8

TEST PERSONNEL:



Daniel W. Baltzell		October 16, 2005
EMC Test Engineer	Signature	Date Of Test

22 Power Spectral Density - §15.247(d); RSS-210 §A8.2(2)

22.1 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 22-1: Power Spectral Density Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	8/3/06

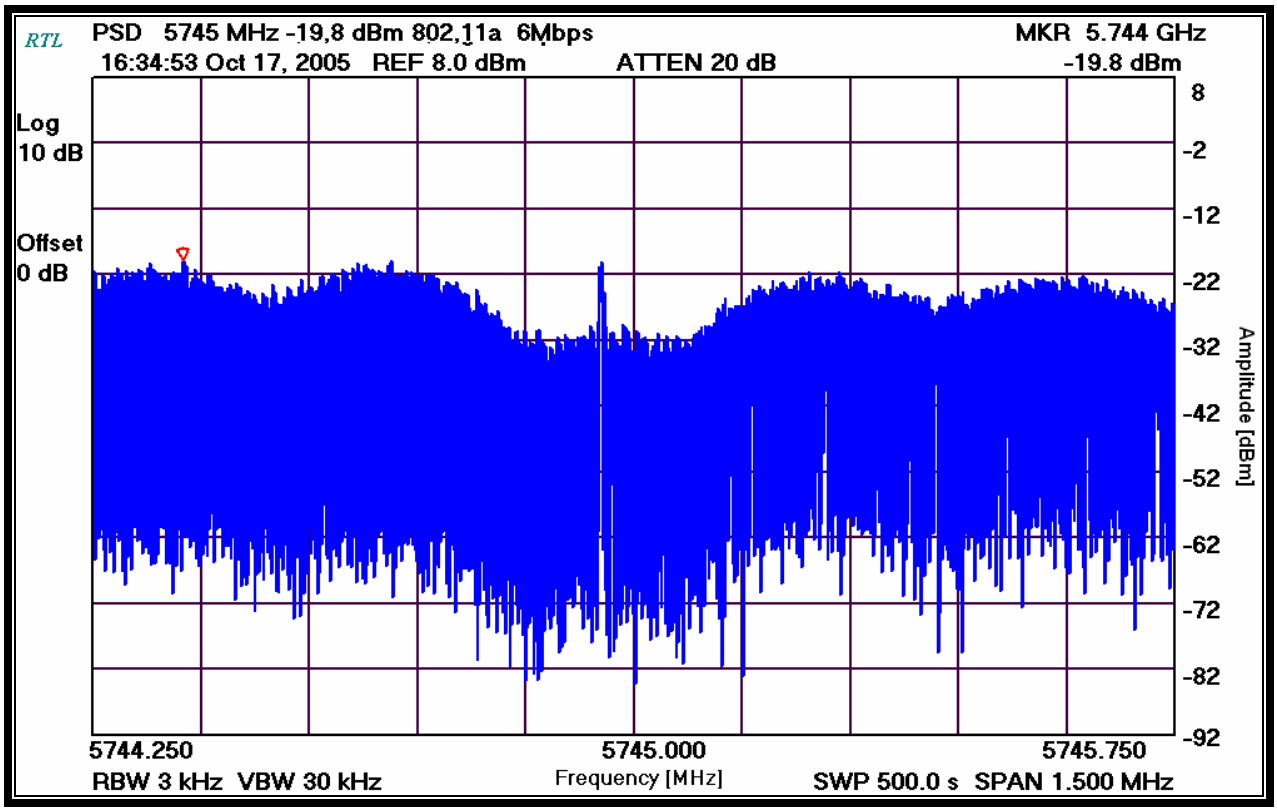
22.2 Power Spectral Density Test Data

Table 22-2: Power Spectral Density Test Data 802.11a

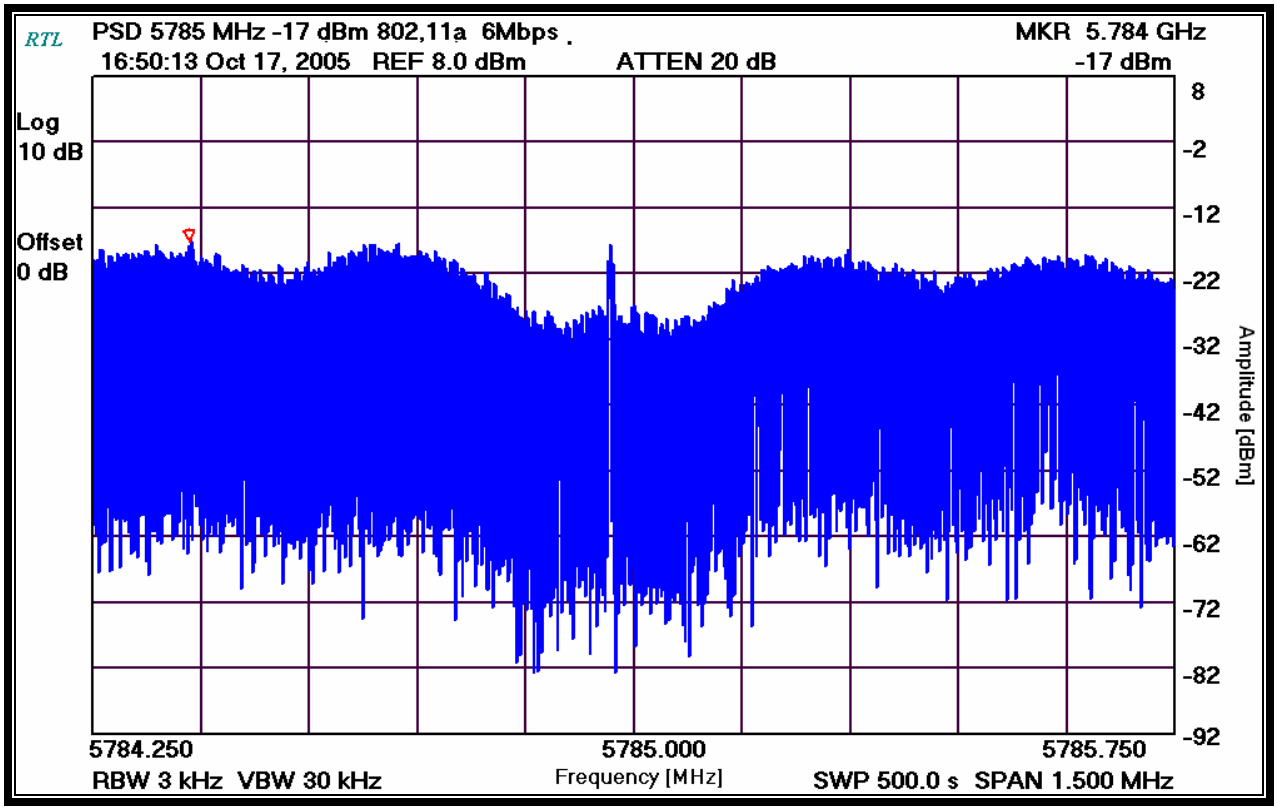
Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
149	5745	-19.8	8	Pass
157	5785	-17.0	8	Pass
165	5825	-11.7	8	Pass
152 turbo	5760	-24.3	8	Pass
160 turbo	5800	-16.1	8	Pass

22.3 Power Spectral Density Plots - 802.11a

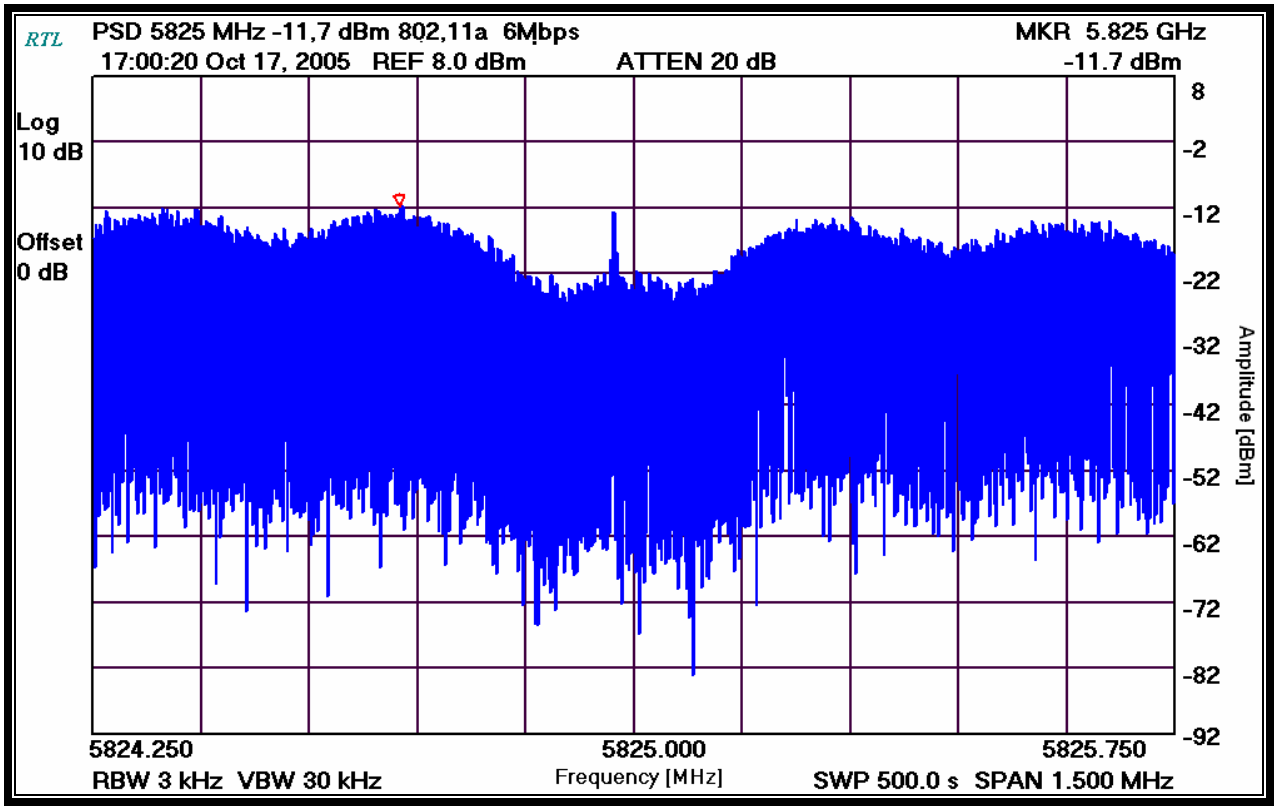
Plot 22-1: Power Spectral Density: Channel 149 (5745 MHz – 6 Mbps)



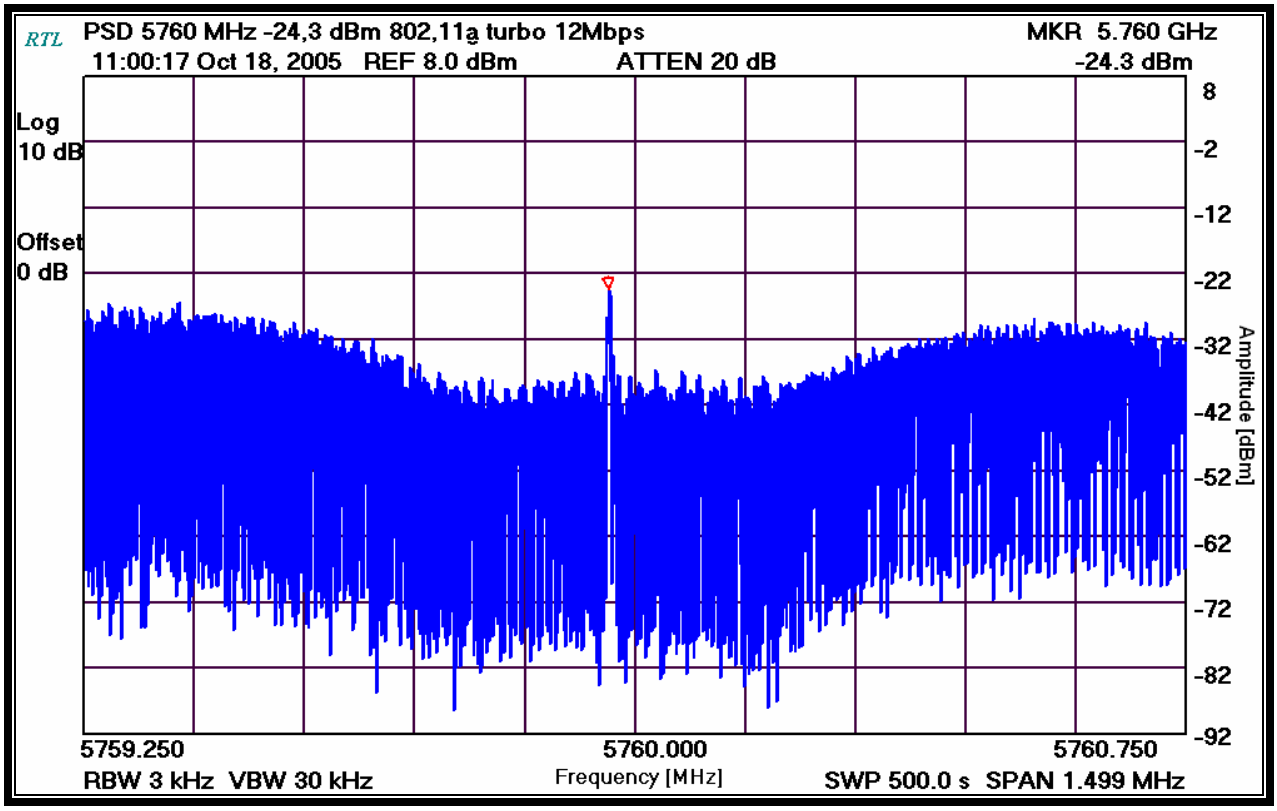
Plot 22-2: Power Spectral Density: Channel 157 (5785 MHz – 6 Mbps)



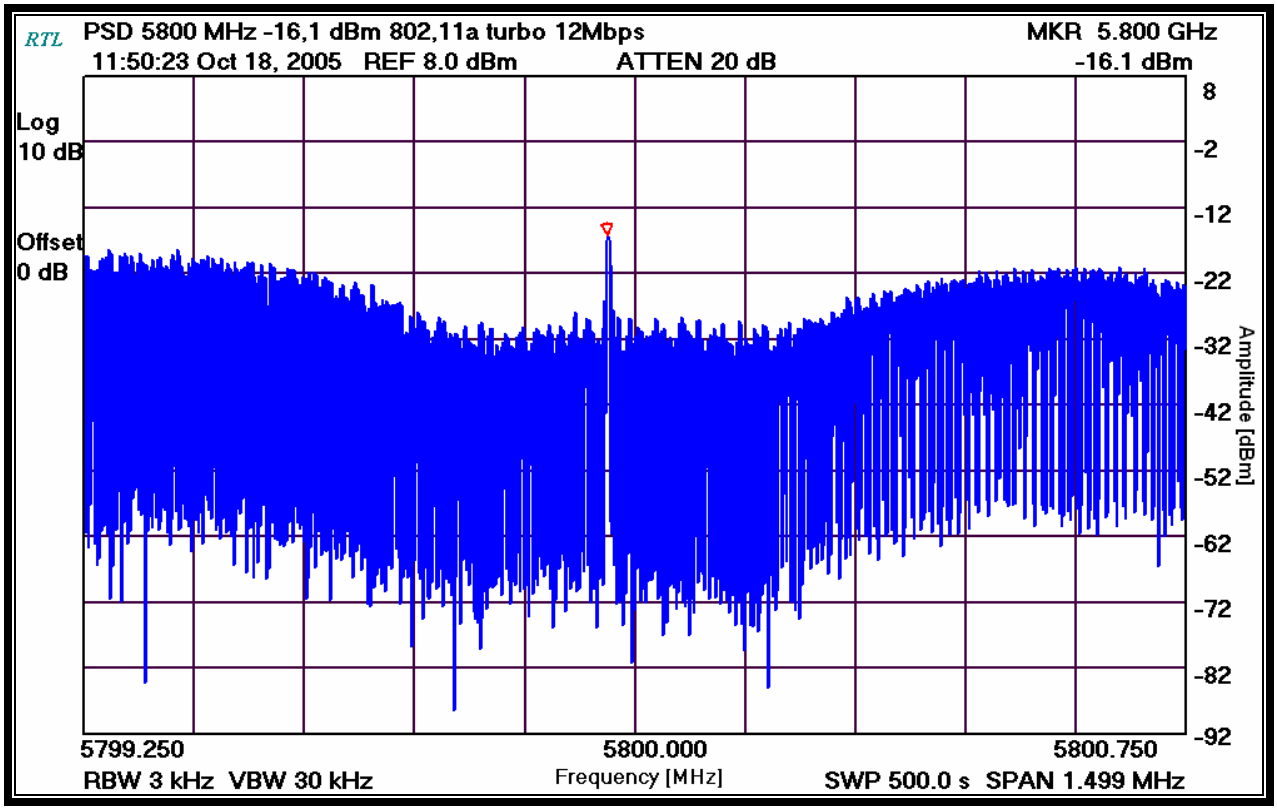
Plot 22-3: Power Spectral Density: Channel 165 (5825 MHz – 6 Mbps)



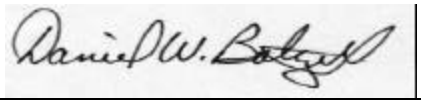
Plot 22-4: Power Spectral Density: Channel 152 Turbo (5760 MHz – 12 Mbps)



Plot 22-5: Power Spectral Density: Channel 160 Turbo (5800 MHz – 12 Mbps)



TEST PERSONNEL:

Daniel W. Baltzell		October 17 and 18, 2005
EMC Test Engineer	Signature	Dates Of Test

23 Compliance with the Band Edge – FCC §15.247(c), §15.205 RSS-210 §A8.5

23.1 Limits of Band Edge Measurement

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

23.2 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 23-1: Band Edge Test Equipment

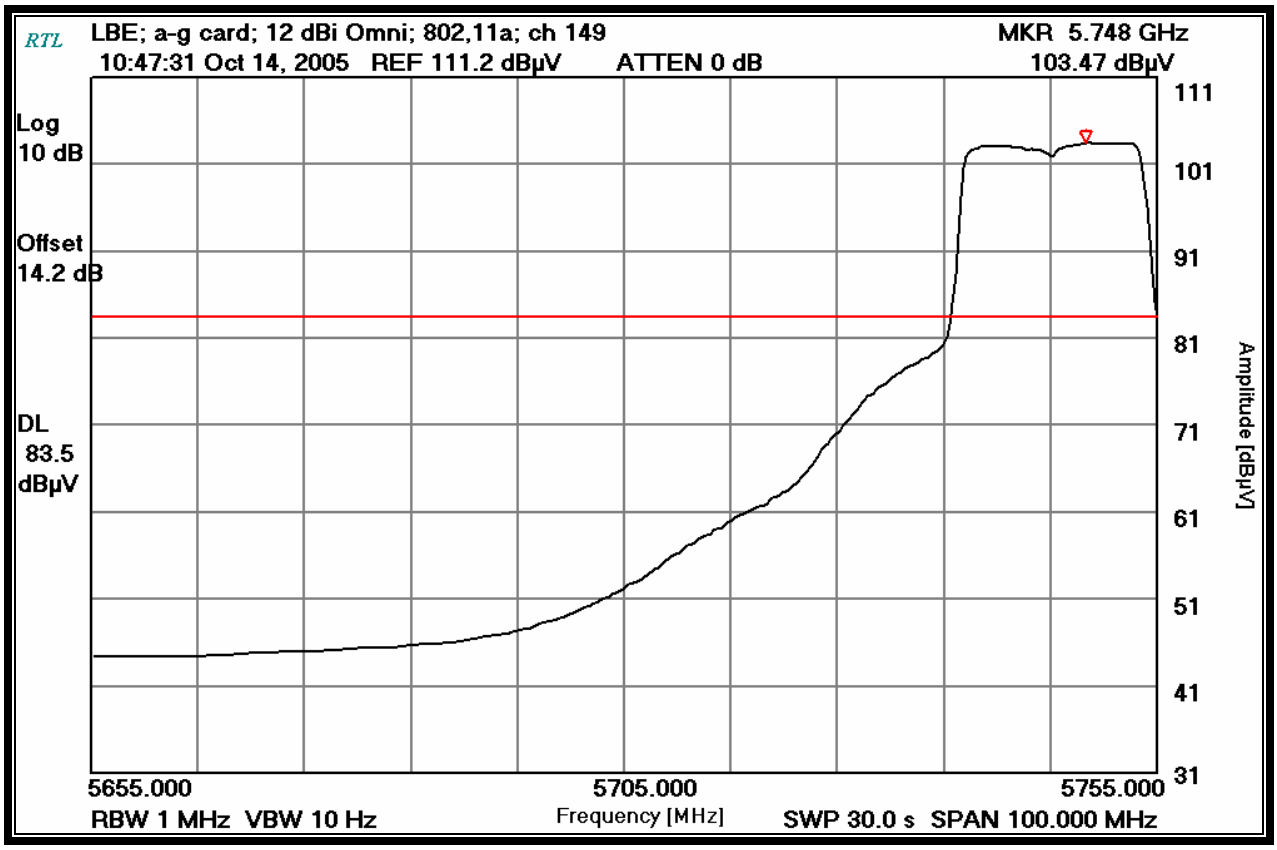
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz – 40 GHz)	3826A00144	9/22/06
901232	IW Microwave Products	KPS-1503-2400-KPS	High frequency RF cables	240"	9/1/06
901235	IW Microwave Products	KPS-1503-360-KPS	High frequency RF cables	36"	9/1/06
901242	Rhein Tech Labs	WRT-000-0003	Wood rotating table	N/A	Not Required
900321	EMCO	3161-03	Horn Antennas (4 - 8,2GHz)	9508-1020	5/20/07
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	5/20/06

23.3 Band Edge Test Results

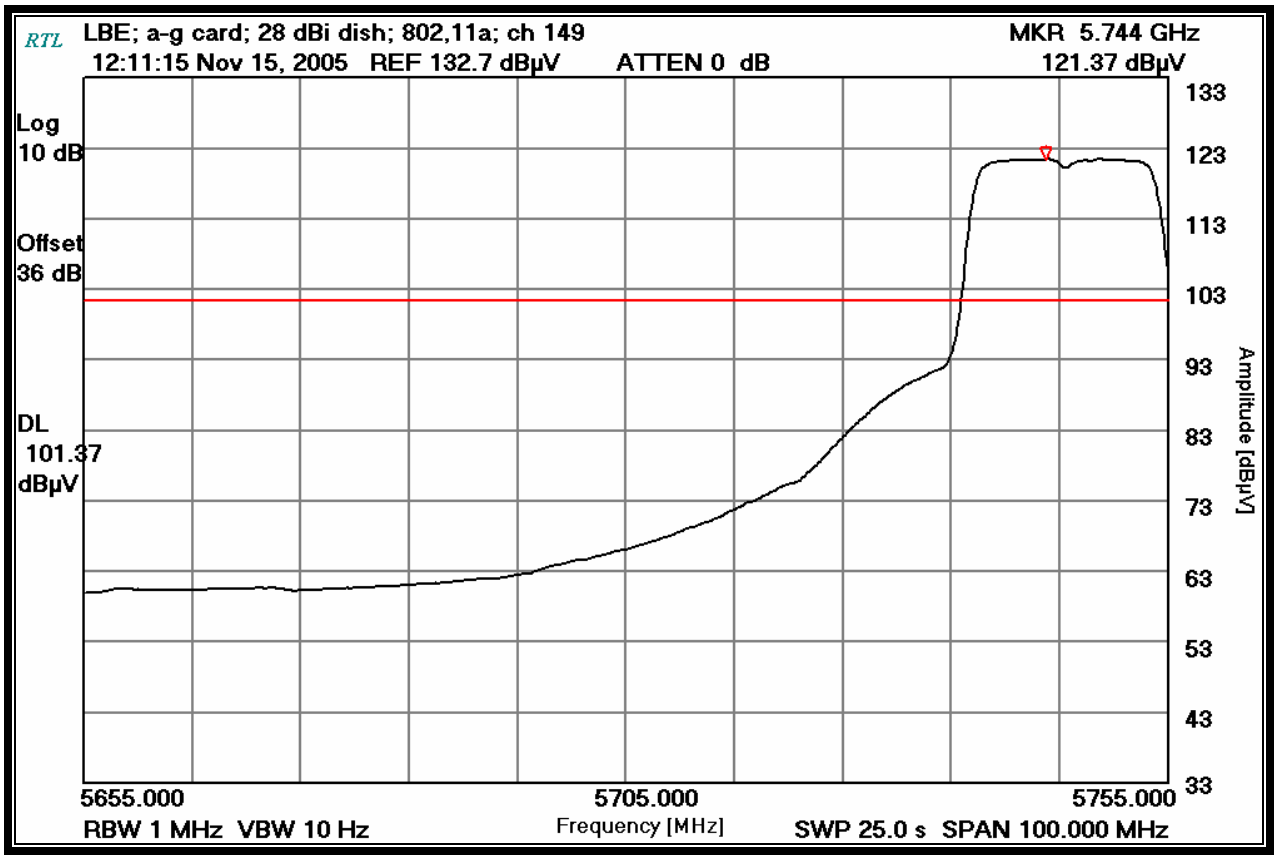
23.3.1 Low Channel Band Edge

The spectrum plots show the display line 20 dBc, which shows compliance with Part 15.247 requirement.

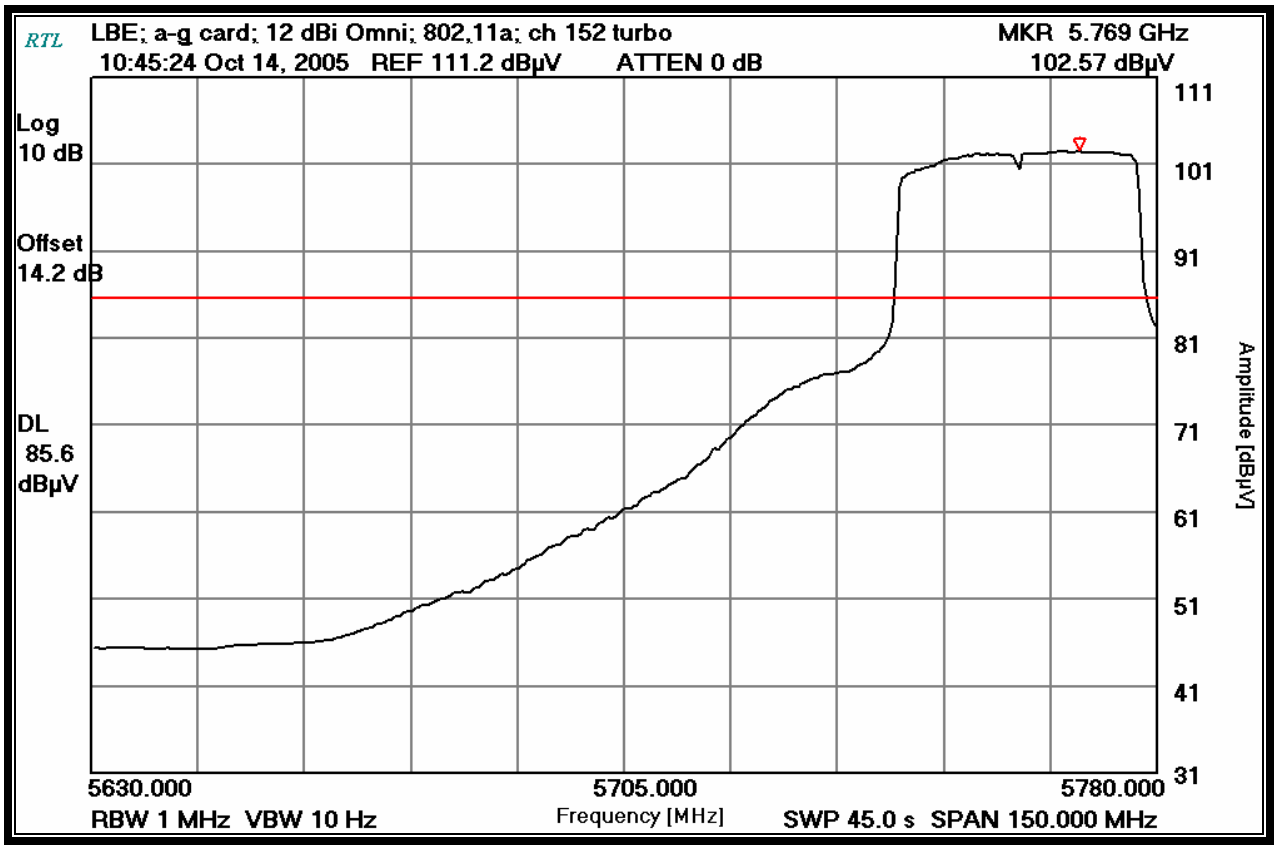
Plot 23-1: Lower Band Edge: Channel 149 (TX Frequency: 5745 MHz – 6 Mbs) for Pacific 12 dBi Omni Antenna



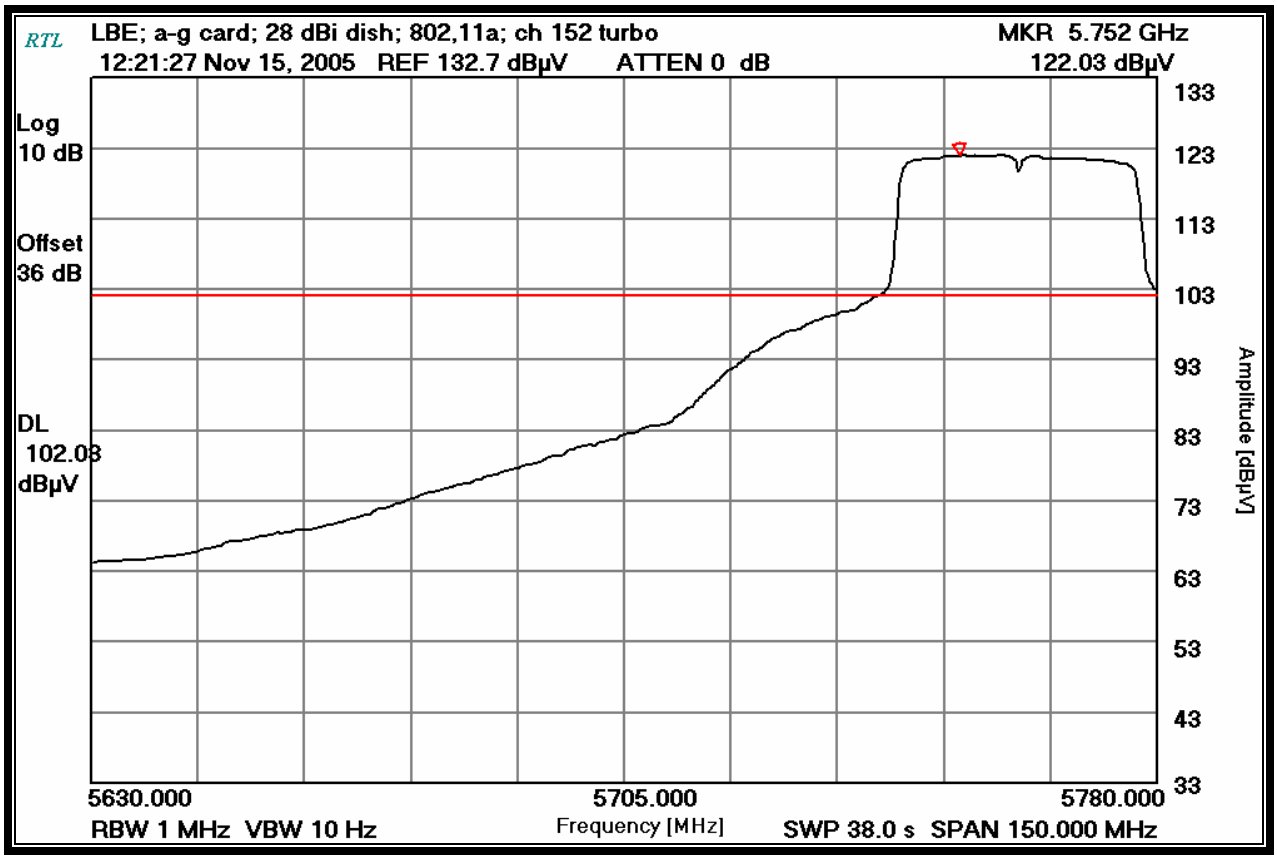
Plot 23-2: Lower Band Edge: Channel 149 (TX Frequency: 5745 MHz – 6 Mbs) for Gabriel 28 dBi Dish Antenna



Plot 23-3: Lower Band Edge: Channel 152 Turbo Mode (TX Frequency: 5760 MHz – 12 Mbs) for Pacific 12 dBi Omni Antenna



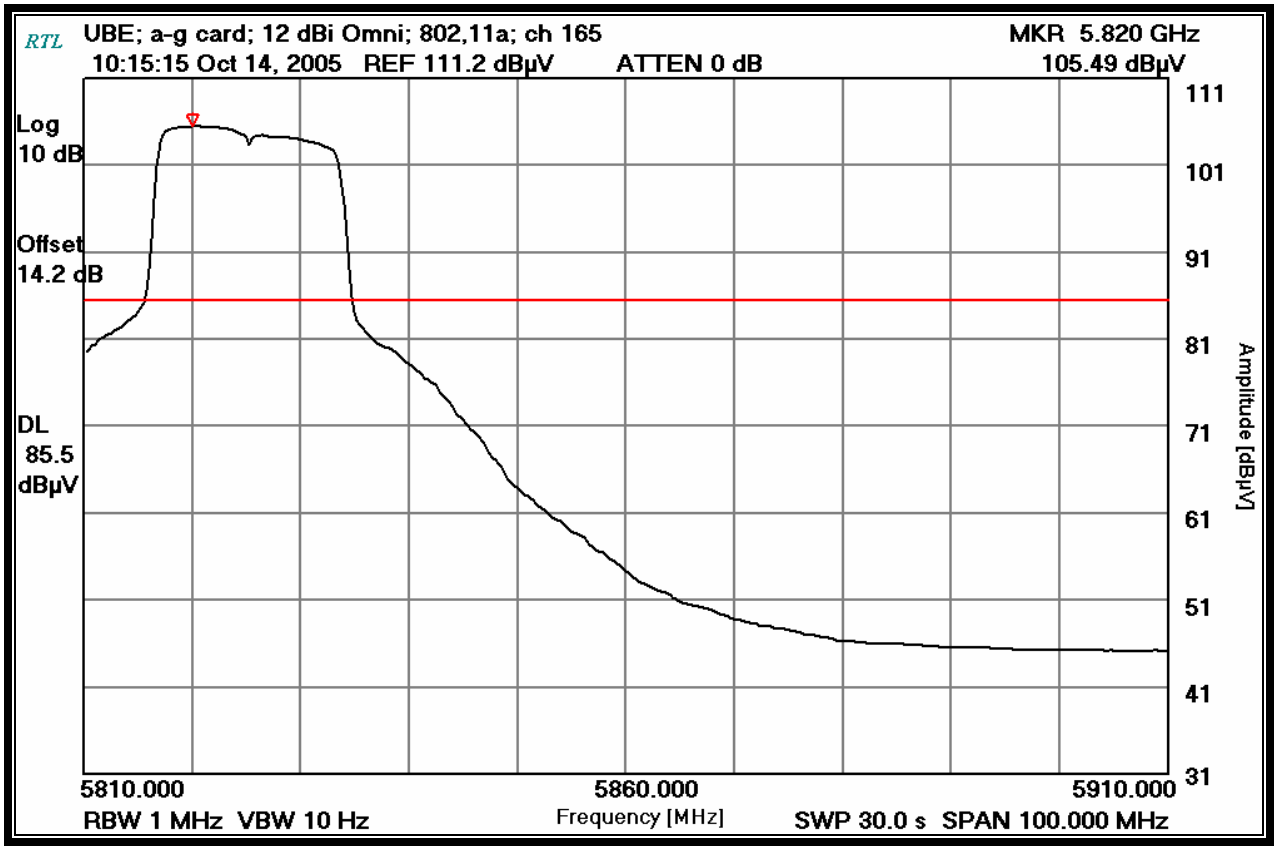
Plot 23-4: Lower Band Edge: Channel 152 Turbo Mode (TX Frequency: 5760 MHz – 12 Mbs) for Gabriel 28 dBi Dish Antenna



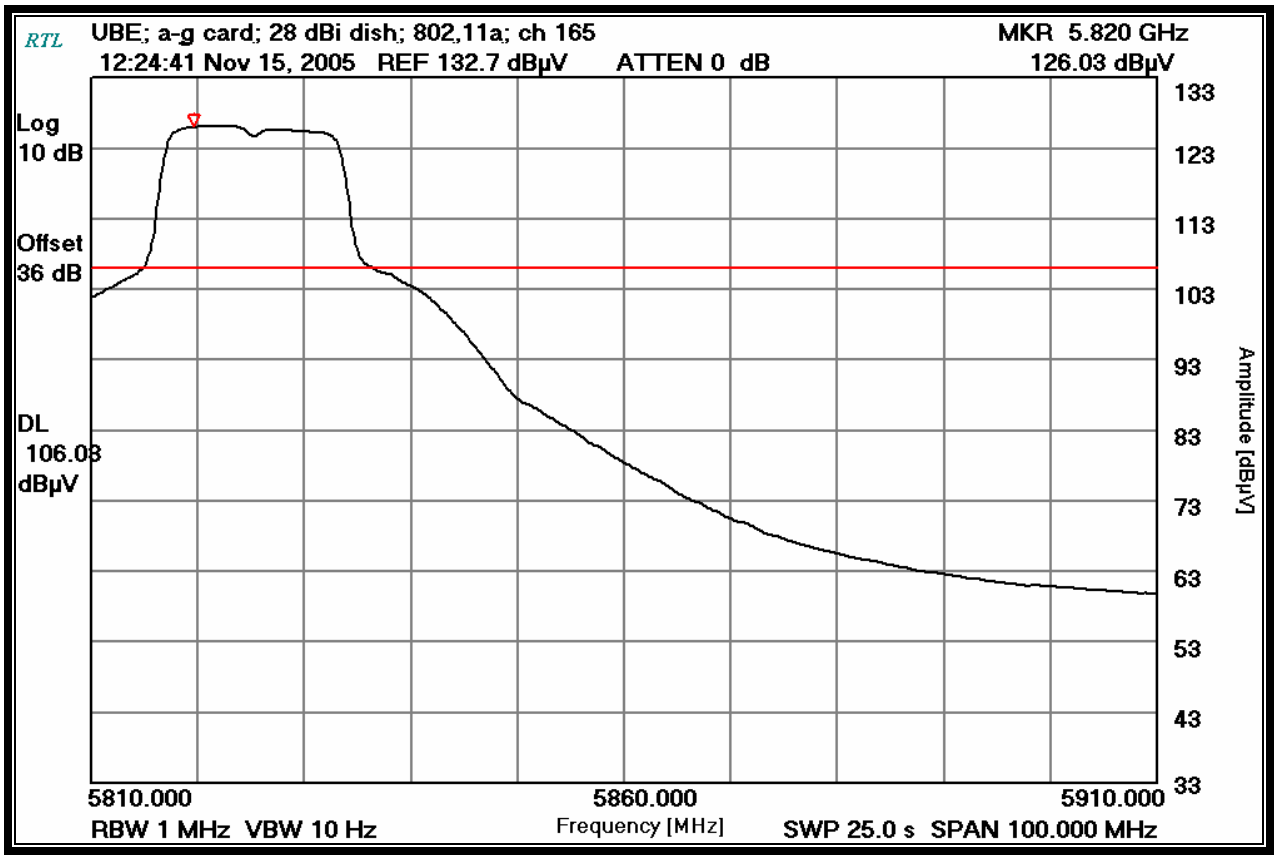
23.3.2 Upper Band Edge

The spectrum plots show the display line 20 dBc, which shows compliance with Part 15.247 requirement.

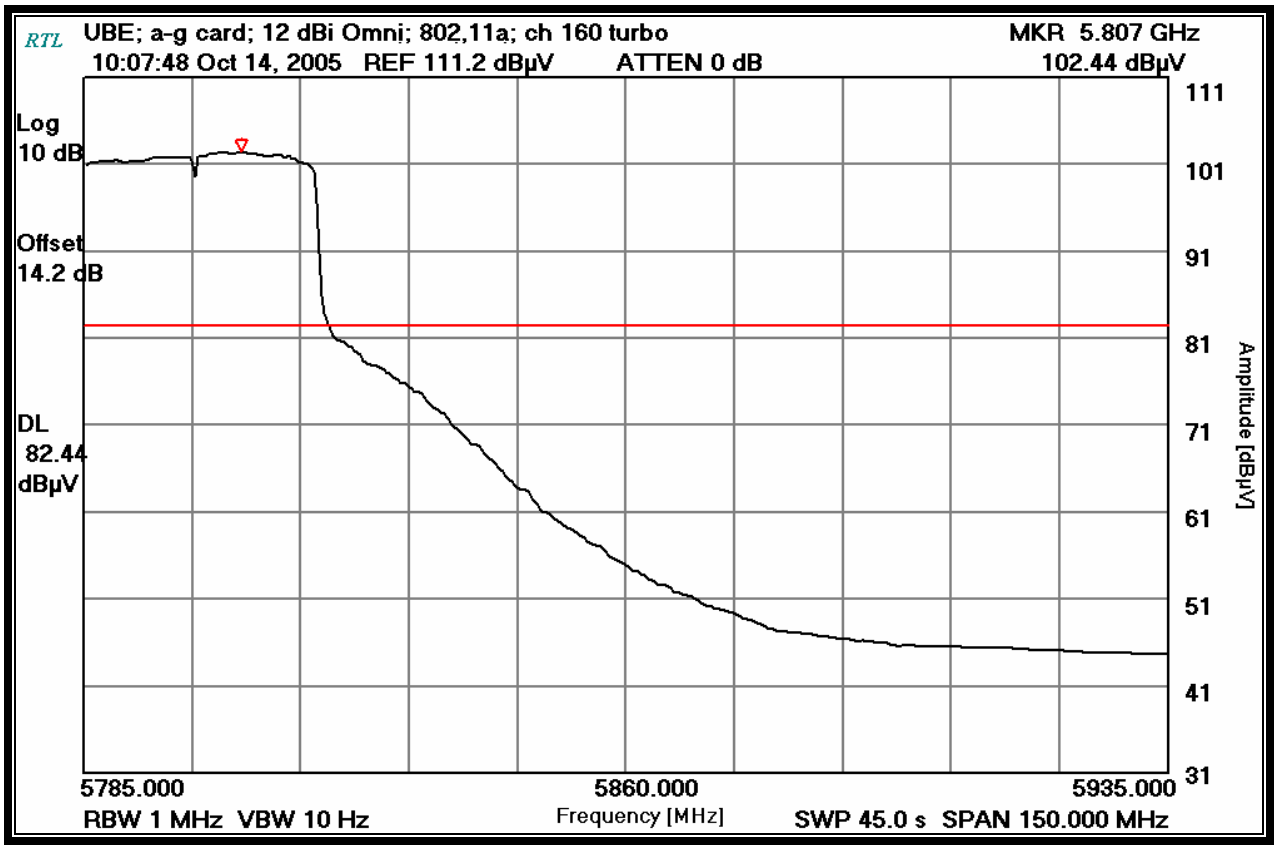
Plot 23-5: Upper Band Edge: Channel 165 (TX Frequency: 5825 MHz – 6 Mbs) for Pacific 12 dBi Omni Antenna



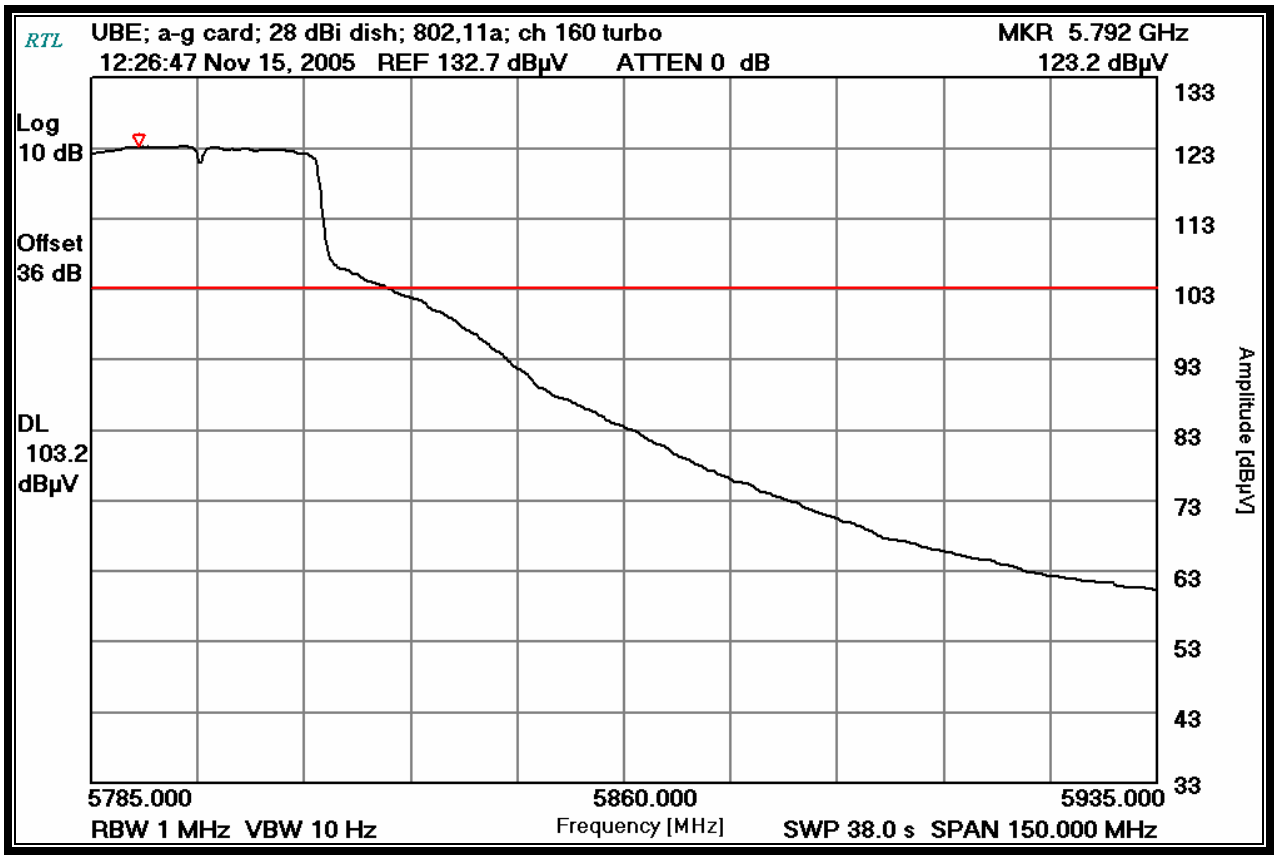
Plot 23-6: Upper Band Edge: Channel 165 (TX Frequency: 5825 MHz – 6 Mbs) for Gabriel 28 dBi Dish Antenna



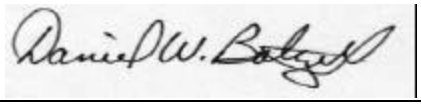
Plot 23-7: Upper Band Edge: Channel 160 Turbo Mode (TX Frequency: 5800 MHz – 12 Mbs) for Pacific 12 dBi Omni Antenna



Plot 23-8: Upper Band Edge: Channel 160 Turbo Mode (TX Frequency: 5800 MHz – 12 Mbs) for Gabriel 28 dBi Dish Antenna



TEST PERSONNEL:

Daniel W. Baltzell		October 14 and November 15, 2005
EMC Test Engineer	Signature	Dates Of Tests

24 Antenna Requirement – FCC §15.203

24.1 Applicable Standard

According to Part 15.203, 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 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

24.2 Antenna Connector Construction

The EUT's antenna connector is a reverse-thread SMA connector and the antennas with the applicable gains are listed below.

Gain (dBi)	Manufacturer	Serial Number	Antenna Type
28	Gabriel	QF2-52 (5.25-5.85)	Dish
12	Pacific	OD58-12 (5.47-5.85)	Collinear Omni
10	MaxRad	MFB51510	Collinear Omni
12	Mobile Mark	OD12-2400	Collinear Omni
10	MaxRad	MP52010NF	Panel
6	Radiall	R380600201	Omni
14	Maxrad	MYP24014	Yagi
8.5	Centurion	CAF94180	Patch

25 Antenna Conducted Spurious Emissions - §15.247(c); RSS-210 §A8.5

25.1 Antenna Conducted Spurious Emissions Test Procedures

Antenna spurious emissions per FCC 15.247(c) were 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, 5785 MHz, and 5825 MHz.

Table 25-1: 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	9/14/06

25.2 Antenna Conducted Spurious Emissions Test Results – 802.11a

Table 25-2: Antenna Conducted Spurious Emissions - Channel 149 - 5745 MHz 802.11a

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
523.000	-70.3	63.8	20.0	-43.8
562.000	-71.8	65.3	20.0	-45.3
3830.000	-69.8	63.3	20.0	-43.3
5745.000	-6.5	Fundamental		
11490.000	-65.2	58.7	20.0	-38.7
17235.000	-82.5	76.0	20.0	-56.0
22980.000	-84.0	77.5	20.0	-57.5
28725.000	-84.5	78.0	20.0	-58.0
34470.000	-80.2	73.7	20.0	-53.7

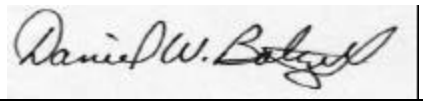
Table 25-3: Antenna Conducted Spurious Emissions - Channel 157 - 5785 MHz 802.11a

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
523.000	-71.3	64.5	20.0	-44.5
601.000	-73.0	66.2	20.0	-46.2
3853.000	-71.5	64.7	20.0	-44.7
5785.000	-6.8	Fundamental		
11570.000	-66.8	60.0	20.0	-40.0
17355.000	-83.5	76.7	20.0	-56.7
23140.000	-82.2	75.4	20.0	-55.4
28925.000	-83.5	76.7	20.0	-56.7
34710.000	-80.0	73.2	20.0	-53.2

Table 25-4: Antenna Conducted Spurious Emissions - Channel 165 - 5825 MHz 802.11a

Frequency (MHz)	Amplitude (dBm)	Amplitude (dBc)	Limit (dBc)	Margin (dB)
520.000	-70.0	63.8	20.0	-43.8
599.000	-70.5	64.3	20.0	-44.3
3888.000	-71.0	64.8	20.0	-44.8
5825.000	-6.2	Fundamental		
11650.000	-64.7	58.5	20.0	-38.5
17475.000	-80.5	74.3	20.0	-54.3
23300.000	-82.2	76.0	20.0	-56.0
29125.000	-84.2	90.4	20.0	-70.4
34950.000	-78.3	72.1	20.0	-52.1

TEST PERSONNEL:



Daniel W. Baltzell		October 20, 2005
EMC Test Engineer	Signature	Date Of Test

26 Conclusion

The data in this measurement report shows that the EUT as tested, Psion Teklogix Inc. Model: 9160-RA2050, FCC ID: GM39160RA2050, complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations, and Industry Canada RSS-210.