FCC Test Report for
47CFR15, Subpart B, Section 101
and
47CFR15, Part 15.205, 15.207, 15.209 & 15.247.

on

AirTegrity Product

Model

4000 Chassis with Seneo Radio Card

FCC ID :SJW-4000-2024-15

Report No.

20041203-03-B-Fc15

Judgement

Complies as Tested

provided for evaluation by

AirTegrity Wireless, Inc
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Report by

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PART 1: DOCUMENTATION

1.1 General Information

Product Name	AirTegrity	
Model	4000 chassis with Seneo Card	
Manufacturer's Name	AirTegrity Wireless, Inc	
Manufacturer's Address	276 Kingsbury Grade, Suite 206 Stateline, NV 89449 U.S.A	
Contact	Tel: +1(775) 588-8800 Patti Kimball	Fax: +1(755) 231-0889 PattilKimball@aol.com
Test Laboratory	ITC Engineering Services, Inc. 9959 Calaveras Road, PO Box 543 Sunol, CA 94586-0543 Email: itcemc@itcemc.com Web Site: http://www.itcemc.com	Tel: +1(925) 862-2944 Fax: +1(925) 862-9013
Test Number and Report Numbers	20041203-03-B	20041203-03-B-Fc15
Test Date(s) & Issue Date	May 03 – 10 2005	May 17,2005
Test Engineer(s)	Bob Kershaw, Femi Ojo	
Documentation	George W Brown	
Test Results	☑ Complies as tested	❑ Fail
Total Number of Pages	47	

The Emissions and RF tests, which this report describes, were performed by an independent engineering consulting firm, ITC Engineering Services, Inc. (ITC), in accordance with the emissions requirements specified in the FCC rules, 47CFR Part 15, Subpart C.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications specified in this report for compliance must be implemented in all production units for compliance to be maintained.

1.2 Accuracy of Test Data

The test results contained in this report accurately represents the emissions generated by the sample equipment under test. ITC as an independent testing laboratory declares that the equipment as tested complies with the functional requirements of:

FCC standard 47CFR 15.205, 15.207, 15.209 & 15.247.

General Information (cont.)

1.3 Tests Performed on AirTegrity 4000:

Emissions Requirements:

- POWER LINE CONDUCTED EMISSIONS PER FCC 47CFR 15.207
- OPEN FIELD RADIATED EMISSIONS PER FCC 47CFR 15.209.

RF Requirements:

- SPURIOUS EMISSIONS PER FCC 47CFR 15.247.
- 6dB BANDWIDTH MEASUREMENT PER FCC 47CFR 15.247.
- PEAK POWER OUTPUT PER FCC 47CFR 15.247.
- POWER SPECTRAL DENSITY PER FCC 47CFR 15.247

PREPARED BY:	REVIEWED BY:
George Brown	M Gbadebo
George W Brown	Michael Gbadebo, PE
Technical Writer	(California License # 11303) Chief Engineer

1.4 Declaration/Disclaimer

ITC Engineering Services, Inc. reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. ITC Engineering Services, Inc. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from ITC Engineering Services, Inc. issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full with our written approval. The applicant/manufacturer shall not use this report to claim product endorsement by NIST, NVLAP or any US Government agency.

ITC Engineering Services, Inc. is:
Accepted by the Federal Communications Commission (FCC) for FCC Methods, CISPR Methods and AUSTEL Technical Standards (Ref: NVLAP Lab Code 200172-0)

Approved by the Industry Canada for Telecom Testing

Certified by Rockford Engineering Services GmbH for EMC Testing according to the European EMC Directive 89/336/EEC per EN45001

Certified by Reg. TP for EMC Testing according to the European EMC Directive 89/336/EEC per EN45001 for RES GmbH (DAR-Registration number: TTI-P-G 159/98-00)

Certified by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI) for EMC testing, in accordance with the Regulations for Voluntary Control Measures, Article 8, Registration Numbers C-1582 and R-1497.

1.5 Description of the EUT

Product Description : CPE wireless access point with two 802.11b RF modules.
Model : 4000 with Seneo Radio Card.
Frequency Range : 2.400GHz – 2.4835GHz.
Support Channel : 11 Channels.
EUT Input Voltage : 12Vdc, 3A
AC Adapter Input Voltage: 120Vac/240Vac, 50/60Hz

1.6 Channel Number and Frequencies.

Channel Number	Channel center Frequency (GHz)
1	2.412
2	2.417
3	2.422
4	2.427
5	2.432
6	2.437
7	2.442
8	2.447
9	2.452
10	2.457
11	2.462

1.7 Antenna Specification.

Antenna Type	Manufacturer	Model Number	Antenna Gain
Yaggi	Poynting	YAGI – A0005	13dBi
Omni(Dipole)	HyperLink Technologies	HG2415U-PRO	15dBi
5" Mobile Omni	e-digital wireless	ANT-5.5G2.4GMOBILE	5.5
Directional Panel	Til-Tek	TA - 2408	17dBi
Grid Parabolic	Mark Antennas	HP-24A24N	22dBi

1.8 Test Methodology

The Emissions and RF tests, which this report describes, were performed by an independent engineering firm, ITC Engineering Services, Inc., in accordance with the FCC test procedure.

1.9 Test Setup Configurations

AirTegrity's products, Model 4000 Chassis Seneo Radio card or the "EUTs", as referred to in this report. The EUT has the following port(s) and connector(s):

1.10 EUT Ports & Connectors: External:

1. (5) RJ - 45 Ports.
2. (1) Serial Port
3. (1) USB Port
4. (1)Power Supply
5. (3) Antenna Connectors.

1.11 List of peripherals used during Test

No	Description	Manufacturer	Model Name	Serial Number
1	NOTEBOOK	SONY	PCG-974L	3418746
2	AC ADAPTER	SONY	PCGA-AC19V1	0347992
3	HUB	NETGEAR	FS605 v2	FS62147CB 246041
4	AC-DC ADAPTER	NETGEAR	DV-07580S-B25	PWR-075-101

Test Voltage: 120/230VAC, 50/60Hz

1.12 General Test Remarks

The EUT and peripheral equipment were operated under the following conditions during testing

☐	Standby	☐	Test Program (H - Pattern)
☐	Test Program (Color Bar)	☒	Test Program (Customer Specific)
☐	Laptop Video Signal Input	☐	Signal Generator Input
☐	Continuous Audio Tone (1kHz)	☐	Cycled Audio Tone (1kHz)
☐	Printer/Parallel Function	☒	Modem/Serial Function
☐	Serpentine Program with I/O	☐	Serpentine Program without I/O
☐	Practice Operation	☒	Normal Operating Mode
☐	Essential Operation (Functional Safety)	☐	Continuous Unmonitored Operation
☒	Continuous Monitored Operation	☐	Non-Continuous Operation

1.13 The requirements according to the technical regulations are

☑	**Met**	☐	**Not Met**

1.14 The Equipment under Test does

☑ Fulfill the general approval requirements
☐ Not fulfill the general approval requirements

PART 2 POWER LINE CONDUCTED Emissions per FCC 47 CFR Part 15.207 Class A

2.1 EUT Configuration and Test Procedure

The EUT, Airtegrity 4000 router, was set up in a shielded room. It was powered and tested in a functional mode to exercise functionality. The functionality exercised by software provided by the manufacturer. The EUT was setup on a wooden table, 80cm above the horizontal reference plane and 40cm away from the vertical reference plane in a shielded room, with the suggested configuration given in FCC Measurement Procedure ANSI C63.4-2001. Excess cord of the EUT was bundled in the center or shortened to appropriate length.

2.2 Site Used

☑ Test Site 1: Shielded Room: 16' x 12' x 9'
☐ Test Laboratory 19' x 20.5' x 11.5'
☐ Semi-Anechoic Absorber Lined Shielded Room

2.3 Administrative Details

Test Date:	May 03 - 10,2005
Test Engineer:	Femi Ojo
Temperature:	67ºF
Humidity:	42%

2.4 Test Equipment Used

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8568B	2841A04315	11-29-05
Spectrum Analyzer Display	Hewlett-Packard	85662A	2848A17028	11-29-05
Quasi Peak Adapter	Hewlett-Packard	85650	2521A00871	11-29-05
Preselector	Hewlett-Packard	85685A	2620A00265	11-29-05
LISN (25 Amp)	EMCO	38825/2	1229	02-15-06

2.5 Software Used

Description	Manufacturer	Model Name	Version Number	Calibration/Validation Date
Test Software	ITC	1.04b1	Rev. 4	02-05-06
Cable Software	ITC	Line Conducted	Rev. 4	02-21-06

Spectrum Analyzer Configuration (during swept frequency scans)

Analyzer Mode (for Peak Measurements)	Peak
Sweep Speed	Manual
IF Bandwidth	9 kHz
Resolution Bandwidth	10 kHz
Video Bandwidth	10 kHz
Quasi Peak Adapter Mode	Disabled
Average/Quasi Peak Adapter Bandwidth	9 kHz
Attenuation	0 dB
Analyzer Mode (for Quasi-Peak Measurements)	Quasi-Peak
Resolution Bandwidth	100 kHz
Video Bandwidth	100 kHz
Quasi Peak Adapter Mode	Normal
Analyzer Mode (for Average Measurements)	Video Averaging
Resolution Bandwidth	100 kHz
Video Bandwidth	100 kHz
Quasi Peak Adapter Mode	Disabled

2.6 Conducted Emissions Test Results from .20 MHz to 29.91 MHz

The tables which follow show summaries of the highest conducted emissions on the current carrying conductors supplying power to the host device for the EUT.

INDICATED		CORRECTION		CORR	TURNTABLE		ANT	CLASS A		CLASS B			
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	FILTER	
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db	MODE	NOTES
0.20	47.5	-	0.9	48.4	-	-		79.0	-30.6	63.8	-15.4	QP	
0.52	28.2	-	1.1	29.3	-	-		73.0	-43.7	56.0	-26.7	QP	
0.58	19.4	-	1.0	20.4	-	-		73.0	-52.6	56.0	-35.6	QP	1
0.78	21.1	-	1.0	22.1	-	-		73.0	-50.9	56.0	-33.9	QP	
1.43	19.3	-	1.0	20.3	-	-		73.0	-52.7	56.0	-35.7	QP	
2.60	23.8	-	1.1	24.9	-	-		73.0	-48.1	56.0	-31.1	QP	2
3.12	25.2	-	1.2	26.4	-	-		73.0	-46.6	56.0	-29.6	QP	
5.24	19.5	-	1.3	20.8	-	-		73.0	-52.2	60.0	-39.2	QP	
5.78	21.3	-	1.3	22.6	-	-		73.0	-50.4	60.0	-37.4	QP	3
7.37	20.6	-	1.3	21.9	-	-		73.0	-51.1	60.0	-38.1	QP	
9.88	16.5	-	1.2	17.7	-	-		73.0	-55.3	60.0	-42.3	QP	4
10.01	16.3	-	1.2	17.5	-	-		73.0	-55.5	60.0	-42.5	QP	
11.89	14.2	-	1.5	15.7	-	-		73.0	-57.3	60.0	-44.3	QP	
14.28	20.7	-	1.9	22.6	-	-		73.0	-50.4	60.0	-37.4	QP	5
16.23	23.2	-	1.8	25.0	-	-		73.0	-48.0	60.0	-35.0	QP	
19.26	22.9	-	1.3	24.2	-	-		73.0	-48.8	60.0	-35.8	QP	6
20.87	22.4	-	1.2	23.6	-	-		73.0	-49.4	60.0	-36.4	QP	
21.91	25.6	-	1.2	26.8	-	-		73.0	-46.2	60.0	-33.2	QP	7
23.13	25.6	-	1.2	26.8	-	-		73.0	-46.2	60.0	-33.2	QP	
24.90	24.4	-	1.2	25.6	-	-		73.0	-47.4	60.0	-34.4	QP	8
29.11	38.1	-	1.2	39.3	-	-		73.0	-33.7	60.0	-20.7	QP	
29.91	37.0	-	1.2	38.2	-	-		73.0	-34.8	60.0	-21.8	QP	9

No Emissions of significant level were observed in the ranges 0.15MHz to 0.68MHz and 28.80MHz to 30MHz

2.7 Data Table Legend and Field Strength Calculation

Detector mode: Peak (P) or Quasi-Peak (QP) or Average (A)

The margin is calculated as follows:
Margin = Corrected Amplitude - Limit; where Corrected Amplitude = Amplitude + Cable Loss + Antenna Factor.

2.8 Remarks

The EUT meets the requirements of the test reference for power line conducted emissions class A.

POWER LINE CONDUCTED (cont.)

2.9 POWER LINE CONDUCTED Test Setup Photographs

Figure 1: Power Line Conducted Maximized Emissions Test Setup (Front View)

Figure 2: Power Line Conducted Maximized Emissions Test Setup (Front View)

PART 3 6 dB BANDWIDTH MEASUREMENT FOR DSSS per 47 CFR 15.247(a)(2)

3.1 EUT Configuration and Test Procedure

The EUT was set up on a wooden non-conductive tabletop in a Semi-Anechoic chamber, 80cm above the ground plane at a 3-meter distance from the receiving antenna. The EUT was transmitting at its maximum rate and was rotated 360 degrees azimuths with the search antenna polarity at a fixed height of 1-meter.Tests were repeated in the horizontal polarity. The trace was allowed to stabilize. The analyzer was the placed in 'max hold' mode to record signal level. The marker-delta function was used to obtain the -6dB bandwidth reading.

3.2 Administrative Details

Site Used:	Semi-Anechoic Absorber Lined Shielded Room
Test Date:	May 03 – May 10,2005
Test Engineer:	,Femi Ojo & Robert Kershaw
Temperature:	62.3ºF
Humidity:	53%

3.3 Test Equipment Used

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8564B	06004	02-16-06
Spectrum Analyzer Display	Hewlett-Packard	8564B	06004	02-16-06
Horn Antenna	EMCO	3115	8812-3050	02-03-06
Antenna Cable	Pumona	2256-X-48	N/A	N/A

3.4 Software Used

Description	Manufacturer	Model Name	Version Number	Calibration/Validation Date
Test Software	ITC	1.04b1	Rev. 4	02-05-06

Spectrum Analyzer Configuration (during swept frequency scans)
IF Bandwidth.....120 kHz
Measurements below 1000 MHz (unless stated otherwise)
Analyzer Mode (for Peak Measurements) ..... Peak/Log
Resolution Bandwidth..... 100 kHz
Video Bandwidth..... 100 kHz
Analyzer Mode (for Quasi-Peak Measurements)
Ouasi-Peak/Linear Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 1000 kHz
Measurements above 1000 MHz (unless stated otherwise)
Quasi-Peak Adapter Mode ..... Disabled
Analyzer Mode (for Peak Measurements) ..... Peak
Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 1000 kHz
Analyzer Mode (for Average Measurements)..... Video Filter
Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 10 Hz

3.5 Test Results:

Channel	Radio 0	Radio 1
01	8.4MHz	8.03MHz
06	8.2MHz	7.55MHz
11	7.2MHz	8.1MHz

The data above shows the 6dB bandwidth measured from the plots shown below. The minimum requirement for the 6dB bandwidth is 500KHz.

3.6 Remarks:

EUT meets the requirements of the test reference for 6dB bandwidth for DSSS.

3.7 6dB BANDWIDTH MEASUREMENT PLOTS

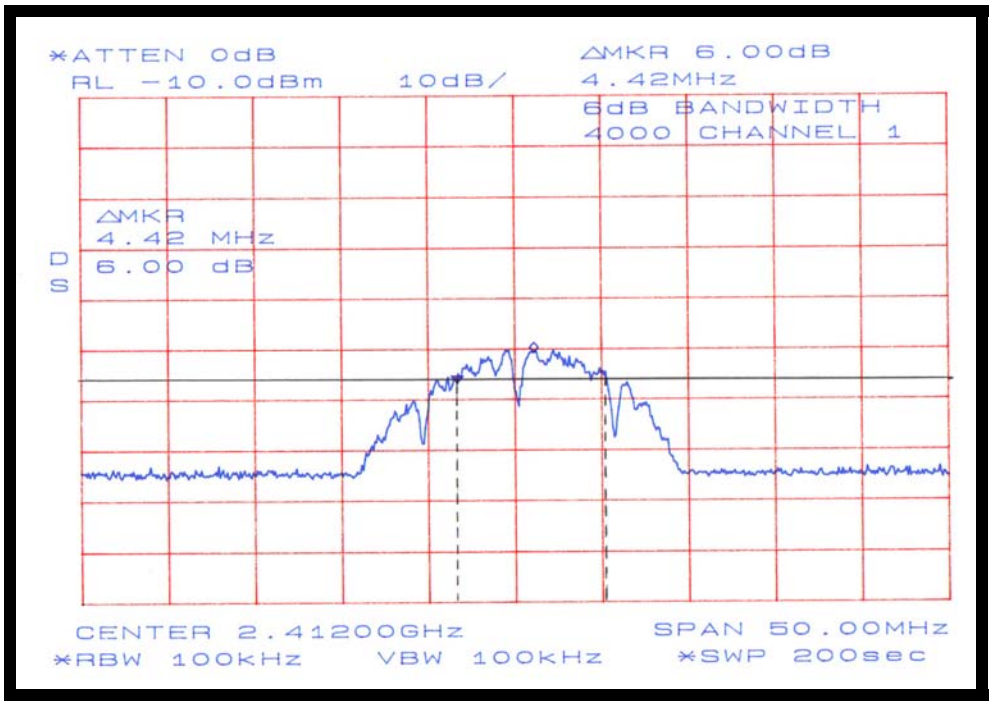

Figure 3: 6dB Bandwidth at 2.412 GHz at Channel 1 (RD 0)

6dB BANDWIDTH MEASUREMENT Plots (cont.)

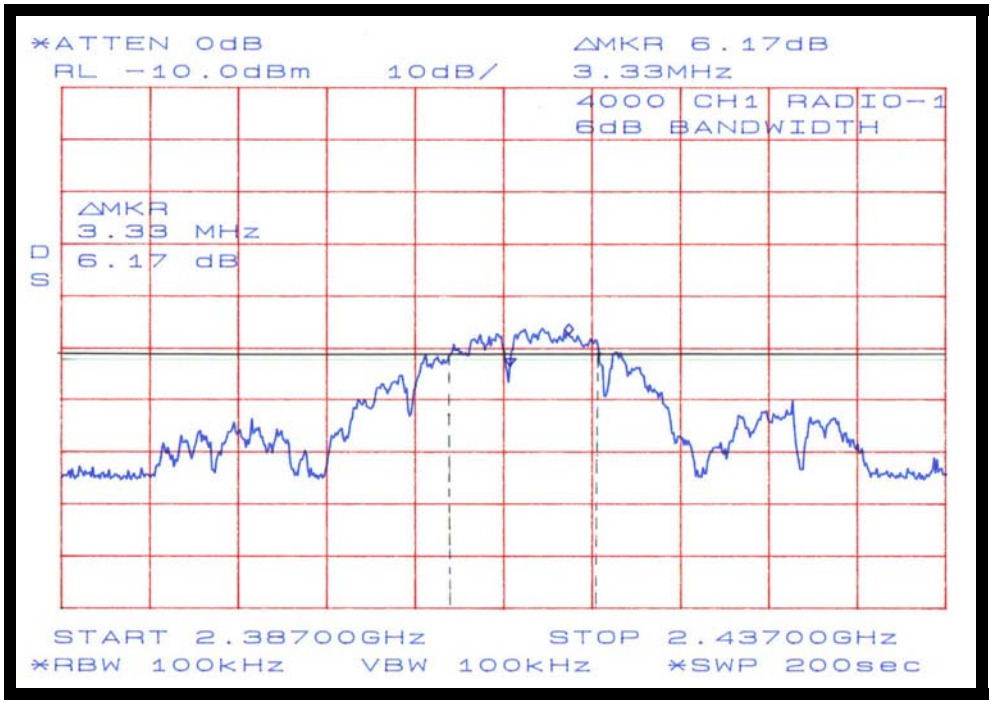

Figure 4: 6dB Bandwidth at 2.412 GHz at Channel 1 (RD 1)

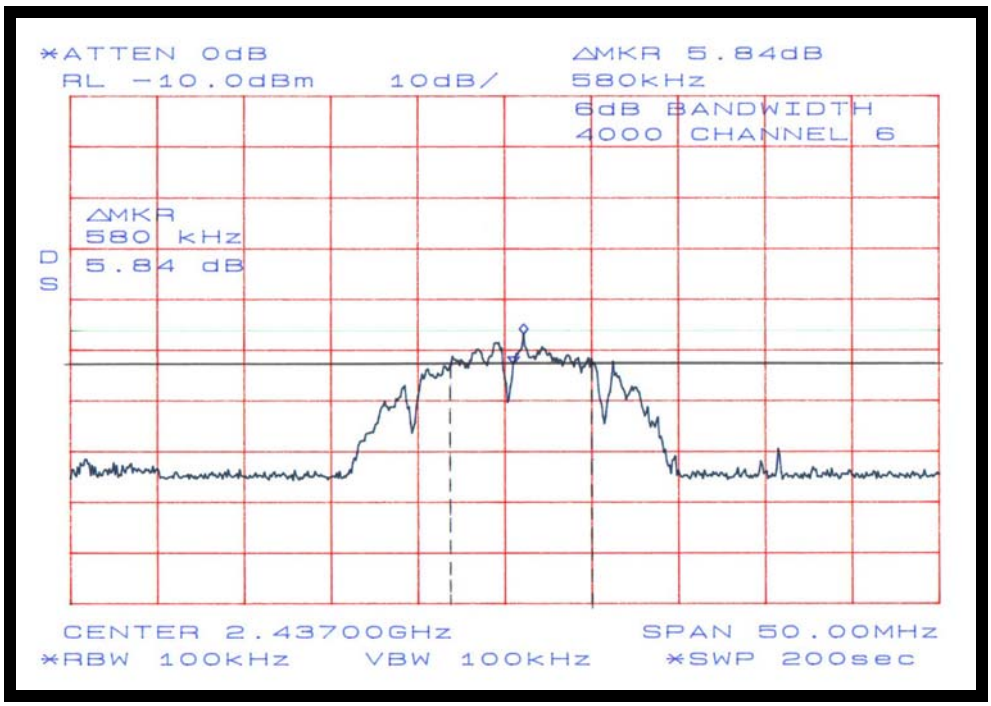

Figure 5: 6dB Bandwidth at 2.412 GHz at Channel 6 (RD 0)

6dB BANDWIDTH MEASUREMENT Plots (cont.)

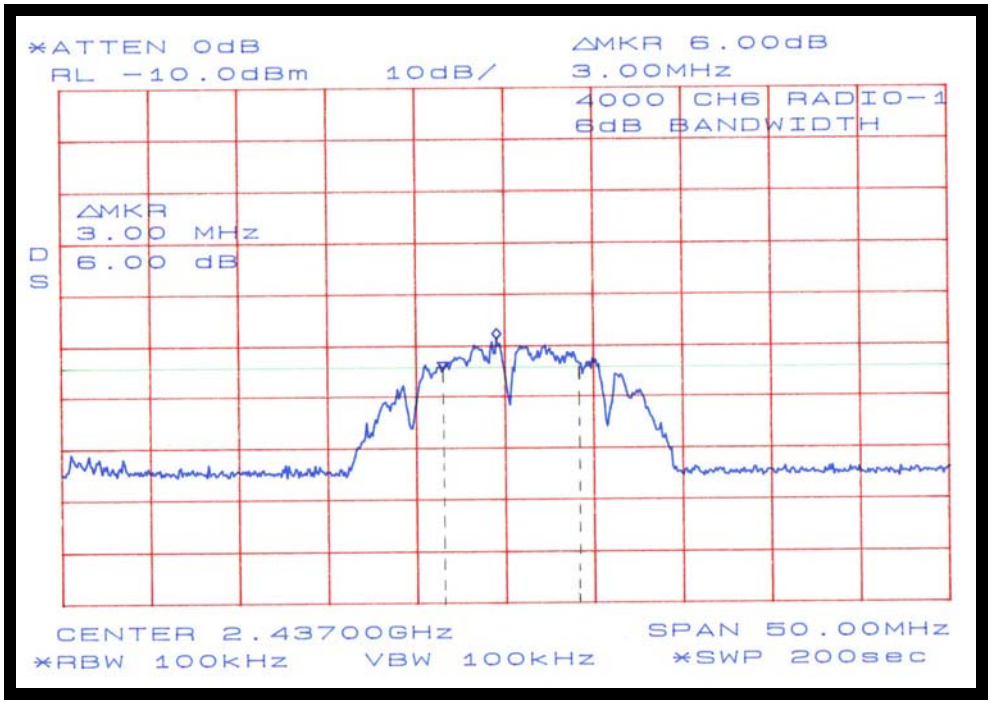

Figure 6: 6dB Bandwidth at 2.412 GHz at Channel 6 (RD 1)

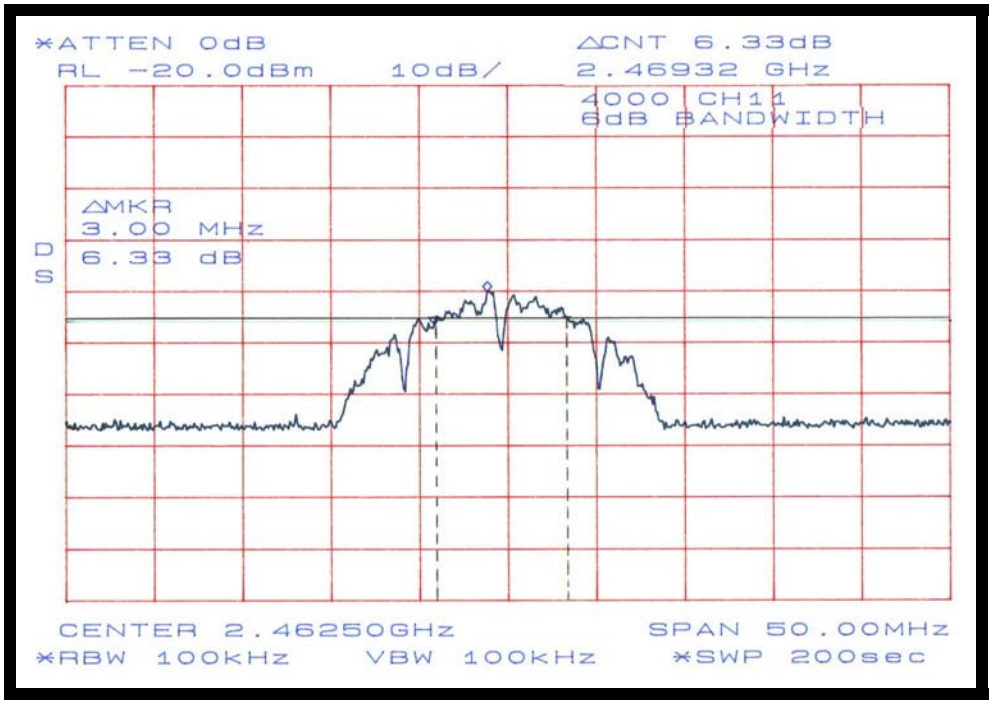

Figure 7: 6dB Bandwidth at 2.412 GHz at Channel 11 (RD 0)

6dB BANDWIDTH MEASUREMENT Plots (cont.)

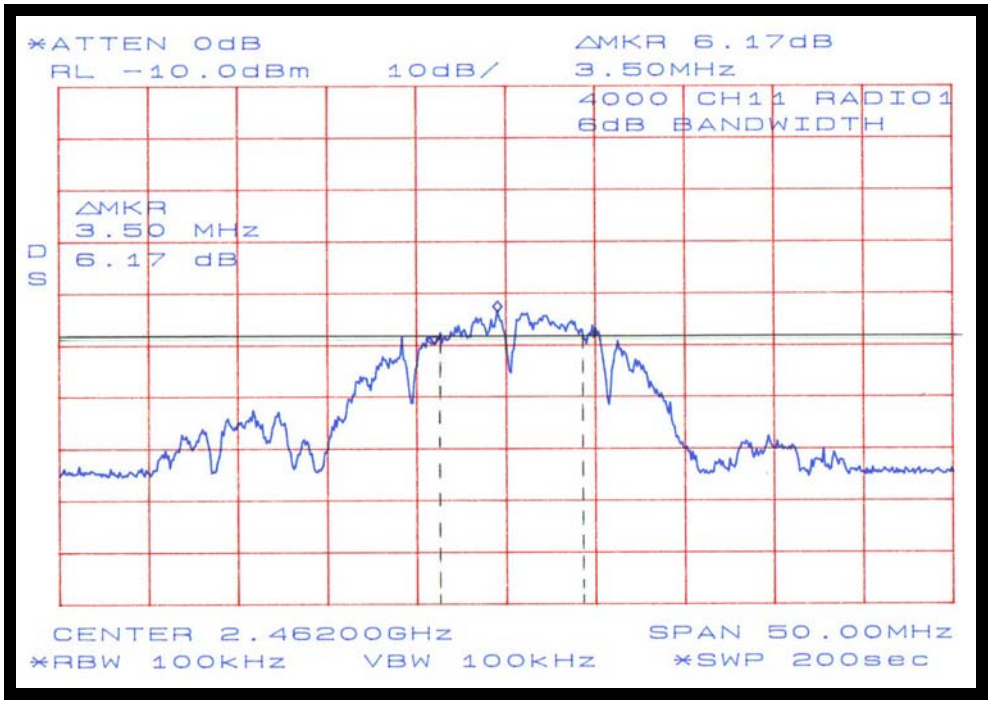

Figure 8: 6dB Bandwidth at 2.412 GHz at Channel 11 (RD 1)

3.8 6dB Bandwidth Measurement Setup Photographs

Test Setup Photographs for 6dB Bandwidth Measurement

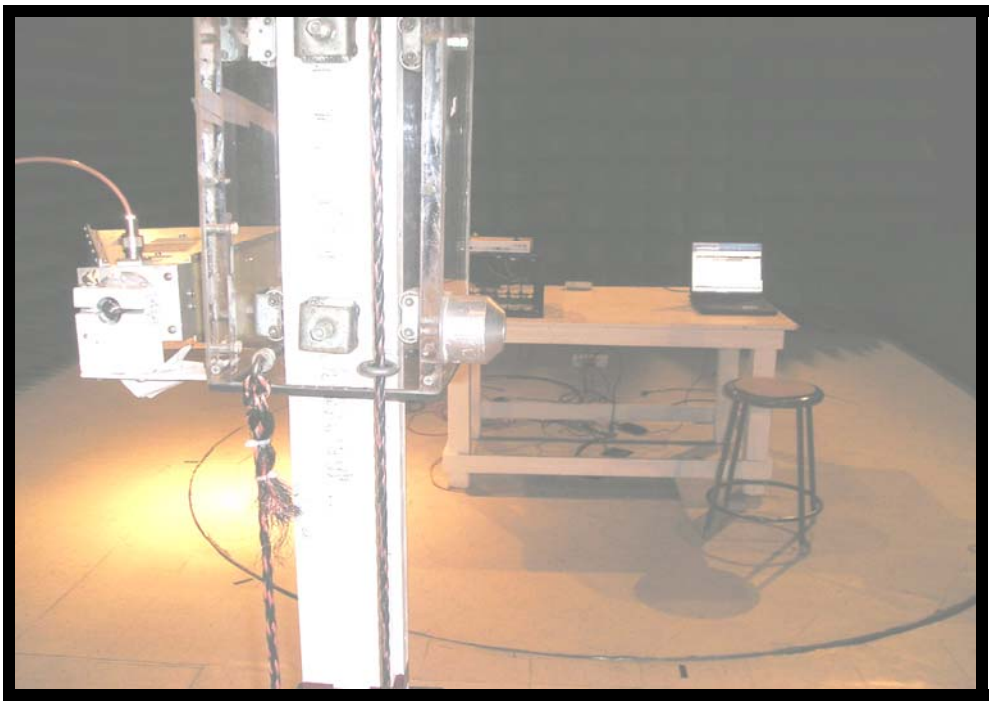

Figure 9: 6dB Bandwidth Test Set-up Photo (Front View)

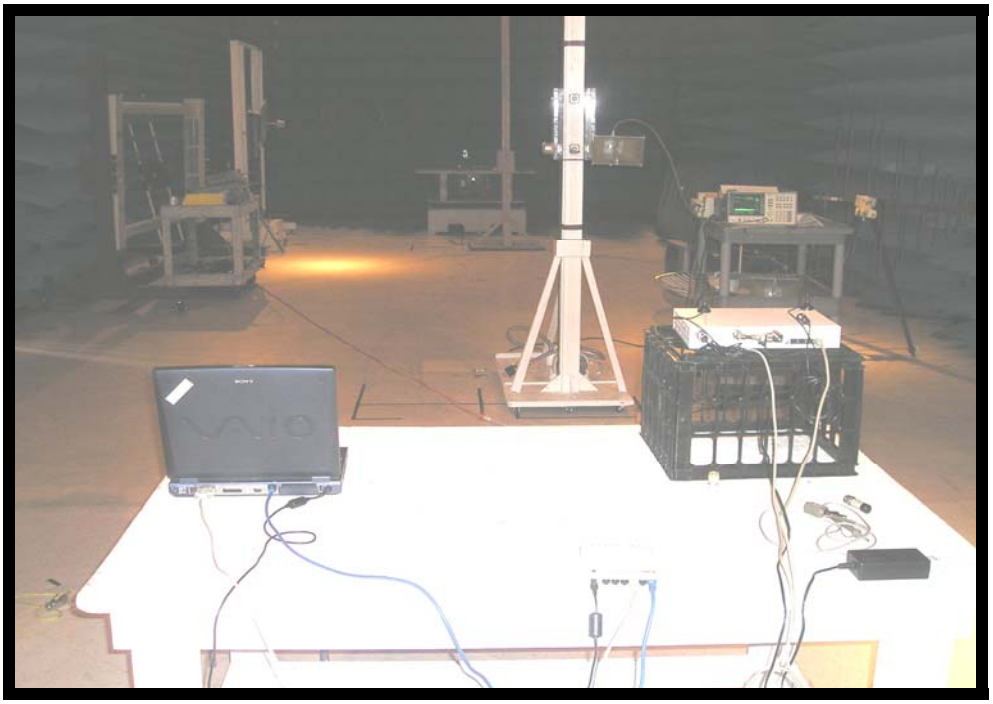

Figure 10: 6dB Bandwidth Test Set-up Photo (Rear View)

PART 4 PEAK OUTPUT POWER PER FCC 47CFR 15.247 (b) (3)

4,1 EUT Configuration and Test Procedure

The EUT was set up on a wooden non-conductive tabletop in a Semi-Anechoic chamber, 80cm above the ground plane and was connected to the spectrum analyzer. The peak output power were recorded for the low (channel 1), middle (channel 6) and high (channel11) channels. The values were recorded in dBm and later converted to mW.The maximum peak output power shall not exceed 1 watt.

4.2 Administrative Details

Test Site Used:	Semi-Anechoic Absorber Lined Shielded Room
Test Date:	May 03 – May 10,2005
Test Engineer:	,Femi Ojo & Robert Kershaw
Temperature:	69.7ºF
Humidity:	55%

4.3 Test Equipment Used

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8564B	06004	02-16-06
Spectrum Analyzer Display	Hewlett-Packard	8564B	06004	02-16-06
Horn Antenna	EMCO	3115	8812-3050	02-03-06
Antenna Cable	Pumona	2256-X-48	N/A	N/A

4.4 Software Used

Description	Manufacturer	Model Name	Version Number	Calibration/Validation Date
Test Software	ITC	1.04b1	Rev. 4	02-05-06

4.5 Test Results:

Channel	RF Output dBm	Cable Loss dBm	Output Peak Power dBm	mW
CH 01 Radio 0	19.83	0.33	20.16	103.75
CH 06 Radio 0	19.83	0.33	20.16	103.75
CH 11 Radio 0	19.67	0.33	20.00	100.00
CH 01 Radio 1	19.67	0.33	20.00	100.00
CH 06 Radio 1	16.83	0.33	17.16	51.99
CH 11 Radio 1	16.67	0.33	17.00	50.12

4.6 Remarks:

EUT meets the requirements of the test reference for output peak power measurement

4.7 PEAK POWER PLOTS

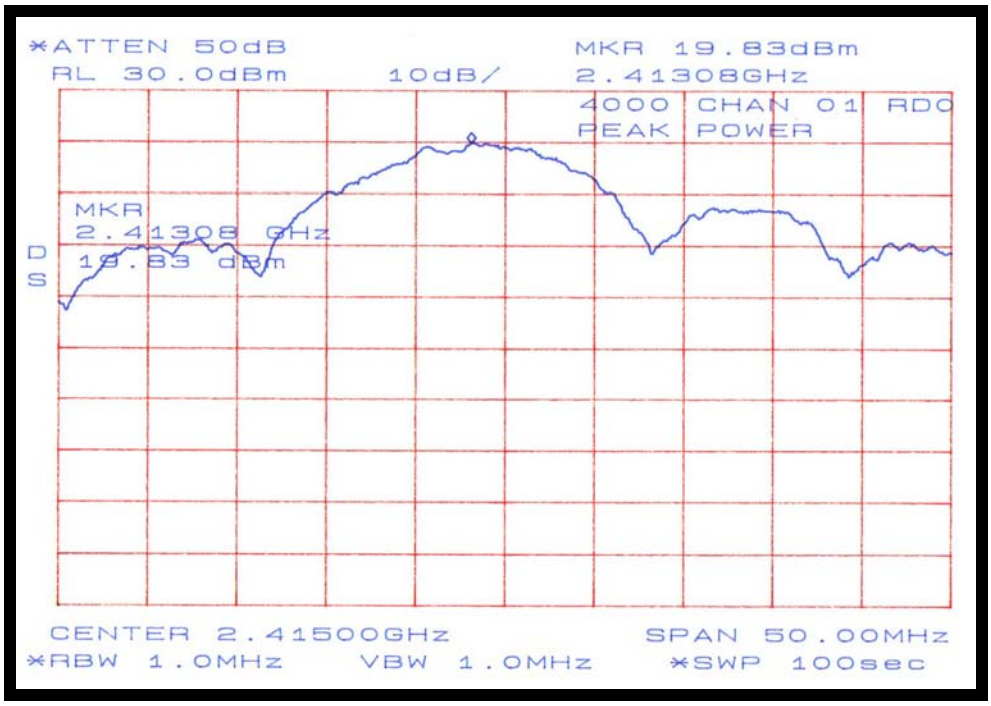

Figure 11: Peak Power, Channel 1, RD 0 at 2.41308 GHz

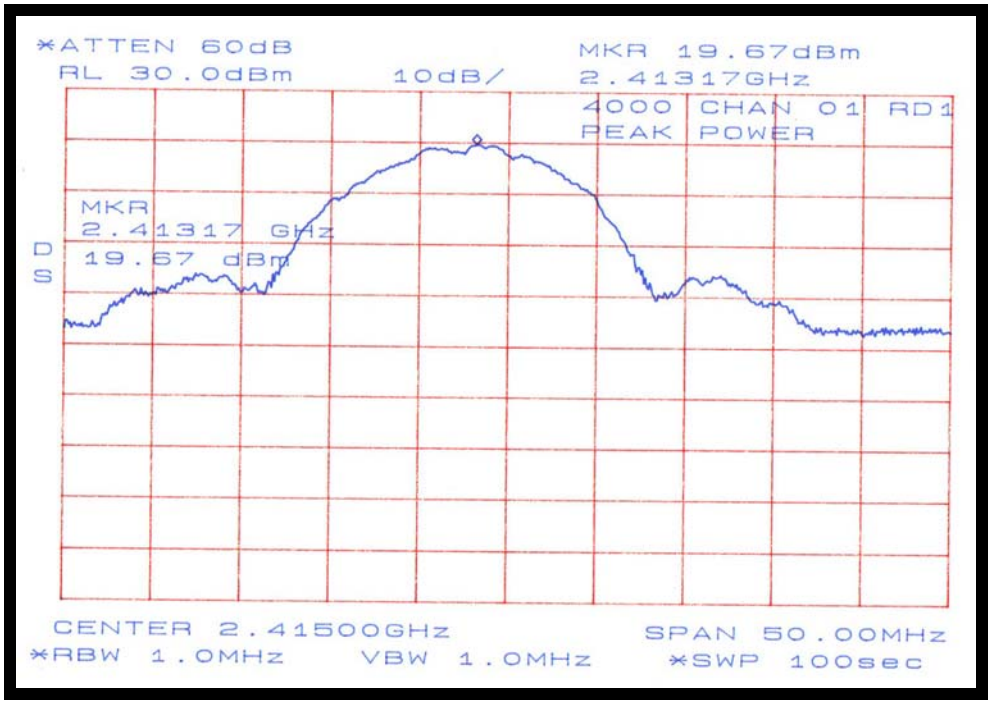

Figure 12: Peak Power at 2.41317 GHz, Channel 1 at RD1

PEAK POWER PLOTS (cont).

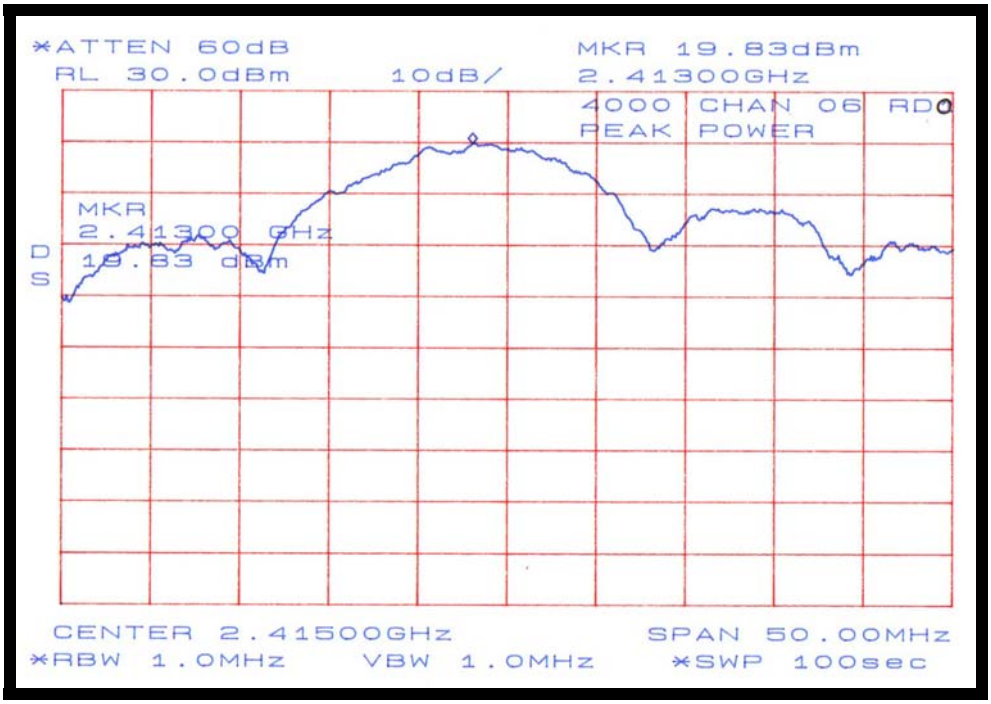

Figure 13: Peak Power at Channel 6, RD 0 at 2.41300 GHz

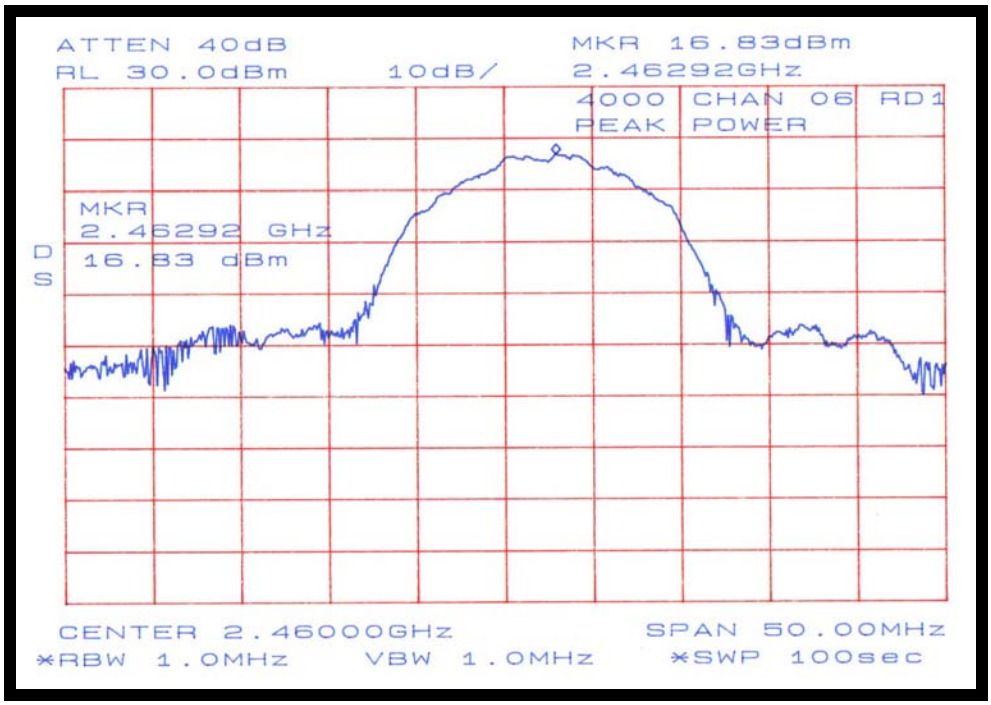

Figure 14: Peak Power at 2.46292 GHz at Channel 6, and at RD 1.

PEAK POWER PLOTS (cont).

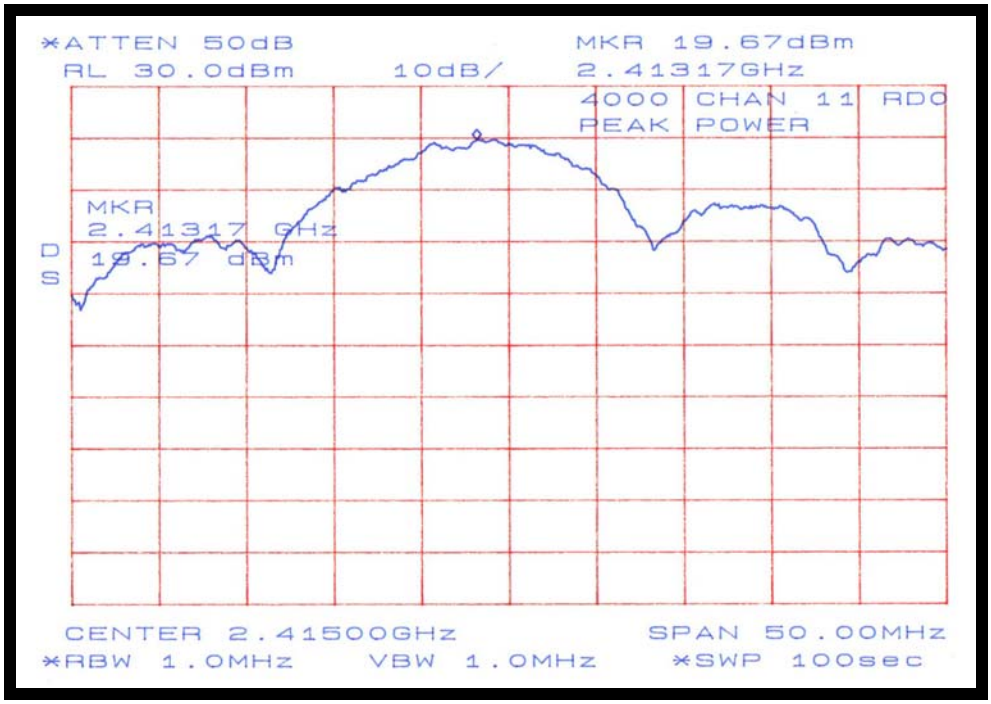

Figure 15: Peak Power at 2.41317 GHz Channel 11 at RD 0

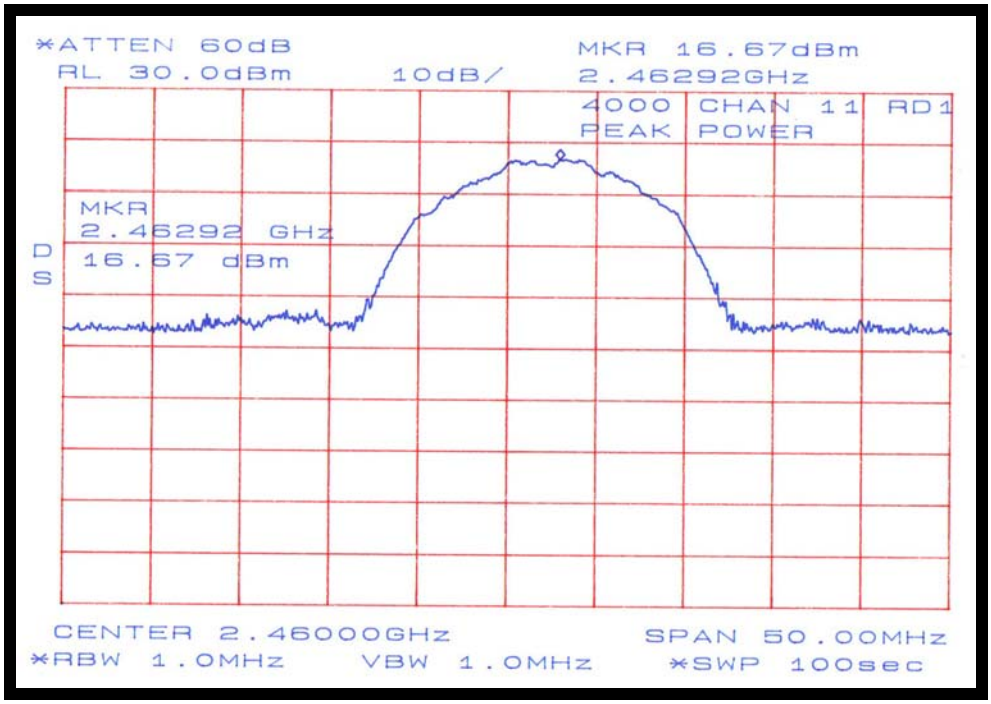

Figure 16: Peak Power at 2.46292GHz, Channel 11 at RD 1

4.8 Peak Power Setup Photos

Test Setup Photographs for Peak Power

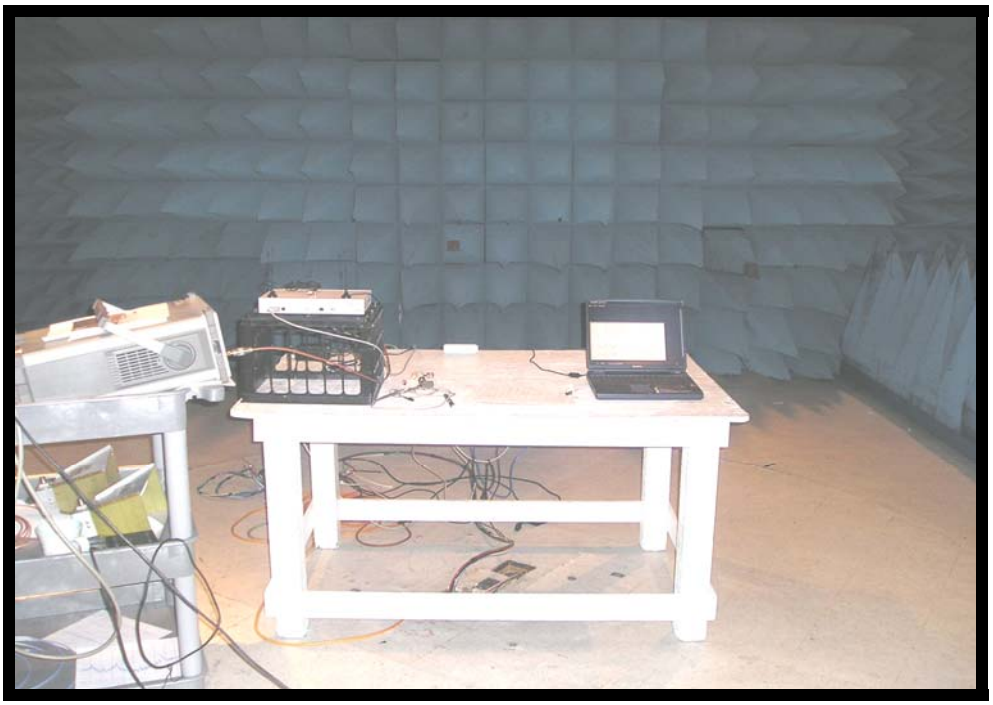

Figure 17: Peak Power Test Set-up Photo (Front View)

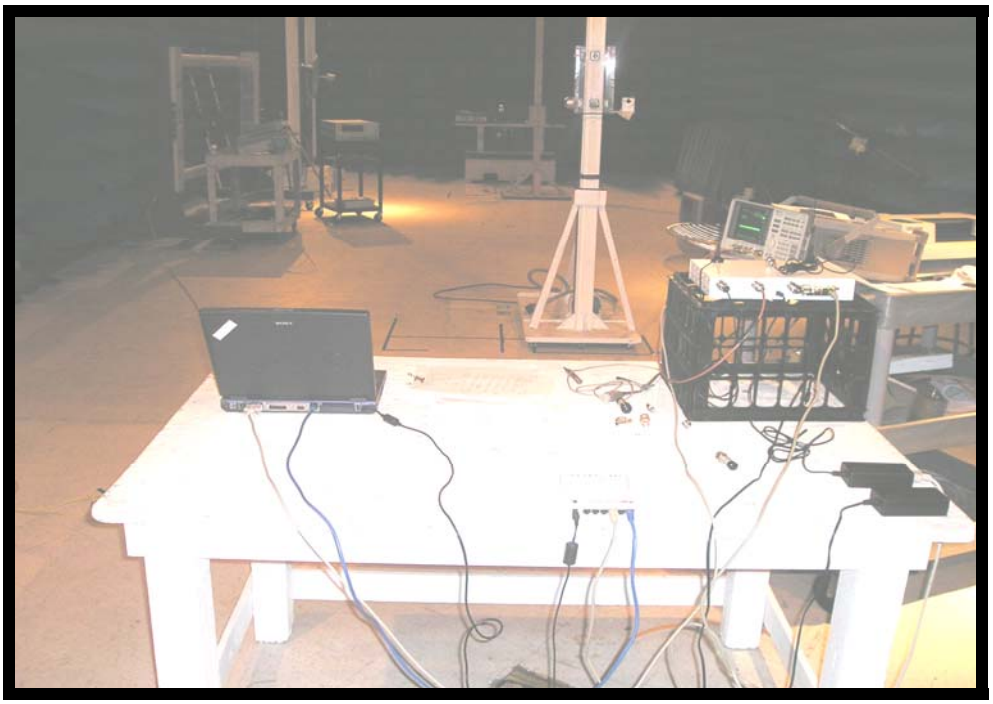

Figure 18: Peak Power Test Set-up Photo (Rear View)

PART 5 SPURIOUS EMISSIONS per FCC 47CFR 15.247(c)

5.1 EUT Configuration and Test Procedure

The EUT,Air Tegrity 4000 with Seneo radio card, was connected to peripherals as listed in the list of peripherals section, and tested according to the requirements specified in FCC 47CFR 15.247.The tests were first performed with the search antenna in vertical polarity and repeated in the horizontal polarity. High emissions were analyzed in detail by operating the spectrum analyzer in fixed tune mode to determine the precise amplitude of the emissions. The analyzer was then placed in 'max-hold' mode to record the signal level. While doing so, the interconnecting cables were moved around, and the antenna height was varied between 1meter and 4meters.
For measurements below 1GHz, the EUT was setup on an Open Area Test Site (OATS) at a 10meter distance from the receiving antenna and was rotated 360 degrees azimuth.For measurement above 1GHz, the EUT was setup in a semi anechoic chamber at a 3meter distance from the receiving antenna. Functionality was exercised by using software provided by the manufacturer. Excess cords of the EUT were bundled and shortened to appropriate length.

5.2 Site Used

☑ Test Site 1: Shielded Room: 16' x 12' x 9'
☐ Test Laboratory 19' x 20.5' x 11.5'
☑ Semi-Anechoic Absorber Lined Shielded Room

5.3 Administrative Details

Test Date:	May 03 – 10 ,2005
Test Engineer(s):	Lan Vu, Femi Ojo & Robert Kershaw

5.4 Environmental Conditions

Temperature:	65°F
Humidity:	48%

5.5 Test Equipment Used

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8568B	2841A04315	11-29-05
Spectrum Analyzer Display	Hewlett-Packard	85662A	2848A17028	11-29-05
Quasi Peak Adapter	Hewlett-Packard	85650	2521A00871	11-29-05
Preselector	Hewlett-Packard	85685A	2620A00265	11-29-05
Biconical Antenna	EMCO	3104	3667	02-03-06
L. P. Ant. (200-1000 MHz)	EMCO	3146	9510-4202	02-03-06

5.6 Measurements above 1GHz.

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8564B	06004	02-16-06
Spectrum Analyzer Display	Hewlett-Packard	8564B	06004	02-16-06
Horn Antenna	EMCO	3115	8812-3050	02-03-06
Antenna Cable	Pumona	2256-X-48	N/A	N/A

5.7 Software Used

Description	Manufacturer	Model Name	Version Number	Calibration/Validation Date
Test Software	ITC	1.04b1	Rev. 4	02-05-06
Antenna Software	ITC	L.P-V/H 10m	Rev. 4	02-05-06
Antenna Software	ITC	B-V/H 10m	Rev. 4	02-05-06
Cable Software	ITC	OATS 30MHz-1GHz	Rev. 4	02-01-06

Spectrum Analyzer Settings

IF Bandwidth.....120 kHz
Measurements below 1000 MHz (unless stated otherwise)
Analyzer Mode (for Peak Measurements) ..... Peak/Log
Resolution Bandwidth ..... 100 kHz
Video Bandwidth ..... 100 kHz
Analyzer Mode (for Quasi-Peak Measurements)
Ouasi-Peak/Linear Resolution Bandwidth ..... 1000 kHz
Video Bandwidth ..... 1000 kHz
Measurements above 1000 MHz (unless stated otherwise)
Quasi-Peak Adapter Mode..... Disabled
Analyzer Mode (for Peak Measurements) ..... Peak
Resolution Bandwidth ..... 1000 kHz
Video Bandwidth ..... 1000 kHz
Analyzer Mode (for Average Measurements) ..... Video Filter
Resolution Bandwidth ..... 1000 kHz
Video Bandwidth ..... 10 Hz

Data Table Legend and Field Strength Calculation

Detector mode: Peak (P) or Quasi-Peak (QP) or Average (A)

The margin is calculated as follows:

Margin = Corrected Amplitude - Limit; where Corrected Amplitude = Amplitude + Cable Loss + Antenna Factor.

5.8 Remarks:

EUT meets the requirements of the test reference for spurious emissions(Radiated).There was no emissions of significant level.

5.9 Test Result :

Spurious Emissions below 1 GHz(Class A)

INDICATED		CORRECTION		CORR	TURNTABLE		ANT	CLASS A		CLASS B			
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	FILTER	
MHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	db	MODE	NOTES
33.06	3.8	10.5	2.0	16.4	60	1.0	VB	40.0	-23.6	30.0	-13.6	P	
33.06	-0.6	11.1	2.0	12.5	0	1.0	HB	40.0	-27.5	30.0	-17.5	P	
66.02	0.7	8.4	3.1	12.2	0	1.0	HB	40.0	-27.8	30.0	-17.8	P	
66.02	7.6	8.1	3.1	18.8	0	1.0	VB	40.0	-21.2	30.0	-11.2	P	
165.07	7.1	14.8	5.1	27.0	270	1.0	VB	40.0	-13.0	30.0	-3.0	P	
165.07	5.1	14.4	5.1	24.6	270	2.0	HB	40.0	-15.4	30.0	-5.4	P	
198.01	-3.0	17.3	5.7	19.9	0	1.0	HB	40.0	-20.1	30.0	-10.1	P	
198.12	3.0	18.0	5.7	26.6	0	1.0	VB	40.0	-13.4	30.0	-3.4	P	
330.00	-2.9	14.4	7.3	18.8	0	1.0	VL	47.0	-28.2	37.0	-18.2	P	
330.01	-1.8	14.0	7.3	19.5	0	1.0	HL	47.0	-27.5	37.0	-17.5	P	
660.01	-2.5	20.0	11.0	28.5	0	1.0	HL	47.0	-18.5	37.0	-8.5	P	
660.13	-1.1	19.6	11.0	29.5	0	1.0	VL	47.0	-17.5	37.0	-7.5	P	
792.09	-8.4	21.2	12.7	25.5	0	1.0	VL	47.0	-21.5	37.0	-11.5	P	

Test Plots.

Spurious emissions above 1GHz Plots.

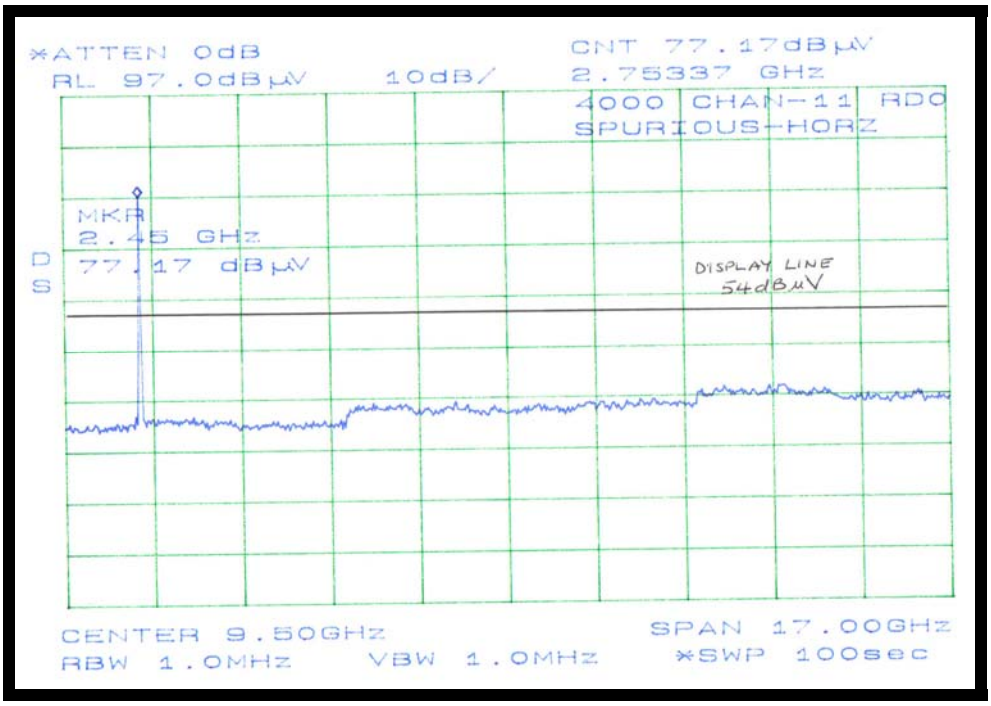

Figure 19: Channel 11 at RD 0 (Spurious 1 GHz – 18 GHz with mini omni antenna)

Fundamental Frequency= 2.45GHz
Marker @Fundamental Frequency= 77.17dBµV.

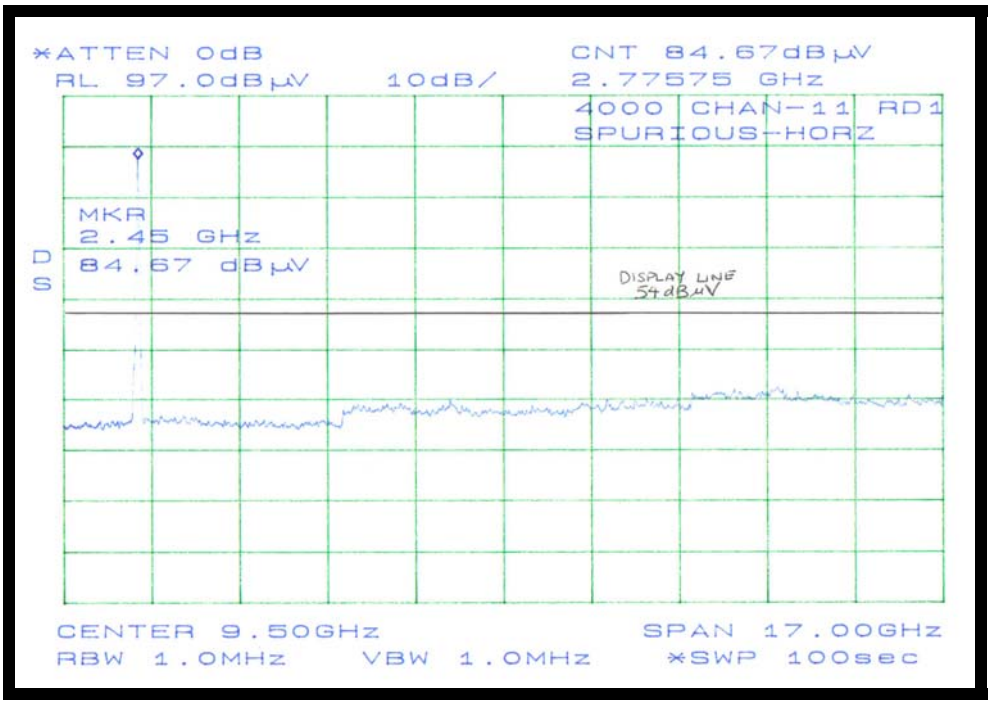

Figure 20: Channel 11 at RD 1 (Spurious 1 GHz – 18 GHz with mini omni antenna)

Fundamental Frequency= 2.45GHz
Marker @Fundamental Frequency= 84.67dBµV.

Spurious Emission Plots (Cont.)

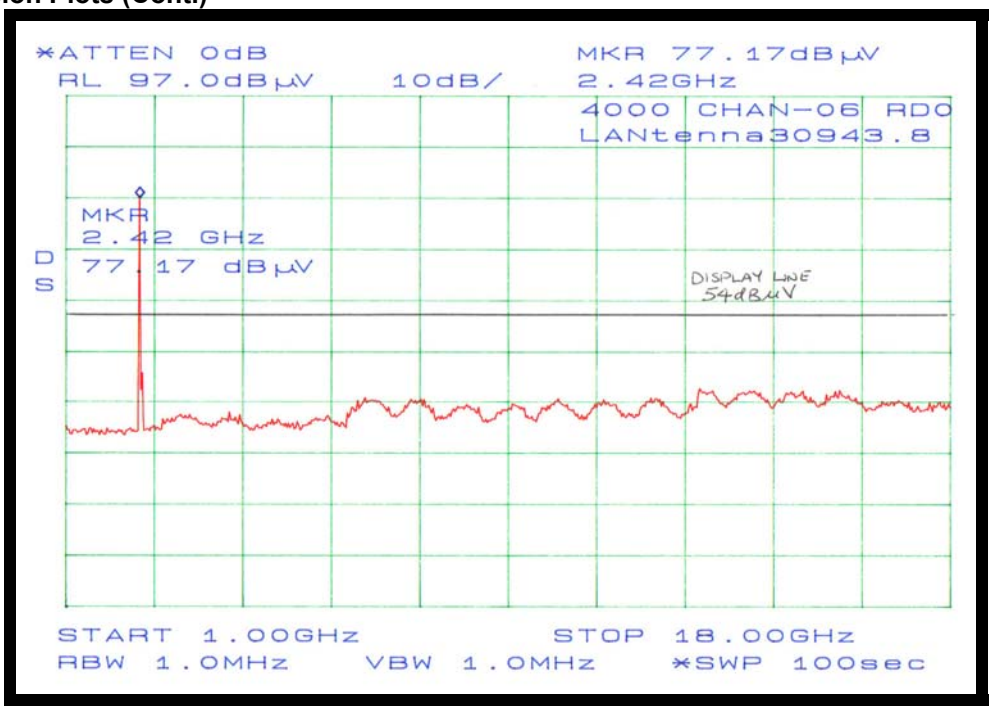

Figure 21: Channel 06 at RD 0 (Spurious 1 GHz – 18 GHz with Panel antenna)

Fundamental Frequency= 2.42GHz
Marker @Fundamental Frequency= 77.17dBµV.

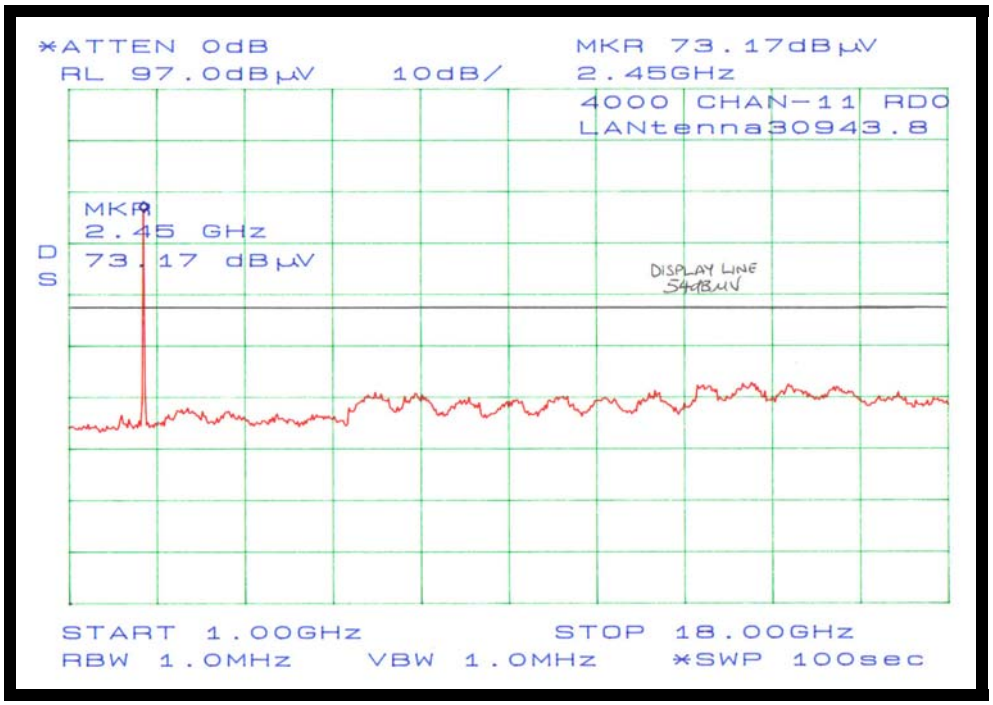

Figure 22: Channel 11 at RD 0 (Spurious 1 GHz – 18 GHz with Panel antenna)

Fundamental Frequency= 2.45GHz
Marker @Fundamental Frequency= 73.17dBµV.

Spurious Emission Plots (Cont.)

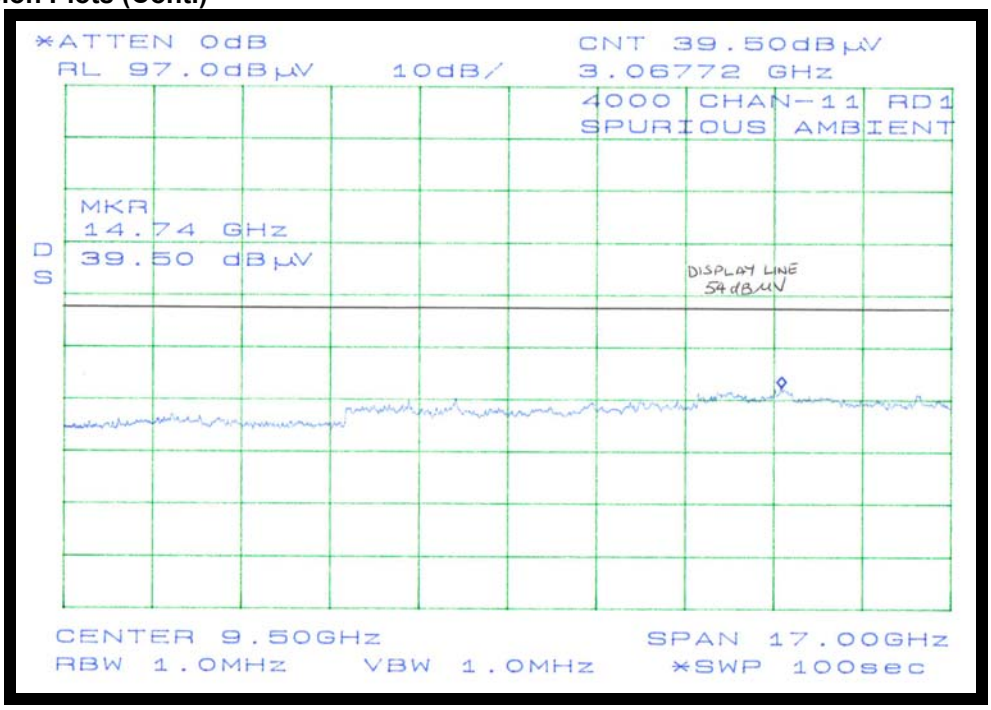

Figure 23: Spurious emissions Ambient (1 GHz – 18 GHz)

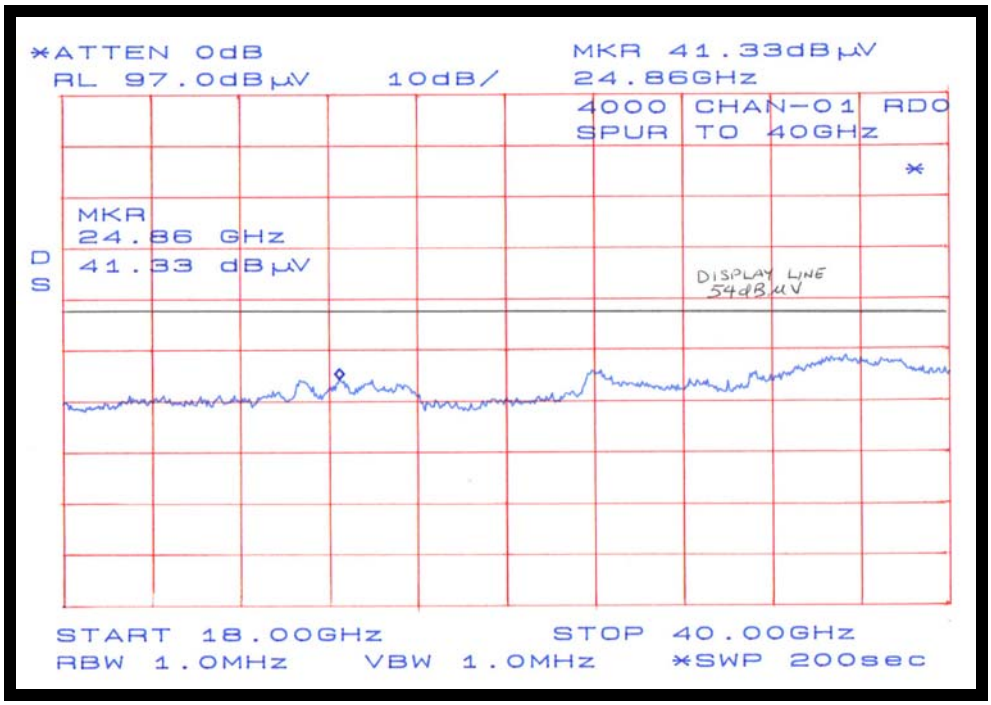

Figure 24: Channel 1 at RD 0 (Spurious 18 GHz – 40 GHz with mini omni antenna)

Spurious Emission Plots (Cont.)

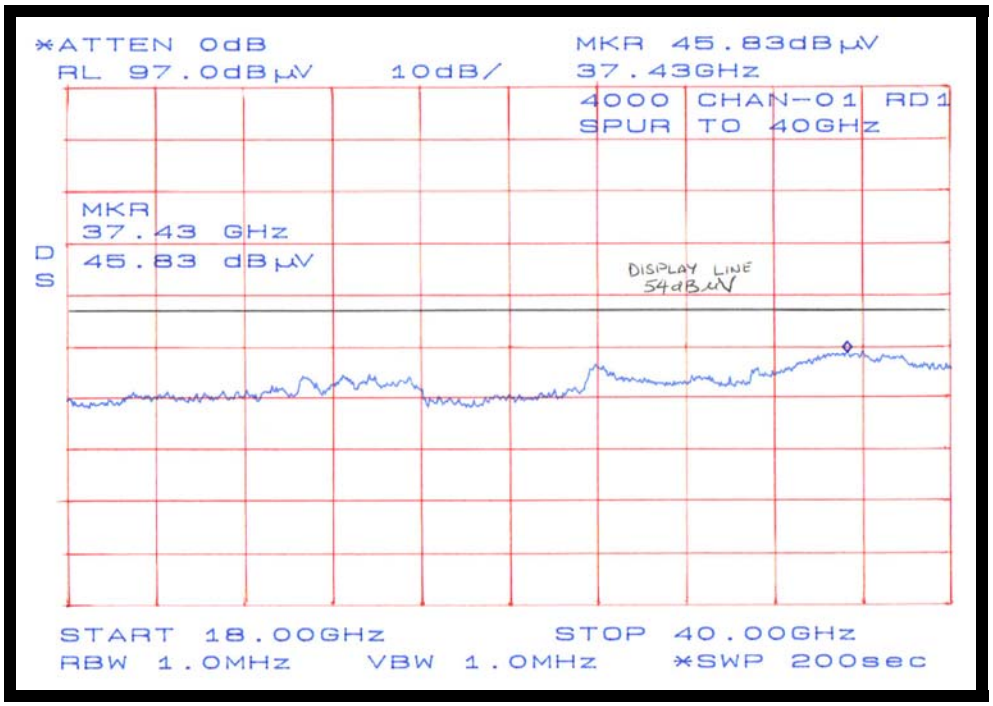

Figure 25: Channel 1 at RD 1 (Spurious 18 GHz – 40 GHz with mini omni antenna)

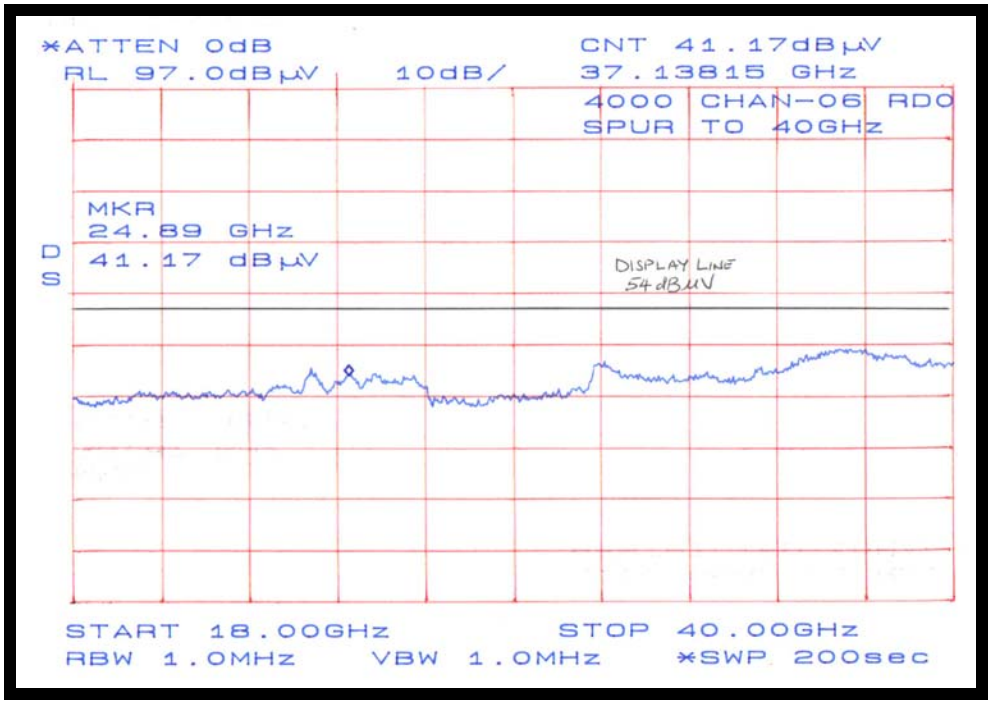

Figure 26: Channel 6 at RD 0 (Spurious 18 GHz – 40 GHz with mini omni antenna)

Spurious Emission Plots (Cont.)

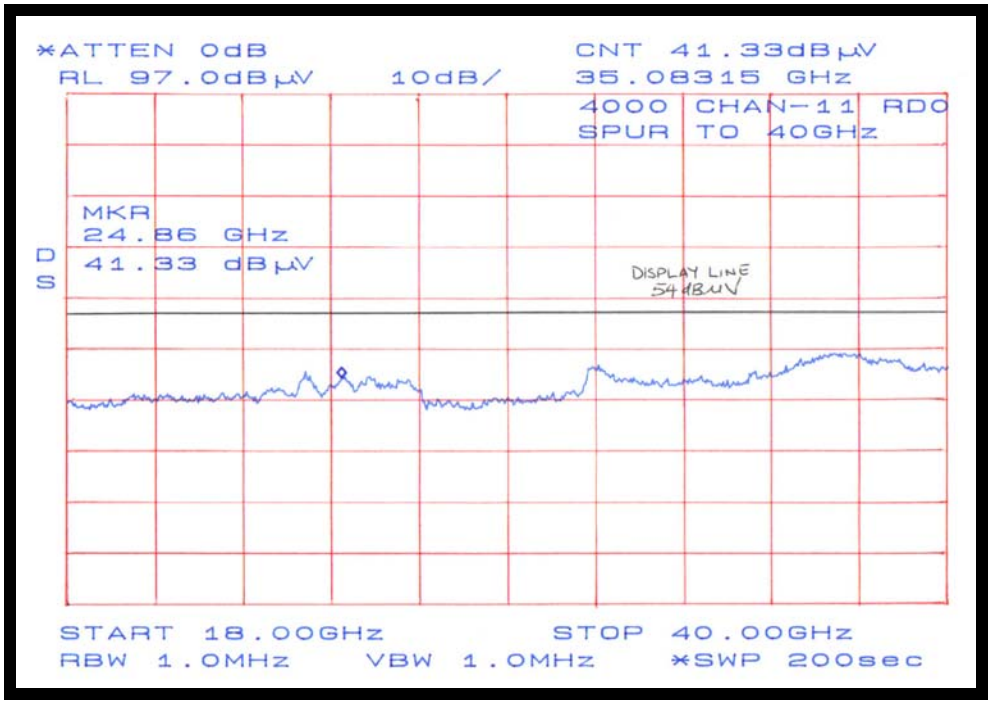

Figure 27: Channel 11 at RD 0 (Spurious 18 GHz – 40 GHz with mini omni antenna)

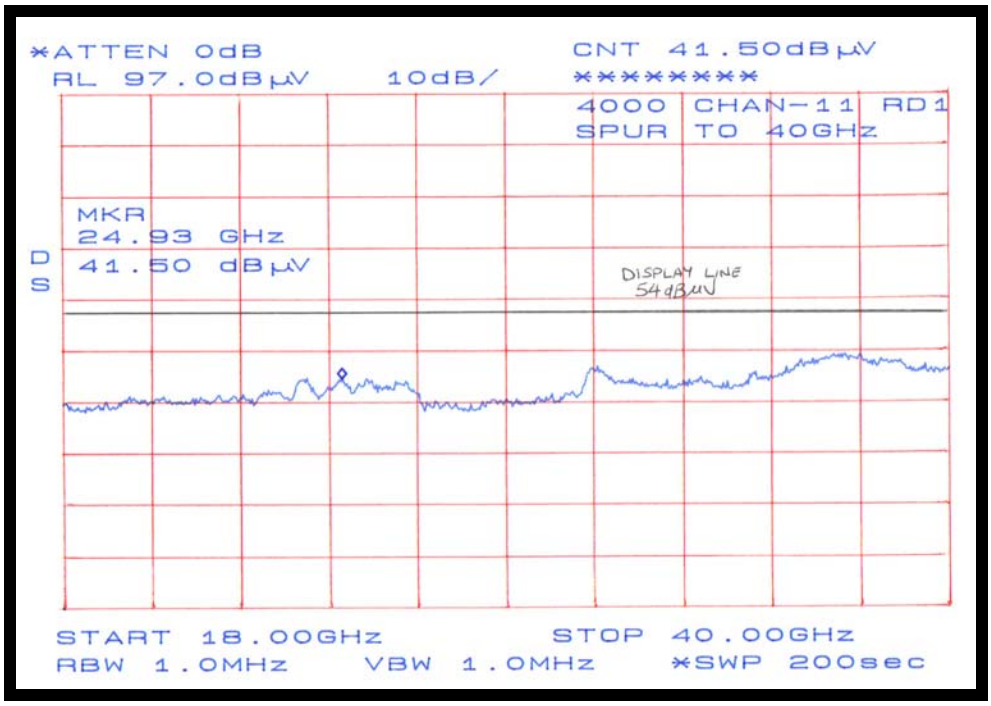

Figure 28: Channel 11 at RD 1 (Spurious 18 GHz – 40 GHz with mini omni antenna)

5.11 Test Setup Photographs

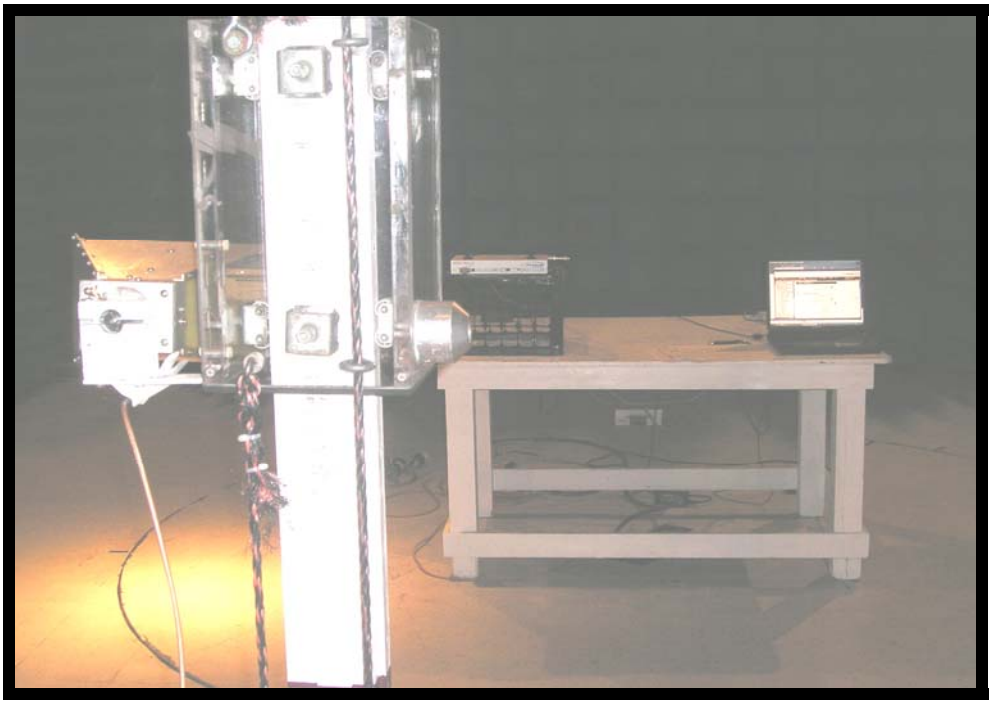

Figure 29: Front View: Spurious Emissions Test Setup (Above 1 GHz)

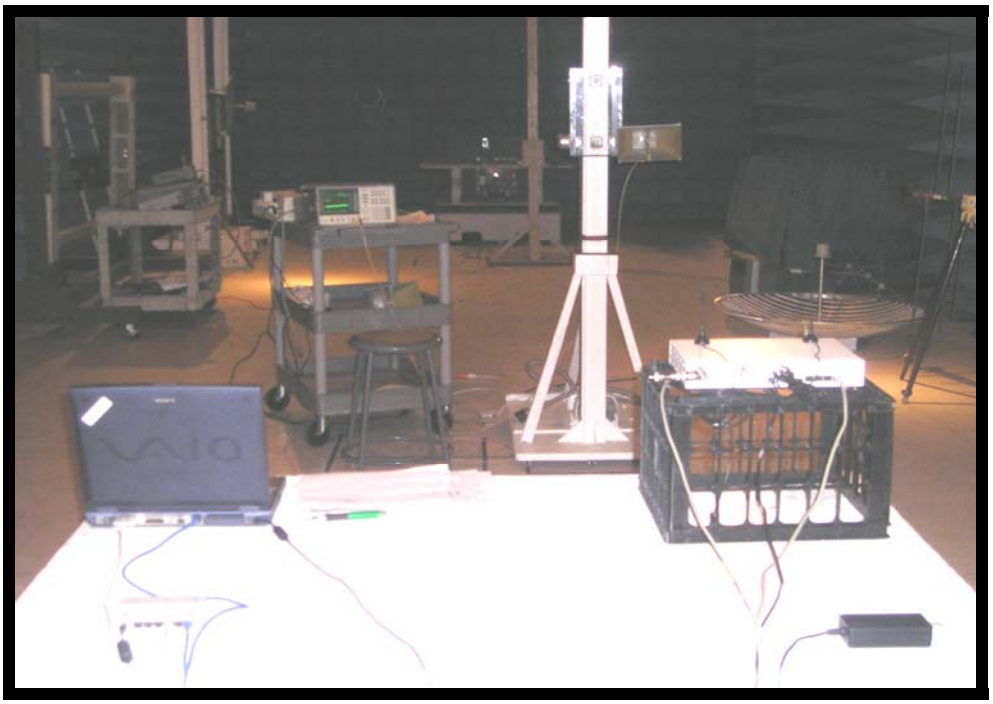

Figure 30: Rear View: Spurious Emissions test setup (Above 1 GHz)

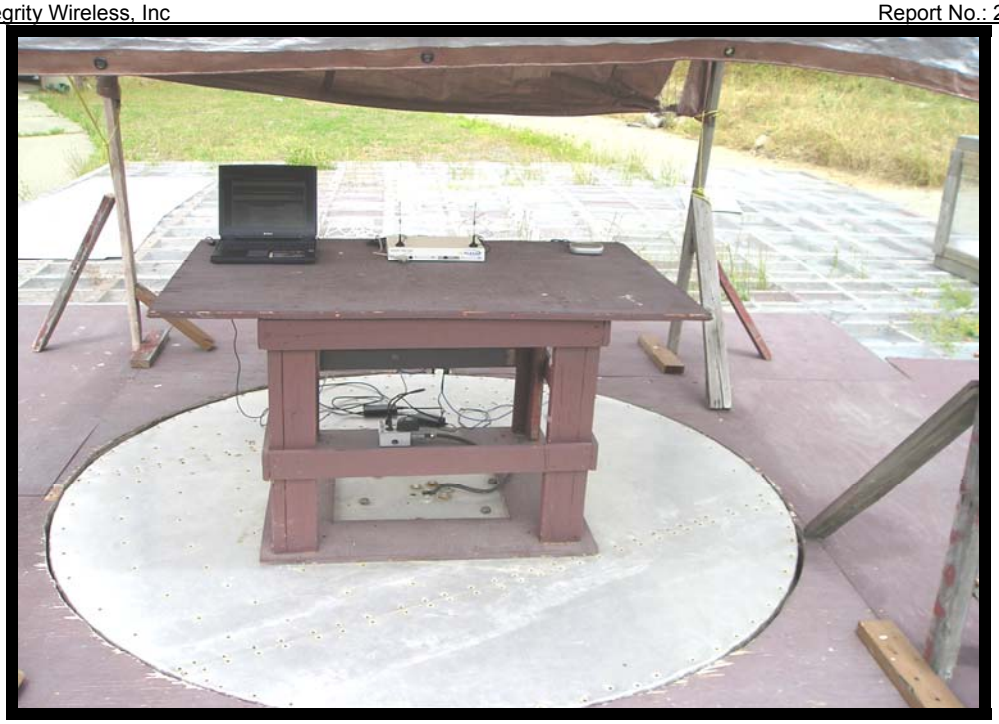

Figure 31: Front View: Harmonic, Spurious test setup (Below 1 GHz)

Figure 32: Rear View: Harmonic, Spurious test setup (Below 1 GHz)

Band edge and restricted band measurement per FCC 47CFR 15.247(c)

6.1 EUT Configuration and Test Procedures

The EUT was set up on a wooden non-conductive tabletop in a Semi-Anechoic chamber, 80cm above the ground plane at a 3-meter distance from the receiving antenna, and tested according to the requirements specified in FCC 47 CFR 15.247.In any 100kHz bandwidth outside the frequency band, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. The EUT running in continuous mode was rotated 360 degrees azimuth and was also rotated in its x-y-z axis positions. The EUT signal was captured in “max hold” mode on the analyzer and measurements of the signal were taken.
For restricted band, all emissions in the restricted band stated in 15.205 must comply with the radiated emission limit specified in 15.209.

6.2 Administrative Details

Site Used:	Semi-Anechoic Absorber Lined Shielded Room
Test Date:	May 03 – May 10,2005
Test Engineer:	,Femi Ojo & Robert Kershaw
Temperature:	62.3ºF
Humidity:	53%

6.3 Test Equipment Used

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8564B	06004	02-16-06
Spectrum Analyzer Display	Hewlett-Packard	8564B	06004	02-16-06
Horn Antenna	EMCO	3115	8812-3050	02-03-06
Antenna Cable	Pumona	2256-X-48	N/A	N/A

6.4 Software Used

Description	Manufacturer	Model Name	Version Number	Calibration/Validation Date
Test Software	ITC	1.04b1	Rev. 4	02-05-06

Spectrum Analyzer Configuration (during swept frequency scans) – Radiated Emissions
IF Bandwidth.....120 kHz
Measurements below 1000 MHz (unless stated otherwise)
Analyzer Mode (for Peak Measurements) ..... Peak/Log
Resolution Bandwidth..... 100 kHz
Video Bandwidth..... 100 kHz
Analyzer Mode (for Quasi-Peak Measurements)
Ouasi-Peak/Linear Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 1000 kHz
Measurements above 1000 MHz (unless stated otherwise)
Quasi-Peak Adapter Mode ..... Disabled (if available)
Analyzer Mode (for Peak Measurements) ..... Peak
Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 1000 kHz
Analyzer Mode (for Average Measurements)..... Video Filter
Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 10 Hz

6.5 Remarks:

EUT meets the requirements of the test reference for bandedge and restricted band measurements.

6.6 BANDEDGE MEASUREMENT PLOTS

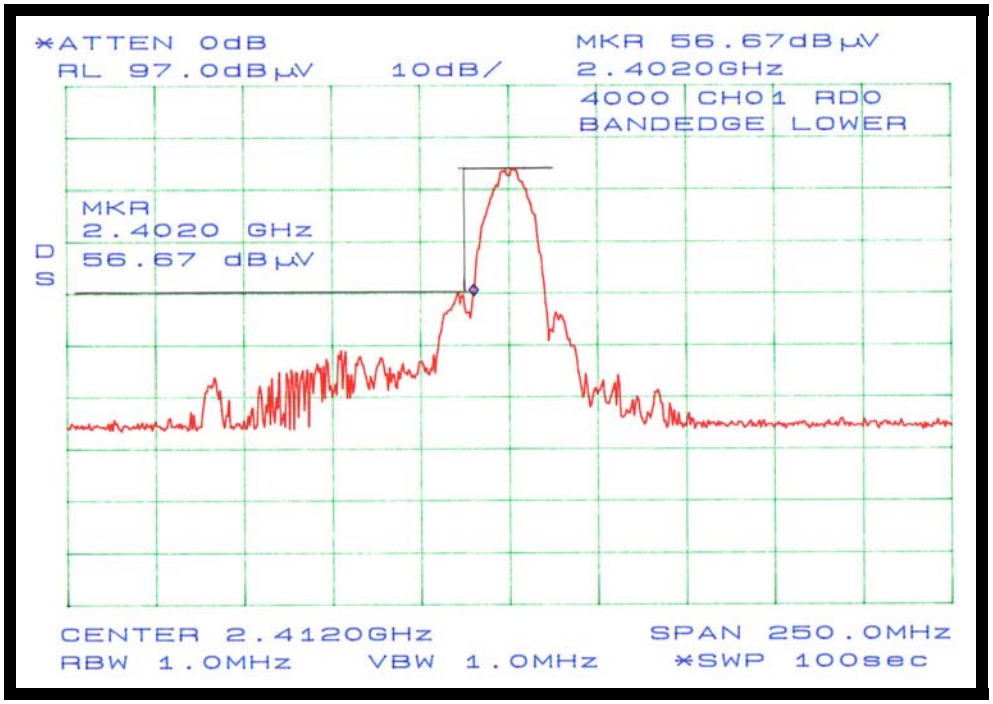

Figure 33: Band Edge Measurement, Channel 1 Radio 0

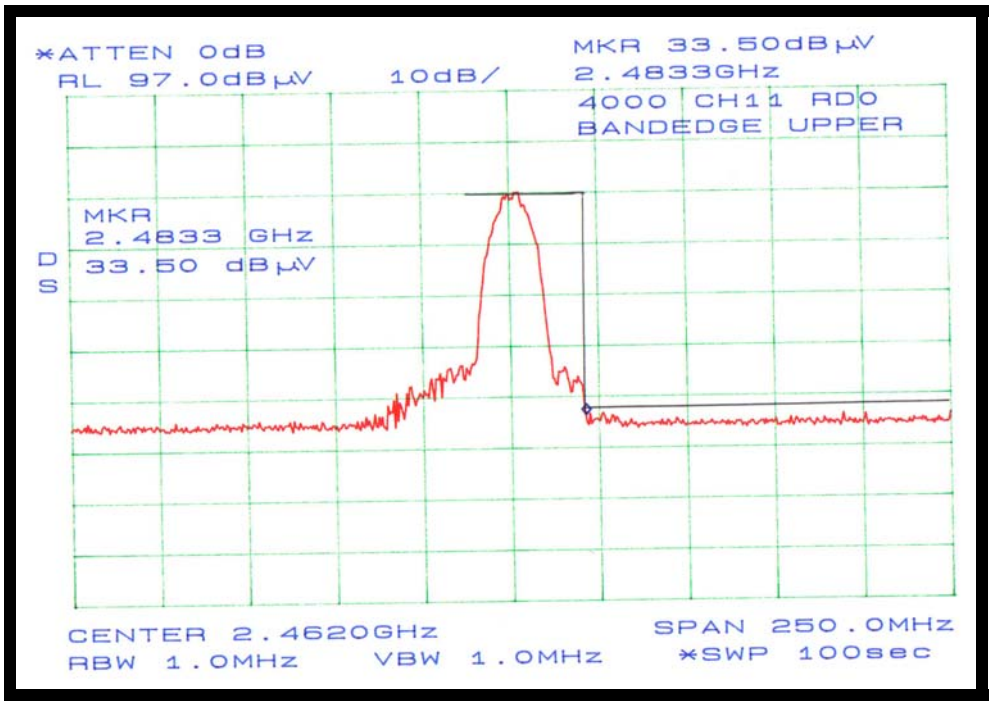

Figure 34: Band-Edge Measurement Channel 11 Radio 0

BANDEDGE MEASUREMENT (cont.)

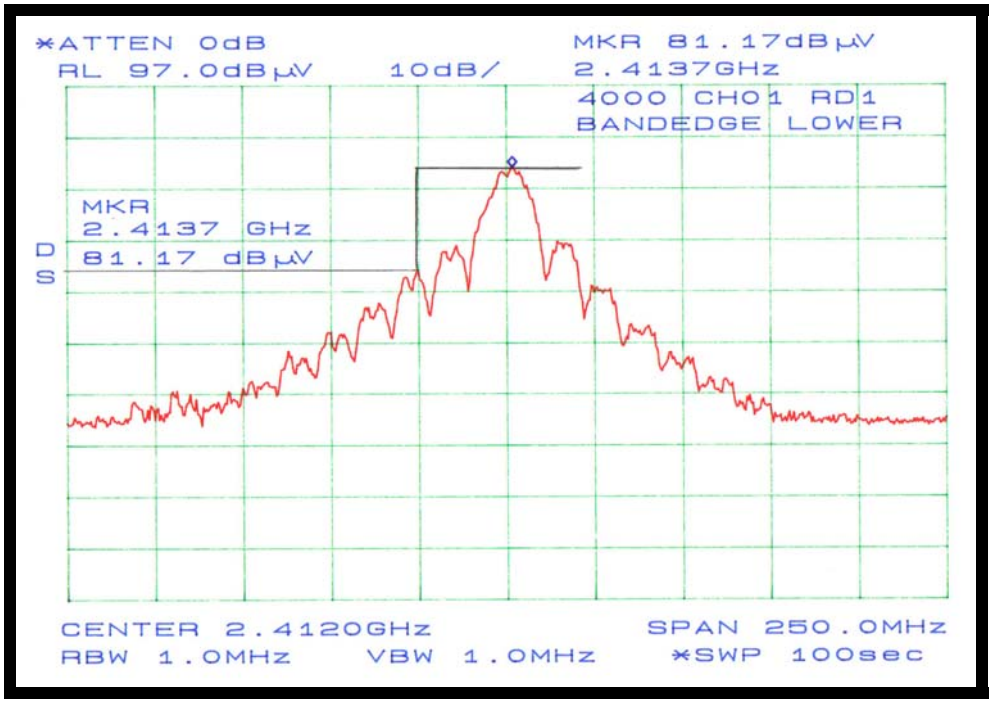

Figure 35: Band-Edge Measurement Channel 1 Radio 1

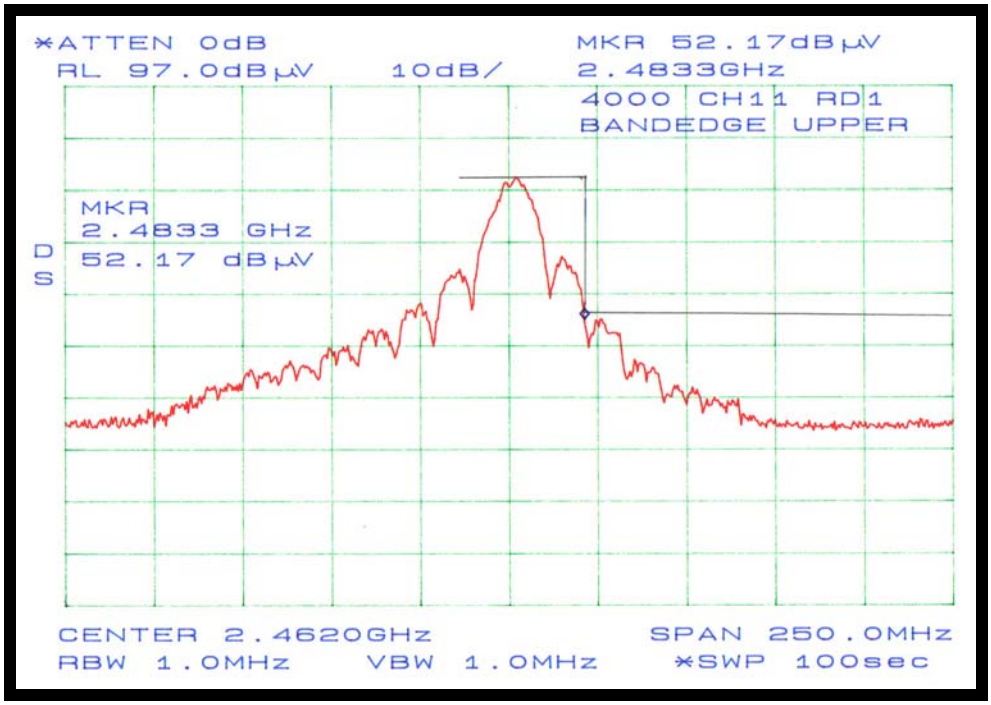

Figure 36: Band-Edge Measurement Channel 11 Radio 1

6.7 RESTRICTED BAND MEASUREMENT.

Spurious emissions that falls in the restricted as specified in FCC 47CFR.15.205 must comply with the limit specified in FCC 47CFR 15.209.
The data shown below are the emissions recorded in the restricted band and they do comply with FCC 47CFR 15.209.

CHANNEL 01 RADIO 0

INDICATED		CORRECTION		CORR	TURNTABLE	ANT		CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	DET
GHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	dB	MODE
2.3262	19.76	28.0	1.26	49.02	0	1.0	VH	-	-	54.0	-4.98	A

CHANNEL 06 RADIO 0

INDICATED		CORRECTION		CORR	TURNTABLE	ANT		CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	DET
GHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	dB	MODE
2.3970	21.67	28.0	1.26	50.93	0	1.0	VH	-	-	54.0	-3.07	A

CHANNEL 11 RADIO 0

INDICATED		CORRECTION		CORR	TURNTABLE	ANT		CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	DET
GHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	dB	MODE
2.4982	21.83	28.2	1.31	51.34	0	1.0	HH	-	-	54.0	-2.66	A

CHANNEL 01 RADIO 1

INDICATED		CORRECTION		CORR	TURNTABLE	ANT		CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	DET
GHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	dB	MODE
2.3978	20.03	28.0	1.26	49.29	0	1.0	HH	-	-	54.0	-4.71	A

CHANNEL 06 RADIO 1

INDICATED		CORRECTION		CORR	TURNTABLE	ANT		CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	DET
GHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	dB	MODE
2.3737	21.50	28.0	1.26	50.76	0	1.0	VH	-	-	54.0	-3.24	A

CHANNEL 11 RADIO 1

INDICATED		CORRECTION		CORR	TURNTABLE	ANT		CLASS A		CLASS B		
FREQ	AMPL	ANT	CAB	AMPL	ANG	HT	POL	AMPL	MARG	AMPL	MARG	DET
GHz	dBuV/m	dB	dB	dBuV/m	DEG	m	-	dBuV/m	dB	dBuV/m	dB	MODE
2.3871	20.37	28.[illegible]	1.2	49.63	0	1.0	VH	-	-	54.0	-4.37	A

6.8 Test Setup Photographs

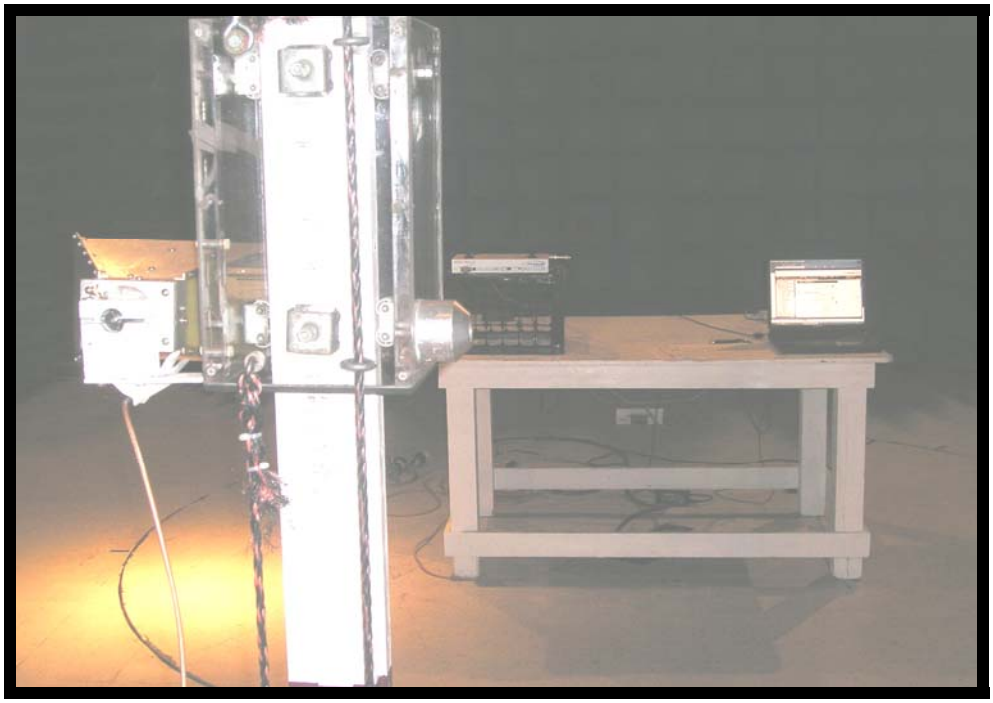

Figure 37: Front View: Bandedge and restricted band measurement test setup.

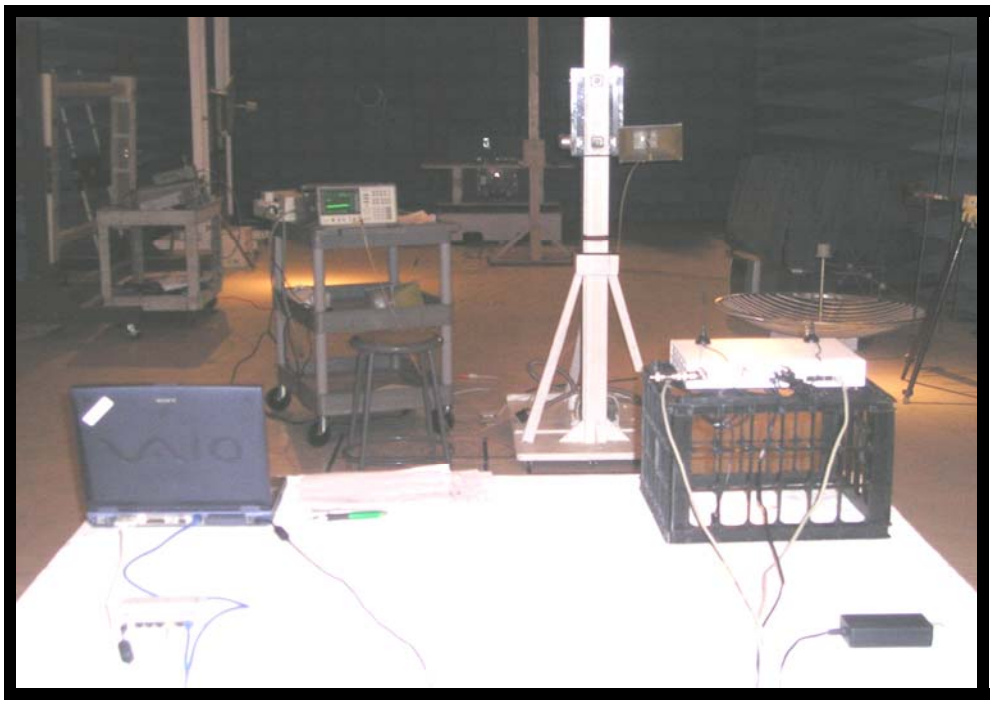

Figure 38: Rear View: Bandedge and restricted band measurement test setup.

PART 7 POWER SPECTRAL DENSITY per 47 CFR 15.247(d)

7.1 EUT Configuration and Test Procedure

The EUT was set up on a wooden non-conductive tabletop in a Semi-Anechoic chamber, 80cm above the ground plane at a 3-meter distance from the receiving antenna. The EUT was transmitting at its maximum rate and was rotated 360 degrees azimuths with the search antenna polarity at a fixed height of 1-meter.Tests were repeated in the horizontal polarity. The trace was allowed to stabilize. The analyzer was the placed in 'max hold' mode to record signal level.

7.2 Administrative Details

Site Used	Semi-Anechoic Absorber Lined Shielded Room
Test Date:	May 03 – May 10, 2005
Test Engineer:	,Femi Ojo & Robert Kershaw
Temperature:	70ºF
Humidity:	55%

7.3 Test Equipment Used

Equipment Description	Manufacturer	Model Name	Serial Number	Calibration Due
Spectrum Analyzer	Hewlett-Packard	8564B	06004	02-16-06
Spectrum Analyzer Display	Hewlett-Packard	8564B	06004	02-16-06
Horn Antenna	EMCO	3115	8812-3050	02-03-06
Antenna Cable	Pumona	2256-X-48	N/A	N/A

7.4 Software Used

Description	Manufacturer	Model Name	Version Number	Calibration/Validation Date
Test Software	ITC	1.04b1	Rev. 4	02-05-06

Spectrum Analyzer Configuration (during swept frequency scans)
IF Bandwidth.....120 kHz
Measurements below 1000 MHz (unless stated otherwise)
Analyzer Mode (for Peak Measurements) ..... Peak/Log
Resolution Bandwidth..... 100 kHz
Video Bandwidth..... 100 kHz
Analyzer Mode (for Quasi-Peak Measurements)
Ouasi-Peak/Linear Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 1000 kHz
Measurements above 1000 MHz (unless stated otherwise)
Quasi-Peak Adapter Mode ..... Disabled
Analyzer Mode (for Peak Measurements) ..... Peak
Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 1000 kHz
Analyzer Mode (for Average Measurements)..... Video Filter
Resolution Bandwidth..... 1000 kHz
Video Bandwidth..... 10 Hz

7.5 POWER SPECTRAL DENSITY PLOTS

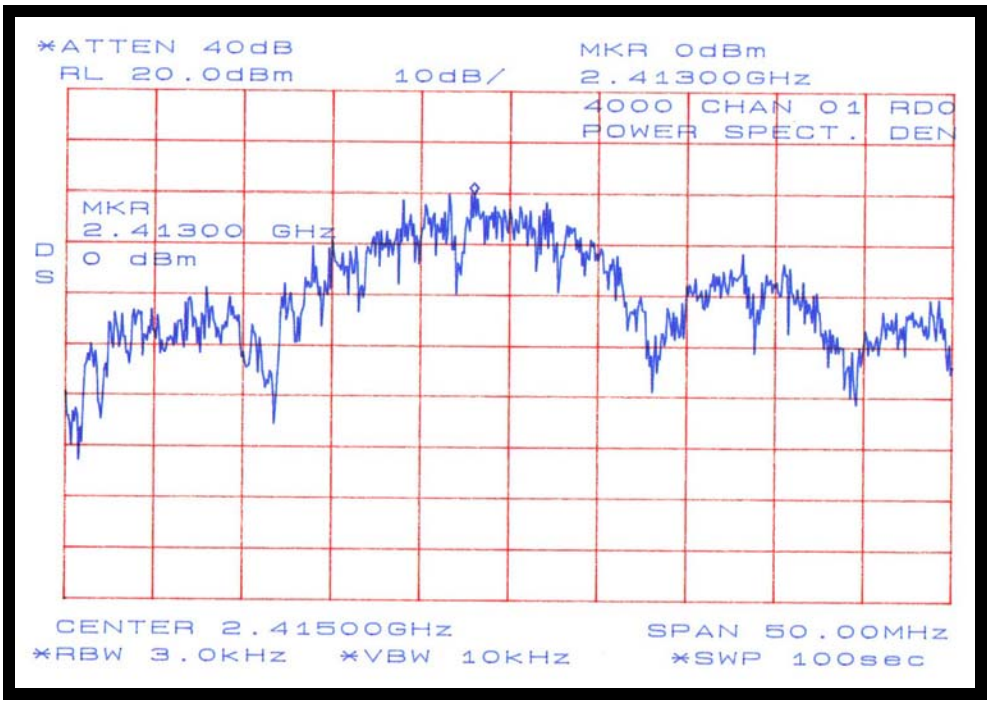

Figure 39: Power Spectral Density Channel 1, RD 0 at 2.41300 GHz

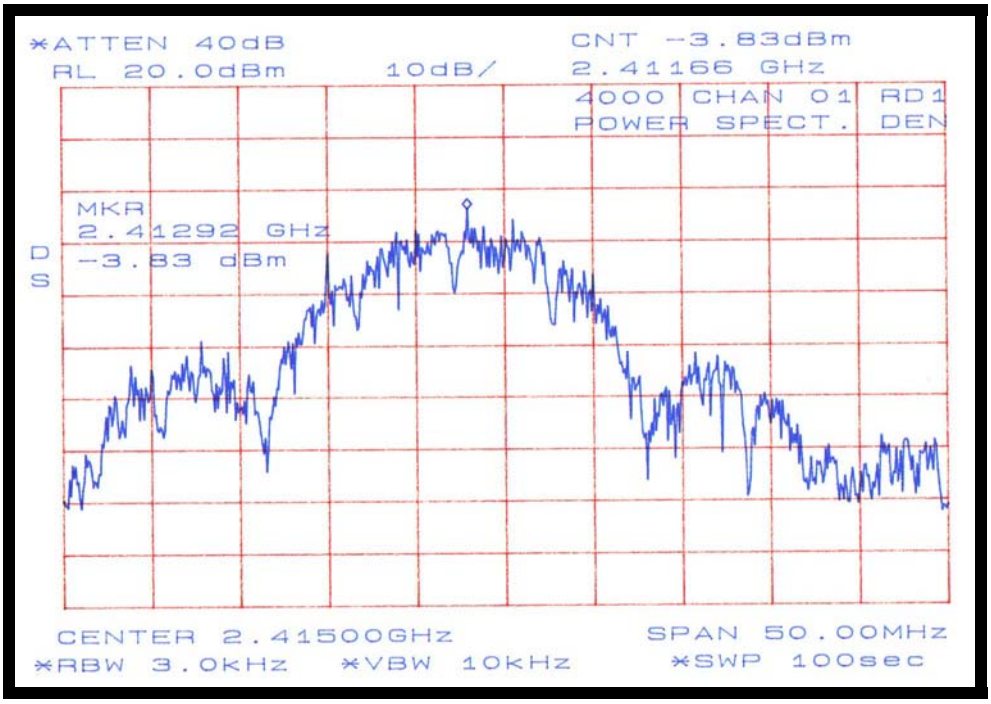

Figure 40: Power Spectral Density Channel 1, RD 1 at 2.41166 GHz

POWER SPECTRAL DENSITY (cont.)

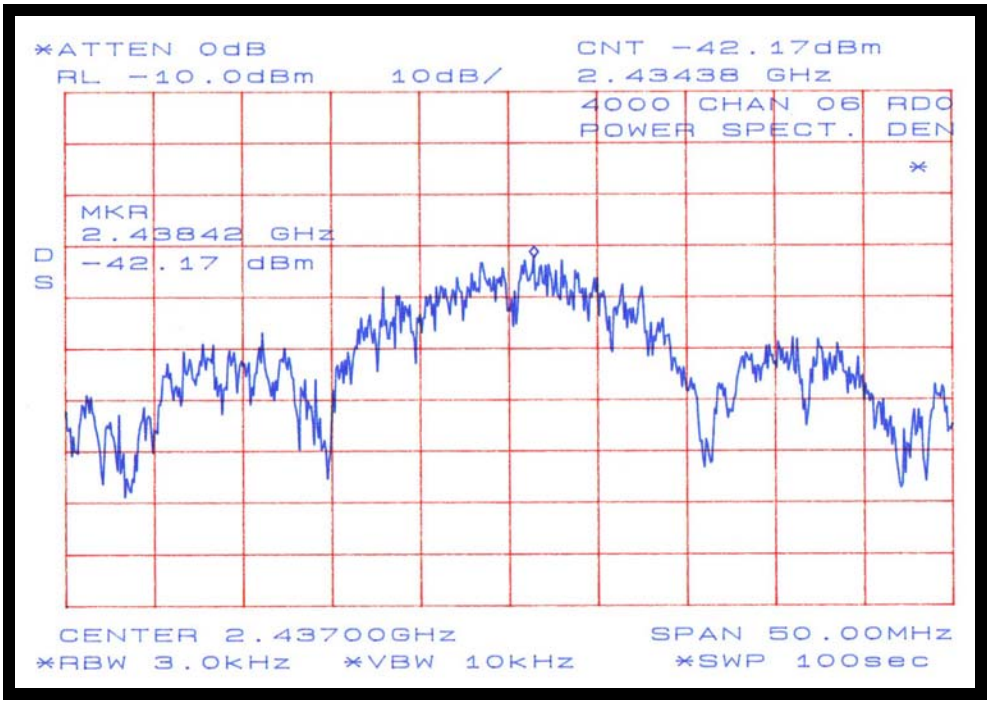

Figure 41: Power Spectral Density Channel 6, RD 0 at 2.43438 GHz

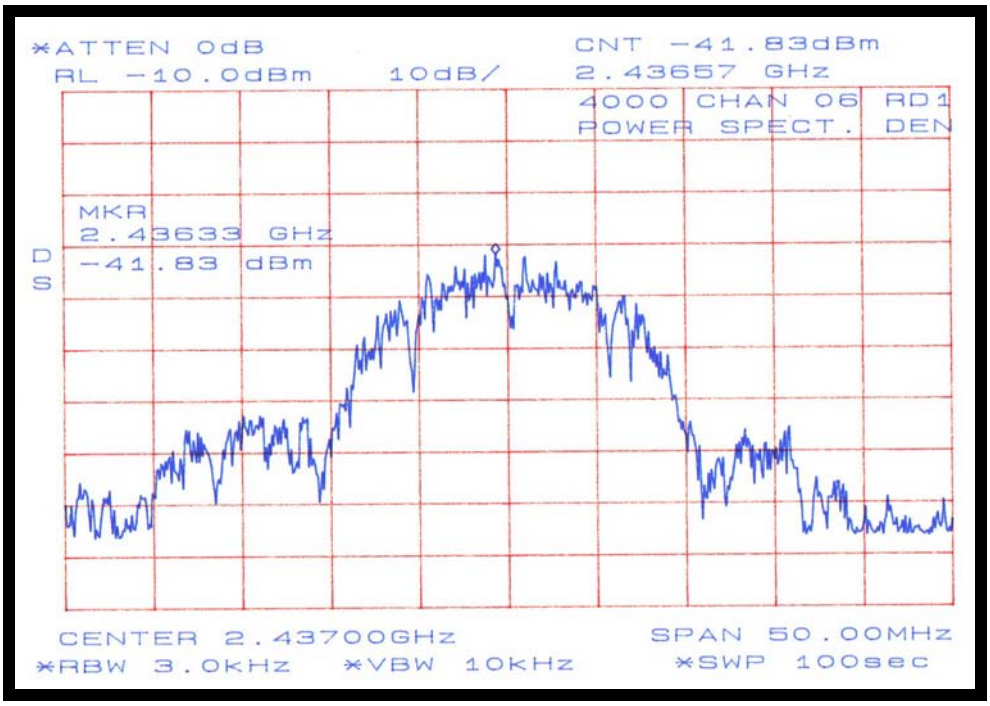

Figure 42: Power Spectral Density Channel 6, RD 1 at 2.43657 GHz

POWER SPECTRAL DENSITY (cont.)

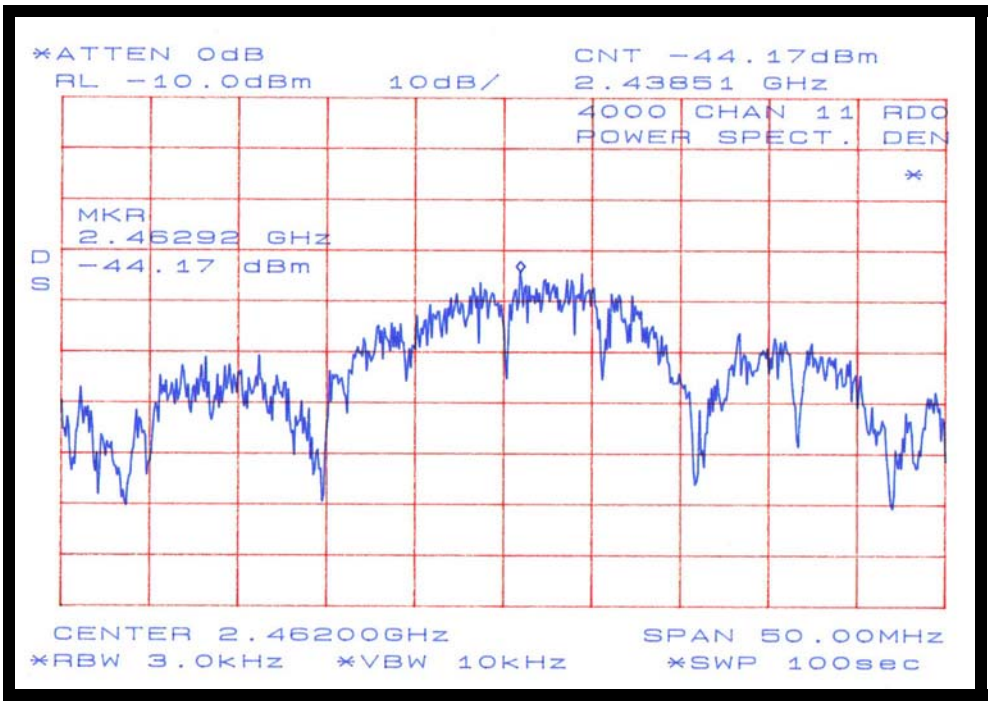

Figure 43: Power Spectral Density Channel 11, RD 0 at 2.46292 GHz

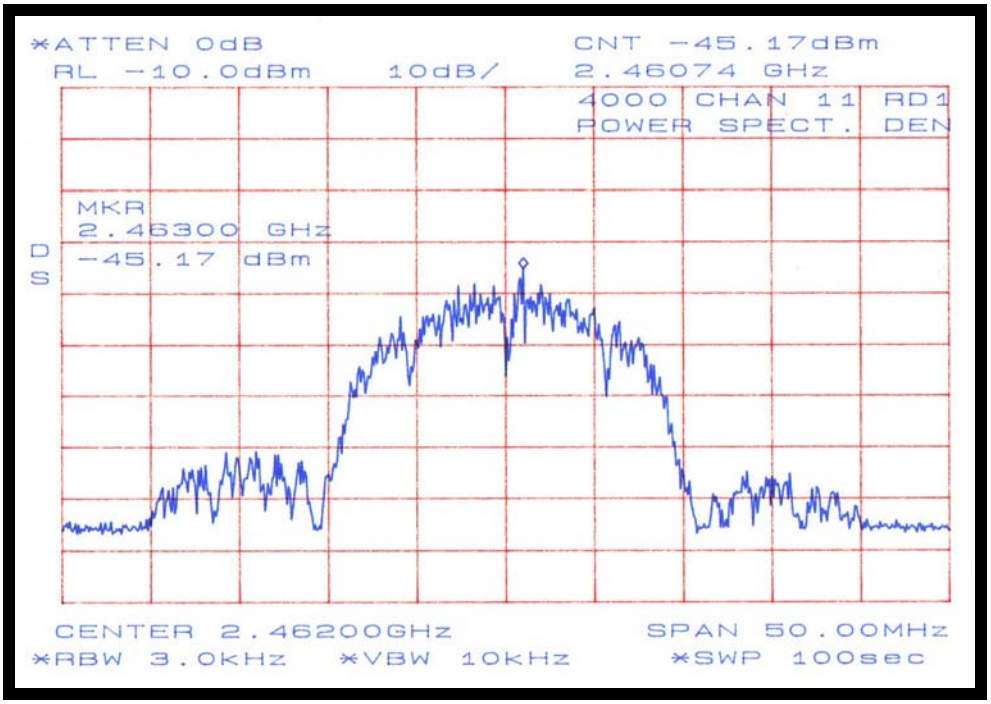

Figure 44: Power Spectral Density Channel 11, RD1 at 2.46074 GHz

7.6 Test Setup Photographs

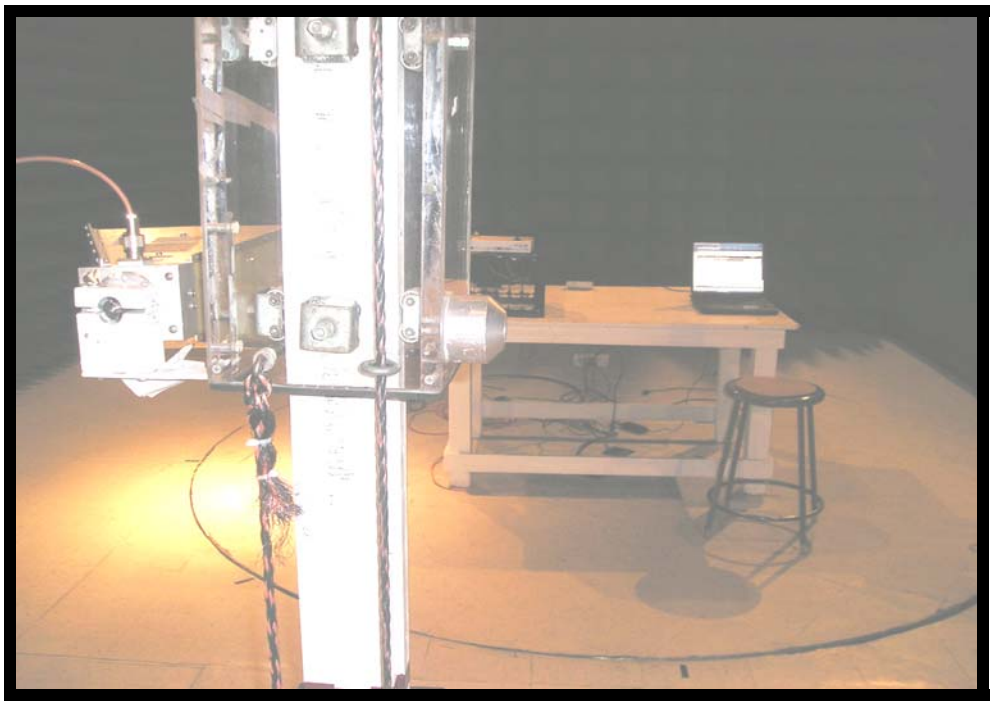

Figure 45: Test Set-up for Power Spectral Density (Front View)

Figure 46: Test Set-up for Power Spectral Density (Rear View)

7.7 Remarks:

EUT meets the requirements of the test reference for power spectral density.

PART 8: APPENDICES

A. EUT TECHNICAL SPECIFICATION

Applicant	AIRTEGRITY WIRELESS INC,
General Description	Chassis with Seneo Radio card
Model	4000
Power Input	12Vdc; 3A.
Dimension	300mm X 208mm X 48mm
Power Supply	GlobTek Inc
	Model: GT-21097-3612
	P/N: TR9CE3000LHP-Y
	Input: 100-250Vac; 1.6A, 50/60Hz
	Output: 12Vdc; 3A.

B. EUT PHOTOGRAPHS

Figure 47: EUT and Antenna Front View

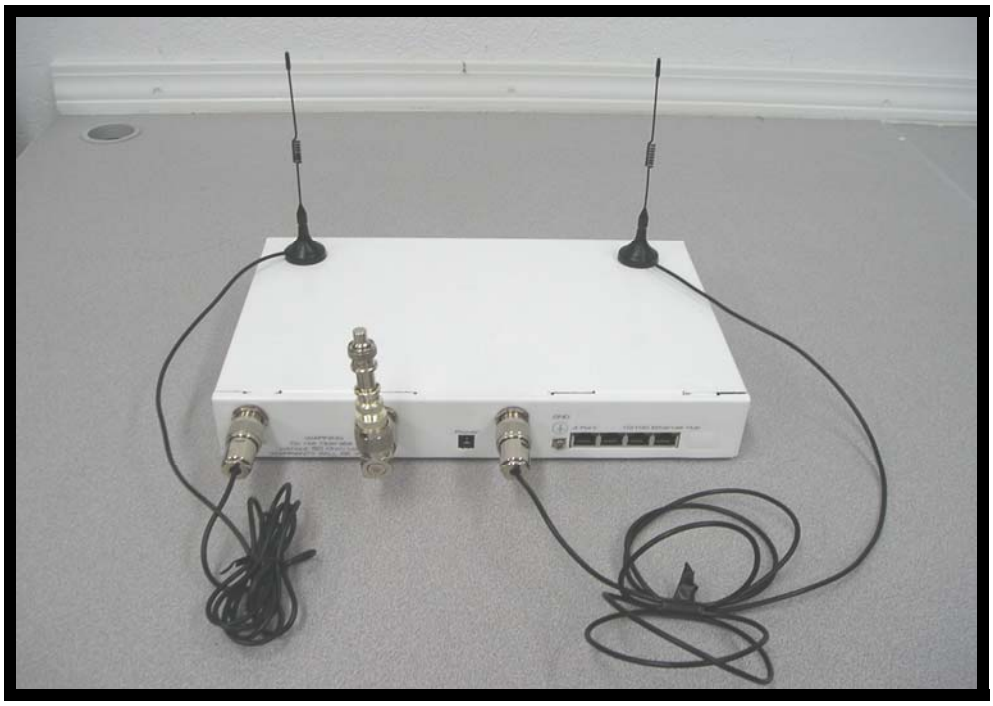

Figure 48: EUT and Antenna Rear View

EUT Photos (cont.)

Figure 49: EUT Rear View

Figure 50: EUT Side View

EUT Photos (cont.)

Figure 51: EUT Front View

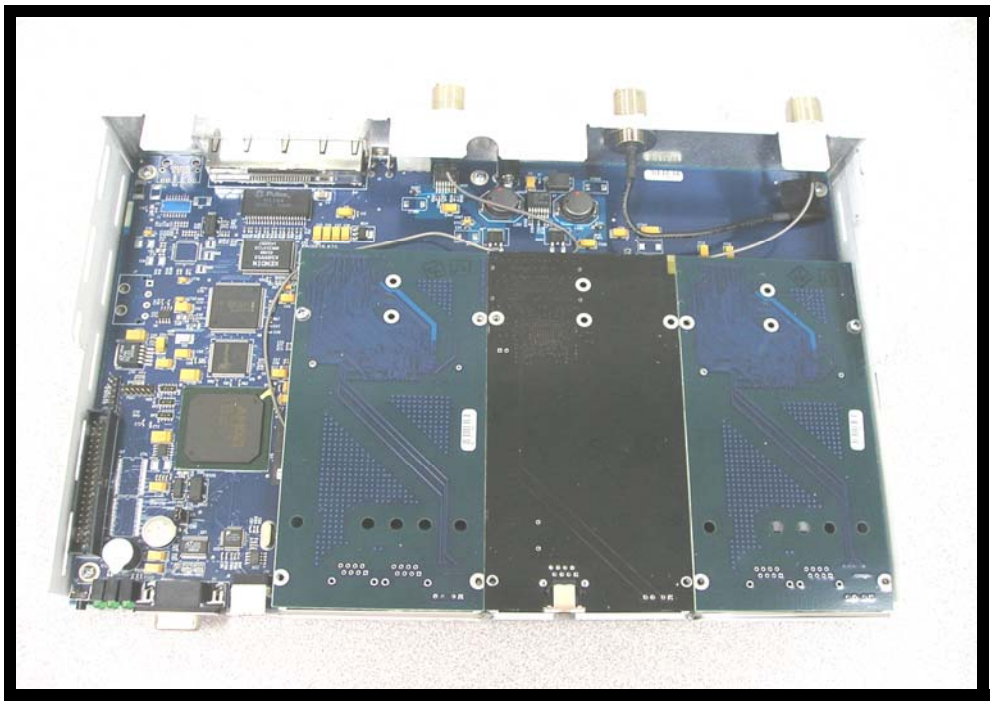

Figure 52: EUT Front Case Open View

EUT Photos (cont.)

Figure 53: Power Supply for the EUT

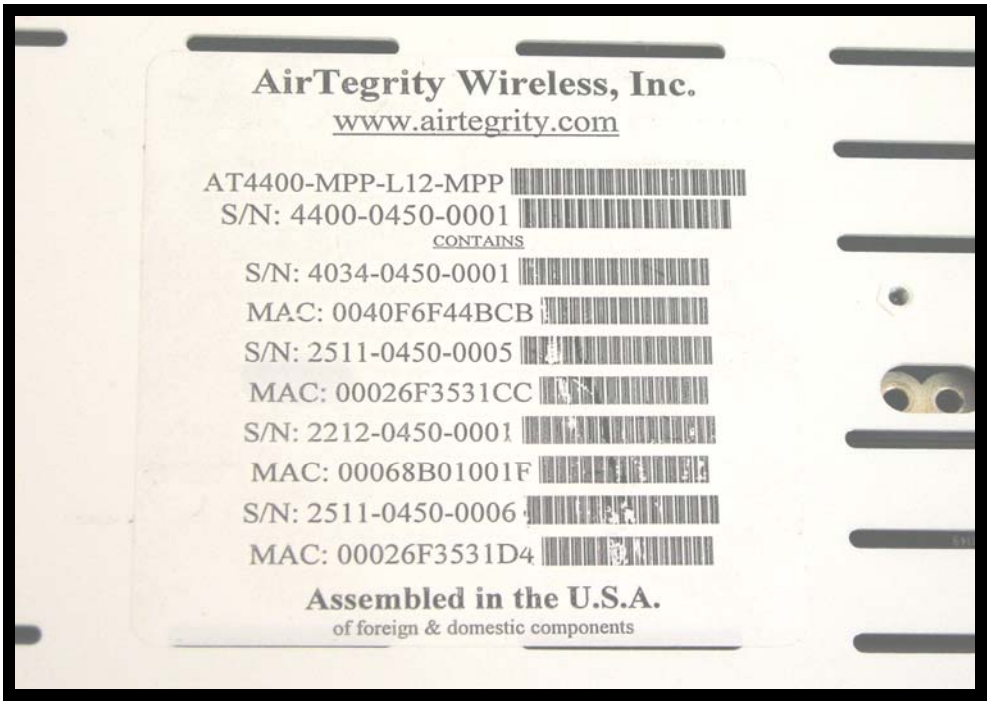

Figure 54: EUT Label.

C. MODIFICATION LETTER

To Whom It May Concern:

The EUT, Air Tegrity 4000 Chasis with Seneo radio card, described in this report required no modifications in order to comply with the standards below:

Standards Met:

Emissions Requirements:

- POWER LINE CONDUCTED EMISSIONS PER FCC 47CFR 15.207
- OPEN FIELD RADIATED EMISSIONS PER FCC 47CFR 15.209.

RF Requirements:

- SPURIOUS EMISSIONS PER FCC 47CFR 15.247.
- 6dB BANDWIDTH MEASUREMENT PER FCC 47CFR 15.247.
- PEAK POWER OUTPUT PER FCC 47CFR 15.247.
- POWER SPECTRAL DENSITY PER FCC 47CFR 15.247

For further information, please contact the manufacturer at:

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276 Kingsbury Grade, Suite 206
Stateline, NV 89449
United States

Tel: (775) 588-8800
Fax: (775) 231-0889

Attention: Ms Patti Kimball
Email: Pattilkimball@aol.com