



Engineering and Testing for EMC and Safety Compliance

**Certification Application Report
FCC Part 15.247 & Industry Canada RSS-210**

Test Lab: Rhein Tech Laboratories, Inc. Phone: 703-689-0368 360 Herndon Parkway Fax: 703-689-2056 Suite 1400 Web: www.rheintech.com Herndon, VA 20170 E-Mail: atcbinfo@rheintech.com		Applicant: iRobot Corporation Phone: 781-345-0200 63 South Avenue Fax: 781-345-0201 Burlington, MA 01803 Adam Craft E-Mail: acraft@irobot.com	
FCC ID/ IC:	UFE-R3MOD24A/ 6652A-R3MOD24A	Test Report Date:	April 9, 2007
Platform:	N/A	RTL Work Order Number:	2007155
Model Name/ Model Number:	2.4 GHz Module/4123659	RTL Quote Number:	QRTL07-105
American National Standard Institute:	ANSI C63.4-2003: 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 (10-01-06): Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System		
Industry Canada:	RSS-210, Issue 6 September 2005: 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
2405-2480	0.0012	N/A	1M62G7D

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: April 25, 2007

Typed/Printed Name: Desmond A. Fraser

Position: President

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The test results relate only to the item(s) tested.*

360 Herndon Parkway, Suite 1400
Herndon, VA 20170
Tel: 703-689-0368 Fax: 703-689-2056

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1 General Information

1.1 Scope

Applicable Standards:

- FCC Rules Part 15.247 (10-01-05): 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.
- Industry Canada RSS-210 (Issue 6 September 2005): Low Power License-Exempt Communications Devices

1.2 Description of EUT

Equipment Under Test	2.4 GHz Module
Model Name/Number	2.4 GHz Module/4123659
Power Supply	Battery operated
Modulation Type	DSSS
Frequency Range	2405-2480 MHz
Antenna Connector Type	N/A PCB Trace Antenna
Antenna Types	F Type PCB Trace

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 certification application for FCC and Industry Canada Limited Modular Approval for Model # 4123659, 2.4 GHz Module, FCC ID: UFE-R3MOD24A and IC: 6652A-R3MOD24A, based on the guidelines in FCC Publication DA 00-1407 and IC RSS-GEN.

1.5 Modifications

No modifications were required for compliance.

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:

Table 2-1: Channels Tested

Channel	Frequency
0	2405
7	2440
15	2480

2.2 Exercising the EUT

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. 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 2-2: Test Result Summary – FCC Part 15, Subpart C (Section 15.247)

Standard	Test	Pass/Fail or N/A
FCC 15.207	AC Power Conducted Emissions	Pass
FCC 15.209	Radiated Emissions	Pass
FCC 15.247(a)(2)	6 dB Bandwidth	Pass
FCC 15.247(b)	Maximum Peak Power Output	Pass
FCC 15.247(d)	Antenna Conducted Spurious Emissions	Pass
FCC 15.247(e)	Power Spectral Density	Pass
FCC 15.247(d)	Band Edge Measurement	Pass

2.4 Test System Details

The test sample was received on April 5 and 7, 2007. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following table.

Table 2-3: Equipment Under Test

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
R3 Lighthouse Dev Board	iRobot Corporation	N/A	#	N/A	N/A	17854
Radio PCB	iRobot Corporation	RF13202	SPINPCB6 42131	UFE-R3MOD24A	N/A	17855
Radio PCB (with SMA connector)	iRobot Corporation	RF13202	N/A	UFE-R3MOD24A	N/A	17862

2.5 Configuration of Tested System

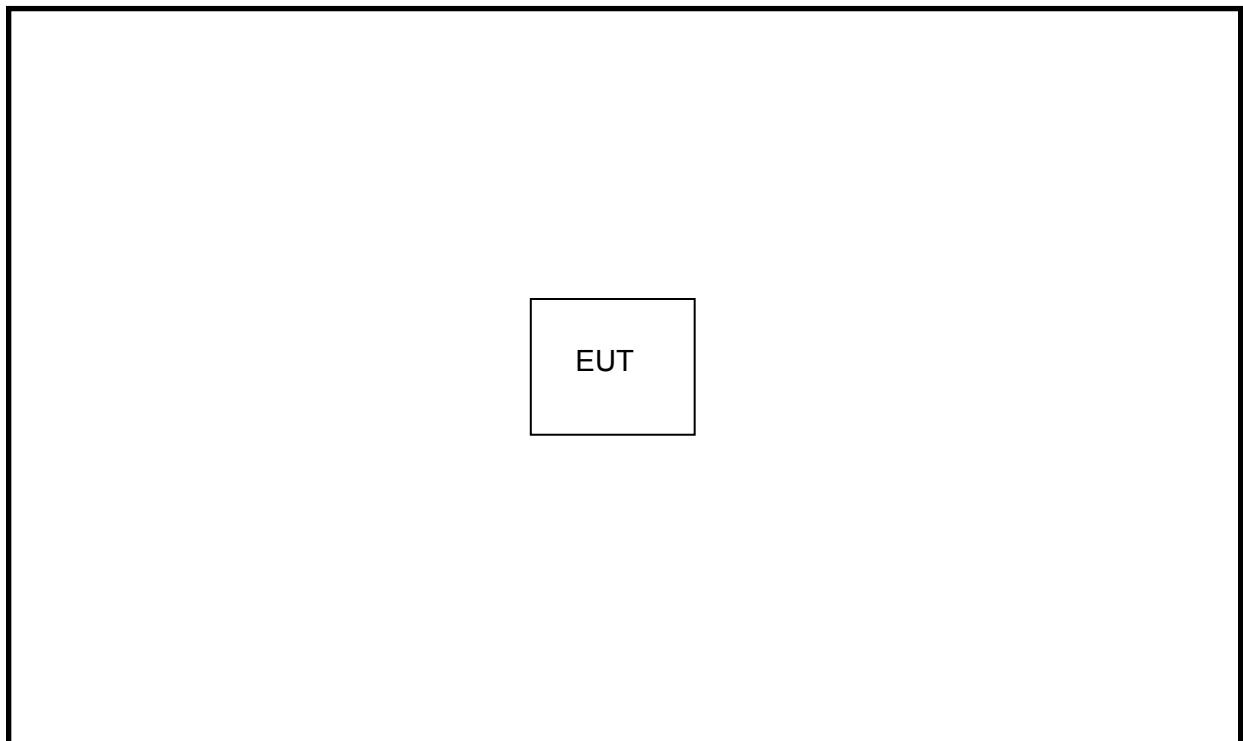


Figure 2-1: Configuration of System Under Test

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.

Table 3-1: 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	10/3/07
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	10/3/07

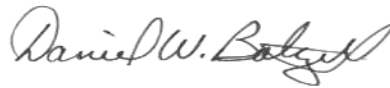
3.2 Power Output Test Data

Table 3-2: Power Output Test Data

Channel	Frequency (MHz)	Peak Power Conducted Output (dBm)
0	2405	0.7
7	2440	0.1
15	2480	-0.8

Test Personnel:

Daniel W. Baltzell
 Test Engineer



Signature

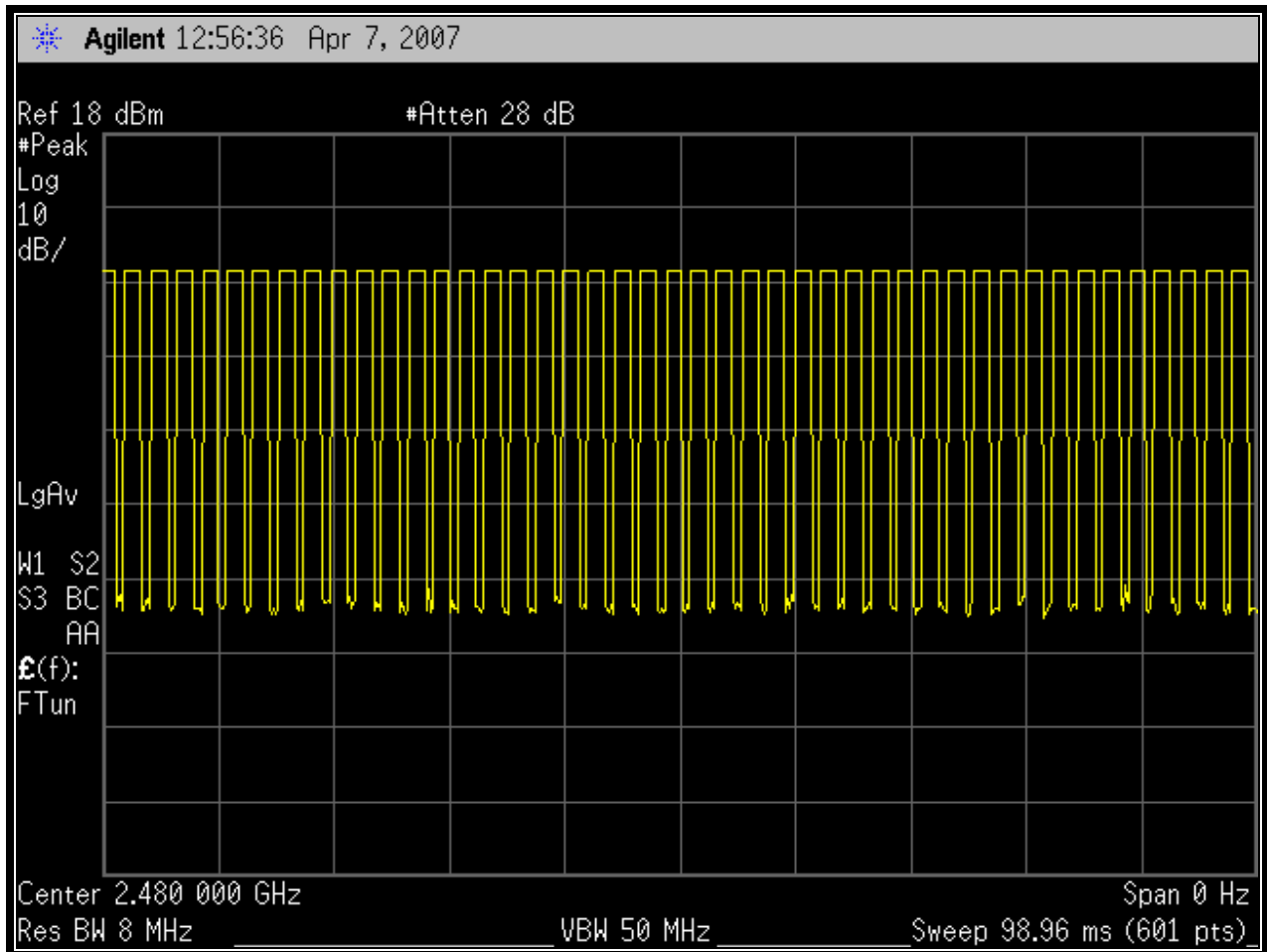
April 7, 2007
 Date Of Test

4 Duty Cycle Measurement

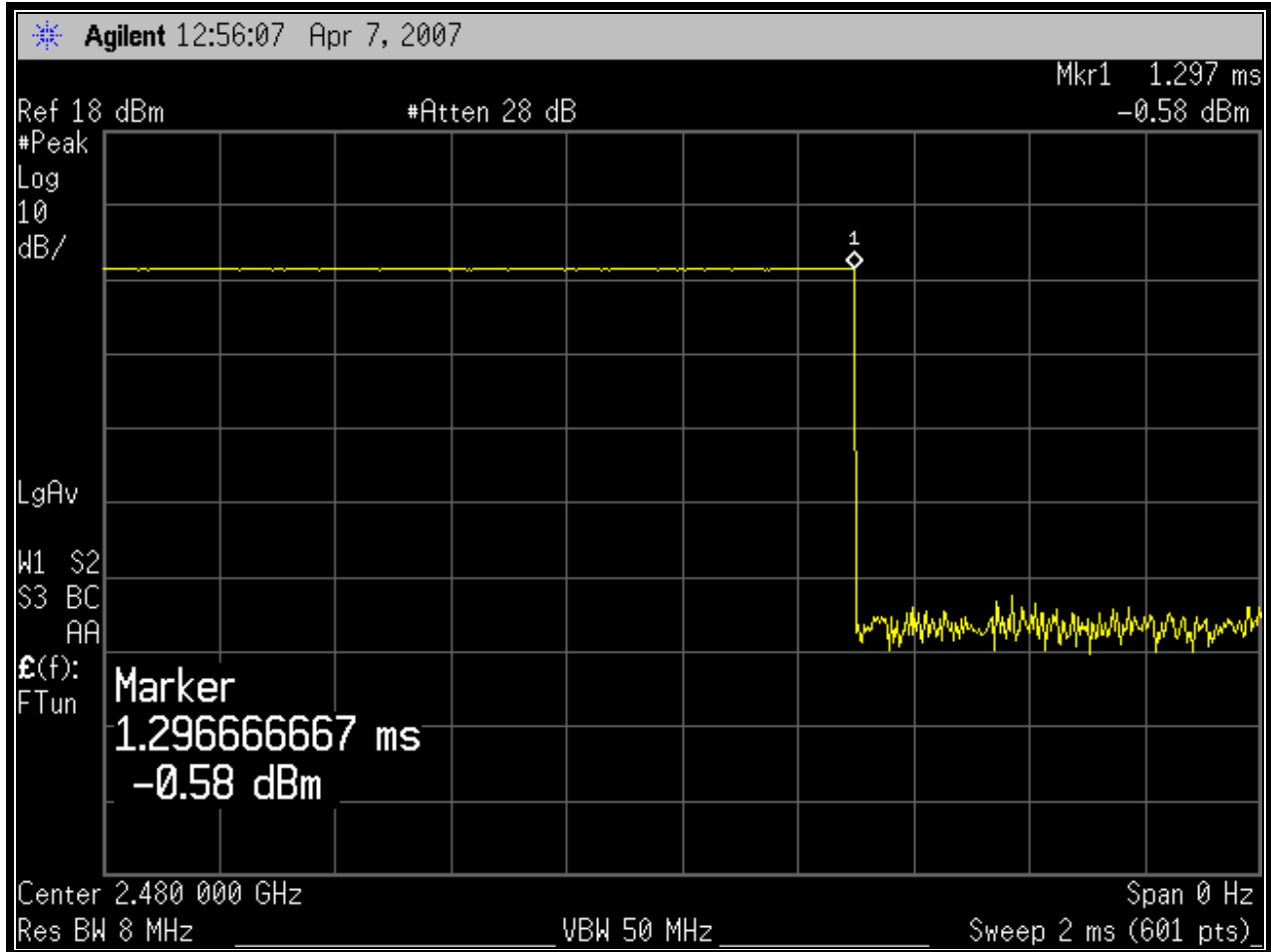
Table 4-1: Duty Cycle Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US44020346	12/14/07

Plot 4-1: Number of Pulses in 100 ms = 45



Plot 4-2: Duty Cycle Pulse Width 1.297 ms



Duty cycle calculation from above plots:

45 pulses in 100 ms

1.297 ms pulse width x 45 pulses = 58.365% duty cycle

$20 \log(.58365) = -4.7 \text{ dB}$

5 Compliance with the Band Edge – FCC §15.247(d); RSS-210 §2.2

5.1 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 5-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz - 12.8 GHz)	3826A00144	10/16/07
900878	Rhein Tech Labs	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901425	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF cable, 20'	NA	12/5/07
901424	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	12/5/07
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
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US44020346	12/14/07

5.2 Restricted Band Edge Test Results

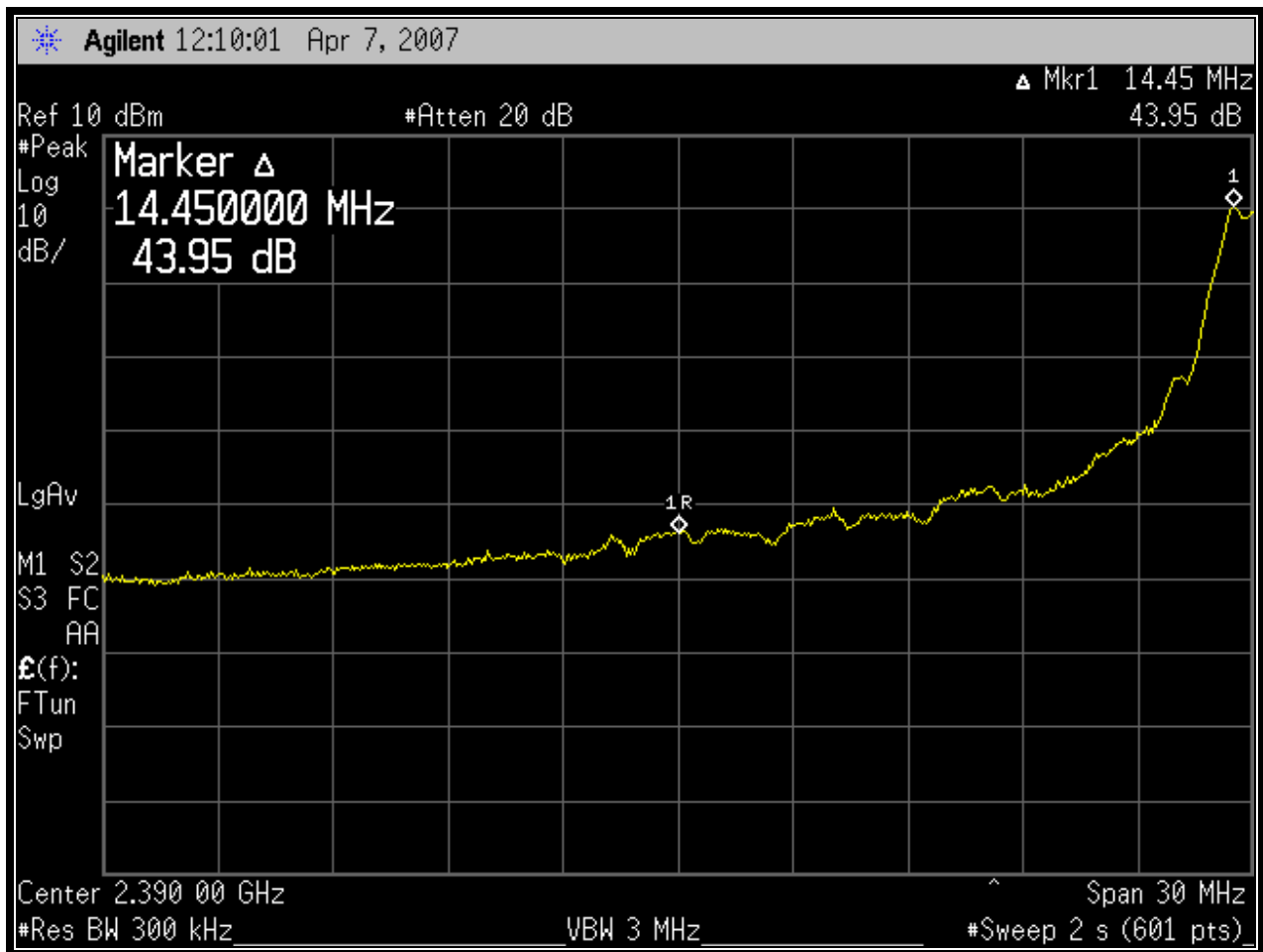
5.2.1 Calculation of Lower Band Edge

91.8 dBuV/m is the field strength measurement, from which the delta measurement of 44 dB is subtracted (reference plots), resulting in a level of 47.8 dB. This level has a margin of 6.2 dB below the limit of 54 dBuV/m.

Calculation: $91.8 \text{ dBuV/m} - 44 \text{ dB} - 54 \text{ dBuV/m} = -6.2 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 96.5 dBuV/m
Average Field Strength of Lower Band Edge (Pk less duty cycle -4.7 dB) = 91.8 dBuV/m
Delta measurement = 44 dB

Plot 5-1: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2405 MHz)



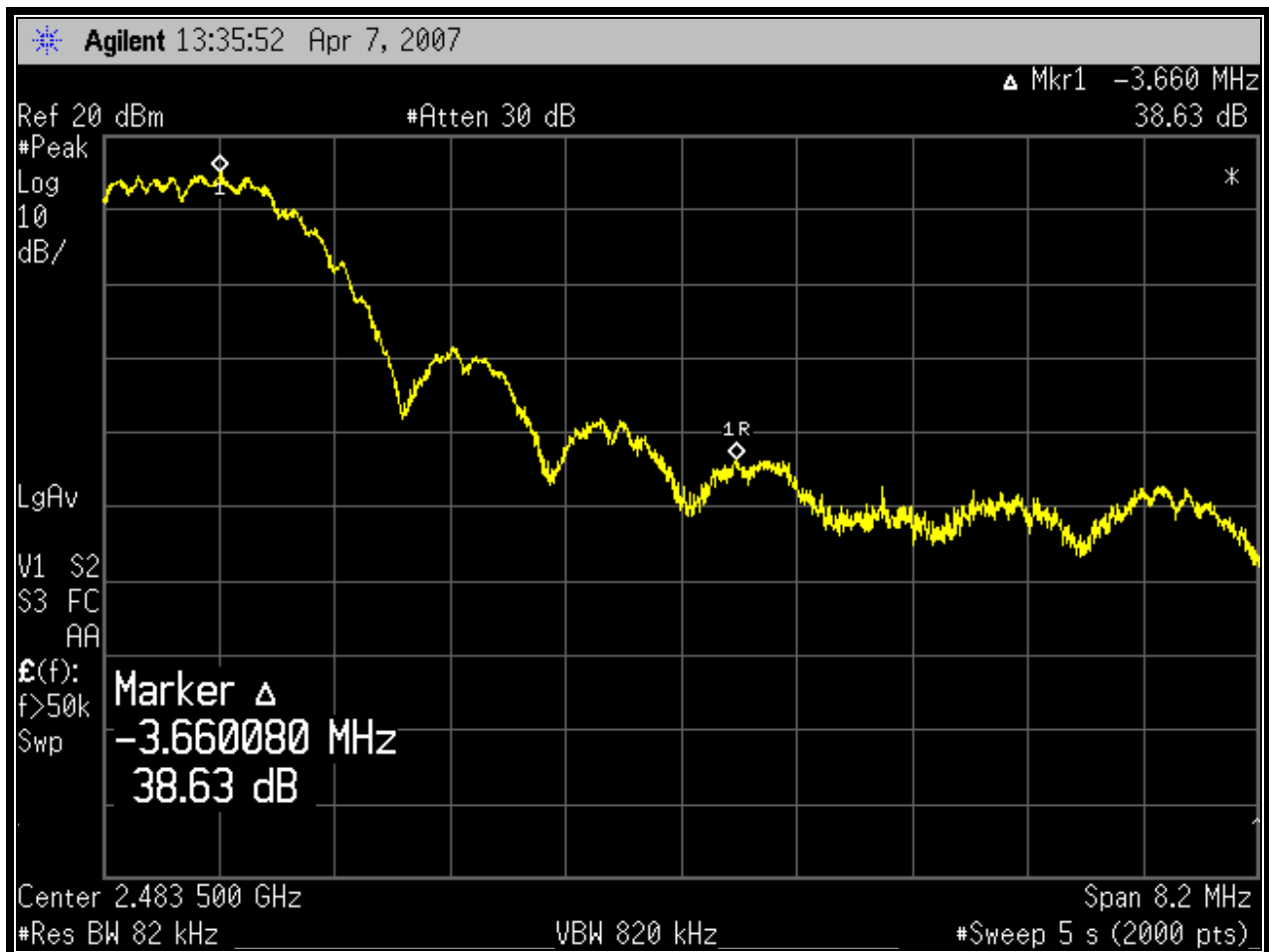
5.2.2 Calculation of Upper Band Edge

91.7 dBuV/m is the field strength measurement, from which the delta measurement of 38.6 dB is subtracted (reference plots), resulting in a level of 53.1 dB. This level has a margin of 0.9 dB below the limit of 54 dBuV/m.

Calculation: $91.7 \text{ dBuV/m} - 38.6 \text{ dB} - 54 \text{ dBuV/m} = -0.9 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 96.4 dBuV/m
 Average Field Strength of Lower Band Edge (Pk less duty cycle -4.7 dB) = 91.7 dBuV/m
 Delta measurement = 38.6 dB

Plot 5-2: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2480 MHz)



Test Personnel:

Daniel W. Baltzell
 EMC Test Engineer

Signature

April 7, 2007
 Date Of Test

6 Antenna Conducted Spurious Emissions - §15.247(d); RSS-210, RSS-Gen

6.1 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: 2405 MHz, 2440 MHz and 2480 MHz.

Table 6-1: Antenna Conducted Spurious Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US440203416	12/14/07

6.2 Antenna Conducted Spurious Emissions Test Results

Table 6-2: Antenna Conducted Spurious Emissions (2405 MHz)

Frequency (MHz)	Amplitude Measured (dBm)	Limit (20 dBc)	Margin (dB)
2405.0	-3.3		Fundamental
4810.0	-39.8	-23.3	-16.5
7215.0	-47.3	-23.3	-24.0
9620.0	-65.6	-23.3	-42.3
12025.0	-72.2	-23.3	-48.9
14430.0	-75.2	-23.3	-51.9

Table 6-3: Antenna Conducted Spurious Emissions (2440 MHz)

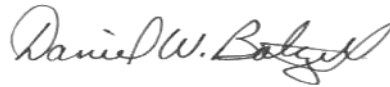
Frequency (MHz)	Amplitude Measured (dBm)	Limit (20 dBc)	Margin (dB)
2440.0	-4.2		Fundamental
4880.0	-40.2	-24.2	-16.0
7320.0	-49.7	-24.2	-25.5
9760.0	-70.7	-24.2	-46.5
12200.0	-70.9	-24.2	-46.7
14640.0	-70.4	-24.2	-46.2

Table 6-4: Antenna Conducted Spurious Emissions (2480 MHz)

Frequency (MHz)	Amplitude Measured (dBm)	Limit (20 dBc)	Margin (dB)
2480.0	-4.7		Fundamental
4960.0	-41.3	-24.7	-16.6
7440.0	-51.5	-24.7	-26.8
9920.0	-77.5	-24.7	-52.8
12400.0	-76.1	-24.7	-51.4
14880.0	-75.8	-24.7	-51.1

Test Personnel:

Daniel W. Baltzell
 EMC Test Engineer



Signature

April 7, 2007
 Date Of Test

7 6 dB Bandwidth - §15.247(a)(2); RSS-210 §A8.2

7.1 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 300 Hz. The device was modulated. The minimum 6 dB bandwidths are presented below.

Table 7-1: 6 dB Bandwidth Test Equipment

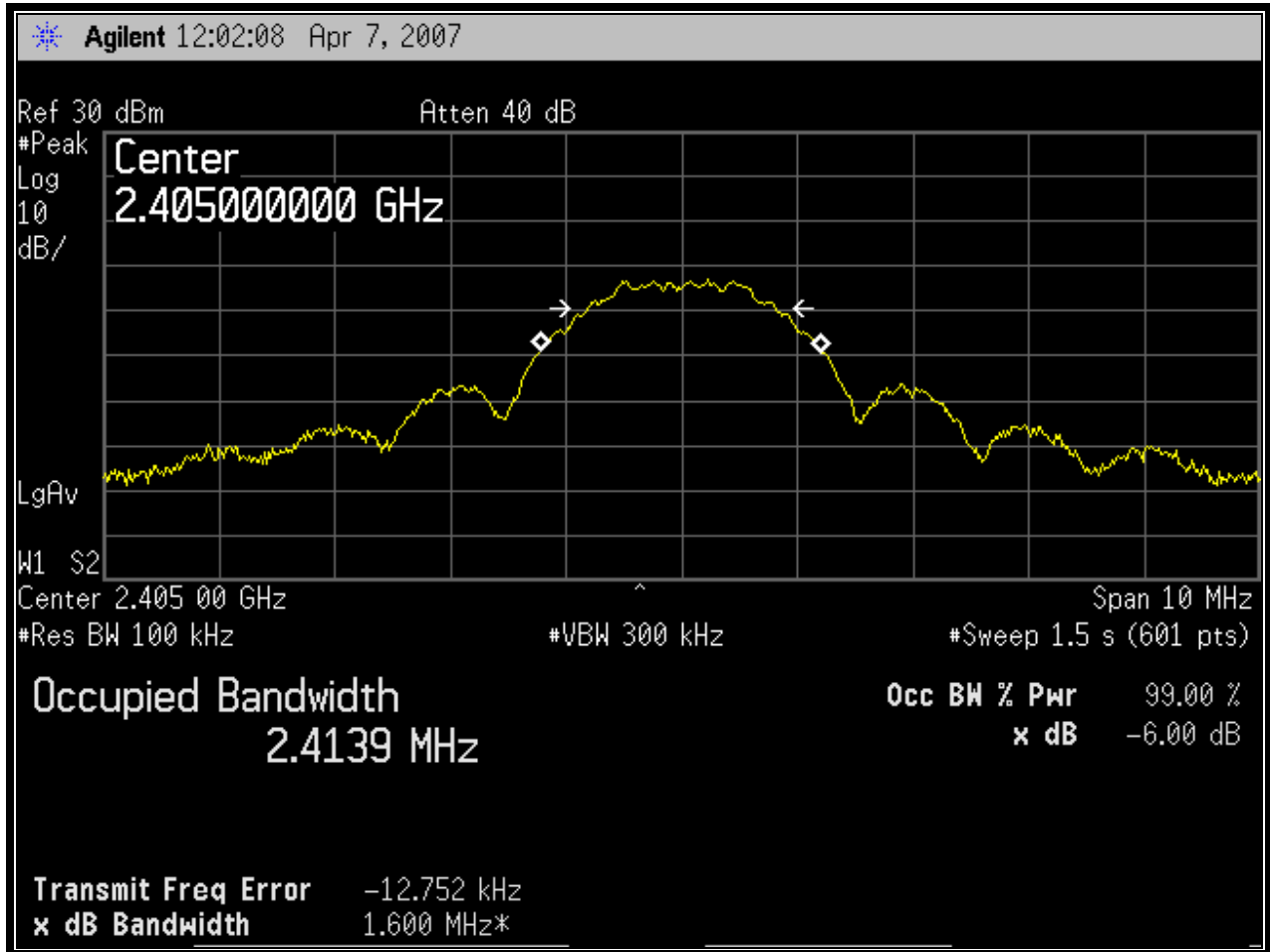
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US440203416	12/14/07

7.2 6 db Bandwidth Test Results

Table 7-2: 6 db Bandwidth Test Data

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
0	2405	1.60	0.5	Pass
7	2440	1.62	0.5	Pass
15	2480	1.62	0.5	Pass

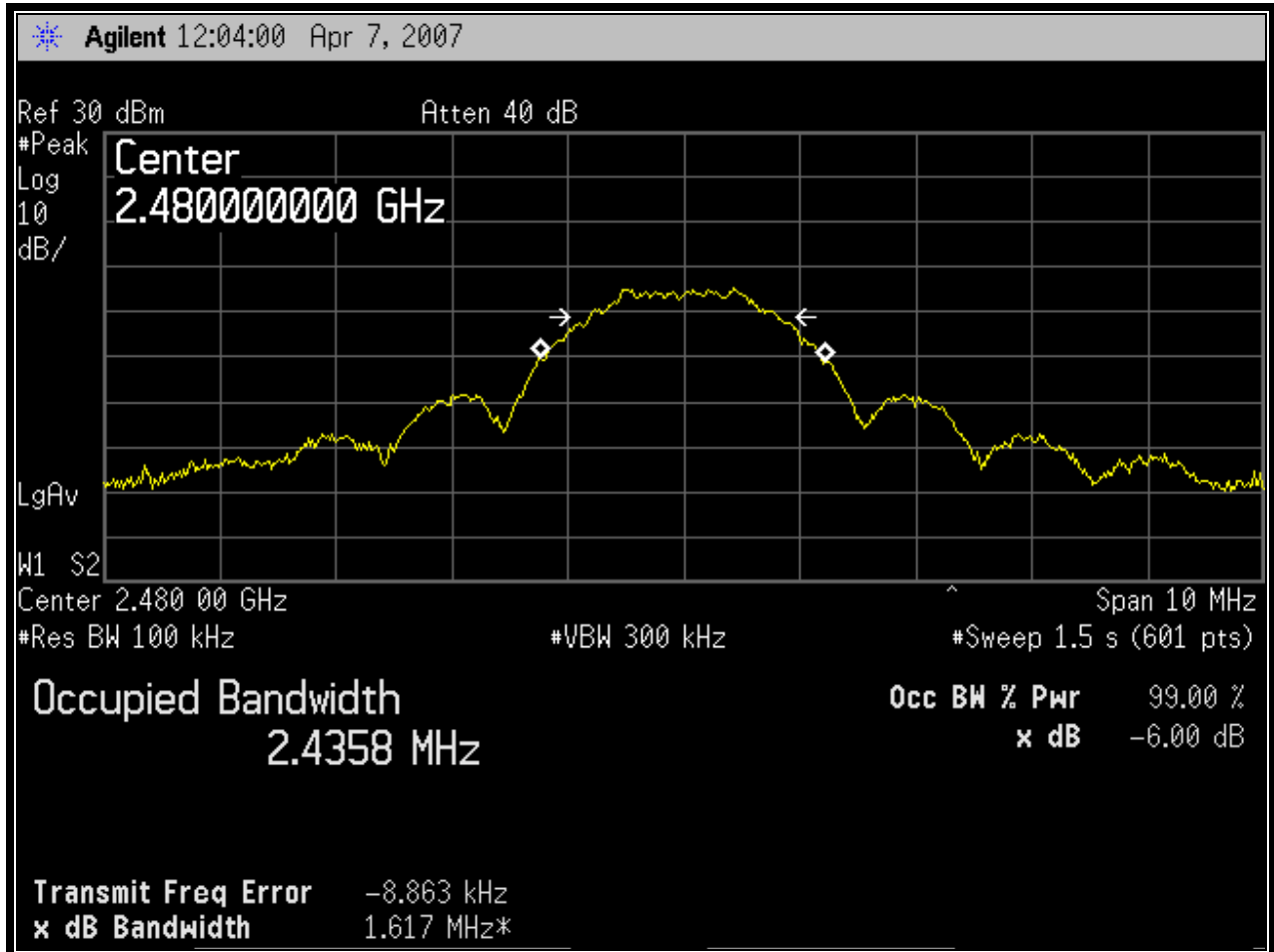
Plot 7-1: 6 dB Bandwidth Channel 0 (TX Frequency: 2405 MHz)



Plot 7-2: 6 dB Bandwidth Channel 7 (TX Frequency: 2440 MHz)



Plot 7-3: 6 dB Bandwidth Channel 15 (TX Frequency: 2480 MHz)



Test Personnel:

Daniel W. Baltzell
 EMC Test Engineer

Signature

April 7, 2007
 Date Of Test

8 Power Spectral Density - §15.247(e); RSS-210 §A8.2

8.1 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 k Hz, the video bandwidth set at 30 k Hz, and the sweep time set at 500 seconds. The spectral lines were resolved for the modulated carriers at 2.405 GHz, 2.440 GHz, and 2.480 GHz respectively. These levels are below the +8 dBm limit. See the power spectral density table and plots.

Table 8-1: Power Spectral Density Test Equipment

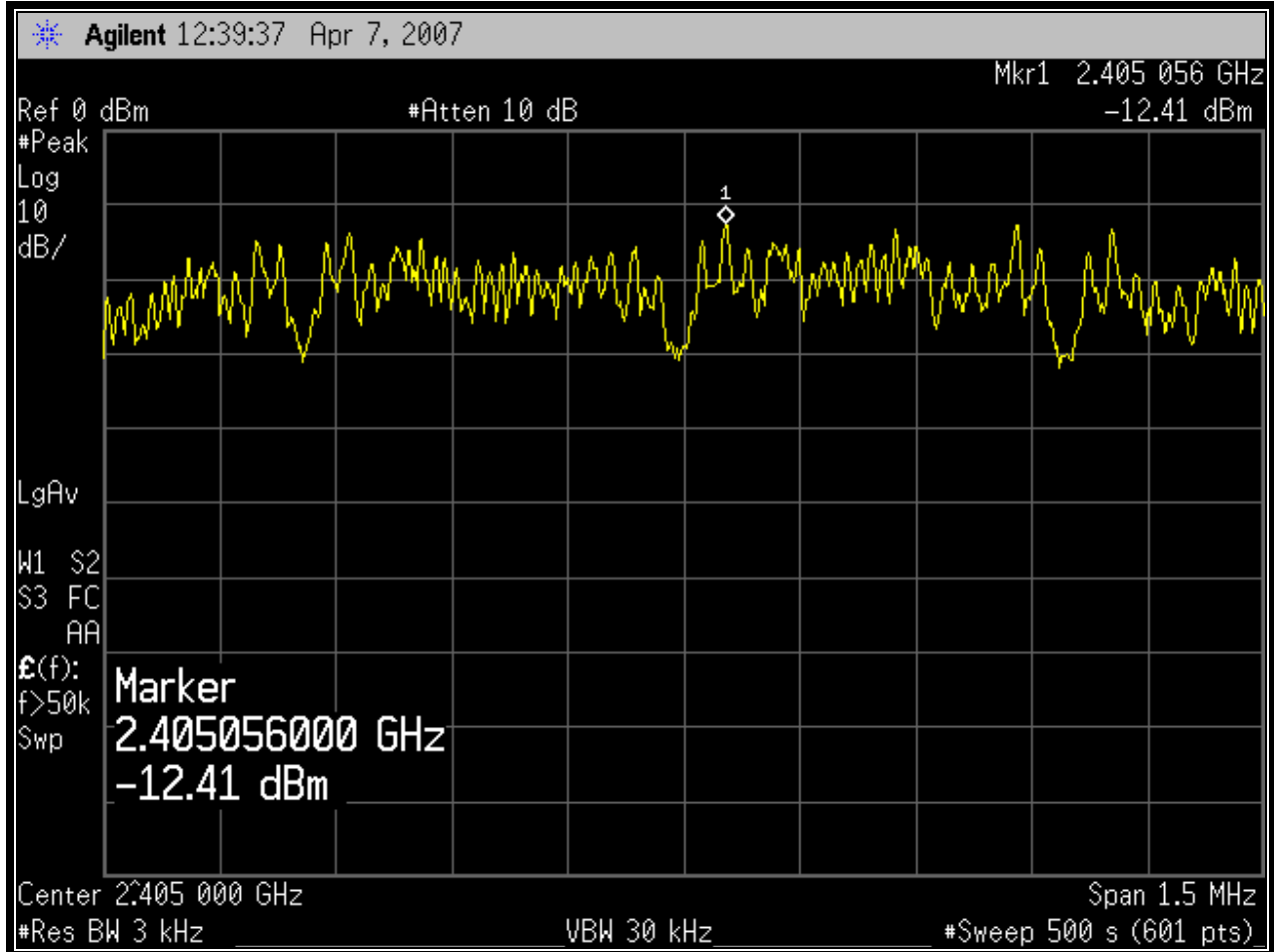
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US440203416	12/14/07

8.2 Power Spectral Density Test Data

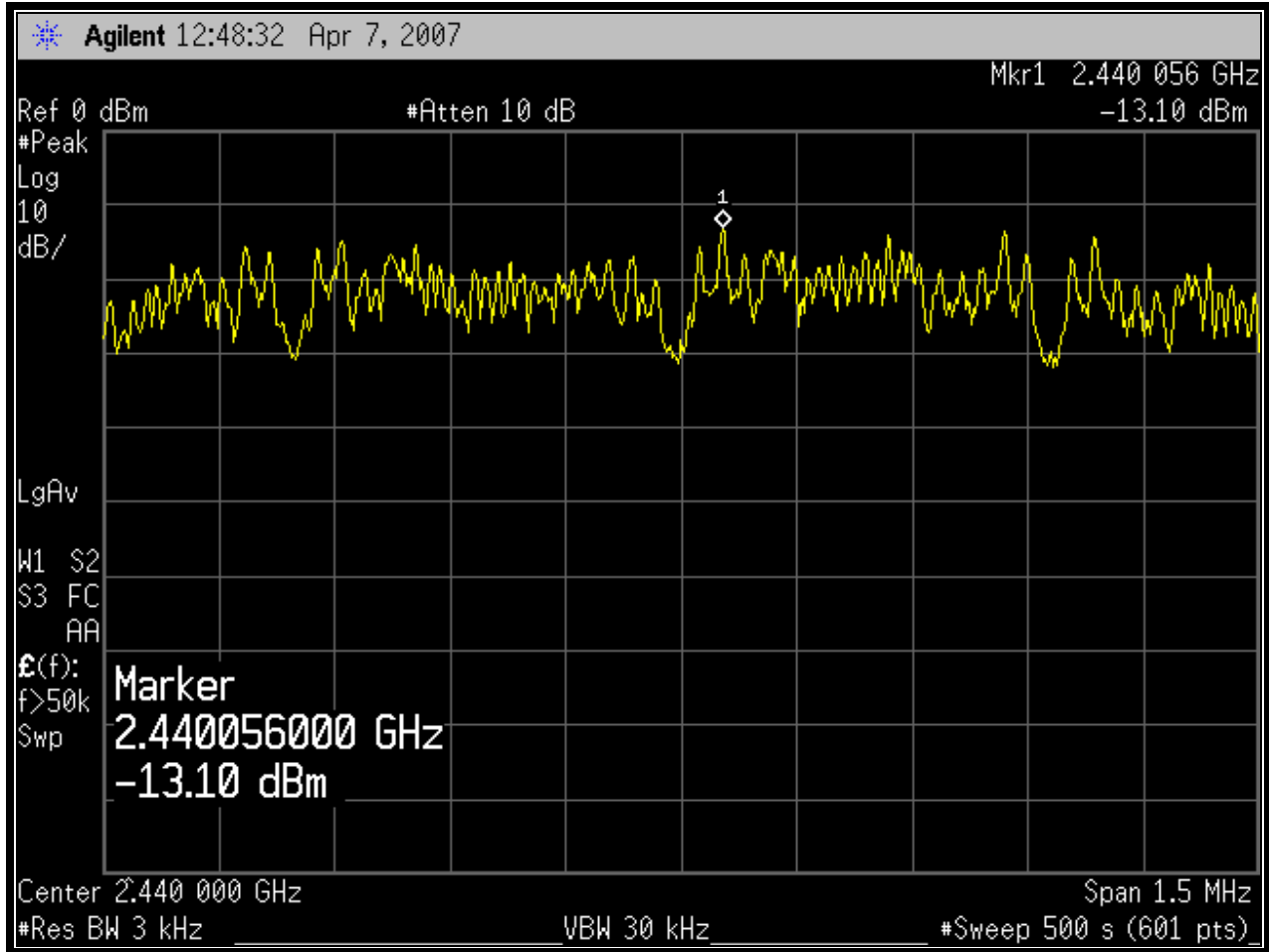
Table 8-2: Power Spectral Density Test Data

Channel	Frequency (MHz)	RF Power Level (dBm)	Maximum Limit +8dBm	Pass/Fail
0	2405	-12.4	8	Pass
7	2440	-13.1	8	Pass
15	2480	-13.6	8	Pass

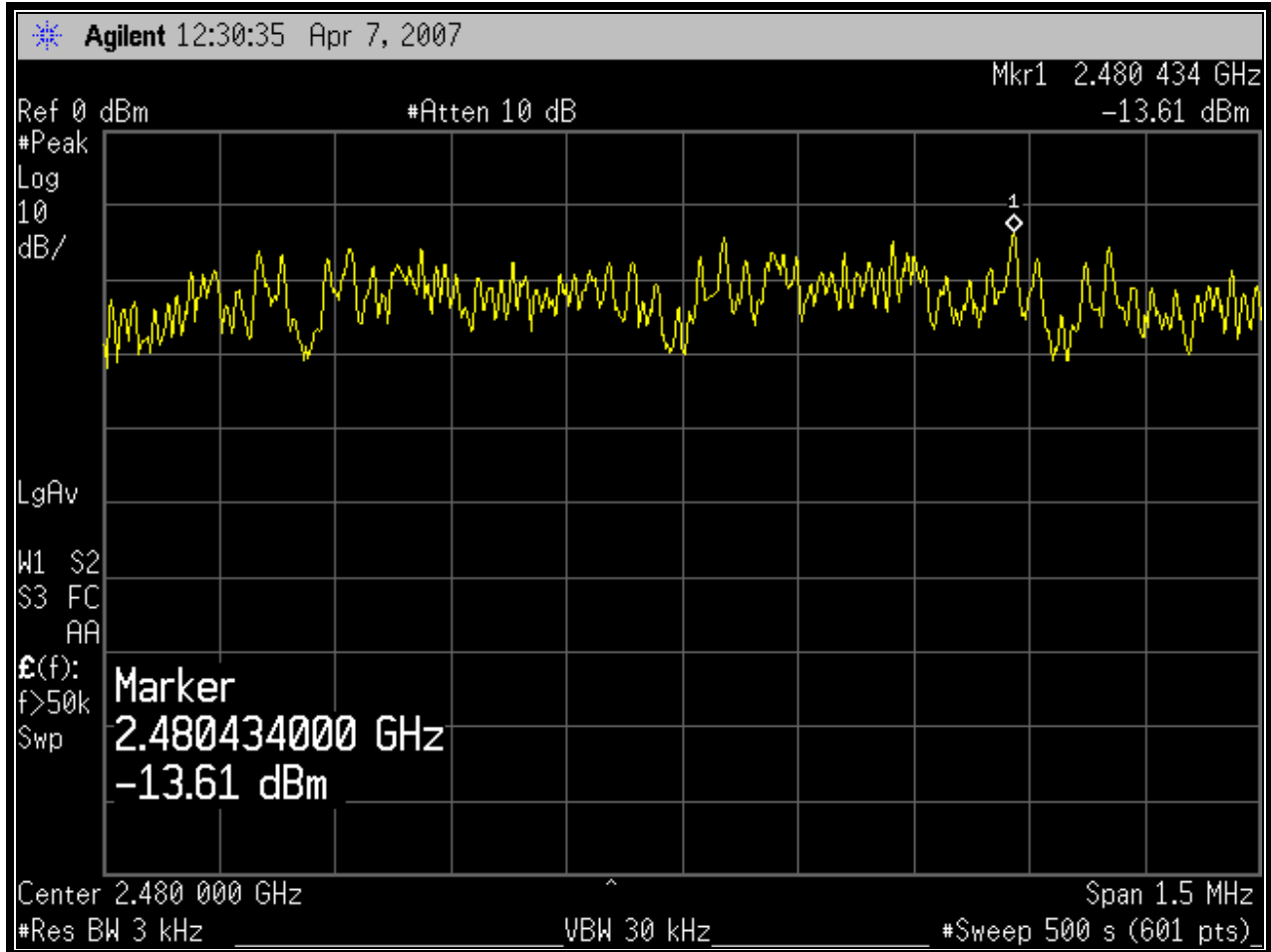
Plot 8-1: Power Spectral Density: Channel 0 (2405 MHz)



Plot 8-2: Power Spectral Density: Channel 7 (2440 MHz)



Plot 8-3: Power Spectral Density: Channel 15 (2480 MHz)



Test Personnel:

Daniel W. Baltzell
EMC Test Engineer

Signature

April 7, 2007
Date Of Test

9 Conducted Limits - §15.207; RSS-Gen

The conducted limits testing is not required since the device is battery operated and cannot be connected to an AC power source.

10 Radiated Emissions - §15.209; RSS-210 §A8.5 and RSS-Gen

10.1 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.

10.2 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 10th harmonic of the highest fundamental transmitter frequency (24.8 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 10-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900151	Rohde and Schwarz	HFH2-Z2	Loop Antenna (9 kHz - 30 MHz)	827525/019	9/15/09
901365	MITEQ	JS4-00102600-41-5P	Amplifier, 15 V, 0.1-26 GHz, 28 dB gain, power 5 dB	1094152	3/24/08
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9kHz-12.8GHz)	3826A00144	10/16/07
900905	Rhein Tech Labs	PR-1040	OATS 1 Preamplifier 40 dB (30 MHz – 2 GHz)	1006	7/19/08
900878	Rhein Tech Labs	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901426	Insulated Wire Inc.	KPS-1503-3600-KPS	RF cable, 30'	NA	12/5/07
901425	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF cable, 20'	NA	12/5/07
901424	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	12/5/07
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 - 8,2 GHz)	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 GHz)	3525A00159	11/27/07
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	9/13/07
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	9/13/07
900889	Hewlett Packard	85685A	RF Preselector (20 Hz - 2 GHz)	3146A01309	4/12/07

10.3 Radiated Emissions Test Results

10.3.1 Radiated Emissions – Digital Test Data

Table 10-2: Digital Radiated Emissions

Temperature: 44°F Humidity: 31%										
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
48.000	Qp	V	0	1.0	40.7	-18.8	21.9	40.0	-18.1	Pass
64.000	Qp	V	90	1.0	43.8	-23.9	19.9	40.0	-20.1	Pass
80.020	Qp	V	180	1.0	44.4	-22.2	22.2	40.0	-17.8	Pass
144.000	Qp	H	270	1.0	32.4	-17.7	14.7	43.5	-28.8	Pass
160.000	Qp	H	90	1.5	37.8	-18.3	19.5	43.5	-24.0	Pass
240.000	Qp	H	90	1.5	40.8	-15.9	24.9	46.0	-21.1	Pass
1008.000	Av	H	90	1.1	38.5	-0.2	38.3	54.0	-15.7	Pass

10.3.2 Radiated Emissions Harmonics/Spurious Test Data

Table 10-3: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2405 MHz)

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Average Analyzer Reading (dBuV) (1 MHz RBW/10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
4810.0	59.7	40.8	4.1	44.9	54.0	-9.1
7215.0	46.5	32.6	6.2	38.8	52.7	-13.9
9620.0	40.7	28.3	12.8	41.1	52.7	-11.6
12025.0	40.8	27.3	15.2	42.5	54.0	-11.5

Table 10-4: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2440 MHz)

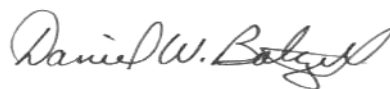
Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Average Analyzer Reading (dBuV) (1 MHz RBW/10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
4880.0	59.0	40.0	4.0	44.0	54.0	-10.0
7320.0	42.1	28.5	6.2	34.7	54.0	-19.3
9760.0	41.0	28.1	13.3	41.4	53.2	-11.8
12200.0	40.7	27.3	15.1	42.4	54.0	-11.6

Table 10-5: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2480 MHz)

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Average Analyzer Reading (dBuV) (1 MHz RBW/10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
4960.0	58.5	41.7	4.2	45.9	54.0	-8.1
7440.0	42.9	28.5	6.8	35.3	54.0	-18.7
9920.0	42.2	29.5	13.6	43.1	52.6	-9.5
12400.0	40.0	26.9	18.7	45.6	54.0	-8.4

Test Personnel:

Daniel W. Baltzell
 EMC Test Engineer



Signature

April 6, 2007
 Date Of Tests

10.3.3 Radiated Emissions Harmonics/Spurious Test Data – EUT Mounted in Host Unit

Table 10-6: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2405 MHz)

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Average Analyzer Reading (dBuV) (1 MHz RBW/10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
4810.0	57.5	39.2	4.1	43.3	54.0	-10.7
7215.0	47.7	33.8	6.2	40.0	52.7	-12.7
9620.0	39.1	26.5	12.8	39.3	52.7	-13.4
12025.0	39.0	26.2	15.2	41.4	54.0	-12.6

Table 10-7: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2440 MHz)

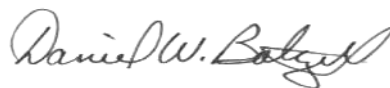
Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Average Analyzer Reading (dBuV) (1 MHz RBW/10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
4880.0	57.9	39.0	4.0	43.0	54.0	-11.0
7320.0	44.5	31.0	6.2	37.2	54.0	-16.8
9760.0	39.4	26.6	13.3	39.9	53.2	-13.3
12200.0	38.4	24.7	15.1	39.8	54.0	-14.2

Table 10-8: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2480 MHz)

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Average Analyzer Reading (dBuV) (1 MHz RBW/10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
4960.0	61.0	43.0	4.2	47.2	54.0	-6.8
7440.0	42.5	28.3	6.8	35.1	54.0	-18.9
9920.0	41.7	28.9	13.6	42.5	52.6	-10.1
12400.0	39.2	26.4	18.7	45.1	54.0	-8.9

Test Personnel:

Daniel W. Baltzell
 EMC Test Engineer



Signature

April 24, 2007
 Date Of Tests

Rhein Tech Laboratories, Inc.
360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

Client: iRobot Corporation
Model: 2.4 GHz Module
Standards: FCC 15.247 & RSS-210
FCC/IC ID: UFE-R3MOD24A/6652A-R3MOD24A
Report #: 2007155

11 Conclusion

The data in this measurement report shows that the EUT as tested, Model # 4123659, 2.4 GHz Module, FCC ID: UFE-R3MOD24A, IC: 6652A-R3MOD24A, complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations, and Industry Canada RSS-210 and RSS Gen.