



Engineering and Testing for EMC and Safety Compliance



Accredited under A2LA Certificate # 2653.01

Certification Report
FCC Part 15.247 & Industry Canada RSS-210

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FCC ID/IC:	MQOTT601-30000/ 2570A-TT601300	Test Report Date:	September 7, 2007
Platform:	N/A	RTL Work Order Number:	2007233
Model Number:	TT-601_RG WF	RTL Quote Number:	QRTL07-226/ QRTL07-279
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 (10-01-05): Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System			
Industry Canada: RSS-210, Issue 7 Low-power License-exempt Radiocommunication Devices			
Digital Interface Information Digital Interface was found to be compliant			
Frequency Range (MHz)	Output Power (W)*	Frequency Tolerance	Emission Designator
2412-2462	0.132	N/A	17M4G7D

* power reported is peak conducted power

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: Desmond A. Fraser

Date: September 7, 2007

Typed/Printed Name: Desmond A. Fraser

Position: President

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

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1 General Information

1.1 Scope

Applicable Standards:

- FCC Rules Part 15.247 (10-01-06): 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 7 September 2005): Low-power License-exempt Radiocommunication Devices

1.2 Description of EUT

Equipment Under Test	Body Worn Terminal
Model Number	TT-601_RG WF
Power Supply	Battery operated
Modulation Type	DSSS
Transfer Rate	1, 2, 5.5, 11 Mbps 6, 9, 12, 18, 24, 36, 48, 54 Mbps
Frequency Range	2412 – 2462 MHz
Antenna Connector Type	Internal
Antenna Types	Internal

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 FCC certification for Vocollect, Inc. Model: TT-601_RG WF, FCC ID: MQOTT601-30000, and IC: 2570A-TT601300.

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
1	2412
6	2437
11	2462

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
RSS-Gen	20 dB Bandwidth	Pass

2.4 Test System Details

The test samples were received on July 9 and August 14, 2007. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following tables.

Table 2-3: Equipment Under Test

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
T2x WLAN Terminal	Vocollect, Inc.	TT-601_RG WF	097040722	MQOTT601-30000	N/A	18081
T2x WLAN Terminal	Vocollect, Inc.	TT-601_RG WF	097040728	MQOTT601-30000	N/A	18080
Battery	Vocollect, Inc.	730025	07190024	N/A	N/A	18079
Battery	Vocollect, Inc.	730025	07190028	N/A	N/A	18078
Headset	Vocollect, Inc.	076320303	N/A	N/A	1.4 m shielded I/O	18023
Scanner	Vocollect, Inc.	735089	N/A	N/A	1.4 m shielded I/O	18024

2.5 Configuration of Tested System

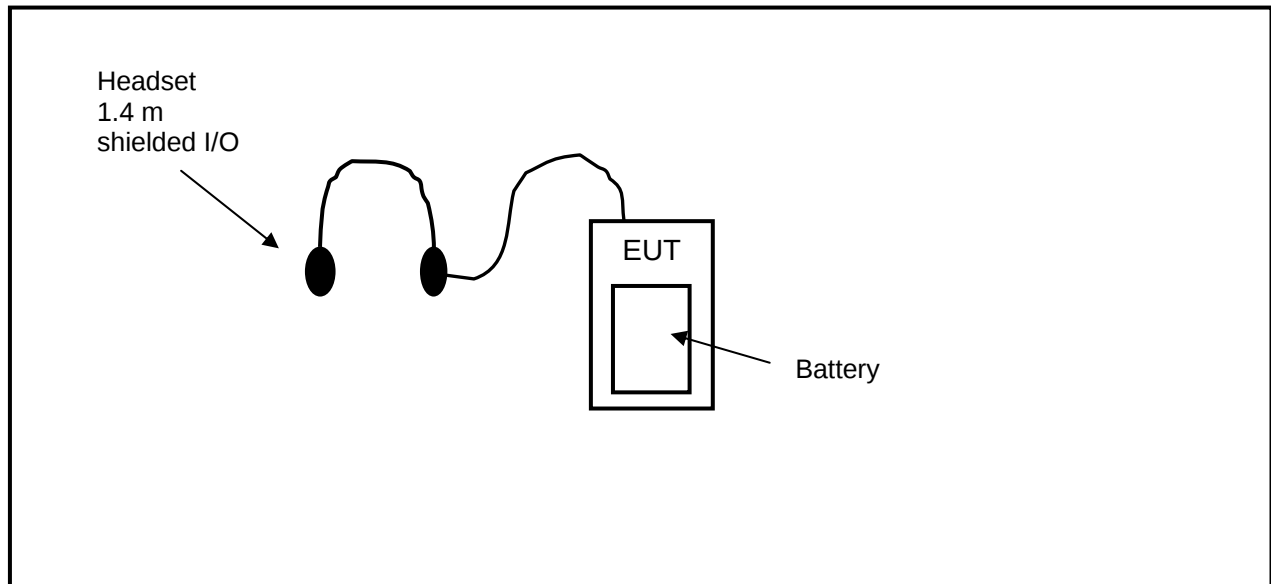


Figure 2-1: Configuration of System Under Test

3 Peak Output Power - §15.247(b)(3); 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

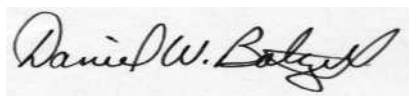
Channel	Frequency (MHz)	Peak Conducted Output Power b mode (dBm)	Average Conducted Output Power b mode (dBm)	Peak Conducted Output Power g mode (dBm)	Average Conducted Output Power g mode (dBm)
1	2412	17.8	14.3	21.2	14.1
6	2437	17.7	13.9	21.2	14.0
11	2462	17.7	13.6	19.3	13.8

Notes:

- Peak power is being used to show compliance for EMC. Average power is presented per "FCC OET SAR Measurement Procedures for 802.11a/b/g Transmitters (Oct '06 Rev. 1.1)" for comparison to the SAR report.
- Since the average conducted output power in g mode was not more than 0.25 dB higher than the average conducted output power in b mode, SAR testing in g mode was not done (please reference SAR report).
- Vocollect firmware power setting of 75.

Test Personnel:

Daniel Baltzell
Test Engineer



Signature

July 19 and August 16, 2007
Dates Of Tests

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

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
900931	Hewlett Packard	8566B	Spectrum Analyzer (20 Hz – 22 GHz)	3138A07771	5/22/08
900878	Rhein Tech Labs	AM3-1197-0005	3 m Antenna Mast, Polarizing	Outdoor Range 1	Not Required
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9kHz-12.8GHz)	3826A00144	10/16/07
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	6/15/10

4.2 Restricted Band Edge Test Results

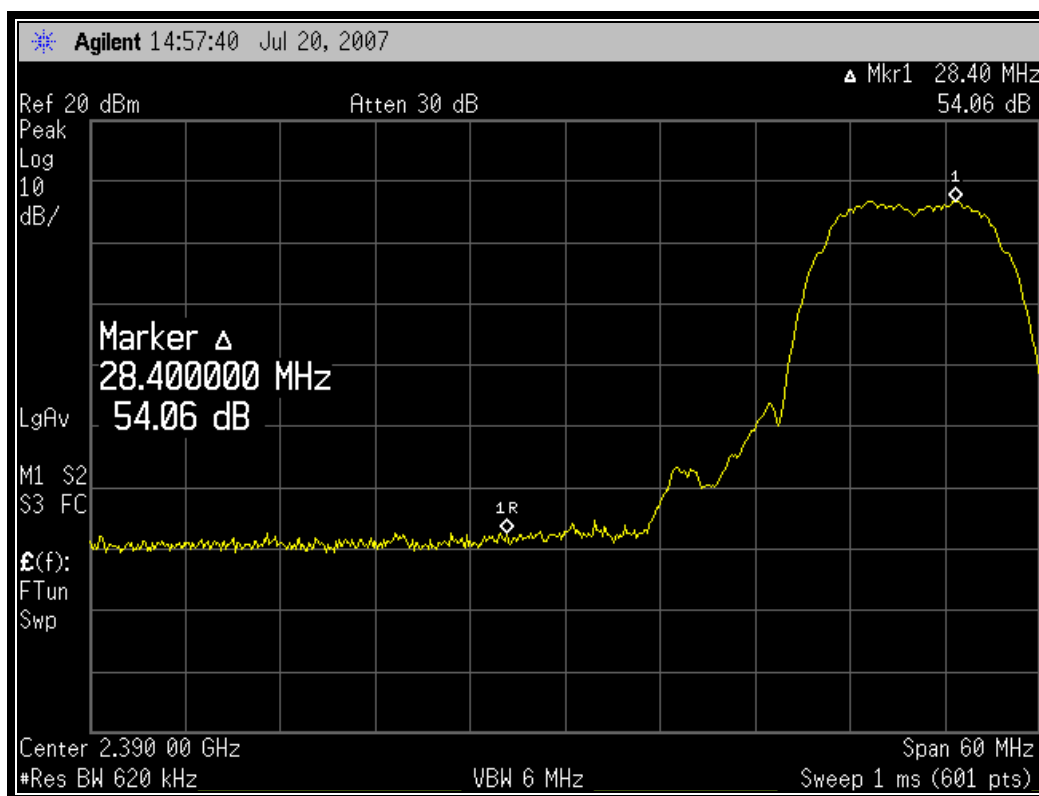
4.2.1 Calculation of Lower Band Edge – b mode

98.2 dBuV/m is the field strength measurement, from which the delta measurement of 54.1 dB is subtracted (reference plots), resulting in a level of 44.1 dB. This level has a margin of 9.9 dB below the limit of 54 dBuV/m.

Calculation: $98.2 \text{ dBuV/m} - 54.1 \text{ dB} - 54 \text{ dBuV/m} = -9.9 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 102.2 dBuV/m
 Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 98.2 dBuV/m
 Delta measurement = 54.1 dB

Plot 4-1: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz) – b mode



4.2.2 Calculation of Upper Band Edge – b mode

85.8 dBuV/m is the field strength measurement, from which the delta measurement of 52.2 dB is subtracted (reference plots), resulting in a level of 33.6 dB. This level has a margin of 20.4 dB below the limit of 54 dBuV/m.

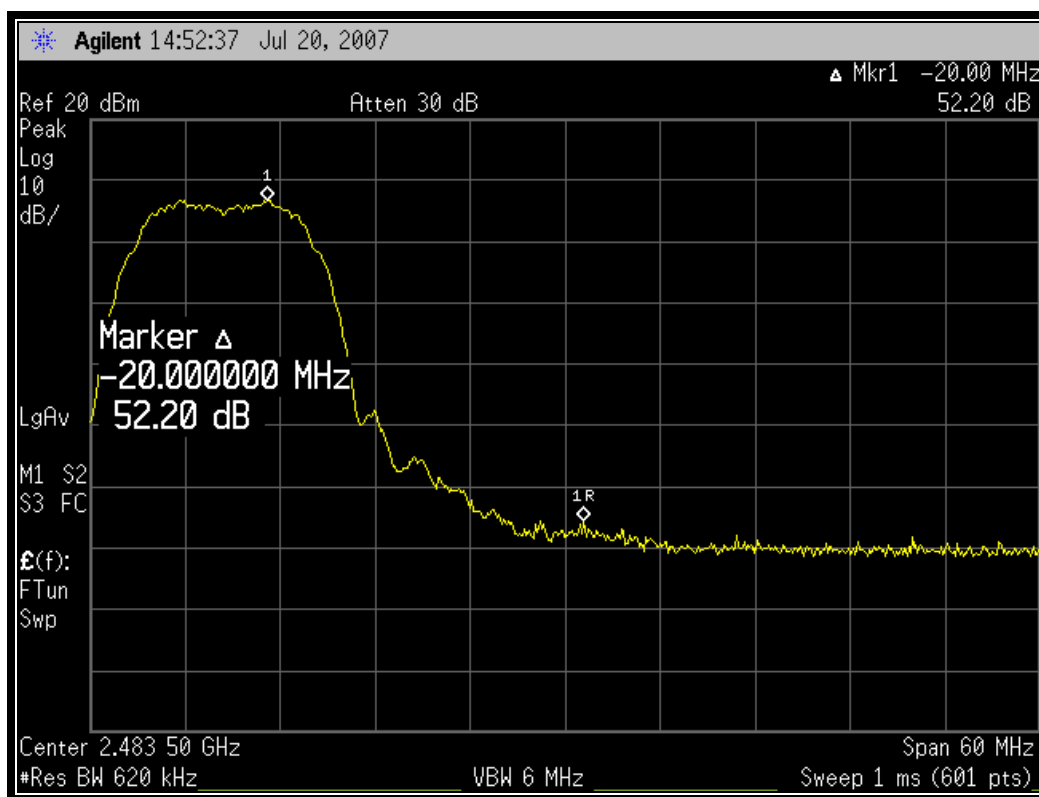
Calculation: $85.8 \text{ dBuV/m} - 52.2 \text{ dB} - 54 \text{ dBuV/m} = -20.4 \text{ dB}$

Peak Field Strength of Upper Band Edge (1 MHz RBW/1 MHz VBW) = 89.1 dBuV/m

Average Field Strength of Upper Band Edge (1 MHz RBW/10 Hz VBW) = 85.8 dBuV/m

Delta measurement = 52.2 dB

Plot 4-2: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz) – b mode



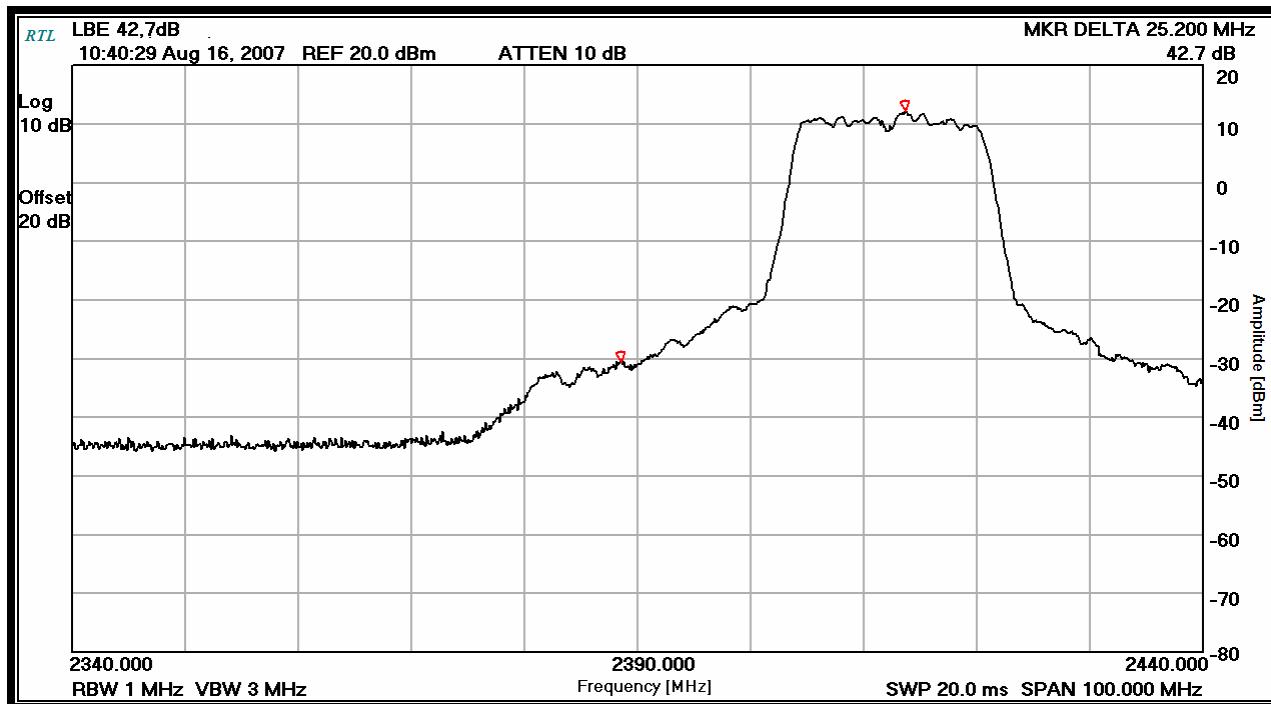
4.2.3 Calculation of Lower Band Edge – g mode

94.4 dBuV/m is the field strength measurement, from which the delta measurement of 42.7 dB is subtracted (reference plots), resulting in a level of 51.7 dB. This level has a margin of 2.3 dB below the limit of 54 dBuV/m.

Calculation: $94.4 \text{ dBuV/m} - 42.7 \text{ dB} - 54 \text{ dBuV/m} = -2.3 \text{ dB}$

Peak Field Strength of Lower Band Edge (1 MHz RBW/1 MHz VBW) = 108.3 dBuV/m
 Average Field Strength of Lower Band Edge (1 MHz RBW/10 Hz VBW) = 94.4 dBuV/m
 Delta measurement = 42.7 dB

Plot 4-3: Lower Band Edge: Average Measurement Channel 1 (TX Frequency: 2412 MHz) – g mode



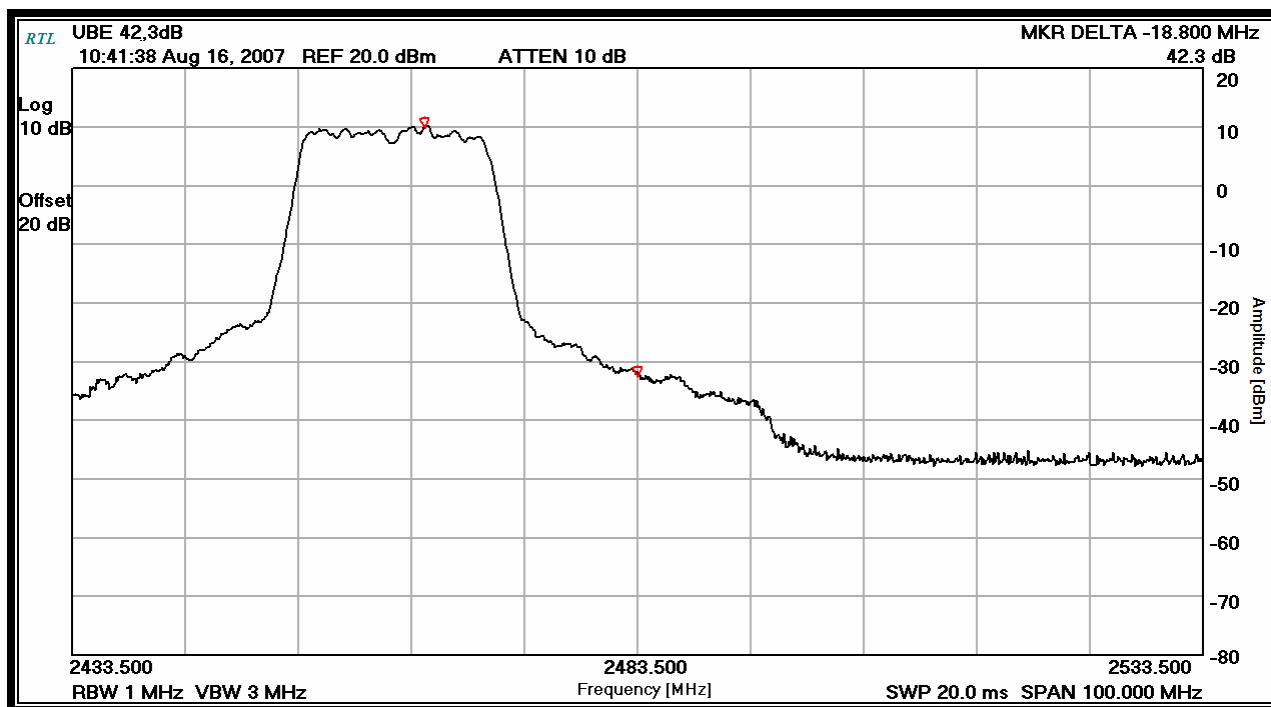
4.2.4 Calculation of Upper Band Edge – g mode

94.7 dBuV/m is the field strength measurement, from which the delta measurement of 42.3 dB is subtracted (reference plots), resulting in a level of 52.4 dB. This level has a margin of 1.6 dB below the limit of 54 dBuV/m.

Calculation: $94.7 \text{ dBuV/m} - 42.3 \text{ dB} - 54 \text{ dBuV/m} = -1.6 \text{ dB}$

Peak Field Strength of Upper Band Edge (1 MHz RBW/1 MHz VBW) = 108.8 dBuV/m
Average Field Strength of Upper Band Edge (1 MHz RBW/10 Hz VBW) = 94.7 dBuV/m
Delta measurement = 42.3 dB

Plot 4-4: Upper Band Edge: Average Measurement Channel 11 (TX Frequency: 2462 MHz) – g mode



Test Personnel:

Daniel Baltzell
Test Engineer

Daniel W. Baltzell

Signature

July 20 and August 16, 2007
Dates Of Tests

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

5.1 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: 2412 MHz, 2437 MHz and 2462 MHz.

5.2 Antenna Conducted Spurious Emissions Test Results

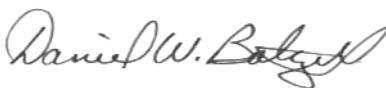
No harmonics or spurs were found within 20 dB (note that we are reporting power as peak) of the limit from the carrier to the 10th harmonic of the carrier frequency. Per FCC 15.31(o), no data is being reported.

Table 5-1: 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	6/13/08

Test Personnel:

Daniel Baltzell
Test Engineer



Signature

July 20 and August 16, 2007
Dates Of Tests

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

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

Table 6-1: 6 dB Bandwidth Test Equipment

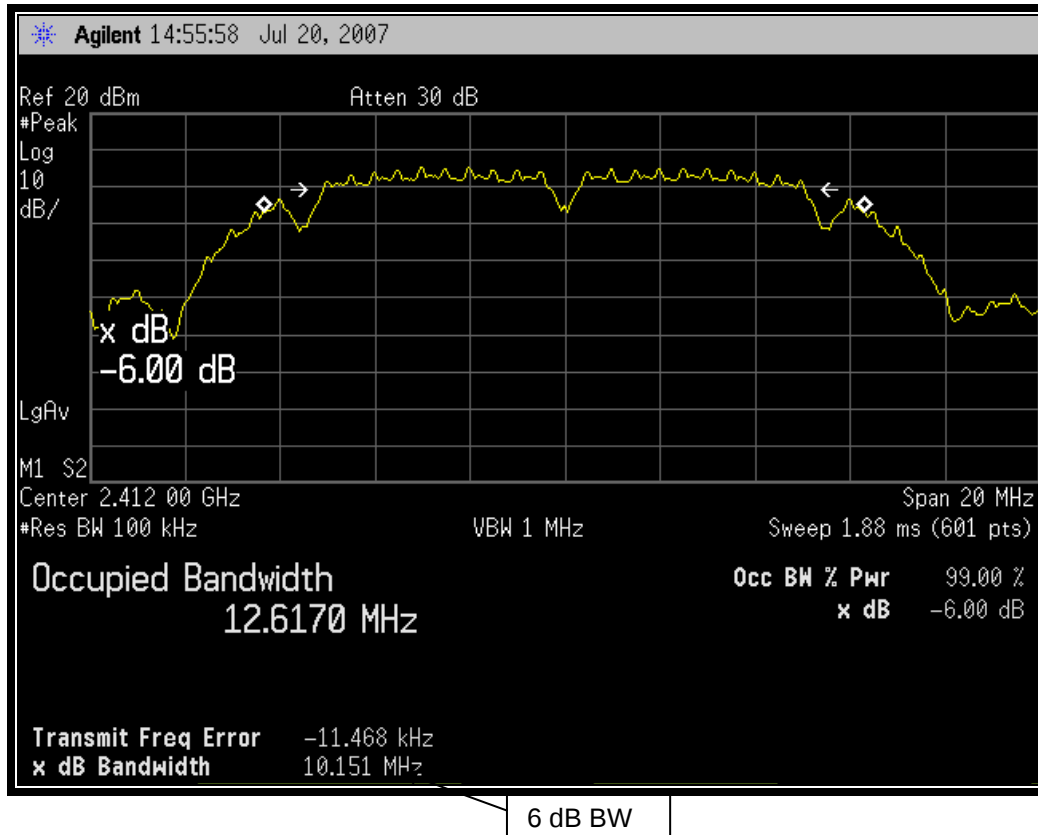
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (20 Hz – 22 GHz)	3138A07771	5/22/08
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US440203416	6/13/08

6.2 6 db Bandwidth Test Results

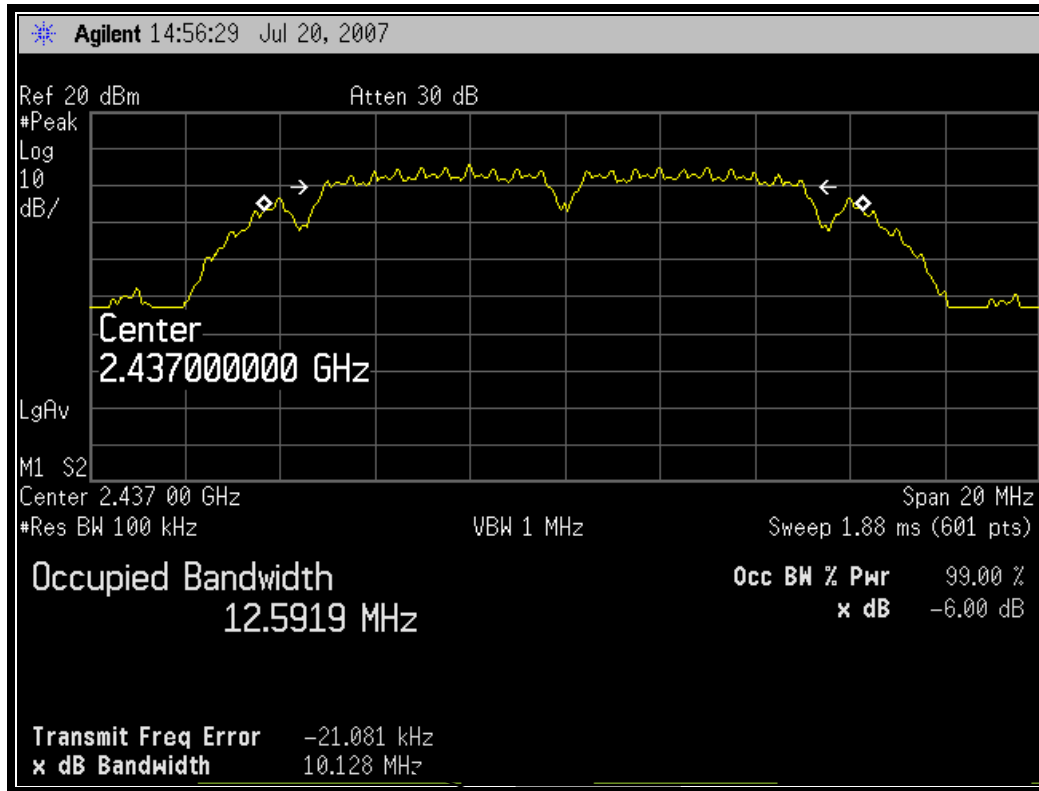
Table 6-2: 6 db Bandwidth Test Data

Channel	Frequency (MHz)	6 dB Bandwidth – b mode (MHz)	6 dB Bandwidth – g mode (MHz)	Minimum Limit (MHz)	Pass/Fail
1	2412	10.2	16.6	0.5	Pass
6	2437	10.1	16.6	0.5	Pass
11	2462	10.1	16.6	0.5	Pass

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

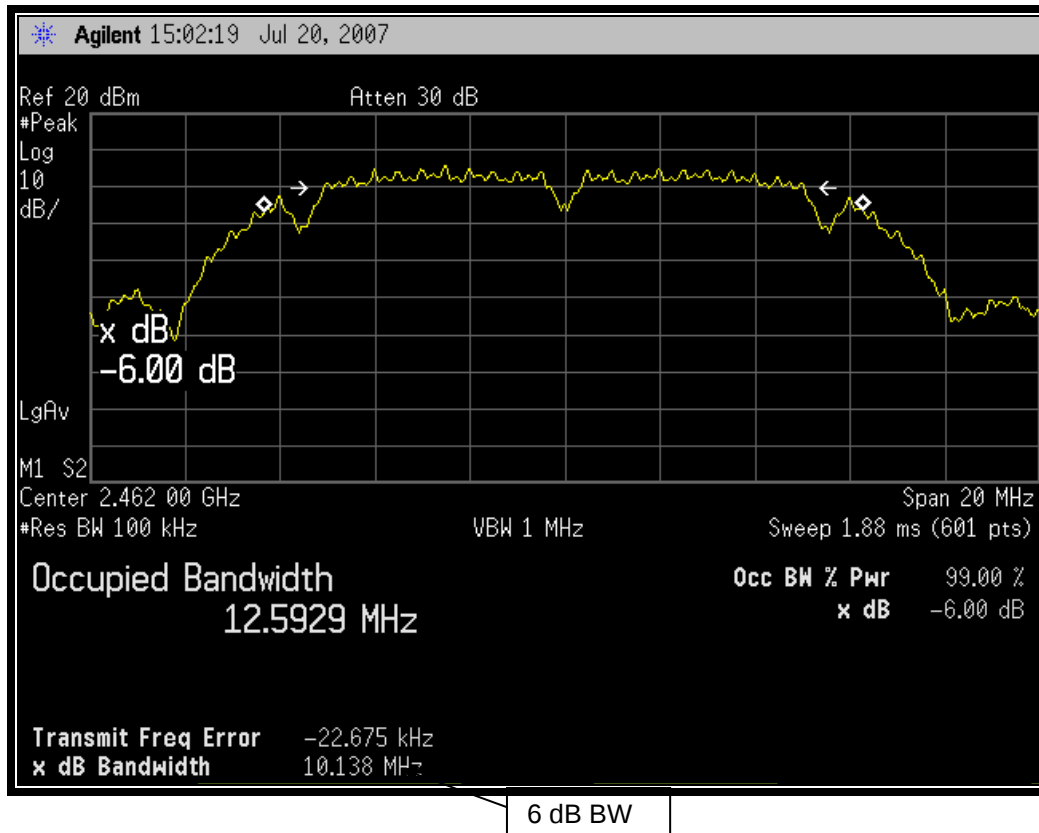


Plot 6-2: 6 dB Bandwidth Channel 6 (TX Frequency: 2437 MHz) – b mode

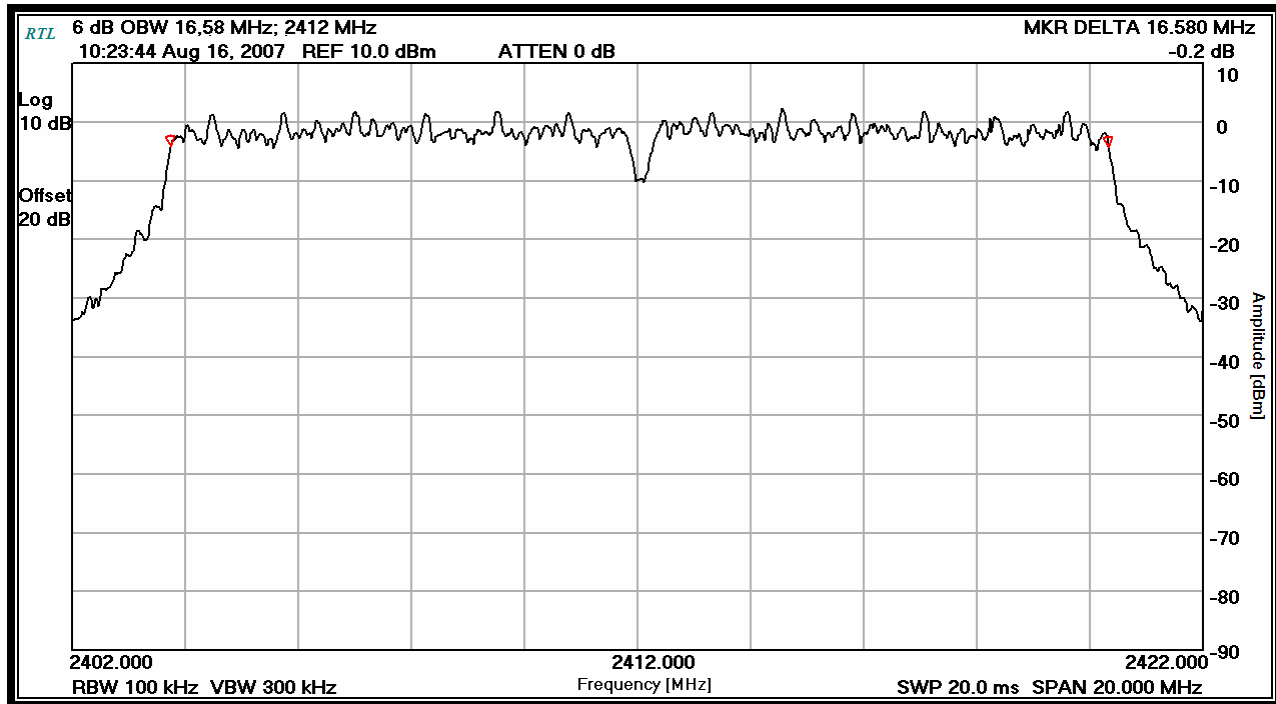


6 dB BW

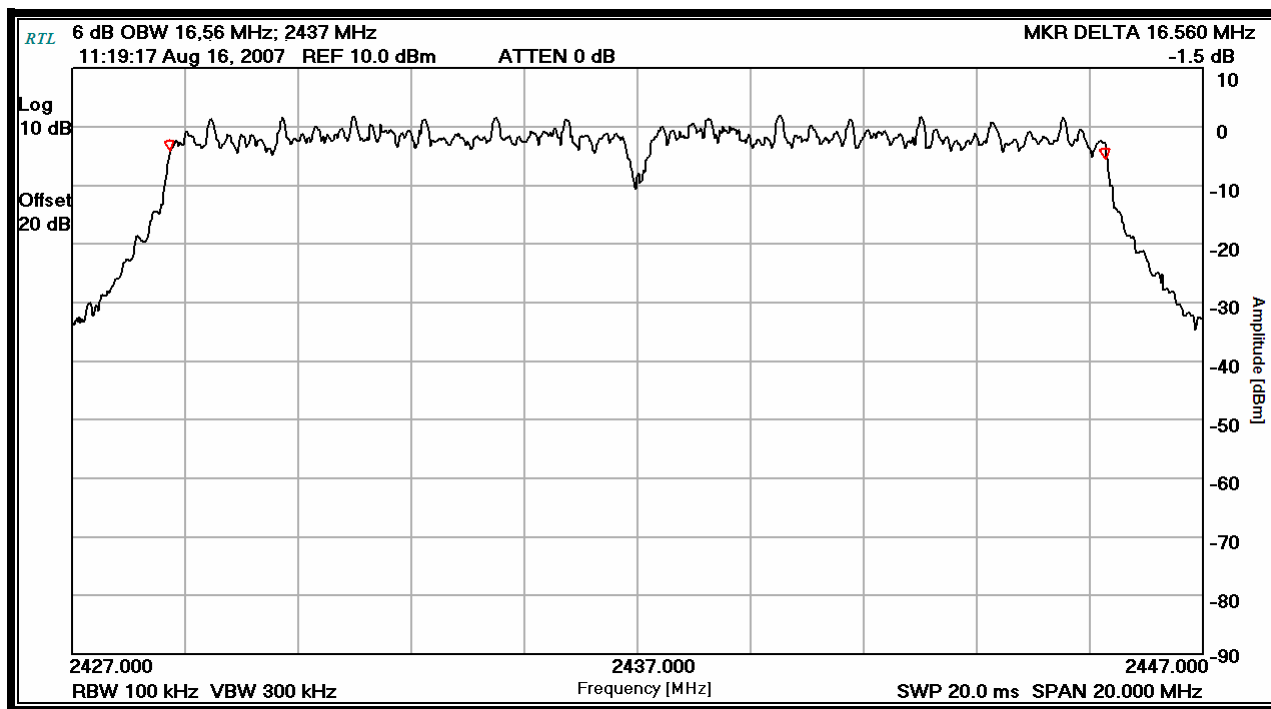
Plot 6-3: 6 dB Bandwidth Channel 11 (TX Frequency: 2462 MHz) – b mode



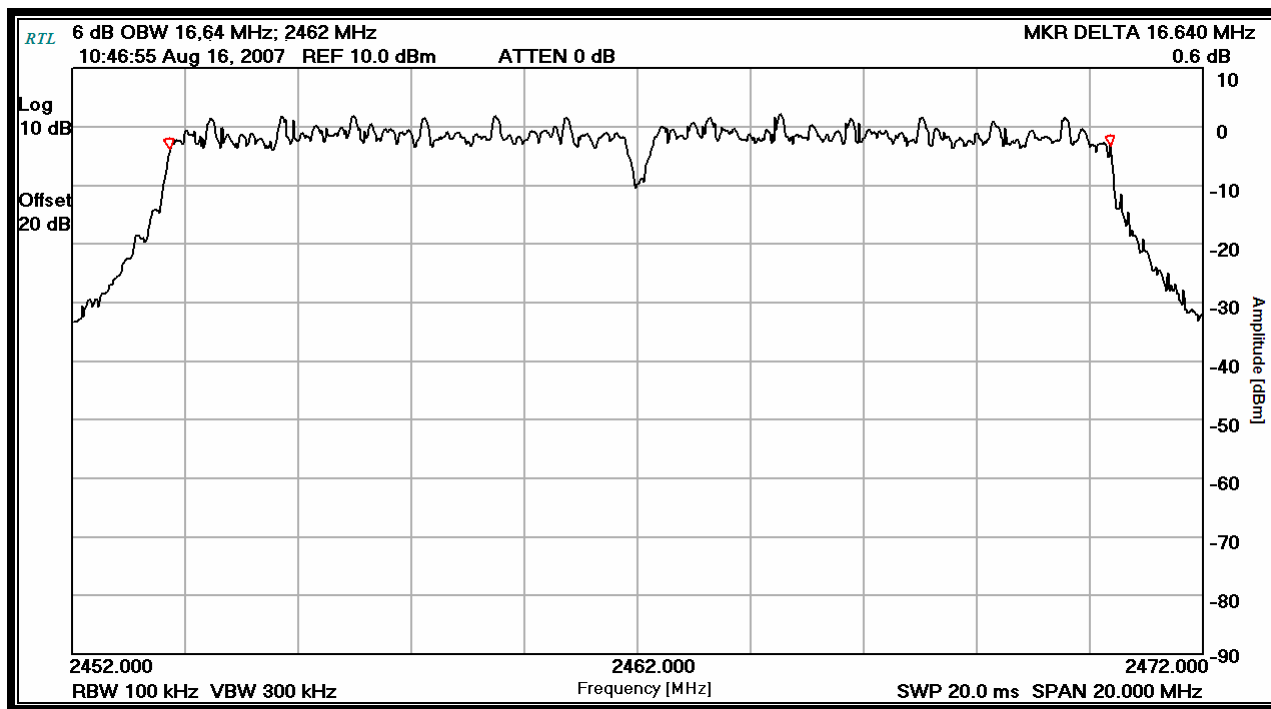
Plot 6-4: 6 dB Bandwidth Channel 1 (TX Frequency: 2412 MHz) – g mode



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



Plot 6-6: 6 dB Bandwidth Channel 11 (TX Frequency: 2462 MHz) – g mode



Test Personnel:

Daniel Baltzell
 Test Engineer

Daniel W. Baltzell

Signature

July 20 and August 16, 2007
 Dates Of Tests

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

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

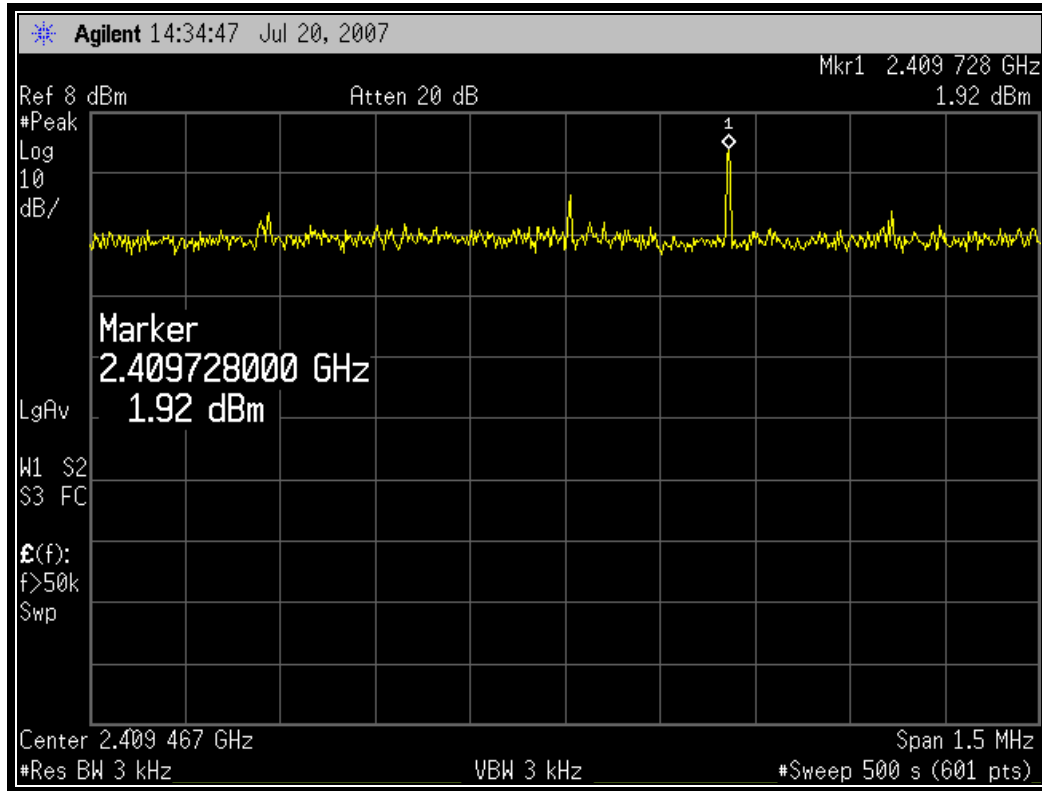
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (20 Hz – 22 GHz)	3138A07771	5/22/08
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US440203416	6/13/08

7.2 Power Spectral Density Test Data

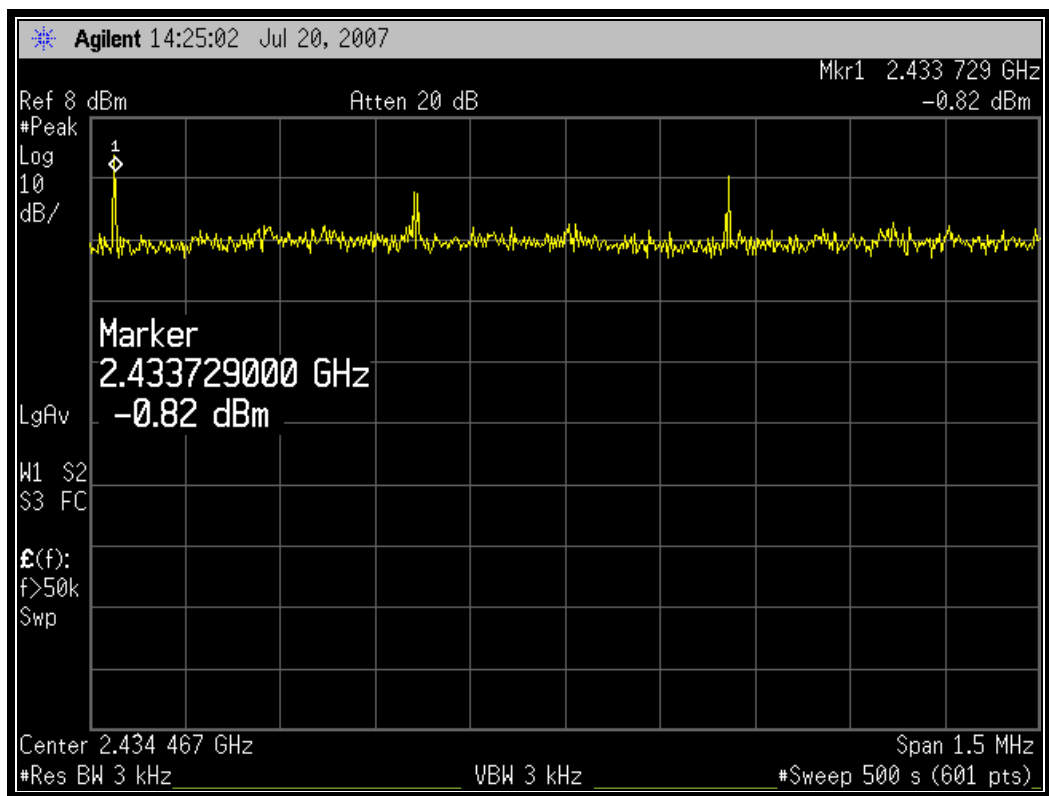
Table 7-2: Power Spectral Density Test Data

Channel	Frequency (MHz)	RF Power Level – b mode (dBm)	RF Power Level – g mode (dBm)	Maximum Limit +8dBm	Pass/Fail
1	2412	1.92	-12.6	8	Pass
6	2437	-0.82	-12.4	8	Pass
11	2462	-0.04	-10.9	8	Pass

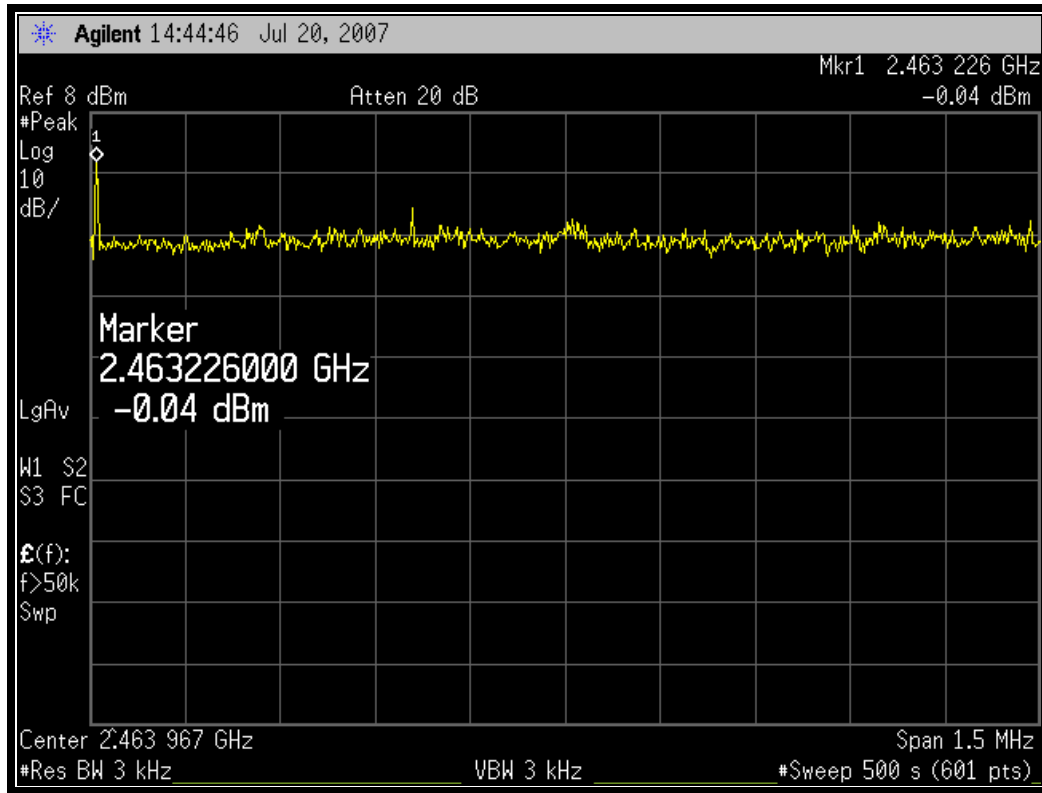
Plot 7-1: Power Spectral Density: Channel 1 (2412 MHz) – b mode



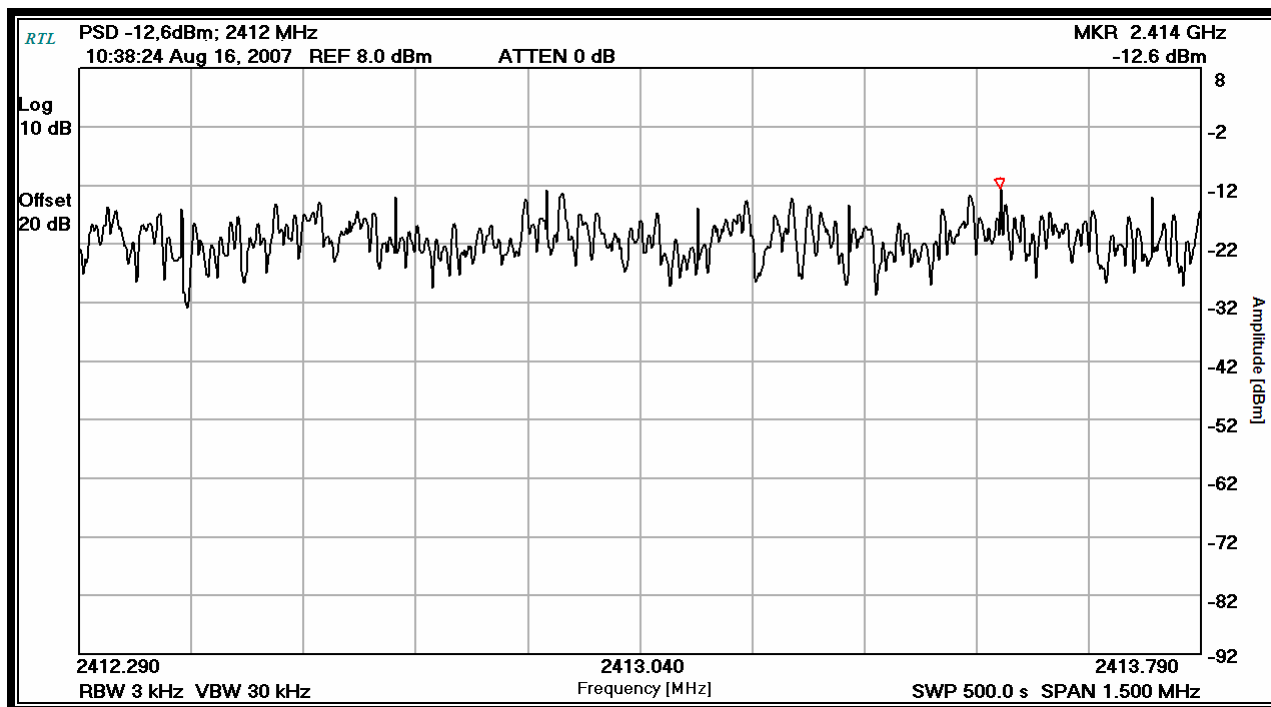
Plot 7-2: Power Spectral Density: Channel 6 (2437 MHz) – b mode



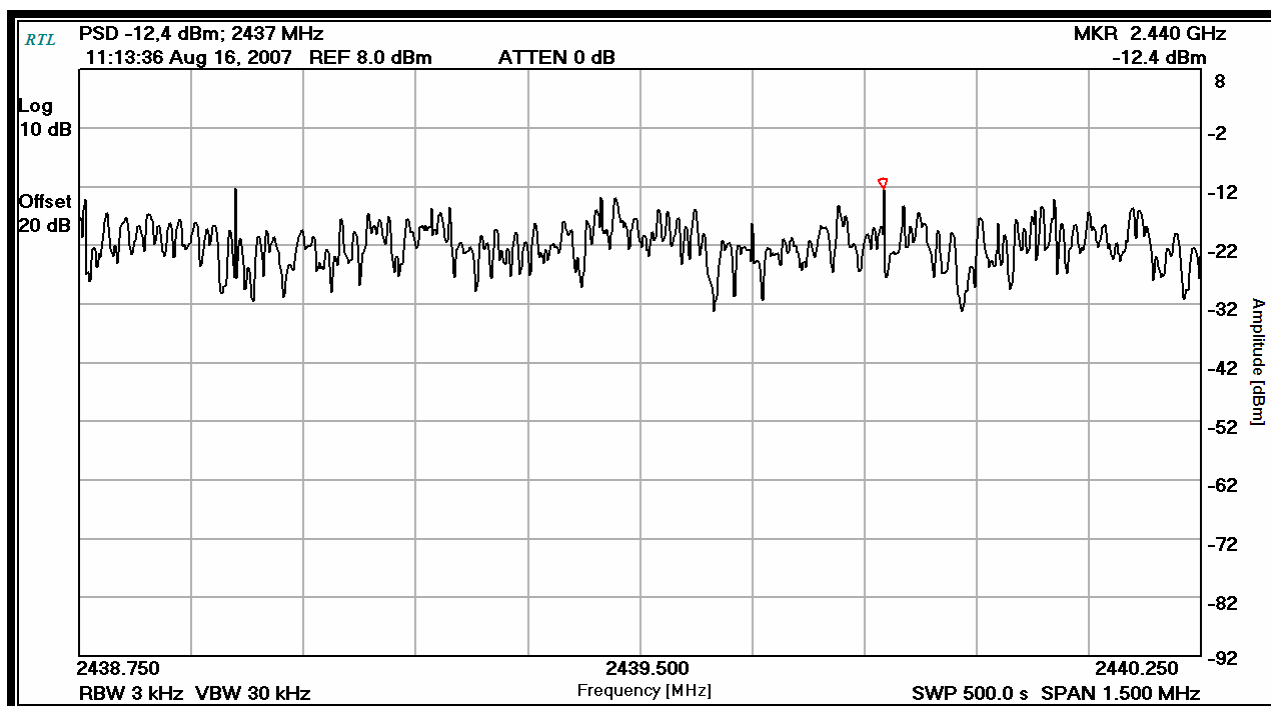
Plot 7-3: Power Spectral Density: Channel 11 (2462 MHz) – b mode



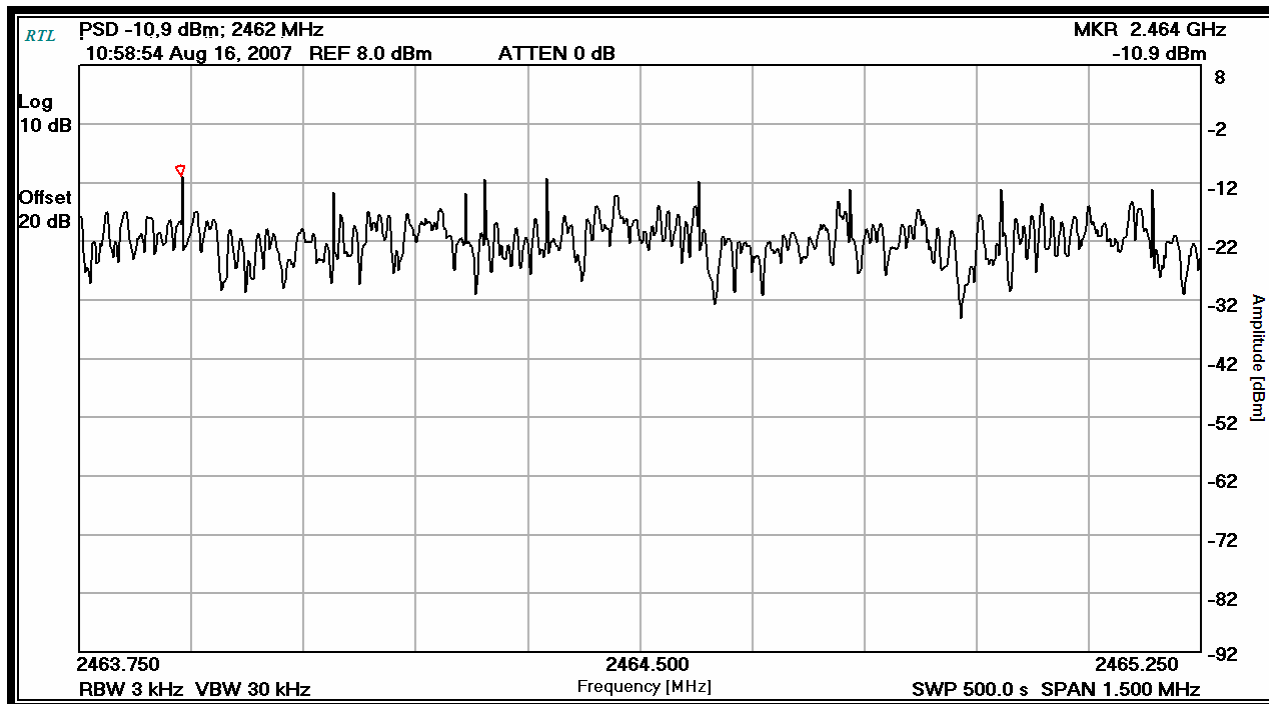
Plot 7-4: Power Spectral Density: Channel 1 (2412 MHz) – g mode



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



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



Test Personnel:

Daniel Baltzell
Test Engineer

Signature

July 20 and August 16, 2007
Dates Of Tests

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

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 Site and Test Description

The power line conducted emissions measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was assembled on a wooden table 80 centimeters high. Power was fed to the EUT through a 50 ohm/50 microhenry Line Impedance Stabilization Network (LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed A.C. power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers the EUT host peripherals.

The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50 ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 100 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 100 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable).

The analyzer's 6 dB bandwidth was set to 9 kHz. Video filter less than 10 times the resolution bandwidth is not used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded.

Table 8-1: Conducted Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Date
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz-12.8 GHz)	3826A00144	10/16/07
901084	AFJ International	LS16	16A LISN	16010020082	3/28/08

8.3 Conducted Emissions Test Data

Table 8-2: Conducted Emissions Test Data – Neutral - TX Mode

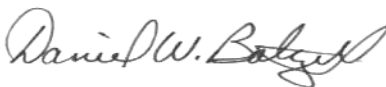
Temperature: 74°F Humidity: 36%									
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC 15.207 QP Limit (dBuV)	FCC 15.207 QP Margin (dBuV)	FCC 15.207 AV Limit (dBuV)	FCC 15.207 AV Margin (dBuV)	Pass/Fail
0.220	Pk	41.4	0.2	41.6	62.8	-21.2	52.8	-11.2	Pass
0.263	Pk	41.2	0.2	41.4	61.3	-19.9	51.3	-9.9	Pass
0.370	Qp	47.0	0.2	47.2	58.5	-11.3	48.5	-1.3	Pass
0.479	Pk	34.9	0.2	35.1	56.4	-21.3	46.4	-11.3	Pass
0.583	Pk	44.2	0.3	44.5	56.0	-11.5	46.0	-1.5	Pass
17.385	Av	44.0	2.3	46.3	60.0	-13.7	50.0	-3.7	Pass

Table 8-3: Conducted Emissions Test Data – Hot – TX Mode

Temperature: 74°F Humidity: 36%									
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	FCC 15.207 QP Limit (dBuV)	FCC 15.207 QP Margin (dBuV)	FCC 15.207 AV Limit (dBuV)	FCC 15.207 AV Margin (dBuV)	Pass/Fail
0.264	Pk	33.6	0.2	33.8	61.3	-27.5	51.3	-17.5	Pass
0.264	Pk	33.6	0.2	33.8	61.3	-27.5	51.3	-17.5	Pass
0.369	Pk	45.9	0.2	46.1	58.5	-12.4	48.5	-2.4	Pass
0.474	Pk	34.5	0.2	34.7	56.4	-21.7	46.4	-11.7	Pass
0.586	Pk	42.4	0.3	42.7	56.0	-13.3	46.0	-3.3	Pass
1.715	Pk	42.5	0.6	43.1	56.0	-12.9	46.0	-2.9	Pass

Test Personnel:

Daniel W. Baltzell
Test Engineer



Signature

July 20, 2007
Date Of Test

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

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 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 9-1: 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
901281	Rhein Tech Labs	PR-1040	Amplifier (10 MHz - 2 GHz)	1004	1/19/08
900878	Rhein Tech Labs	AM3-1197-0005	3 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	6/14/10
900321	EMCO	3161-03	Horn Antenna (4 - 8,2 GHz)	9508-1020	6/14/10
900323	EMCO	3160-7	Horn Antenna (8,2 - 12,4 GHz)	9605-1054	6/14/10
900356	EMCO	3160-08	Horn Antenna (12.4 - 18 GHz)	9607-1044	6/14/10
900325	EMCO	3160-9	Horn Antenna (18 - 26.5 GHz)	9605-1051	6/14/10
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	5/22/08
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	5/22/08
900889	Hewlett Packard	85685A	RF Preselector (20 Hz - 2 GHz)	3146A01309	5/22/08
900791	Chase	CBL6111B	Bilog Antenna (30 MHz – 2000 MHz)	N/A	6/12/08
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz - 12.8 GHz)	3826A00144	10/16/07
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	9/13/07
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	6/13/08

9.3 Radiated Emissions Test Results

9.3.1 Radiated Emissions – Digital Test Data

Table 9-2: Digital Radiated Emissions – b mode

Temperature: 74°F Humidity: 43%										
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
93.701	Qp	H	0	1.0	26.3	-19.3	7.0	43.5	-36.5	Pass
158.700	Qp	H	0	1.0	39.9	-18.3	21.6	43.5	-21.9	Pass
175.995	Qp	H	180	1.0	38.9	-18.5	20.4	43.5	-23.1	Pass
245.730	Qp	H	180	1.0	32.8	-15.3	17.5	46.0	-28.5	Pass
282.591	Qp	H	0	1.0	34.8	-14.1	20.7	46.0	-25.3	Pass
434.342	Qp	H	0	1.0	29.4	-9.6	19.8	46.0	-26.2	Pass

Table 9-3: Digital Radiated Emissions – g mode

Temperature: 87°F Humidity: 48%										
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
73.710	Qp	V	270	1	46.8	-31.8	15.0	40.0	-25.0	Pass
154.550	Qp	H	270	1	46.1	-27.7	18.4	43.5	-25.1	Pass
172.010	Qp	H	80	2	48.2	-27.9	20.3	43.5	-23.2	Pass
368.583	Qp	V	290	1	44.6	-21.6	23.0	46.0	-23.0	Pass
393.173	Qp	H	330	1	43.2	-21.6	21.6	46.0	-24.4	Pass
405.463	Qp	H	330	1	43.2	-21.3	21.9	46.0	-24.1	Pass

9.3.2 Radiated Emissions Harmonics/Spurious Test Data

Table 9-4: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz) – b mode

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)
4824.0	44.7	35.0	17.5	52.5	54.0	-1.5
7236.0	42.5	30.1	15.3	45.4	78.2	-32.8
9648.0	40.9	30.2	18.3	48.5	78.2	-29.7
12060.0	32.5	21.5	19.2	40.7	54.0	-13.3
14472.0	41.4	28.7	23.4	52.1	54.0	-1.9
16884.0	40.8	29.0	24.4	53.4	78.2	-24.8

Table 9-5: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz) – b mode

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)
4874.0	44.2	33.7	17.7	51.4	54.0	-2.6
7311.0	40.7	28.8	14.7	43.5	54.0	-10.5
9748.0	41.7	30.5	18.1	48.6	54.0	-5.4
12185.0	34.5	22.6	19.7	42.3	54.0	-11.7
14622.0	40.5	28.8	24.4	53.2	63.8	-10.6
17059.0	40.9	29.4	25.1	54.5	63.8	-9.3

Table 9-6: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz) – b mode

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)
4924.0	43.8	33.3	17.8	51.1	54.0	-2.9
7386.0	42.1	30.0	15.3	45.3	54.0	-8.7
9848.0	43.0	31.1	18.2	49.3	65.8	-16.5
12310.0	38.0	25.6	19.1	44.7	54.0	-9.3
14772.0	40.7	29.3	24.4	53.7	65.8	-12.1
17234.0	42.4	30.4	22.7	53.1	65.8	-12.7

Table 9-7: Radiated Emissions Harmonics/Spurious Channel 1 (TX Frequency: 2412 MHz) – g mode

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)
4824.0	43.3	30.8	16.3	47.1	54.0	-6.9
7236.0	44.3	34.2	15.3	49.5	74.4	-24.9
9648.0	40.2	29.8	18.3	48.1	74.4	-26.3
12060.0	41.5	29.2	19.2	48.4	54.0	-5.6

Table 9-8: Radiated Emissions Harmonics/Spurious Channel 6 (TX Frequency: 2437 MHz) – g mode

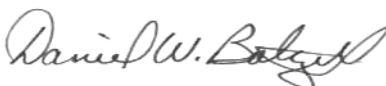
Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/VBW)	Average Analyzer Reading (dBuV) (1 MHz RBW/ 10 Hz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
4874	41.3	30	16.2	46.2	54.0	-7.8
7311	39.8	29	14.7	43.7	54.0	-10.3
9748	41.1	30.5	18.1	48.6	72.7	-24.1
12185	40.6	29.2	19.7	48.9	54.0	-5.1

Table 9-9: Radiated Emissions Harmonics/Spurious Channel 11 (TX Frequency: 2462 MHz) – g mode

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)
4924.0	43.0	31.5	16.2	47.7	54.0	-6.3
7386.0	39.7	29.7	15.3	45.0	54.0	-9.0
9848.0	39.1	31.5	18.2	49.7	74.7	-25.0
12310.0	41.8	29.8	19.1	48.9	54.0	-5.1

Test Personnel:

Daniel Baltzell
Test Engineer



Signature

July 20 and August 29, 2007
Dates Of Tests

10 99% Bandwidth - RSS-Gen §4.6.1

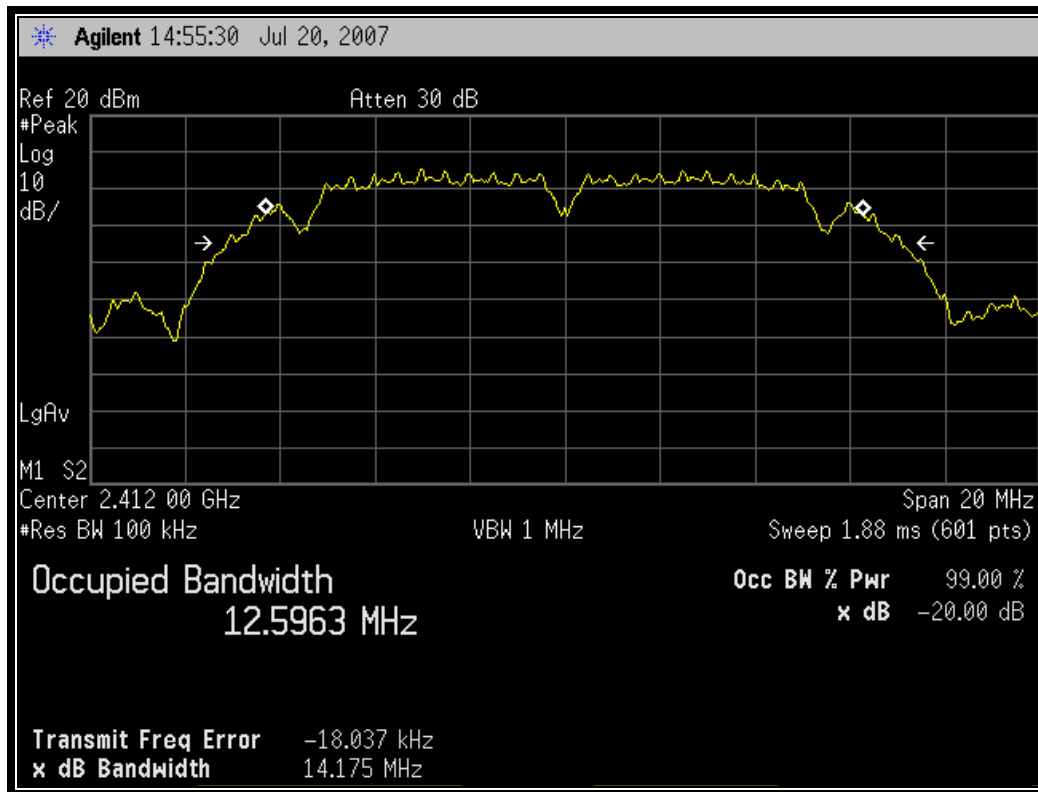
Table 10-1: 99% Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (20 Hz – 22 GHz)	3138A07771	5/22/08
901413	Agilent Technologies	E4448A	Spectrum Analyzer (3 Hz – 50 GHz)	US440203416	6/13/08

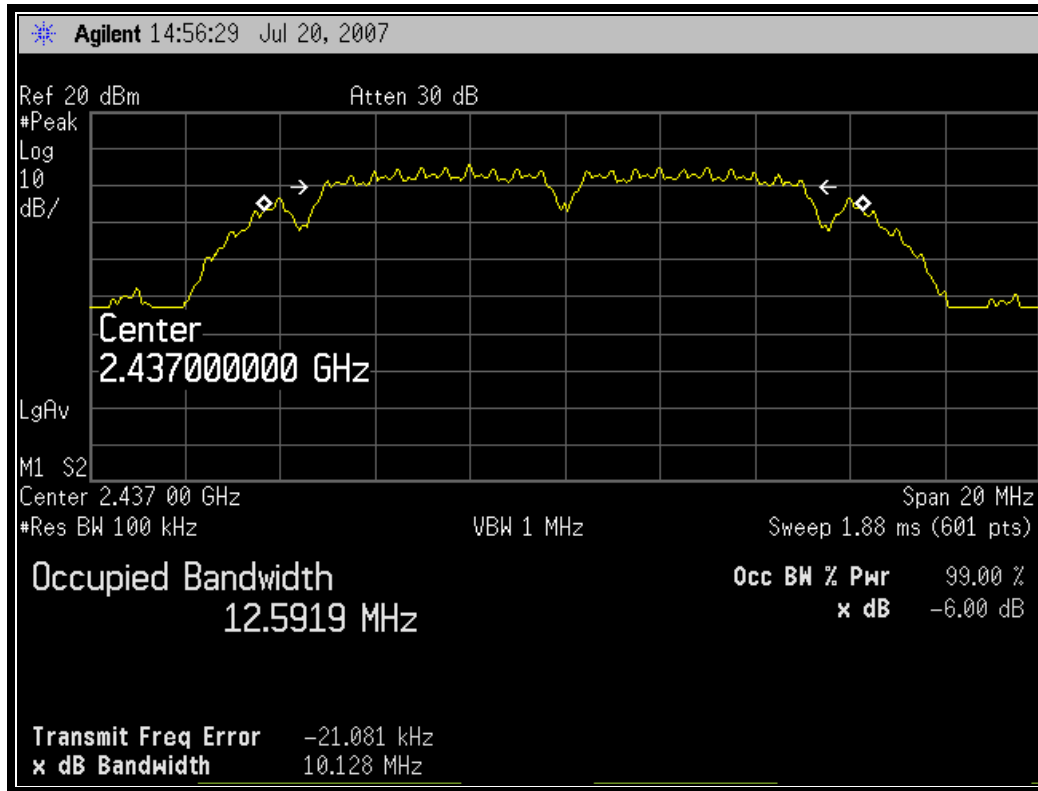
Table 10-2: 99% Bandwidth Test Data

Channel	Frequency (MHz)	99% Bandwidth – b mode (MHz)	99% Bandwidth – g mode (MHz)
1	2412	12.6	17.3
6	2437	12.6	17.3
11	2462	12.6	17.4

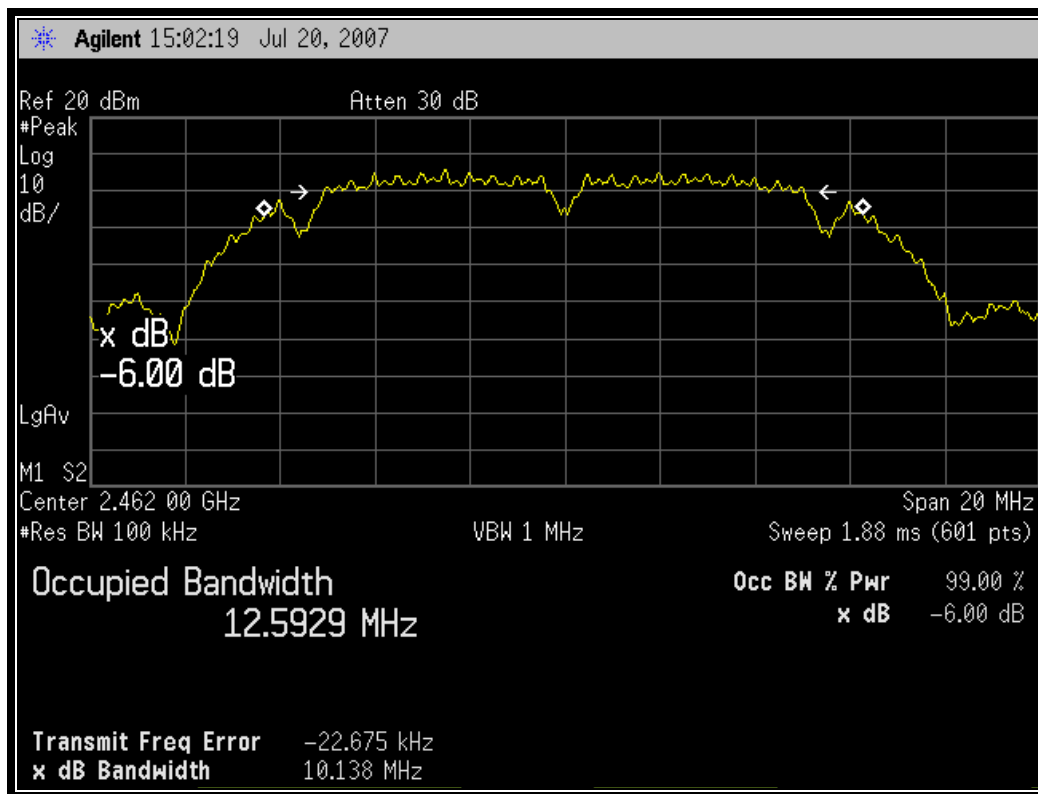
Plot 10-1: 99% Bandwidth Channel 1 (TX Frequency: 2412 MHz) – b mode



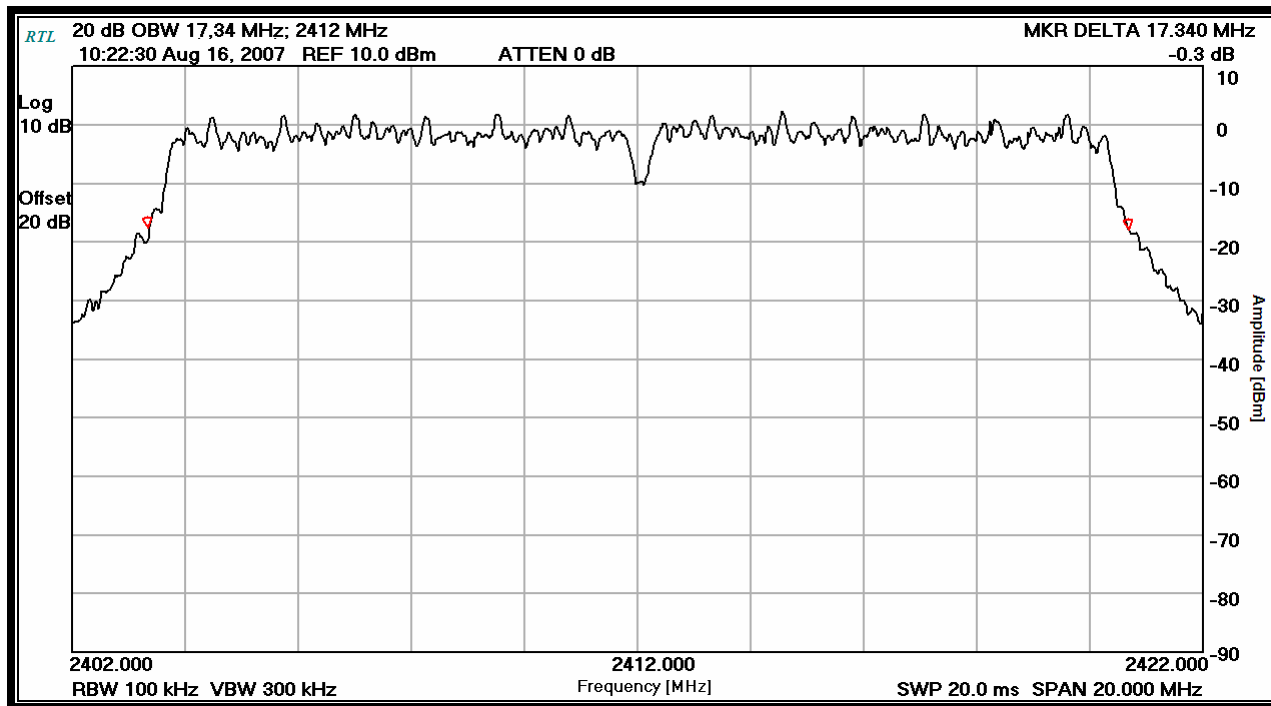
Plot 10-2: 99% Bandwidth Channel 6 (TX Frequency: 2437 MHz) – b mode



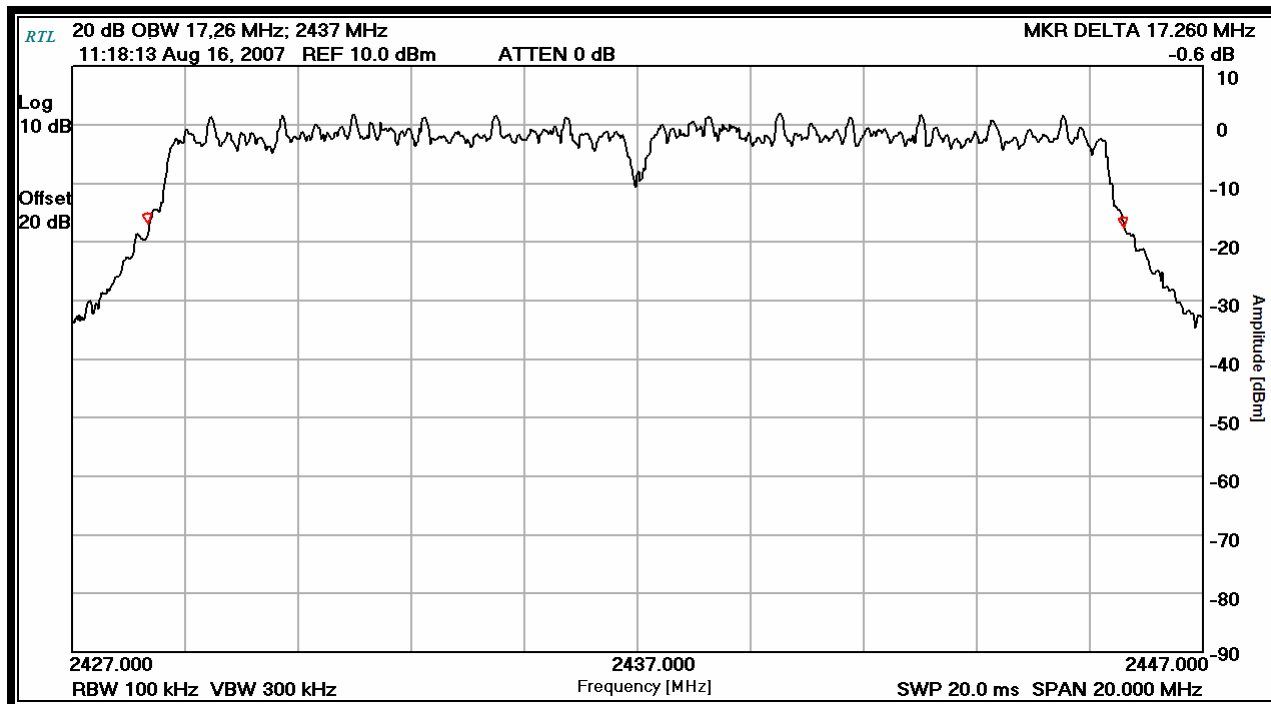
Plot 10-3: 99% Bandwidth Channel 11 (TX Frequency: 2462 MHz) – b mode



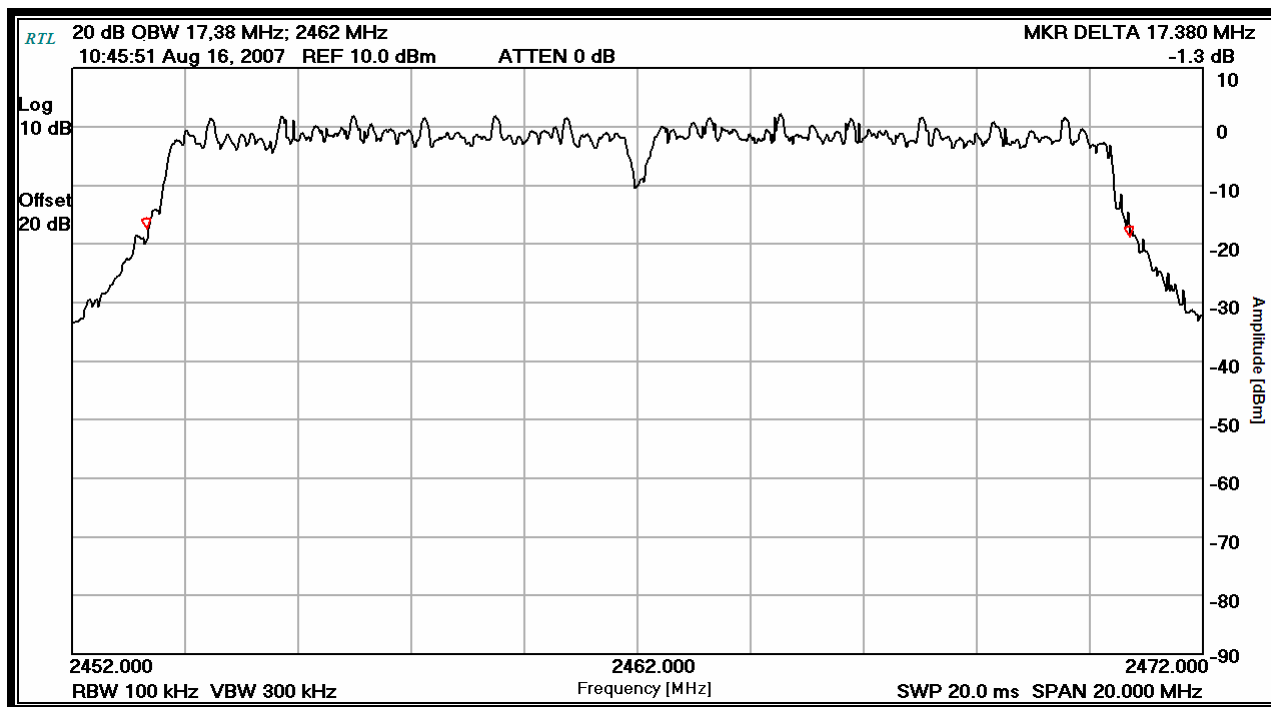
Plot 10-4: 99% Bandwidth Channel 1 (TX Frequency: 2412 MHz) – g mode



Plot 10-5: 99% Bandwidth Channel 6 (TX Frequency: 2437 MHz) – g mode



Plot 10-6: 99% Bandwidth Channel 11 (TX Frequency: 2462 MHz) – g mode



Test Personnel:

Daniel Baltzell
Test Engineer

Signature

July 20 and August 16, 2007
Dates Of Tests

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

Client: Vocollect, Inc.
Model: TT-601_RG WF
Standards: FCC 15.247 & RSS-210
FCC ID: MQOTT601-30000
Report #: 2007233

11 Conclusion

The data in this measurement report shows that the EUT as tested, Vocollect, Inc. Model: TT-601_RG WF, FCC ID: MQOTT601-30000, IC: 2570A-TT601300, complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations, and Industry Canada RSS-210.