



Engineering and Testing for EMC and Safety Compliance

**CLASS II PERMISSIVE CHANGE 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: Zebra Technologies Corp. Phone: 847-739-5800 Contact: Brian Sutton Fax: 847-732-0145 30 Plan Way E-Mail: bsutton@zebra.com Warwick, RI 02886	
FCC ID/ IC ID:	I28MD-ZLAN11G/ 3798A-ZLAN11G	TEST REPORT DATE:	September 22, 2006
PLATFORM:	RW-220 AND RW-420	RTL WORK ORDER #:	2006127
MODEL:	ZLAN11G Radio Module	RTL QUOTE #:	QRTL06-329
Standards and Procedures:	ANSI 63.4 and FCC 97-114 (DSSS)		
FCC Classification:	DTS		
FCC Rule Part:	Part 15.247: Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System		
Industry Canada Standard:	RSS-210: Low Power License-Exempt Radio Communication Devices (All Frequency Bands)		
Digital Interface Information	Digital Interface was found to be compliant		
Frequency Range (MHz)	Output Power*(W)	Frequency Tolerance	Emission Designator
2412-2462	0.076	N/A	N/A

* output power is maximum peak conducted

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 or FCC Part 2, FCC Part 15, Industry Canada RSS-210, ANSI 63.4, and FCC 97-114 (DSSS).

Signature:

Date: September 22, 2006

Typed/Printed Name: Desmond A. Fraser

Position: President

Table of Contents

1	General Information	4
1.1	Scope	4
1.2	Test Facility	4
1.3	Related Submittal(s)/Grant(s)	4
1.4	Modifications.....	4
2	Test Information	5
2.1	Test Justification	5
2.2	Exercising the EUT	5
2.3	Test Result Summary	5
2.4	Test System Details.....	6
2.5	Configuration of Tested System	7
3	Peak Output Power - FCC §15.247(b)(1); IC RSS-210 §6.2.2(o)(b).....	8
3.1	Power Output Test Procedure	8
3.2	Power Output Test Data	8
3.3	Power Output Test Equipment.....	8
4	Compliance with the Restricted Band Edge - FCC §15.247(c), §15.205; IC RSS-210 §6.3	9
4.1	Band Edge Test Procedure	9
4.2	Band Edge Test Equipment.....	17
5	Radiated Emissions for Receiver/Digital Interface – FCC §15.209; IC RSS-GEN	18
5.1	Radiated Emissions Test Procedure for Receiver/Digital Interface	18
5.2	Radiated Emission Test Data Receiver/Digital Interface	18
5.3	Radiated Digital Emissions Test Equipment	18
6	Radiated Emissions Radiated Harmonics/Spurious Noise – FCC §15.247; IC RSS-210 §6.2.2(o)(e1); §6.3..	19
6.1	Radiated Emissions Test Procedure for Harmonics/Spurious Noise	19
6.2	Radiated Emissions Harmonics/Spurious Test Data	19
6.3	Radiated Spurious Emissions Test Equipment.....	23
7	Conclusion.....	24

Figure Index

Figure 2-1:	Worst Case Configuration of System under Test.....	7
-------------	--	---

Table Index

Table 2-1:	Test Result Summary of FCC Rules and Regulations	5
Table 2-2:	Equipment under Test (EUT)	6
Table 3-1:	Power Output Test Data; 802.11b	8
Table 3-2:	Power Output Test Data; 802.11g	8
Table 3-3:	Power Output Test Equipment	8
Table 4-1:	Band Edge Test Equipment	17
Table 5-1:	Digital Radiated Emissions Test Data	18
Table 5-2:	Radiated Digital Emissions Test Equipment	18
Table 6-1:	Radiated Emissions Harmonics/Spurious (Channel 1/2412 MHz) RW-420 802.11b	19
Table 6-2:	Radiated Emissions Harmonics/Spurious (Channel 6/2437 MHz) RW-420 802.11b	19
Table 6-3:	Radiated Emissions Harmonics/Spurious (Channel 11/2462 MHz) RW-420 802.11b	20
Table 6-4:	Radiated Emissions Harmonics/Spurious (Channel 1/2412 MHz) RW-220 802.11b	20
Table 6-5:	Radiated Emissions Harmonics/Spurious (Channel 6/2437 MHz) RW-220 802.11b	20
Table 6-6:	Radiated Emissions Harmonics/Spurious (Channel 11/2462 MHz) RW-220 802.11b	21
Table 6-7:	Radiated Emissions Harmonics/Spurious (Channel 1/2412 MHz) RW-420 802.11g	21
Table 6-8:	Radiated Emissions Harmonics/Spurious (Channel 6/2437 MHz) RW-420 802.11g	21
Table 6-9:	Radiated Emissions Harmonics/Spurious (Channel 11/2462 MHz) RW-420 802.11g	22
Table 6-10:	Radiated Emissions Harmonics/Spurious (Channel 1/2412 MHz) RW-220 802.11g	22
Table 6-11:	Radiated Emissions Harmonics/Spurious (Channel 6/2437 MHz) RW-220 802.11g	22
Table 6-12:	Radiated Emissions Harmonics/Spurious (Channel 11/2462 MHz) RW-220 802.11g	23
Table 6-13:	Radiated Spurious Emissions Test Equipment	23

Plot Index

Plot 4-1:	Lower Band Edge: Delta Measurement 802.11b	10
Plot 4-2:	Upper Band Edge: Delta Measurement 802.11b	12
Plot 4-3:	Lower Band Edge: Delta Measurement 802.11g	14

Appendix Index

Appendix A:	RF Exposure; IC RSS-210 §14	25
Appendix B:	Antenna Specifications	26
Appendix C:	Change Description Letter	27
Appendix D:	Agency Authorization Letter	28
Appendix E:	IC Agency and Listing Requirements Letters	29
Appendix F:	User Manual	30
Appendix G:	Test Photographs	31
Appendix H:	External Photographs	33

Photograph Index

Photograph 1:	Radiated Emissions - Front View	31
Photograph 2:	Radiated Emissions - Rear View	32
Photograph 3:	Top of Antenna CQ17252-G1 (for RW-420)	33
Photograph 4:	Bottom of Antenna CQ17252-G1	34
Photograph 5:	Top of Antenna CQ18317 (for RW-220)	35
Photograph 6:	Bottom of Antenna CQ18317	36

1 General Information

1.1 Scope

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

IC RSS-210 Section 6.2.2(o): 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.

1.2 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).

1.3 Related Submittal(s)/Grant(s)

This is a request for a Class II Permissive Change per FCC 2.1043(b)(2) for the Zebra Technologies Corp., Model Number: ZLAN11G, FCC ID: I28MD-ZLAN11G, IC: 3798A-ZLAN11G, the original grant for which was issued on May 8, 2006 and May 7, 2006 respectively. The permissive change is being requested due to the addition of two antennas, Model CQ17252-G1, for use in the RW-420 host, and Model CQ18317, for use in the RW-220 host.

1.4 Modifications

No modifications were implemented to meet the testing criteria.

2 Test Information

2.1 Test Justification

The EUT was tested in all three orthogonal planes in order to determine worst case emissions. Channel 1 at 2412 MHz, Channel 6 at 2437 MHz, and Channel 11 at 2462 MHz were tested and investigated from 9 kHz to 24 GHz. Data for all three channels is presented in this report.

The worst case data presented in this report represents the highest data rate at 11 MBPS. Data rates of 5.5 MBPS, 2 MBPS and 1 MBPS were investigated and found to be in compliance. The change in envelope did not cause the EUT to be non-compliant in any of the aforementioned modes.

2.2 Exercising the EUT

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

2.3 Test Result Summary

Table 2-1: Test Result Summary of FCC Rules and Regulations

STANDARD	TEST	PASS/FAIL OR N/A
FCC 15.205	Compliance with the Restricted Band Edge	Pass
FCC 15.209	Radiated Emissions	Pass
FCC 15.247(b)	Power Output	Pass

2.4 Test System Details

The test sample was received on September 6, 2006. The FCC Identifiers for all equipment, and descriptions of all cables used in the tested system, are shown in the following table.

Table 2-2: Equipment under Test (EUT)

Part	Manufacturer	Model #	Serial Number	FCC ID	Cable Description	RTL Bar Code
Wireless Mobile Printer	Zebra Technologies Corporation	RW-420	XXRC06-24-5105	N/A	N/A	17485
Wireless Mobile Printer	Zebra Technologies Corporation	RW-220	XXRD06-24-5036	N/A	N/A	17480
RW-420 Antenna	Zebra Technologies, Corp.	CQ17252-G1	106030EDR	N/A	7 cm shielded with ferrite	N/A
RW-220 Antenna	Zebra Technologies, Corp.	CQ18317	N/A	N/A	7 cm shielded with ferrite	N/A
7.4 VDC Lithium-Ion Battery	Zebra Technologies, Corp.	CT17102-2	N/A	N/A	N/A	17484
7.4 VDC Lithium-Ion Battery	Zebra Technologies, Corp.	CT17497-1	N/A	N/A	N/A	17477
Battery Charger	Zebra Technologies, Corp.	L172	N/A	N/A	2m shielded	16692

2.5 Configuration of Tested System

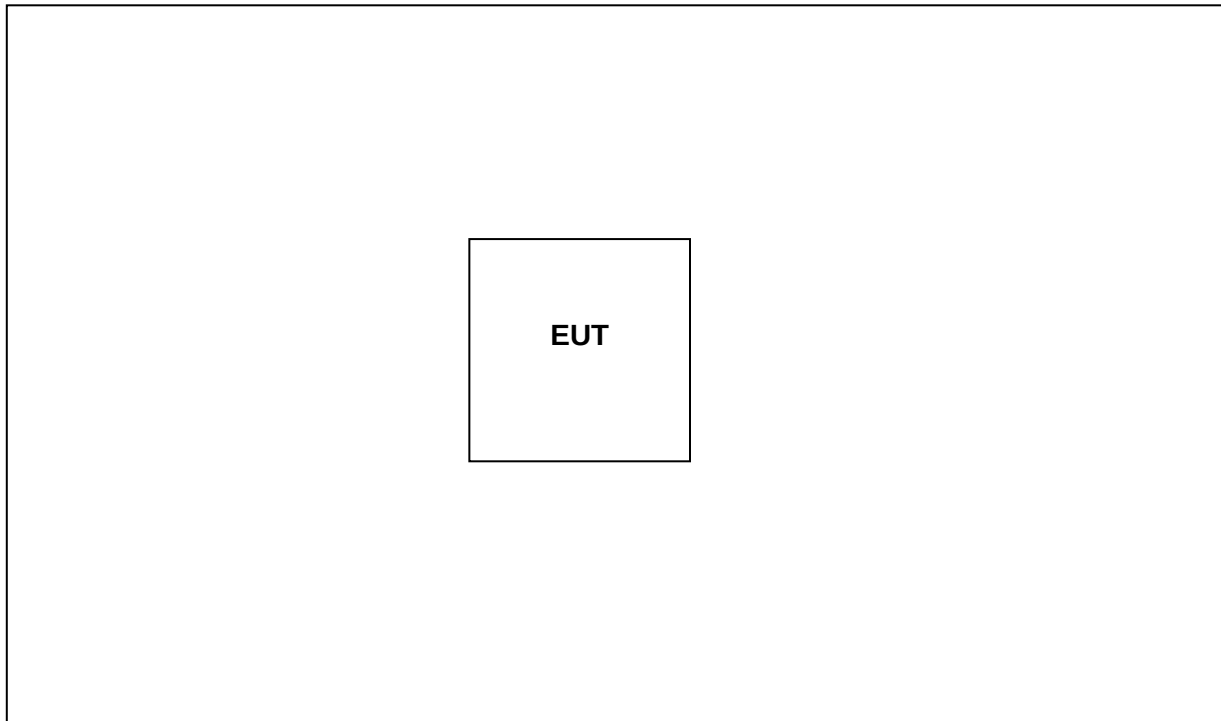


Figure 2-1: Worst Case Configuration of System under Test

3 Peak Output Power - FCC §15.247(b)(1); IC RSS-210 §6.2.2(o)(b)

3.1 Power Output Test Procedure

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

3.2 Power Output Test Data

Table 3-1: Power Output Test Data; 802.11b

CHANNEL	PEAK POWER CONDUCTED OUTPUT (dBm)
1	18.6
6	18.6
11	18.8

*Measurement accuracy is +/- 1.5 dB

Table 3-2: Power Output Test Data; 802.11g

CHANNEL	PEAK POWER CONDUCTED OUTPUT (dBm)
1	15.2
6	15.0
11	14.8

*Measurement accuracy is +/- 1.5 dB

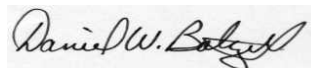
3.3 Power Output Test Equipment

Table 3-3: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	9/21/06
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573	9/21/06
900819	Weinschel Corporation	BF0830	Attenuator 10 db	N/A	12/2/08

TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer



Signature

September 7, 2006
Date Of Test

4 Compliance with the Restricted Band Edge - FCC §15.247(c), §15.205; IC RSS-210 §6.3

4.1 Band Edge Test Procedure

Compliance with the band edges was performed using the FCC's "Radiated Measurement at a Band Edge" guidance document. The final data derived below were from radiated measurements only. The data shown in this report represents the worst case at 11 Mbps for 802.11b and 54 Mbps for 802.11g. Data rates of 5.5 Mbps, 2 Mbps, and 1 Mbps were investigated and found to be in compliance.

Calculation of Lower Band Edge RW-420 802.11b

The level 96.8 dBuV/m is the average field strength measurement, from which the delta measurement of 51.1 dB is subtracted (reference plot), which is equivalent to a level of 45.7 dB. This level has a margin of 8.3 dB under the limit of 54 dBuV/m.

Calculation: $96.8 \text{ dBuV/m} - 51.1 \text{ dB} - 54 \text{ dBuV/m} = -8.3 \text{ dB}$

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 106.3 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 96.8 dBuV/m

Delta measurement: 51.1 dB

Calculation of Lower Band Edge RW-220 802.11b

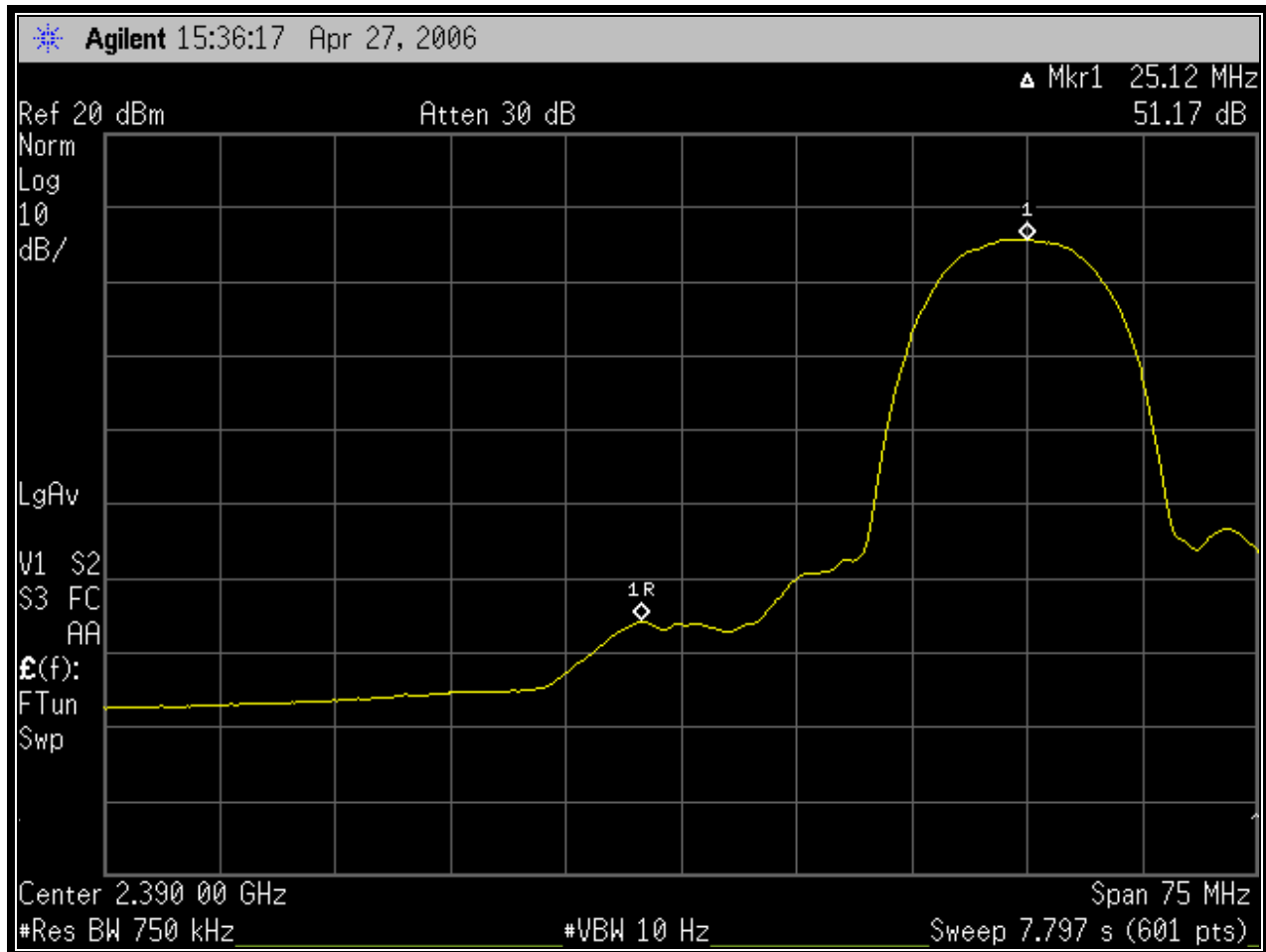
The level 97.1 dBuV/m is the average field strength measurement, from which the delta measurement of 51.1 dB is subtracted (reference plot), which is equivalent to a level of 46 dB. This level has a margin of 8 dB under the limit of 54 dBuV/m.

Calculation: $97.1 \text{ dBuV/m} - 51.1 \text{ dB} - 54 \text{ dBuV/m} = -8 \text{ dB}$

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 106.3 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 97.1 dBuV/m

Delta measurement: 51.1 dB

Plot 4-1: Lower Band Edge: Delta Measurement 802.11b



Calculation of Upper Band Edge RW-420 802.11b

The level 99.5 dBuV/m is the average field strength measurement, from which the delta measurement of 51.2 dB is subtracted (reference plots), which is equivalent to a level of 48.3 dB. This level has a margin of 5.7 dB below the limit of 54 dBuV/m.

Calculation: $99.5 \text{ dBuV/m} - 51.2 \text{ dB} - 54 \text{ dBuV/m} = -5.7 \text{ dB}$

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 105.7 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 99.5 dBuV/m

Delta measurement: 51.2 dB

Calculation of Upper Band Edge RW-220 802.11b

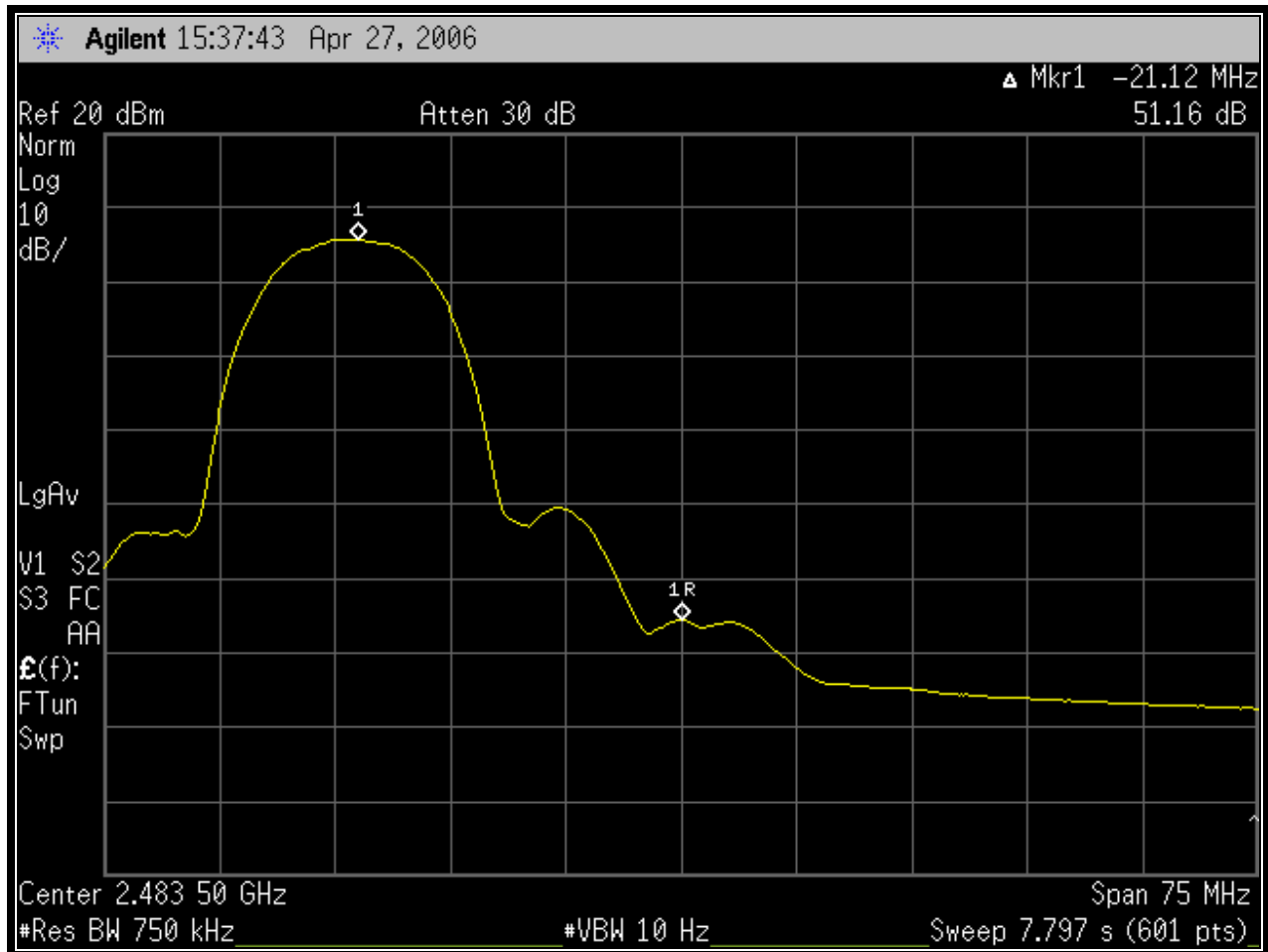
The level 99.2 dBuV/m is the average field strength measurement, from which the delta measurement of 51.2 dB is subtracted (reference plots), which is equivalent to a level of 48 dB. This level has a margin of 6 dB below the limit of 54 dBuV/m.

Calculation: $99.2 \text{ dBuV/m} - 51.2 \text{ dB} - 54 \text{ dBuV/m} = -6 \text{ dB}$

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 105.7 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 99.2 dBuV/m

Delta measurement: 51.2 dB

Plot 4-2: Upper Band Edge: Delta Measurement 802.11b



Calculation of Lower Band Edge RW-420 802.11g

The level 91.7 dBuV/m is the average field strength measurement, from which the delta measurement of 52.9 dB is subtracted (reference plot), which is equivalent to a level of 38.8 dB. This level has a margin of 19.2 dB under the limit of 54 dBuV/m.

Calculation: $91.7 \text{ dBuV/m} - 52.9 \text{ dB} - 54 \text{ dBuV/m} = -15.2 \text{ dB}$

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 103.2 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 91.7 dBuV/m

Delta measurement: 52.9 dB

Calculation of Lower Band Edge RW-220 802.11g

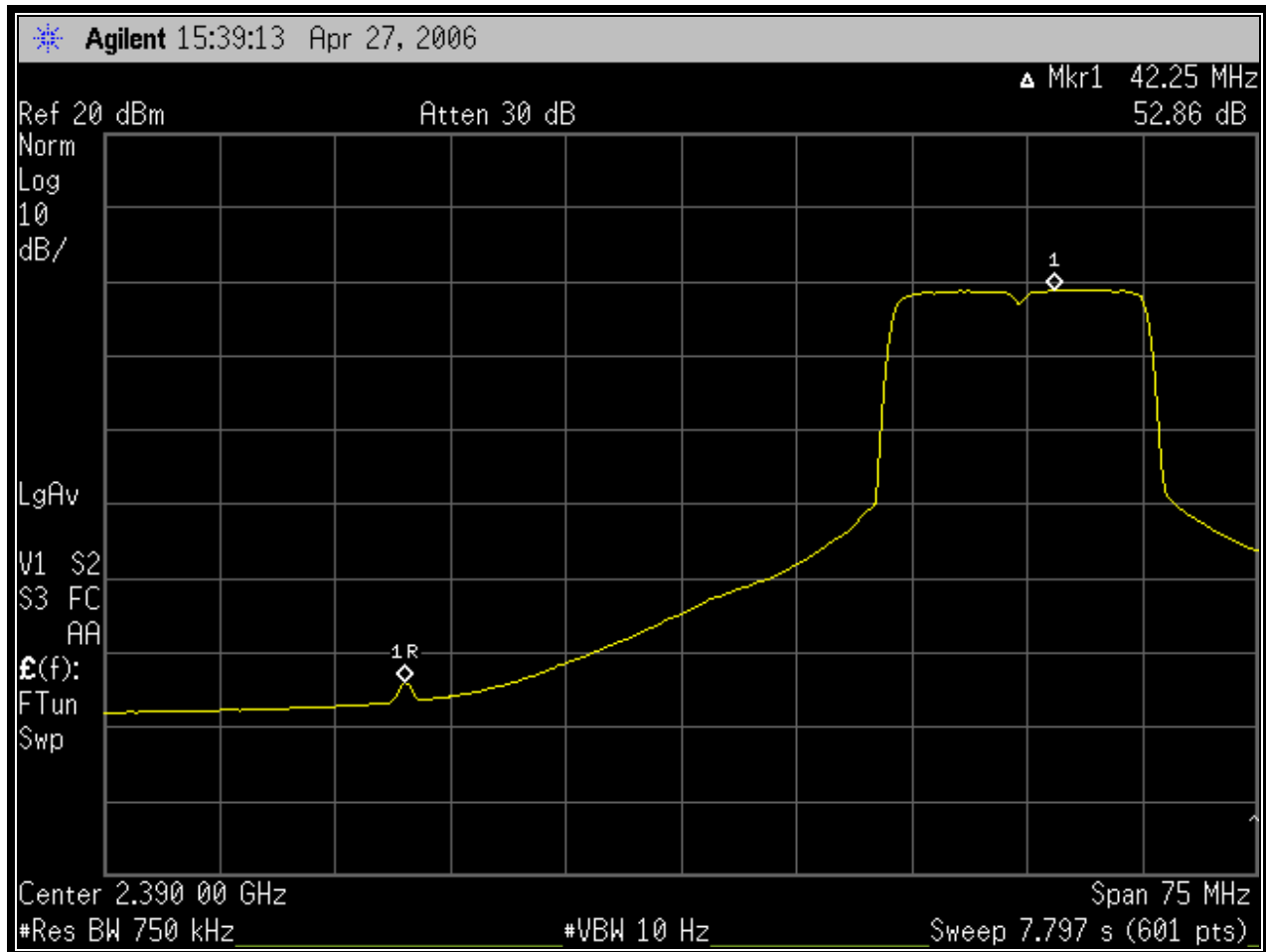
The level 88.1 dBuV/m is the average field strength measurement, from which the delta measurement of 52.9 dB is subtracted (reference plot), which is equivalent to a level of 35.2 dB. This level has a margin of 18.8 dB under the limit of 54 dBuV/m.

Calculation: $88.1 \text{ dBuV/m} - 52.9 \text{ dB} - 54 \text{ dBuV/m} = -18.8 \text{ dB}$

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 99.6 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 88.1 dBuV/m

Delta measurement: 52.9 dB

Plot 4-3: Lower Band Edge: Delta Measurement 802.11g



Calculation of Upper Band Edge RW-420 802.11g

The level 93.2 dBuV/m is the average field strength measurement, from which the delta measurement of 43.5 dB is subtracted (reference plots), which is equivalent to a level of 49.7 dB. This level has a margin of 4.3 dB below the limit of 54 dBuV/m.

Calculation: $93.2 \text{ dBuV/m} - 43.5 \text{ dB} - 54 \text{ dBuV/m} = -4.3 \text{ dB}$

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 104.3 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 93.2 dBuV/m

Delta measurement: 43.5 dB

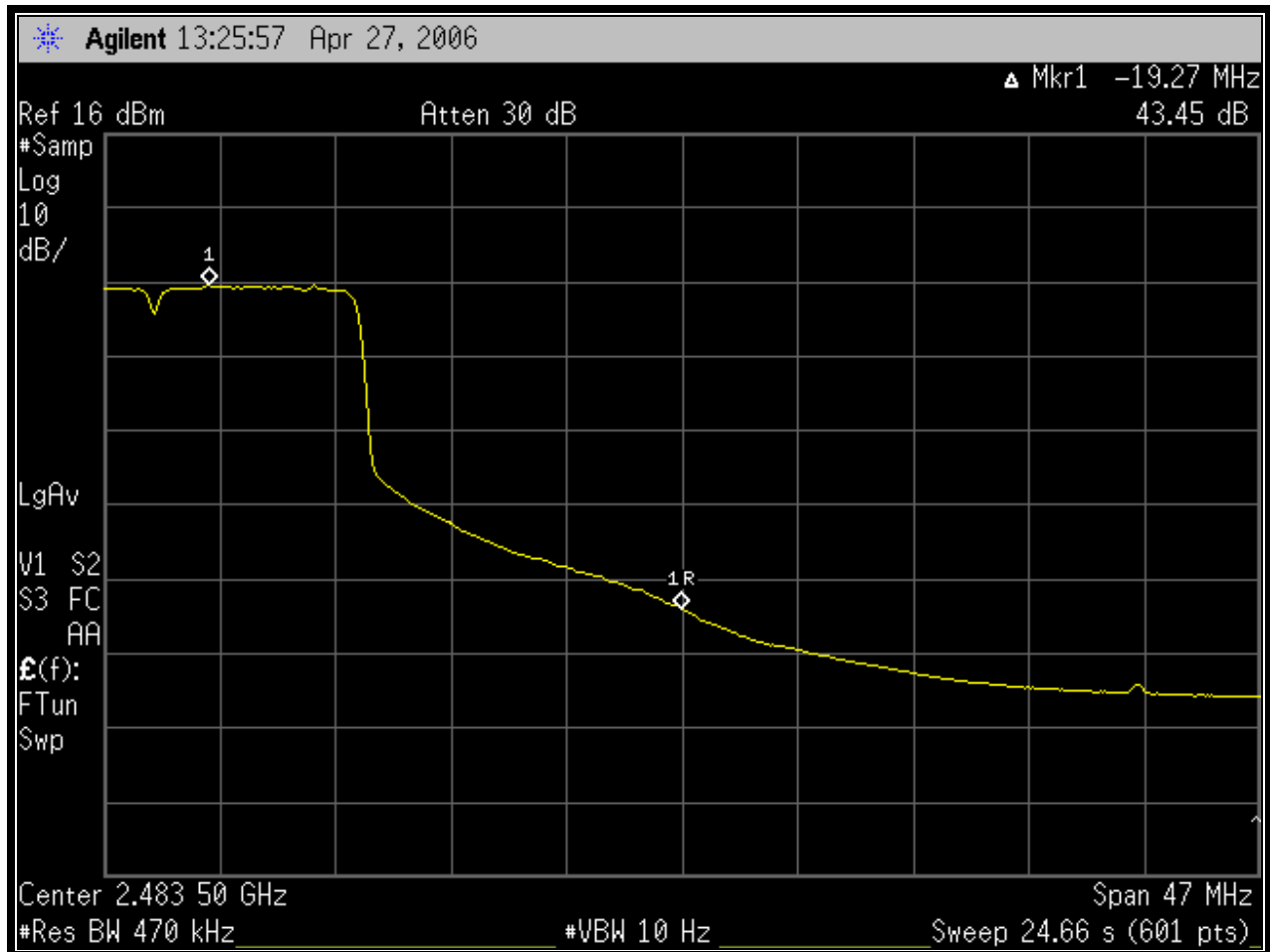
Calculation of Upper Band Edge RW-220 802.11g

The level 88.0 dBuV/m is the average field strength measurement, from which the delta measurement of 43.5 dB is subtracted (reference plots), which is equivalent to a level of 44.5 dB. This level has a margin of 9.5 dB below the limit of 54 dBuV/m.

Calculation: $88.0 \text{ dBuV/m} - 43.5 \text{ dB} - 54 \text{ dBuV/m} = -9.5 \text{ dB}$

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 99.1 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 88.0 dBuV/m

Delta measurement: 43.5 dB

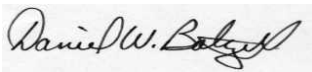


4.2 Band Edge Test Equipment

Table 4-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900878	Rhein Tech Labs	AM3-1197-0005	3 meter Antenna Mast, Polarizing	Outdoor Range 1	Not Required
901242	Rhein Tech Labs	WRT-000-0003	Wood Rotating Table	N/A	Not Required
901424	IW Microwave Products	KPS-1503-2400-KPS	High Frequency RF Cables	240"	12/11/06
901425	IW Microwave Products	KPS-1503-360-KPS	High Frequency RF Cables	36"	12/11/06
900772	EMCO	3161-02	Horn Antenna	9804-1044	5/20/07
901365	MITEQ	JS4-00102600-41-5P	Amplifier, 15 V, 0.1-26 GHz, 28dB gain, power 5dB	1094152	3/24/07
901413	Agilent	E4448A	Spectrum Analyzer	US44020346	11/2/06
900819	Weinschel Corporation	BF0830	Attenuator 10 db	N/A	12/2/08

TEST PERSONNEL:

Daniel W. Baltzell Test Engineer	 Signature	April 27, 2006 & September 17, 2006 Dates Of Tests
-------------------------------------	--	---

5 Radiated Emissions for Receiver/Digital Interface – FCC §15.209; IC RSS-GEN

5.1 Radiated Emissions Test Procedure for Receiver/Digital Interface

Radiated spurious emissions for digital interface fall between 30 MHz and up to the 2nd LO when the EUT is in the receiver/digital interface mode. The highest levels measured are presented. The maximum permitted average field strength is listed in Part 15.209. The data in this report represents the worst case modes.

5.2 Radiated Emission Test Data Receiver/Digital Interface

Table 5-1: Digital Radiated Emissions Test Data

Temperature: 74°F Humidity: 55%									
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)
88.800	Qp	H	0	1.0	37.7	-16.5	21.2	43.5	-22.3
132.537	Qp	H	0	1.0	31.8	-14.4	17.4	43.5	-26.1
279.750	Qp	H	0	1.0	31.2	-10.8	20.4	46.0	-25.6
403.500	Qp	V	0	1.0	31.0	-5.6	25.4	46.0	-20.6
532.300	Qp	V	0	1.0	31.7	-2.8	28.9	46.0	-17.1
647.500	Qp	V	0	1.0	33.1	-0.9	32.2	46.0	-13.8
768.500	Qp	V	0	1.0	31.8	2.1	33.9	46.0	-12.1

QP: RES. = 100 kHz, VID = 100 kHz

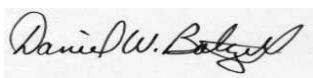
5.3 Radiated Digital Emissions Test Equipment

Table 5-2: Radiated Digital Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900878	Rhein Tech Labs	AM3-1197-0005	3 meter antenna mast	Outdoor Range 1	Not Required
900969	Hewlett Packard	85650A	Quasi-Peak Adapter	2412A00414	9/13/07
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz-22 GHz)	3138A07771	4/5/07
900889	Hewlett Packard	85685A	RF Preselector (20 Hz-2 GHz)	3146A01309	4/12/07
901242	Rhein Tech Labs	WRT-000-0003	Wood rotating table	N/A	Not Required
901053	Schaffner Chase	CBL6112B	Bi-Log Antenna (20 MHz-2 GHz)	2648	11/1/06
900905	Rhein Tech Labs	PR-1040	OATS 1 Preamplifier 40dB (30 MHz-2 GHz)	1006	3/15/07
900889	Hewlett Packard	85685A	RF Preselector (20 Hz-2 GHz)	3146A01309	4/12/07

TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer



Signature

September 6, 2006
Date Of Test

6 Radiated Emissions Radiated Harmonics/Spurious Noise – FCC §15.247; IC RSS-210 §6.2.2(o)(e1); §6.3

6.1 Radiated Emissions Test Procedure for Harmonics/Spurious Noise

Radiated Spurious Emissions apply to harmonics and spurious emissions that fall in the restricted bands when the EUT is configured in the transmit mode. The restricted bands are listed in Part 15.205. The maximum permitted average field strength for the restricted band is listed in Part 15.209. The EUT was tested in three orthogonal planes from 10 kHz to the 10th harmonic of the fundamental. The data in this report represents the worst case modes.

6.2 Radiated Emissions Harmonics/Spurious Test Data

Table 6-1: Radiated Emissions Harmonics/Spurious (Channel 1/2412 MHz) RW-420 802.11b

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2386.230	55.3	42.2	-4.4	37.8	54.0	-16.2
2412.000	80.7	71.2	25.6	96.8	fundamental	
4824.000	51.2	40.2	10.3	50.5	54.0	-3.5
7236.000	42.3	28.9	10.2	39.1	76.8	-37.7
9648.000	38.5	25.5	12.6	38.1	76.8	-38.7
12060.000	41.3	31.6	15.9	47.5	54.0	-6.5
14472.000	42.2	29.7	19.2	48.9	54.0	-5.1
16884.000	42.7	29.5	19.9	49.4	76.8	-27.4

Table 6-2: Radiated Emissions Harmonics/Spurious (Channel 6/2437 MHz) RW-420 802.11b

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2437.0	80.2	72.1	25.7	97.8	fundamental	
4874.0	47.0	33.7	9.8	43.5	54.0	-10.5
7311.0	42.7	29.4	9.7	39.1	54.0	-14.9
9748.0	41.3	27.8	12.6	40.4	77.8	-37.4
12185.0	41.0	27.8	14.6	42.4	54.0	-11.6
14622.0	42.0	28.4	19.3	47.7	77.8	-30.1

Table 6-3: Radiated Emissions Harmonics/Spurious (Channel 11/2462 MHz) RW-420 802.11b

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2462.0	79.8	73.6	25.9	99.5	fundamental	
2487.920	58.0	44.3	-4.1	40.2	54.0	-13.8
4924.0	46.5	33.0	10.1	43.1	54.0	-10.9
7386.0	41.0	28.1	11.3	39.4	79.5	-40.1
9848.0	41.7	28.1	25.4	53.5	79.5	-26.0
12310.0	41.3	28.2	13.9	42.1	54.0	-11.9
14772.0	42.2	29.8	19.7	49.5	79.5	-30.0
17234.0	42.2	29.2	18.7	47.9	79.5	-31.6

Table 6-4: Radiated Emissions Harmonics/Spurious (Channel 1/2412 MHz) RW-220 802.11b

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2386.23	49.2	46.2	-4.4	41.8	54.0	-12.2
2412.0	80.7	71.5	25.6	97.1	fundamental	
4824.0	49.2	40.2	10.3	50.5	54.0	-3.5
7236.0	42.5	29.5	10.2	39.7	77.1	-37.4
9648.0	42.3	32.6	12.6	45.2	77.1	-31.9
12060.0	40.7	28.2	15.9	44.1	54.0	-9.9
14472.0	42.3	29.1	19.2	48.3	54.0	-5.7
16884.0	42.8	31.2	19.9	51.1	77.1	-26.0

Table 6-5: Radiated Emissions Harmonics/Spurious (Channel 6/2437 MHz) RW-220 802.11b

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2437.0	80.2	71.5	25.7	97.2	fundamental	
4874.0	56.8	43.5	9.8	53.3	54.0	-0.7
7311.0	41.7	28.2	9.7	37.9	54.0	-16.1
9748.0	40.8	27.6	12.6	40.2	77.2	-37.0
12185.0	40.8	27.2	14.6	41.8	54.0	-12.2
14622.0	43.0	30.6	19.3	49.9	77.2	-27.3
17059.0	43.2	30.7	19.8	50.5	77.2	-26.7

Table 6-6: Radiated Emissions Harmonics/Spurious (Channel 11/2462 MHz) RW-220 802.11b

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2462.0	79.8	73.3	25.9	99.2	fundamental	
2487.92	61.3	54.8	-4.1	50.7	54.0	-3.3
4924.0	53.3	40.4	10.1	50.5	54.0	-3.5
7386.0	40.8	27.9	11.3	39.2	79.2	-40.0
9848.0	41.2	27.6	25.4	53.0	79.2	-26.2
12310.0	42.7	29.6	13.9	43.5	54.0	-10.5
14772.0	41.5	29.1	19.7	48.8	79.2	-30.4
17234.0	42.5	29.5	18.7	48.2	79.2	-31.0

Table 6-7: Radiated Emissions Harmonics/Spurious (Channel 1/2412 MHz) RW-420 802.11g

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2390.0	52.3	40.9	-4.4	36.5	54.0	-17.5
2412.0	77.6	66.1	25.6	91.7	fundamental	
4824.0	44.5	32.4	10.3	42.7	54.0	-11.3
7236.0	43.3	31.2	10.2	41.4	71.7	-30.3
9648.0	41.5	28.9	12.6	41.5	71.7	-30.2
12060.0	40.0	26.8	15.9	42.7	54.0	-11.3
14472.0	42.8	31.3	19.2	50.5	54.0	-3.5
16884.0	42.2	29.4	19.9	49.3	71.7	-22.4

Table 6-8: Radiated Emissions Harmonics/Spurious (Channel 6/2437 MHz) RW-420 802.11g

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2437.0	79.1	67.9	25.7	93.6	fundamental	
4874.0	44.7	34.0	9.8	43.8	54.0	-10.2
7311.0	42.0	29.1	9.7	38.8	54.0	-15.2
9748.0	41.0	28.1	12.6	40.7	73.6	-32.9
12185.0	41.3	28.4	14.6	43.0	54.0	-11.0
14622.0	42.3	30.2	19.3	49.5	73.6	-24.1
17059.0	43.2	29.8	19.8	49.6	73.6	-24.0

Table 6-9: Radiated Emissions Harmonics/Spurious (Channel 11/2462 MHz) RW-420 802.11g

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2462.0	78.4	67.3	25.9	93.2	fundamental	
2483.7	54.7	44.0	-4.1	39.9	54.0	-14.1
4924.0	44.3	31.6	10.1	41.7	54.0	-12.3
7386.0	41.2	28.7	11.3	40.0	73.2	-33.2
9848.0	41.3	28.2	13.4	41.6	73.2	-31.6
12310.0	41.7	29.3	13.9	43.2	54.0	-10.8
14772.0	42.5	29.5	19.7	49.2	73.2	-24.0
17234.0	43.7	30.7	18.7	49.4	73.2	-23.8

Table 6-10: Radiated Emissions Harmonics/Spurious (Channel 1/2412 MHz) RW-220 802.11g

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2390.0	68.7	57.2	-4.4	52.8	54.0	-1.2
2412.0	74.0	62.5	25.6	88.1	fundamental	
4824.0	45.0	32.9	10.3	43.2	54.0	-10.8
7236.0	43.2	31.1	10.2	41.3	68.1	-26.8
9648.0	42.3	29.7	12.6	42.3	68.1	-25.8
12060.0	40.8	27.6	15.9	43.5	54.0	-10.5
14472.0	42.8	31.3	19.2	50.5	54.0	-3.5
16884.0	42.3	29.5	19.9	49.4	68.1	-18.7

Table 6-11: Radiated Emissions Harmonics/Spurious (Channel 6/2437 MHz) RW-220 802.11g

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2437.0	73.8	62.6	25.7	88.3	fundamental	
4874.0	43.8	33.1	9.8	42.9	54.0	-11.1
7311.0	41.7	28.8	9.7	38.5	54.0	-15.5
9748.0	41.5	28.6	12.6	41.2	68.3	-27.1
12185.0	41.7	28.8	14.6	43.4	54.0	-10.6
14622.0	40.8	28.7	19.3	48.0	68.3	-20.3
17059.0	42.3	28.9	19.8	48.7	68.3	-19.6

Table 6-12: Radiated Emissions Harmonics/Spurious (Channel 11/2462 MHz) RW-220 802.11g

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2462.0	73.2	62.1	25.9	88.0	fundamental	
2483.7	62.7	51.6	-4.1	47.5	54.0	-6.5
4924.0	44.7	34.0	10.1	44.1	54.0	-9.9
7386.0	42.0	29.3	11.3	40.6	68.0	-27.4
9848.0	41.7	29.2	13.4	42.6	68.0	-25.4
12310.0	42.0	28.9	13.9	42.8	54.0	-11.2
14772.0	43.2	30.8	19.7	50.5	68.0	-17.5
17234.0	42.0	29.0	18.7	47.7	68.0	-20.3

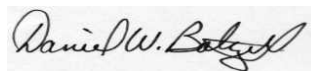
6.3 Radiated Spurious Emissions Test Equipment

Table 6-13: Radiated Spurious Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900878	Rhein Tech Labs	AM3-1197-0005	3 Meter Antenna Mast, Polarizing	Outdoor Range 1	Not Required
901242	Rhein Tech Labs	WRT-000-0003	Wood Rotating Table	N/A	Not Required
901424	IW Microwave Products	KPS-1503-2400-KPS	High Frequency RF Cables	240"	12/11/06
901425	IW Microwave Products	KPS-1503-360-KPS	High Frequency RF Cables	36"	12/11/06
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
900325	EMCO	3160-9	Horn Antennas (18 - 26.5 GHz)	9605-1051	5/20/07
901365	MITEQ	JS4-00102600-41-5P	Amplifier, 15 V, 0.1-26 GHz, 28dB gain, power 5dB	1094152	3/24/07
901413	Agilent	E4448A	Spectrum Analyzer	US44020346	11/2/06

TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer


Signature

September 17, 2007
Date Of Test

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

Client: Zebra Technologies
Model: ZLAN11G Radio Module
Standards: FCC Part 15.247/IC RSS-210
FCC ID: I28MD-ZLAN11G/3798A-ZLAN11G
Report#: 2006127

7 Conclusion

The data in this measurement report shows that the Zebra Technologies Corp. FCC ID: I28MD-ZLAN11G and IC: 3798A-ZLAN11G with antennas CQ18317 and CQ17252-G1 for the hosts RW-220 and RW-420 respectively, complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules, Industry Canada RSS-210, ANSI 63.4 and FCC 97-114 (DSSS).