



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 Site: www.rheintech.com Herndon, VA 20170 E-Mail: ATCBINFO@rheintech.com		Applicant: Zebra Technologies Phone: 401-739-5800 ext. 352 Contact: Bob Heon Fax: 401-732-0145 30 Plan Way E-Mail: bheon@zebra.com Warwick, RI 02886	
FCC ID:	I28MD-RW4137	GRANTEE FRN NUMBER:	0006-3040-75
PLAT FORM:	N/A	RTL WORK ORDER NUMBER:	2004179
MODEL NUMBER:	AN17444-1	RTL QUOTE NUMBER:	QRTL04-222
DATE OF TEST REPORT:	November 24, 2004		
Standards and Procedures:	ANSI 63.4, DA00-705 (FHSS) and FCC 97-114 (DSSS)		
FCC Classification:	DSS Direct Sequence Spread Spectrum		
FCC Rule Part(s):	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	0.096	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 FCC Part 2, FCC Part 15, Industry Canada RSS-210, ANSI 63.4, DA00-705 (FHSS) and FCC 97-114 (DSSS).

Signature: 
Typed/Printed Name: Desmond A. Fraser

Date: November 24, 2004
Position: President

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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.

A direct sequence (DS) system is a spread spectrum (SS) system in which the carrier has been modulated by a high speed spreading code and an information data stream. The high-speed code sequence dominates the "modulating function" and is the direct cause of the wide spreading of the transmitted signal.

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 an original FCC certification application for Limited Modular transmitter approval, based on the guidelines in FCC Publication DA 00-1407, for Zebra Technologies Corp., Model Name: Zebra CF 802.11b Radio, Model Number: AN17444-1, FCC ID: I28MD-RW4137.

The applicant requests LIMITED MODULAR APPROVAL to allow the use of this radio in Zebra printers and other Zebra products similar in style to those presented in this report, including housing type and materials, and not limited to the printers in this report. Appendix E of this report includes a letter from the applicant justifying the LIMITED MODULAR APPROVAL request. The IF, LO and up to the 2nd LO were investigated and tested.

With respect to Industry Canada, the applicant requests MODULAR APPROVAL, based on RSS-210, Section 5.18. The application includes a letter from the applicant justifying MODULAR APPROVAL under the conditions set forth in the RSS-210 standard.

1.4 MODIFICATIONS

No modifications were implemented to meet 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 are presented in this report.

The EUT is connected to a dipole antenna. The patch antenna transmits, receives, and is connected to the antenna port available.

The worst case data taken 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 the 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 WITH FCC RULES AND REGULATIONS

STANDARD	TEST	PASS/FAIL OR N/A
FCC 15.205	Compliance with the Restricted Band Edge	Pass
FCC 15.207	Conducted Emissions	Pass
FCC 15.209	Radiated Emissions	Pass
FCC 15.247(a)(2)	Modulated Bandwidth	Pass
FCC 15.247(b)	Power Output	Pass
FCC 15.247(c)	Antenna Conducted Spurious Emissions	Pass
FCC 15.247(d)	Power Spectral Density	Pass

2.4 TEST SYSTEM DETAILS

The test sample was received on November 24, 2004. The FCC Identifiers for all equipment and descriptions of all cables used in the tested system are:

TABLE 2-2: EQUIPMENT UNDER TEST (EUT)

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Wireless Lan Adapter (EUT)	Symbol Technologies, Inc.	AN17444-1	00A0F85F60C4	I28MD-RW4137	N/A	016329
Wireless Printer Antenna	Zebra Technologies	CQ16688	CX16688-1	N/A	6.5 cm shielded	016254
Wireless Printer Test Bed	Zebra Technologies	QL420	XXVT04-44-5172	I28-QL420352	N/A	016330
Wireless Printer Antenna	Zebra Technologies	CQ17110	CX17110-1	N/A	6.5 cm shielded	016256
AC Adapter	Symbol Technologies, Inc.	FW 7511/07	N/A	N/A	2m Shielded	016162
Compact Flash Extender Card	Sycard Technology	CFextend 160A	C160A-4399	N/A	N/A	016328

2.5 CONFIGURATION OF TESTED SYSTEM

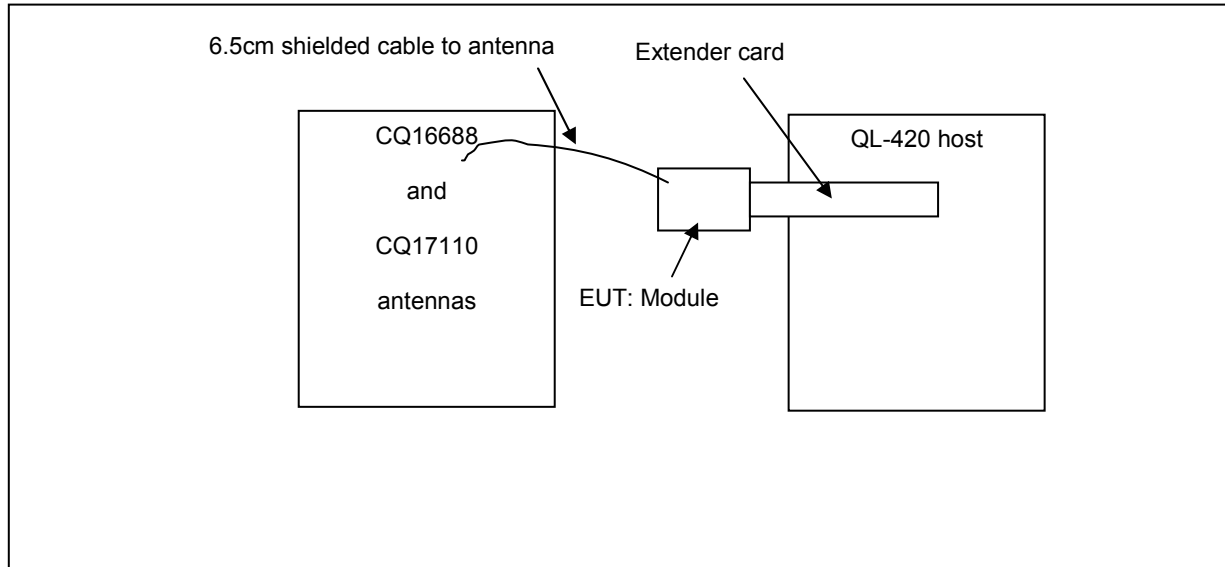


FIGURE 1: WORST CASE CONFIGURATION OF SYSTEM UNDER TEST

3 COMPLIANCE WITH THE RESTRICTED BAND EDGE - FCC §15.247(C), §15.205; IC RSS-210 §6.3

3.1 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. Data rates of 5.5MBPS, 2 MBPS, and 1 MBPS were investigated and found to be in compliance.

3.2 RESTRICTED BAND EDGE PLOTS

Calculation of Lower Band Edge

The level 101.0 dBuV/m is the worst case average field strength measurement, from which the delta measurement of 54.8 dB is subtracted (reference plots), which is equivalent to a level of 46.2 dB. This level has a margin of 7.8 dB below the limit of 54 dBuV/m.

Calculation: $101.0 \text{ dBuV/m} - 54.8 \text{ dB} - 54 \text{ dBuV/m} = -7.8 \text{ dB}$

CQ16688 Antenna

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) = 101.0 dBuV/m

CQ17110 Antenna

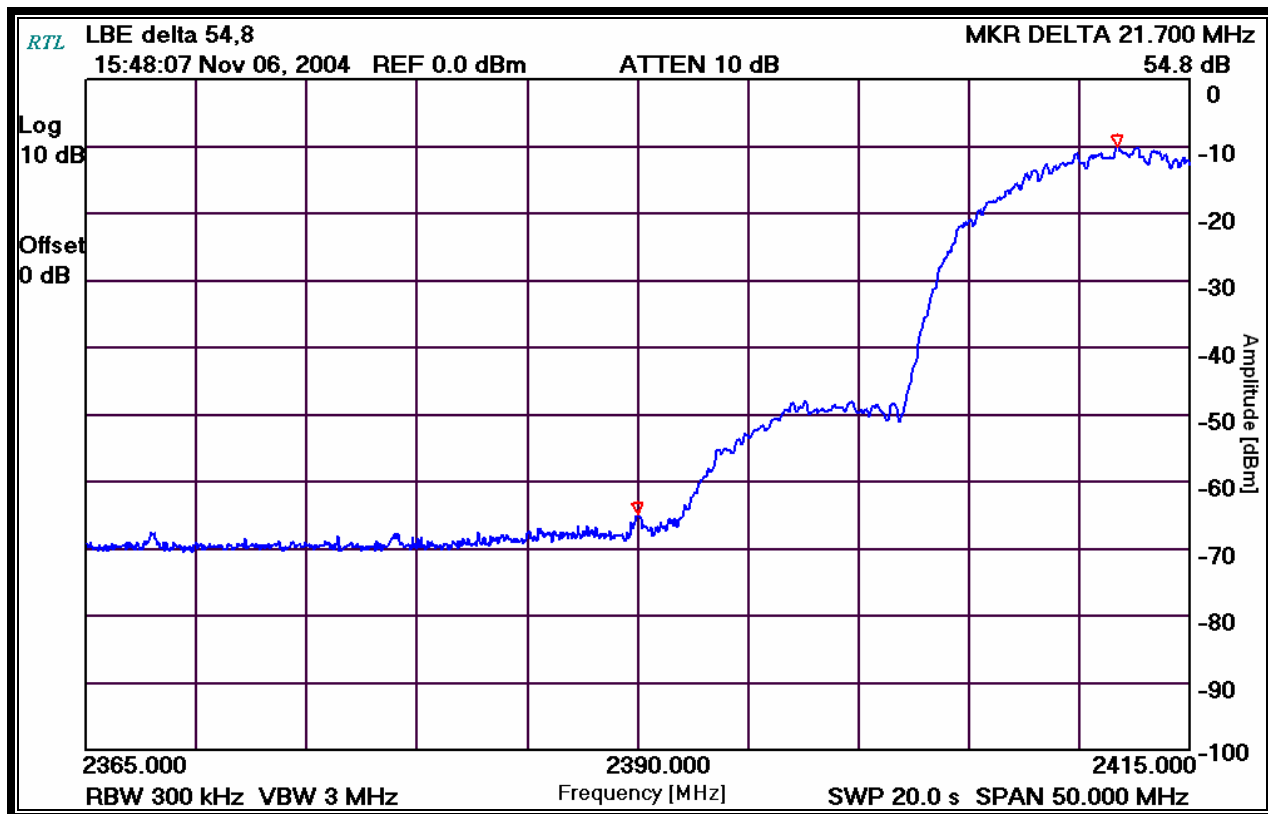
Peak field strength of Channel 1(1 MHz RBW/1 MHz VBW) = 86.7 dBuV/m

Average field strength of Channel 1(1 MHz RBW/10 Hz VBW) = 83.4 dBuV/m

Delta measurement: 54.8 dB

Channel Number: 1
Frequency (MHz): 2412
Resolution Bandwidth (kHz): 300
Video Bandwidth (MHz): 3
Sweep Time (s): 20

PLOT 3-1: LOWER BAND EDGE: DELTA MEASUREMENT



TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer

Daniel W. Baltzell
Signature

November 06, 2004
Date Of Test

Calculation of Upper Band Edge

The level 96.2 dBuV/m is the worst case average field strength measurement, from which the delta measurement of 50.8 dB is subtracted (reference plots), which is equivalent to a level of 45.4 dB. This level has a margin of 8.6 dB below the limit of 54 dBuV/m.

Calculation: $96.2 \text{ dBuV/m} - 50.8 \text{ dB} - 54 \text{ dBuV/m} = -8.6 \text{ dB}$

CQ16688 Antenna

Peak field strength of Upper Band Edge (1 MHz RBW/1 MHz VBW) = 99.5 dBuV/m
Average field strength of Upper Band Edge (1 MHz RBW/10 Hz VBW) = 96.2 dBuV/m

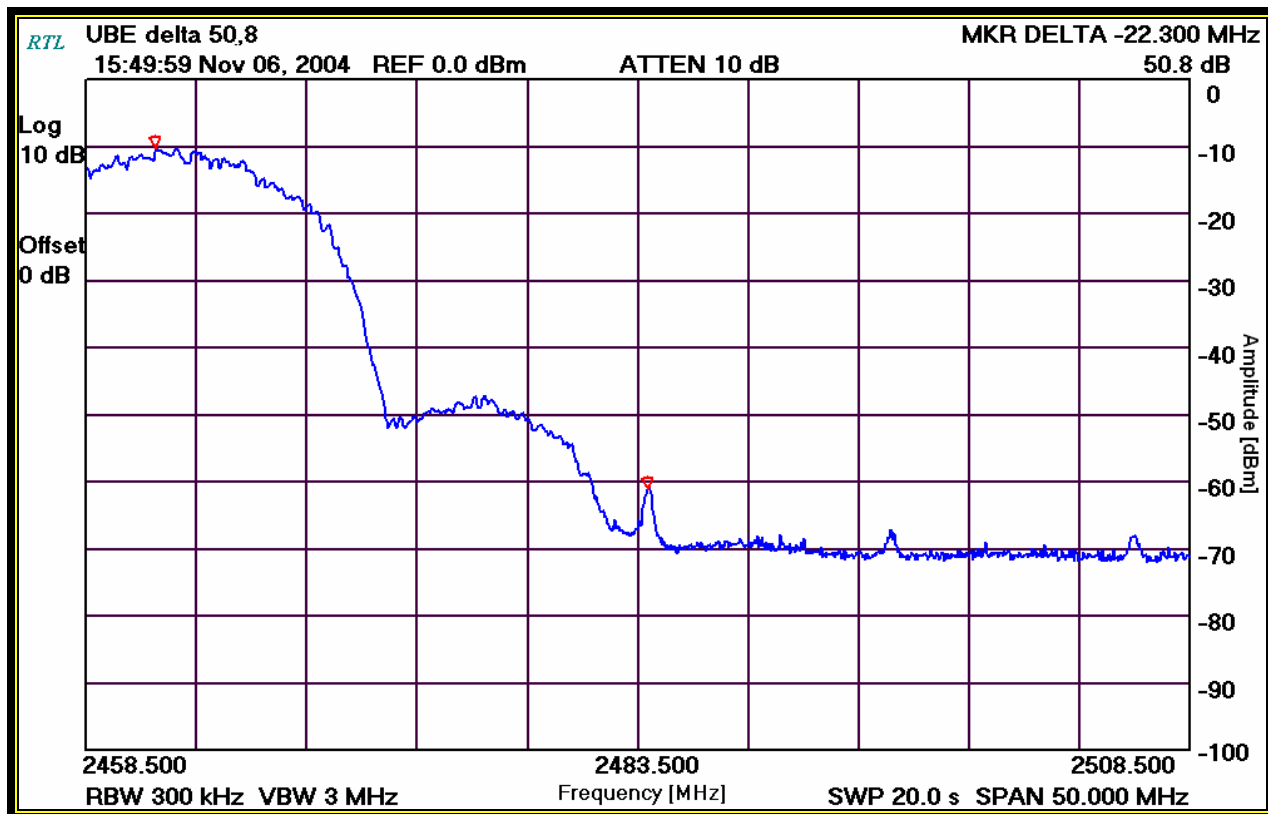
CQ17110 Antenna

Peak field strength of Channel 1 (1 MHz RBW/1 MHz VBW) = 82.9 dBuV/m
Average field strength of Channel 1 (1 MHz RBW/10 Hz VBW) = 79.2 dBuV/m

Delta measurement = 50.8 dB

PLOT 3-2: UPPER BAND EDGE: DELTA MEASUREMENT

Channel Number: 11
Frequency (MHz): 2462
Resolution Bandwidth (kHz): 300
Video Bandwidth (MHz): 3
Sweep Time (s): 20



TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer

Daniel W. Baltzell
Signature

November 6, 2004
Date Of Test

3.3 BAND EDGE TEST EQUIPMENT

TABLE 3-1: 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
901231	IW Microwave Products	KPS-1503-2400-KPS	High frequency RF cables	240"	9/5/05
901235	IW Microwave Products	KPS-1503-360-KPS	High frequency RF cables	36"	9/5/05
900772	EMCO	3161-02	Horn Antenna	9804-1044	5/20/07
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1-26.5 GHz)	3008A00505	5/5/05
901215	Hewlett Packard	8596EM	Spectrum Analyzer (9 kHz-12.8 GHz)	3826A00144	9/8/05

4 CONDUCTED EMISSIONS - §15.207; IC RSS-210 §6.6 AND 7.4

4.1 TEST METHODOLOGY FOR CONDUCTED EMISSIONS MEASUREMENTS

The power line conducted emission 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 (EUT 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 400 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 150 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. No video filter less than 10 times the resolution bandwidth was 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 limit were measured and have been recorded in this report.

Note: Rhein Tech Laboratories, Inc. has implemented procedures to minimize errors that occur from test instruments, calibration, procedures, and test setups. Test instrument and calibration errors are documented from the manufacturer or calibration lab. Other errors have been defined and calculated within the Rhein Tech Quality Manual, Section 6.1. Rhein Tech implements the following procedures to minimize errors that may occur: yearly as well as daily calibration methods, technician training, and emphasis to employees on avoiding error.

4.2 CONDUCTED EMISSION TEST

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. If the conducted emissions exceed the limit, then the instrument is set to the quasi-peak mode and compared to the quasi-peak limit, then measurements are made in the average mode and compared to the average limit. The conducted test was performed with the EUT exercise program loaded, and the emissions were scanned between 150 kHz to 30 MHz on the NEUTRAL SIDE and PHASE SIDE.

TABLE 4-1: CONDUCTED EMISSIONS TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900339	Hewlett Packard	85650A	Quasi-Peak Adapter (30 Hz-1 GHz)	2521A00743	4/28/05
901084	AFJ international	LS16	16A LISN	16010020082	12/4/04
900968	Hewlett Packard	8567A	Spectrum Analyzer (10 kHz-1.5 GHz)	2602A00160	4/28/05
900970	Hewlett Packard	85662A	Spectrum Analyzer Display	2542A11239	4/28/05

4.3 CONDUCTED EMISSION TEST DATA

TABLE 4-2: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 1 CQ16688 ANTENNA

Temperature: 74°F				Humidity: 43%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.177	Pk	48.1	0.4	48.5	64.6	-16.1	54.6	-6.1
0.241	Pk	45.5	0.4	45.9	62.1	-16.2	52.1	-6.2
0.299	Pk	42.2	0.4	42.6	60.3	-17.7	50.3	-7.7
2.120	Pk	41.0	0.8	41.8	56.0	-14.2	46.0	-4.2
6.280	Pk	36.1	1.2	37.3	60.0	-22.7	50.0	-12.7
25.870	Pk	27.2	1.7	28.9	60.0	-31.1	50.0	-21.1

TABLE 4-3: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 1 CQ16688 ANTENNA

Temperature: 74°F				Humidity: 43%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.184	Pk	45.6	0.4	46.0	64.3	-18.3	54.3	-8.3
0.422	Pk	42.4	0.5	42.9	57.4	-14.5	47.4	-4.5
0.480	Pk	43.7	0.5	44.2	56.3	-12.1	46.3	-2.1
2.180	Pk	40.5	0.8	41.3	56.0	-14.7	46.0	-4.7
7.640	Pk	36.7	1.2	37.9	60.0	-22.1	50.0	-12.1
26.370	Pk	35.1	1.7	36.8	60.0	-23.2	50.0	-13.2

TABLE 4-4: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 6 CQ16688 ANTENNA

Temperature: 74°F Humidity: 43%								
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.182	Pk	47.9	0.4	48.3	64.4	-16.1	54.4	-6.1
0.241	Pk	45.4	0.4	45.8	62.1	-16.3	52.1	-6.3
0.423	Pk	45.6	0.5	46.1	57.4	-11.3	47.4	-1.3
1.740	Pk	42.2	0.8	43.0	56.0	-13.0	46.0	-3.0
7.880	Pk	37.1	1.2	38.3	60.0	-21.7	50.0	-11.7
26.700	Pk	28.7	1.7	30.4	60.0	-29.6	50.0	-19.6

TABLE 4-5: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 6 CQ16688 ANTENNA

Temperature: 74°F Humidity: 43%								
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.177	Pk	46.4	0.4	46.8	64.6	-17.8	54.6	-7.8
0.423	Pk	44.1	0.5	44.6	57.4	-12.8	47.4	-2.8
0.483	Pk	43.0	0.5	43.5	56.3	-12.8	46.3	-2.8
1.330	Pk	41.7	0.7	42.4	56.0	-13.6	46.0	-3.6
7.880	Pk	36.2	1.2	37.4	60.0	-22.6	50.0	-12.6
25.780	Pk	30.5	1.7	32.2	60.0	-27.8	50.0	-17.8

TABLE 4-6: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 11 CQ16688 ANTENNA

Temperature: 74°F Humidity: 43%								
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.178	Pk	48.6	0.4	49.0	64.6	-15.6	54.6	-5.6
0.243	Pk	44.5	0.4	44.9	62.0	-17.1	52.0	-7.1
0.423	Pk	45.8	0.5	46.3	57.4	-11.1	47.4	-1.1
1.150	Pk	40.4	0.6	41.0	56.0	-15.0	46.0	-5.0
7.290	Pk	37.8	1.2	39.0	60.0	-21.0	50.0	-11.0
26.670	Pk	27.7	1.7	29.4	60.0	-30.6	50.0	-20.6

TABLE 4-7: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 11 CQ16688 ANTENNA

Temperature: 74°F Humidity: 43%								
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.179	Pk	47.5	0.4	47.9	64.5	-16.6	54.5	-6.6
0.424	Pk	43.5	0.5	44.0	57.4	-13.4	47.4	-3.4
0.485	Pk	43.1	0.5	43.6	56.3	-12.7	46.3	-2.7
2.330	Pk	40.9	0.8	41.7	56.0	-14.3	46.0	-4.3
7.610	Pk	37.1	1.2	38.3	60.0	-21.7	50.0	-11.7
25.750	Pk	33.3	1.7	35.0	60.0	-25.0	50.0	-15.0

TABLE 4-8: CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVE CQ16688 ANTENNA

Temperature: 74°F Humidity: 43%								
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.182	Pk	48.7	0.4	49.1	64.4	-15.3	54.4	-5.3
0.243	Pk	44.9	0.4	45.3	62.0	-16.7	52.0	-6.7
0.423	Pk	45.1	0.5	45.6	57.4	-11.8	47.4	-1.8
1.210	Pk	43.8	0.6	44.4	56.0	-11.6	46.0	-1.6
7.400	Pk	36.7	1.2	37.9	60.0	-22.1	50.0	-12.1
25.070	Pk	27.3	1.6	28.9	60.0	-31.1	50.0	-21.1

TABLE 4-9: CONDUCTED EMISSIONS (PHASE SIDE) RECEIVE CQ16688 ANTENNA

Temperature: 74°F Humidity: 43%								
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.181	Pk	47.3	0.4	47.7	64.4	-16.7	54.4	-6.7
0.420	Pk	43.5	0.5	44.0	57.4	-13.4	47.4	-3.4
0.484	Pk	43.5	0.5	44.0	56.3	-12.3	46.3	-2.3
0.910	Pk	42.4	0.6	43.0	56.0	-13.0	46.0	-3.0
7.760	Pk	36.8	1.2	38.0	60.0	-22.0	50.0	-12.0
25.720	Pk	33.4	1.7	35.1	60.0	-24.9	50.0	-14.9

TABLE 4-10: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 1 CQ17110 ANTENNA

Temperature: 74°F Humidity: 43%								
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.182	Pk	48.8	0.4	49.2	64.4	-15.2	54.4	-5.2
0.239	Pk	45.3	0.4	45.7	62.1	-16.4	52.1	-6.4
0.422	Pk	44.8	0.5	45.3	57.4	-12.1	47.4	-2.1
0.850	Pk	43.3	0.6	43.9	56.0	-12.1	46.0	-2.1
5.010	Pk	39.3	1.2	40.5	60.0	-19.5	50.0	-9.5
19.500	Pk	26.2	1.4	27.6	60.0	-32.4	50.0	-22.4

TABLE 4-11: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 1 CQ17110 ANTENNA

Temperature: 74°F Humidity: 43%								
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.177	Pk	46.8	0.4	47.2	64.6	-17.4	54.6	-7.4
0.422	Pk	42.8	0.5	43.3	57.4	-14.1	47.4	-4.1
0.483	Pk	43.2	0.5	43.7	56.3	-12.6	46.3	-2.6
1.440	Pk	41.0	0.7	41.7	56.0	-14.3	46.0	-4.3
7.700	Pk	37.7	1.2	38.9	60.0	-21.1	50.0	-11.1
20.910	Pk	32.1	1.5	33.6	60.0	-26.4	50.0	-16.4

TABLE 4-12: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 6 CQ17110 ANTENNA

Temperature: 74°F				Humidity: 43%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.180	Pk	48.2	0.4	48.6	64.5	-15.9	54.5	-5.9
0.242	Pk	45.2	0.4	45.6	62.0	-16.4	52.0	-6.4
0.423	Pk	45.1	0.5	45.6	57.4	-11.8	47.4	-1.8
2.000	Pk	41.5	0.8	42.3	56.0	-13.7	46.0	-3.7
4.930	Pk	39.5	1.2	40.7	56.0	-15.3	46.0	-5.3
26.670	Pk	27.9	1.7	29.6	60.0	-30.4	50.0	-20.4

TABLE 4-13: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 6 CQ17110 ANTENNA

Temperature: 74°F				Humidity: 43%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.180	Pk	47.5	0.4	47.9	64.5	-16.6	54.5	-6.6
0.422	Pk	44.2	0.5	44.7	57.4	-12.7	47.4	-2.7
0.484	Pk	42.9	0.5	43.4	56.3	-12.9	46.3	-2.9
1.030	Pk	43.3	0.6	43.9	56.0	-12.1	46.0	-2.1
7.610	Pk	37.0	1.2	38.2	60.0	-21.8	50.0	-11.8
24.310	Pk	31.6	1.7	33.3	60.0	-26.7	50.0	-16.7

TABLE 4-14: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 11 CQ17110 ANTENNA

Temperature: 74°F				Humidity: 43%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.181	Pk	48.3	0.4	48.7	64.4	-15.7	54.4	-5.7
0.242	Pk	45.1	0.4	45.5	62.0	-16.5	52.0	-6.5
0.424	Pk	45.3	0.5	45.8	57.4	-11.6	47.4	-1.6
1.090	Pk	41.4	0.6	42.0	56.0	-14.0	46.0	-4.0
7.640	Pk	38.0	1.2	39.2	60.0	-20.8	50.0	-10.8
24.690	Pk	27.0	1.7	28.7	60.0	-31.3	50.0	-21.3

TABLE 4-15: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 11 CQ17110 ANTENNA

Temperature: 74°F				Humidity: 43%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.180	Pk	47.4	0.4	47.8	64.5	-16.7	54.5	-6.7
0.422	Pk	45.2	0.5	45.7	57.4	-11.7	47.4	-1.7
0.482	Pk	42.7	0.5	43.2	56.3	-13.1	46.3	-3.1
1.530	Pk	41.7	0.7	42.4	56.0	-13.6	46.0	-3.6
7.990	Pk	38.3	1.2	39.5	60.0	-20.5	50.0	-10.5
25.870	Pk	33.5	1.7	35.2	60.0	-24.8	50.0	-14.8

TABLE 4-16: CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVE CQ17110 ANTENNA

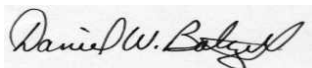
Temperature: 74°F				Humidity: 43%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.179	Pk	48.7	0.4	49.1	64.5	-15.4	54.5	-5.4
0.242	Pk	44.7	0.4	45.1	62.0	-16.9	52.0	-6.9
0.422	Pk	46.2	0.5	46.7	57.4	-10.7	47.4	-0.7
1.210	Pk	44.8	0.6	45.4	56.0	-10.6	46.0	-0.6
7.400	Pk	38.2	1.2	39.4	60.0	-20.6	50.0	-10.6
25.750	Pk	27.6	1.7	29.3	60.0	-30.7	50.0	-20.7

TABLE 4-17: CONDUCTED EMISSIONS (PHASE SIDE) RECEIVE CQ17110 ANTENNA

Temperature: 74°F				Humidity: 43%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.176	Pk	45.6	0.4	46.0	64.7	-18.7	54.7	-8.7
0.423	Pk	44.6	0.5	45.1	57.4	-12.3	47.4	-2.3
0.486	Pk	43.2	0.5	43.7	56.2	-12.5	46.2	-2.5
0.910	Pk	42.2	0.6	42.8	56.0	-13.2	46.0	-3.2
7.400	Pk	35.7	1.2	36.9	60.0	-23.1	50.0	-13.1
25.630	Pk	33.9	1.7	35.6	60.0	-24.4	50.0	-14.4

TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer



Signature

November 23, 2004
Date Of Test

5 RADIATED EMISSION FOR RECEIVER/DIGITAL INTERFACE - §15.209; IC RSS-210 §7.3

5.1 RADIATED EMISSION TEST PROCEDURE FOR RECEIVER/DIGITAL INTERFACE

Radiated spurious emissions for receiver/digital interface fall in the restricted and non-restricted bands between 30 MHz and up to the 2nd LO when the EUT is in the receiver/digital interface mode. The IF, LO and up to the 2nd LO of the receiver were investigated and tested. Channels 1, 6, and 11 were tested and investigated. The restricted bands are listed in FCC Part 15.205 and the maximum permitted average field strength for the restricted band 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: RADIATED EMISSIONS - CQ16688 ANTENNA

Temperature: 54°F					Humidity: 86%				
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)
176.000	Qp	H	0	1.0	41.5	-20.6	20.9	43.5	-22.6
187.000	Qp	H	0	1.0	45.4	-20.9	24.5	43.5	-19.0
198.000	Qp	H	180	1.0	40.8	-20.3	20.5	43.5	-23.0
220.000	Qp	H	0	1.0	51.1	-19.6	31.5	46.0	-14.5
242.000	Qp	H	0	1.0	41.1	-17.6	23.5	46.0	-22.5
253.000	Qp	H	180	1.0	41.9	-16.6	25.3	46.0	-20.7
264.000	Qp	H	0	1.0	51.8	-15.7	36.1	46.0	-9.9
275.000	Qp	H	0	1.0	42.9	-16.0	26.9	46.0	-19.1
286.000	Qp	H	180	1.0	42.2	-16.0	26.2	46.0	-19.8

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

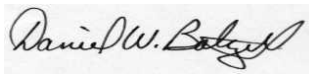
TABLE 5-2: RADIATED EMISSIONS - CQ17110 ANTENNA

Temperature: 54°F					Humidity: 86%				
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)
176.000	Qp	H	0	1.0	45.7	-20.6	25.1	43.5	-18.4
187.000	Qp	H	0	1.0	49.2	-20.9	28.3	43.5	-15.2
198.000	Qp	H	180	1.0	41.5	-20.3	21.2	43.5	-22.3
220.000	Qp	H	0	1.0	48.8	-19.6	29.2	46.0	-16.8
242.000	Qp	H	180	1.0	43.1	-17.6	25.5	46.0	-20.5
253.000	Qp	H	180	1.0	43.9	-16.6	27.3	46.0	-18.7
264.000	Qp	H	0	1.0	49.1	-15.7	33.4	46.0	-12.6
275.000	Qp	H	180	1.0	45.6	-16.0	29.6	46.0	-16.4
286.000	Qp	H	0	1.0	44.6	-16.0	28.6	46.0	-17.4

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

TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer



Signature

November 23, 2004
Date Of Test

6 RADIATED EMISSION RADIATED HARMONICS/SPURIOUS NOISE - §15.247; IC RSS-210 §6.2.2(O)(E1); §6.3

6.1 RADIATED EMISSION TEST PROCEDURE FOR HARMONICS/SPURIOUS NOISE

Radiated Spurious Emissions applies 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: CQ16688 ANTENNA RADIATED EMISSIONS HARMONICS/SPURIOUS CHANNEL 1 / 2412 MHZ)

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824.0	29.7	13.8	43.5	54.0	-10.5
7236.0	30.5	13.2	43.7	80.9	-37.2
9648.0	30.2	15.5	45.7	80.9	-35.2
12060.0	31.2	18.9	50.1	54.0	-3.9
14472.0	27.3	24.6	51.9	54.0	-2.1
16884.0	29.3	22.7	52.0	80.9	-28.9
19296.0	28.2	23.5	51.7	54.0	-2.3
21708.0	29.0	27.6	56.6	80.9	-24.3
24120.0	32.2	28.4	60.6	80.9	-20.3

Fundamental Field Strength (100 kHz / dBuV/m): 100.9

TABLE 6-2: CQ16688 ANTENNA RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 6 / 2437 MHZ)

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874.0	30.8	14.2	45.0	54.0	-9.0
7311.0	30.5	12.6	43.1	54.0	-10.9
9748.0	29.7	15.4	45.1	78.2	-33.1
12185.0	29.7	19.2	48.9	54.0	-5.1
14622.0	30.5	25.5	56.0	78.2	-22.2
17059.0	21.2	22.5	43.7	78.2	-34.5
19496.0	28.3	23.6	51.9	54.0	-2.1
21933.0	29.7	27.7	57.4	78.2	-20.8
24370.0	32.3	28.5	60.8	78.2	-17.4

Fundamental Field Strength (100 kHz / dBuV/m): 98.2

TABLE 6-3: CQ16688 ANTENNA RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 11 / 2462 MHZ)

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924.0	30.7	14.0	44.7	54.0	-9.3
7386.0	31.3	13.9	45.2	54.0	-8.8
9848.0	31.8	16.1	47.9	76.1	-28.2
12310.0	29.5	18.6	48.1	54.0	-5.9
14772.0	29.7	26.5	56.2	76.1	-19.9
17234.0	29.7	22.3	52.0	76.1	-24.1
19696.0	27.6	23.4	51.0	54.0	-3.0
22158.0	29.7	27.8	57.5	76.1	-18.6
24620.0	33.2	28.6	61.8	76.1	-14.3

Fundamental Field Strength (100 kHz / dBuV/m): 96.1

TABLE 6-4: CQ17110 ANTENNA RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 1 / 2412 MHZ)

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4824.0	27.7	13.8	41.5	54.0	-12.5
7236.0	27.5	13.2	40.7	74.0	-33.3
9648.0	28.7	15.5	44.2	74.0	-29.8
12060.0	26.7	18.9	45.6	54.0	-8.4
14472.0	26.0	24.6	50.6	54.0	-3.4
16884.0	27.5	22.7	50.2	74.0	-23.8
19296.0	27.5	23.5	51.0	54.0	-3.0
21708.0	27.0	27.6	54.6	74.0	-19.4
24120.0	27.0	28.4	55.4	74.0	-18.6

Fundamental Field Strength (100 kHz / dBuV/m): 94.0

TABLE 6-5: CQ17110 ANTENNA RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 6 / 2437 MHZ)

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874.0	27.8	14.2	42.0	54.0	-12.0
7311.0	28.8	12.6	41.4	54.0	-12.6
9748.0	28.0	15.4	43.4	61.2	-17.8
12185.0	27.3	19.2	46.5	54.0	-7.5
14622.0	26.8	25.5	52.3	61.2	-8.9
17059.0	28.3	22.5	50.8	61.2	-10.4
19496.0	26.5	23.6	50.1	54.0	-3.9
21933.0	26.7	27.7	54.4	61.2	-6.8
24370.0	25.7	28.5	54.2	61.2	-7.0

Fundamental Field Strength (100 kHz / dBuV/m): 81.2

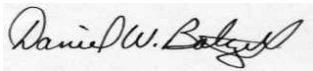
TABLE 6-6: CQ17110 ANTENNA RADIATED EMISSIONS HARMONICS/SPURIOUS (CHANNEL 11 / 2462 MHZ)

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4924.0	28.0	14.0	42.0	54.0	-12.0
7386.0	25.7	13.9	39.6	54.0	-14.4
9848.0	28.5	16.1	44.6	59.0	-14.4
12310.0	26.0	18.6	44.6	54.0	-9.4
14772.0	26.3	26.5	52.8	59.0	-6.2
17234.0	25.7	22.3	48.0	59.0	-11.0
19696.0	27.8	23.4	51.2	54.0	-2.8
22158.0	27.7	27.8	55.5	59.0	-3.5
24620.0	26.8	28.6	55.4	59.0	-3.6

Fundamental Field Strength (100 kHz / dBuV/m): 79.0

TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer


Signature

November 20, 2004
Date Of Test

6.3 TEST EQUIPMENT USED FOR TESTING

TABLE 6-7: 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
901231	IW Microwave Products	KPS-1503-2400-KPS	High frequency RF cables	240"	9/5/05
901235	IW Microwave Products	KPS-1503-360-KPS	High frequency RF cables	36"	9/5/05
900772	EMCO	3161-02	Horn Antenna (2-4 GHz)	9804-1044	05/20/07
900321	EMCO	3161-03	Horn Antennas (4-8,2 GHz)	9508-1020	05/20/07
900323	EMCO	3160-7	Horn Antennas (8,2-12,4 GHz)	9605-1054	05/20/07
900325	EMCO	3160-9	Horn Antennas (18-26.5 GHz)	9605-1051	05/20/07
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1-26.5 GHz)	3008A00505	5/5/05
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz-40 GHz)	3943A01719	8/11/05

7 MODULATED BANDWIDTH - §15.247(A)(2)

7.1 MODULATED BANDWIDTH TEST PROCEDURE

The minimum 6 dB bandwidth per FCC 15.247 (a)(2) was measured using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 1 MHz. The minimum 6 dB modulated bandwidths are the following:

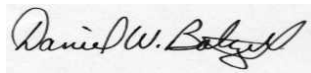
7.2 MODULATED BANDWIDTH TEST DATA

TABLE 7-1: MINIMUM 6 DB MODULATED BANDWIDTHS

CHANNEL	6 dB BANDWIDTH (MHz)
1	10.2
6	10.1
11	10.0

TEST PERSONNEL:

Daniel Baltzell
Test Engineer



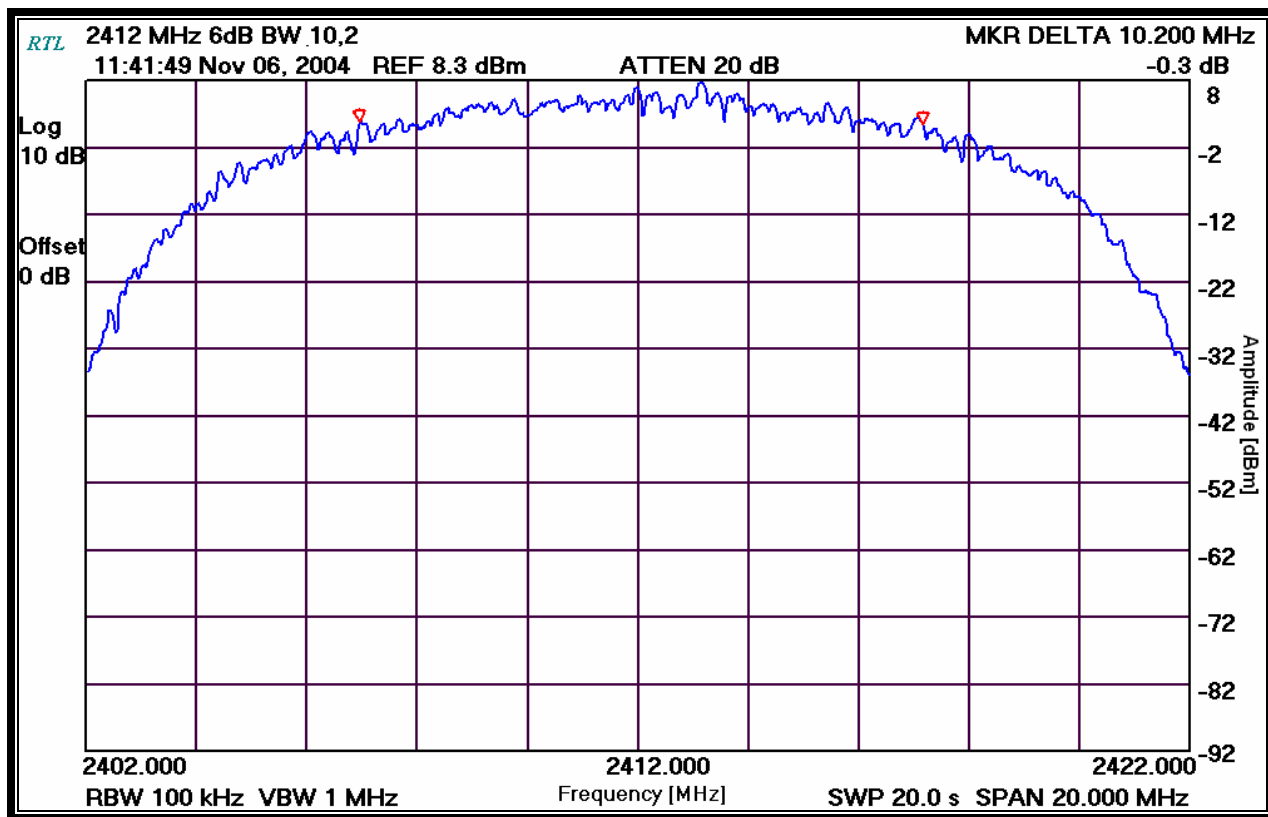
Signature

November 6, 2004
Date Of Test

7.3 MODULATED BANDWIDTH PLOTS

Channel Number: 1
Frequency (MHz): 2412
Resolution Bandwidth (kHz): 100
Video Bandwidth (MHz): 1
Sweep Time (s): 20.0

PLOT 7-1: MODULATED BANDWIDTH CHANNEL 1



TEST PERSONNEL:

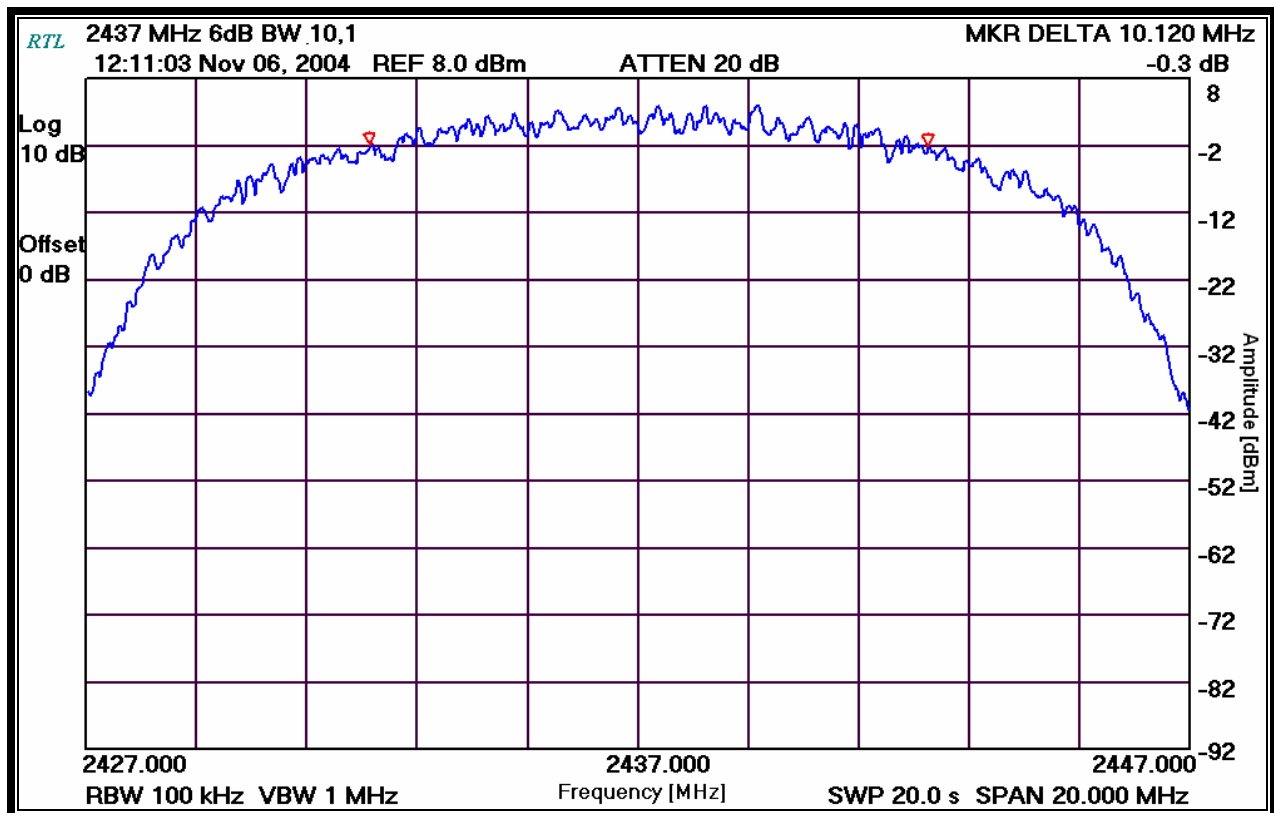
Daniel Baltzell
Test Engineer

Daniel W. Baltzell
Signature

November 6, 2004
Date Of Test

Channel Number: 6
Frequency (MHz): 2437
Resolution Bandwidth (kHz): 100
Video Bandwidth (MHz): 1
Sweep Time (s): 20.0

PLOT 7-2: MODULATED BANDWIDTH CHANNEL 6



TEST PERSONNEL:

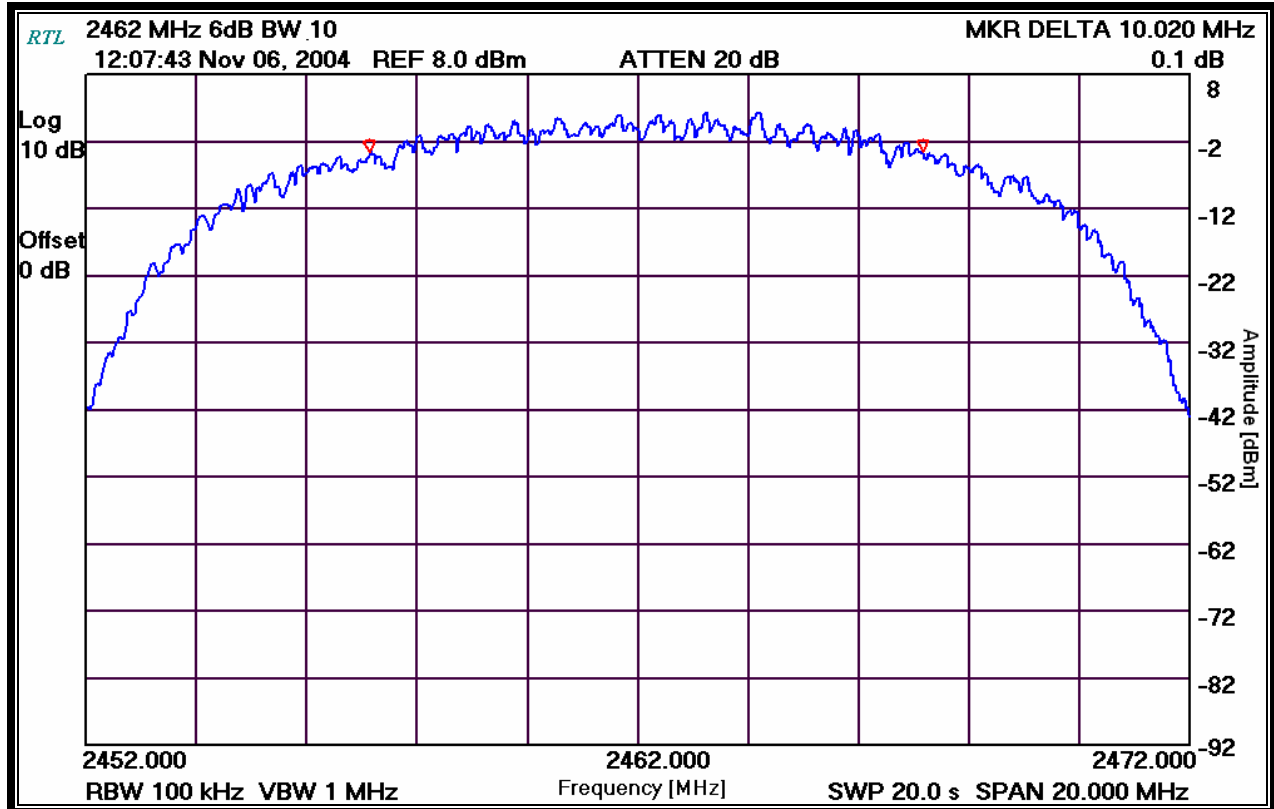
Daniel Baltzell
Test Engineer

Daniel W. Baltzell
Signature

November 6, 2004
Date of Test

Channel Number: 11
Frequency (MHz): 2462
Resolution Bandwidth (kHz): 100
Video Bandwidth (MHz): 1
Sweep Time (s): 20.0

PLOT 7-3: MODULATED BANDWIDTH CHANNEL 11



TEST PERSONNEL:

Daniel Baltzell
Test Engineer

Daniel W. Baltzell
Signature

November 6, 2004
Date Of Test

7.4 TEST EQUIPMENT USED FOR TESTING

TABLE 7-2: TEST EQUIPMENT USED FOR TESTING (MODULATED BANDWIDTH)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771	6/23/05

8 PEAK OUTPUT POWER - FCC §15.247(B)(1); IC RSS-210 §6.2.2(O)(B)

8.1 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.

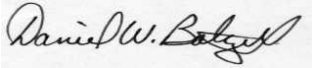
8.2 POWER OUTPUT TEST DATA

TABLE 8-1: POWER OUTPUT TEST DATA

CHANNEL	POWER CONDUCTED OUTPUT (dBm)
1	19.8
6	18.2
11	17.8

*Measurement accuracy is +/- 1.5 dB

TEST PERSONNEL:

Daniel W. Baltzell		November 6, 2004
Test Engineer	Signature	Date Of Test

8.3 TEST EQUIPMENT USED FOR TESTING

TABLE 8-2: TEST EQUIPMENT USED FOR TESTING RF POWER OUTPUT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901356	Agilent Technologies	E9323A (50MHz-6GHz)	Peak & Average Power Sensor	31764-261	9/10/05
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573	8/2/05

9 ANTENNA CONDUCTED SPURIOUS EMISSIONS - §15.247(C); IC RSS-210 §6.2.2(O)(E1)

9.1 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST PROCEDURES

Antenna spurious emission per FCC 15.247(c) was measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 300 kHz. The modulated carrier was identified at 2.412 GHz for Channel 1, 2.437 GHz for Channel 6, and 2.462 GHz for Channel 11. No other harmonics or spurs were found within 20 dB of the carrier level, and from 9 kHz to the carriers 10th harmonic. A notch filter was not used; it was found to have no effect in the levels.

Channels 1, 6, and 11 were investigated and tested.

9.2 ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 1

Operating Frequency (MHz): 2412
Channel: 1
Measured Peak Conducted Power (dBm): 7.7
Conducted Spurious Limit (dBm): -12.3

TABLE 9-1: ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 1

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limits (dBc)	Margin (dB)
2037.975	-76.5	84.2	20.0	-64.2
4075.944	-67.7	75.4	20.0	-55.4
4824.000	-53.6	61.3	20.0	-41.3
6113.902	-68.8	76.5	20.0	-56.5
7236.000	-61.3	69.0	20.0	-49.0
8151.868	-66.8	74.5	20.0	-54.5
9648.000	-65.2	72.9	20.0	-52.9
10189.838	-67.5	75.2	20.0	-55.2
12060.000	-70.9	78.6	20.0	-58.6
12227.822	-70.0	77.7	20.0	-57.7

9.3 ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 6

Operating Frequency (MHz): 2437
 Channel: 6
 Measured Peak Conducted Power (dBm): 4.6
 Conducted Spurious Limit (dBm): -15.4

TABLE 9-2: ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 6

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limits (dBc)	Margin (dB)
2062.986	-75.7	80.3	20.0	-60.3
2437.000	4.6	4.6	-15.4	-20.0
4125.943	-64.3	68.9	20.0	-48.9
4874.000	-79.7	84.3	20.0	-64.3
6188.901	-68.1	72.7	20.0	-52.7
7311.000	-74.7	79.3	20.0	-59.3
8251.868	-64.4	69.0	20.0	-49.0
9748.000	-70.5	75.1	20.0	-55.1
10314.841	-67.7	72.3	20.0	-52.3
12185.000	-73.2	77.8	20.0	-57.8
12377.806	-66.7	71.3	20.0	-51.3

9.4 ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 11

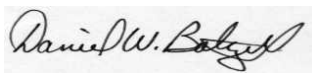
Operating Frequency (MHz): 2462
Channel: 11
Measured Peak Conducted Power (dBm): 3.1
Conducted Spurious Limit (dBm): -16.9

TABLE 9-3: ANTENNA CONDUCTED SPURIOUS EMISSIONS CHANNEL 11

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limits (dBc)	Margin (dB)
2087.975	-71.7	74.8	20.0	-54.8
2462.000	3.1	3.1	-16.9	-20.0
4175.945	-61.7	64.8	20.0	-44.8
4924.000	-70.3	73.4	20.0	-53.4
6263.920	-69.4	72.5	20.0	-52.5
7386.000	-74.2	77.3	20.0	-57.3
8351.866	-64.7	67.8	20.0	-47.8
9848.000	-70.2	73.3	20.0	-53.3
10439.841	-69.8	72.9	20.0	-52.9
12310.000	-72.6	75.7	20.0	-55.7
12527.816	-63.6	66.7	20.0	-46.7
14615.772	-65.0	68.1	20.0	-48.1

TEST PERSONNEL:

Daniel W. Baltzell
Test Engineer


Signature

November 6, 2004
Date Of Test

10 POWER SPECTRAL DENSITY - §15.247(D); IC RSS-210 §6.2.2(O)(B)

10.1 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 test was performed as a conducted test. The spectral lines were resolved for the modulated carriers at 2.412 GHz, 2.437 GHz, and 2.462GHz respectively. These levels are well below the +8 dBm limit. See the power spectral density table and plots that follow.

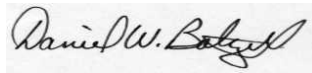
10.2 POWER SPECTRAL DENSITY TEST DATA

TABLE 10-1: POWER SPECTRAL DENSITY

CHANNEL	POWER SPECTRAL DENSITY (dBm) (LIMIT = +8dBm)
1	-6.2
6	-10
11	-10.6

TEST PERSONNEL:

Daniel Baltzell
Test Engineer



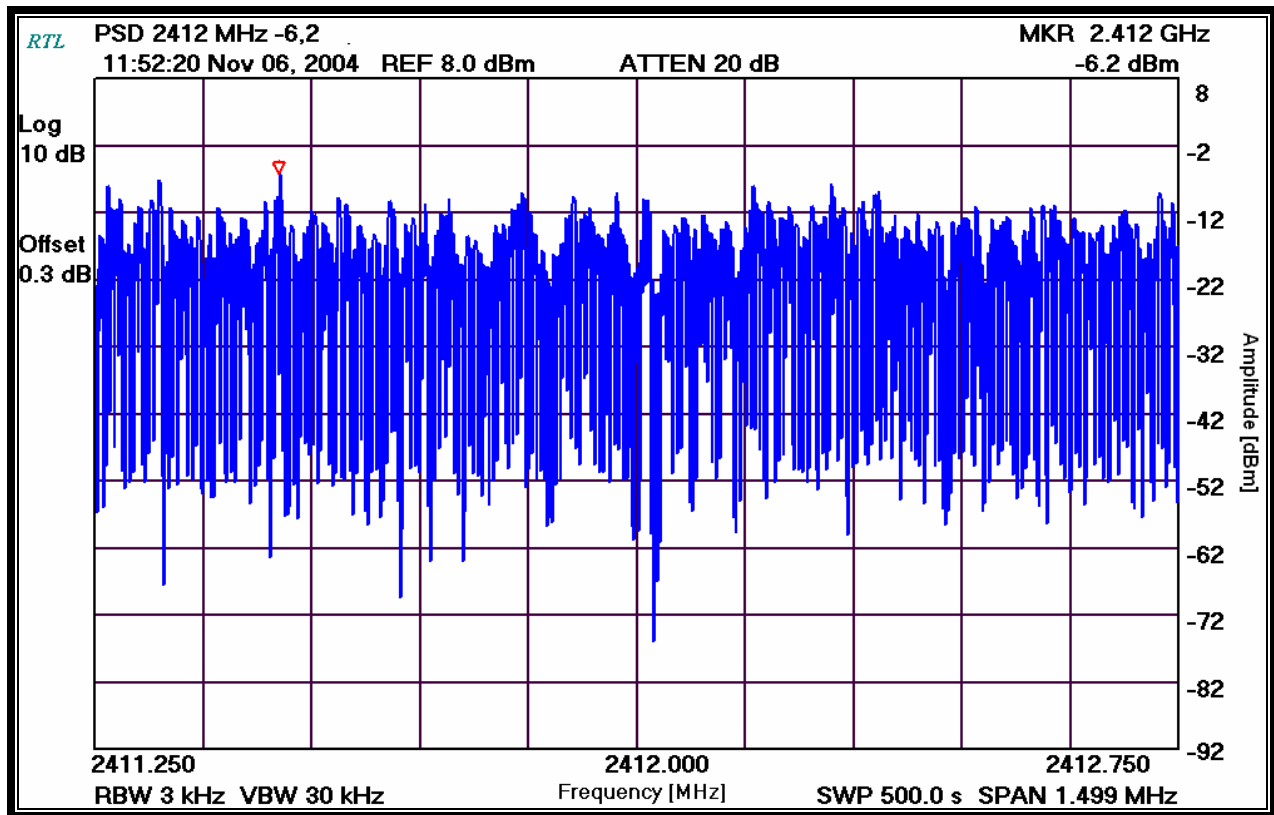
Signature

November 6, 2004
Date Of Test

10.3 POWER SPECTRAL DENSITY PLOTS

Operating Frequency (MHz): 2412
Channel: 1
Measured Peak Conducted Power (dBm): 19.8
Bandwidth Resolution (kHz): 3
Bandwidth Video (kHz): 30
Sweep Time (s): 500

PLOT 10-1: POWER SPECTRAL DENSITY: CHANNEL 1



TEST PERSONNEL:

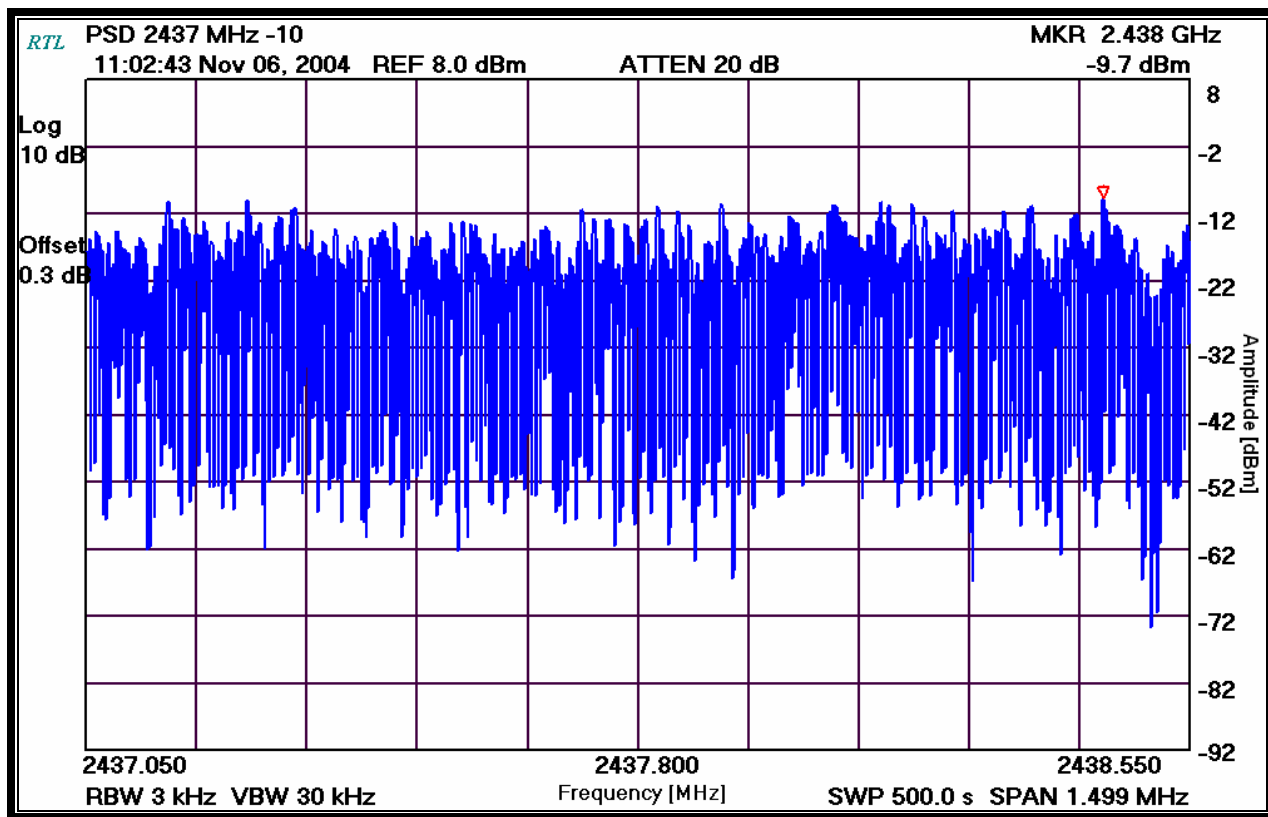
Daniel Baltzell
Test Engineer

Daniel W. Baltzell
Signature

November 6, 2004
Date Of Test

Operating Frequency (MHz): 2437
Channel: 6
Measured Peak Conducted Power (dBm): 18.2
Bandwidth Resolution (kHz): 3
Bandwidth Video (kHz): 30
Sweep Time (s): 500

PLOT 10-2: POWER SPECTRAL DENSITY: CHANNEL 6



TEST PERSONNEL:

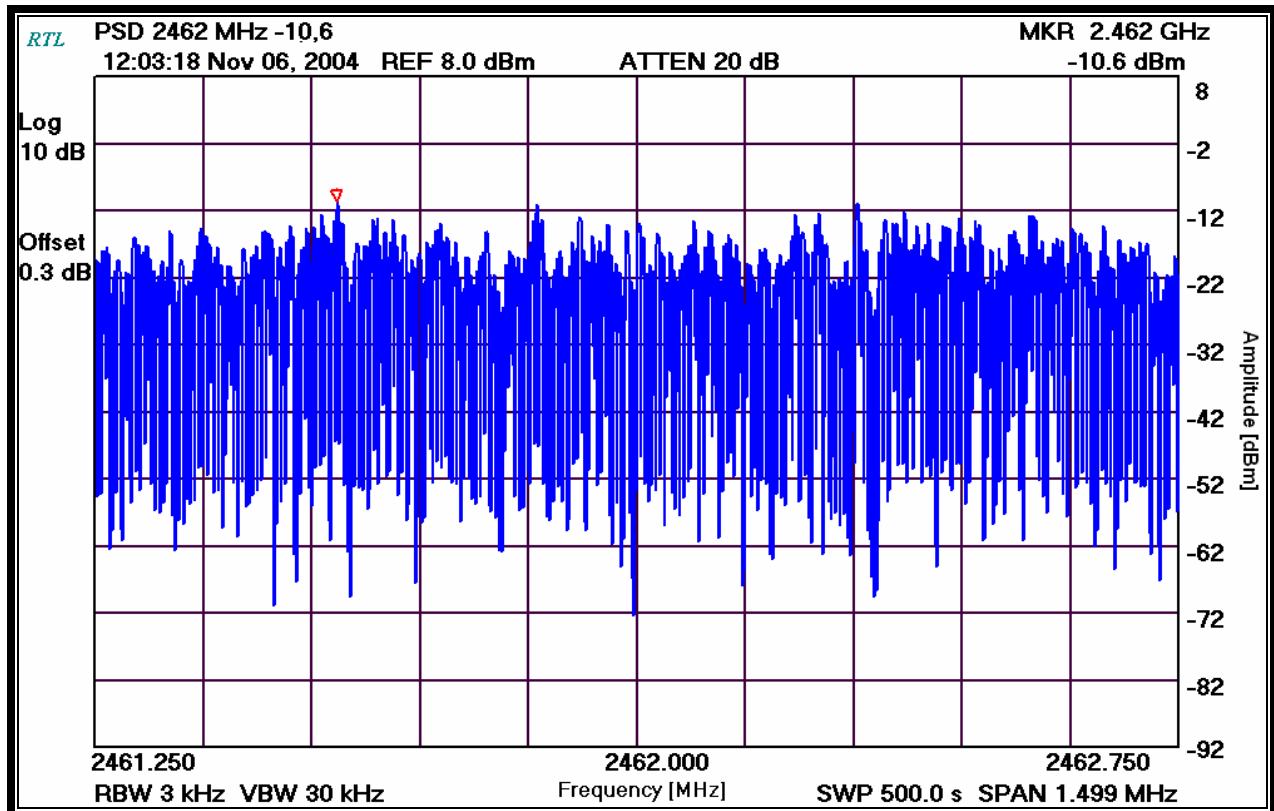
Daniel Baltzell
Test Engineer

Signature

November 6, 2004
Date Of Test

Operating Frequency (MHz): 2462
Channel: 11
Measured Peak Conducted Power (dBm): 17.8
Bandwidth Resolution (kHz): 3
Bandwidth Video (kHz): 30
Sweep Time (s): 500

PLOT 10-3: POWER SPECTRAL DENSITY: CHANNEL 11



TEST PERSONNEL:

Daniel Baltzell
Test Engineer

Daniel W. Baltzell
Signature

November 6, 2004
Date Of Test

10.4 TEST EQUIPMENT USED FOR TESTING

TABLE 10-2: TEST EQUIPMENT USED FOR TESTING (POWER SPECTRAL DENSITY)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz – 22 GHz)	3138A07771	6/23/05

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

Client: Zebra Technologies
FCC: Part 15.247
IC: RSS-210
FCC ID: I28MD-RW4137
M/N: AN17444-1

11 CONCLUSION

The data in this measurement report shows that the Zebra Technologies, Model AN17444-1, FCC ID: I28MD-RW4137, complies with all the requirements of Parts 2 and 15 of the FCC Rules, Industry Canada RSS-210, ANSI 63.4, DA00-705 (FHSS) and FCC 97-114 (DSSS).