



360 Herndon Parkway, Suite 1400

Herndon, VA 20170

<http://www.rheintech.com>

CERTIFICATE OF COMPLIANCE
FCC PART 15.247 CERTIFICATION & INDUSTRY CANADA CERTIFICATION

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		Applicant Information ICOM Inc. 1-1-32, Kamiminami, Hirano-ku, Osaka, 547-0003 Japan Phone : 06 6793 5302 Fax : 06 6793 0013 E-Mail : export@icom.co.jp	
FCC ID:	AFJAP-12	GRANTEE FRN NUMBER:	0005-8553-90
PLAT FORM:	N/A	RTL WORK ORDER NUMBER:	2002045
MODEL(S):	AP-12	RTL QUOTE NUMBER:	QRTL02-3802
DATE OF TEST REPORT:	April 18, 2002		
American National Standard Institute:	ANSI/TIA/EIA603 and ANSI/TIA/EIA 603-1		
FCC Classification:	DSS – Spread Spectrum Transmitter		
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) RSS-210 Section 6.2.2(o): 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz		
Digital Interface Information	Digital Interface was found to be compliant		
Receiver Information	Receiver was found to be compliant		
Frequency Range (MHz)	Calculated Output Power (W)	Freq. Tolerance	Emission Designator
2412-2462	0.0295	N/A	N/A

We, 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 C63.4, ANSI/TIA/EIA603 and ANSI/TIA/EIA 603-1.

Signature: 

Date: April 18, 2002

Typed/Printed Name: Desmond A. Fraser

Position: President

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

TABLE OF CONTENTS

1	General Information	6
1.1	SCOPE	6
1.2	TEST FACILITY	6
1.3	RELATED SUBMITTAL(S)/GRANT(S).....	6
2	Equipment Information.....	7
2.1	APPLICANT AND EQUIPMENT INFORMATION	7
2.2	JUSTIFICATION.....	7
2.3	EXERCISING THE EUT	7
2.4	TEST SYSTEM DETAILS	8
2.5	CONFIGURATION OF TESTED SYSTEM.....	9
3	Compliance with the Restricted Band Edge - §15.205	10
3.1	TEST PROCEDURE.....	10
3.2	COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA	10
4	Conducted Limits - §15.207.....	15
4.1	TEST METHODOLOGY FOR CONDUCTED EMISSIONS MEASUREMENTS	15
4.2	CONDUCTED EMISSION TEST	15
4.3	CONDUCTED EMISSION TEST DATA	16
5	Radiated Emission Limits (general Requirements) - §15.209.....	22
5.1	RADIATED EMISSION LIMITS TEST PROCEDURE.....	22
5.2	RADIATED EMISSION TEST DATA	22
6	Radiated Emission Limits (general Requirements) receiver/digital interface - §15.209	25
6.1	RADIATED EMISSION LIMITS TEST PROCEDURE.....	25
6.2	TEST EQUIPMENT USED FOR TESTING	27
7	Modulated Bandwidth - §15.247(a)(2).....	29
7.1	MODULATED BANDWIDTH TEST PROCEDURE	29
7.2	MODULATED BANDWIDTH TEST DATA	29
7.3	TEST EQUIPMENT USED FOR TESTING	29
7.4	MODULATED BANDWIDTH PLOTS	30
8	Power Output - §15.247(b)	33
8.1	POWER OUTPUT TEST PROCEDURE	33
8.2	POWER OUTPUT TEST DATA.....	33
8.3	TEST EQUIPMENT USED FOR TESTING	33
9	Antenna Conducted Spurious Emissions - §15.247(c).....	34
10	Power Spectral Density - §15.247(d)	35
10.1	POWER SPECTRAL DENSITY TEST PROCEDURE	35
10.2	TEST EQUIPMENT USED FOR TESTING	35
10.3	POWER SPECTRAL DENSITY TEST DATA.....	35
11	Conclusion.....	39

FIGURE INDEX

FIGURE 2-1:	WORST CASE CONFIGURATION OF SYSTEM UNDER TEST.....	9
-------------	--	---

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

TABLE INDEX

TABLE 2-1:	EQUIPMENT UNDER TEST (EUT).....	8
TABLE 2-2:	EXTERNAL COMPONENTS IN TEST CONFIGURATION.....	8
TABLE 3-1:	COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA.....	10
TABLE 4-1:	CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 1.....	16
TABLE 4-2:	CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 1.....	16
TABLE 4-3:	CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 6.....	17
TABLE 4-4:	CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 6.....	17
TABLE 4-5:	CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 11.....	18
TABLE 4-6:	CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING CH 11.....	18
TABLE 4-7:	CONDUCTED EMISSIONS (PHASE SIDE) RECEIVING CH 1.....	19
TABLE 4-8:	CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVING CH 1.....	19
TABLE 4-9:	CONDUCTED EMISSIONS (PHASE SIDE) RECEIVING CH 6.....	20
TABLE 4-10:	CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVING CH 6.....	20
TABLE 4-11:	CONDUCTED EMISSIONS (PHASE SIDE) RECEIVING CH 11.....	21
TABLE 4-12:	CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVING CH 11.....	21
TABLE 5-1:	RADIATED EMISSIONS CHANNEL 1 TRANSMITTER MODE.....	22
TABLE 5-2:	RADIATED EMISSIONS CHANNEL 6 TRANSMITTER MODE.....	23
TABLE 5-3:	RADIATED EMISSIONS CHANNEL 11 TRANSMITTER MODE.....	24
TABLE 6-1:	RADIATED EMISSIONS CHANNEL 1 RECEIVER MODE.....	25
TABLE 6-2:	RADIATED EMISSIONS CHANNEL 6 RECEIVER MODE.....	26
TABLE 6-3:	RADIATED EMISSIONS CHANNEL 11 RECEIVER MODE.....	27
TABLE 6-4:	RADIATED SPURIOUS EMISSIONS TEST EQUIPMENT.....	27
TABLE 7-1:	MINIMUM 6 DB MODULATED BANDWIDTHS.....	29
TABLE 7-2:	TEST EQUIPMENT USED FOR TESTING (MODULATED BANDWIDTH).....	29
TABLE 8-1:	POWER OUTPUT TEST DATA.....	33
TABLE 8-2:	POWER OUTPUT TEST DATA.....	33
TABLE 8-3:	TEST EQUIPMENT USED FOR TESTING (RADIATED RF OUTPUT – EIRP).....	33
TABLE 10-1:	TEST EQUIPMENT USED FOR TESTING (POWER SPECTRAL DENSITY).....	35
TABLE 10-2:	POWER SPECTRAL DENSITY (MAIN PORT).....	35
TABLE 11-1:	RF EXPOSURE SEPARATION DISTANCE.....	40

PLOT INDEX

PLOT 3-1:	BAND EDGE: AVERAGE MEASUREMENT FOR CHANNEL 1.....	11
PLOT 3-2:	BAND EDGE: PEAK MEASUREMENT FOR CHANNEL 1.....	12
PLOT 3-3:	BAND EDGE: AVERAGE MEASUREMENT FOR CHANNEL 11.....	13
PLOT 3-4:	BAND EDGE: PEAK MEASUREMENT FOR CHANNEL 11.....	14
PLOT 7-1:	MODULATED BANDWIDTH CHANNEL 1.....	30
PLOT 7-2:	MODULATED BANDWIDTH CHANNEL 6.....	31
PLOT 7-3:	MODULATED BANDWIDTH CHANNEL 11.....	32
PLOT 10-1:	POWER SPECTRAL DENSITY: CHANNEL 1.....	36
PLOT 10-2:	POWER SPECTRAL DENSITY: CHANNEL 6.....	37
PLOT 10-3:	POWER SPECTRAL DENSITY: CHANNEL 11.....	38
PLOT 11-1:	20DB MODULATED BANDWIDTH CHANNEL 1.....	61
PLOT 11-2:	20DB MODULATED BANDWIDTH CHANNEL 6.....	62
PLOT 11-3:	20DB MODULATED BANDWIDTH CHANNEL 11.....	63

APPENDIX INDEX

APPENDIX A:	RF EXPOSURE CALCULATIONS.....	40
APPENDIX B:	AGENCY AUTHORIZATION LETTER.....	41
APPENDIX C:	CONFIDENTIALITY REQUEST LETTER.....	42
APPENDIX D:	ANTENNA SPECIFICATIONS.....	43
APPENDIX E:	PRODUCT DESCRIPTION.....	44
APPENDIX F:	LABEL AND LABEL LOCATION.....	45

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

APPENDIX G:	BILL OF MATERIAL (PARTS LIST)	46
APPENDIX H:	SCHEMATIC.....	47
APPENDIX I:	BLOCK DIAGRAM	48
APPENDIX J:	MANUAL	49
APPENDIX K:	TEST PHOTOGRAPHS	50
APPENDIX L:	EXTERNAL PHOTOGRAPHS.....	52
APPENDIX M:	ANTENNA PHOTOGRAPHS.....	55
APPENDIX N:	INTERNAL PHOTOGRAPHS	57
APPENDIX O:	ADDITIONAL INFORMATION FOR CANADIAN CERTIFICATION.....	61

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

PHOTOGRAPH INDEX

PHOTOGRAPH 1:	IDENTIFICATION LABEL	45
PHOTOGRAPH 2:	RADIATED EMISSION FRONT VIEW WORST CASE CONFIGURATION	50
PHOTOGRAPH 3:	RADIATED EMISSION REAR VIEW CASE CONFIGURATION	51
PHOTOGRAPH 4:	TOP VIEW OF EUT	52
PHOTOGRAPH 5:	FRONT VIEW OF EUT	53
PHOTOGRAPH 6:	REAR VIEW OF HOST COMPUTER.....	53
PHOTOGRAPH 7:	RIGHT SIDE OF EUT	54
PHOTOGRAPH 8:	LEFT SIDE OF EUT	54
PHOTOGRAPH 9:	TOP VIEW OF ANTENNA	55
PHOTOGRAPH 10:	BOTTOM VIEW OF ANTENNA.....	56
PHOTOGRAPH 11:	TOP VIEW MAIN PCB WITH SHIELD	57
PHOTOGRAPH 12:	BOTTOM VIEW MAIN PCB WITH SHIELD.....	58
PHOTOGRAPH 13:	TOP VIEW MAIN PCB WITHOUT SHIELD	59
PHOTOGRAPH 14:	BOTTOM VIEW MAIN PCB WITHOUT SHIELD.....	60

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

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 Communication Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).

1.3 RELATED SUBMITTAL(S)/GRANT(S)

This is an original application for Certification on the AP-12 WIRELESS ACCESS POINT. The IF, LO and up to the 2nd LO were investigated and tested.

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

2 EQUIPMENT INFORMATION

2.1 APPLICANT AND EQUIPMENT INFORMATION

Test Lab:		Applicant Information	
Rhein Tech Laboratories, Inc. 360 Herndon Parkway Suite 1400 www.rheintech.com Herndon, VA 20170		ICOM Inc. 1-1-32, Kamiminami, Hirano-ku, Osaka, 547-0003 Japan Phone: 06 6793 5302 Fax: 06 6793 0013 E-Mail: export@icom.co.jp	
FCC ID:	AFJAP-12	GRANTEE FRN NUMBER:	0005-8239-50
PLAT FORM:	N/A	RTL WORK ORDER NUMBER:	2002045
MODEL(S):	AP-12	RTL QUOTE NUMBER:	QRTL02-414

2.2 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 contains a Diversity Slot Antenna that transmits and receives.

2.3 EXERCISING THE EUT

The EUT was provided with software to continuously transmit or continuously receive during testing. The carrier was also checked to verify that the information was being transmitted.

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

2.4 TEST SYSTEM DETAILS

The FCC Identifiers for all equipment, plus descriptions of all cables used in the tested system are:

TABLE 2-1: EQUIPMENT UNDER TEST (EUT)

Part	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
WIRELESS ACCESS POINT	ICOM INC.	AP-12	000003	AFJ-AP12	Unshielded I/O Unshielded Power	

TABLE 2-2: EXTERNAL COMPONENTS IN TEST CONFIGURATION

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
CD-ROM DRIVE	PHILIPS BUSINESS ELECTRONICS	CDD4201/81 CDR/W	4VO1947DG02397	N/A	INTERNAL	012274
FLOPPY DRIVE	MITSUMI	D353M3	N/A	N/A	INTERNAL	012114
SYSTEM	GATEWAY COMPANIES, INC.	ATXSTF	N/A	N/A	N/A	012332
VIDEO CARD	VISIONTEK	NV996.0 REV.D (RIVA TNT 2)	0223655	N/A	N/A	012900
MOUSE	MICROSOFT CORPORATION	INTELLIMOUSE USB	X05-22941	SAMPLE	SHIELDED WITH FERRITE CONNECTOR END I/O	012301
POWER SUPPLY	EOS	ZVC60NT12AD	00000-94-5797	N/A	UNSHIELDED	014274
KEYBOARD	MAXI-SWITCH	G9900H	2000022106	SAMPLE	SHIELDED I/O	011754

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

2.5 CONFIGURATION OF TESTED SYSTEM

Connects to auxiliary equipment (in this case computer system with Ethernet card)

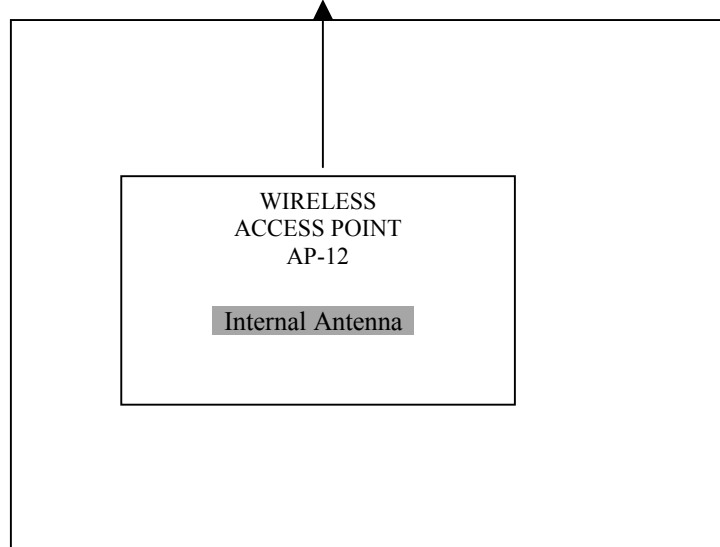


FIGURE 2-1: WORST CASE CONFIGURATION OF SYSTEM UNDER TEST

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

3 COMPLIANCE WITH THE RESTRICTED BAND EDGE - §15.205

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 taken 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 COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA

Operating Frequency (MHz): 2412-2462
Channel: 1 & 11
Distance: 3 meter
Limit: 54 dBuV/m

TABLE 3-1: COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA

Channel Set to	Frequency tested MHz	Detector	Field Strength Level (dBμV/m)	Level Corrected (dBμV/m)	FCC Limit (dBμV/m)	FCC Margin (dB)
1	2390.0	Absolute measurement	36.1	47.1	54.0	-6.9
11	2483.5	Absolute measurement	36.0	47.0	54.0	-7.0

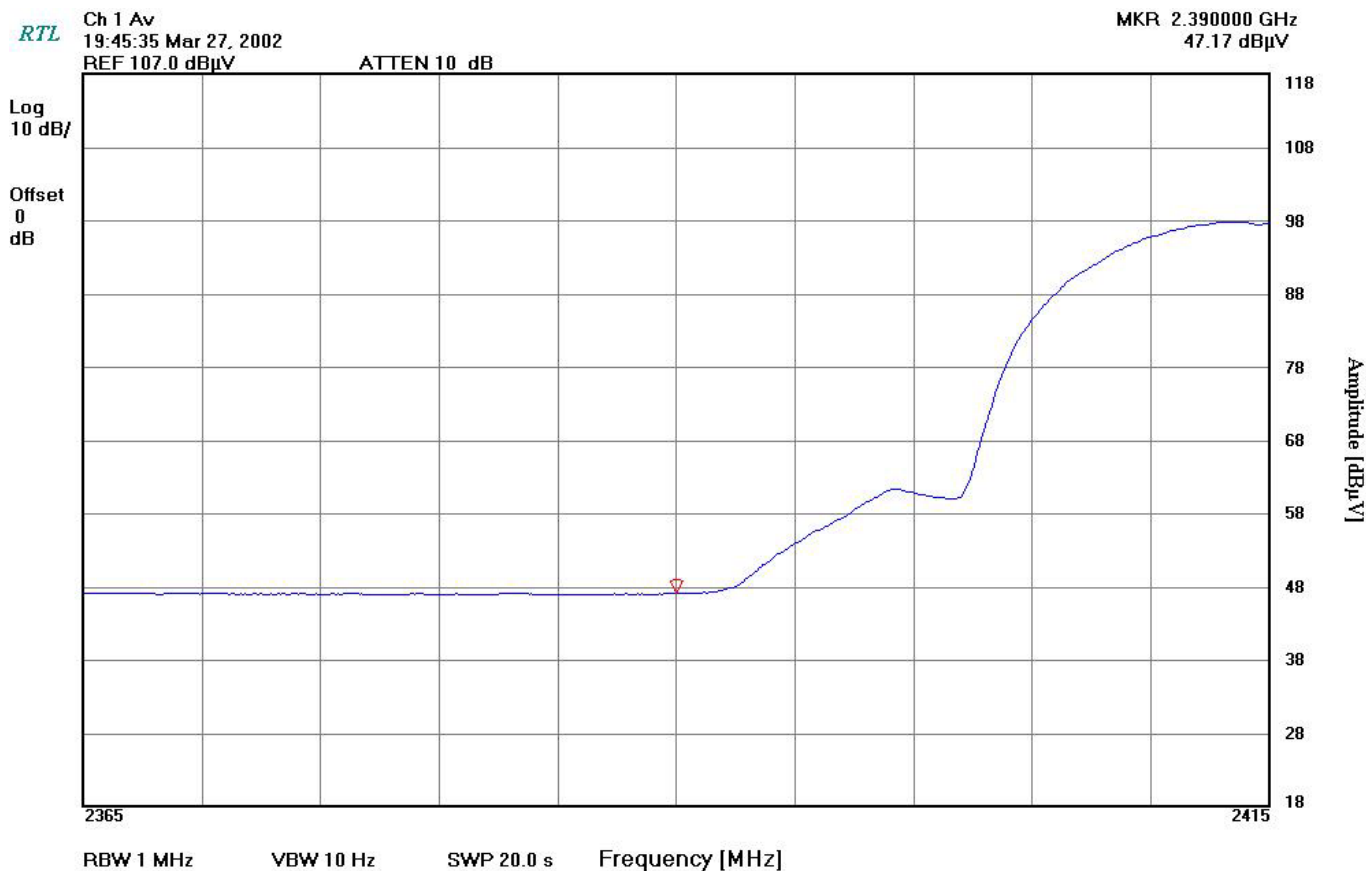
TEST PERSONNEL:

Franck Schuppiss Test Technician/Engineer	 Signature	3/27/2002 Date Of Test
--	--	---------------------------

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Channel Number: 1
 Frequency: 2412MHz
 Resolution Bandwidth: 1MHz
 Video Bandwidth: 10Hz
 Sweep Time: 20.0s

PLOT 3-1: BAND EDGE: AVERAGE MEASUREMENT FOR CHANNEL 1



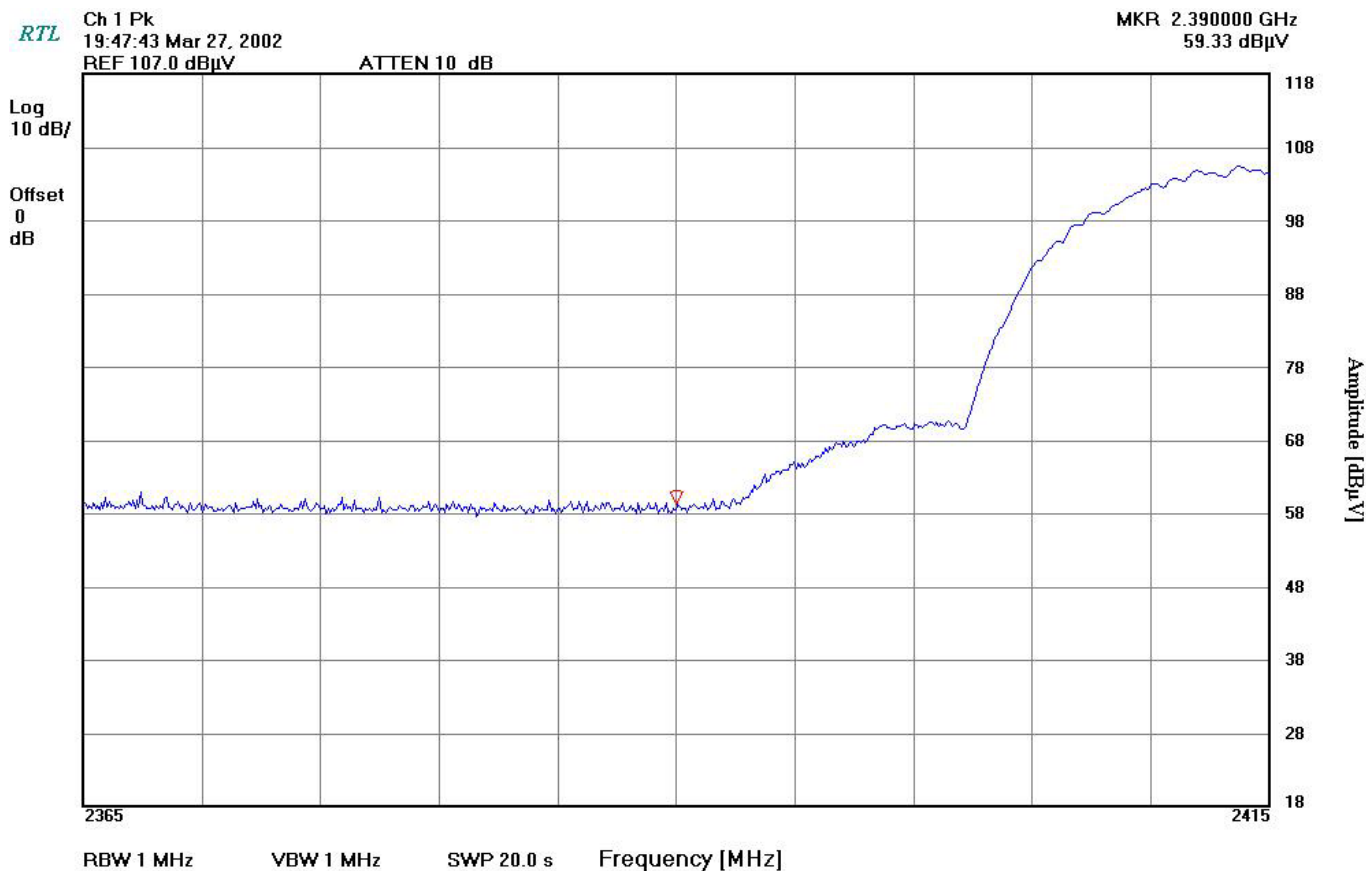
TEST PERSONNEL:

Franck Schuppius Test Technician/Engineer	 Signature	3/27/2002 Date Of Test
--	--	---------------------------

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Channel Number: 1
 Frequency: 2412MHz
 Bandwidth Resolution: 1MHz
 Video Bandwidth: 1MHz
 Sweep Time: 20.0s

PLOT 3-2: BAND EDGE: PEAK MEASUREMENT FOR CHANNEL 1



TEST PERSONNEL:

Franck Schuppius
 Test Technician/Engineer



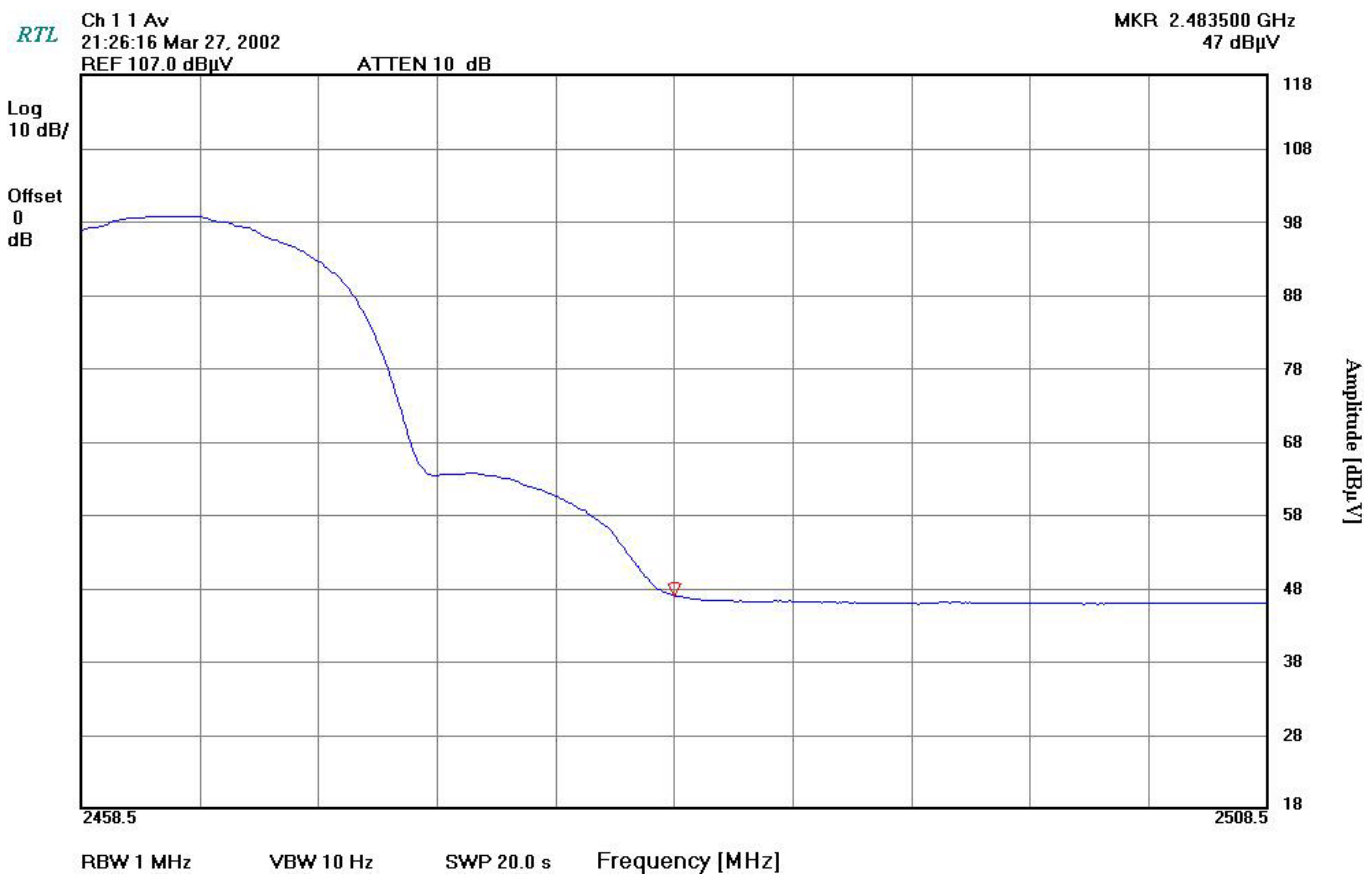
Signature

3/27/2002
 Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

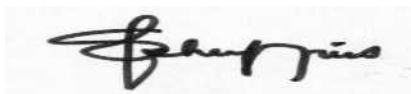
Channel Number: 11
 Frequency: 2462MHz
 Resolution Bandwidth: 1MHz
 Video Bandwidth: 10Hz
 Sweep Time: 20.0s

PLOT 3-3: BAND EDGE: AVERAGE MEASUREMENT FOR CHANNEL 11



TEST PERSONNEL:

Franck Schuppius
 Test Technician/Engineer



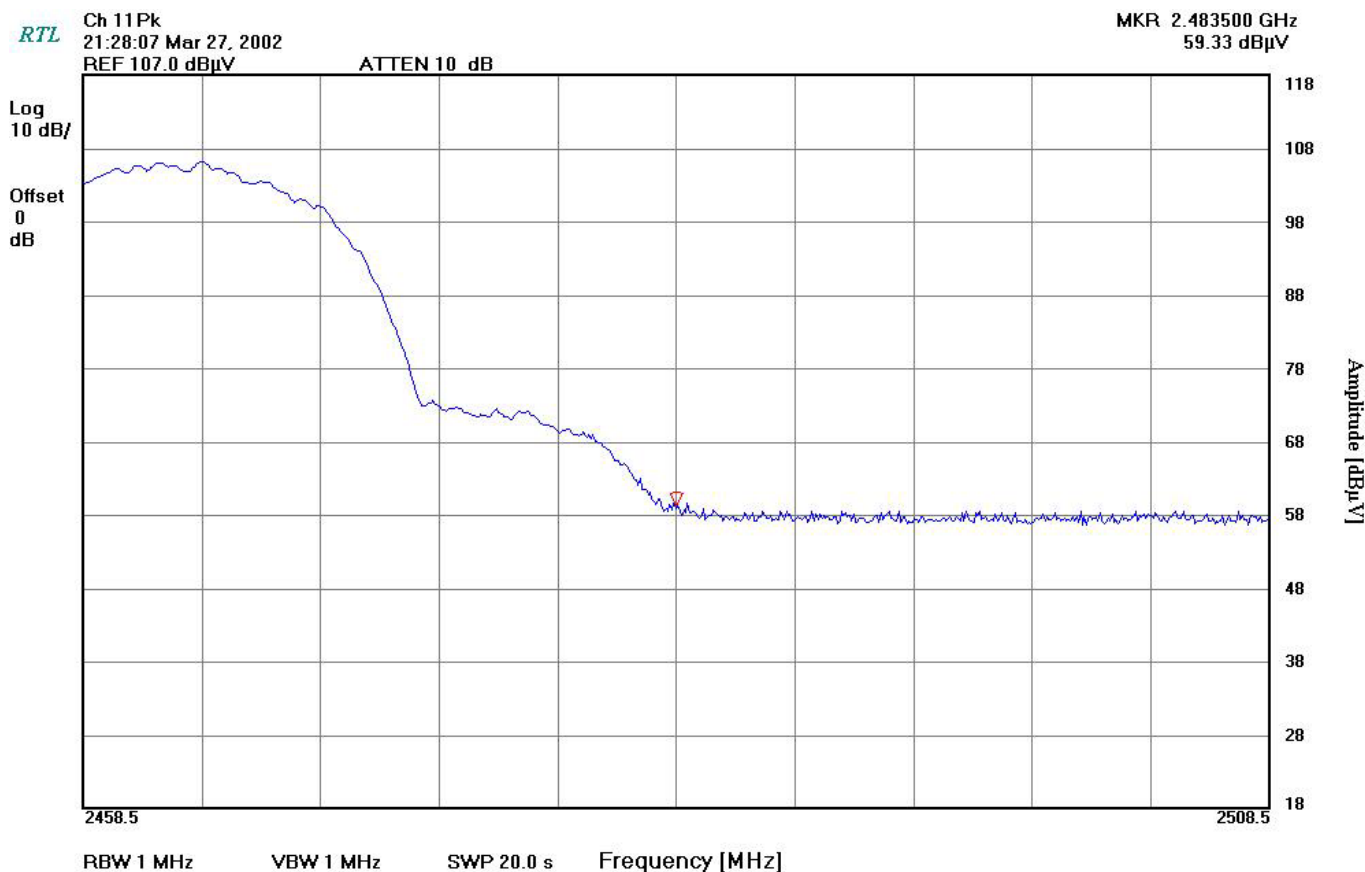
Signature

3/27/2002
 Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Channel Number: 11
 Frequency: 2462MHz
 Resolution Bandwidth: 1MHz
 Video Bandwidth: 1MHz
 Sweep Time: 20.0s

PLOT 3-4: BAND EDGE: PEAK MEASUREMENT FOR CHANNEL 11



TEST PERSONNEL:

Franck Schuppius Test Technician/Engineer	 Signature	3/27/2002 Date Of Test
--	---	---------------------------

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

4 CONDUCTED LIMITS - §15.207

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 400 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 (150/450) 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 with the instrument set to the quasi-peak mode, then measurements are made in the average mode. If the quasi-peak measurement is at least 6dB higher than the amplitude in the average mode, the level measured in the quasi-peak mode may be reduced by 13dB before comparing it to the limit.

The conducted test was performed with the EUT exercise program loaded, and the emissions were scanned between 450 kHz to 30 MHz on the NEUTRAL SIDE and PHASE SIDE.

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

4.3 CONDUCTED EMISSION TEST DATA

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

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.466	Pk	32.8	0.8	33.6	48.0	-14.4
0.581	Pk	31.3	0.7	32.0	48.0	-16.0
0.816	Pk	31.6	0.6	32.2	48.0	-15.8
2.176	Pk	35.8	1.2	37.0	48.0	-11.0
6.635	Pk	30.3	1.9	32.2	48.0	-15.8
24.990	Pk	26.5	3.4	29.9	48.0	-18.1

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

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.584	Pk	31.5	0.7	32.2	48.0	-15.8
0.809	Pk	30.6	0.7	31.3	48.0	-16.7
0.936	Pk	32.5	0.7	33.2	48.0	-14.8
2.172	Pk	35.6	1.2	36.8	48.0	-11.2
6.570	Pk	29.2	1.8	31.0	48.0	-17.0
24.980	Pk	26.5	3.4	29.9	48.0	-18.1

TEST PERSONNEL:

Franck Schuppius		3/18/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

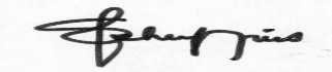
TABLE 4-3: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 6

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.452	Pk	31.8	0.8	32.6	48.0	-15.4
0.794	Pk	30.7	0.6	31.3	48.0	-16.7
1.840	Pk	32.7	1.1	33.8	48.0	-14.2
2.176	Pk	36.2	1.2	37.4	48.0	-10.6
2.408	Pk	34.9	1.2	36.1	48.0	-11.9
10.160	Pk	29.0	1.5	30.5	48.0	-17.5
24.980	Pk	27.3	3.4	30.7	48.0	-17.3

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

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.583	Pk	31.1	0.7	31.8	48.0	-16.2
0.696	Pk	27.4	0.7	28.1	48.0	-19.9
0.813	Pk	31.0	0.7	31.7	48.0	-16.3
0.938	Pk	33.1	0.7	33.8	48.0	-14.2
2.176	Pk	35.5	1.2	36.7	48.0	-11.3
6.130	Pk	29.9	1.7	31.6	48.0	-16.4
24.980	Pk	26.5	3.4	29.9	48.0	-18.1

TEST PERSONNEL:

Franck Schuppis		3/18/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

TABLE 4-5: CONDUCTED EMISSIONS (PHASE SIDE) TRANSMITTING CH 11

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.794	Pk	31.3	0.6	31.9	48.0	-16.1
1.140	Pk	29.2	0.8	30.0	48.0	-18.0
1.825	Pk	31.6	1.1	32.7	48.0	-15.3
1.845	Pk	32.1	1.1	33.2	48.0	-14.8
2.180	Pk	35.4	1.2	36.6	48.0	-11.4
2.430	Pk	33.3	1.2	34.5	48.0	-13.5
24.980	Pk	26.3	3.4	29.7	48.0	-18.3

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

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.563	Pk	30.3	0.7	31.0	48.0	-17.0
1.123	Pk	32.2	0.8	33.0	48.0	-15.0
1.473	Pk	31.1	0.9	32.0	48.0	-16.0
1.843	Pk	30.9	1.1	32.0	48.0	-16.0
2.176	Pk	35.3	1.2	36.5	48.0	-11.5
10.170	Pk	28.4	2.1	30.5	48.0	-17.5
24.990	Pk	26.5	3.4	29.9	48.0	-18.1

TEST PERSONNEL:

Franck Schuppis		3/18/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

TABLE 4-7: CONDUCTED EMISSIONS (PHASE SIDE) RECEIVING CH 1

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.501	Pk	32.1	0.7	32.8	48.0	-15.2
0.630	Pk	30.9	0.7	31.6	48.0	-16.4
0.752	Pk	30.5	0.7	31.2	48.0	-16.8
2.352	Pk	32.9	1.2	34.1	48.0	-13.9
9.995	Pk	31.1	1.3	32.4	48.0	-15.6
11.470	Pk	31.3	2.4	33.7	48.0	-14.3
22.270	Pk	31.3	3.2	34.5	48.0	-13.5
24.980	Pk	28.4	3.4	31.8	48.0	-16.2

TABLE 4-8: CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVING CH 1

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.622	Pk	31.0	0.7	31.7	48.0	-16.3
0.862	Pk	30.9	0.7	31.6	48.0	-16.4
0.991	Pk	31.1	0.7	31.8	48.0	-16.2
2.344	Pk	34.2	1.2	35.4	48.0	-12.6
6.805	Pk	29.5	1.9	31.4	48.0	-16.6
11.970	Pk	28.4	2.5	30.9	48.0	-17.1
22.020	Pk	28.5	3.2	31.7	48.0	-16.3
24.980	Pk	28.2	3.4	31.6	48.0	-16.4

TEST PERSONNEL:

Franck Schuppilus		3/18/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

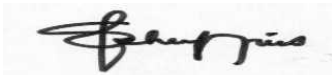
TABLE 4-9: CONDUCTED EMISSIONS (PHASE SIDE) RECEIVING CH 6

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.500	Pk	31.9	0.7	32.6	48.0	-15.4
0.627	Pk	30.9	0.7	31.6	48.0	-16.4
0.749	Pk	29.8	0.7	30.5	48.0	-17.5
0.870	Pk	30.2	0.7	30.9	48.0	-17.1
2.472	Pk	33.2	1.3	34.5	48.0	-13.5
6.395	Pk	27.7	1.8	29.5	48.0	-18.5
11.340	Pk	24.8	2.4	27.2	48.0	-20.8
24.980	Pk	27.1	3.4	30.5	48.0	-17.5

TABLE 4-10: CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVING CH 6

Temperature: 76.5°F Humidity: 45%						
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.626	Pk	30.4	0.7	31.1	48.0	-16.9
0.749	Pk	29.9	0.7	30.6	48.0	-17.4
0.870	Pk	31.5	0.7	32.2	48.0	-15.8
0.995	Pk	31.3	0.7	32.0	48.0	-16.0
2.348	Pk	34.5	1.2	35.7	48.0	-12.3
6.820	Pk	28.9	1.9	30.8	48.0	-17.2
10.350	Pk	29.5	2.1	31.6	48.0	-16.4
22.140	Pk	30.5	3.2	33.7	48.0	-14.3
24.990	Pk	26.1	3.4	29.5	48.0	-18.5

TEST PERSONNEL:

Franck Schuppis		3/18/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

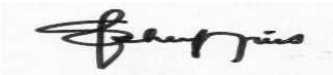
TABLE 4-11: CONDUCTED EMISSIONS (PHASE SIDE) RECEIVING CH 11

		Temperature: 76.5°F		Humidity: 45%		
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.501	Pk	32.3	0.7	33.0	48.0	-15.0
0.629	Pk	30.8	0.7	31.5	48.0	-16.5
0.753	Pk	30.8	0.7	31.5	48.0	-16.5
0.871	Pk	31.0	0.7	31.7	48.0	-16.3
1.980	Pk	33.0	1.2	34.2	48.0	-13.8
6.575	Pk	30.3	1.9	32.2	48.0	-15.8
10.350	Pk	25.6	1.6	27.2	48.0	-20.8
24.980	Pk	26.6	3.4	30.0	48.0	-18.0

TABLE 4-12: CONDUCTED EMISSIONS (NEUTRAL SIDE) RECEIVING CH 11

		Temperature: 76.5°F		Humidity: 45%		
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	Limit (dBuV)	Margin (dBuV)
0.623	Pk	29.7	0.7	30.4	48.0	-17.6
0.750	Pk	28.9	0.7	29.6	48.0	-18.4
0.870	Pk	31.1	0.7	31.8	48.0	-16.2
2.347	Pk	33.8	1.2	35.0	48.0	-13.0
6.570	Pk	29.6	1.8	31.4	48.0	-16.6
10.000	Pk	28.0	2.1	30.1	48.0	-17.9
24.990	Pk	25.7	3.4	29.1	48.0	-18.9
24.990	Pk	25.9	3.4	29.3	48.0	-18.7

TEST PERSONNEL:

Franck Schuppius		3/18/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

5 RADIATED EMISSION LIMITS (GENERAL REQUIREMENTS) - §15.209

5.1 RADIATED EMISSION LIMITS TEST PROCEDURE

Radiated Spurious Emissions applies to harmonics and spurious emissions that fall in the restricted and non-restricted bands. 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 the X-Y, X-Z, and Y-Z orthogonal plane.

5.2 RADIATED EMISSION TEST DATA

Operating Frequency (MHz): 2412

Measured EIRP 11.3

(dBm):

Channel: 1

Antenna: TX Antenna

Measured Cond. Pwr. 13.3

Mode Transmitting

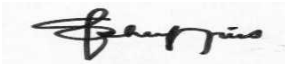
(dBm):

TABLE 5-1: RADIATED EMISSIONS CHANNEL 1 TRANSMITTER MODE

Emission Frequency (MHz)	Test Detector	Temperature: 48°F			Humidity: 71%			Limit (dBuV/m)
		Antenna Polarity (H/V)	Turntable Azimuth (deg)	Antenna Height (m)	Analyzer Reading (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	
132.00	Qp	V	0	1.0	48.6	-15.5	33.1	43.5
176.00	Qp	V	0	1.0	46.0	-17.5	28.5	43.5
220.00	Qp	V	0	1.0	44.2	-17.5	26.7	46.0
264.00	Qp	V	90	1.0	46.5	-14.5	32.0	46.0
308.00	Qp	V	180	1.0	40.9	-13.6	27.3	46.0
440.00	Qp	V	90	1.0	37.3	-9.4	27.9	46.0
484.00	Qp	V	95	1.0	38.7	-8.8	29.9	46.0
660.00	Qp	V	270	1.0	37.7	-5.9	31.8	46.0
2338.00	Av	V	20	1.0	<20 dB			54.0
2412.00	Pk	V	20	1.2	94.3	11.0	105.3	Fundamental
2412.00	Av	V	20	1.2	86.8	11.0	97.8	Fundamental
4824.00	Av	V	20	1.0	<20 dB			54.0
7236.00	Av	V	20	1.0	<20 dB			54.0
9648.00	Av	V	10	1.0	<20 dB			54.0
12060.00	Av	V	10	1.0	<20 dB			54.0
14472.00	Av	V	10	1.0	<20 dB			54.0
16884.00	Av	V	10	1.0	<20 dB			54.0
19296.00	Av	V	10	1.0	<20 dB			54.0
21708.00	Av	V	10	1.0	<20 dB			54.0
24120.00	Av	V	10	1.0	<20 dB			54.0

PEAK: RES. =1 MHz, VID= 1MHz; AVERAGE: RES. =1 MHz, VID= 10Hz; <20dB= 20dB BELOW THE LIMIT

TEST PERSONNEL:

Franck Schuppius		3/20/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Operating Frequency (MHz): 2437

Measured EIRP 12.7

(dBm):

Channel: 6

Antenna: TX Antenna

Measured Cond. Pwr. 14.7

Mode Transmitting

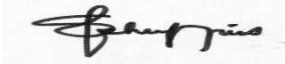
(dBm):

TABLE 5-2: RADIATED EMISSIONS CHANNEL 6 TRANSMITTER MODE

		Temperature: 48°F			Humidity: 71%				
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)	
132.000	Qp	V	0	1.0	48.6	-15.5	33.1	43.5	
176.000	Qp	V	0	1.0	46.0	-17.5	28.5	43.5	
220.000	Qp	V	0	1.0	44.2	-17.5	26.7	46.0	
264.000	Qp	V	90	1.0	46.5	-14.5	32.0	46.0	
308.000	Qp	V	180	1.0	40.9	-13.6	27.3	46.0	
440.000	Qp	V	90	1.0	37.3	-9.4	27.9	46.0	
484.000	Qp	V	95	1.0	38.7	-8.8	29.9	46.0	
660.000	Qp	V	270	1.0	37.7	-5.9	31.8	46.0	
2437.000	Pk	V	20	1.2	96.2	11	107.2	Fundamental	
2437.000	Av	V	20	1.2	89	11	100	Fundamental	
4874.000	Av	V	20	1.0	<20 dB			54	
7311.000	Av	V	10	1.0	<20 dB			54	
9748.000	Av	V	10	1.0	<20 dB			54	
12185.000	Av	V	10	1.0	<20 dB			54	
14622.000	Av	V	10	1.0	<20 dB			54	
17059.000	Av	V	10	1.0	<20 dB			54	
19496.000	Av	V	10	1.0	<20 dB			54	
21933.000	Av	V	10	1.0	<20 dB			54	
24370.000	Av	V	10	1.0	<20 dB			54	

PEAK: RES. =1 MHz, VID= 1MHz; AVERAGE: RES. =1 MHz, VID= 10Hz; <20dB= 20dB BELOW THE LIMIT

TEST PERSONNEL:

Franck Schuppis		3/20/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Operating Frequency (MHz): 2462
 Channel: 11
 Measured Cond. Pwr.(dBm): 14.7

Measured EIRP (dBm): 12.6
 Antenna: TX Antenna
 Mode: Transmitting

TABLE 5-3: RADIATED EMISSIONS CHANNEL 11 TRANSMITTER MODE

Temperature: 48°F Humidity: 71%									
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)
132.000	Qp	V	0	1.0	48.6	-15.5	33.1	43.5	-10.4
176.000	Qp	V	0	1.0	46.0	-17.5	28.5	43.5	-15.0
220.000	Qp	V	0	1.0	44.2	-17.5	26.7	46.0	-19.3
264.000	Qp	V	90	1.0	46.5	-14.5	32.0	46.0	-14.0
308.000	Qp	V	180	1.0	40.9	-13.6	27.3	46.0	-18.7
440.000	Qp	V	90	1.0	37.3	-9.4	27.9	46.0	-18.1
484.000	Qp	V	95	1.0	38.7	-8.8	29.9	46.0	-16.1
660.000	Qp	V	270	1.0	37.7	-5.9	31.8	46.0	-14.2
2462.000	Pk	V	20	1.2	94.8	11	105.8	Fundamental	
2462.000	Av	V	20	1.2	87.8	11	98.8	Fundamental	
4924.000	Av	V	20	1.0	<20 dB			54	
7386.000	Av	V	10	1.0	<20 dB			54	
9848.000	Av	V	10	1.0	<20 dB			54	
12310.000	Av	V	10	1.0	<20 dB			54	
14772.000	Av	V	10	1.0	<20 dB			54	
17234.000	Av	V	10	1.0	<20 dB			54	
19696.000	Av	V	10	1.0	<20 dB			54	
22158.000	Av	V	10	1.0	<20 dB			54	
24620.000	Av	V	10	1.0	<20 dB			54	

PEAK: RES. =1 MHz, VID= 1MHz; AVERAGE: RES. =1 MHz, VID= 10Hz; <20dB= 20dB BELOW THE LIMIT



Test Technician/Engineer

Signature

3/20/2002

Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

6 RADIATED EMISSION LIMITS (GENERAL REQUIREMENTS) RECEIVER/DIGITAL INTERFACE - §15.209

6.1 RADIATED EMISSION LIMITS TEST PROCEDURE

Radiated Emissions applies to harmonics and spurious emissions that fall in the restricted and non-restricted bands. 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 IF, LO and up to the 2nd LO were investigated and tested.

Operating Frequency 2412 Measured EIRP (dBm) TX mode: 11.3
(MHz):
Channel: 1 Antenna: RX Antenna
Measured TX Cond. Pwr. 14.7 Mode Receiving
(dBm):

TABLE 6-1: RADIATED EMISSIONS CHANNEL 1 RECEIVER MODE

		Temperature: 43°F			Humidity: 100%			
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)
125.000	Qp	V	145	1.0	48.2	-15.6	32.6	43.5
150.000	Qp	V	145	1.0	49.7	-16.8	32.9	43.5
160.004	Qp	V	175	1.0	55.2	-17.5	37.7	43.5
175.000	Qp	H	180	1.4	60.0	-18.1	41.9	43.5
199.996	Qp	V	145	1.0	55.9	-17.8	38.1	43.5
224.996	Qp	V	90	1.0	49.8	-17.2	32.6	46.0
239.800	Qp	V	125	1.0	49.6	-15.8	33.8	46.0
250.000	Qp	V	90	1.0	52.8	-15.2	37.6	46.0
300.000	Qp	V	90	1.0	46.2	-14.2	32.0	46.0
320.000	Qp	V	180	1.0	49.0	-13.1	35.9	46.0
344.050	Qp	V	225	1.0	44.4	-12.3	32.1	46.0
748.000	Qp	V	145	1.0	37.4	-4.4	33.0	46.0
792.000	Qp	V	180	1.0	41.3	-4.4	36.9	46.0
*2038.028	Av	V	145	1.0	<20dB			
*4076.017	Av	V	90	1.0	<20dB			

*Lo (1,2) <20dB= 20dB BELOW THE LIMIT

PEAK: RES. =1 MHz, VID= 1MHz; AVERAGE: RES. =1 MHz, VID= 10Hz; QP= RES =100kHz, VID=100kHz

TEST PERSONNEL:

Franck Schuppius Test Technician/Engineer	 Signature	3/20/2002 Date Of Test
--	--	---------------------------

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Operating Frequency (MHz): 2437
 Channel: 6
 Measured TX Cond. Pwr (dBm): 14.7

Measured EIRP (dBm) TX mode: 12.7
 Antenna: RX Antenna
 Mode: Receiving

TABLE 6-2: RADIATED EMISSIONS CHANNEL 6 RECEIVER MODE

Temperature: 43°F				Humidity: 100%				
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)
125.000	Qp	V	145	1.0	47.8	-15.6	32.2	43.5
150.000	Qp	V	145	1.0	50.0	-16.8	33.2	43.5
160.000	Qp	V	145	1.0	55.6	-17.5	38.1	43.5
175.000	Qp	H	90	1.0	60.1	-18.1	42.0	43.5
199.996	Qp	V	225	1.0	53.7	-17.8	35.9	43.5
225.000	Qp	V	225	1.0	45.9	-17.2	28.7	46.0
240.010	Qp	V	345	1.0	50.8	-15.8	35.0	46.0
250.000	Qp	V	90	1.0	50.5	-15.2	35.3	46.0
300.000	Qp	V	225	1.0	47.2	-14.2	33.0	46.0
320.000	Qp	V	270	1.0	45.0	-13.1	31.9	46.0
344.064	Qp	V	90	1.0	42.3	-12.3	30.0	46.0
748.000	Qp	V	225	1.0	39.3	-4.4	34.9	46.0
792.000	Qp	V	0	1.0	41.4	-4.4	37.0	46.0
*2063.031	Av	V	270	1.0	<20dB			
*4126.062	Av	V	180	1.0	<20dB			

***Lo (1,2)**

<20dB= 20dB BELOW THE LIMIT

PEAK: RES. =1 MHz, VID= 1MHz; AVERAGE: RES. =1 MHz, VID= 10Hz; QP= RES =100kHz, VID=100kHz

TEST PERSONNEL:



Test Technician/Engineer

Signature

3/20/2002

Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Operating Frequency (MHz): 2462
Channel: 11
Measured TX Cond. Pwr. (dBm): 14.7

Measured EIRP (dBm) TX mode: 12.6
Antenna: RX Antenna
Mode: Receiving

TABLE 6-3: RADIATED EMISSIONS CHANNEL 11 RECEIVER MODE

Temperature: 43°F Humidity: 100%									
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)
125.000	Qp	V	145	1.0	48.8	-15.6	33.2	43.5	-10.3
150.000	Qp	V	0	1.0	50.9	-16.8	34.1	43.5	-9.4
160.000	Qp	V	175	1.0	55.5	-17.5	38.0	43.5	-5.5
175.000	Qp	H	90	1.3	59.9	-18.1	41.8	43.5	-1.7
200.000	Qp	H	145	1.4	56.3	-18.1	38.2	43.5	-5.3
225.000	Qp	V	270	1.0	51.6	-17.2	34.4	46.0	-11.6
240.006	Qp	V	90	1.0	50.5	-15.8	34.7	46.0	-11.3
250.000	Qp	V	145	1.0	45.8	-15.2	30.6	46.0	-15.4
300.000	Qp	V	225	1.0	47.7	-14.2	33.5	46.0	-12.5
320.000	Qp	V	225	1.0	48.9	-13.1	35.8	46.0	-10.2
344.050	Qp	V	225	1.0	40.4	-12.3	28.1	46.0	-17.9
748.000	Qp	V	145	1.0	40.1	-4.4	35.7	46.0	-10.3
792.000	Qp	V	180	1.0	40.6	-4.4	36.2	46.0	-9.8
*2088.028	Av	V	180	1.0	<20dB				
*4176.056	Av	V	145	1.0	<20dB				

***Lo (1,2)**

<20dB= 20dB BELOW THE LIMIT

PEAK: RES. =1 MHz, VID= 1MHz; AVERAGE: RES. =1 MHz, VID= 10Hz; QP= RES =100kHz, VID=100kHz

TEST PERSONNEL:

Franck Schuppis		3/05/2002
Test Technician/Engineer	Signature	Date Of Test

6.2 TEST EQUIPMENT USED FOR TESTING

TABLE 6-4: RADIATED SPURIOUS EMISSIONS TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771
900772	EMCO	3161-02	Horn ANTENNA (2-4 GHz)	900772
900321	EMCO	3161-03	Horn Antennas (4-8,2GHz)	9508-1020
900323	EMCO	3160-7	Horn Antennas (8,2-12,4 GHz)	9605-1054
900325	EMCO	3160-9	Horn Antennas (18 - 26.5 GHz)	9605-1051
900723	Miteq	NA	AMP 100MHz-26GHz	NA
900791	Schaffner - Chase	CBL6112	Antenna (25 MHz - 2 GHz)	2099

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

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 performed as a radiated test with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 300 kHz. The 6 dB modulated bandwidth plots were corrected using the site correction factor (i.e. cable loss, amplifier gain, and antenna factor) and the path loss at 3 meter distance; and referenced to the EIRP value measured in section 7 of this report. 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	10.0
6	10.4
11	10.4

The 6 dB bandwidths are listed below.

7.3 TEST EQUIPMENT USED FOR TESTING

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

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771
900791	Schaffner - Chase	CBL6112	Antenna (25 MHz - 2 GHz)	2099

TEST PERSONNEL:

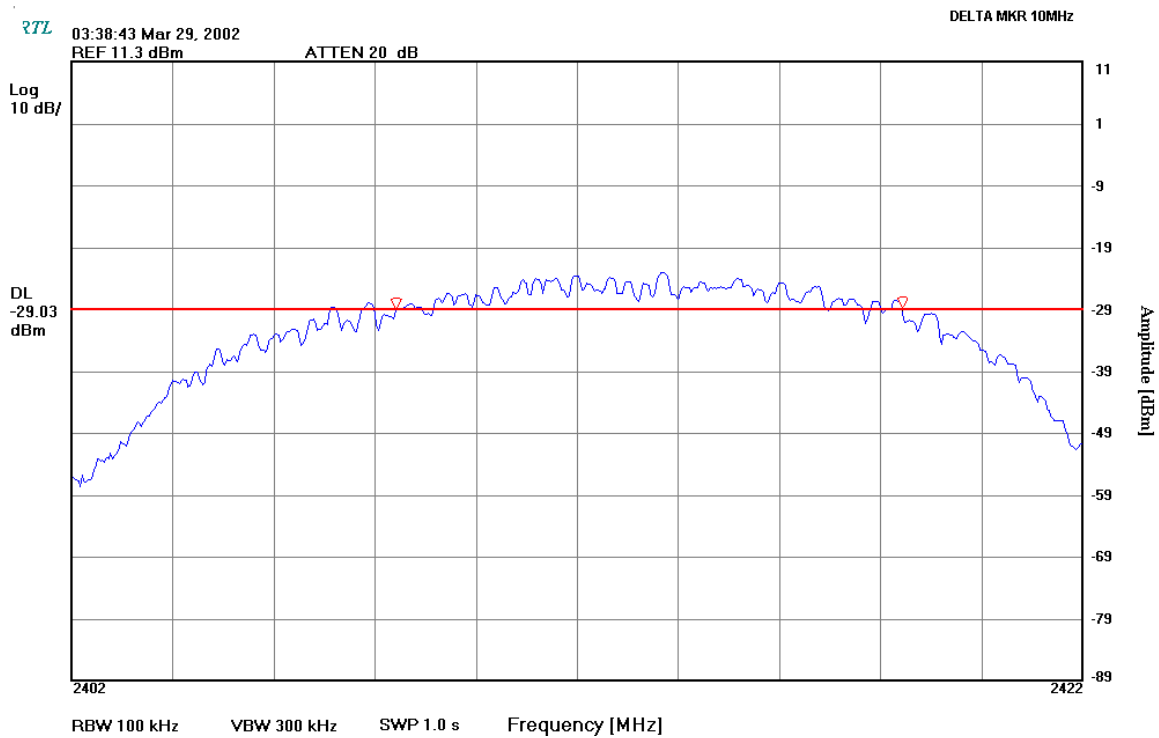
Franck Schuppius		3/29/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

7.4 MODULATED BANDWIDTH PLOTS

Channel Number: 1
 Frequency (MHz): 2412
 Resolution Bandwidth: 100kHz
 Video Bandwidth: 300kHz
 Sweep Time: 1.0s
 REF LEVEL CH1 EIRP 11.3dBm

PLOT 7-1: MODULATED BANDWIDTH CHANNEL 1



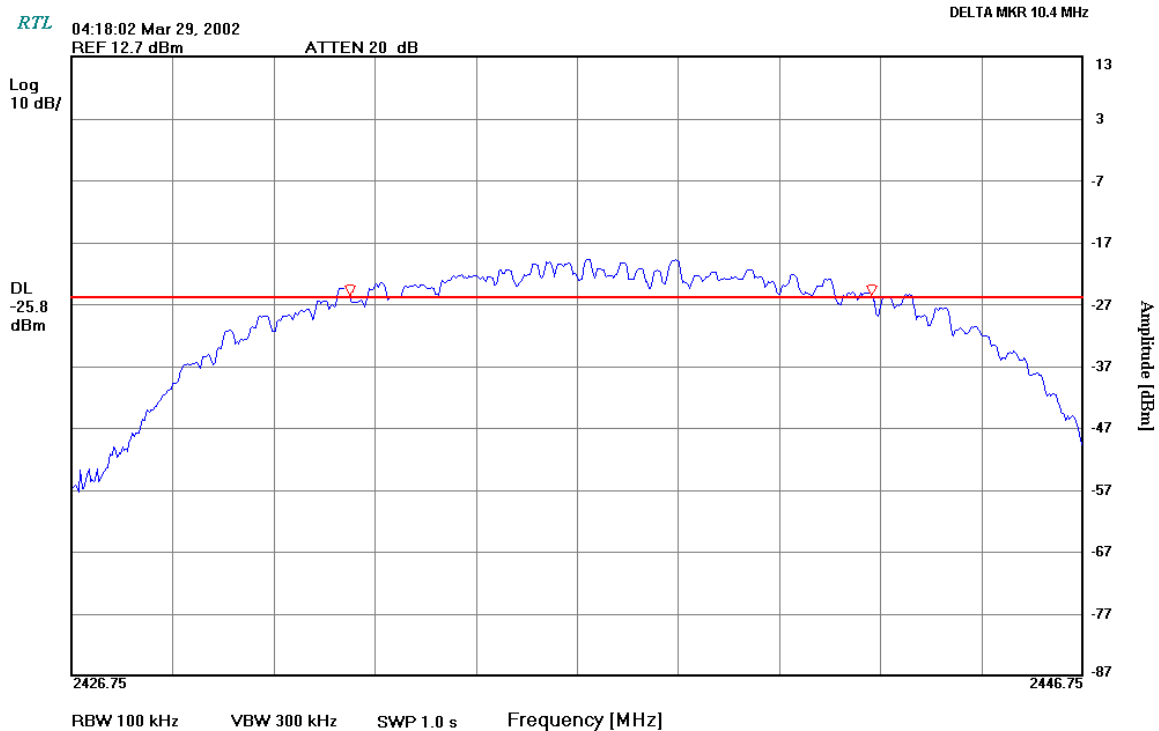
TEST PERSONNEL:

Franck Schuppius		3/29/2002
Test Technician/Engineer	Signature	Date Of Test

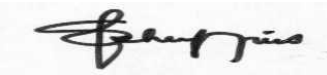
	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Channel Number: 6
 Frequency (MHz): 2437
 Resolution Bandwidth: 100kHz
 Video Bandwidth: 300kHz
 Sweep Time: 1.0s
 REF LEVEL CH6 EIRP 12.7dBm

PLOT 7-2: MODULATED BANDWIDTH CHANNEL 6



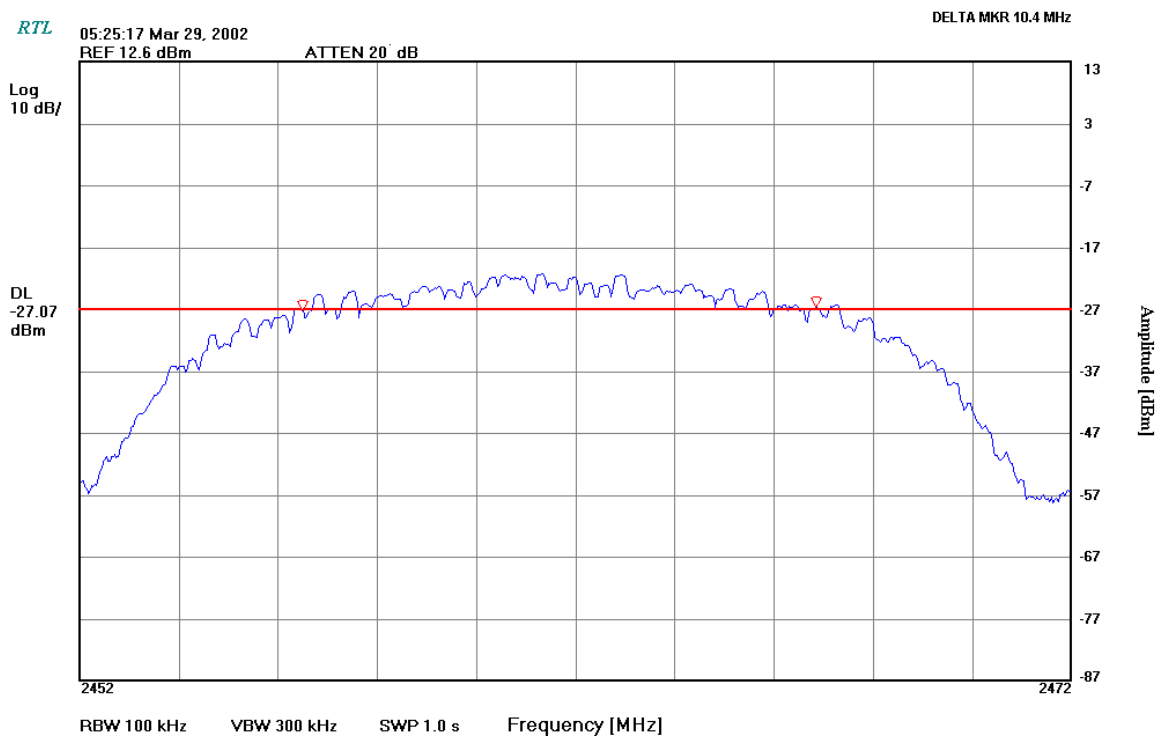
TEST PERSONNEL:

Franck Schuppius		3/29/2002
Test Technician/Engineer	Signature	Date Of Test

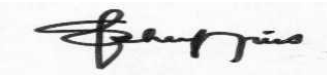
	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Channel Number: 11
 Frequency (MHz): 2462
 Resolution Bandwidth: 100kHz
 Video Bandwidth: 300kHz
 Sweep Time: 1.0s
 REF LEVEL CH11 EIRP 12.6dBm

PLOT 7-3: MODULATED BANDWIDTH CHANNEL 11



TEST PERSONNEL:

Franck Schuppius		3/29/2002
Test Technician/Engineer	Signature	Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

8 POWER OUTPUT - §15.247(B)

8.1 POWER OUTPUT TEST PROCEDURE

The EIRP measurement was performed as a radiated test using the substitution method. The final measurement of the EIRP of the EUT was measured using an Agilent 4416A EPM-P Series Power Meter with an E9323A Peak and Average Power Sensor. The peak conducted output power was calculated from the EIRP data and the average antenna gain of -2.0dBi in the table below.

8.2 POWER OUTPUT TEST DATA

TABLE 8-1: POWER OUTPUT TEST DATA

Operating Frequency (MHz): 2412MHz, 2437MHz, 2462MHz
Channel: 1, 6 & 11
Measured Cond. Pwr. (dBm): 13.3
Measured EIRP (dBm): 11.3, 12.7 & 12.6
Modulation: 10.3MHz

TABLE 8-2: POWER OUTPUT TEST DATA

CHANNEL	EIRP (dBm)*	**POWER CONDUCTED OUTPUT (dBm)
1	11.3	13.3
6	12.7	14.7
11	12.6	14.6

*Measurement accuracy is +/- 1.5 dB

** Calculated power

TEST PERSONNEL:

Franck Schuppis		3/29/2002
Test Technician/Engineer	Signature	Date Of Test

8.3 TEST EQUIPMENT USED FOR TESTING

TABLE 8-3: TEST EQUIPMENT USED FOR TESTING (RADIATED RF OUTPUT – EIRP)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771
900772	EMCO	3161-02	Horn ANTENNA (2-4 GHz)	900772
900723	Miteq	NA	AMP 100MHz-26GHz	NA
901186	Agilent Technologies	E9323A (50MHz-6GHz)	Peak & Avg. Power Sensor	US40410380
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573
900814	Electro-Metrics	RGA-60	Double Ridges Guide Antenna (1-18 GHz)	2310

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

9 ANTENNA CONDUCTED SPURIOUS EMISSIONS - §15.247(C)

N/A no output port available on the unit

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

10 POWER SPECTRAL DENSITY - §15.247(D)

10.1 POWER SPECTRAL DENSITY TEST PROCEDURE

The Power spectral density per FCC 15.247(d) was performed as a radiated testing with the resolution bandwidth set at 3kHz, the video bandwidth set at 30kHz, and the sweep time set at 1000 second. Since the EUT has an integral antenna, the test was performed as a radiated testing. The power spectral density plots were corrected using the site correction factor (i.e. cable loss, amplifier gain, and antenna factor) and the path loss at 3 meter distance; and referenced to the EIRP value measured in section 7 of this report. The spectral lines were resolved for the modulated carriers at 2.412GHz, 2.437GHz, and 2.462GHz respectively. These levels are well below the +8 dBm limit. See power spectral density table and plots.

10.2 TEST EQUIPMENT USED FOR TESTING

TABLE 10-1: TEST EQUIPMENT USED FOR TESTING (POWER SPECTRAL DENSITY)

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
900931	HP	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771
900791	Schaffner - Chase	CBL6112	Antenna (25 MHz - 2 GHz)	2099

10.3 POWER SPECTRAL DENSITY TEST DATA

Operating Frequency (MHz): 2412MHz, 2437MHz & 2462
Channel: 1, 6 & 11
Measured Cond. Pwr. (dBm): 13.3
Modulation Bandwidth: 10.3 MHz
Limit: 8dBm

TABLE 10-2: POWER SPECTRAL DENSITY (MAIN PORT)

CHANNEL	POWER SPECTRAL DENSITY LIMIT = +8dBm
1	-10.53
6	-8.97
11	-8.90

TEST PERSONNEL:

Franck Schuppilus
Test Technician/Engineer



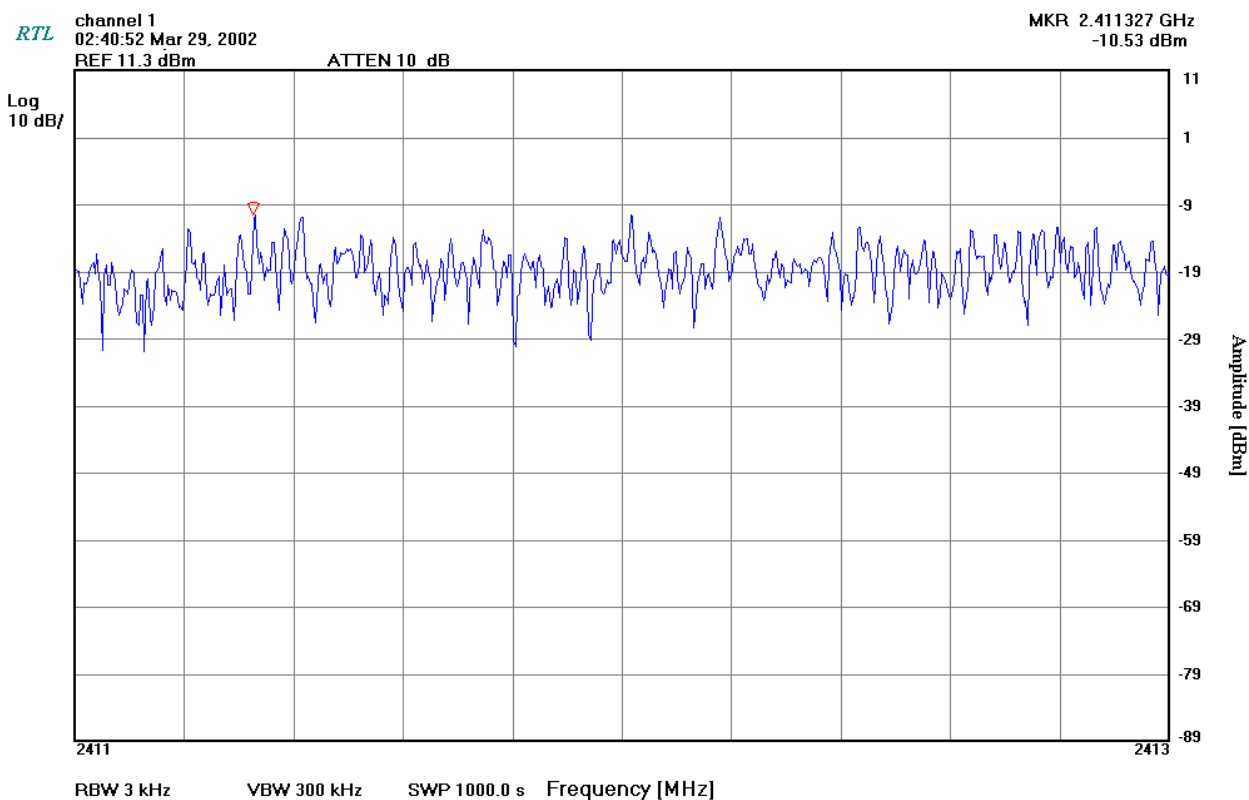
Signature

3/29/2002
Date Of Test

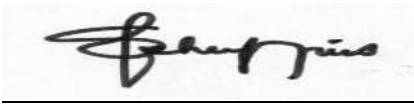
	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Operating Frequency (MHz): 2412
 Channel: 1
 Measured Cond. Pwr. (dBm): 13.3
 Measured EIRP (dBm): 11.3
 Bandwidth Resolution: 3kHz
 Bandwidth Video: 300kHz
 Sweep Time: 1000.0s

PLOT 10-1: POWER SPECTRAL DENSITY: CHANNEL 1



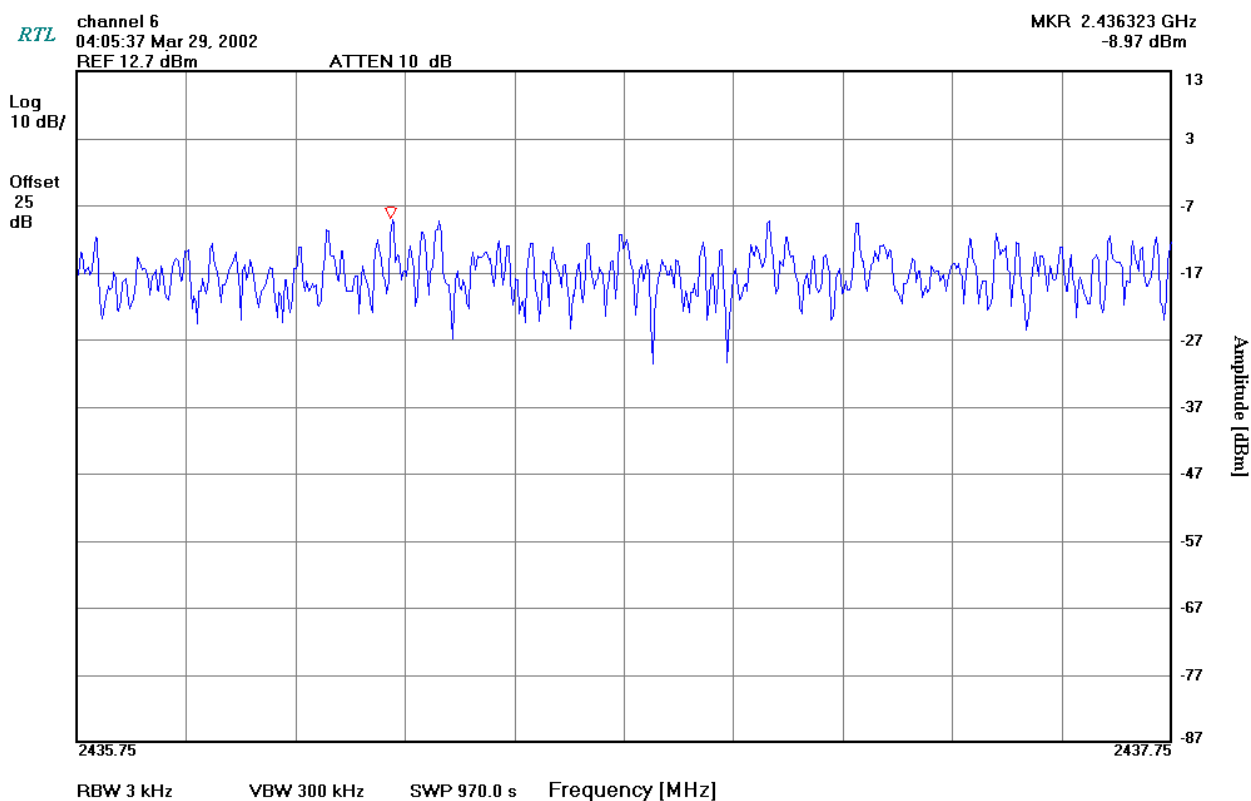
TEST PERSONNEL:

Franck Schuppis Test Technician/Engineer	 Signature	3/29/2002 Date Of Test
---	---	---------------------------

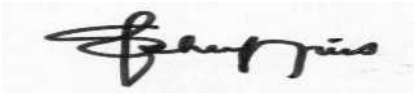
	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Operating Frequency (MHz): 2437
 Channel: 6
 Measured Cond. Pwr. (dBm): 14.7
 Measured EIRP (dBm): 12.7
 Bandwidth Resolution: 3kHz
 Bandwidth Video: 300kHz
 Sweep Time: 1000.0s

PLOT 10-2: POWER SPECTRAL DENSITY: CHANNEL 6



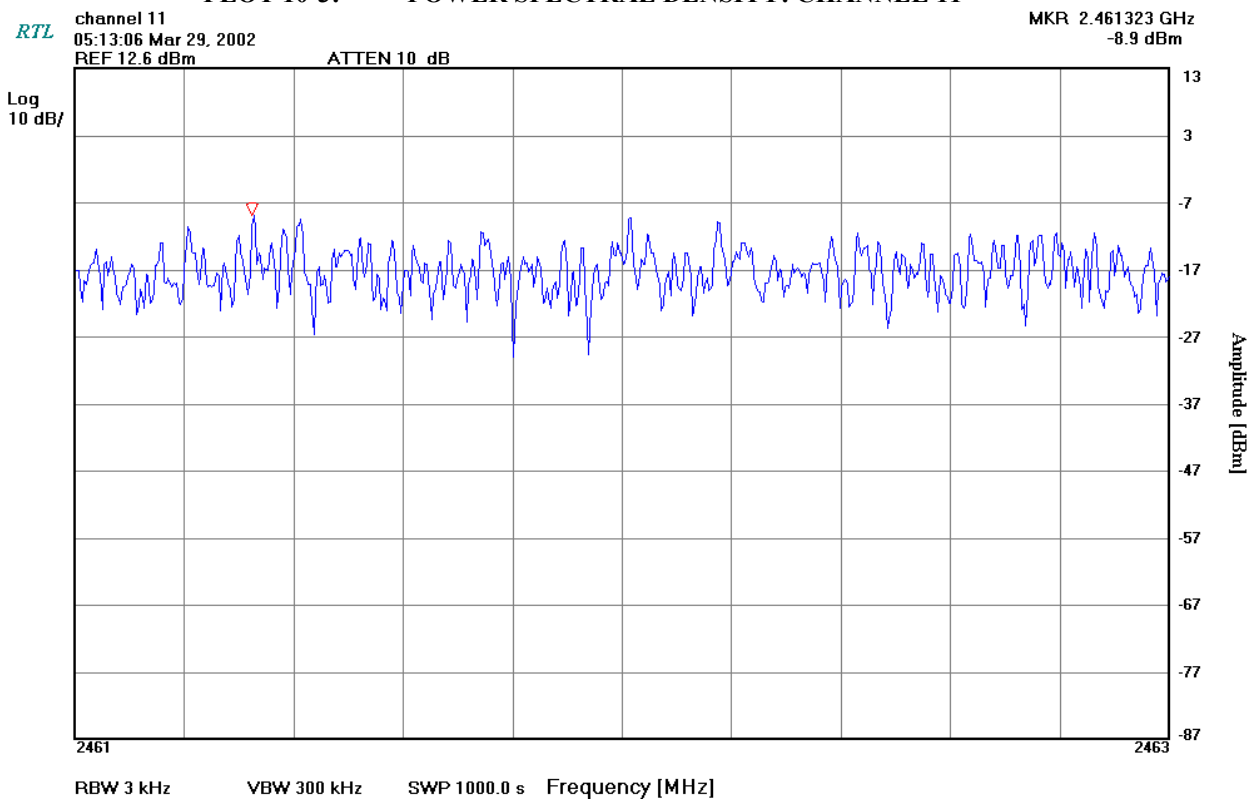
TEST PERSONNEL:

Franck Schuppis Test Technician/Engineer	 Signature	3/29/2002 Date Of Test
---	---	---------------------------

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

Operating Frequency (MHz): 2462
 Channel: 11
 Measured Cond. Pwr. (dBm): 14.6
 Measured EIRP (dBm): 12.6
 Bandwidth Resolution: 3kHz
 Bandwidth Video: 300kHz
 Sweep Time: 1000.0s

PLOT 10-3: POWER SPECTRAL DENSITY: CHANNEL 11



TEST PERSONNEL:

Franck Schuppis
 Test Technician/Engineer



Signature

3/29/2002
 Date Of Test

	360 Herndon Parkway, Suite 1400	Work Order number	2001326
	Herndon, VA 20170	FCC	Part 15.247
	http://www.rheintech.com	Industry Canada	RSS-210
		FCC ID	AFJAP-12
		M/N	AP-12

11 CONCLUSION

The data in this measurement report shows that the Wireless Access Point, **Model: AP-12, FCC ID:AFJAP-12** complies with all the requirements of Parts 2 and 15.247 of the FCC Rules.