



Engineering and Testing for EMC and Safety Compliance

CERTIFICATION APPLICATION REPORT
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 E-Mail :ATCBINFO@rheintech.com		Applicant: Stratex Networks Inc. Phone: 27-21-7102272 120 Rose Orchard Way Fax: 27-21-7102693 San Jose, CA 95134 E-mail: douw_vandermerwe@stratexnet.com	
FCC ID:	RLW-3ECJ68W7P	RTL Work Order #:	2003205
Model(s):	Velox LE 2450	RTL Quote #:	QRTL03-167
Date of Test Report:	December 19, 2003	FRN:	0009818253
Standards and Procedures:	FCC 97-114 (DSSS), ANSI C63.4, ANSI/TIA/EIA603 and ANSI/TIA/EIA603-1		
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		
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		
Receiver Information	Receiver was found to be compliant		
Frequency Range (MHz)	Output Power (W)	Frequency Tolerance	Emission Designator
2405-2469	0.281	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, FCC 97-114 (DSSS), Industry Canada RSS-210, ANSI C63.4, ANSI/TIA/EIA603 and ANSI/TIA/EIA603-1.

Signature: 

Date: December 19, 2003

Typed/Printed Name: Desmond A. Fraser

Position: President

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	TEST INFORMATION	7
2.1	TEST JUSTIFICATION	7
2.2	EXERCISING THE EUT	7
2.3	TEST RESULT SUMMARY	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	BAND EDGE TEST EQUIPMENT	10
4	CONDUCTED LIMITS - §15.207	15
4.1	TEST METHODOLOGY FOR CONDUCTED EMISSIONS MEASUREMENTS	15
4.2	CONDUCTED EMISSION TEST PROCEDURE.....	16
4.3	CONDUCTED EMISSION TEST DATA	17
5	RADIATED EMISSION FOR RECEIVER/DIGITAL INTERFACE - §15.209	18
5.1	RADIATED EMISSION TEST PROCEDURE FOR RECEIVER/DIGITAL INTERFACE	18
5.2	RADIATED EMISSION TEST DATA RECEIVER/DIGITAL INTERFACE	18
6	RADIATED EMISSIONS/RADIATED HARMONICS/SPURIOUS NOISE - §15.247	19
6.1	RADIATED EMISSION TEST PROCEDURE FOR HARMONICS/SPURIOUS NOISE	19
6.2	RADIATED EMISSIONS HARMONICS/SPURIOUS TEST DATA	19
6.3	TEST EQUIPMENT USED FOR TESTING	22
7	MODULATED BANDWIDTH - §15.247(A)(2)	23
7.1	MODULATED BANDWIDTH TEST PROCEDURE	23
7.2	TEST EQUIPMENT USED FOR TESTING	23
7.3	MODULATED BANDWIDTH TEST DATA	23
7.4	MODULATED BANDWIDTH PLOTS	24
8	POWER OUTPUT - §15.247(B)	30
8.1	POWER OUTPUT TEST PROCEDURE	30
8.2	TEST EQUIPMENT USED FOR TESTING	30
8.3	POWER OUTPUT TEST DATA	30
9	ANTENNA CONDUCTED SPURIOUS EMISSIONS - §15.247(C)	32
9.1	ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST PROCEDURE	32
9.2	ANTENNA CONDUCTED SPURIOUS EMISSIONS LOWEST OPERATING FREQUENCY	32
9.3	ANTENNA CONDUCTED SPURIOUS EMISSIONS MIDDLE OPERATING FREQUENCY	33
9.4	ANTENNA CONDUCTED SPURIOUS EMISSIONS HIGHEST OPERATING FREQUENCY	34
10	POWER SPECTRAL DENSITY - §15.247(D)	35
10.1	POWER SPECTRAL DENSITY TEST PROCEDURE	35
10.2	POWER SPECTRAL DENSITY TEST EQUIPMENT	35
10.3	POWER SPECTRAL DENSITY PLOTS	36
11	CONCLUSION	42
11.1	MODULATED BANDWIDTH TEST DATA	57
11.2	MODULATED BANDWIDTH PLOTS	58

FIGURE INDEX

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

TABLE INDEX

TABLE 2-1: TEST RESULT SUMMARY WITH FCC RULES AND REGULATIONS	7
TABLE 2-2: EQUIPMENT UNDER TEST (EUT)	8
TABLE 2-3: AUXILIARY EQUIPMENT	8
TABLE 3-1: BAND EDGE TEST EQUIPMENT	10
TABLE 4-1: CONDUCTED SPURIOUS EMISSIONS TEST EQUIPMENT	16
TABLE 4-2: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING HIGHEST CHANNEL AT 50 MBPS ..	17
TABLE 4-3: CONDUCTED EMISSIONS (HOT SIDE) TRANSMITTING HIGHEST CHANNEL AT 50 MBPS	17
TABLE 5-1: RADIATED EMISSIONS RECEIVING 2412MHZ OPERATING FREQUENCY	18
TABLE 6-1: RADIATED EMISSIONS HARMONICS/SPURIOUS LOWEST OPERATING FREQUENCY AT 8 MPS ..	19
TABLE 6-2: RADIATED EMISSIONS HARMONICS/SPURIOUS LOWEST OPERATING FREQUENCY AT 50 MBPS	19
TABLE 6-3: RADIATED EMISSIONS HARMONICS/SPURIOUS MIDDLE OPERATING FREQUENCY AT 50 MBPS ..	20
TABLE 6-4: RADIATED EMISSIONS HARMONICS/SPURIOUS MIDDLE OPERATING FREQUENCY AT 8 MBPS ..	20
TABLE 6-5: RADIATED EMISSIONS HARMONICS/SPURIOUS HIGHEST OPERATING FREQUENCY AT 50 MBPS	21
TABLE 6-6: RADIATED EMISSIONS HARMONICS/SPURIOUS HIGHEST OPERATING FREQUENCY AT 8 MBPS ..	21
TABLE 6-7: RADIATED SPURIOUS EMISSIONS TEST EQUIPMENT	22
TABLE 7-1: MODULATED BANDWIDTH TEST EQUIPMENT	23
TABLE 7-2: MINIMUM 6 DB MODULATED BANDWIDTHS AT 50 MBPS	23
TABLE 7-3: MINIMUM 6 DB MODULATED BANDWIDTHS AT 8MBPS	23
TABLE 8-1: RADIATED RF OUTPUT TEST EQUIPMENT	30
TABLE 8-2: POWER OUTPUT TEST DATA AT 50 MBPS	30
TABLE 8-3: POWER OUTPUT TEST DATA AT 8MBPS	30
TABLE 9-1: ANTENNA CONDUCTED SPURIOUS EMISSIONS LOWEST OPERATING FREQUENCY AT 50 MBPS ..	32
TABLE 9-2: ANTENNA CONDUCTED SPURIOUS EMISSIONS LOWEST OPERATING FREQUENCY AT 8 MBPS ..	32
TABLE 9-3: ANTENNA CONDUCTED SPURIOUS EMISSIONS MIDDLE OPERATING FREQUENCY AT 50 MBPS ..	33
TABLE 9-4: ANTENNA CONDUCTED SPURIOUS EMISSIONS MIDDLE OPERATING FREQUENCY AT 8 MBPS ..	33
TABLE 9-5: ANTENNA CONDUCTED SPURIOUS EMISSIONS HIGHEST OPERATING FREQUENCY AT 50 MBPS ..	34
TABLE 9-6: ANTENNA CONDUCTED SPURIOUS EMISSIONS HIGHEST OPERATING FREQUENCY AT 50 MBPS ..	34
TABLE 10-1: POWER SPECTRAL DENSITY TEST EQUIPMENT	35
TABLE 11-1: MINIMUM 20 DB MODULATED BANDWIDTHS AT 50 MBPS	57
TABLE 11-2: MINIMUM 20 DB MODULATED BANDWIDTHS AT 8 MBPS	57

PLOT INDEX

PLOT 3-1:	LOWER BAND EDGE LOWEST CHANNEL AT 50 MBPS (ABSOLUTE MEASUREMENT)	11
PLOT 3-2:	LOWER BAND EDGE LOWEST CHANNEL AT 8 MBPS (ABSOLUTE MEASUREMENT)	12
PLOT 3-3:	UPPER BAND EDGE HIGHEST CHANNEL AT 50 MBPS (ABSOLUTE MEASUREMENT)	13
PLOT 3-4:	LOWER BAND EDGE LOWEST CHANNEL AT 8 MBPS (ABSOLUTE MEASUREMENT)	14
PLOT 7-1:	MODULATED BANDWIDTH LOWEST CHANNEL AT 50 MPBS	24
PLOT 7-2:	MODULATED BANDWIDTH LOWEST CHANNEL AT 8 MPBS	25
PLOT 7-3:	MODULATED BANDWIDTH MIDDLE CHANNEL AT 50 MBPS	26
PLOT 7-4:	MODULATED BANDWIDTH MIDDLE CHANNEL AT 8 MBPS	27
PLOT 7-5:	MODULATED BANDWIDTH HIGHEST CHANNEL AT 50 MBPS	28
PLOT 7-6:	MODULATED BANDWIDTH HIGHEST CHANNEL AT 8 MBPS	29
PLOT 10-1:	POWER SPECTRAL DENSITY LOWEST CHANNEL AT 50 MBPS	36
PLOT 10-2:	POWER SPECTRAL DENSITY LOWEST CHANNEL AT 8 MBPS	37
PLOT 10-3:	POWER SPECTRAL DENSITY MIDDLE CHANNEL AT 50 MBPS	38
PLOT 10-4:	POWER SPECTRAL DENSITY MIDDLE CHANNEL AT 8 MBPS	39
PLOT 10-5:	POWER SPECTRAL DENSITY HIGHEST CHANNEL AT 50 MBPS	40
PLOT 10-6:	POWER SPECTRAL DENSITY HIGHEST CHANNEL AT 8 MBPS	41
PLOT 11-1:	MODULATED BANDWIDTH LOW CHANNEL AT 50 MPBS	58
PLOT 11-2:	MODULATED BANDWIDTH LOW CHANNEL AT 8 MPBS	59
PLOT 11-3:	MODULATED BANDWIDTH MIDDLE CHANNEL AT 50 MBPS	60
PLOT 11-4:	MODULATED BANDWIDTH MIDDLE CHANNEL AT 8 MBPS	61
PLOT 11-5:	MODULATED BANDWIDTH HIGHEST CHANNEL AT 50 MBPS	62
PLOT 11-6:	MODULATED BANDWIDTH HIGHEST CHANNEL AT 8 MBPS	63

APPENDIX INDEX

APPENDIX A:	RF EXPOSURE	43
APPENDIX B:	ANTENNA SPECIFICATIONS	45
APPENDIX C:	AGENCY AUTHORIZATION LETTER	46
APPENDIX D:	CONFIDENTIALITY REQUEST LETTER	47
APPENDIX E:	PRODUCT DESCRIPTION	48
APPENDIX F:	LABEL AND LABEL LOCATION	49
APPENDIX G:	SCHEMATICS	50
APPENDIX H:	BLOCK DIAGRAM	51
APPENDIX I:	MANUAL	52
APPENDIX J:	TEST PHOTOGRAPHS	53
APPENDIX K:	EXTERNAL PHOTOGRAPHS	55
APPENDIX L:	INTERNAL PHOTOGRAPHS	56
APPENDIX M:	ADDITIONAL INFORMATION FOR CANADIAN CERTIFICATION	57

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

Client: Stratex Networks, Inc.
Model: Velox LE 2450
Standards: FCC 15.247/ IC RSS-210
FCC ID: RLW-3ECJ68W7P
Report No: 2003205

PHOTOGRAPH INDEX

PHOTOGRAPH 1:	RADIATED BACK VIEW	53
PHOTOGRAPH 2:	RADIATED FRONT VIEW	54

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 1992).

1.3 RELATED SUBMITTAL(S)/GRANT(S)

This is an original application for Certification for Model Velox LE 2450 SR, M/N: 651-04377-01-H/L16-P, FCC ID: **RLW-3ECJ68W7P**. The IF, LO and up to the 2nd LO were investigated and tested.

2 TEST INFORMATION

2.1 TEST JUSTIFICATION

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 1992. Radiated testing was performed at an antenna-to-EUT distance of 3 meters. Emissions above 1 GHz were video averaged.

The EUT has a flat panel antenna. The flat panel antenna transmits, receives, and is connected to the antenna port.

The worst-case data taken in this report represents the lowest and highest data rate respectively at 8 and 50 Mbps. The EUT is restricted to operate at a software setting of 20dBm between 2405 to 2469 MHz at 8 Mbps, and between 2410 to 2463 MHz at 50 Mbps. The manufacturer will restrict the software/firmware of the EUT so that these levels are not exceeded.

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.

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 FCC Identifiers for all equipment, plus 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
Flat Panel Antenna	Gabriel Electronics	DFPD2-23	P103720	N/A	RTL Asset 901238	15560
Outdoor Unit	Stratex	651-04368	CBXXD5000000	RLW-3ECJ68W7P	shielded CAT 5 cable unshielded dc power cable	15536
Outdoor Unit	Stratex	651-04368	CBXX8B000001	RLW-3ECJ68W7P	shielded CAT 5 cable unshielded dc power cable	15533

TABLE 2-3: AUXILIARY EQUIPMENT

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Indoor Unit	Stratex	651-03810	Acxxc9000016	N/A - Verification	Shielded Cat 5 Cable Unshielded Dc Power Cable	15532

2.5 CONFIGURATION OF TESTED SYSTEM

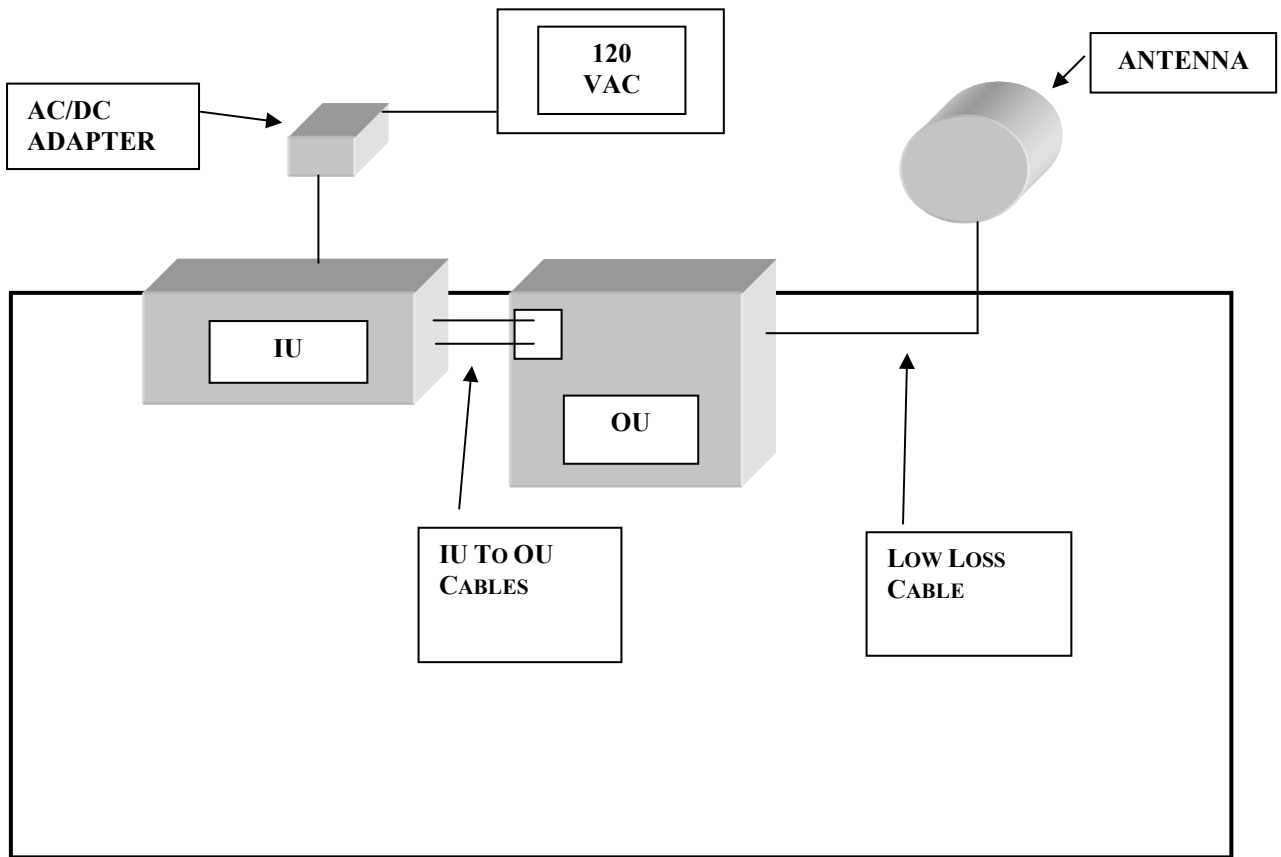


FIGURE 1: WORST CASE CONFIGURATION OF SYSTEM UNDER TEST

3 COMPLIANCE WITH THE RESTRICTED BAND EDGE - §15.205

3.1 TEST PROCEDURE

Compliance with the band edges was performed using the guidance in FCC 97-114. The final data derived below was from radiated measurements only. All measurements were found to be compliant with the maximum permitted average field strength listed in FCC 15.209.

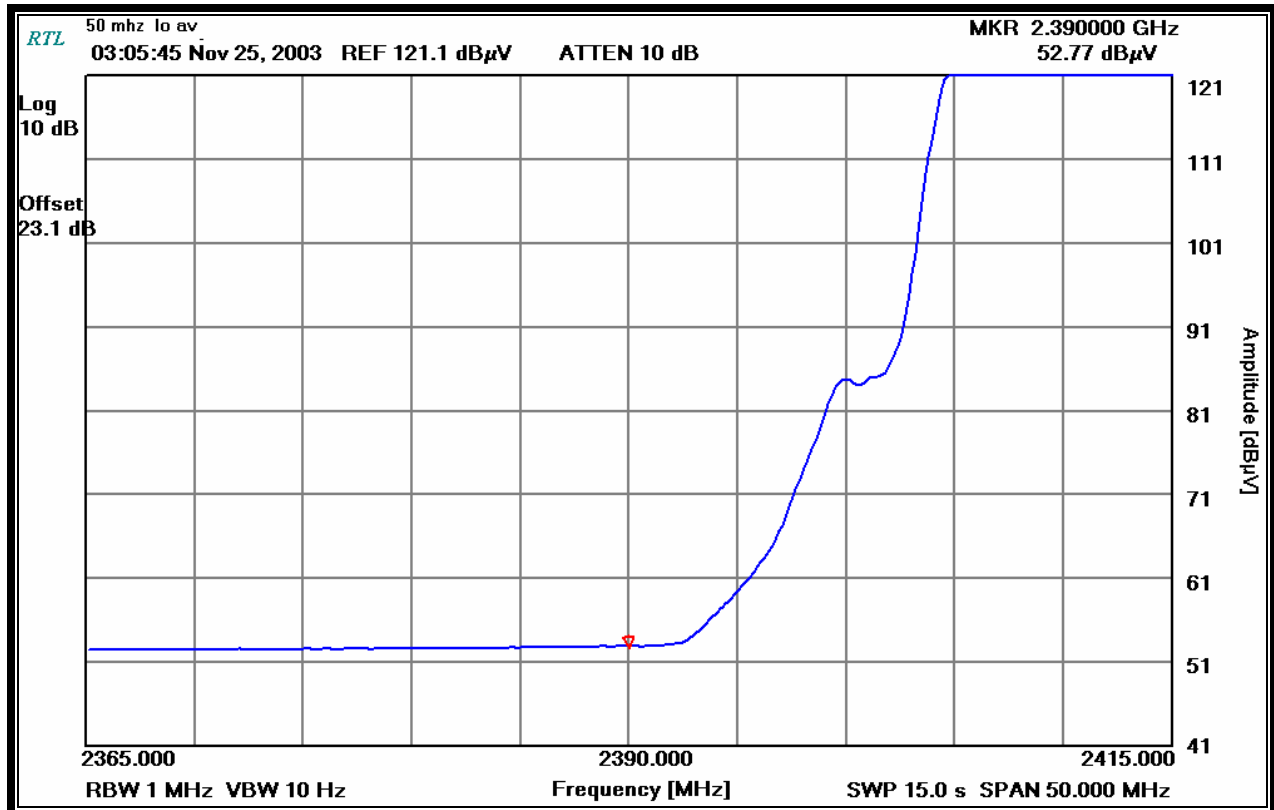
The EUT was tested using the widest and the narrowest modulation available. The worst case found is shown below.

3.2 BAND EDGE TEST EQUIPMENT

TABLE 3-1: BAND EDGE TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	3/15/04
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	7/15/04

PLOT 3-1: LOWER BAND EDGE LOWEST CHANNEL AT 50 MBPS (ABSOLUTE MEASUREMENT)



TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

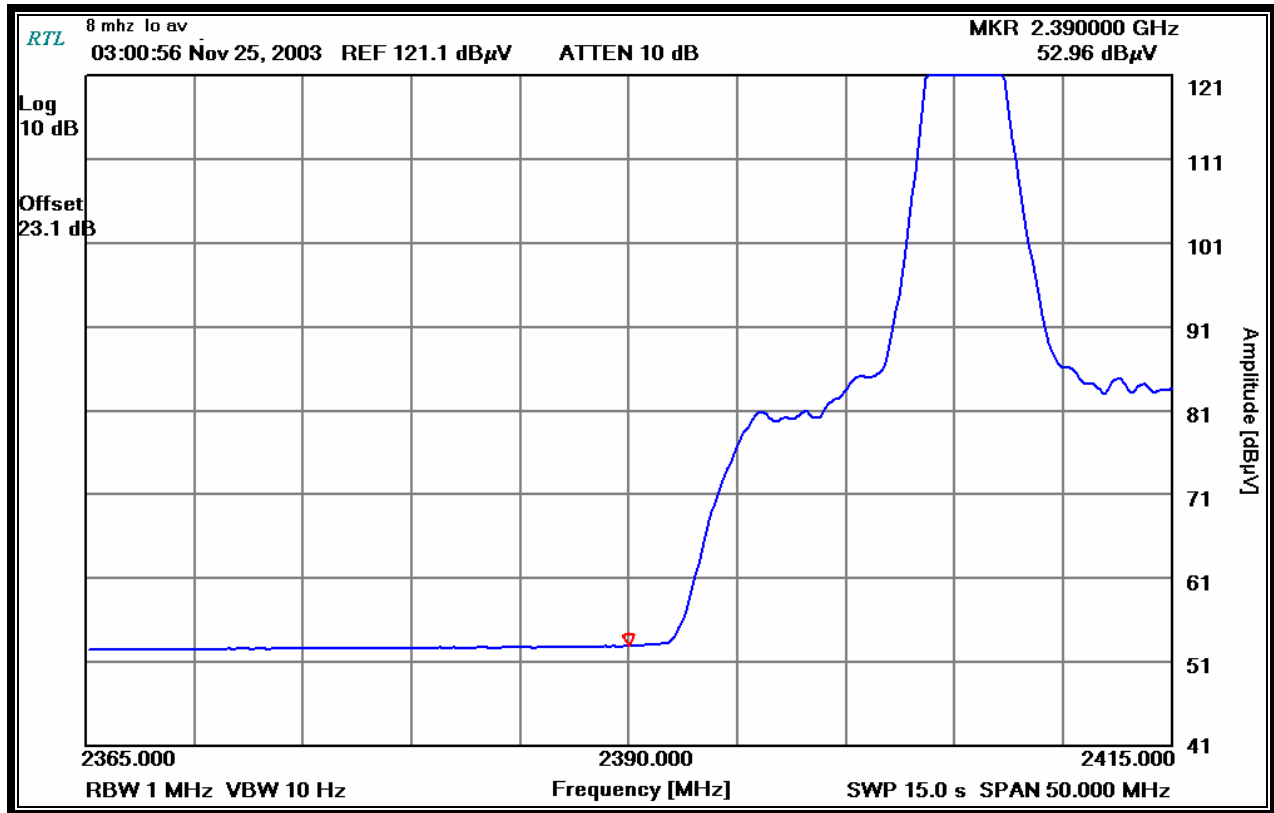
See

Signature

November 25, 2003

Date of Test

PLOT 3-2: LOWER BAND EDGE LOWEST CHANNEL AT 8 MBPS (ABSOLUTE MEASUREMENT)



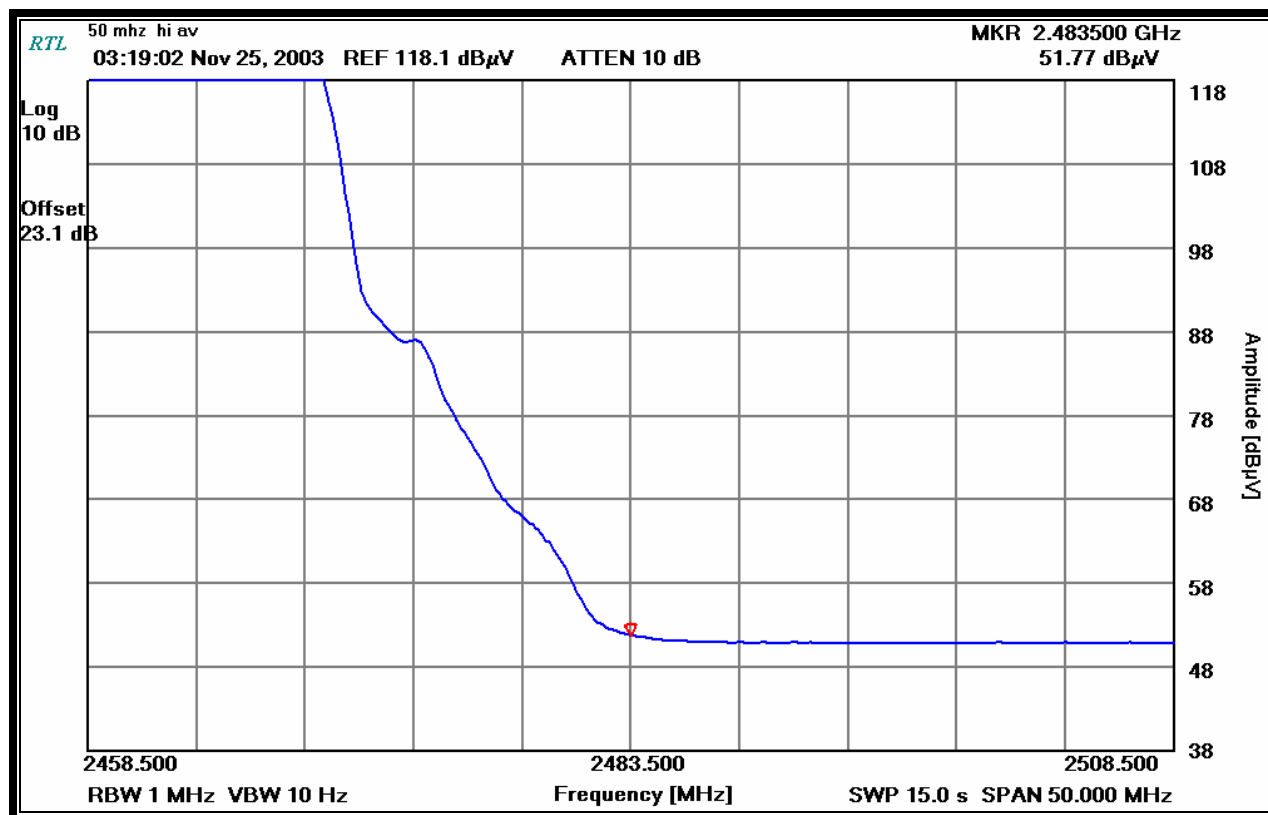
TEST PERSONNEL:

Rachid Sehb
EMC Test Engineer


Signature

November 25, 2003
Date of Test

PLOT 3-3: UPPER BAND EDGE HIGHEST CHANNEL AT 50 MBPS (ABSOLUTE MEASUREMENT)



TEST PERSONNEL:

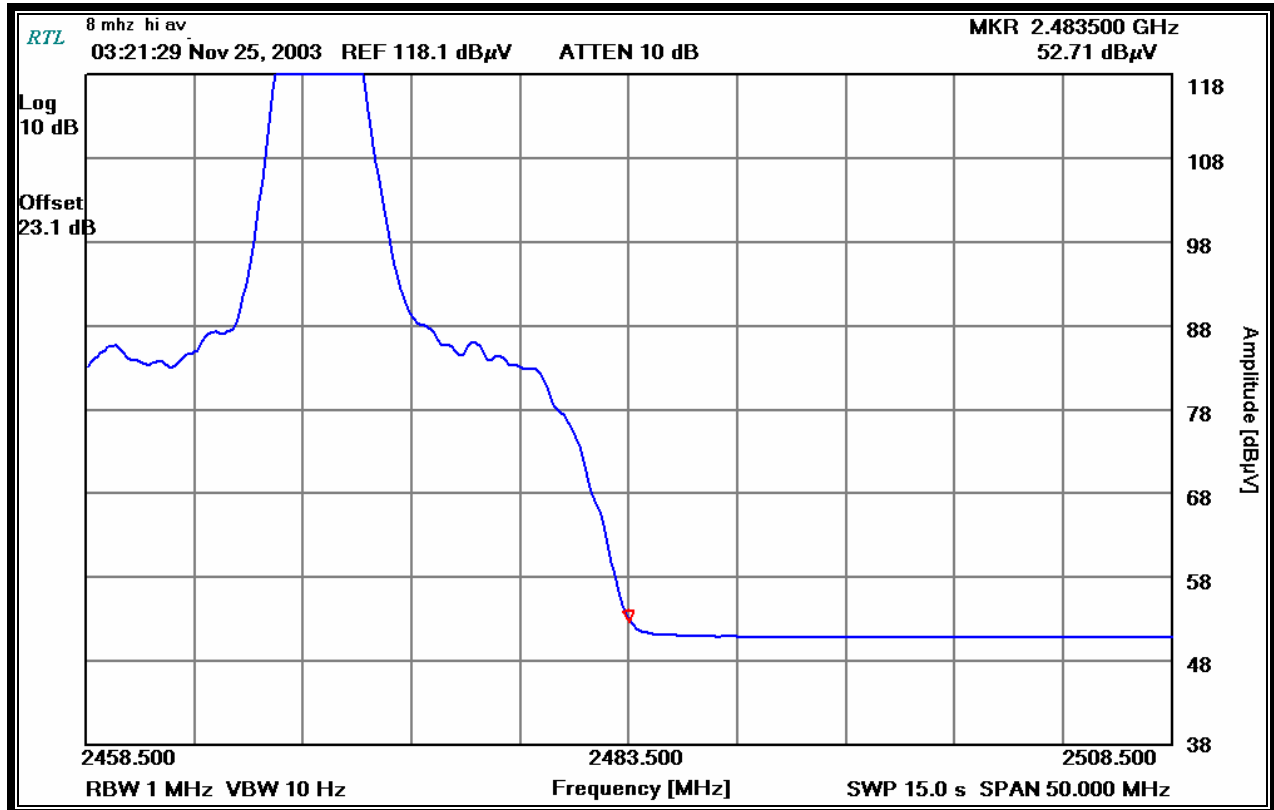
Rachid Sehb
EMC Test Engineer

See

Signature

November 25, 2003
Date of Test

PLOT 3-4: LOWER BAND EDGE LOWEST CHANNEL AT 8 MBPS (ABSOLUTE MEASUREMENT)



TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

See
 Signature

November 25, 2003
 Date of Test

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 (LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed A.C. power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers the EUT host peripherals.

The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 100 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 100 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB bandwidth was set to 9 kHz. Video filters less than 10 times the resolution bandwidth are not used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded.

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 PROCEDURE

The conducted test was performed with the EUT constantly transmitting data, and the emissions were scanned between 150 kHz to 30 MHz on the NEUTRAL SIDE and PHASE SIDE. The values listed below show the unit in transmitting mode at the highest power output. Receiving modes were also investigated for worst case conducted emissions in the various data rate modes.

TABLE 4-1: CONDUCTED SPURIOUS EMISSIONS TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Date
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	05/12/2004
901082	AFJ International	LS16	16A LISN	16010020081	11/5/2004

4.3 CONDUCTED EMISSION TEST DATA

TABLE 4-2: CONDUCTED EMISSIONS (NEUTRAL SIDE) TRANSMITTING HIGHEST CHANNEL AT 50 MPBS

Temperature: 57°F				Humidity: 87%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	CISPR B QP Limit (dBuV)	CISPR B QP Margin (dBuV)	CISPR B AV Limit (dBuV)	CISPR B AV Margin (dBuV)
0.150	Qp	30.6	2.0	32.6	66.0	-33.4	56.0	N/A
0.223	Qp	42.3	1.5	43.8	62.7	-18.9	52.7	N/A
0.446	Qp	40.3	0.9	41.2	56.9	-15.7	46.9	N/A
0.559	Qp	38.2	0.8	39.0	56.0	-17.0	46.0	N/A
2.238	Qp	44.8	1.5	46.3	56.0	-9.7	46.0	N/A
2.238	Av	40.5	1.5	42.0	56.0	-14.0	46.0	-4.0
6.158	Qp	32.1	2.1	34.2	60.0	-25.8	50.0	N/A
16.578	Qp	21.3	3.5	24.8	60.0	-35.2	50.0	N/A

TABLE 4-3: CONDUCTED EMISSIONS (HOT SIDE) TRANSMITTING HIGHEST CHANNEL AT 50 MPBS

Temperature: 57°F				Humidity: 87%				
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	CISPR B QP Limit (dBuV)	CISPR B QP Margin (dBuV)	CISPR B AV Limit (dBuV)	CISPR B AV Margin (dBuV)
0.160	Qp	38.9	1.9	40.8	65.5	-24.7	55.5	N/A
0.224	Qp	43.6	1.5	45.1	62.7	-17.6	52.7	N/A
5.474	Qp	36.5	2.0	38.5	60.0	-21.5	50.0	N/A
5.812	Qp	37.5	2.1	39.6	60.0	-20.4	50.0	N/A
9.611	Qp	34.8	2.7	37.5	60.0	-22.5	50.0	N/A
11.958	Qp	31.9	3.1	35.0	60.0	-25.0	50.0	N/A
16.875	Qp	24.5	3.6	28.1	60.0	-31.9	50.0	N/A
29.788	Qp	28.3	4.6	32.9	60.0	-27.1	50.0	N/A

TEST PERSONNEL:

Rachid Sehb
EMC Test Engineer


Signature

December 8, 2003
Date of Test

5 RADIATED EMISSION FOR RECEIVER/DIGITAL INTERFACE - §15.209

5.1 RADIATED EMISSION TEST PROCEDURE FOR RECEIVER/DIGITAL INTERFACE

Radiated spurious emissions for receiver/digital interface falls 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. 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.

5.2 RADIATED EMISSION TEST DATA RECEIVER/DIGITAL INTERFACE

TABLE 5-1: RADIATED EMISSIONS RECEIVING 2412MHZ OPERATING FREQUENCY

Temperature: 50°F Humidity: 73%									
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)
40.000	Qp	H	90	1.0	39.6	-6.5	33.1	40.0	-6.9
128.000	Qp	H	180	1.0	42.9	-14.9	28.0	43.5	-15.5
151.520	Qp	V	180	1.0	50.5	-17.7	32.8	43.5	-10.7
178.180	Qp	H	10	1.0	52.3	-19.3	33.0	43.5	-10.5
178.180	Qp	V	90	1.0	49.8	-18.7	31.1	43.5	-12.4
223.370	Qp	H	90	1.0	49.1	-18.2	30.9	46.0	-15.1
224.002	Qp	H	270	1.0	49.3	-18.2	31.1	46.0	-14.9
291.860	Qp	H	10	1.0	45.0	-14.9	30.1	46.0	-15.9
339.080	Qp	H	180	1.0	41.2	-13.7	27.5	46.0	-18.5
398.700	Qp	H	90	1.0	44.8	-11.2	33.6	46.0	-12.4

TEST PERSONNEL:

Rachid Sehb
EMC Test Engineer


Signature

December 9, 2003
Date of Test

6 RADIATED EMISSIONS/RADIATED HARMONICS/SPURIOUS NOISE - §15.247

6.1 RADIATED EMISSION TEST PROCEDURE FOR HARMONICS/SPURIOUS NOISE

Radiated Spurious Emissions applies to harmonics and spurious emissions that fall in the restricted and non-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 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 LOWEST OPERATING FREQUENCY AT 8 MPS

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4810.00	32.6	22.9	14.0	36.9	54.0	-17.1
7215.00	39.6	29.6	12.5	42.1	54.0	-11.9
9620.00	42.4	31.8	16.9	48.7	54.0	-5.3
12025.00	42.4	31.3	17.5	48.8	54.0	-5.2

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

TABLE 6-2: RADIATED EMISSIONS HARMONICS/SPURIOUS LOWEST OPERATING FREQUENCY AT 50 MBPS

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4820.00	32.4	22.5	14.0	36.5	54.0	-17.5
7230.00	39.0	29.0	12.5	41.5	54.0	-12.5
9640.00	42.1	31.5	16.9	48.4	54.0	-5.7
12050.00	41.9	31.2	17.5	48.7	54.0	-5.3

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

TABLE 6-3: RADIATED EMISSIONS HARMONICS/SPURIOUS MIDDLE OPERATING FREQUENCY AT 50 MPBS

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4858.00	33.0	23.2	15.3	38.5	54.0	-15.5
7287.00	40.8	30.9	12.1	43.0	54.0	-11.0
9716.00	41.2	30.9	16.7	47.6	54.0	-6.4
12145.00	42.4	32.3	18.2	50.5	54.0	-3.5

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

TABLE 6-4: RADIATED EMISSIONS HARMONICS/SPURIOUS MIDDLE OPERATING FREQUENCY AT 8 MBPS

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4848.00	32.5	23.1	15.3	38.4	54.0	-15.6
7272.00	40.6	30.5	12.1	42.6	54.0	-11.4
9696.00	40.6	30.4	16.7	47.1	54.0	-6.9
12120.00	42.1	32.1	18.2	50.3	54.0	-3.7

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

TABLE 6-5: RADIATED EMISSIONS HARMONICS/SPURIOUS HIGHEST OPERATING FREQUENCY AT 50 MBPS

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4938.00	32.6	23.2	13.9	37.1	54.0	-16.9
7407.00	41.3	30.9	13.3	44.2	54.0	-9.8
9876.00	39.6	31.1	16.3	47.4	54.0	-6.6
12345.00	41.6	32.1	18.1	50.2	54.0	-3.8

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

TABLE 6-6: RADIATED EMISSIONS HARMONICS/SPURIOUS HIGHEST OPERATING FREQUENCY AT 8 MBPS

Emission Frequency (MHz)	Analyzer Reading (dBuV) Peak	Analyzer Reading (dBuV) Average	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4926.00	32.3	22.9	13.9	36.8	54.0	-17.2
7389.00	41.0	30.1	13.3	43.4	54.0	-10.6
9852.00	39.5	31.0	16.3	47.3	54.0	-6.7
12315.00	41.2	31.9	18.1	50.0	54.0	-4.0

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

TEST PERSONNEL:

Rachid Sehb
EMC Test Engineer


Signature

November 28, 2003
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
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	3/15/04
900323	EMCO	3160-7	Horn Antennas (8.2 - 12.4 GHz)	9605-1054	6/10/04
900356	EMCO	3160-08	Horn Antennas (12.4 - 18 GHz)	9607-1044	6/10/04
900321	EMCO	3161-03	Horn Antenna (4 - 8.2 GHz)	9508-1020	4/10/04
901053	Schaffner & Chase	CBL6112B	Bilog Antenna (20 MHz - 2 GHz)	2648	7/3/04
900905	Rhein Tech Labs	PR-1040	Pre Amplifier 40dB (10 MHz - 2 GHz)	1006	7/10/03
900325	EMCO	3160-9	Horn Antennas (18 - 26.5 GHz)	9605-1051	7/30/04
900905	Rhein Tech Labs	PR-1040	Amplifier	900905	7/10/04
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	7/15/2004

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 300 kHz. The minimum 6 dB modulated bandwidths are the following:

7.2 TEST EQUIPMENT USED FOR TESTING

TABLE 7-1: MODULATED BANDWIDTH TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number
900931	Hewlett Packard	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771

7.3 MODULATED BANDWIDTH TEST DATA

TABLE 7-2: MINIMUM 6 DB MODULATED BANDWIDTHS AT 50 MBPS

Operating Frequency (MHz)	6 dB Bandwidth (MHz)
2405	10.9
2429	11.1
2469	11.0

TABLE 7-3: MINIMUM 6 DB MODULATED BANDWIDTHS AT 8MBPS

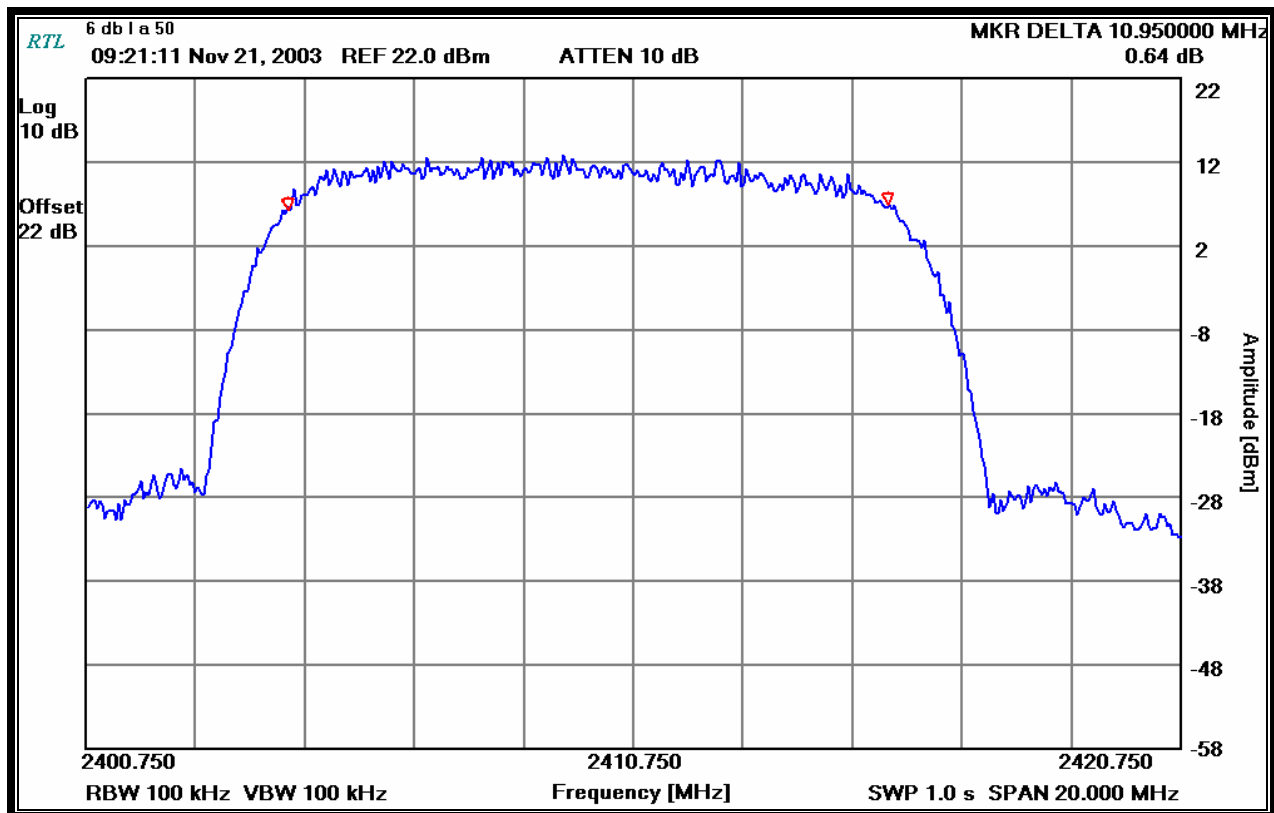
Operating Frequency (MHz)	6 Db Bandwidth (MHz)
2410	2.4
2424	2.5
2463	2.4

TEST PERSONNEL:

Rachid Sehb		November 21, 2003
EMC Test Engineer	Signature	Date of Test

7.4 MODULATED BANDWIDTH PLOTS

PLOT 7-1: MODULATED BANDWIDTH LOWEST CHANNEL AT 50 MPBS



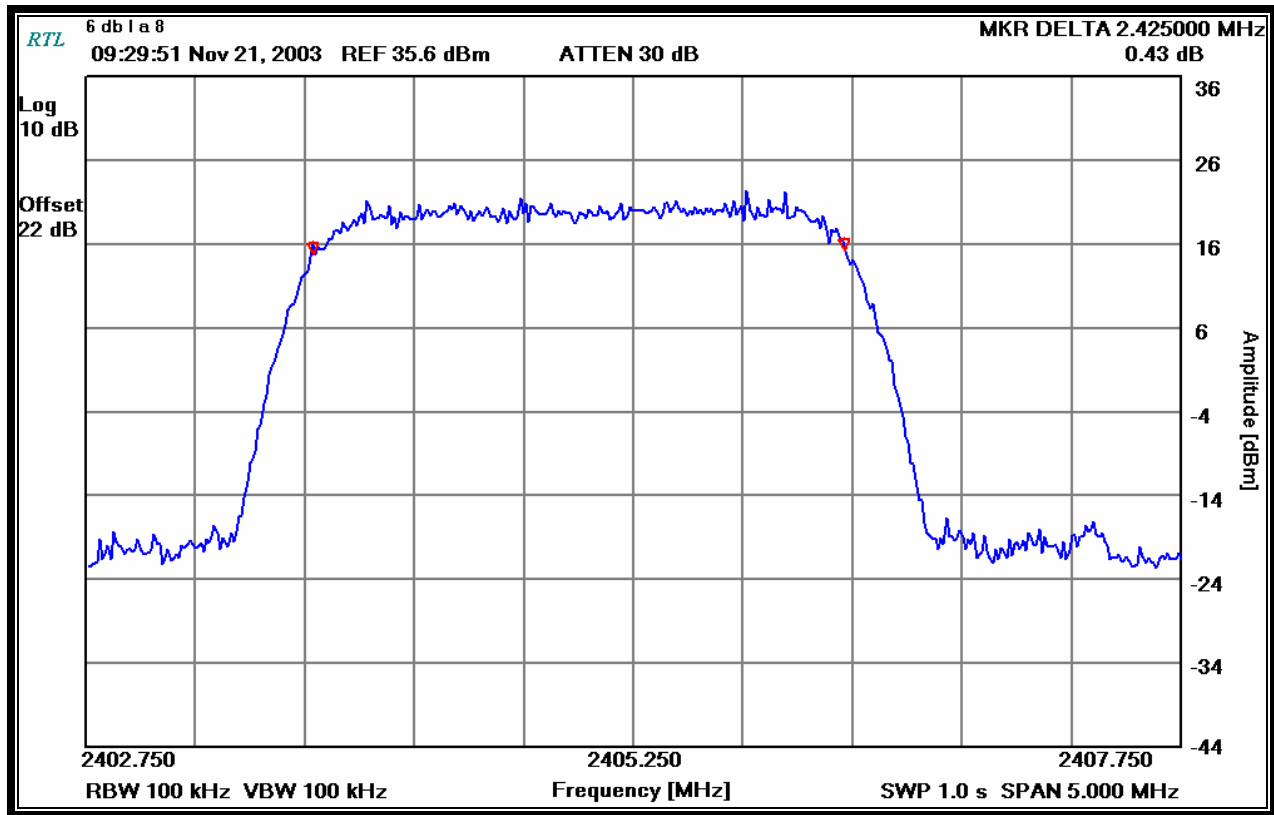
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

Sehb
 Signature

November 21, 2003
 Date of Test

PLOT 7-2: MODULATED BANDWIDTH LOWEST CHANNEL AT 8 MPBS



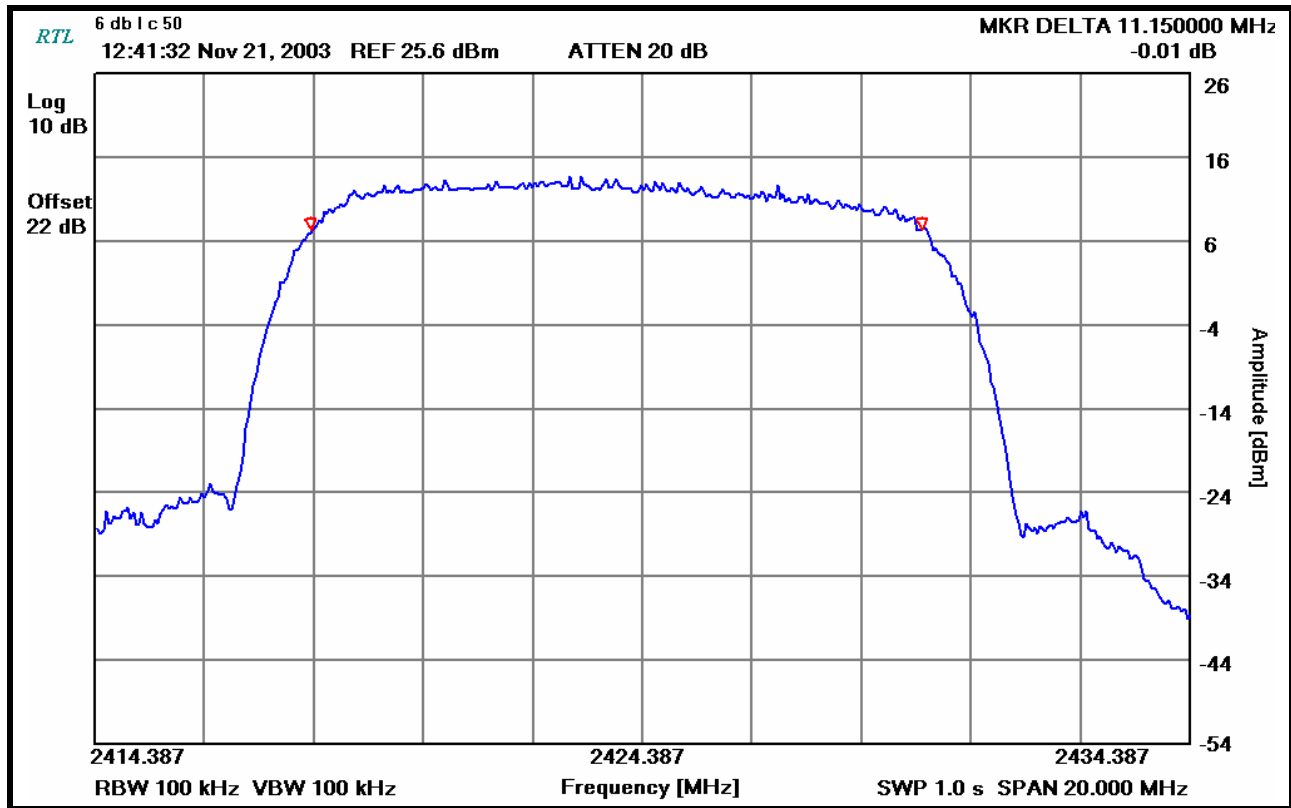
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

Sehb
 Signature

November 21, 2003
 Date of Test

PLOT 7-3: MODULATED BANDWIDTH MIDDLE CHANNEL AT 50 MBPS



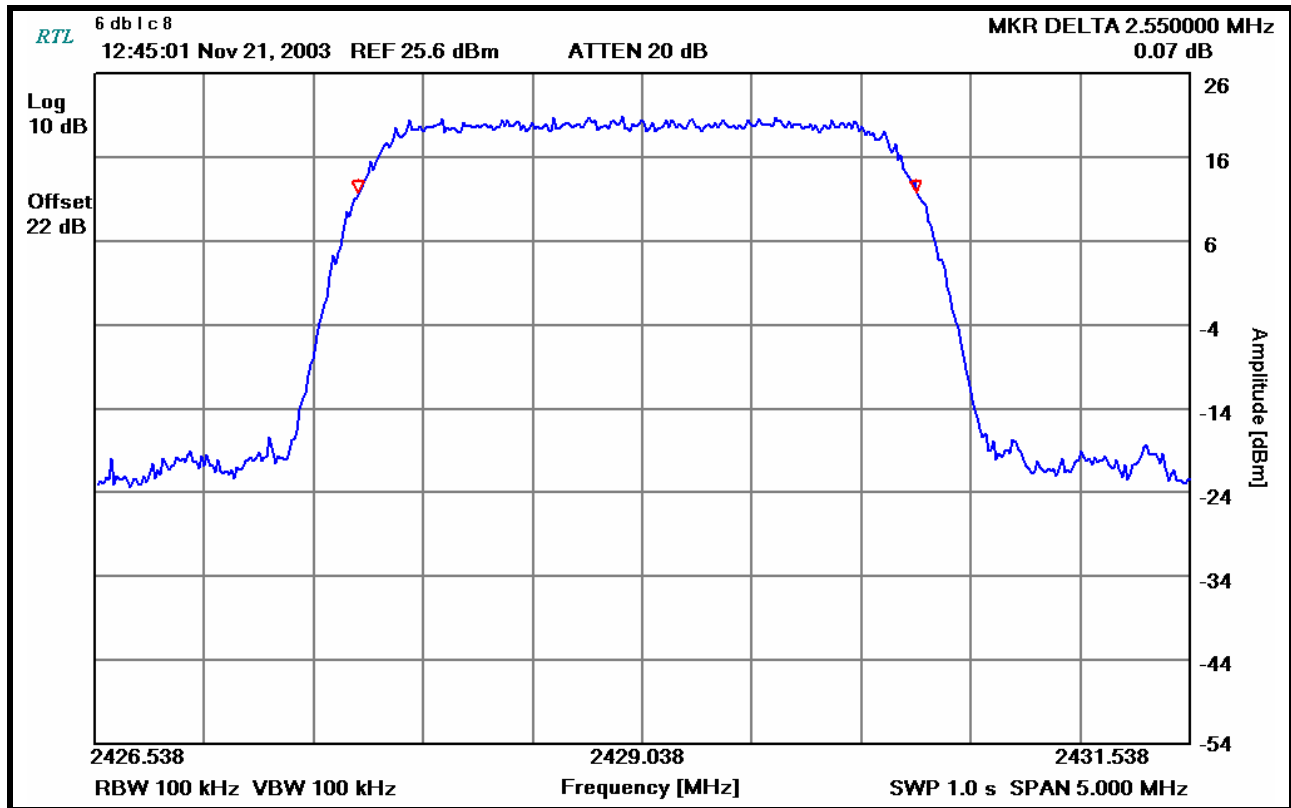
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

See
 Signature

November 21, 2003
 Date of Test

PLOT 7-4: MODULATED BANDWIDTH MIDDLE CHANNEL AT 8 MBPS



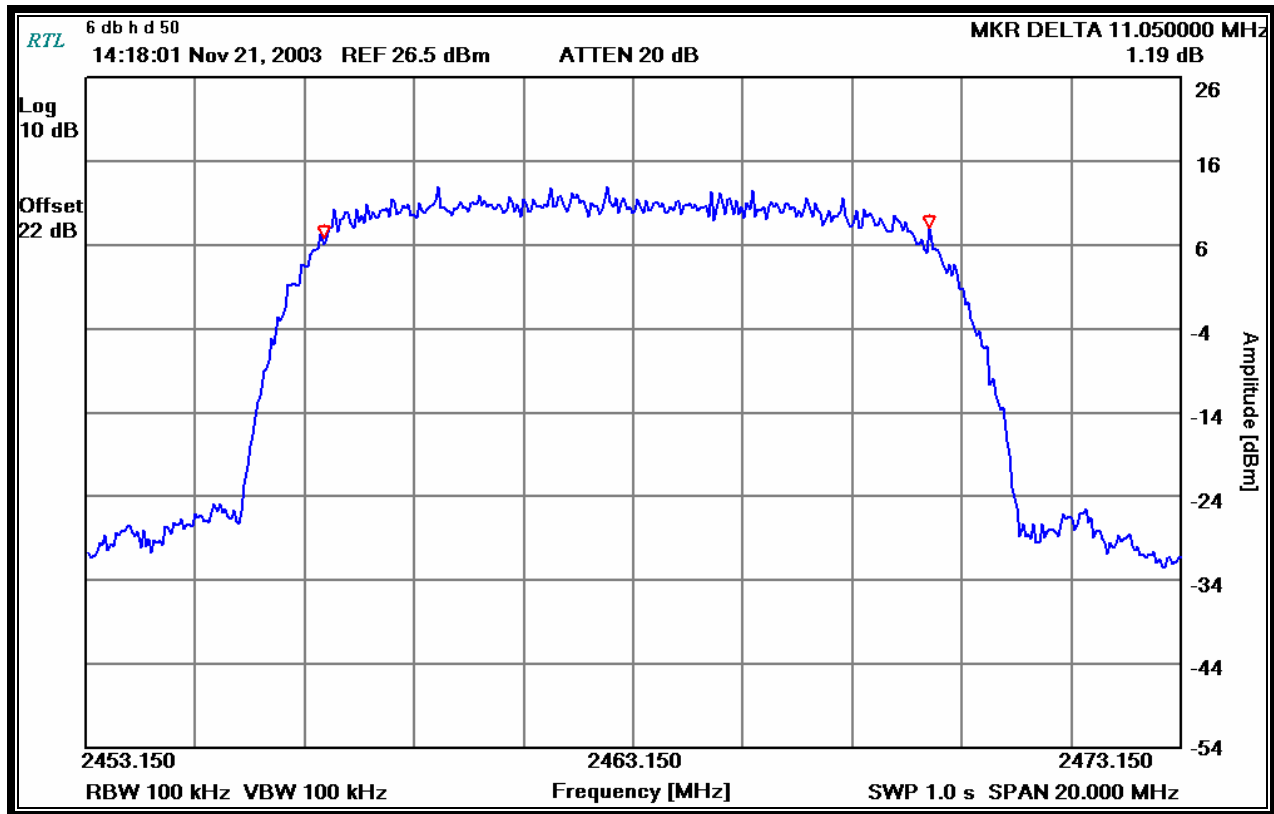
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

See
 Signature

November 21, 2003
 Date of Test

PLOT 7-5: MODULATED BANDWIDTH HIGHEST CHANNEL AT 50 MBPS



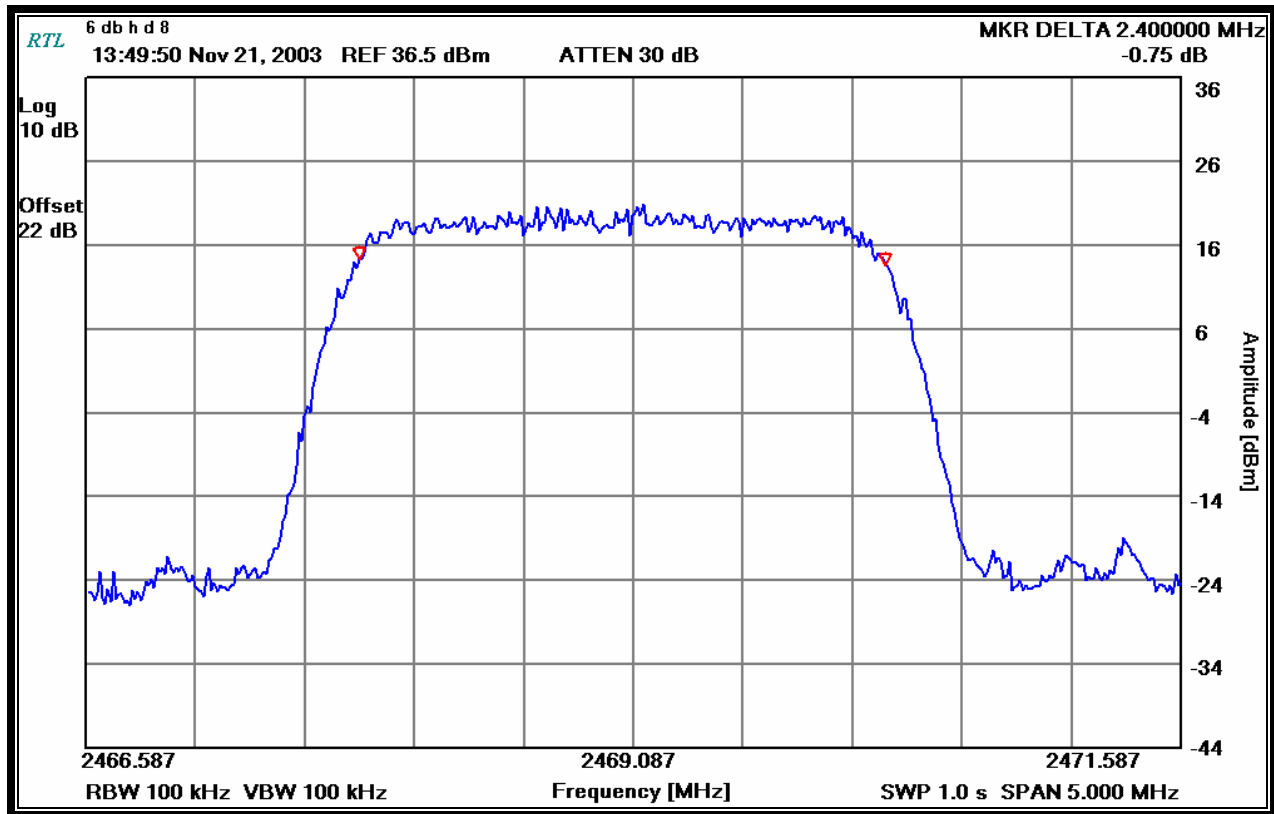
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer


 Signature

November 21, 2003
 Date of Test

PLOT 7-6: MODULATED BANDWIDTH HIGHEST CHANNEL AT 8 MBPS



TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer


 Signature

November 21, 2003
 Date of Test

8 POWER OUTPUT - §15.247(B)

8.1 POWER OUTPUT TEST PROCEDURE

The peak conducted output power of the EUT was measured using an oscilloscope and diode detector to determine the maximum deviation since the signals tested are large bandwidth. Using a signal generator allows us to determine the power output of the signal investigated. The unit has been tested for the lowest, middle and highest channel with the data rates set at 8 and 50 MBPS. The results are listed in tables 8-2 and 8-3.

8.2 TEST EQUIPMENT USED FOR TESTING

TABLE 8-1: RADIATED RF OUTPUT TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901186	Agilent Technologies	E9323A (50 MHz-6 GHz)	Peak & Avg. Power Sensor	US40410380	7/30/04
901184	Agilent Technologies	E4416A	EPM-P Power Meter	GB41050573	7/30/04
901263	Agilent Technologies	.01-12 GHz	SMA Detector	2936A05505	
900917	Hewlett Packard	8648C	Signal Generator (100 KHz - 3200 MHz)	3537A01741	5/2/2004
900561	Tektronix	TDS540B	Oscilloscope	B020129	2/19/2004

8.3 POWER OUTPUT TEST DATA

TABLE 8-2: POWER OUTPUT TEST DATA AT 50 MBPS

Operating Frequency (MHz)	Power Conducted Output (dBm)	EUT Software Power Setting (dBm)
2405	23.0	20
2429	23.4	20
2469	24.5	20

TABLE 8-3: POWER OUTPUT TEST DATA AT 8MBPS

Operating Frequency (MHz)	Power Conducted Output (dBm)	EUT Software Power Setting (dBm)
2410	23.6	20
2424	23.0	20
2463	23.4	20

*Measurement accuracy is +/- 1.5 dB

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

Client: Stratex Networks, Inc.
Model: Velox LE 2450
Standards: FCC 15.247/ IC RSS-210
FCC ID: RLW-3ECJ68W7P
Report No: 2003205

TEST PERSONNEL:

Rachid Sehb
EMC Test Engineer



Signature

November 21, 2003
Date of Test

9 ANTENNA CONDUCTED SPURIOUS EMISSIONS - §15.247(C)

9.1 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST PROCEDURE

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. No other harmonics or spurs were found within 20 dB of the carrier level, and from 9kHz to the carrier's 10th harmonic. See the antenna conducted spurious noise table.

The low, middle and high operating frequencies were investigated and tested at the lowest and highest data rate.

9.2 ANTENNA CONDUCTED SPURIOUS EMISSIONS LOWEST OPERATING FREQUENCY

TABLE 9-1: ANTENNA CONDUCTED SPURIOUS EMISSIONS LOWEST OPERATING FREQUENCY AT 50 MBPS

Frequency (MHz)	Measured Level (dBm)	Corrected Measured Level (dBc)	Margin (dB)
1655.68	-51.8	-60.8	-49.8
4811.00	-58.6	-67.6	-56.6
7216.00	-51.6	-60.6	-49.6
9621.00	-51.3	-60.3	-49.3
12026.00	-49.3	-58.3	-47.3

TABLE 9-2: ANTENNA CONDUCTED SPURIOUS EMISSIONS LOWEST OPERATING FREQUENCY AT 8 MBPS

Frequency (MHz)	Measured Level (dBm)	Corrected Measured Level (dBc)	Margin (dB)
1657.25	-52.2	-60.7	-49.2
4821.00	-57.1	-65.6	-54.1
7231.00	-51.8	-60.3	-48.8
9641.00	-51.1	-59.6	-48.1
12051.00	-48.3	-56.8	-45.3

TEST PERSONNEL:

Rachid Sehb
EMC Test Engineer


Signature

November 21, 2003
Date of Test

9.3 ANTENNA CONDUCTED SPURIOUS EMISSIONS MIDDLE OPERATING FREQUENCY

TABLE 9-3: ANTENNA CONDUCTED SPURIOUS EMISSIONS MIDDLE OPERATING FREQUENCY AT 50 MBPS

Frequency (MHz)	Measured Level (dBm)	Corrected Measured Level (dBc)	Margin (dB)
1680.95	-44.7	-61.7	-58.7
4849.00	-52.5	-69.5	-66.5
7273.50	-48.2	-65.2	-62.2
9698.00	-49.5	-66.5	-63.5
12122.50	-49.0	-66.0	-63.0

TABLE 9-4: ANTENNA CONDUCTED SPURIOUS EMISSIONS MIDDLE OPERATING FREQUENCY AT 8 MBPS

Frequency (MHz)	Measured Level (dBm)	Corrected Measured Level (dBc)	Margin (dB)
1682.95	-44.7	-61.2	-57.7
4859.00	-57.5	-74.0	-70.5
7288.00	-48.7	-65.2	-61.7
9717.00	-49.0	-65.5	-62.0
12146.00	-48.4	-64.9	-61.4

TEST PERSONNEL:

Rachid Sehb
EMC Test Engineer


Signature

November 21, 2003
Date of Test

9.4 ANTENNA CONDUCTED SPURIOUS EMISSIONS HIGHEST OPERATING FREQUENCY

TABLE 9-5: ANTENNA CONDUCTED SPURIOUS EMISSIONS HIGHEST OPERATING FREQUENCY AT 50 MBPS

Frequency (MHz)	Measured Level (dBm)	Corrected Measured Level (dBc)	Margin (dB)
1734.76	-51.1	-61.0	-50.9
4925.00	-55.5	-65.4	-55.3
7388.00	-50.0	-59.9	-49.8
9851.00	-49.6	-59.5	-49.4
12314.00	-49.2	-59.1	-49.0

TABLE 9-6: ANTENNA CONDUCTED SPURIOUS EMISSIONS HIGHEST OPERATING FREQUENCY AT 50 MBPS

Frequency (MHz)	Measured Level (dBm)	Corrected Measured Level (dBc)	Margin (dB)
1732.12	-50.7	-62.2	-53.7
4938.00	-77.1	-88.6	-80.1
7407.00	-68.6	-80.1	-71.6
9876.00	-67.6	-79.1	-70.6
12345.00	-68.1	-79.6	-71.1

TEST PERSONNEL:

Rachid Sehb
EMC Test Engineer


Signature

November 21, 2003
Date of Test

10 POWER SPECTRAL DENSITY - §15.247(D)

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 1000 seconds. The spectral lines were resolved for the modulated carriers at lowest, middle and highest channels. These levels are below the +8 dBm limit. See the following power spectral density plots.

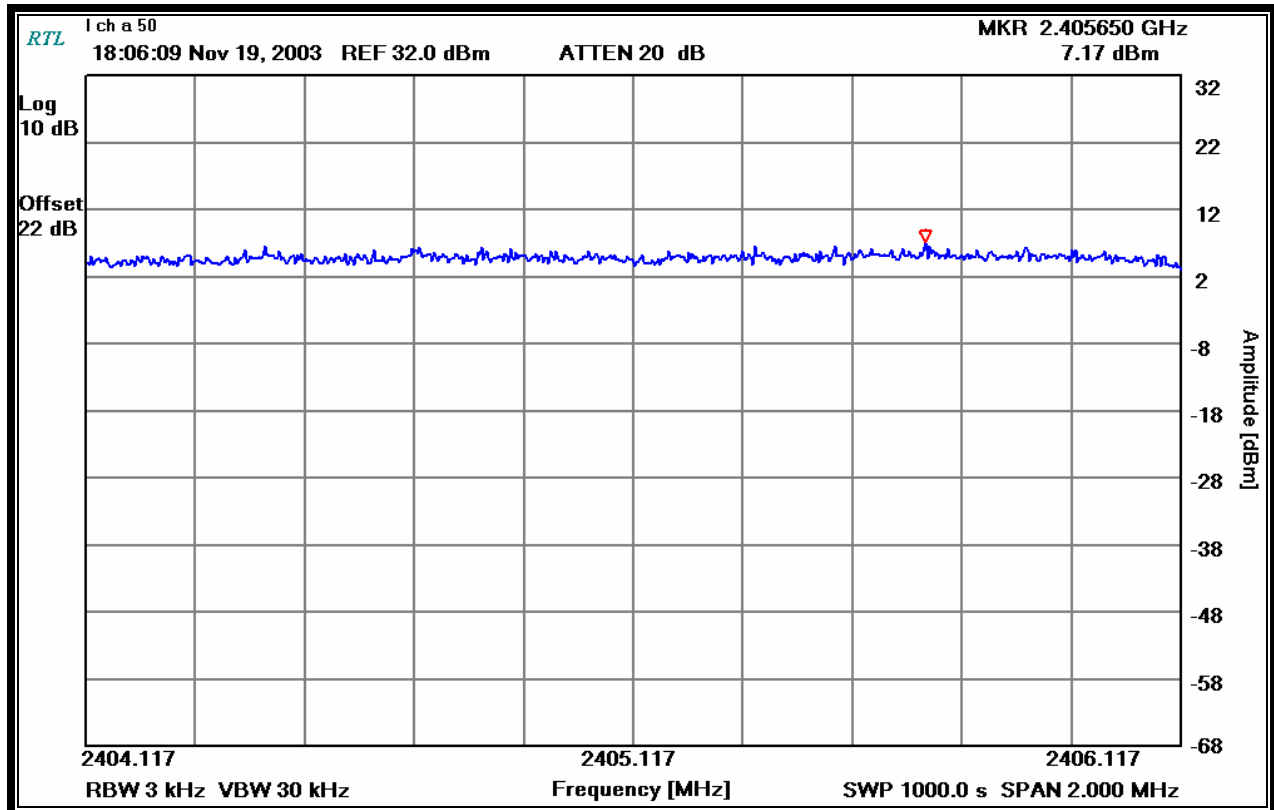
10.2 POWER SPECTRAL DENSITY TEST EQUIPMENT

TABLE 10-1: POWER SPECTRAL DENSITY TEST EQUIPMENT

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901020	Hewlett Packard	8564E	Spectrum Analyzer (30 Hz – 40 GHz)	3943A01719	7/15/04

10.3 POWER SPECTRAL DENSITY PLOTS

PLOT 10-1: POWER SPECTRAL DENSITY LOWEST CHANNEL AT 50 MBPS



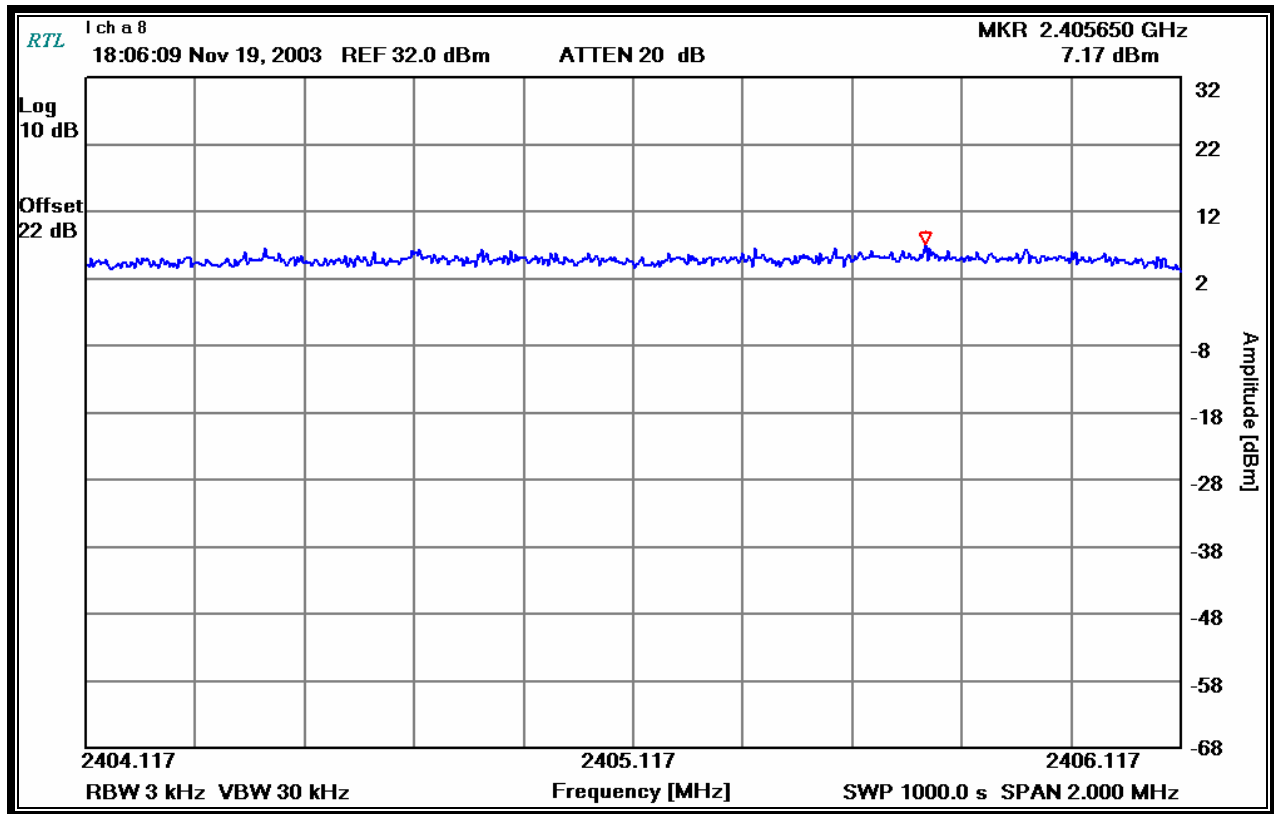
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer


 Signature

November 19, 2003
 Date of Test

PLOT 10-2: POWER SPECTRAL DENSITY LOWEST CHANNEL AT 8 MBPS



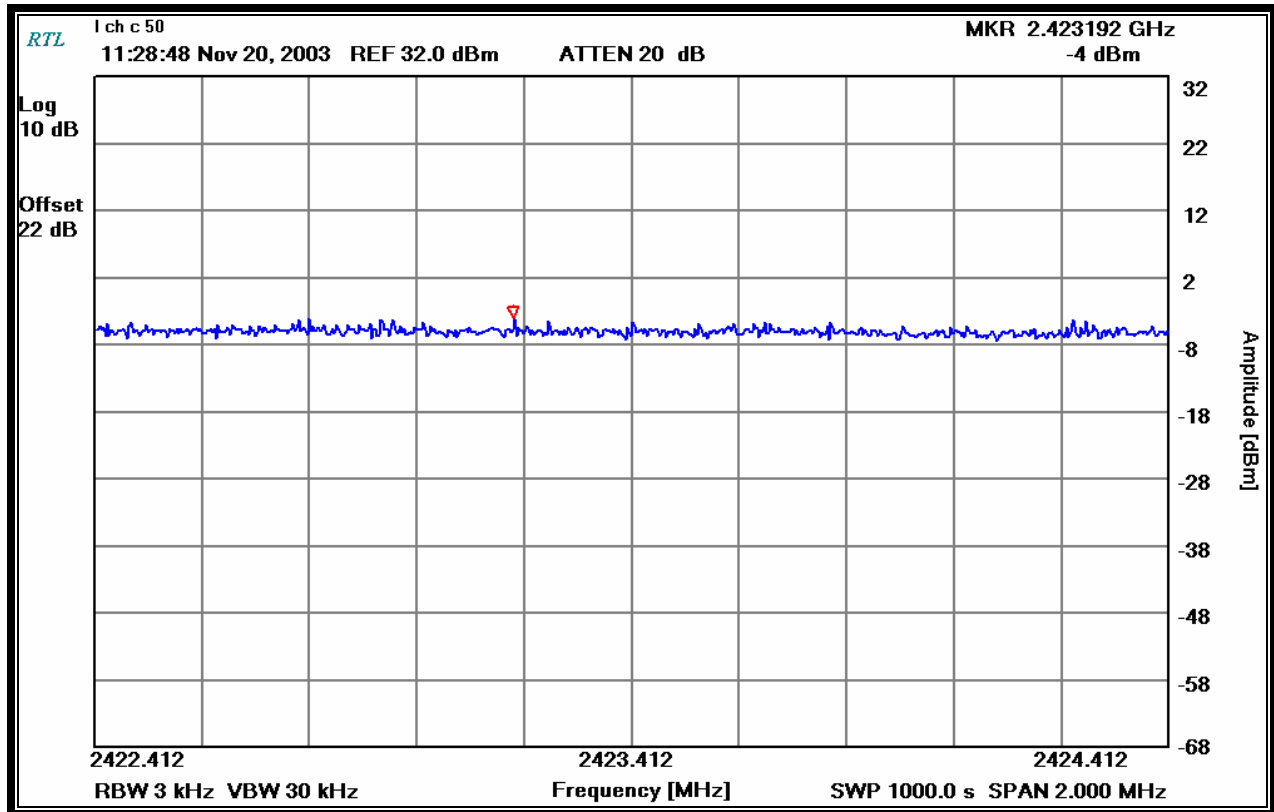
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

Sehb
 Signature

November 19, 2003
 Date of Test

PLOT 10-3: POWER SPECTRAL DENSITY MIDDLE CHANNEL AT 50 MBPS



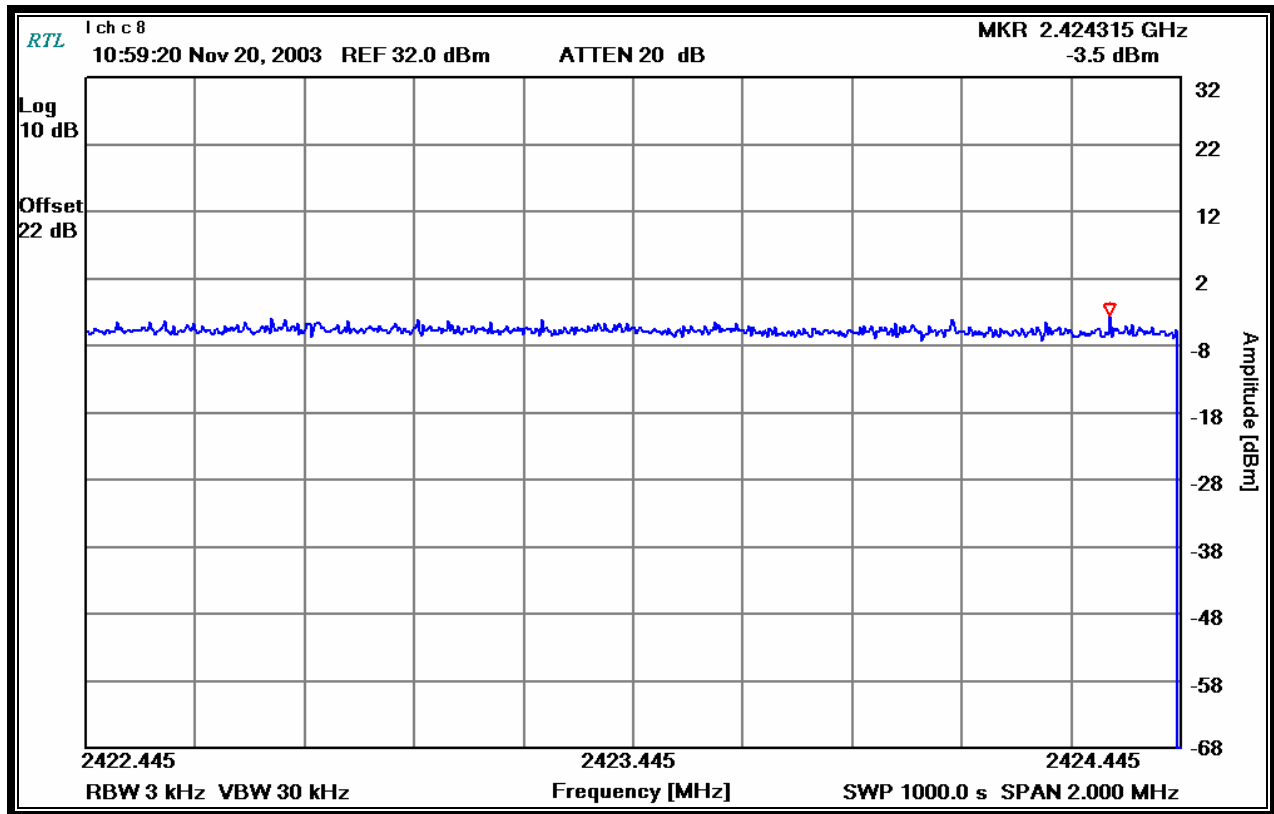
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

Sehb
 Signature

November 19, 2003
 Date of Test

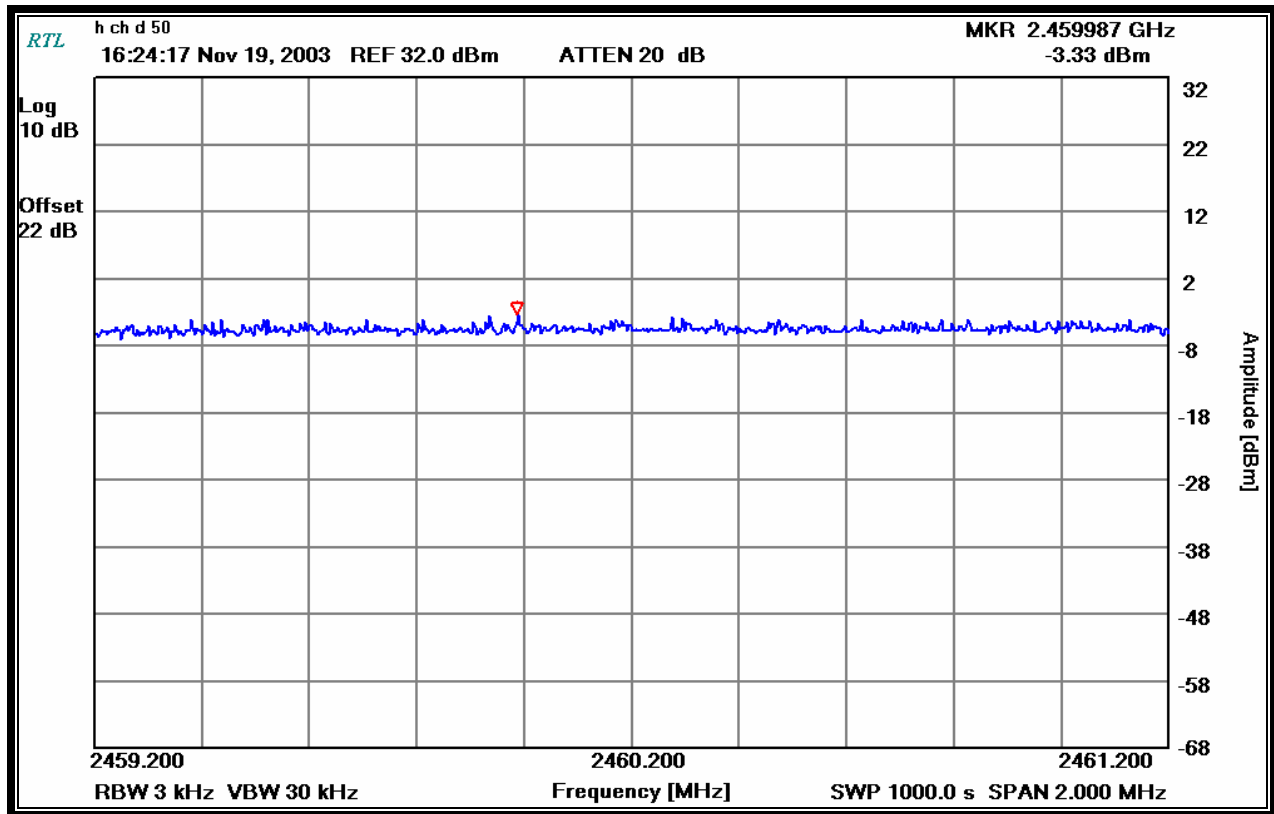
PLOT 10-4: POWER SPECTRAL DENSITY MIDDLE CHANNEL AT 8 MBPS



TEST PERSONNEL:

Rachid Sehb		November 19, 2003
EMC Test Engineer	Signature	Date of Test

PLOT 10-5: POWER SPECTRAL DENSITY HIGHEST CHANNEL AT 50 MBPS



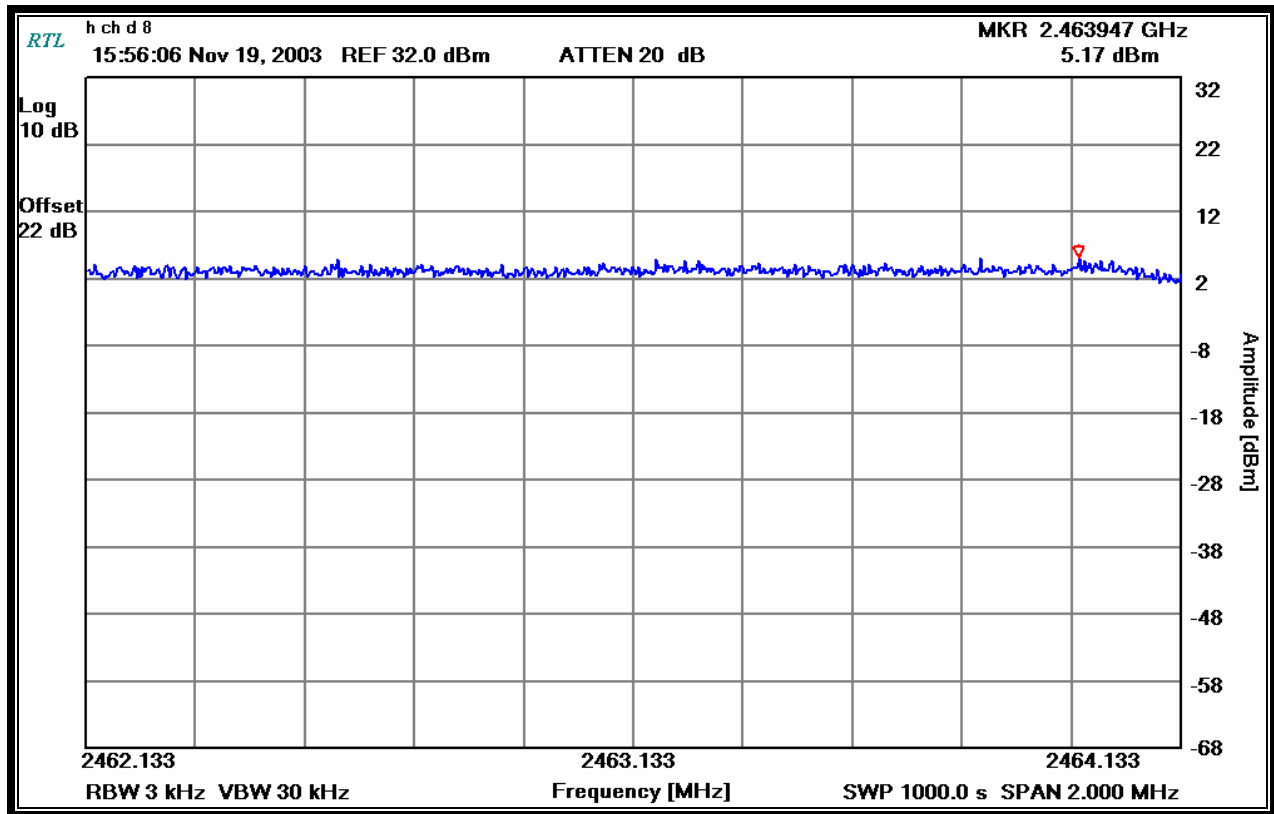
TEST PERSONNEL:

Rachid Sehb
 EMC Test Engineer

See
 Signature

November 19, 2003
 Date of Test

PLOT 10-6: POWER SPECTRAL DENSITY HIGHEST CHANNEL AT 8 MBPS



TEST PERSONNEL:

Rachid Sehb		November 19, 2003
EMC Test Engineer	Signature	Date of Test

11 CONCLUSION

The data in this measurement report shows that Stratex Networks Inc., Model Name: Velox LE 2450 SR, Model Number: 651-04377-01-H/L16-P, FCC ID: RLW-3ECJ68W7P, complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules and Industry Canada RSS-210.