



Engineering and Testing for EMC and Safety Compliance

PERMISSIVE CHANGE APPLICATION REPORT
FCC PART 15.247 & INDUSTRY CANADA RSS-210

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FCC ID:	ONJ-3ECJ68A4D	GRANTEE FRN:	0009818253
PLAT FORM:	N/A	RTL WORK ORDER #:	2003223
MODEL(S):	Velox LE 5850	RTL QUOTE #:	QRTL03-171A
DATE OF TEST REPORT:	January 14, 2004		
American National Standard Institute:	ANSI C63.4: Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz		
FCC Classification:	DTS – Part 15 Digital Transmission System		
FCC Rule Part(s):	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
5731 - 5844	0.245	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.

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: January 14, 2004

Typed/Printed Name: Desmond A. Fraser

Position: President

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1 GENERAL INFORMATION

1.1 SCOPE

FCC Rules Part 15.247: Operation within the bands of 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.

IC RSS-210 Section 6.2.2(o): 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz (Spread Spectrum) and RSS-210 Issue 5: Amendment which permits certification of systems employing digital modulation techniques.

The EUT is considered a “Digital Transmission System (DTS)” because of the digital modulation used. The EUT is also characterized as a fixed, point-to-point system.

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 a permissive change for the original application for certification for Stratex Networks, Model Name: Velox LE 5850, FCC ID: ONJ-3ECJ68A4D. The change is the addition of 32-QAM modulation, and a new antenna. The modulation change was implemented in software; no hardware changes have been made to the device since the original certification. The IF and LO's were investigated and tested.

Please note the following:

At the time of the original certification, the manufacturer was Plessey BBW, a division of Tellumat. Plessey BBW has been sold to Stratex Networks. As of October 3, 2003, Plessey BBW is part of Stratex Networks. Based on Stratex Networks' discussions with the FCC, the Tellumat grantee code “ONJ” has been transferred to Stratex in its entirety.

1.4 MODIFICATIONS

No modifications were necessary to achieve compliance.

2 TEST INFORMATION

2.1 TEST JUSTIFICATION

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. Frequencies from 9 kHz to 40 GHz were investigated.

Worst-case data is presented in this report. The unit was tested for the maximum power output. The conducted testing was performed with the new modulation: 32-QAM. Per Part 15.31(m), the EUT was tested at the following frequencies representing one frequency near the bottom, one frequency near the middle, and one frequency near the top of the EUT's range of operation: 5736 MHz, 5806 MHz, and 5839 MHz.

The EUT was tested with one antenna: Harris Corporation flat panel antenna, model number MT-20004. The sole antenna receives and transmits.

The EUT is used in fixed, point-to-point applications.

2.2 EXERCISING THE EUT

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

2.3 TEST RESULT SUMMARY

TABLE 2-1: TEST RESULT SUMMARY FOR 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)(3), (b)(4)(ii)	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 identified in Table 2-2. Auxiliary equipment is identified in Table 2-3.

TABLE 2-2: EQUIPMENT UNDER TEST (EUT)

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
Outdoor Unit (H)	Stratex Networks	Velox LE 5850	BAXX35000251	ONJ-3ECJ68A4D	Shielded CAT 5 Cable, Unshielded DC Power Cable	15638
Outdoor Unit (L)	Stratex Networks	Velox LE 5850	BAXXEL060212	ONJ-3ECJ68A4D	Shielded CAT 5 Cable, Unshielded DC Power Cable	15639
Flat Panel Antenna	Harris Corporation	MT-20004	00621	N/A	RTL Asset 901238	15024

TABLE 2-3: AUXILIARY EQUIPMENT

PART	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID	CABLE DESCRIPTION	RTL BAR CODE
AC Adapter	Stratex Networks	PW106	99372A	N/A	Unshielded Power Cable	14345
Digital unit	Stratex Networks	Velox LE 50	ACXX2B000015	DOC	N/A	15535

2.5 CONFIGURATION OF TESTED SYSTEM

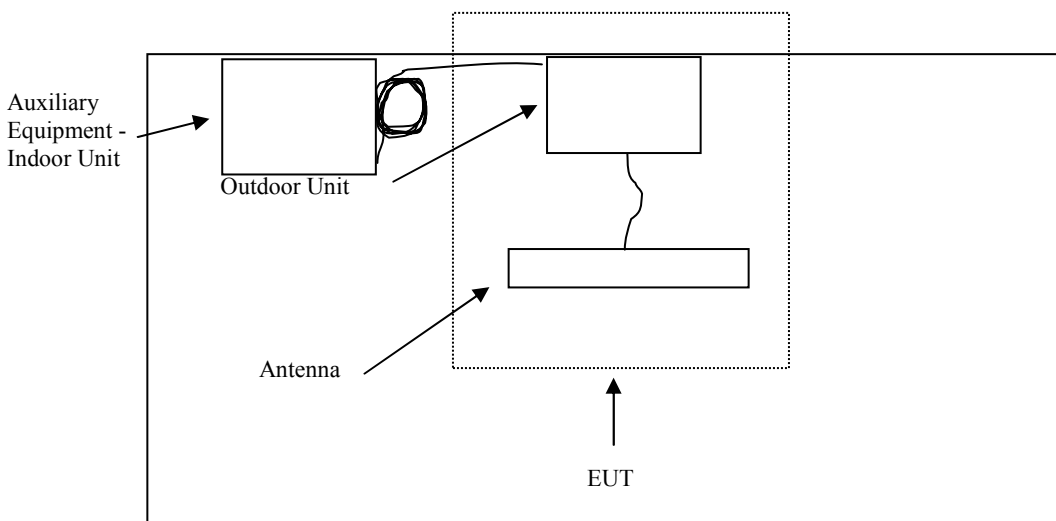


FIGURE 1: WORST CASE CONFIGURATION OF SYSTEM UNDER TEST

3 COMPLIANCE WITH THE RESTRICTED BAND EDGE – FCC §15.205; IC RSS-210 §6.3

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. The restricted bands surrounding the EUT's operating frequency range are 5.35 – 5.46 GHz and 7.25 – 7.75 GHz. 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 new 32 QAM modulation.

3.2 BAND EDGE TEST EQUIPMENT

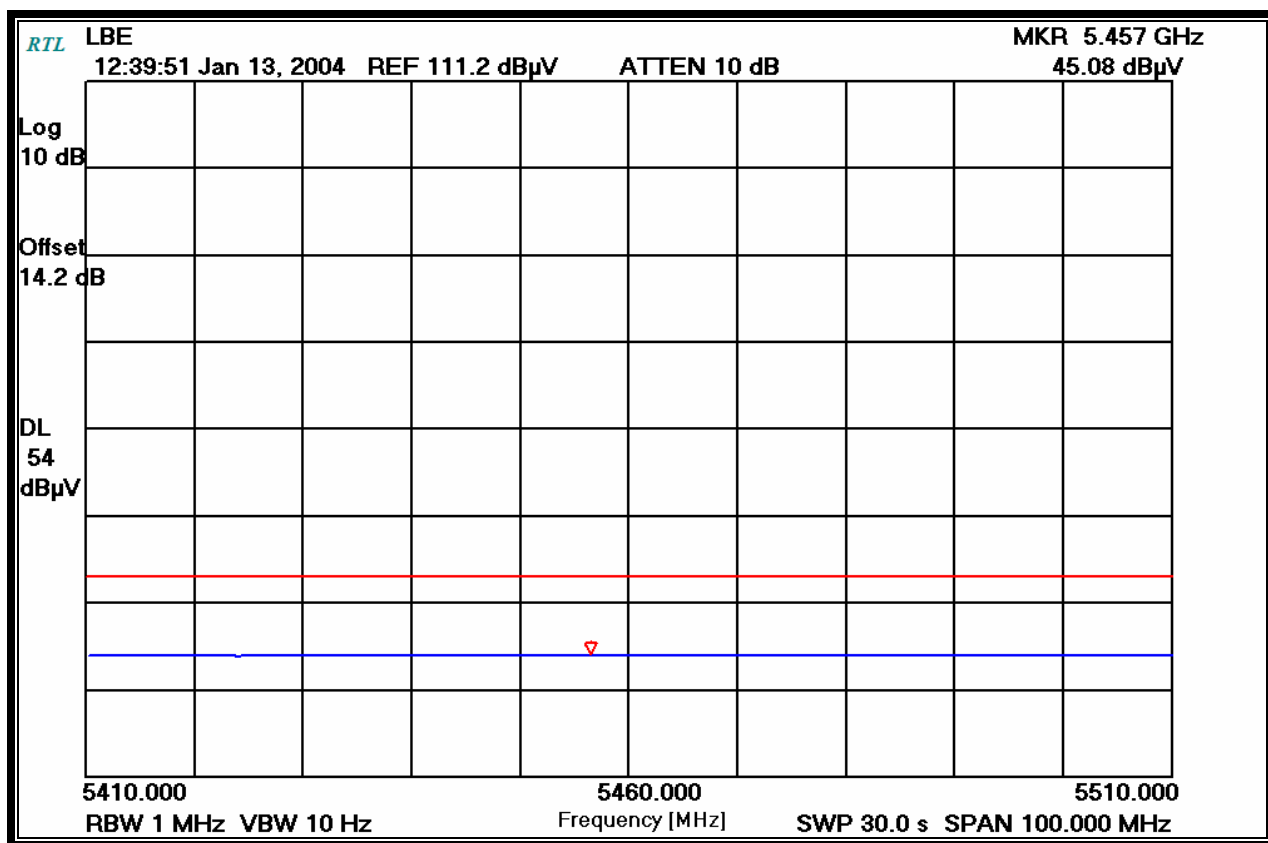
TABLE 3-1: BAND EDGE TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900814	Electrometrics	RGA-60	Horn Antenna	2310	2/17/04
901020	Hewlett Packard	8564E	Portable Spectrum Analyzer (9 kHz - 40 GHz)	3943A01719	7/15/04

Operating Frequency (MHz): 5736
 RBW/VBW: 1 MHz/10 Hz
 Distance (m): 3

3.3 COMPLIANCE WITH THE RESTRICTED BAND EDGE TEST DATA

PLOT 3-1: LOWER BAND EDGE WITH FLAT PANEL ANTENNA



TEST PERSONNEL:

Daniel W. Baltzell
 EMC Test Engineer

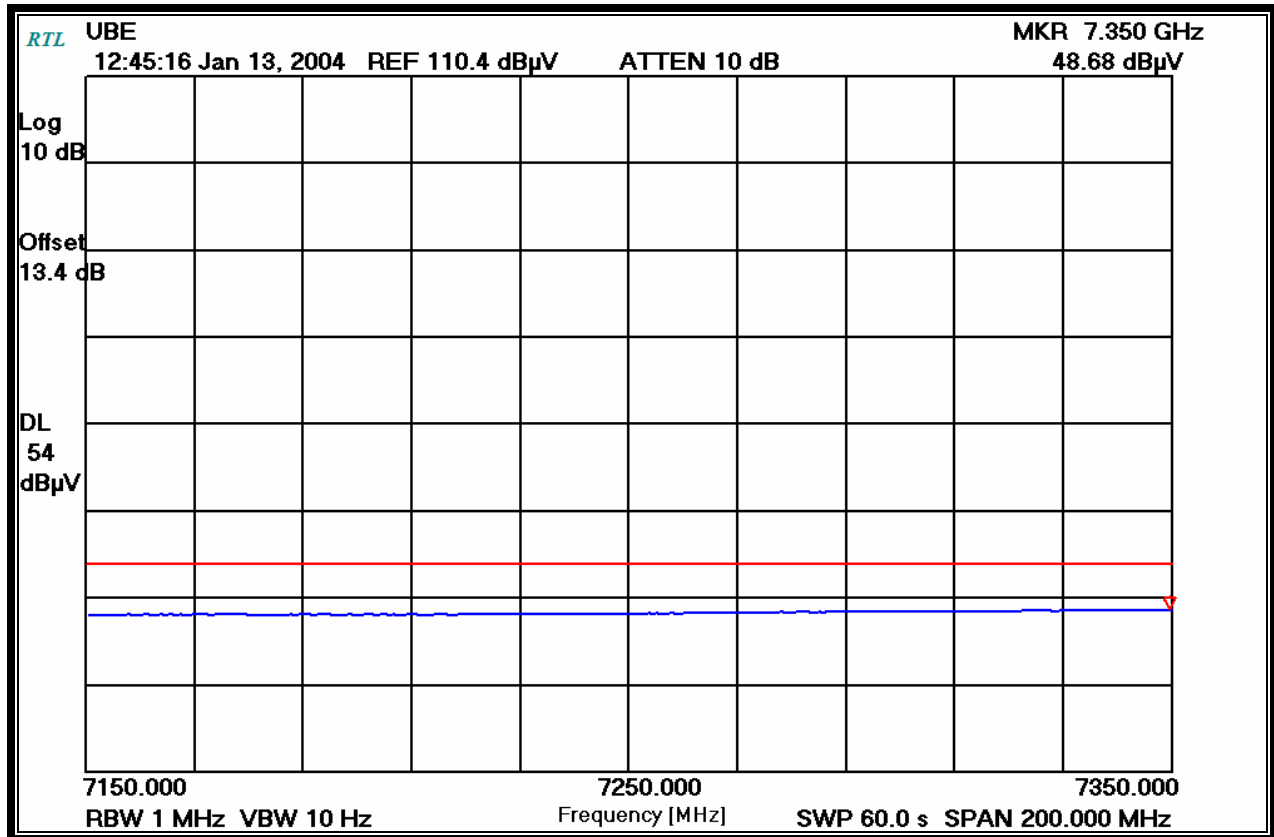
Daniel W. Baltzell

Signature

January 13, 2004
 Date of Test

Operating Frequency (MHz): 5839
RBW/VBW: 1 MHz/10 Hz
Distance (m): 3

PLOT 3-2: UPPER BAND EDGE WITH FLAT PANEL ANTENNA



TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer

Signature

January 13, 2004
Date of Test

4 CONDUCTED LIMITS – FCC §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 (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 is not used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from 150 kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limits were measured and have been recorded.

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 conducted test was performed with the EUT in constantly transmitting data, and the emissions were scanned between 150 kHz to 30 MHz on the NEUTRAL SIDE and PHASE SIDE. 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	5/12/04
901082	AFJ International	LS16	16A LISN	16010020081	11/5/04

4.3 CONDUCTED EMISSIONS TEST DATA

TABLE 4-2: NEUTRAL SIDE TRANSMITTING AT 5736 MHZ AND 32-QAM

Temperature: 74°F					Humidity: 32%			
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)
0.229	Pk	41.4	1.5	42.9	62.5	-19.6	52.5	-9.6
0.346	Pk	43.2	1.0	44.2	59.1	-14.9	49.1	-4.9
0.464	Pk	43.4	0.9	44.3	56.6	-12.3	46.6	-2.3
0.740	Pk	41.6	0.9	42.5	56.0	-13.5	46.0	-3.5
5.810	Pk	38.0	2.1	40.1	60.0	-19.9	50.0	-9.9
27.820	Pk	29.6	4.4	34.0	60.0	-26.0	50.0	-16.0

TABLE 4-3: PHASE SIDE TRANSMITTING AT 5736 MHZ AND 32-QAM

Temperature: 74°F					Humidity: 32%			
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)
0.228	Pk	43.9	1.5	45.4	62.5	-17.1	52.5	-7.1
0.347	Pk	42.4	1.0	43.4	59.0	-15.6	49.0	-5.6
0.466	Pk	42.5	0.9	43.4	56.6	-13.2	46.6	-3.2
0.530	Pk	41.0	0.8	41.8	56.0	-14.2	46.0	-4.2
5.810	Pk	36.8	2.1	38.9	60.0	-21.1	50.0	-11.1
24.690	Pk	30.4	4.3	34.7	60.0	-25.3	50.0	-15.3

TABLE 4-4: NEUTRAL SIDE TRANSMITTING AT 5806 MHZ AND 32-QAM

Temperature: 74°F					Humidity: 32%			
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)
0.229	Pk	43.0	1.5	44.5	62.5	-18.0	52.5	-8.0
0.468	Pk	42.0	0.9	42.9	56.5	-13.6	46.5	-3.6
0.740	Pk	42.6	0.9	43.5	56.0	-12.5	46.0	-2.5
1.270	Pk	41.1	1.1	42.2	56.0	-13.8	46.0	-3.8
5.990	Pk	36.8	2.1	38.9	60.0	-21.1	50.0	-11.1
28.440	Pk	30.4	4.4	34.8	60.0	-25.2	50.0	-15.2

TABLE 4-5: PHASE SIDE TRANSMITTING AT 5806 MHZ AND 32-QAM

Temperature: 74°F					Humidity: 32%			
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)
0.232	Pk	44.4	1.5	45.9	62.4	-16.5	52.4	-6.5
0.466	Pk	41.7	0.9	42.6	56.6	-14.0	46.6	-4.0
1.090	Pk	40.1	1.0	41.1	56.0	-14.9	46.0	-4.9
2.210	Pk	39.2	1.4	40.6	56.0	-15.4	46.0	-5.4
5.460	Pk	36.8	2.0	38.8	60.0	-21.2	50.0	-11.2
28.440	Pk	30.5	4.4	34.9	60.0	-25.1	50.0	-15.1

TABLE 4-6: NEUTRAL SIDE TRANSMITTING AT 5839 MHZ AND 32-QAM

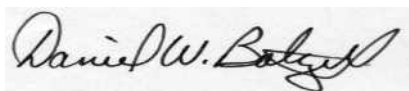
Temperature: 74°F					Humidity: 32%			
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	CISPR B QP Limit (dBuV)	CISPR B QP Margin (dBuV)	CISPR B AV Limit (dBuV)	CISPR B AV Margin (dBuV)
0.231	Pk	42.8	1.5	44.3	62.4	-18.1	52.4	-8.1
0.351	Pk	42.7	1.0	43.7	58.9	-15.2	48.9	-5.2
0.490	Pk	42.6	0.9	43.5	56.2	-12.7	46.2	-2.7
1.270	Pk	40.7	1.1	41.8	56.0	-14.2	46.0	-4.2
5.570	Pk	37.1	2.0	39.1	60.0	-20.9	50.0	-10.9
28.050	Pk	30.2	4.4	34.6	60.0	-25.4	50.0	-15.4

TABLE 4-7: PHASE SIDE TRANSMITTING AT 5839 MHZ AND 32-QAM

Temperature: 74°F					Humidity: 32%			
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)
0.231	Pk	44.6	1.5	46.1	62.4	-16.3	52.4	-6.3
0.348	Pk	42.0	1.0	43.0	59.0	-16.0	49.0	-6.0
0.465	Pk	41.9	0.9	42.8	56.6	-13.8	46.6	-3.8
0.740	Pk	40.1	0.9	41.0	56.0	-15.0	46.0	-5.0
6.160	Pk	37.7	2.1	39.8	60.0	-20.2	50.0	-10.2
24.810	Pk	29.0	4.3	33.3	60.0	-26.7	50.0	-16.7

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



Signature

January 14, 2004
Date of Test

5 RADIATED EMISSION LIMITS RECEIVER/DIGITAL INTERFACE – FCC §15.109; IC RSS-210 §7.3

5.1 RECEIVER/DIGITAL INTERFACE RADIATED EMISSION LIMITS TEST PROCEDURE

Radiated Spurious Emissions applies to harmonics and spurious emissions from oscillators, LO's, and IF's 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 oscillators, IF, LO and up to the 2nd LO were investigated.

Emissions from the digital portion of the EUT were tested and found to comply with the Class B requirements of FCC Part 15.109.

5.2 RECEIVER/DIGITAL INTERFACE RADIATED EMISSIONS TEST EQUIPMENT

TABLE 5-1: RECEIVER/DIGITAL INTERFACE RADIATED EMISSIONS TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20 Hz-2 GHz)	3146A01309	3/5/04
900905	Rhein Tech Labs	PR-1040	Amplifier	900905	9/10/04
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	5/12/04
900969	Hewlett Packard	85650A	Quasi-Peak Adapter	2412A00414	5/12/04
901053	Schaffner Chase	CBL6112B	Bi-Log Antenna (20 MHz - 2 GHz)	2648	7/03/04

5.3 RECEIVER/DIGITAL INTERFACE RADIATED EMISSION LIMITS TEST DATA

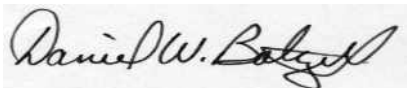
TABLE 5-2: RECEIVER/DIGITAL INTERFACE RADIATED EMISSIONS

Temperature: 51°F					Humidity: 38%				
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)
51.195	Qp	V	270	1.0	54.0	-21.9	32.1	40.0	-7.9
57.339	Qp	V	280	1.0	54.3	-22.6	31.7	40.0	-8.3
104.450	Qp	V	250	1.0	42.0	-17.1	24.9	43.5	-18.6
108.535	Qp	V	185	1.0	42.1	-16.6	25.5	43.5	-18.0
131.071	Qp	V	185	1.0	45.2	-16.2	29.0	43.5	-14.5
172.017	Qp	V	85	1.0	43.8	-18.6	25.2	43.5	-18.3
300.000	Qp	H	300	1.4	42.8	-14.6	28.2	46.0	-17.8
380.000	Qp	H	180	1.0	42.9	-12.4	30.5	46.0	-15.5
740.000	Qp	V	275	1.0	37.3	-5.9	31.4	46.0	-14.6

Note: Quasi-peak adapter settings: RBW/VBW 120kHz/120kHz; 3m EUT to antenna distance

TEST PERSONNEL:

Daniel W. Baltzell
 EMC Test Engineer



Signature

January 13, 2004
 Date of Test

6 RADIATED EMISSION LIMITS; SPURIOUS AND HARMONICS – FCC §15.247; IC RSS-210 §6.3

6.1 RADIATED SPURIOUS EMISSION LIMITS TEST PROCEDURE

Radiated spurious emissions apply 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.

6.2 RADIATED SPURIOUS TEST EQUIPMENT

TABLE 6-1: 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 (4.0-8.2 GHz)	9508-1020	4/10/04
901053	Schaffner & Chase	CBL6112B	Bilog Antenna (20 MHz - 2 GHz)	2648	7/03/04
900905	Rhein Tech Laboratories, Inc.	PR-1040	Pre Amplifier 40dB (10 MHz – 2 GHz)	1006	9/10/04
900325	EMCO	3160-9	Horn Antennas (18 - 26.5 GHz)	9605-1051	3/15/04
900814	Electrometrics	RGA-60	Horn Antenna	2310	2/17/04
900889	Hewlett Packard	85685A	RF Preselector for HP 8566B or 8568B (20 Hz-2 GHz)	3146A01309	3/5/04
900905	Rhein Tech Labs	PR-1040	Amplifier	900905	9/10/04
900931	Hewlett Packard	8566B	Spectrum Analyzer (100 Hz - 22 GHz)	3138A07771	5/12/04
900930	Hewlett Packard	85662A	Spectrum Analyzer Display Section	3144A20839	5/12/04
900932	Hewlett Packard	8449B	Microwave Preamplifier, (1 to 26.5 GHz)	3008A00505	4/22/04
900969	Hewlett Packard	85650A	Quasi-Peak Adapter	2412A00414	5/12/04

6.3 RADIATED EMISSIONS HARMONICS/SPURIOUS TEST DATA

TABLE 6-2: RADIATED EMISSIONS HARMONICS/SPURIOUS 5736 MHz

Operating Frequency (MHz): 5736
Field Strength at 100k RBW 121.1
Limit (dBuV/m) 101.1
Distance (m): 3

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
11472.0	41.6	28.6	15.4	44.0	54.0	-10.0
17208.0	32.7	20.5	22.6	43.1	101.1	-58

TABLE 6-3: RADIATED EMISSIONS HARMONICS/SPURIOUS 5806 MHz

Operating Frequency (MHz): 5806
Field Strength at 100k RBW 121.7
Limit (dBuV/m) 101.7
Distance (m): 3

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
11612.0	42.6	30.6	15.9	46.5	54.0	-7.5
17418.0	33.8	21.3	20.9	42.2	101.7	-59.5

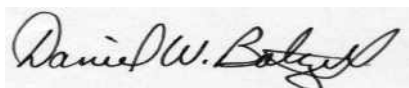
TABLE 6-4: RADIATED EMISSIONS HARMONICS/SPURIOUS 5839 MHz

Operating Frequency (MHz): 5839
Field Strength at 100k RBW 121.7
Limit (dBuV/m) 101.7
Distance (m): 3

Emission Frequency (MHz)	Peak Test Detector (dBuV)	Average Test Detector (dBuV)	Site Correction Factor (dB/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
11678.0	44.4	30.3	16.7	47.0	54.0	-7.0
17517.0	33.4	20.7	21.3	42.0	101.7	-59.7

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



Signature

January 13, 2004
Date of Test

7 MODULATED BANDWIDTH - §15.247(A)(2)

7.1 MODULATED BANDWIDTH TEST PROCEDURE – MINIMUM 6 DB BANDWIDTH

The minimum 6 dB bandwidths per FCC 15.247 (a)(2) were measured using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz. The minimum 6 dB bandwidths for the new 32 QAM modulation are presented, respectively, in Table 7-2 and 7-3.

7.2 BANDWIDTH TEST EQUIPMENT

TABLE 7-1: BANDWIDTH TEST EQUIPMENT

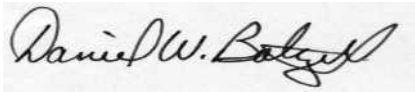
RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900931	Hewlett Packard	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771	5/12/2004

7.3 BANDWIDTH TEST DATA

TABLE 7-2: MINIMUM 6 dB BANDWIDTH TEST DATA FOR 32-QAM

FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)
5736	11.08
5806	10.84
5839	10.98

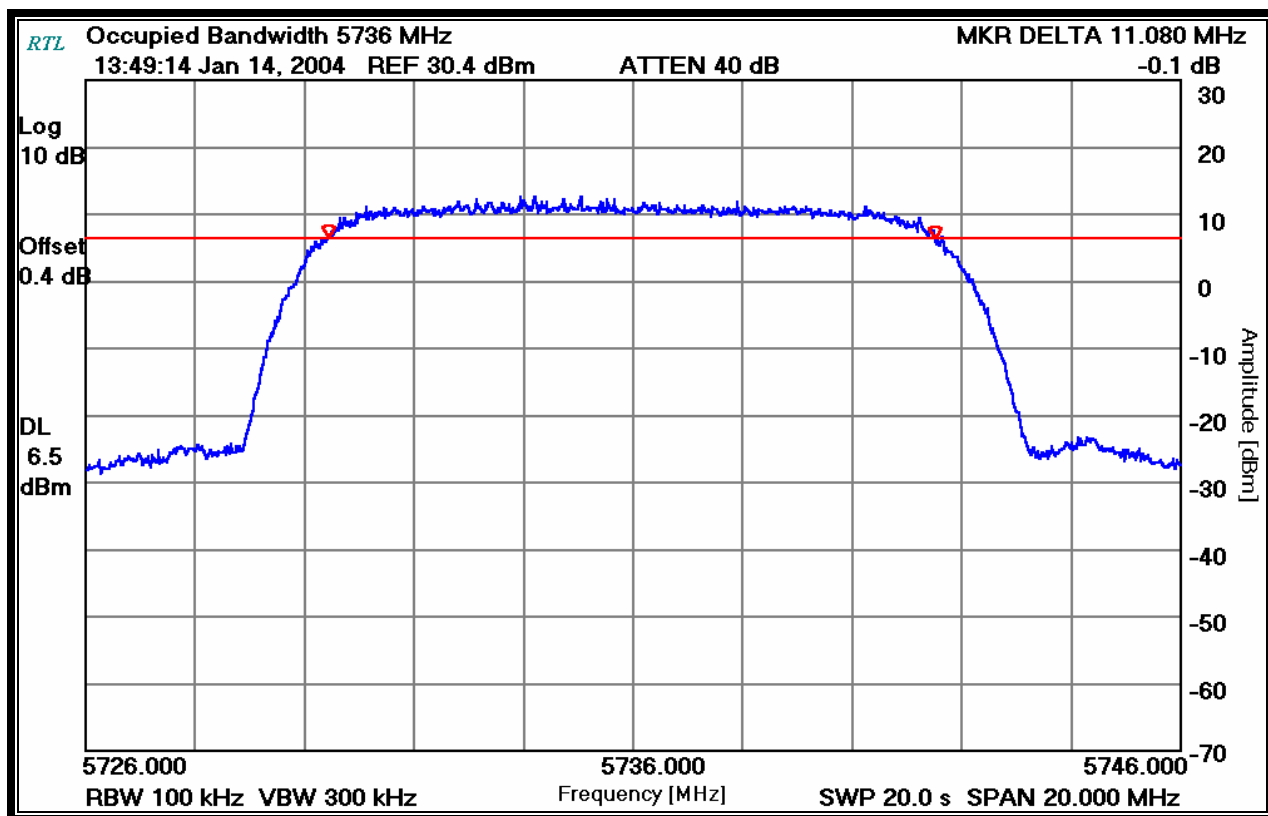
TEST PERSONNEL:

Daniel W. Baltzell EMC Test Engineer	 Signature	January 14, 2004 Date of Test
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7.4 MODULATED BANDWIDTH PLOTS

Frequency (MHz): 5736
Resolution Bandwidth (kHz): 100
Video Bandwidth (kHz): 300
Sweep Time (s): 20

PLOT 7-1: MODULATED BANDWIDTH 5736 MHz



TEST PERSONNEL:

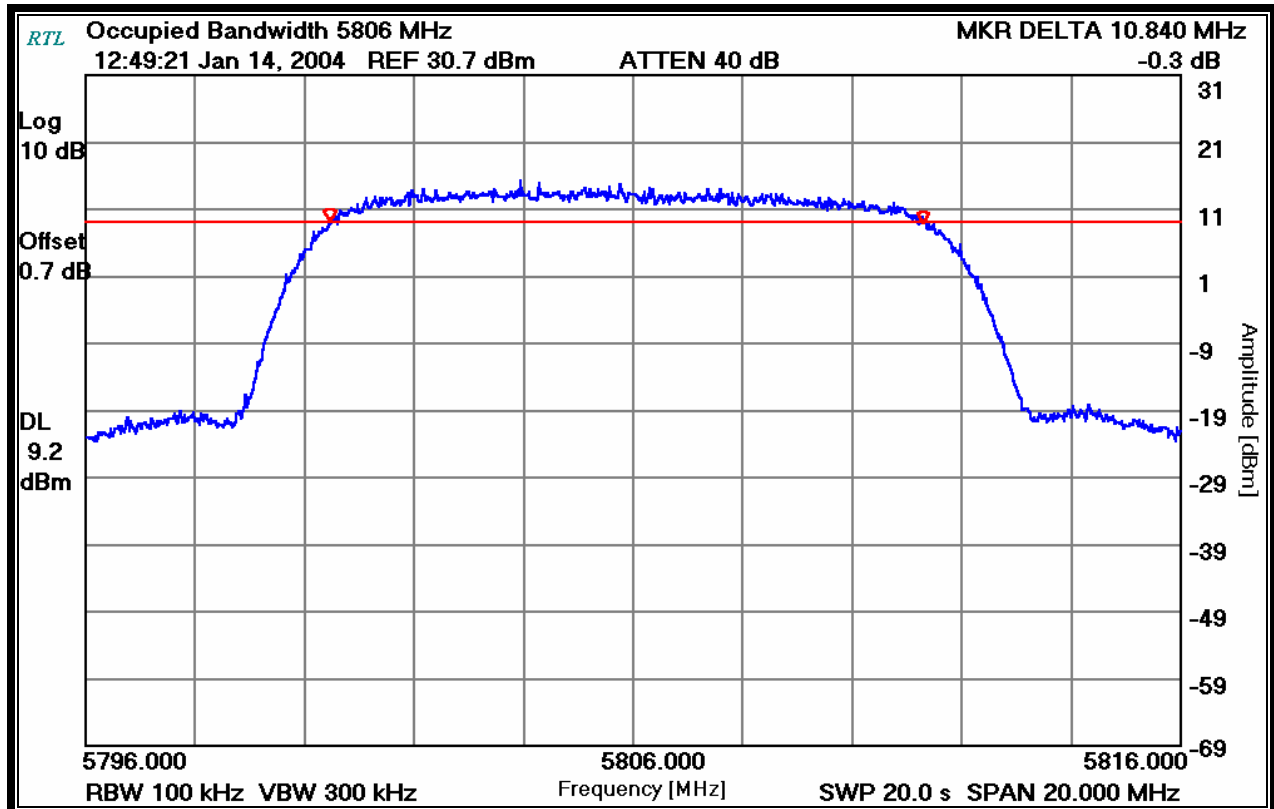
Daniel W. Baltzell
EMC Test Engineer

Signature

January 14, 2004
Date of Test

Frequency (MHz): 5806
Resolution Bandwidth (kHz): 100
Video Bandwidth (kHz): 300
Sweep Time (s): 20

PLOT 7-2: MODULATED BANDWIDTH 5806 MHz



TEST PERSONNEL:

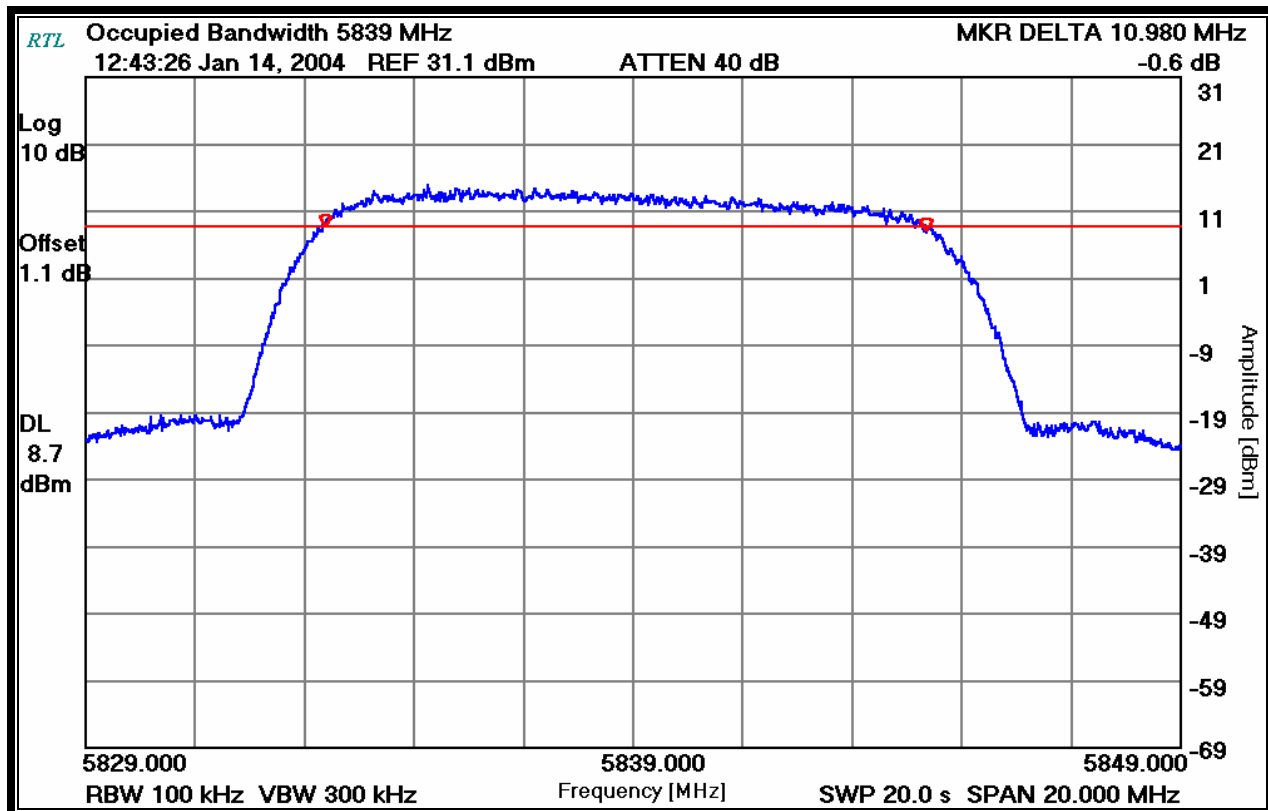
Daniel W. Baltzell
EMC Test Engineer

Signature

January 14, 2004
Date of Test

Frequency (MHz): 5839
Resolution Bandwidth (kHz): 100
Video Bandwidth (kHz): 300
Sweep Time (s): 20

PLOT 7-3: MODULATED BANDWIDTH 5839 MHz



TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer

Signature

January 14, 2004
Date of Test

8 PEAK OUTPUT POWER - FCC §15.247(B)(3), (B)(4)(II); IC RSS-210 §6.2.2(O)(B)

8.1 POWER OUTPUT TEST PROCEDURE

A conducted power measurement of the EUT was taken using an Agilent 4416A EPM-P Series Power Meter with a E9323A Peak and Average Power Sensor.*

*This measurement was verified using the conducted power substitution method.

8.2 POWER OUTPUT TEST EQUIPMENT

TABLE 8-1: POWER 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

8.3 POWER OUTPUT TEST DATA

TABLE 8-2: POWER OUTPUT TEST DATA

FREQUENCY (MHZ)	PEAK POWER CONDUCTED OUTPUT (dBm) 32-QAM
5736.0	23.2
5806.0	23.0
5839.0	22.8

TEST PERSONNEL:

Rachid Sehb		January 12, 2004
EMC Test Engineer	Signature	Date Of Test

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 emissions per FCC 15.247(c) were measured from the EUT antenna port using a 50 ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 300 kHz. The modulated carrier was identified at 5736, 5806, and 5839 MHz. No other harmonics or spurs were found within 20 dB of the carrier level from 9 kHz to 40 GHz. See the following tables for results.

9.2 ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST EQUIPMENT

TABLE 9-1: ANTENNA CONDUCTED SPURIOUS EMISSIONS TEST EQUIPMENT

RTL ASSET #	MANUFACTURER	MODEL	PART TYPE	SERIAL NUMBER	CALIBRATION DUE DATE
900931	Hewlett Packard	8566B	Spectrum Analyzer (100Hz – 22 GHz)	3138A07771	5/12/2004

9.3 ANTENNA CONDUCTED SPURIOUS EMISSIONS DATA FOR 32-QAM

TABLE 9-2: ANTENNA CONDUCTED SPURIOUS EMISSIONS 5736 MHz

Operating Frequency (MHz): 5736
Peak measurement at the Antenna Port (dBm): 11.5
Limit (dBm): -8.5

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limit (dBc)	Margin (dB)
11472.0	-85.8	97.3	20.0	-77.3
17208.0	-86.5	98.0	20.0	-78.0

TABLE 9-3: ANTENNA CONDUCTED SPURIOUS EMISSIONS 5806 MHz

Operating Frequency (MHz): 5806
Peak measurement at the Antenna Port (dBm): 11.7
Limit (dBm): -8.3

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limit (dBc)	Margin (dB)
11612.0	-87.6	99.3	20.0	-79.3
17418.0	-86.9	98.6	20.0	-78.6

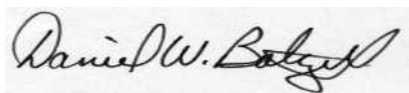
TABLE 9-4: ANTENNA CONDUCTED SPURIOUS EMISSIONS 5841 MHz

Operating Frequency (MHz): 5839
Peak measurement at the Antenna Port (dBm): 12.8
Limit (dBm): -7.2

Frequency (MHz)	Measured Level (dBm)	Measured Level (dBc)	Limit (dBc)	Margin (dB)
11678.0	-85.4	98.2	20.0	-78.2
17517.0	-86.4	99.2	20.0	-79.2

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



Signature

January 14, 2004
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 3kHz, and the sweep time set at 1500 seconds. The test was performed as a conducted test. The spectral lines were resolved for the modulated carriers at 5736 MHz, 5806 MHz, and 5839 MHz. These levels are well below the +8dBm limit. See the power spectral density table and plots that follow.

10.2 POWER SPECTRAL DENSITY TEST DATA

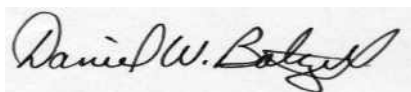
Operating Frequency (MHz): 5736 , 5806, and 5839
Measured Peak Conducted Power (dBm): 23.2, 23.0, 22.8
Power Spectral Density Limit (dBm): +8

TABLE 10-1: POWER SPECTRAL DENSITY

FREQUENCY (MHz)	POWER SPECTRAL DENSITY (dBm) (LIMIT = +8dBm)
5736.0	-3.4
5806.0	-1.7
5839.0	-1.2

TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer



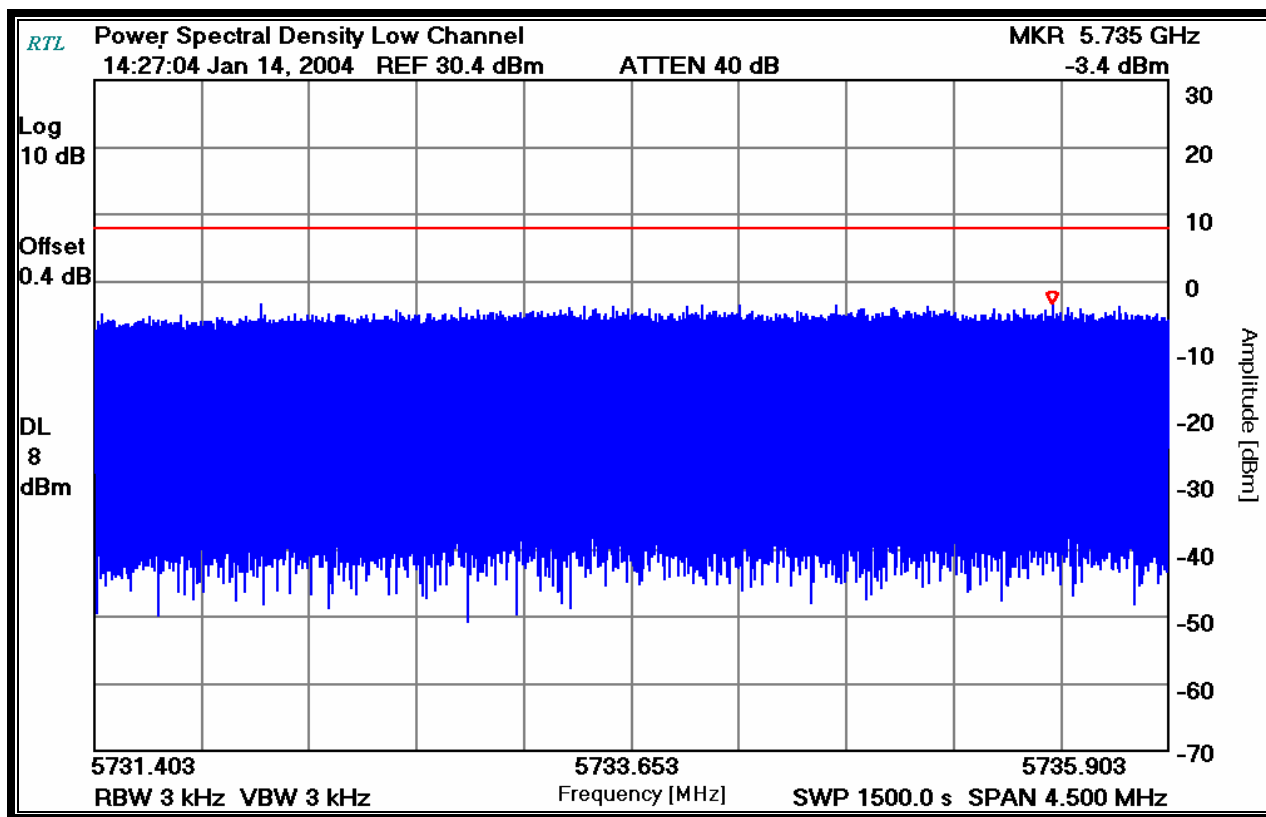
Signature

January 14, 2004
Date of Test

10.3 POWER SPECTRAL DENSITY PLOTS

Operating Frequency (MHz): 5736
 Measured Peak Conducted Power (dBm): 23.2
 Bandwidth Resolution (kHz): 3
 Bandwidth Video (kHz): 3
 Sweep Time (s): 1500

PLOT 10-1: POWER SPECTRAL DENSITY 5736 MHz



TEST PERSONNEL:

Daniel W. Baltzell
 EMC Test Engineer

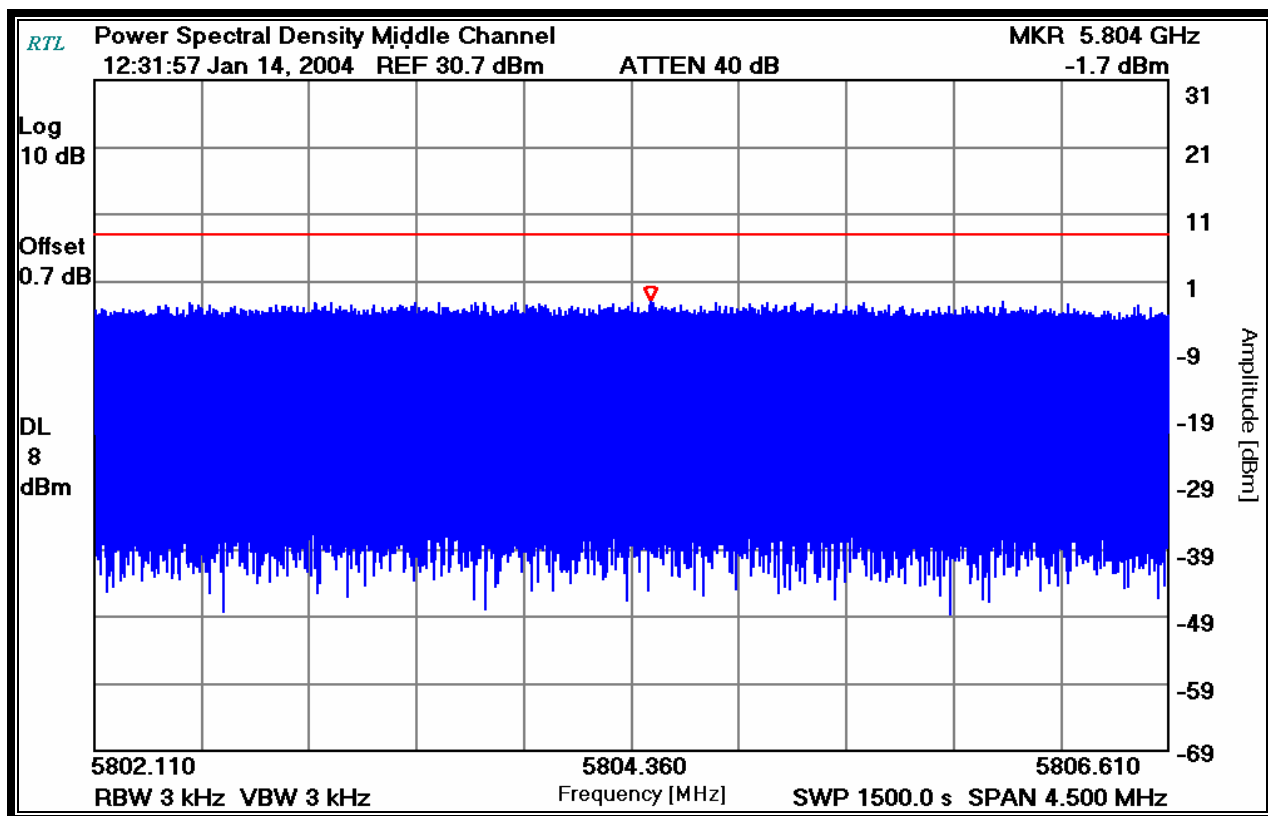
Daniel W. Baltzell

Signature

January 14, 2004
 Date of Test

Operating Frequency (MHz): 5806
 Measured Peak Conducted Power (dBm): 23.0
 Bandwidth Resolution (kHz): 3
 Bandwidth Video (kHz): 3
 Sweep Time (s): 1500

PLOT 10-2: POWER SPECTRAL DENSITY 5806 MHz



TEST PERSONNEL:

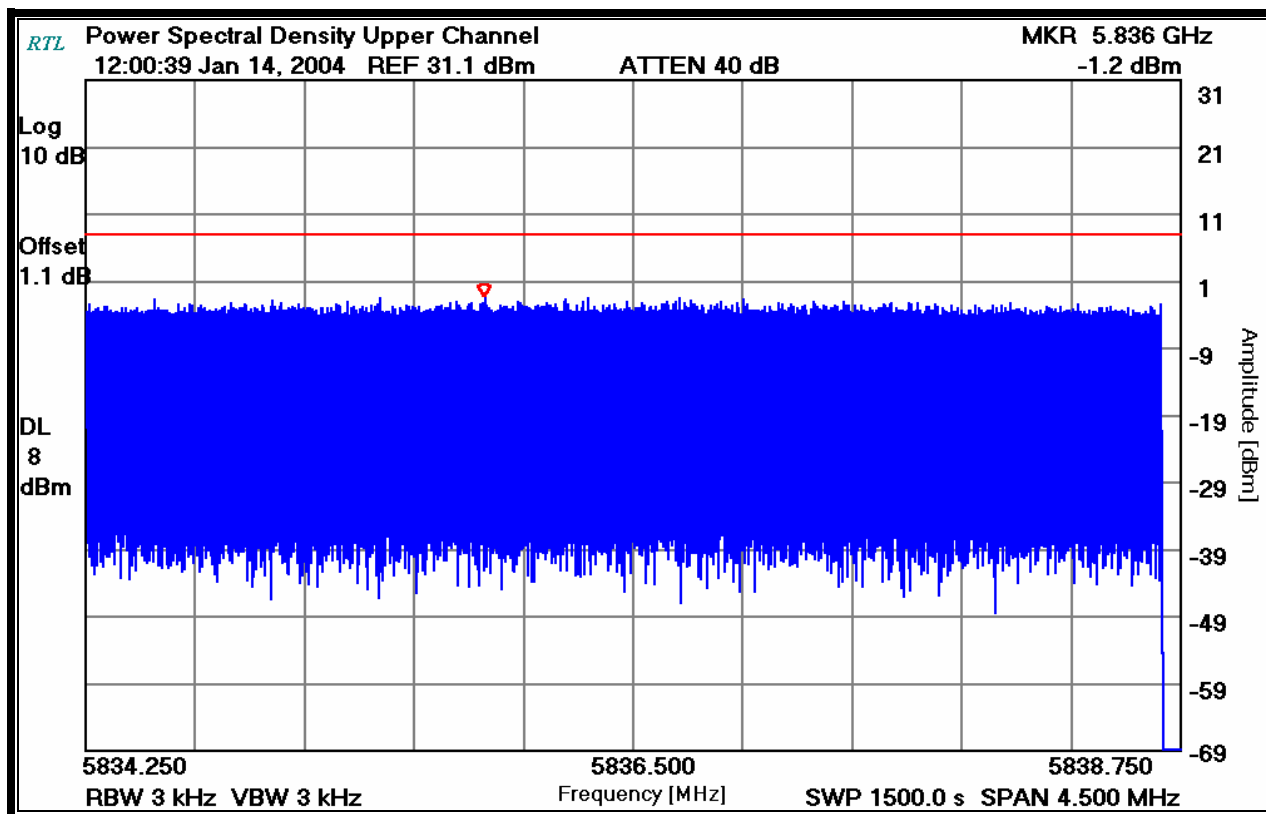
Daniel W. Baltzell
 EMC Test Engineer

Signature

January 14, 2004
 Date of Test

Operating Frequency (MHz): 5839
Measured Peak Conducted Power (dBm): 22.8
Bandwidth Resolution (kHz): 3
Bandwidth Video (kHz): 3
Sweep Time (s): 1500

PLOT 10-3: POWER SPECTRAL DENSITY 5839 MHz



TEST PERSONNEL:

Daniel W. Baltzell
EMC Test Engineer

Signature

January 14, 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 (100Hz – 22 GHz)	3138A07771	5/12/04

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

Client: Stratex Networks
FCC: Part 15.247
Industry Canada: RSS-210
FCC ID: ONJ-3ECJ68A4D
Model Name: Velox LE 5850

11 CONCLUSION

The data in this measurement report shows that the Stratex Networks, Model Name: Velox LE 5850, FCC ID: ONJ-3ECJ68A4D, when used with the Harris Corporation MT-20004 antenna, complies with all the requirements of Parts 2 and 15 of the FCC Rules and Industry Canada RSS-210.