RHEIN TECH LABORATORIES, INC.

Engineering Solutions & Electromagnetic Compatibility Services

Limited Modular Approval Certification Application Report
FCC Part 15.247 & Industry Canada RSS-210

Test Lab:		Applicant:	
Rhein Tech Laboratories, Inc. Tel: 703-689-0368 360 Herndon Parkway Fax: 703-689-2056 Suite 1400 www.rheintech.com Herndon, VA 20170 E-Mail: atcbinfo@rheintech.com		Fleetwood Group, Inc. Tel: 616-820-8271 11832 James Street Fax: 616-820-8300 Holland, MI 49424 Contact: Will Buehler	
FCC ID/ IC:	FBRV2420L/ 1859A-V2420L	**Test Report Date:**	March 23, 2011
Platform:	N/A	**RTL Work Order #:**	2010233
Model:	V2420L	**RTL Quote #:**	QRTL10-183B
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:	DSS – Part 15 Spread Spectrum Transmitter		
FCC Rule Part(s)/Guidance:	FCC Rules Part 15.247: Operation within the bands 920-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz Direct Sequence System (10-01-10), DA 00-705		
Industry Canada:	RSS-210 Issue 8: License-Exempt Radio Apparatus (All Frequency Bands): Category I Equipment		
Digital Interface Information:	Digital Interface was found to be compliant		

Frequency Range (MHz)	Output Power* (W)	Frequency Tolerance	Emission Designator
2401 – 2475	0.051	N/A	1M00FXD

** power is peak conducted*

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15 and ANSI C63.4.

Signature: _____ Date: March 23, 2011

Typed/Printed Name: Desmond A. Fraser Position: President

These tests are accredited and meet the requirements of ISO/IEC 17025 as verified by ANSI-ASQ National Accreditation Board/ACLASS. Refer to certificate and scope of accreditation AT-1445.

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1 General Information

1.1 Scope

This is an original certification application test report for Limited Modular Approval.

Applicable Standards:

- 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.
- Industry Canada RSS-210: Low Power License-Exempt Communications Devices

1.2 Description of EUT

Equipment Under Test	Link Transceiver
Model	V2420L
Power Supply	115VAC
Modulation Type	GFSK (250 Kbps and 1 Mbps rates)
Frequency Range	2401 – 2475 MHz
Antenna Connector Type	PCB Trace
Antenna Type	Internal

1.3 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).

1.4 Related Submittal(s)/Grant(s)

This is an original application for Limited Modular Approval for Fleetwood Group, Inc., Model: V2420L, FCC ID: FBRV2420L, IC: 1859A-V2420L.

1.5 Modifications

No modifications were made to the equipment during testing in order to achieve compliance with these standards.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested:

Table 2-1: Channels Tested

Channel	Frequency
Low	2401
Middle	2437
High	2475

2.2 Exercising the EUT

The EUT was supplied with test firmware programmed with a high, mid, and low channel for testing as well as a low, mid, and high power. The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted. Four power levels were available for testing.

2.3 Test Result Summary

Table 2-2: Test Result Summary – FCC Part 15, Subpart C (Section 15.247)

Standard	Test	Pass/Fail or N/A
FCC 15.207	AC Power Conducted Emissions	Pass
FCC 15.209	Radiated Emissions	Pass
FCC 15.247(b)	Maximum Peak Power Output	Pass
FCC 15.247(d)	Antenna Conducted Spurious Emissions	Pass
FCC 15.247(d)	Band Edge Measurement	Pass
FCC 15.247(a)(1)	Carrier Frequency Separation	Pass
FCC 15.247(a)(1)(ii)	20 dB Bandwidth	Pass
FCC 15.247(a)(1)(iii)	Hopping Characteristics	Pass
FCC 15.247(a)(1)(iii)	Average Time of Occupancy	Pass

2.4 Test System Details

The test samples were received on February 21, 2011. The FCC identifiers for all applicable equipment, plus descriptions of all cables used in the tested system, are identified in the following table.

Table 2-3: Equipment Under Test

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Link Transceiver	Fleetwood Group, Inc.	V2420L	N/A	FBRV2420L	N/A	20007

2.5 Configuration of Tested System

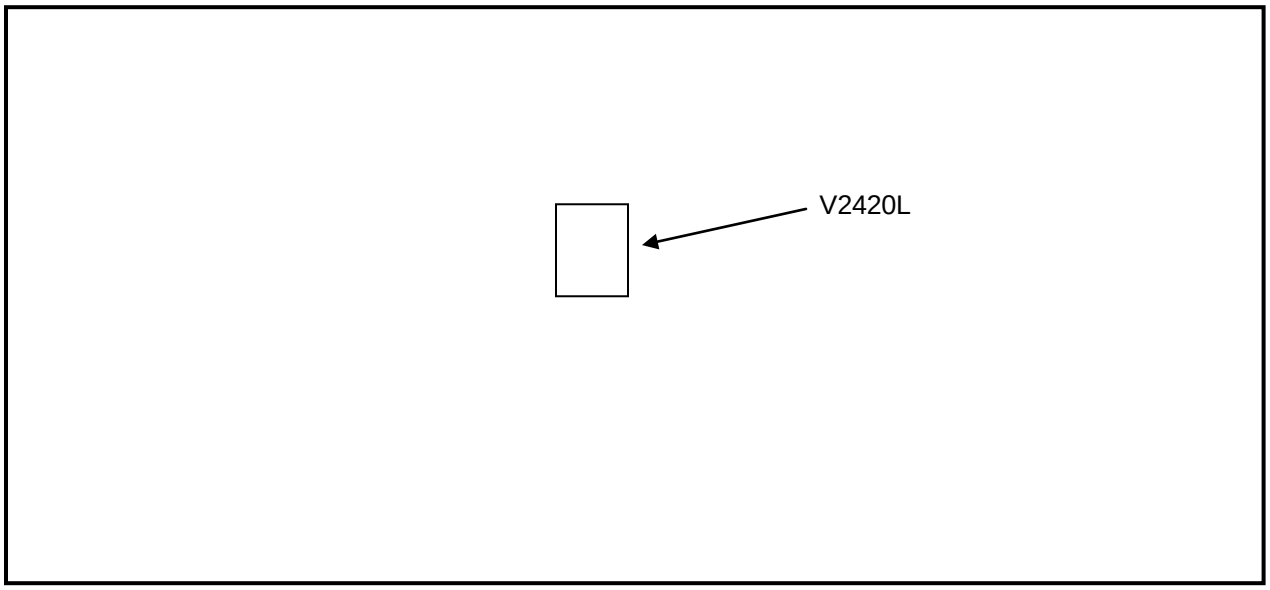


Figure 2-1: Configuration of System under Test

3 Peak Output Power – FCC §15.247(b)(1); RSS-210 §A8.4(2)

3.1 Power Output Test Procedure

A power measurement of the EUT was taken using an Agilent E9323A power meter.

Table 3-1: Power Output Test Equipment

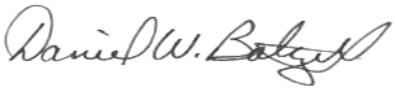
RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901356	Agilent Technologies	E9323A	Power Sensor	31764-264	1/11/12
901184	Agilent Technologies	E4416A	EPM-P Power Meter, single channel	GB41050573	1/11/12

3.2 Power Output Test Data

Table 3-2: Power Output Test Data

Frequency (MHz)	Level Measured (dBm)
2401	17.1
2437	15.7
2475	13.5

Test Personnel:



Daniel W. Baltzell		February 22, 2011
EMC Test Engineer	Signature	Date of Test

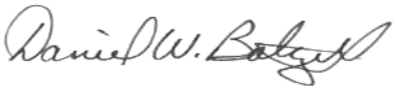
4 Antenna Conducted Spurious Emissions – FCC §15.247(d); RSS-210 §A8.5

No spurious emissions were found within 20 dB of the limit, therefore no emissions are reported.

Table 4-1: Antenna Conducted Spurious Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	11/11/11

Test Personnel:



Daniel W. Baltzell		February 25, 2011
EMC Test Engineer	Signature	Date of Test

5 Band-Edge Compliance of RF Conducted Emissions – FCC §15.247(d); RSS-Gen

5.1 Band Edge Test Procedure

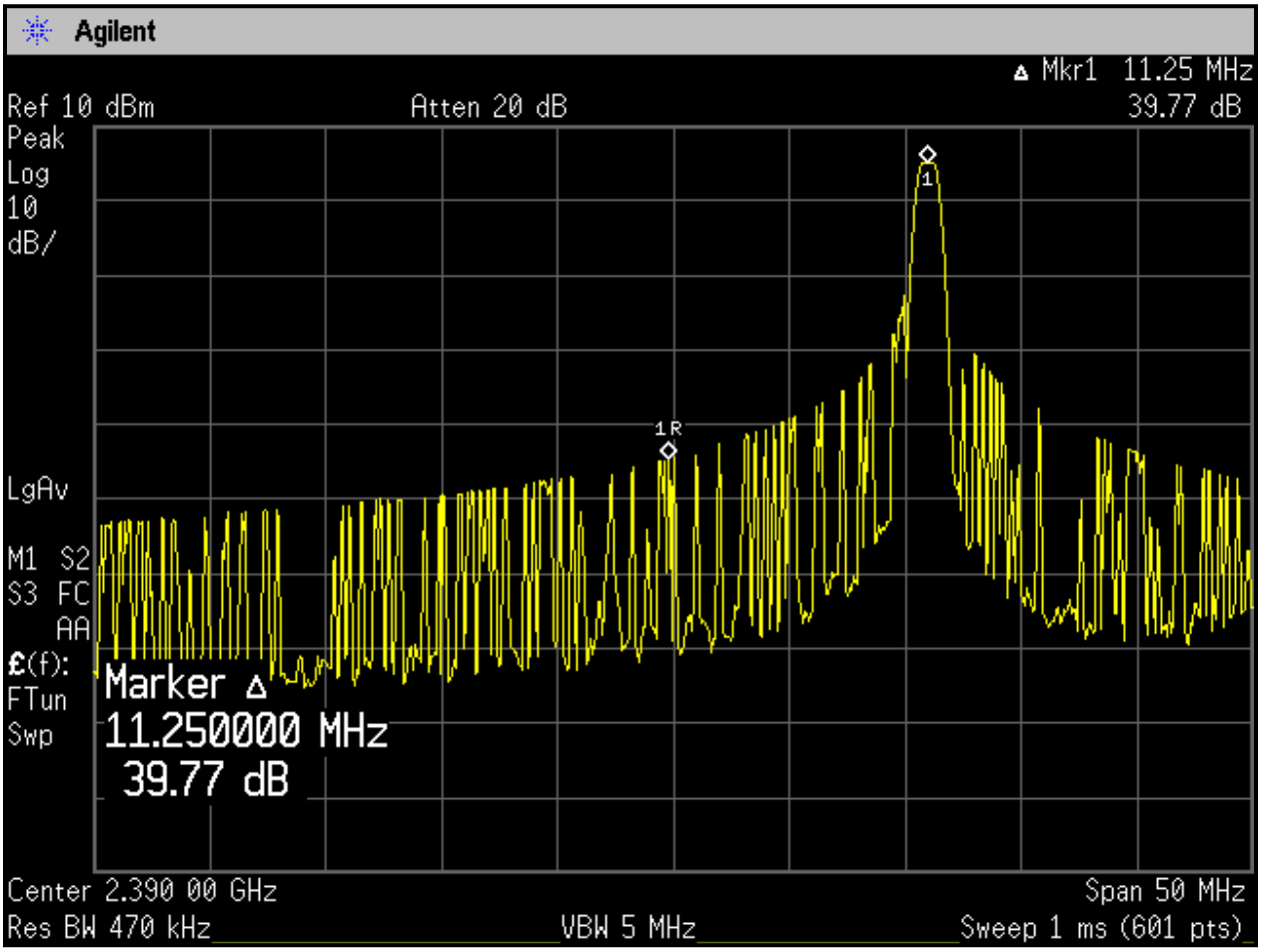
The EUT was connected to the spectrum analyzer through suitable attenuation. The span was set wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation. The spectrum analyzer was set to the following:

RBW > = 1% of the span
VBW > = RBW
Sweep = auto
Detector function = peak
Trace = max hold

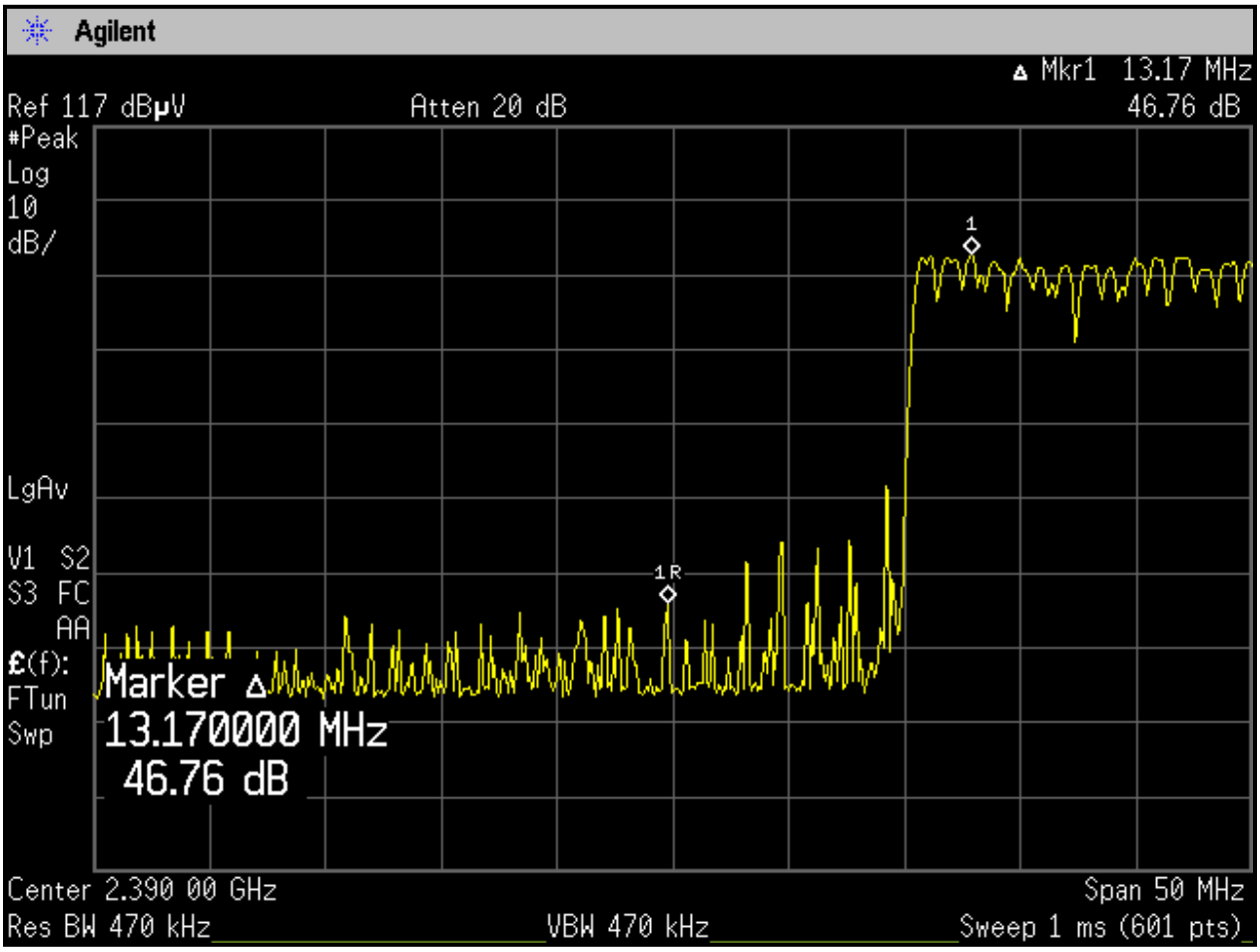
The trace was allowed to stabilize. The marker was set on the emission at the band edge. The marker-delta was used to show the delta between the maximum in-band emission and the emission at the band edge, and was compared to the 20 dBc requirement of 15.247(d) (when using peak emissions). This measurement was taken in both fixed frequency and hopping modes.

5.2 Test Results

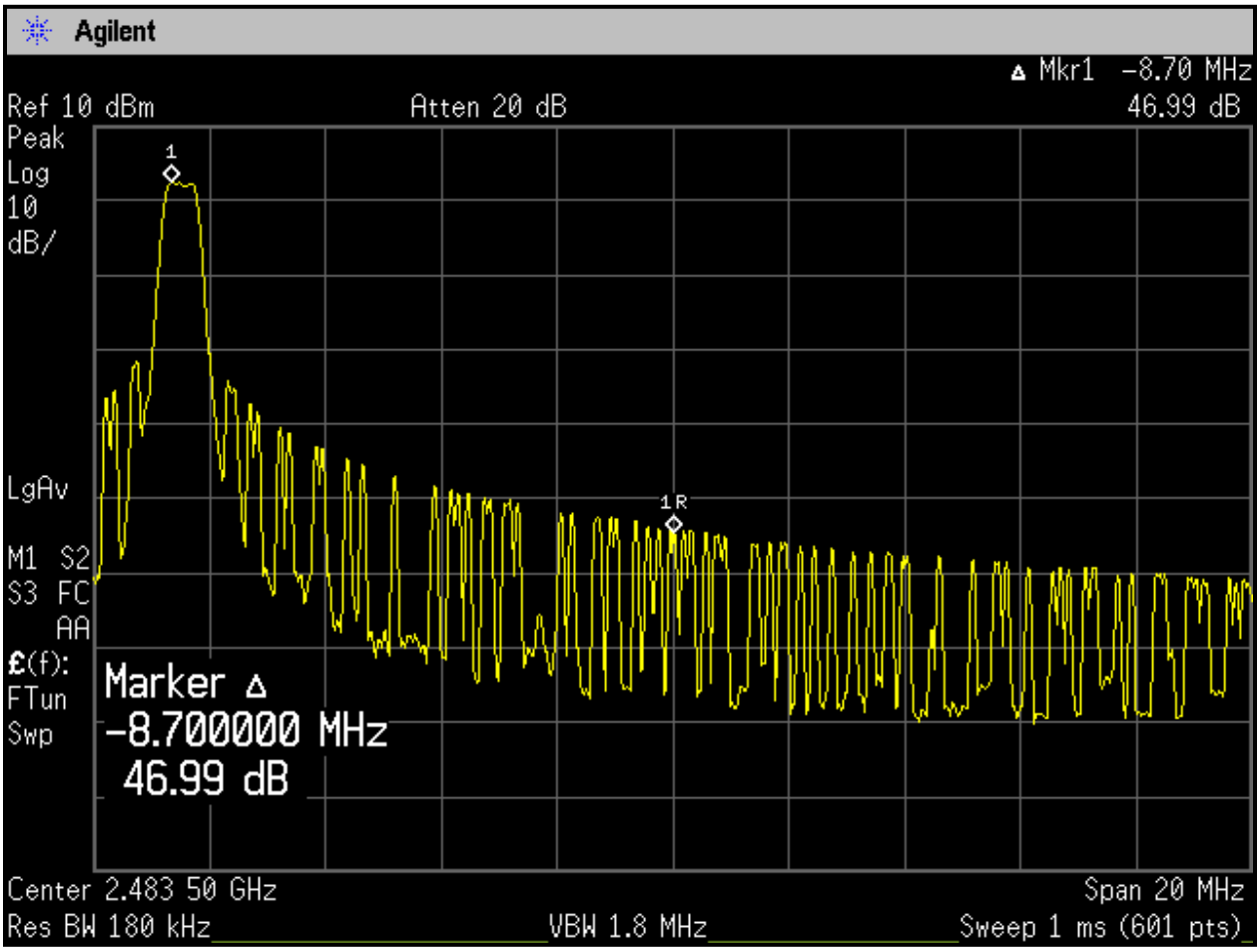
Plot 5-1: Lower Band Edge TX Frequency; 2401 MHz – Fixed Frequency



Plot 5-2: Lower Band Edge TX Frequency; 2401 MHz – Hopping



Plot 5-3: Upper Band Edge TX Frequency; 2475 MHz – Fixed Frequency



Plot 5-4: Upper Band Edge TX Frequency; 2475 MHz – Hopping

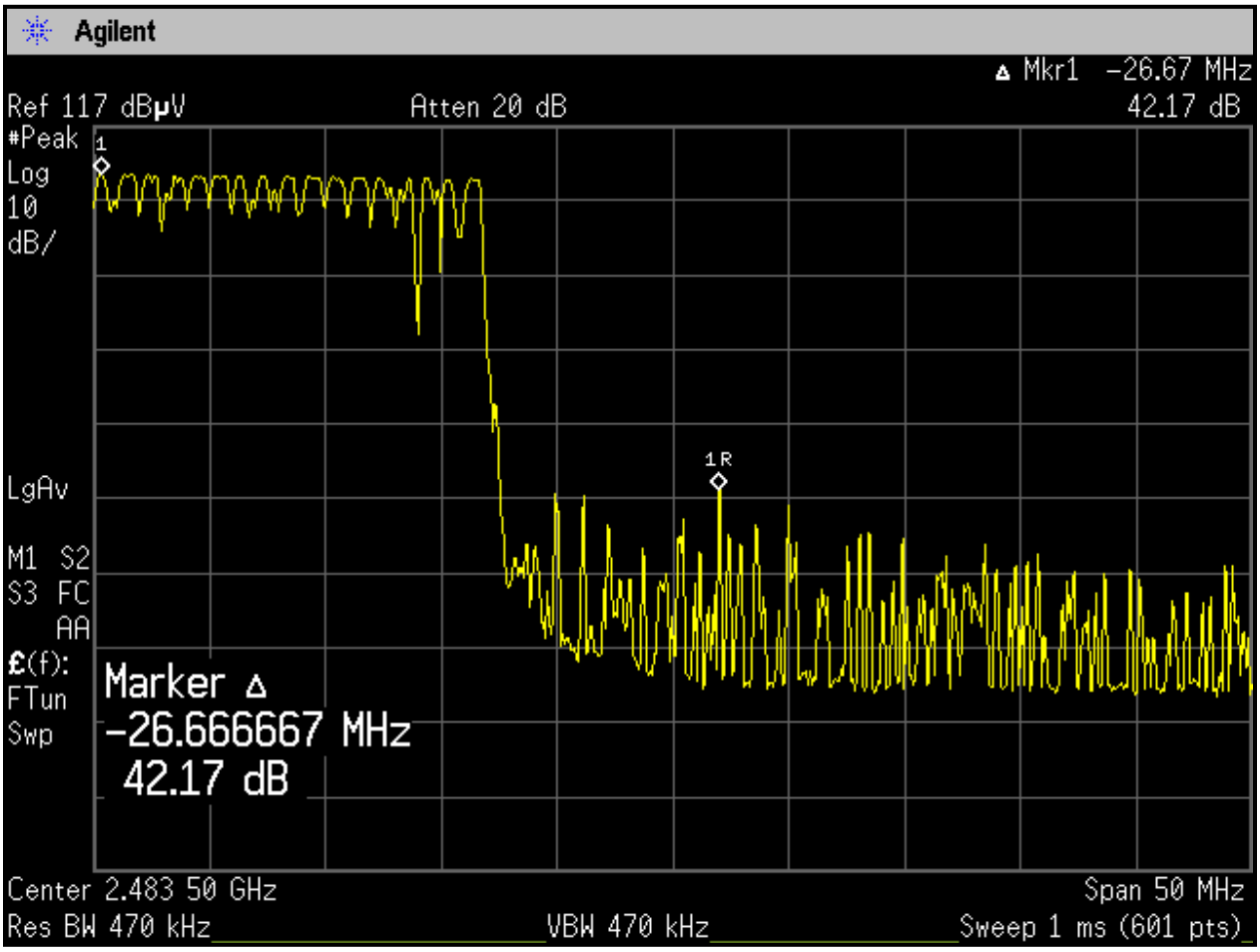


Table 5-1: Radiated Band Edge Emissions Test Data

Emission Frequency (MHz)	Peak (dBuV/m) (1 MHz RBW/ VBW)	Calculated Average (dBuV/m) (-20.9, 9% d.c.)	Delta (from above plots)	Average Limit (dBuV/m)	Average Margin (dB)
2401.0	114.4	93.5	39.8	54.0	-0.3
2475.0	112.8	91.9	42.2	54.0	-4.3

Table 5-2: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901516	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF cable, 20'	NA	10/19/11
901517	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	10/19/11
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	2/22/12
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	11/11/11
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	6/13/11

Test Personnel:

Daniel W. Baltzell		February 24-25, 2011
EMC Test Engineer	Signature	Dates of Tests

6 20 dB Bandwidth – FCC §15.247(a)(1)(ii); IC RSS-210 §A8.1

6.1 20 dB Bandwidth Test Procedure

The minimum 20 dB bandwidths per RSS-210 were measured using a 50 ohm spectrum analyzer. The carrier was adjusted on the analyzer so that it was displayed entirely on the spectrum analyzer. The sweep time was set to auto and allowed through several sweeps with the max hold function used in peak detector mode. The resolution bandwidth was set to 100 kHz, and the video bandwidth set at 1 MHz. The minimum 20 dB bandwidths were measured using the spectrum analyzer automated -20 dB selection. The table below contains the bandwidth measurement results.

Table 6-1: 20 dB Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	11/11/11
900948	Weinschel Corp	47-10-43	10 dB Attenuator	BM1487	2/14/12

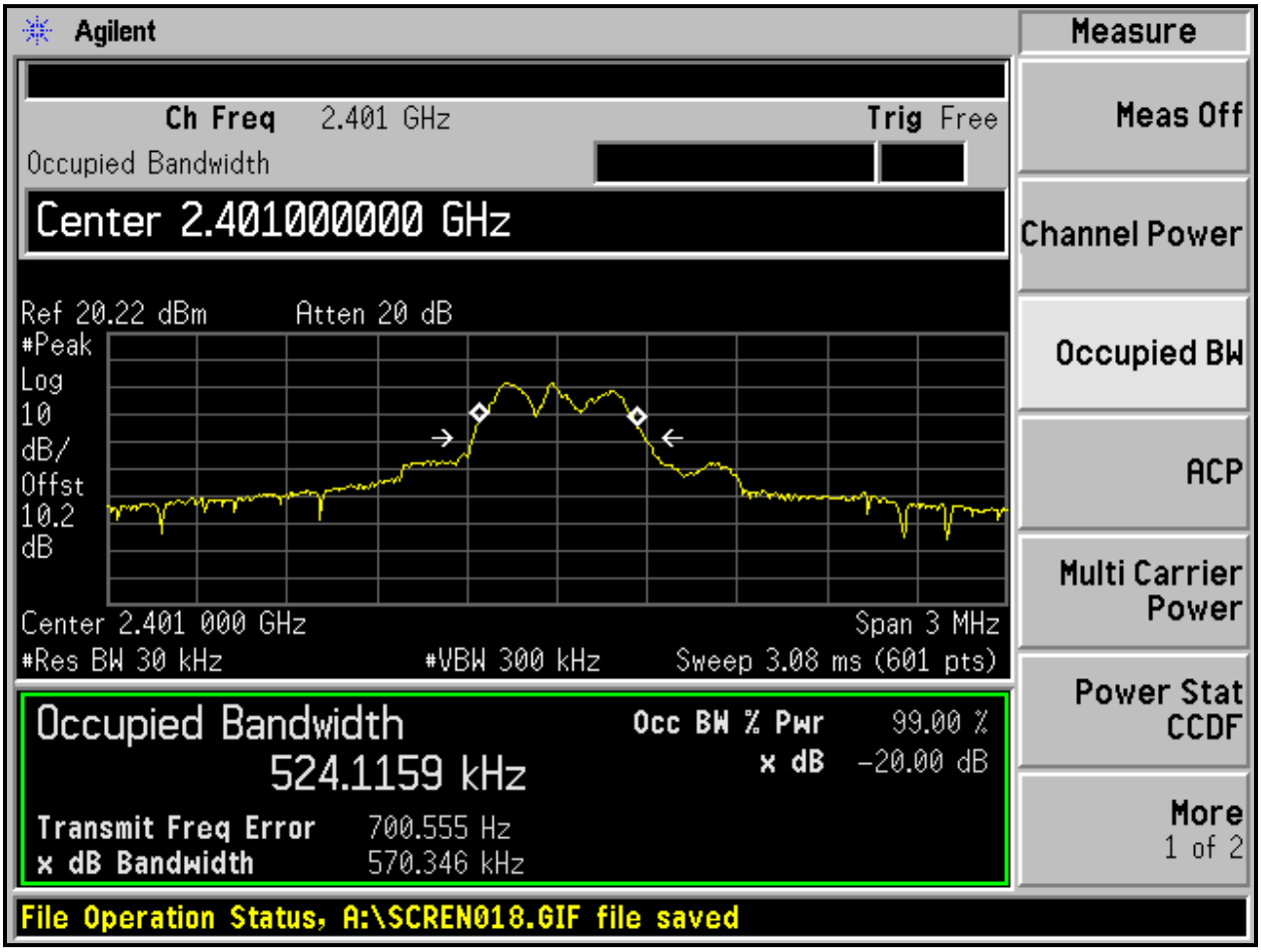
6.2 20 dB Modulated Bandwidth Test Data

Table 6-2: Minimum 20 dB Modulated Bandwidth Test Data

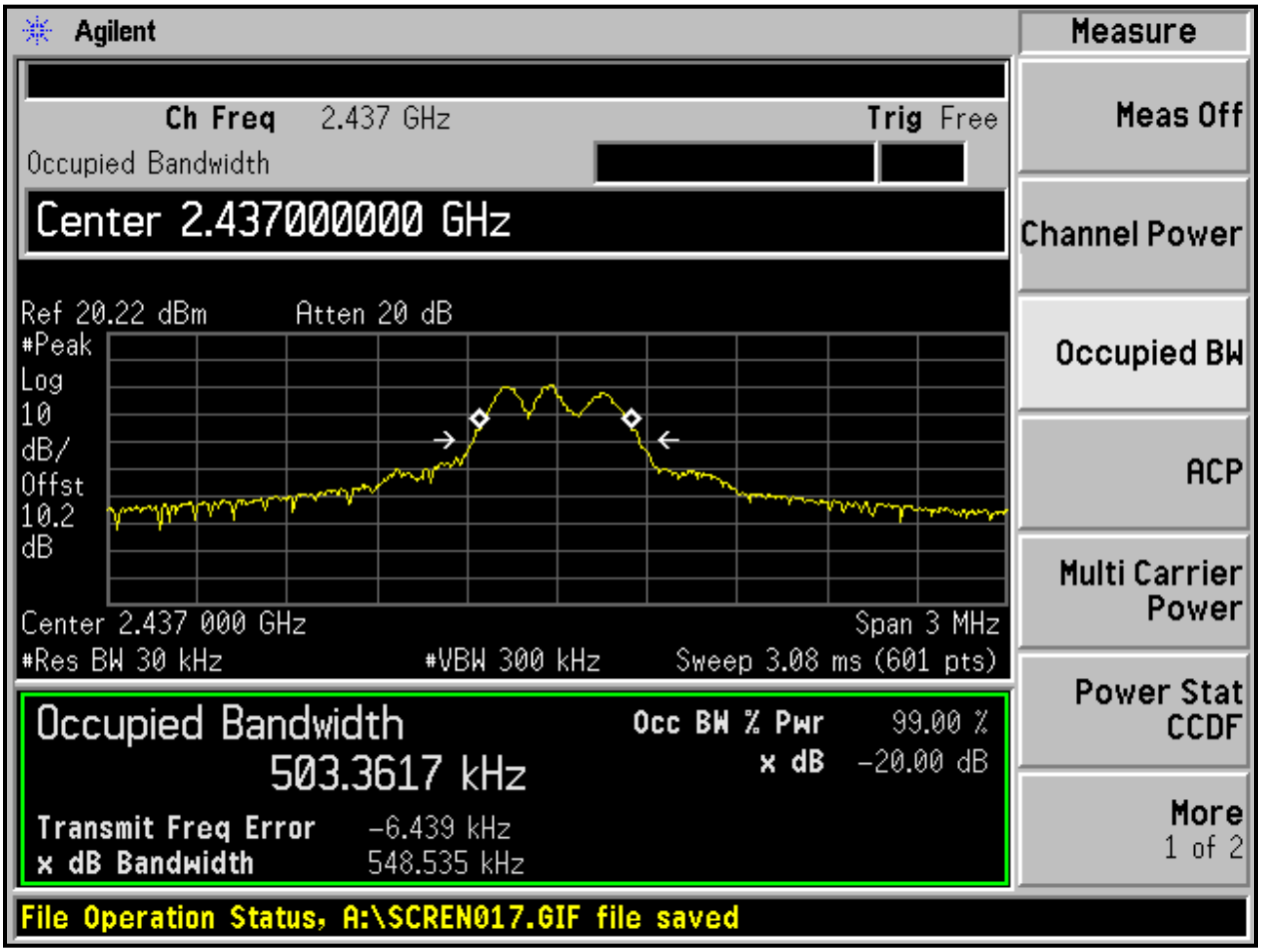
Frequency (MHz)	250 kbps - 20 dB Bandwidth (kHz)	1 Mbps - 20 dB Bandwidth (MHz)
2401	570.4	817.3
2437	548.5	828.8
2475	568.1	923.7

6.3 20 dB Bandwidth Plots

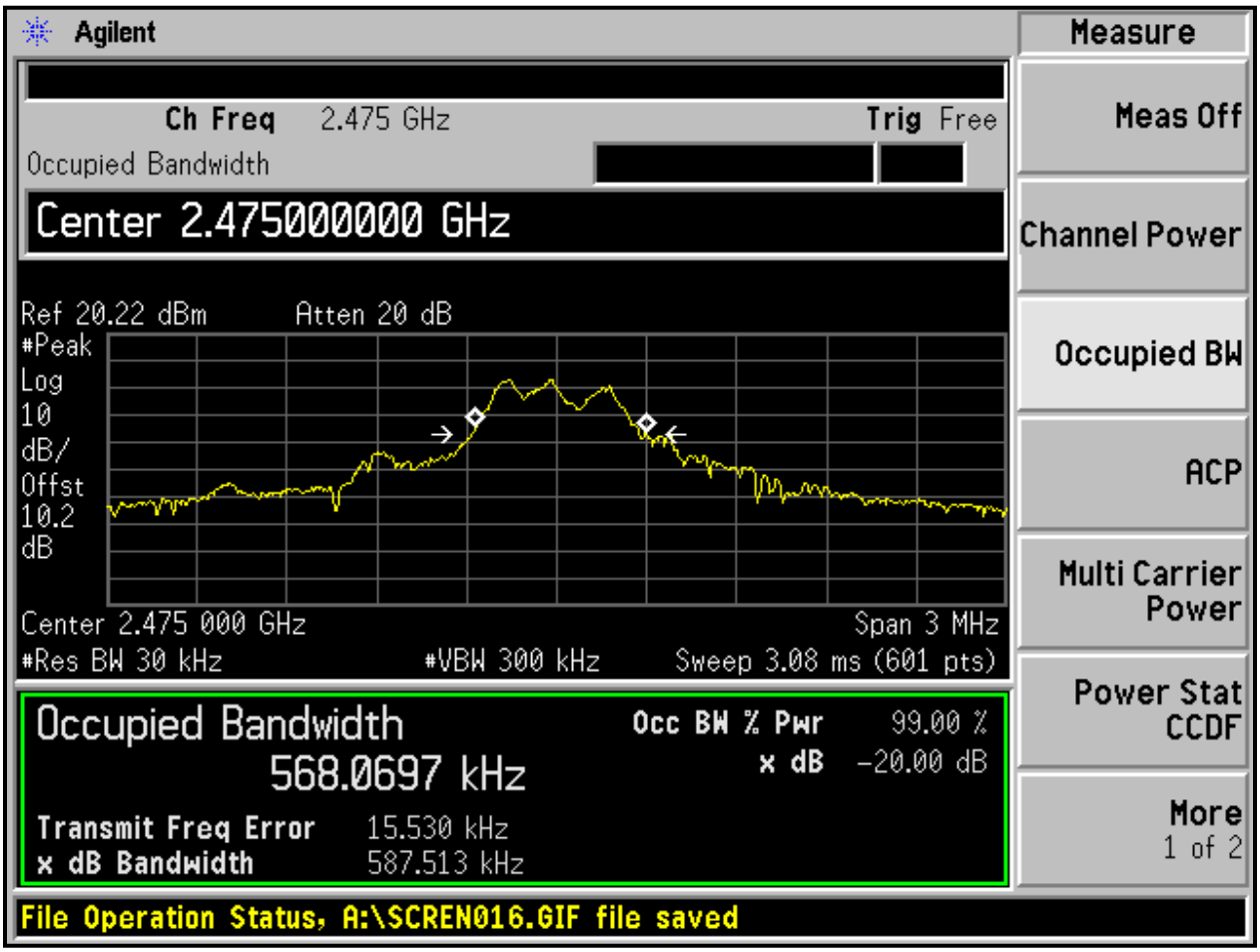
Plot 6-1: 20 dB Bandwidth - 2401 MHz – 250 kbps



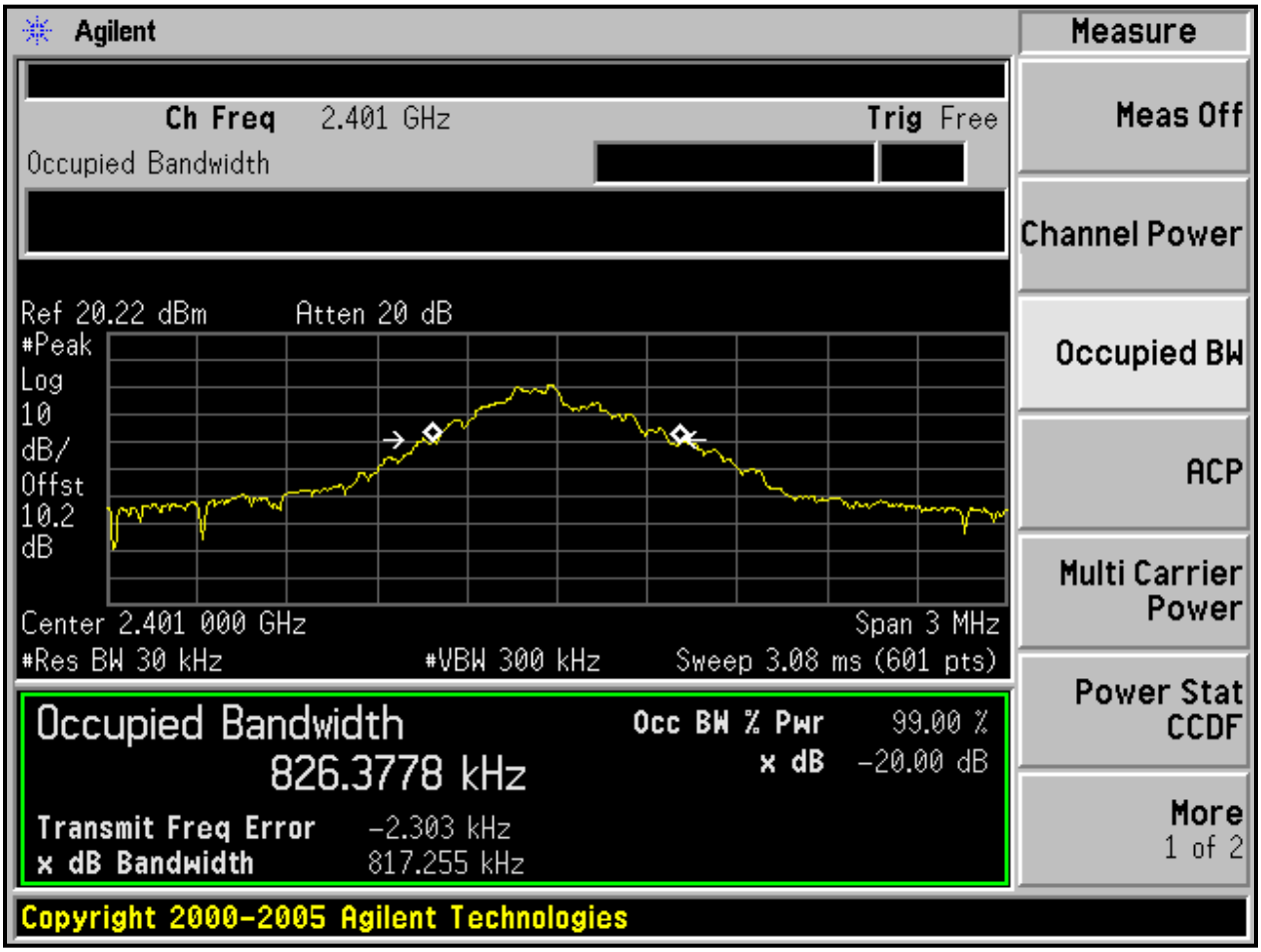
Plot 6-2: 20 dB Bandwidth - 2437 MHz – 250 kbps



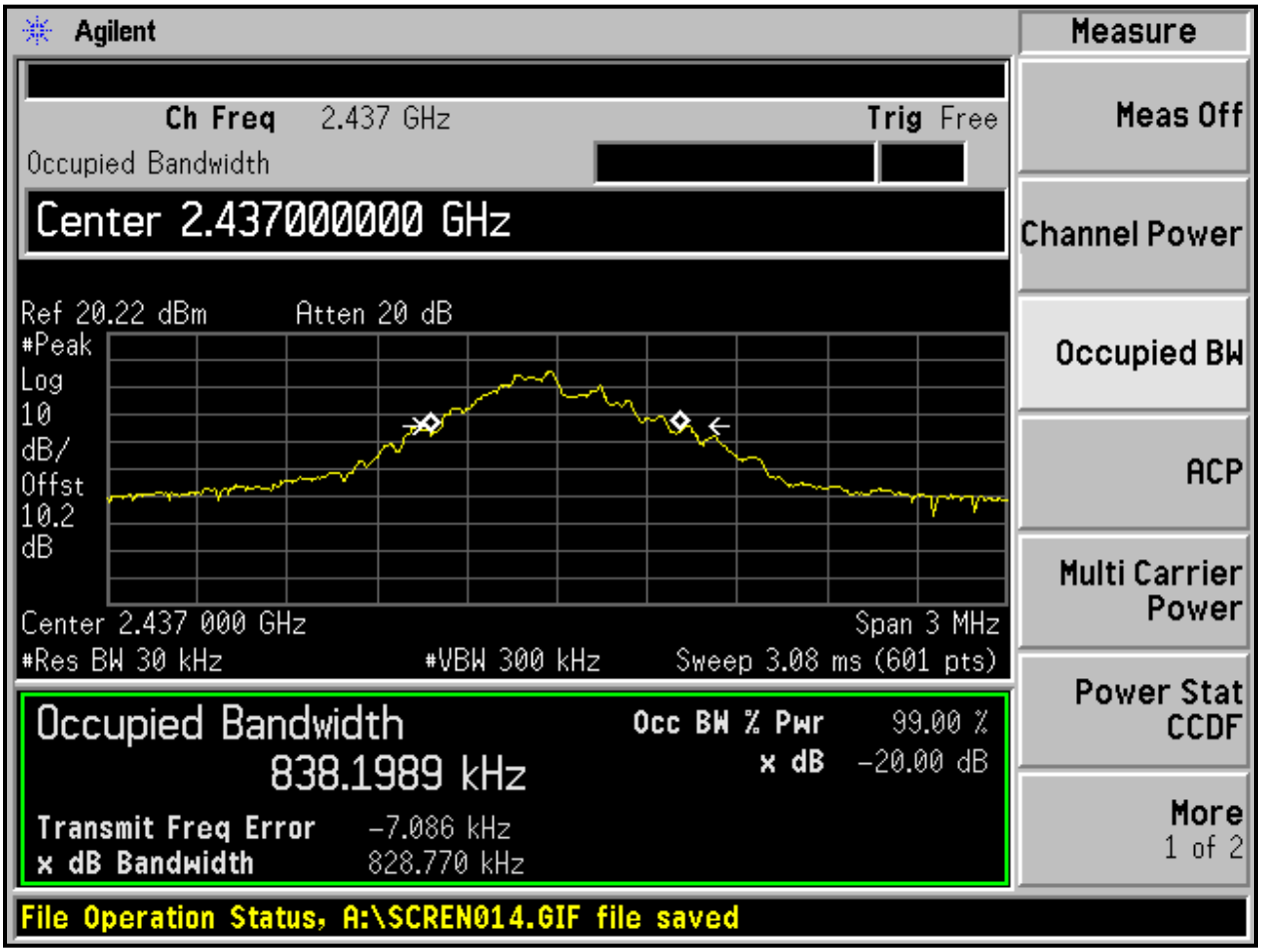
Plot 6-3: 20 dB Bandwidth - 2475 MHz – 250 kbps



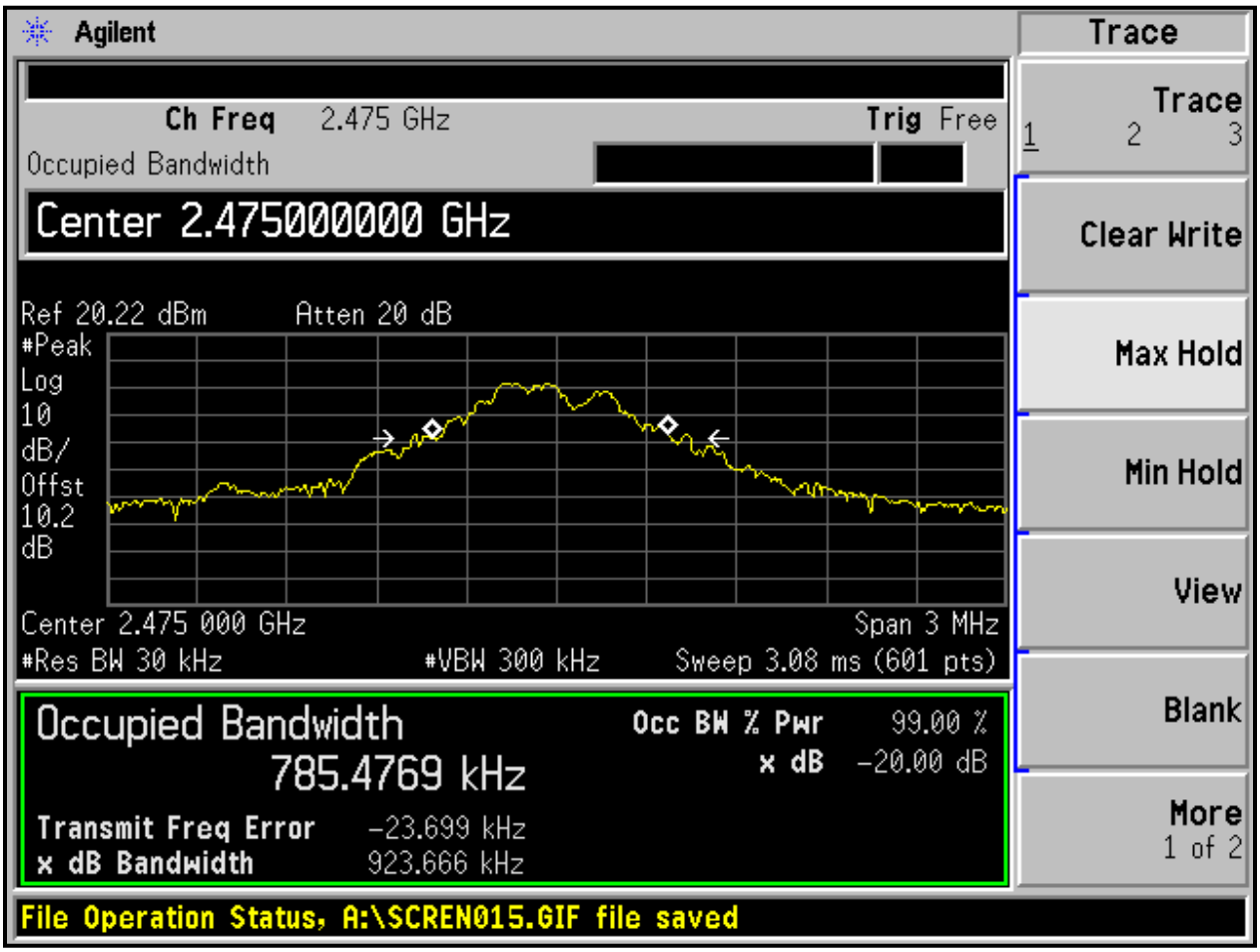
Plot 6-4: 20 dB Bandwidth - 2401 MHz – 1 Mbps



Plot 6-5: 20 dB Bandwidth - 2437 MHz – 1 Mbps



Plot 6-6: 20 dB Bandwidth - 2475 MHz – 1 Mbps



Test Personnel:

Daniel W. Baltzell		February 24, 2011
EMC Test Engineer	Signature	Date of Tests

7 Carrier Frequency Separation - §15.247(a)(1); IC RSS-210 §A8.1(d)

7.1 Carrier Frequency Separation Test Procedure

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

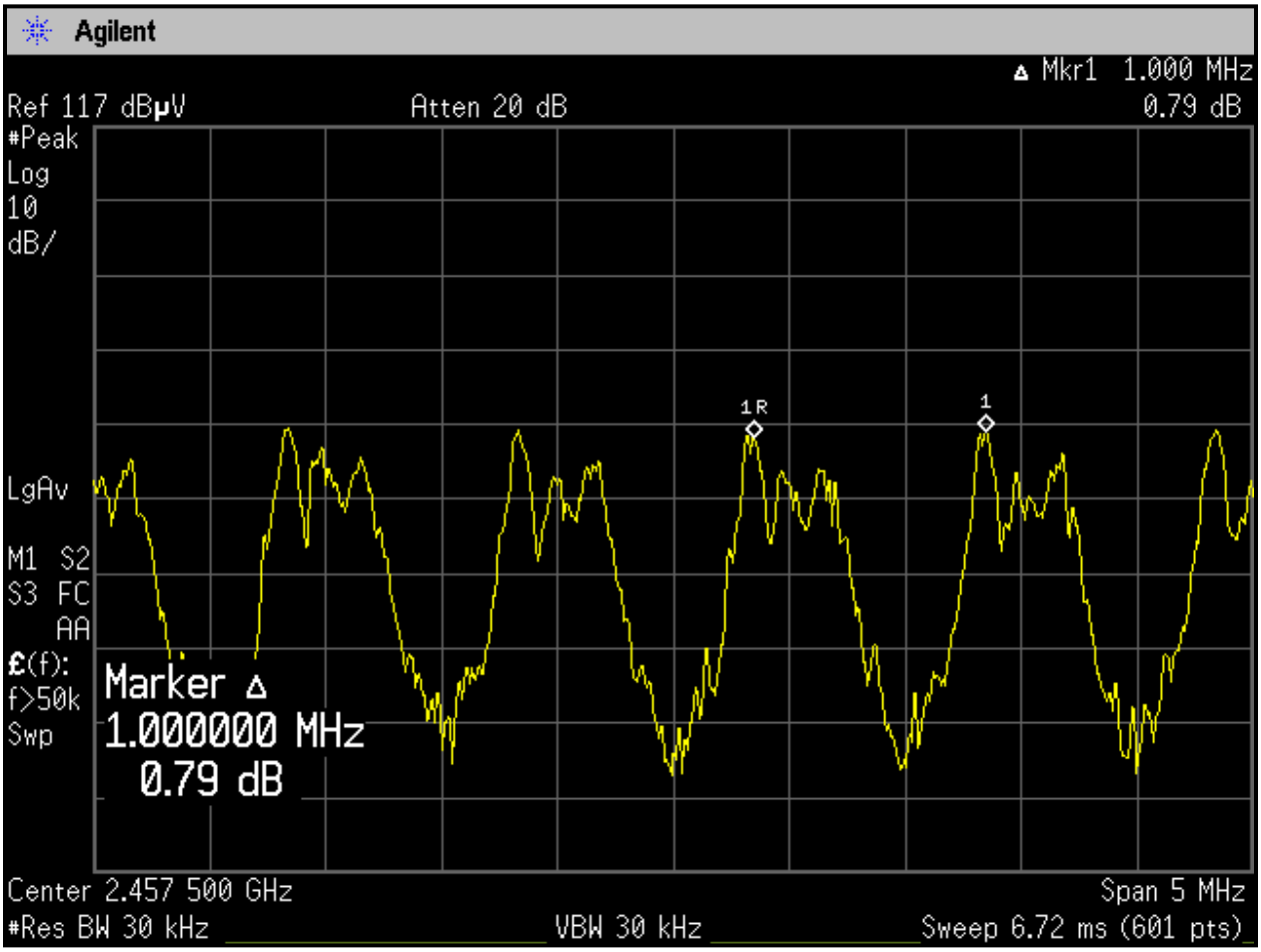
Measured frequency separation = 1.0 MHz

Table 7-1: Carrier Frequency Separation Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	11/11/11

7.2 Carrier Frequency Separation Test Data

Plot 7-1: Carrier Frequency Separation



Test Personnel:

Daniel W. Baltzell		February 25, 2011
EMC Test Engineer	Signature	Date of Test

8 Hopping Characteristics – FCC §15.247(a)(1)(iii); IC RSS-210 §A8.1(d)

8.1 Hopping Characteristics Test Procedure

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

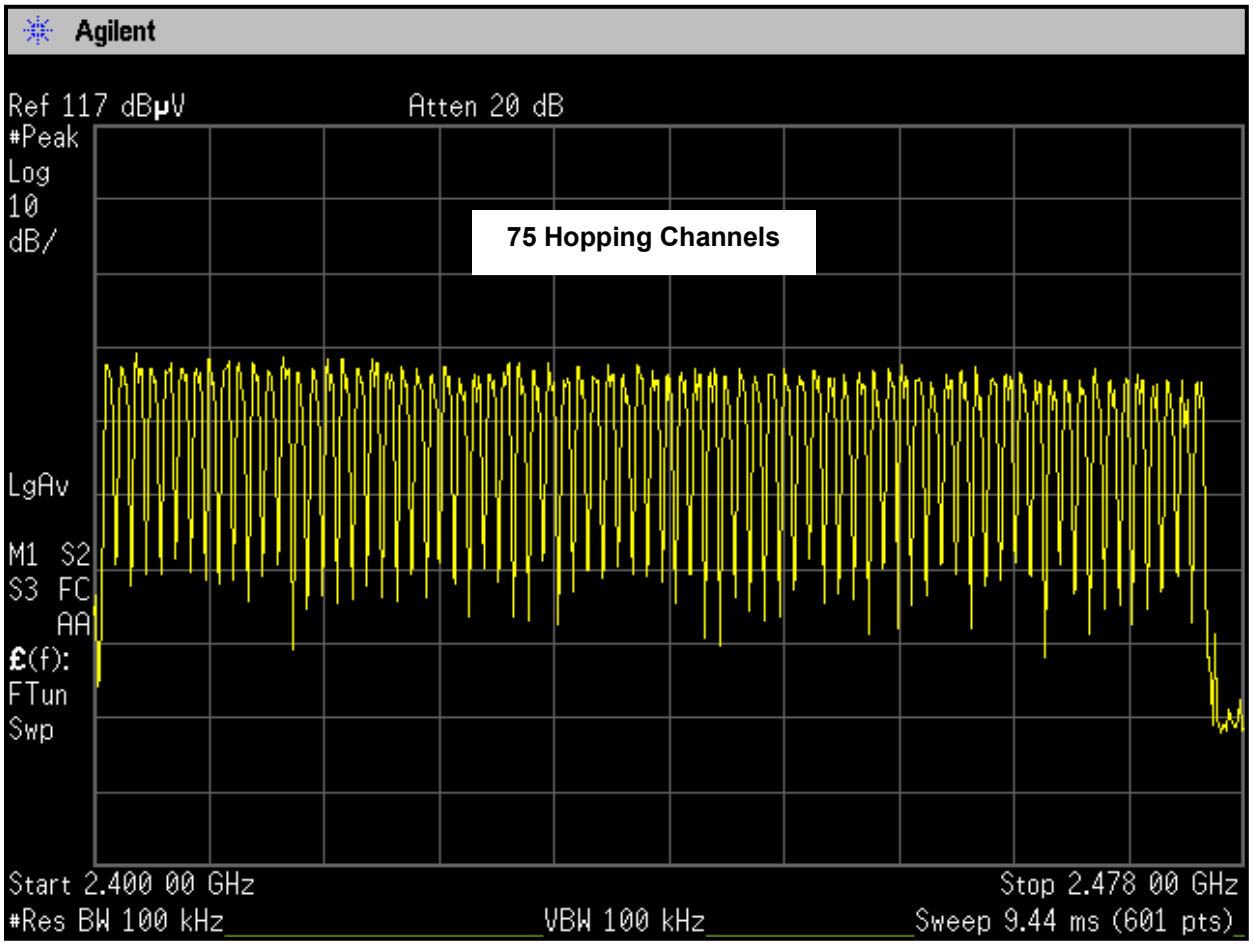
Table 8-1: Hopping Characteristics Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	11/11/11

8.2 Number of Hopping Frequencies

Measured number of hopping frequencies = 75

Plot 8-1: Number of Hopping Frequencies (2401 - 2475 MHz)



Test Personnel:

Daniel W. Baltzell		February 25, 2011
EMC Test Engineer	Signature	Date of Test

8.3 Average Time of Occupancy

Fleetwood Group, Inc. attests that the EUT in actual use will have a maximum source-based time average of 9 ms in 100 ms, which corresponds to a 9% duty cycle.

A plot was taken showing the number of pulses in a period of 0.4 seconds X 75 hopping channels (30 s) is 11 pulses.

The average time of occupancy in the 30 second period is equal to 11 pulses X 9 ms = 99 ms.

This meets the limit as defined by 15.247(a)(1)(iii) of 0.4 seconds.

Plot 8-2: Time of Occupancy (Dwell Time 30 Second Sweep)

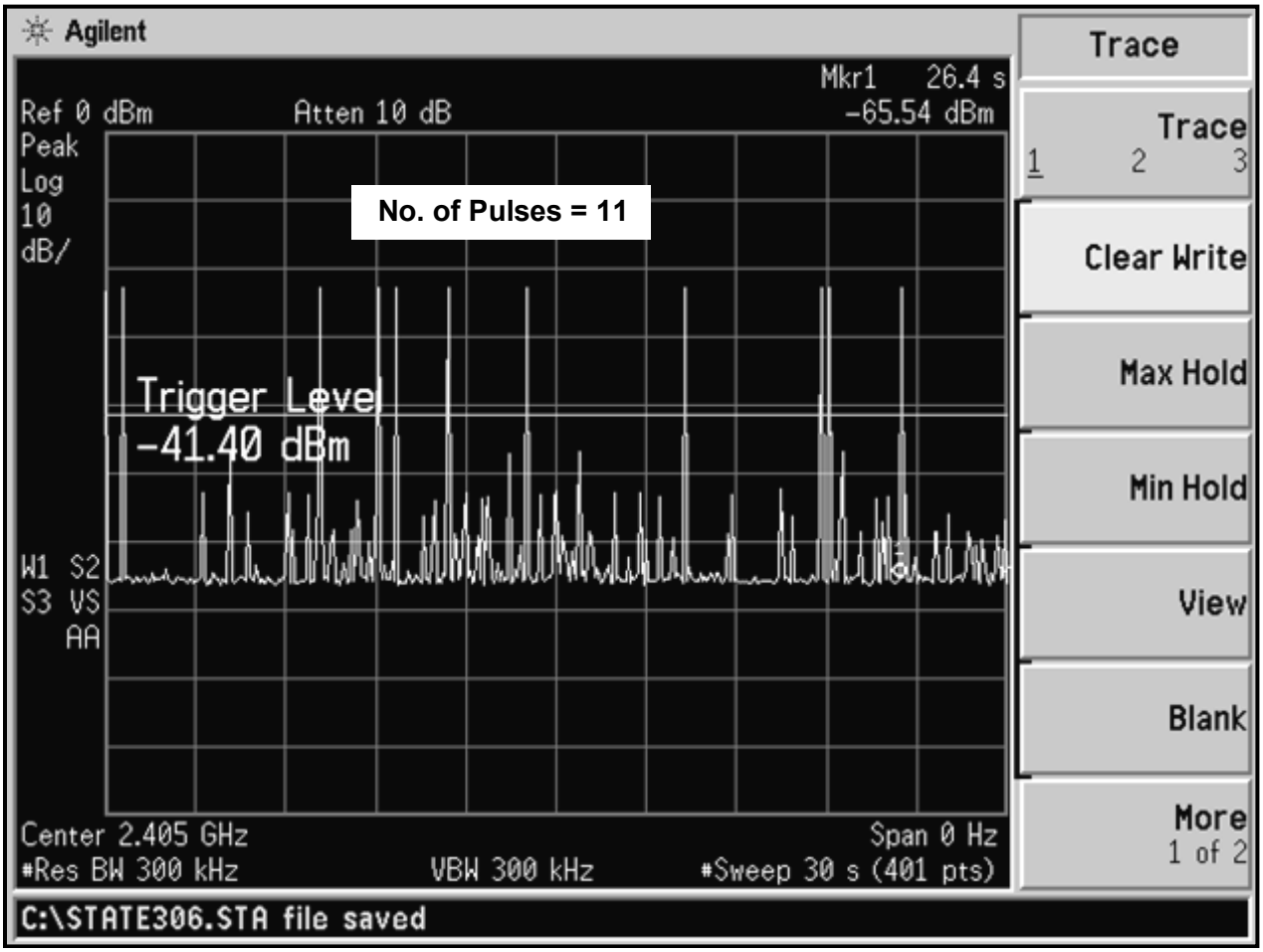


Table 8-2: Average Time of Occupancy Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	11/11/11

Test Personnel:

Daniel W. Baltzell		March 4, 2011
EMC Test Engineer	Signature	Date of Tests

9 AC Conducted Emissions - FCC Rules and Regulations §15.207; IC RSS-Gen

9.1 Site and Test Description

The power line conducted emissions 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 AC 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 filter 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.

9.2 Test Limits

Line-Conducted Emissions		
	Limit (dBµV)	
Frequency (MHz)	Quasi-Peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5.00	56	46
5.00 to 30.00	60	50

9.3 Conducted Emissions Test Data

Table 9-1: Conducted Emissions - Neutral Side – RX Mode

Temperature: 74°F Humidity: 25%									
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.177	Pk	43.9	0.2	44.1	64.6	-20.5	54.6	-10.5	Pass
0.264	Pk	43.1	0.3	43.4	61.3	-17.9	51.3	-7.9	Pass
0.392	Pk	43.6	0.3	43.9	58.0	-14.1	48.0	-4.1	Pass
0.699	Pk	36.9	0.5	37.4	56.0	-18.6	46.0	-8.6	Pass
2.070	Pk	27.9	1.0	28.9	56.0	-27.1	46.0	-17.1	Pass
3.680	Pk	27.7	1.3	29.0	56.0	-27.0	46.0	-17.0	Pass
17.960	Pk	15.8	2.9	18.7	60.0	-41.3	50.0	-31.3	Pass

Table 9-2: Conducted Emissions – Hot Side – RX Mode

Temperature: 74°F Humidity: 25%									
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.164	Pk	41.9	0.2	42.1	65.3	-23.2	55.3	-13.2	Pass
0.339	Pk	44.1	0.3	44.4	59.2	-14.8	49.2	-4.8	Pass
0.388	Pk	42.7	0.3	43.0	58.1	-15.1	48.1	-5.1	Pass
0.785	Pk	38.9	0.6	39.5	56.0	-16.5	46.0	-6.5	Pass
3.190	Pk	31.4	1.2	32.6	56.0	-23.4	46.0	-13.4	Pass
4.590	Pk	28.4	1.4	29.8	56.0	-26.2	46.0	-16.2	Pass
17.540	Pk	14.9	2.9	17.8	60.0	-42.2	50.0	-32.2	Pass

Table 9-3: Conducted Emissions - Neutral Side – TX Mode

Temperature: 74°F Humidity: 25%									
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.179	Pk	53.1	0.2	53.3	64.5	-11.2	54.5	-1.2	Pass
0.262	Pk	46.4	0.3	46.7	61.4	-14.7	51.4	-4.7	Pass
0.396	Pk	45.0	0.3	45.3	57.9	-12.6	47.9	-2.6	Pass
0.639	Pk	39.5	0.5	40.0	56.0	-16.0	46.0	-6.0	Pass
2.420	Pk	33.2	1.1	34.3	56.0	-21.7	46.0	-11.7	Pass
5.430	Pk	31.0	1.5	32.5	60.0	-27.5	50.0	-17.5	Pass

Table 9-4: Conducted Emissions – Hot Side – TX Mode

Temperature: 74°F Humidity: 25%									
Emission Frequency (MHz)	Test Detector	Analyzer Reading (dBuV)	Site Correction Factor (dB)	Emission Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)	Pass/ Fail
0.152	Pk	52.2	0.2	52.4	65.9	-13.5	55.9	-3.5	Pass
0.290	Pk	44.0	0.3	44.3	60.5	-16.2	50.5	-6.2	Pass
0.646	Pk	42.8	0.5	43.3	56.0	-12.7	46.0	-2.7	Pass
2.070	Pk	38.4	1.0	39.4	56.0	-16.6	46.0	-6.6	Pass
3.680	Pk	36.3	1.3	37.6	56.0	-18.4	46.0	-8.4	Pass
4.100	Pk	33.9	1.4	35.3	56.0	-20.7	46.0	-10.7	Pass

Table 9-5: Conducted Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900913	Hewlett Packard	85462A	EMI Receiver RF Section (9 kHz – 6.5 GHz)	3325A00159	8/2/11
901082	AFJ International	LS16	16A LISN	16010020082	4/13/11

Test Personnel:

Daniel W. Baltzell		February 21, 2011
EMC Test Engineer	Signature	Date of Tests

10 Radiated Emissions Test Results - FCC Rules and Regulations §15.247(d); IC RSS-210 §A8.5, RSS-Gen

10.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009-0.490	2400/f (kHz)	300
0.490-1.705	2400/f (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

10.2 Radiated Emissions Measurement Test Procedure

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10^{th} harmonic of the highest fundamental transmitter frequency (24.8 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 10-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900151	Rohde and Schwarz	HFH2-Z2	Loop Antenna (9 kHz - 30 MHz)	827525/019	10/1/12
900932	Hewlett Packard	8449B OPT H02	Preamplifier (1 - 26.5 GHz)	3008A00505	2/22/11
900878	Rhein Tech Laboratories, Inc.	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901516	Insulated Wire, Inc.	KPS-1503-2400-KPS	RF cable, 20'	NA	10/19/11
901517	Insulated Wire Inc.	KPS-1503-360-KPS	RF cable 36"	NA	10/19/11
901242	Rhein Tech Laboratories, Inc.	WRT-000-0003	Wood rotating table	N/A	Not Required
901413	Agilent Technologies	E4448A	Spectrum Analyzer	US44020346	11/11/11
900791	Chase	CBL6111B	Bilog Antenna (30 MHz – 2000 MHz)	N/A	1/31/13
900321	EMCO	3161-03	Horn Antennas (4 – 8 GHz)	9508-1020	6/14/11
900323	EMCO	3160-07	Horn Antennas (8.2 – 12 GHz)	9605-1054	6/14/11
900356	EMCO	3160-08	Horn Antennas (12.4 – 18 GHz)	9607-1044	6/14/11
901218	EMCO	3160-09	Horn Antenna (18 - 26 GHz)	960281-003	6/14/11
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	6/14/11

10.2.1 Radiated Emissions Harmonics/Spurious Test Data

Table 10-2: Radiated Emissions Harmonics/Spurious - 2401 MHz

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/ VBW)	Site Correction Factor (dB/m)	Corrected Peak Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Calculated Average (dBuV/m) (-20.9, 9% d.c.)	Average Limit (dB)	Average Margin (dB)
4802	54.6	13.7	68.3	74.0	-5.7	47.4	54.0	-6.6
7203	58.4	10.8	69.2	74.0	-4.8	48.3	54.0	-5.7
12005	46.8	15.2	62.0	74.0	-12.0	41.1	54.0	-12.9
14406	52.6	19.3	71.9	74.0	-2.1	51.0	54.0	-3.0
19208	16.3	31.9	38.7	74.0	-35.3	17.8	54.0	-36.2

Table 10-3: Radiated Emissions Harmonics/Spurious - 2437 MHz

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/ VBW)	Site Correction Factor (dB/m)	Corrected Peak Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Calculated Average (dBuV/m) (-20.9, 9% d.c.)	Average Limit (dB)	Average Margin (dB)
4874	54.7	12.4	67.1	74.0	-6.9	46.2	54.0	-7.8
7311	56.7	9.0	65.7	74.0	-8.3	44.8	54.0	-9.2
12185	47.5	13.5	61.0	74.0	-13.0	40.1	54.0	-13.9
14622	49.5	20.9	70.4	74.0	-3.6	49.5	54.0	-4.5
19496	16.4	31.9	38.8	74.0	-35.2	17.9	54.0	-36.1

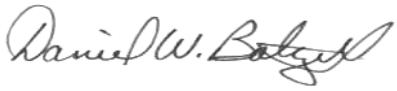
Table 10-4: Radiated Emissions Harmonics/Spurious - 2475 MHz

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/ VBW)	Site Correction Factor (dB/m)	Corrected Peak Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Calculated Average (dBuV/m) (-20.9, 9% d.c.)	Average Limit (dB)	Average Margin (dB)
4950	52.8	12.7	65.5	74.0	-8.5	44.6	54.0	-9.4
7425	55.2	11.2	66.4	74.0	-7.6	45.5	54.0	-8.5
12375	46.5	15.4	61.9	74.0	-12.1	41.0	54.0	-13.0
14850	48.9	20.1	69.0	74.0	-5.0	48.1	54.0	-5.9
19800	15.7	32.0	38.2	74.0	-35.8	17.3	54.0	-36.7
22275	16.0	31.9	38.4	74.0	-35.6	17.5	54.0	-36.5

Table 10-5: Radiated Emissions Harmonics/Spurious - Hopping Mode

Emission Frequency (MHz)	Peak Analyzer Reading (dBuV) (1 MHz RBW/ VBW)	Site Correction Factor (dB/m)	Corrected Peak Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Peak Margin (dB)	Calculated Average (dBuV/m) (-20.9, 9% d.c.)	Average Limit (dB)	Average Margin (dB)
4827.40	51.0	14.4	65.4	74.0	-8.6	44.5	54.0	-9.5
4847.90	51.2	14.1	65.3	74.0	-8.7	44.4	54.0	-9.6
4943.80	50.2	12.9	63.1	74.0	-10.9	42.2	54.0	-11.8
7256.70	59.0	12.3	71.3	74.0	-2.7	50.4	54.0	-3.6
7253.50	58.5	12.3	70.8	74.0	-3.2	49.9	54.0	-4.1
7269.20	58.6	11.6	70.2	74.0	-3.8	49.3	54.0	-4.7
7340.40	58.2	10.6	68.8	74.0	-5.2	47.9	54.0	-6.1
12014.20	48.8	15.6	64.4	74.0	-9.6	43.5	54.0	-10.5
12024.10	49.2	15.8	65.0	74.0	-9.0	44.1	54.0	-9.9
12159.20	47.3	15.3	62.6	74.0	-11.4	41.7	54.0	-12.3
12194.30	47.2	15.1	62.3	74.0	-11.7	41.4	54.0	-12.6
14471.15	51.6	20.9	72.5	74.0	-1.5	51.6	54.0	-2.4
14489.05	50.5	21.5	72.0	74.0	-2.0	51.1	54.0	-2.9
14490.90	51.5	21.6	73.1	74.0	-0.9	52.2	54.0	-1.8
19749.70	16.0	32.0	38.5	74.0	-35.5	17.6	54.0	-36.4
22232.32	15.6	32.0	38.1	74.0	-35.9	17.2	54.0	-36.8

Test Personnel:



Daniel W. Baltzell		February 25, 2011
Test Engineer	Signature	Date of Tests

11 Conclusion

The data in this measurement report shows that the EUT as tested, Fleetwood Group, Inc., Model: V2420L, FCC ID: FBRV2420L, IC: 1859A-V2420L, complies with all the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations, and Industry Canada RSS-210 and RSS-Gen for Limited Modular Approval.