COMPLIANCE WORLDWIDE INC.
TEST REPORT 278-07R1

In Accordance with the Requirements of

FCC PART 15.247, Subpart C
INDUSTRY CANADA RSS 210, ISSUE 7, Annex 8

Low Power License-Exempt Radio Communication Devices
Intentional Radiators

Issued to

Bluesocket, Inc.
10 North Avenue
Burlington, MA 01803
1-781-328-0888

for

BlueSecure™ BSAP-1800

Report Issued on October 12, 2007

Tested by

Brian F. Breault

Reviewed by

Larry K. Stillings

Table of Contents

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

1. Scope

This test report certifies that the Bluesocket BlueSecure™ Access Point 1800, BSAP-1800, as tested, meets the FCC Part 15.247, Subpart C and Industry Canada RSS 210, Issue 7, Annex 8 requirements. The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

2. Product Details

2.1. Manufacturer: Bluesocket, Inc.

2.2. Model Number: BlueSecure™ BSAP-1800

2.3. Serial Number: None

2.4. Description: The BlueSecure™ Access Point 1800 (BSAP-1800) is the first enterprise-class 802.11a/b/g Wi-Fi certified AP to use MIMO technology. This approach achieves more than 30 percent better range and overall performance, using your existing standard 802.11a/b/g clients, than APs using legacy 802.11 technologies. ISM Channels 12 to 14 and 165 have been disabled.

2.5. Power Source: 48 Volts DC via Power Over Ethernet or
48 Volts DC Power Adapter

2.6. EMC Modifications: None

3. Product Configuration

3.1. Support Equipment

Device	Manufacturer	Model	Serial No.	Comment
Notebook PC	Dell	Inspiron 5160	CN-0T5326-12961-4C1-5477	Remotely located
PoE Injector	PowerDsine	3001	R06416050041283801	Remotely located

3.2. Cables

Cable Type	Length	Shield	From	To
CAT 5 Ethernet (UTP)	1.5 Meters	No	Notebook PC	PoE Injector
CAT 5 Ethernet (UTP)	10 Meters	No	PoIP Injector	BSAP-1800

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

3. Product Configuration (continued)

3.3. Operational Characteristics & Software

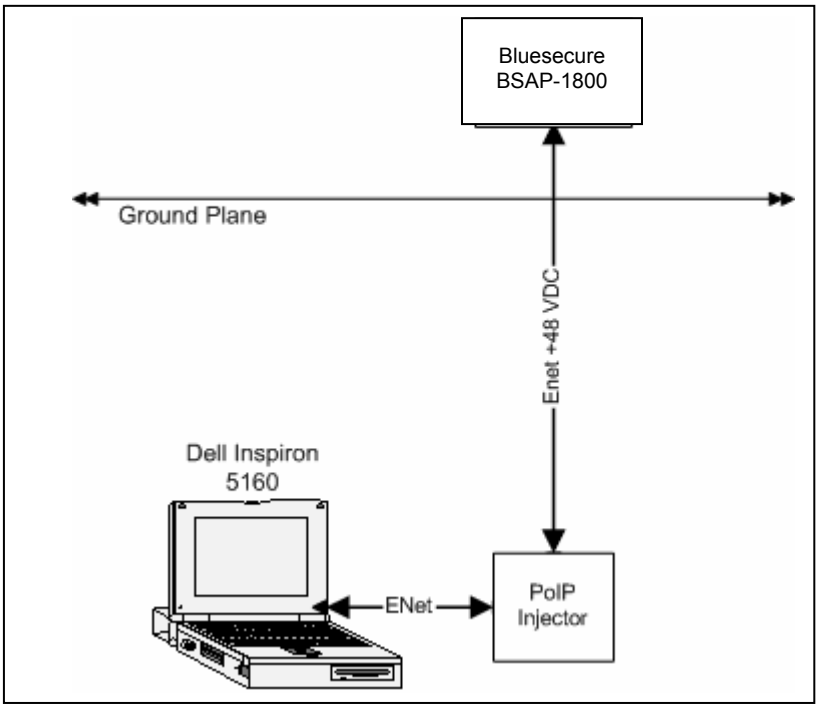
1. Click on the Login AP icon on the desktop. Type wg1000 as the pass phrase.
2. Navigate through the CLI to the command prompt (Enter option 6, then enter option 1)
3. At the command prompt, type /home/setup_1800 (this will configure the AP – there will be a delay of about 30 seconds before the prompt returns)
4. To set the channels, perform the following:
   To change 2.4GHz channels:
   iwconfig ath0 channel <channel number>
   To change 5 GHz channels:
   iwconfig ath1 channel <channel number>
5. `To set the power, perform the following:
   To change 2.4GHz channels:
   iwconfig ath0 txpower < value in dBm>

   To change 5 GHz channels:
   iwconfig ath1 txpower < value in dBm>

6. Click on the "Run Traffic" icon on the desktop. This will startup the traffic through the AP.

   Note : The 7 dBm setting was used for measurements on Channels 36 to 44.

3.4. Block Diagram



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

4. Measurements Parameters

4.1. Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due
EMI Receiver	Hewlett Packard	8546A	3650A00360	3/14/2008
EMI Receiver	Agilent	E4407B	MY45108355	11/22/2008
Spectrum Analyzer	Hewlett Packard	8593E	3829A03887	3/8/2008
Microwave Preamp	Hewlett Packard	8449B	3008A01323	9/21/2008
Bilog Antenna	Com-Power	AC220	25509	8/3/2008
Horn Antenna	Electro-Metrics	EM-6961	6337	8/24/2008
Horn Antenna	ComPower	AH-840	03075	8/24/2008
2.4 GHz BP Filter	Micro-Tronics	BRM50702	14	11/16/2007

4.2. Measurement & Equipment Setup

Test Date:	9/4/2007
Test Engineer:	Brian Breault
Normal Site Temperature (15 - 35°C):	21.6
Relative Humidity (20 -75%RH):	25
Frequency Range:	30 MHz to 40 GHz
Measurement Distance:	3 Meters

4.3. Test Procedure

The test measurements contained in this report are based on the requirements detailed in FCC Part 15, Section 15.247: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz. Radiated emissions testing is based on the requirements detailed in FCC Part 15, Section 15.209: Radiated emission limits, general requirements.

The test methods used to generate the data is this test report are in accordance with ANSI C63.4: 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

In accordance with ANSI C63.4-2003, section 13.1.4.1, c), the device under test was rotated through three orthogonal axes to determine which attitude produced the highest emission relative to the limit. The attitude that produced the highest emission relative to the limit was used for all radiated emission measurements.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

5. Measurement Summary

Test Requirement	FCC Part 15.247 Reference	Test Report Section	Result	Comment
Maximum Peak Conducted Output Power	(b) (3)	6.1	Compliant	< 1 Watt
Minimum 6 dB Bandwidth	(a) (2)	6.2	Compliant	> 500 kHz
99% Bandwidth	N/A	6.3	Compliant	RSS 210
Operation with directional antenna gains greater than 6 dBi	(b) (4)	6.4	N/A	Antenna gains: +3.95 dBi at 2.4 GHz +5.06 dBi at 5.8 GHz
Spurious Radiated Emissions	15.209 15.247 (d)	6.5, 6.6 6.7	Compliant	
Lower and Upper Band Edge	15.247 (d)	6.8	Compliant	
Power Spectral Density	15.247(e)	6.9	Compliant	
Conducted Emissions	15.207	6.10	Compliant	
Public Exposure to Radio Frequency Energy Levels	1.1307 (b) (1)	6.11	Compliant	Calculated from field strength measurement and antenna gain.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data

6.1. Radiated Equivalent Isotropic Radiated Power (15.247(b)(3))

6.1.1. Field Strength Measurements

Requirement: For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands, the maximum conducted output power over the frequency band of operation shall not exceed: 1 Watt.

Note: The following equation was used to determine the output power from the measured peak field strength:

$$P = \frac{(E \times d)^2}{(30 \times G)}$$

P = the power in Watts.
E = the measured maximum field in V/m
G = the numeric gain of the transmitting antenna over an isotropic radiator.
d = the distance in meters of the field strength measurement.

The power was calculated using the spectrum analyzer power integration function with the following settings:

Resolution Bandwidth : 1 MHz
Video Bandwidth : 3 MHz
Frequency Span : 30 MHz
Channel Bandwidth : 20 MHz
Sweep Time : 20 mSec

6.1.1.1. Radiated Equivalent Isotropic Radiated Power 15.247(b)(3)

Channel	Channel Frequency	Peak Field Strength[1]	Antenna Gain	Power		Limit		Result
	GHz	dBµV	Numeric	Watts	dBm	Watts	dBm	
1	2.412	127.35	2.483	0.6560	28.17	1	30	Compliant
6	2.437	128.89	2.483	0.9360	29.71	1	30	Compliant
11	2.462	128.27	2.483	0.8110	29.09	1	30	Compliant
149	5.745	128.43	3.206	0.65187	28.142	1	30	Compliant
153	5.765	128.73	3.206	0.69849	28.442	1	30	Compliant
161	5.805	129.22	3.206	0.78191	28.932	1	30	Compliant

[1] **Values includes correction factors.**

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

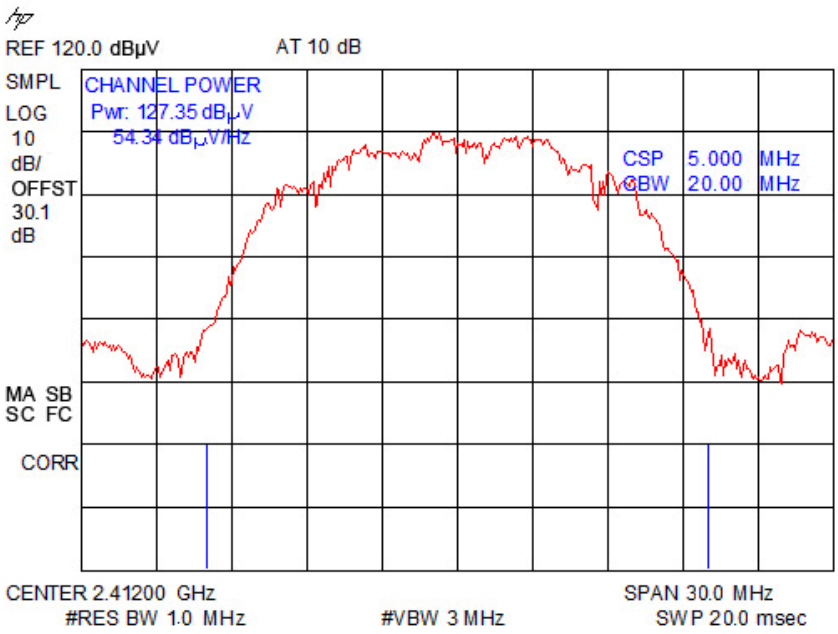
6. Measurement Data (continued)

6.1. Radiated Equivalent Isotropic Radiated Power (15.247(b)(3)) (continued)

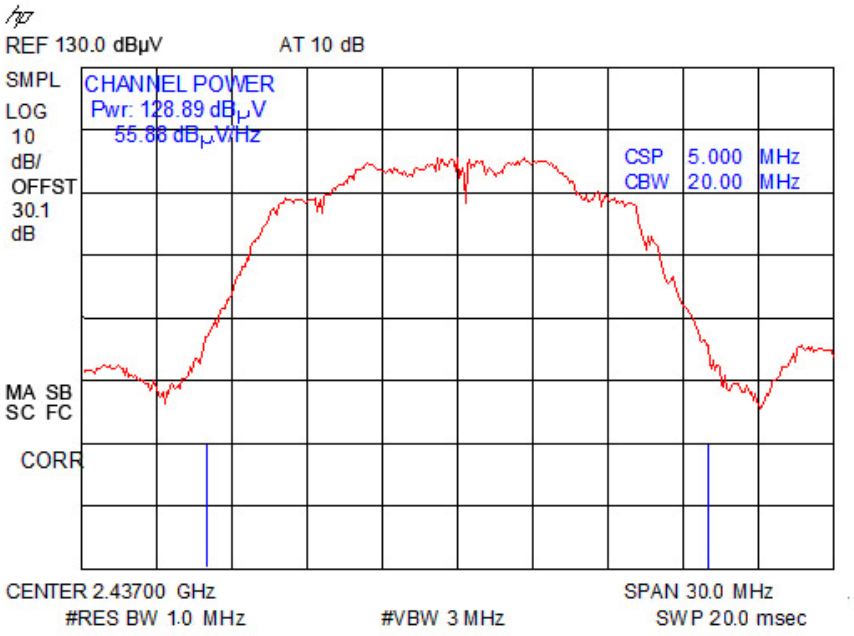
6.1.1. Field Strength Measurements (continued)

6.1.1.2. Radiated Equivalent Isotropic Radiated Power – Plots

6.1.1.2.1. Channel 1



6.1.1.2.2. Channel 6



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

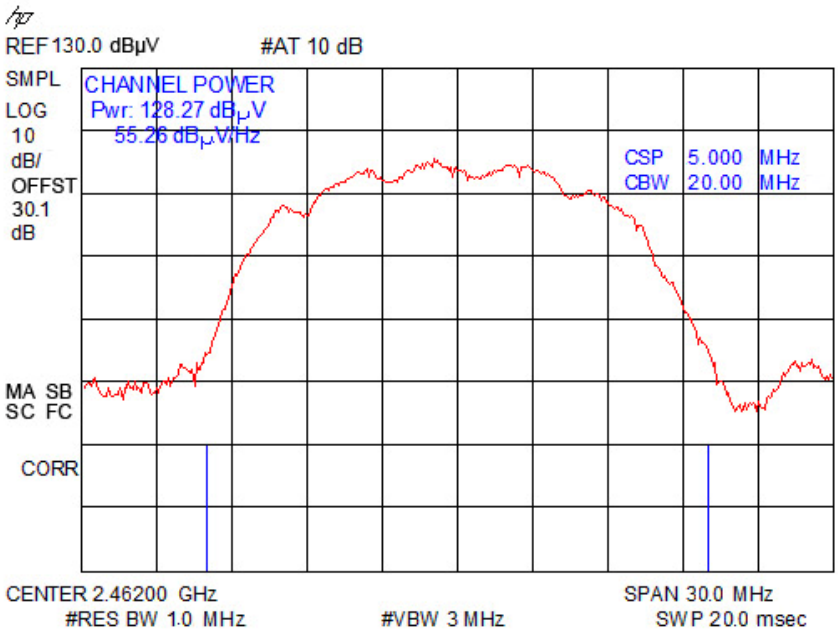
6. Measurement Data (continued)

6.1. Radiated Equivalent Isotropic Radiated Power (15.247(b)(3)) (continued)

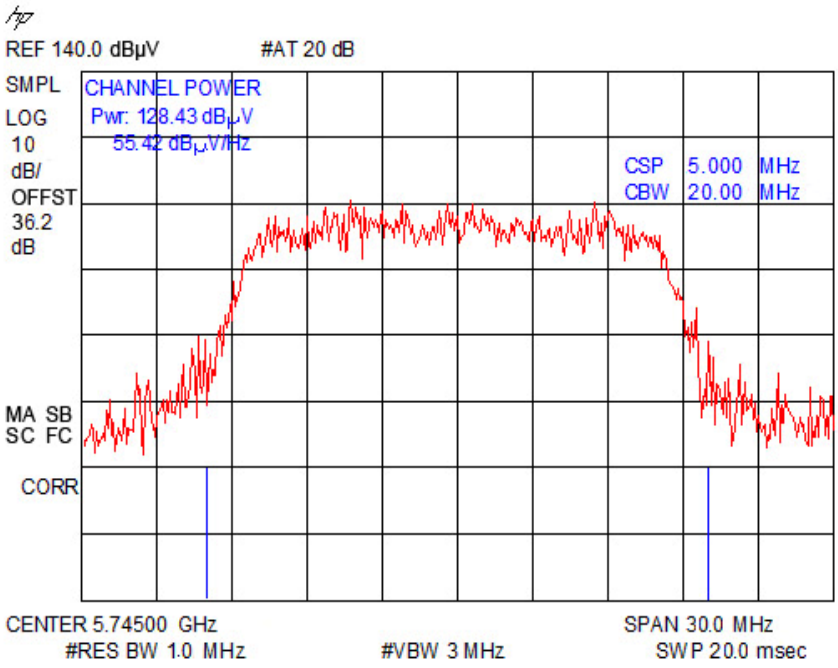
6.1.1. Field Strength Measurements (continued)

6.1.1.2. Radiated Equivalent Isotropic Radiated Power – Plots (continued)

6.1.1.2.3. Channel 11



6.1.1.2.4. Channel 149



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

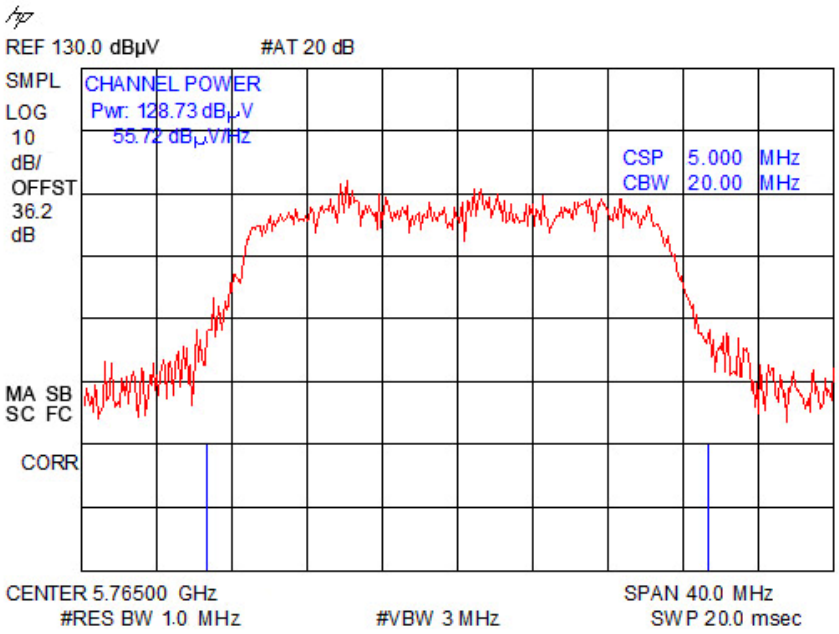
6. Measurement Data (continued)

6.1. Radiated Equivalent Isotropic Radiated Power (15.247(b)(3)) (continued)

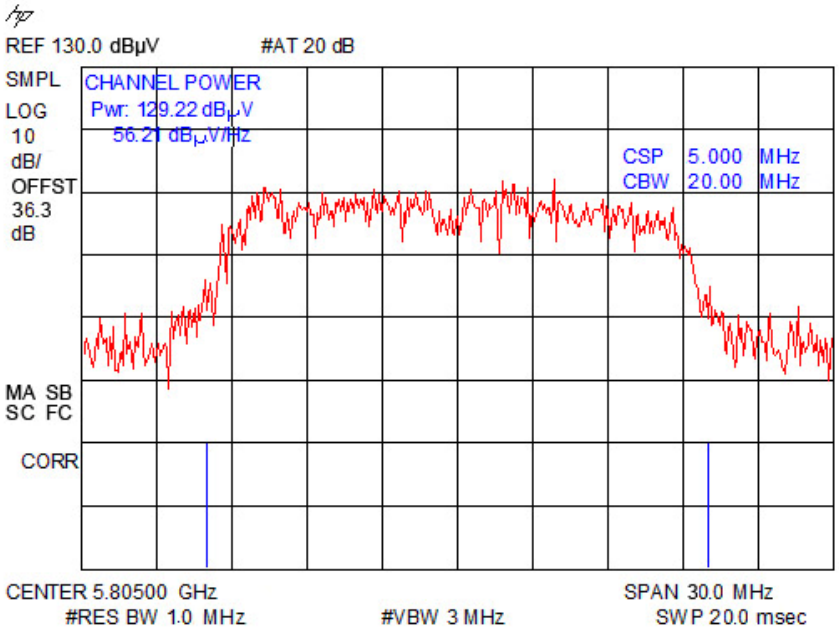
6.1.1. Field Strength Measurements (continued)

6.1.1.2. Radiated Equivalent Isotropic Radiated Power – Plots (continued)

6.1.1.2.5. Channel 153



6.1.1.2.6. Channel 161



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data

6.1. Maximum Peak Conducted Output Power (15.247(b)(3))

6.1.2. Conducted Mode Measurements

Requirement: For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands, the maximum conducted output power over the frequency band of operation shall not exceed: 1 Watt.

The EUT consists of two transmitters and three receivers for the 2x3 MIMO array. Each transmitter was measured and the power was summed below mathematically.

The power was calculated using the spectrum analyzer power integration function with the following settings:

Resolution Bandwidth : 1 MHz
Video Bandwidth : 3 MHz
Frequency Span : 30 MHz
Channel Bandwidth : 20 MHz
Sweep Time : 20 mSec

Total Power (dBm) = 10 $_{LOG}$ ((10^(Chain 0 Power/10)) + (10^(Chain 2 Power/10)))

6.1.2.1. Maximum Peak Conducted Output Power 15.247(b)(3)

Channel	Channel Frequency	Power Meas. Chain 0	Power Meas. Chain 2	Power		Limit		Result
	MHz	dBm	dBm	dBm	Watts	dBm	Watts	
1	2412	20.59	20.95	23.78	0.239	30	1	Compliant
6	2437	20.21	20.66	23.45	0.221	30	1	Compliant
11	2462	20.25	21.23	23.78	0.239	30	1	Compliant
149	5745	20.63	20.31	23.48	0.223	30	1	Compliant
153	5765	20.36	19.88	23.14	0.206	30	1	Compliant
161	5805	20.13	19.50	22.84	0.192	30	1	Compliant

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

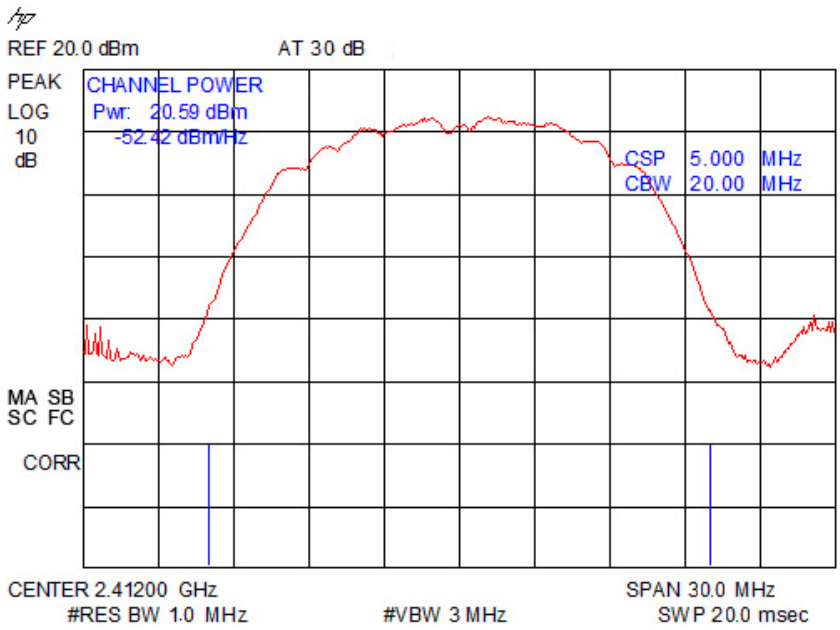
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (15.247(b)(3)) (continued)

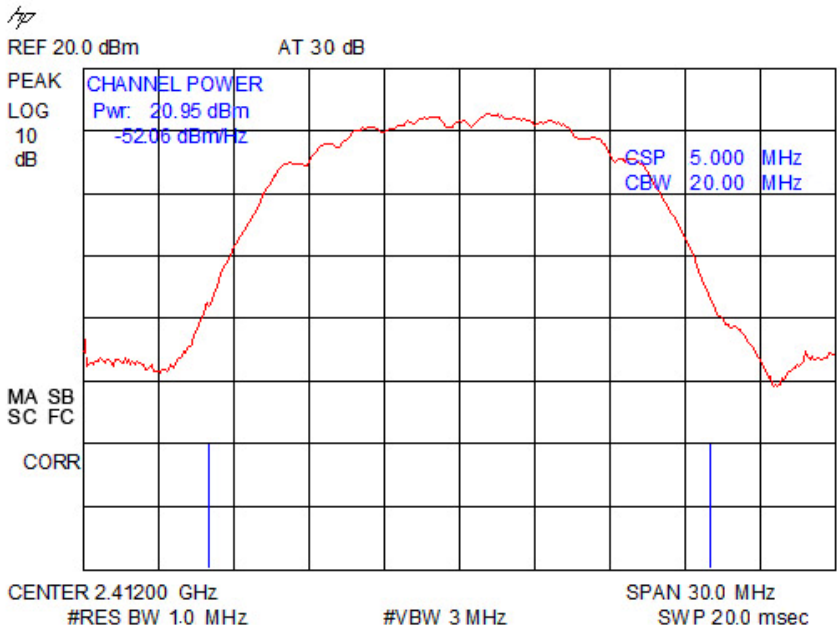
6.1.2. Conducted Mode Measurements (continued)

6.1.2.2. Maximum Peak Conducted Output Power – Plots

6.1.2.2.1. Channel 1 Chain 0



6.1.2.2.2. Channel 1 Chain 2



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

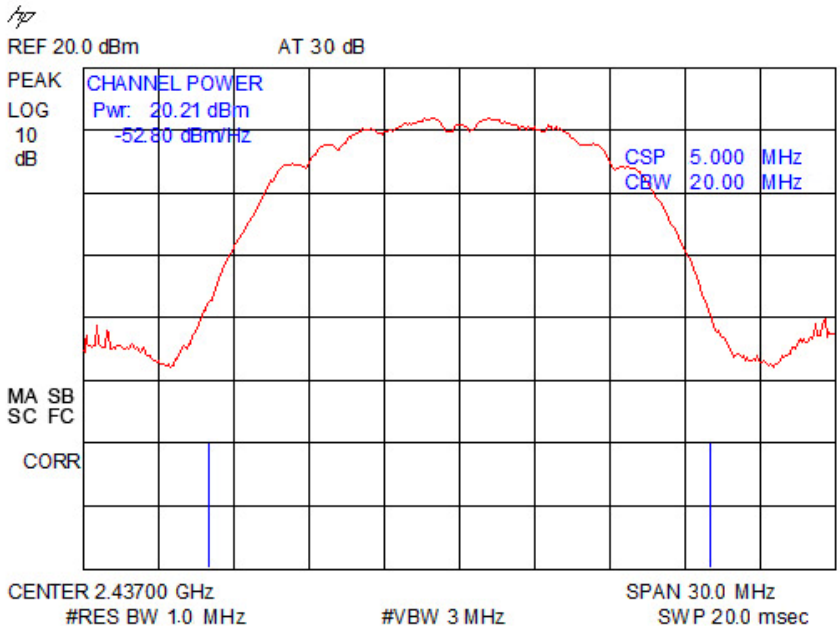
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (15.247(b)(3)) (continued)

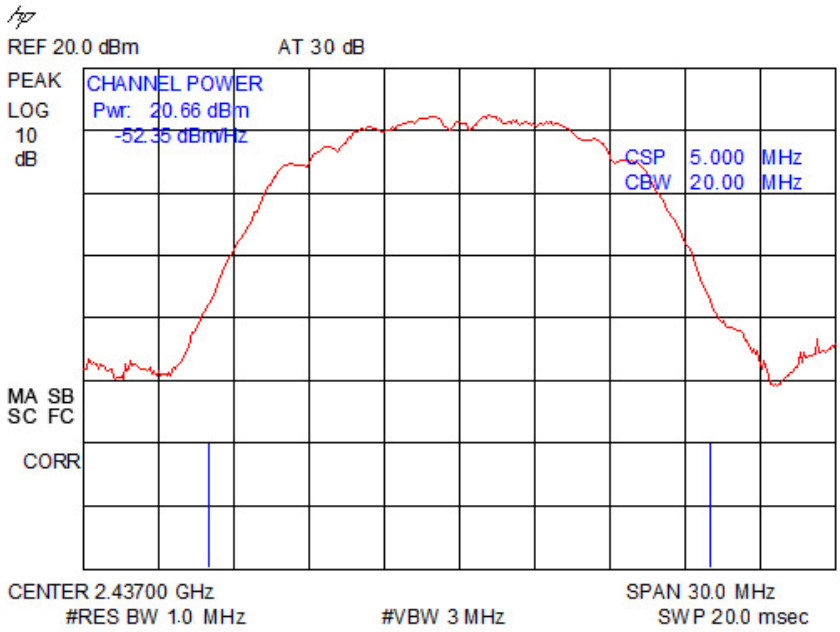
6.1.2. Conducted Mode Measurements (continued)

6.1.2.2. Maximum Peak Conducted Output Power – Plots (continued)

6.1.2.2.3. Channel 6 Chain 0



6.1.2.2.4. Channel 6 Chain 2



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

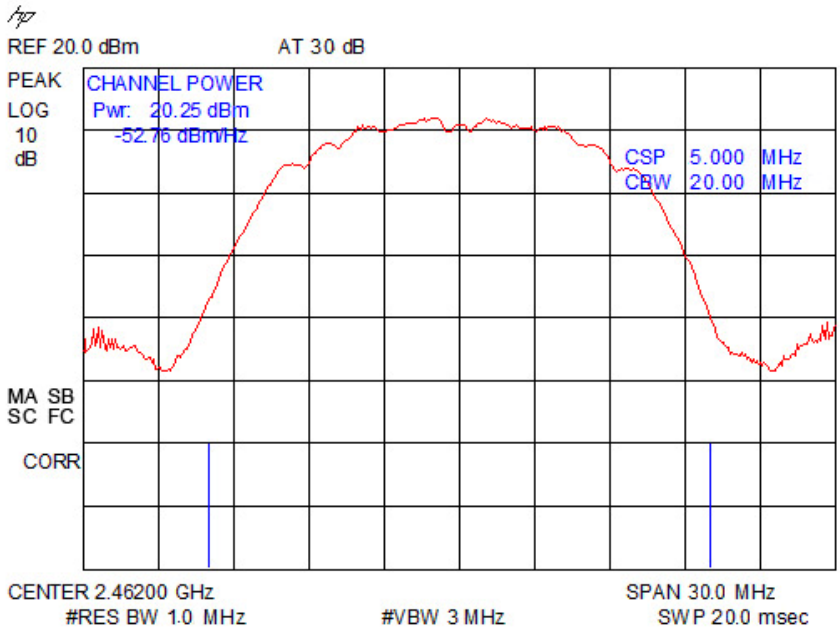
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (15.247(b)(3)) (continued)

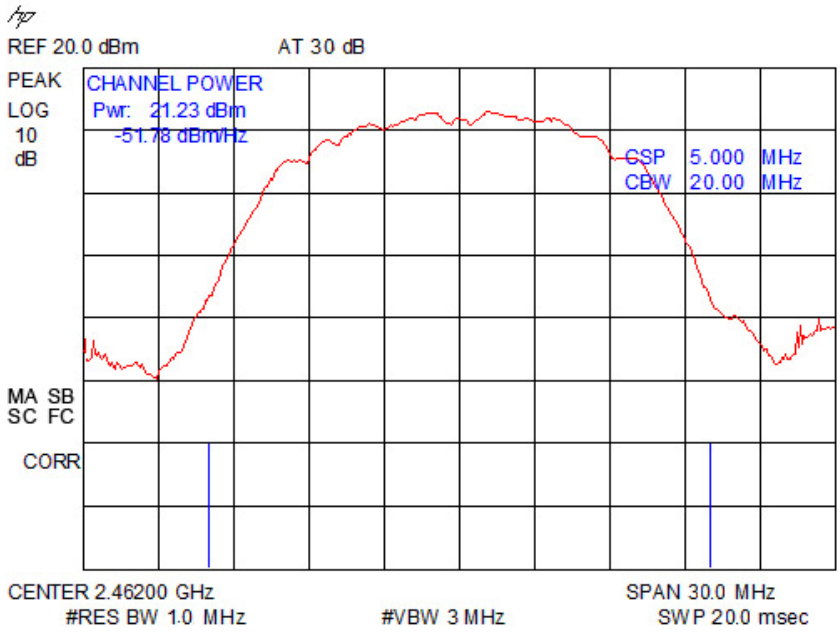
6.1.2. Conducted Mode Measurements (continued)

6.1.2.2. Maximum Peak Conducted Output Power – Plots (continued)

6.1.2.2.5. Channel 11 Chain 0



6.1.2.2.6. Channel 11 Chain 2



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

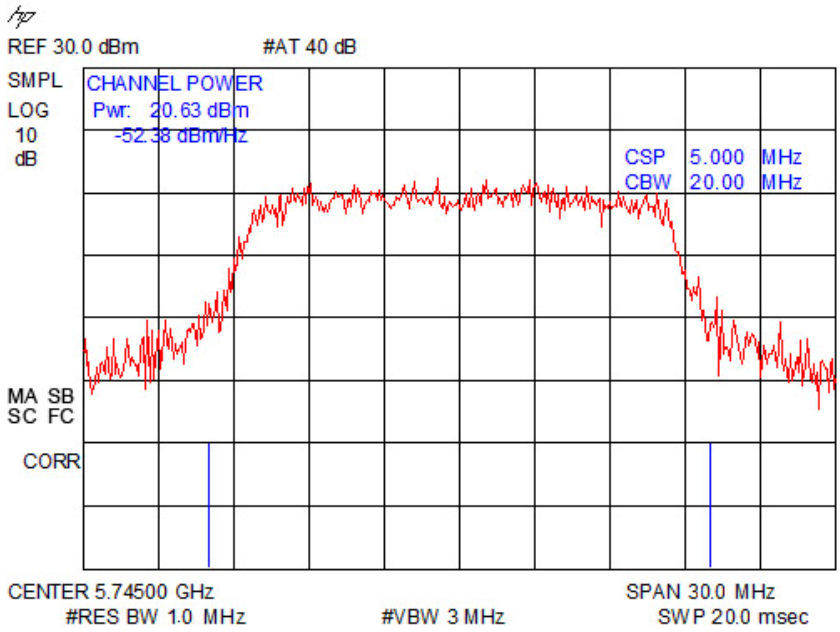
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (15.247(b)(3)) (continued)

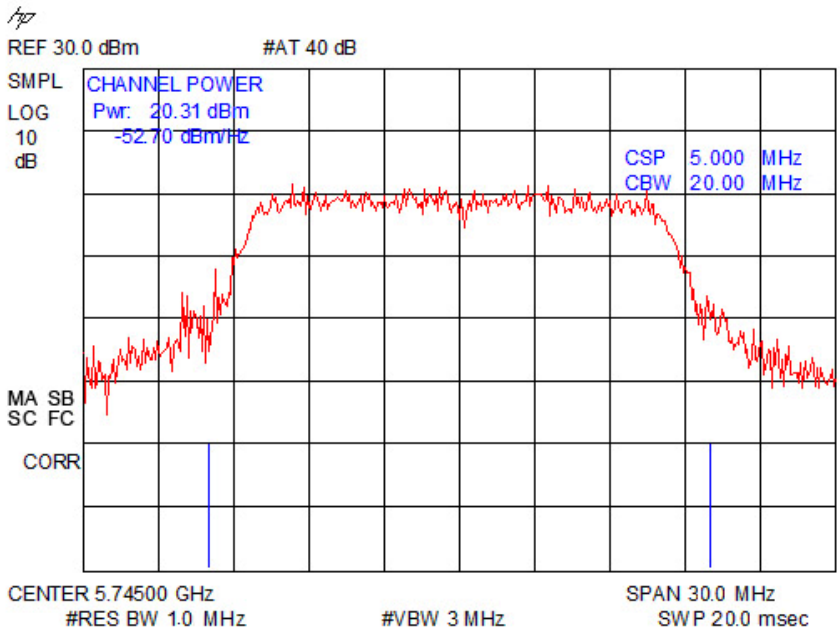
6.1.2. Conducted Mode Measurements (continued)

6.1.2.2. Maximum Peak Conducted Output Power – Plots (continued)

6.1.2.2.7. Channel 149 Chain 0



6.1.2.2.8. Channel 149 Chain 2



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

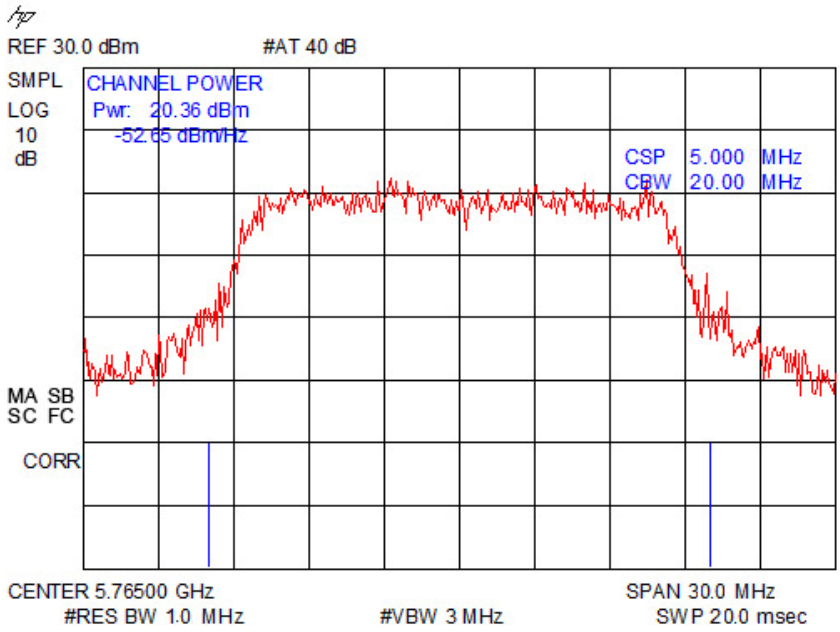
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (15.247(b)(3)) (continued)

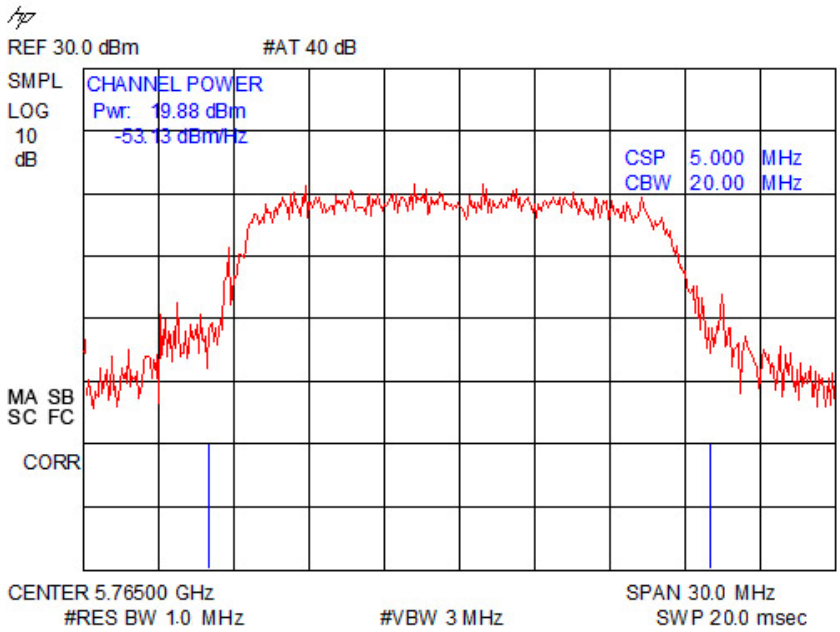
6.1.2. Conducted Mode Measurements (continued)

6.1.2.2. Maximum Peak Conducted Output Power – Plots (continued)

6.1.2.2.9. Channel 153 Chain 0



6.1.2.2.10. Channel 153 Chain 2



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

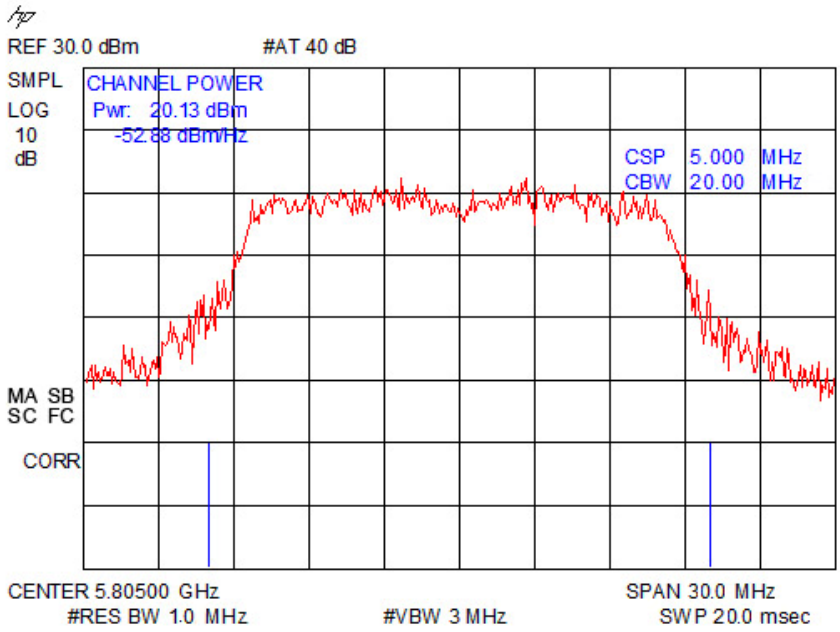
6. Measurement Data (continued)

6.1. Maximum Peak Conducted Output Power (15.247(b)(3)) (continued)

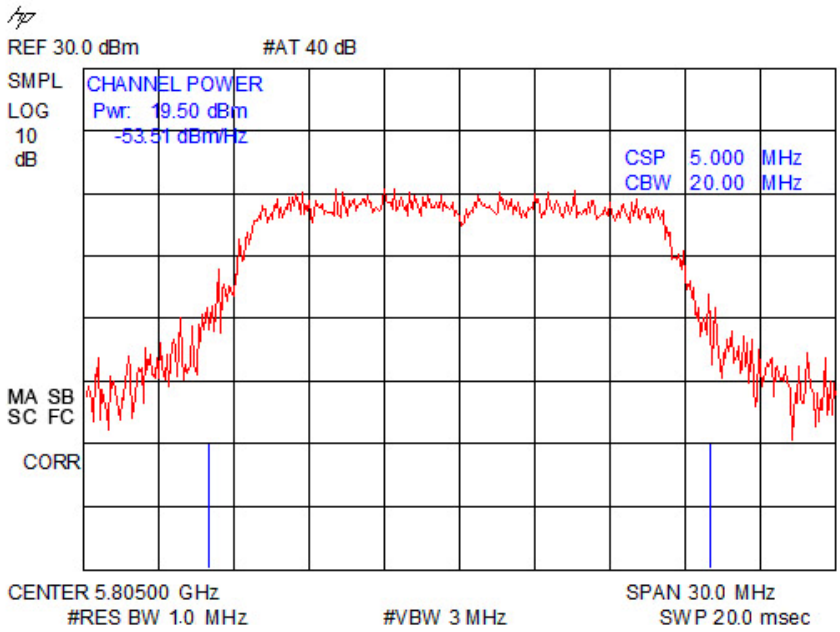
6.1.2. Conducted Mode Measurements (continued)

6.1.2.2. Maximum Peak Conducted Output Power – Plots (continued)

6.1.2.2.11. Channel 161 Chain 0



6.1.2.2.12. Channel 161 Chain 2



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.2. Minimum 6 dB Bandwidth (15.247 (a) (2))

Requirement: Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Note: the measurement data plots did not contain a reference level offset for the antenna factor or cable losses.

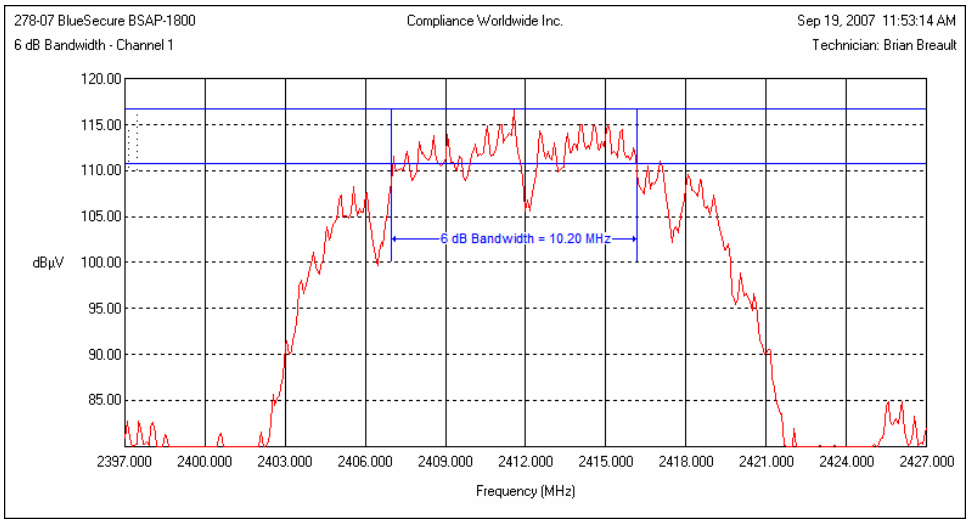
Resolution Bandwidth : 100 kHz
Video Bandwidth : 100 kHz
Sweep Time : 20 mSec

6.2.1 Measurement Results -6dB Bandwidth

Channel	Frequency (MHz)	-6 dB Bandwidth (MHz)	Required -6 dB Bandwidth	Result
1	2412	10.20	≥ 0.5	Compliant
6	2437	8.77	≥ 0.5	Compliant
11	2462	10.20	≥ 0.5	Compliant
149	5745	16.28	≥ 0.5	Compliant
153	5765	16.35	≥ 0.5	Compliant
161	5805	17.55	≥ 0.5	Compliant

6.2.2. Measurement Plots

6.2.2.1. Channel 1



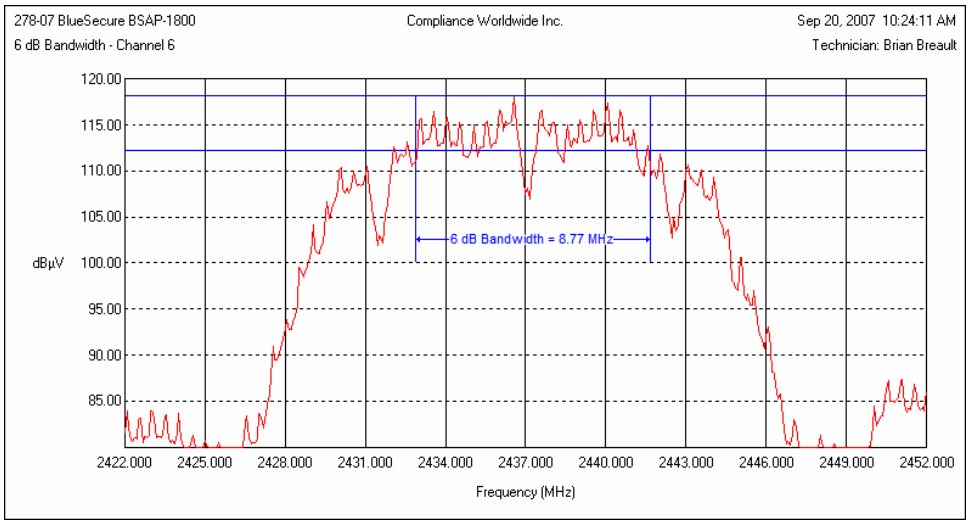
Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

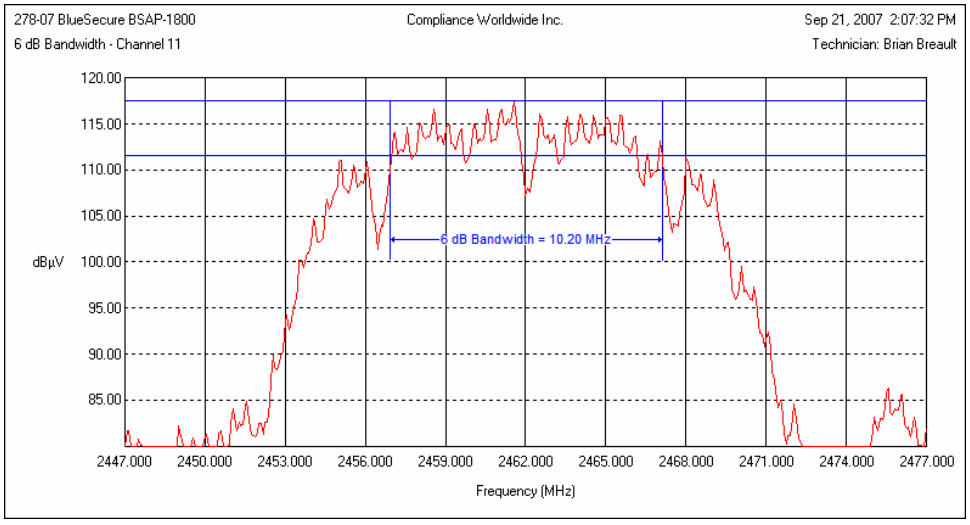
6.2. Minimum 6 dB Bandwidth (15.247 (a) (2)) (cont.)

6.2.2. Measurement Plots

6.2.2.2. Channel 6



6.2.2.3. Channel 11



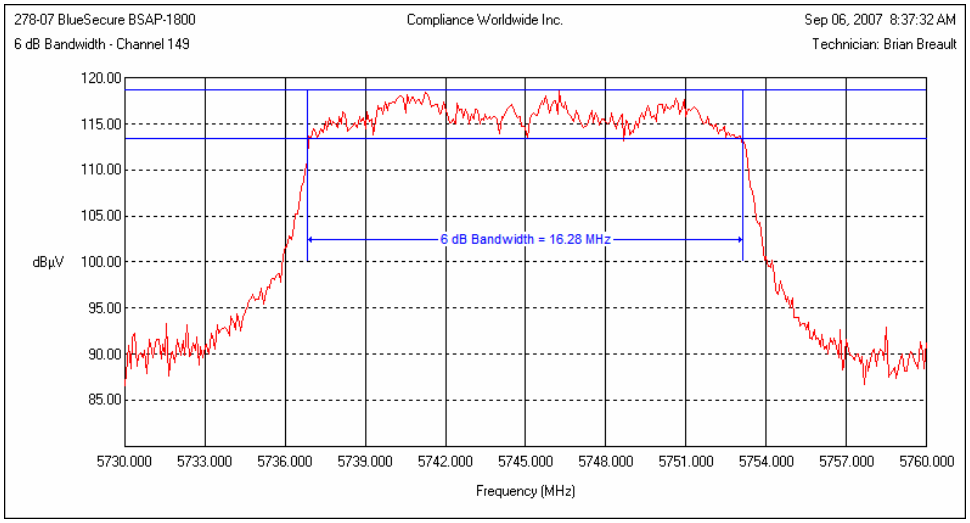
Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

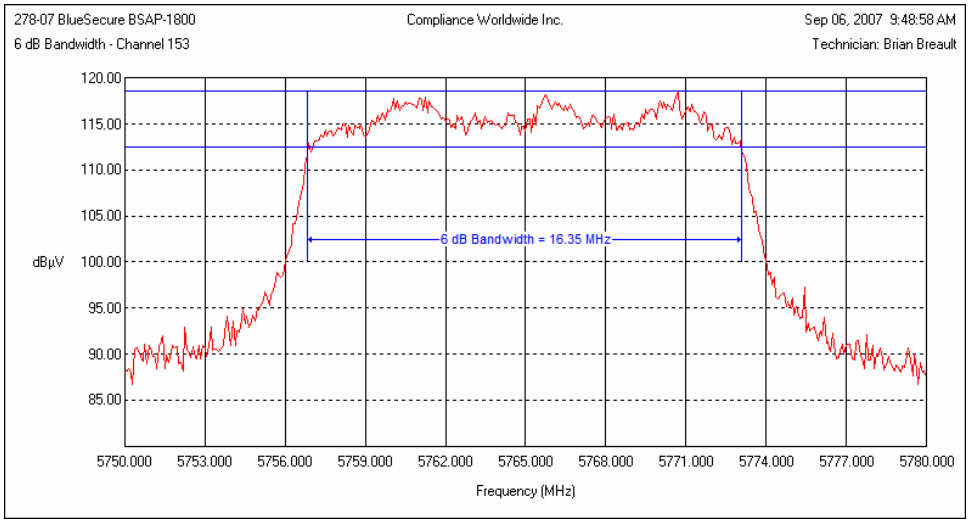
6.2. Minimum 6 dB Bandwidth (15.247 (a) (2)) (cont.)

6.2.2. Measurement Plots

6.2.2.4. Channel 149



6.2.2.5. Channel 153



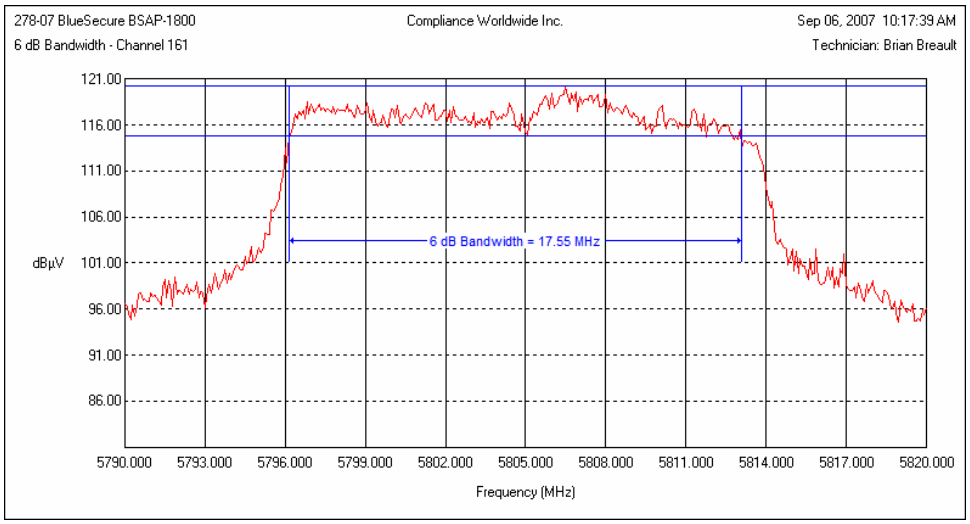
Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.2. Minimum 6 dB Bandwidth (15.247 (a) (2)) (cont.)

6.2.2. Measurement Plots (continued)

6.2.2.6. Channel 161



6. Measurement Data (continued)

6.3. 99% Bandwidth (RSS 210)

6.3.1. Measurement Results 99% Bandwidth

Channel	Frequency (MHz)	99% Bandwidth (MHz)	Result
1	2412	15.00	Compliant
6	2437	14.85	Compliant
11	2462	14.93	Compliant
149	5745	16.60	Compliant
153	5765	16.50	Compliant
161	5805	18.20	Compliant

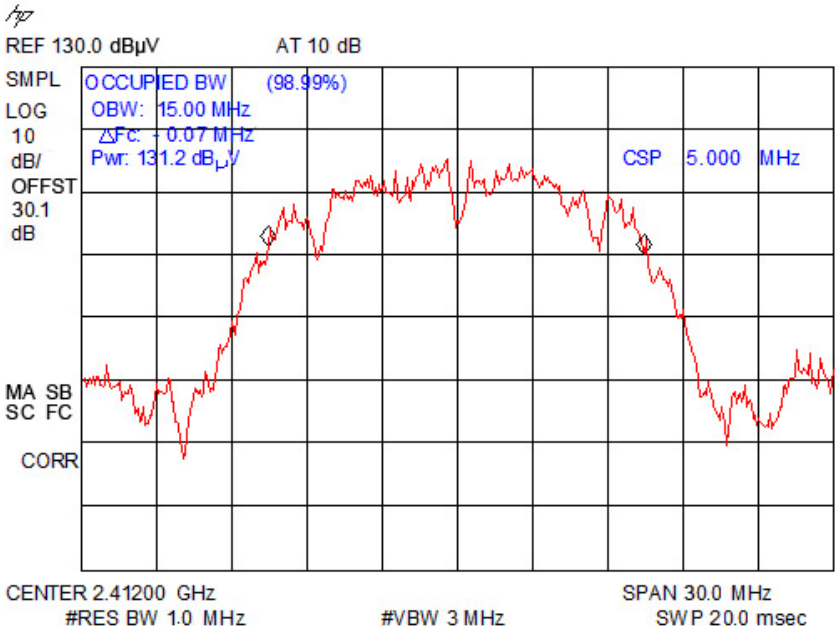
Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

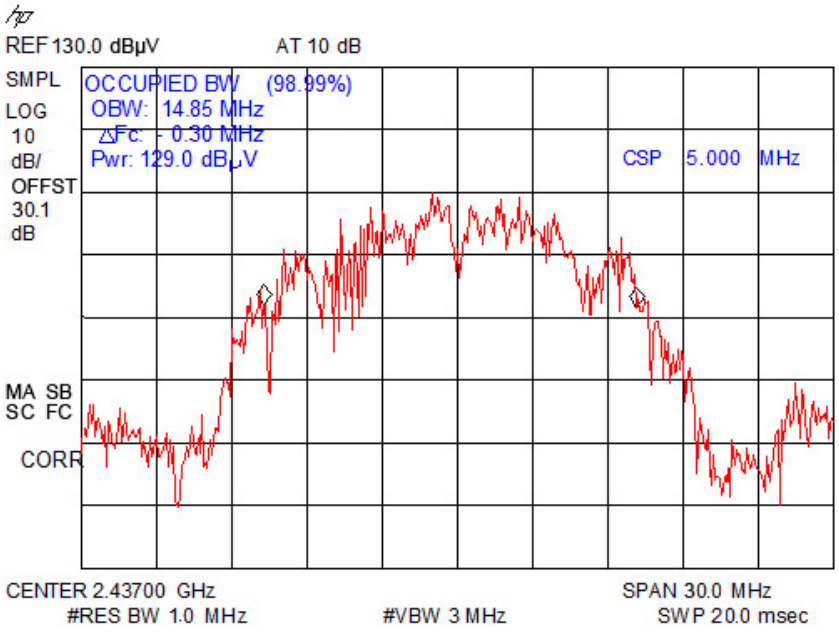
6.3. 99% Bandwidth (RSS 210) (continued)

6.3.2. Measurement Plots

6.3.2.1. Channel 1



6.3.2.2. Channel 6



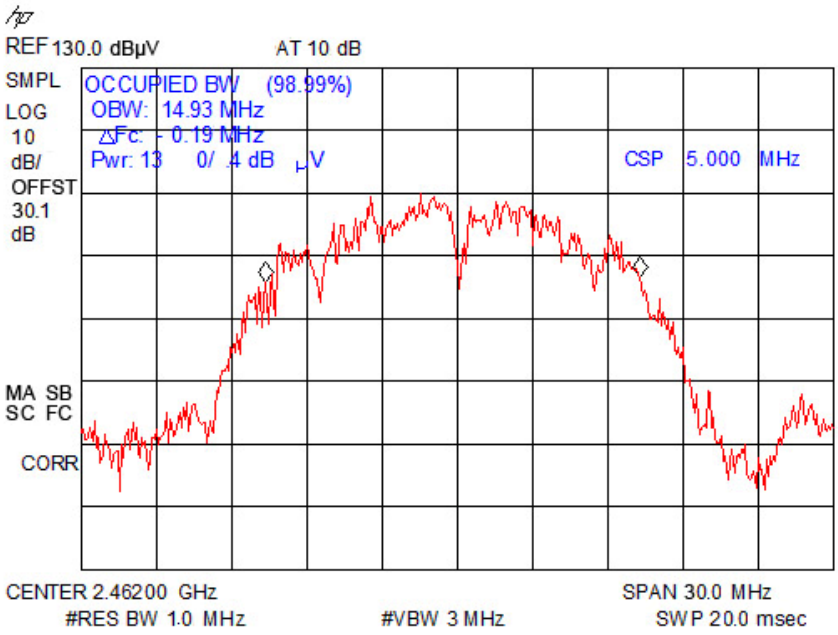
Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

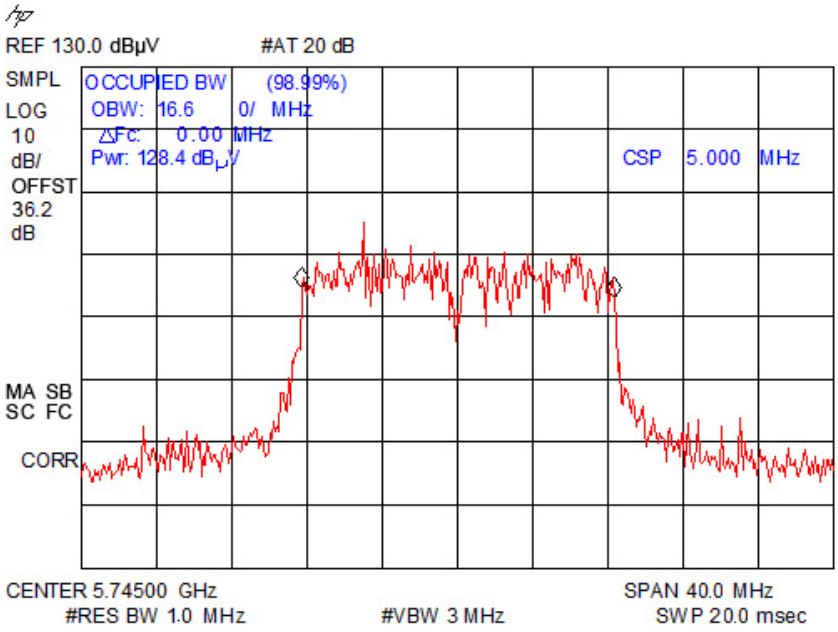
6.3. 99% Bandwidth (IC RSS 210) (cont.)

6.3.2. Measurement Plots (continued)

6.3.2.3. Channel 11



6.3.2.4. Channel 149



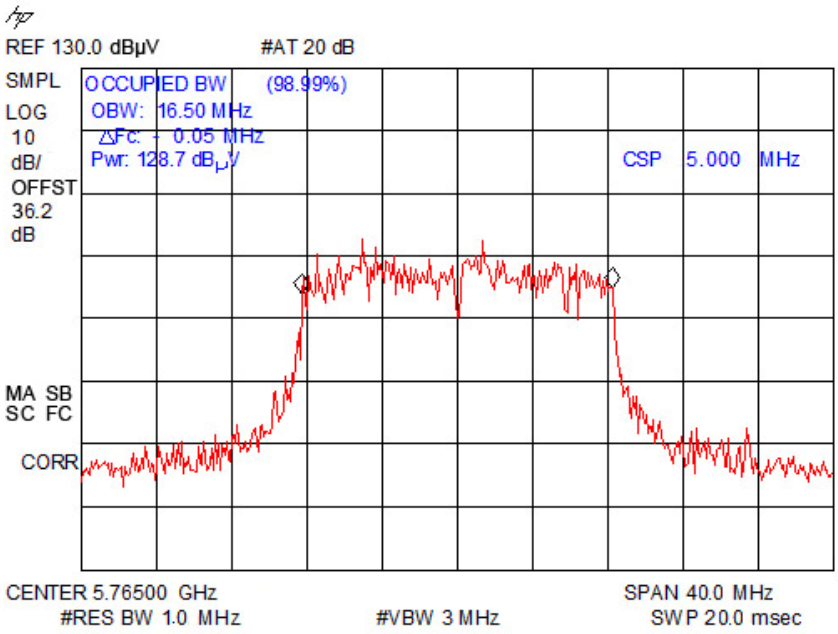
Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

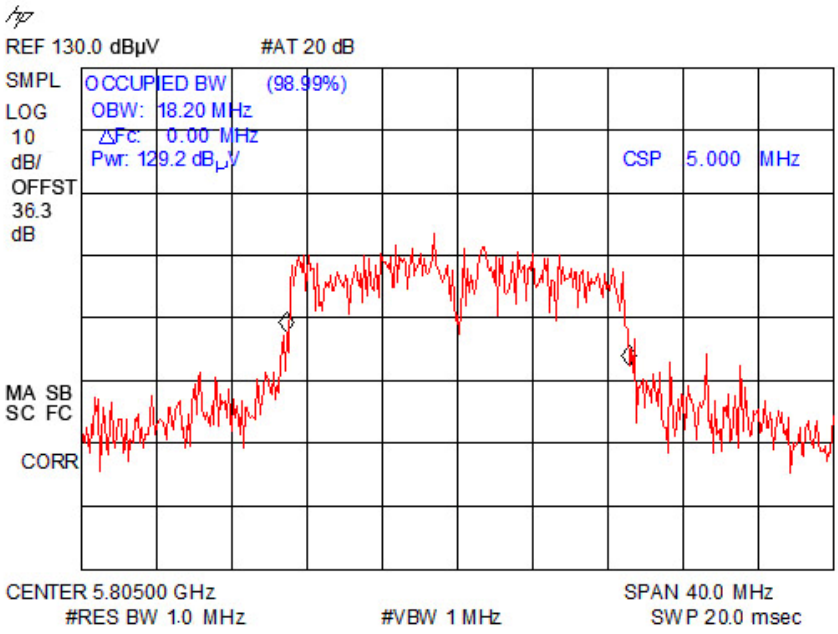
6.3. 99% Bandwidth (IC RSS 210) (cont.)

6.3.2. Measurement Plots (continued)

6.3.2.5. Channel 153



6.3.2.6. Channel 161



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.4. Operation with directional antenna gains greater than 6 dBi (15.247 (b)(4))

Requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Result: **The manufacturer states that the antennas used in this device has a gain of less than +6 dBi, therefore this requirement does not apply.**

6.5. Spurious Radiated Emissions (30 MHz to 1 GHz)

6.5.1. Regulatory Limit: FCC Part 209, Quasi-Peak

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)
30 to 88	3	40.0
88 to 216	3	43.5
216 to 960	3	46.0
960 to 1000	3	54.0

6.5.2. Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due
EMI Receiver	Hewlett Packard	8546A	3650A00360	3/14/2008
Bilog Antenna	Com-Power	AC220	25509	8/3/2008

6.5.3. Measurement & Equipment Setup

Test Date:	09/18/2007
Test Engineer:	Brian Breault
Site Temperature (°C):	21.3
Relative Humidity (%RH):	31
Frequency Range:	30 MHz to 1 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	120 kHz
EMI Receiver Avg Bandwidth:	300 kHz
Detector Functions:	Peak and Quasi-Peak.
Antenna Height:	1 to 4 meters

6.5.4. Test Procedure

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

6.5.5. Test Results

An emissions comparison of the DUT with and without the transmitter modules was made. There were no measurable emissions that could be attributed to the BlueSecure BSAP-1800 transmitter modules.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.6. Spurious Radiated Emissions (Above 1 GHz) Part 1

6.6.1. Regulatory Limit: FCC Part 209, Average

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)
Above 1 GHz	3	54.0

6.6.2. Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due
Spectrum Analyzer	Hewlett Packard	8593E	3829A03887	3/16/2008
Spectrum Analyzer	Hewlett Packard	8563EC	3946A00623	2/09/2008
EMI Receiver	Agilent	E4407B	MY45108355	11/22/2008
Microwave Preamp	Hewlett Packard	8449B	3008A01323	9/21/2008
Horn Antenna	Electro-Metrics	EM-6961	6337	8/23/2008
Harmonic Mixer	Hewlett Packard	11970A	3003A08210	Not Req'd
Horn Antenna	Alpha Industries	861A/599	324	Not Req'd
2.4 GHz BP Filter	Micro-Tronics	BRM50702	14	11/16/2007

6.6.3. Measurement & Equipment Setup

Test Date:	09/18/2007
Test Engineer:	Brian Breault
Site Temperature (°C):	21.3
Relative Humidity (%RH):	31
Frequency Range:	1 GHz to 40 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	1 MHz
EMI Receiver Avg Bandwidth:	3 MHz
Detector Functions:	Peak and Average
Antenna Height:	1 to 4 meters

6.6.4. Test Procedure

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

6.6.5. Test Results

An emissions comparison of the DUT with and without the transmitter modules was made. There were no measurable emissions that could be attributed to the BlueSecure BSAP-1800 transmitter modules.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.7. Spurious Radiated Emissions Above 1 GHz) Part 2

6.7.1. Measurement Results – Channel 1 (2400–2483.5 MHz, Low Channel)

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
2412.000	---	---	---	---	---	---	---	---	---	Fundamental
4824.000[1]	55.45	34.65	-0.33	34.32	54.00	-19.68	V	114	40	
7236.000	71.38	38.00	4.17	42.17	54.00	-11.83	V	136	355	
9648.000	50.78	30.78	5.40	36.18	54.00	-17.82	H	139	280	
12060.000[1]	47.74	26.87	7.03	33.90	54.00	-20.10	---	---	---	Noise floor
14472.000[1]	47.64	27.64	11.18	38.82	54.00	-15.18	---	---	---	Noise floor
16884.000	49.78	29.78	14.49	44.27	54.00	-9.73	---	---	---	Noise floor
19296.000[1]	50.64	30.64	9.83	40.47	54.00	-13.53	---	---	---	Noise floor
21708.000	51.74	31.74	11.21	42.95	54.00	-11.05	---	---	---	Noise floor
24120.000	52.51	32.51	14.39	46.90	54.00	-7.10	---	---	---	Noise floor

6.7.2 Measurement Results – Channel 6 (2400–2483.5 MHz, Middle Channel)

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Avg (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
2437.000[1]	---	---	---	---	---	---	---	---	---	Fundamental
4874.000[1]	55.04	34.42	-0.22	34.20	54.00	-19.80	V	137	275	
7311.000[1]	69.08	41.27	4.06	45.33	54.00	-8.67	H	133	275	
9748.000	51.68	36.77	5.51	42.28	54.00	-11.72	H	133	280	
12185.000[1]	51.68	35.20	7.41	42.61	54.00	-11.39	H	170	275	
14622.000	46.40	33.40	11.63	45.03	54.00	-8.97	---	---	---	Noise floor
17059.000	47.76	35.95	14.73	50.68	54.00	-3.32	---	---	---	Noise floor
19496.000[1]	49.58	36.44	9.68	46.12	54.00	-7.88	---	---	---	Noise floor
21933.000	51.60	37.68	11.67	49.35	54.00	-4.65	---	---	---	Noise floor
24370.000	54.26	30.41	14.18	44.59	54.00	-9.41	---	---	---	Noise floor

6.7.3 Measurement Results – Channel 11 (2400–2483.5 MHz, High Channel)

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Avg (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
2462.000[1]	---	---	---	---	---	---	---	---	---	Fundamental
4924.000[1]	56.53	35.83	-0.11	35.72	54.00	-18.28	V	100	80	
7386.000[1]	70.94	38.74	3.96	42.70	54.00	-11.30	H	142	40	
9848.000	48.37	34.10	5.63	39.73	54.00	-14.27	V	100	290	
12310.000[1]	48.33	33.58	7.78	41.36	54.00	-12.64	---	---	---	Noise floor
14772.000	47.01	34.10	12.05	46.15	54.00	-7.85	---	---	---	Noise floor
17234.000	50.88	34.95	15.22	50.17	54.00	-3.83	---	---	---	Noise floor
19696.000[1]	49.98	36.48	9.53	46.01	54.00	-7.99	---	---	---	Noise floor
22158.000[1]	51.50	37.86	12.02	49.88	54.00	-4.12	---	---	---	Noise floor
24620.000	54.84	32.81	13.97	46.78	54.00	-7.22	---	---	---	Noise floor

[1] Frequency falls within the Restricted Bands of Operation. See FCC Part 15, Section 15.205 for additional information.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.7. Spurious Radiated Emissions Above 1 GHz) Part 2 (continued)

6.7.4. Measurement Results – Channel 149 (5725–5850 MHz, Low Channel)

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5745.000[1]	---	---	---	---	---	---	---	---	---	Fundamental
11490.000[1]	58.31	35.67	7.10	42.77	54.00	-11.23	H	120	90	
17235.000	49.53	29.53	18.03	47.56	54.00	-6.44	H	120	280	
22980.000[1]	53.31	33.31	9.88	43.19	54.00	-10.81	---	---	---	Noise floor
28725.000	11.87	-8.13	23.50	15.37	54.00	-38.63	---	---	---	Noise floor
34470.000	11.70	-8.30	22.50	14.20	54.00	-39.80	---	---	---	Noise floor

[1] Frequency falls within the Restricted Bands of Operation. See FCC Part 15, Section 15.205 for additional information.

6.7.5. Measurement Results – Channel 153 (5725–5850 MHz, Middle Channel)

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5765.000[1]	---	---	---	---	---	---	---	---	---	Fundamental
11530.000[1]	57.66	36.26	7.10	43.36	54.00	-10.64	H	120	80	
17295.000	48.17	28.17	18.12	46.29	54.00	-7.71	H	120	280	
23060.000[1]	52.13	32.13	9.88	42.01	54.00	-11.99	---	---	---	Noise floor
28825.000	12.96	-7.04	23.50	16.46	54.00	-37.54	---	---	---	Noise floor
34590.000	11.40	-8.60	22.50	13.90	54.00	-40.10	---	---	---	Noise floor

[1] Frequency falls within the Restricted Bands of Operation. See FCC Part 15, Section 15.205 for additional information.

6.7.6. Measurement Results – Channel 161 (5725–5850 MHz, High Channel)

Frequency (MHz)	Peak (dBµV)	Avg (dBµV)	Corr Factor (dB)	Average (dBµV/m)	Limit (dB)	Margin (dB)	Polarity (H/V)	Height (cm)	TT Pos (Deg)	Note
5805.000[1]	---	---	---	---	---	---	---	---	---	Fundamental
11610.000[1]	64.59	42.83	7.10	49.93	54.00	-4.07	H	120	90	
17415.000	48.04	28.04	18.29	46.33	54.00	-7.67	H	120	280	
23220.000	51.76	31.76	9.88	41.64	54.00	-12.36	---	---	---	Noise floor
29025.000	11.29	-8.71	23.50	14.79	54.00	-39.21	---	---	---	Noise floor
34830.000	12.71	-7.29	22.50	15.21	54.00	-38.79	---	---	---	Noise floor

[1] Frequency falls within the Restricted Bands of Operation. See FCC Part 15, Section 15.205 for additional information.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.8. Lower and Upper Band Edge Measurements (15.247 (d))

Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.8.1. 2400 MHz to 2483.5 MHz

6.8.1.1. Lower Band Edge

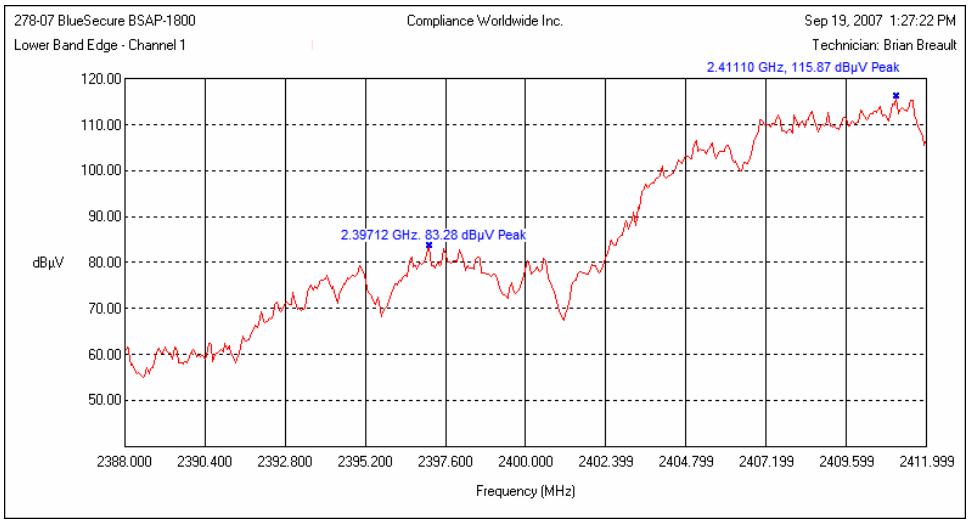
6.8.1.1.1. Measurement Results – Lower Band Edge

Lowest Channel (MHz)	Field Strength (dBµV/m)		Worst Case Out of Band (MHz)	Field Strength (dBµV/m)		Margin (dB)		Result
	Peak	Average		Peak	Average	Peak	Avg	
2412	115.87	---	2.39712	83.28	---	>20 dB	---	Compliant

6.8.1.1.2. Worst Case Measurement – Restricted Out of Band (> 2 BWs, eg >2 MHz)

Frequency (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)	Margin	Result
	Peak	Average	Average	Average	
2386.85	72.75	50.84	54.0	-3.16	Compliant

6.8.1.1.3. Lower Band Edge: Band Edge Measurement

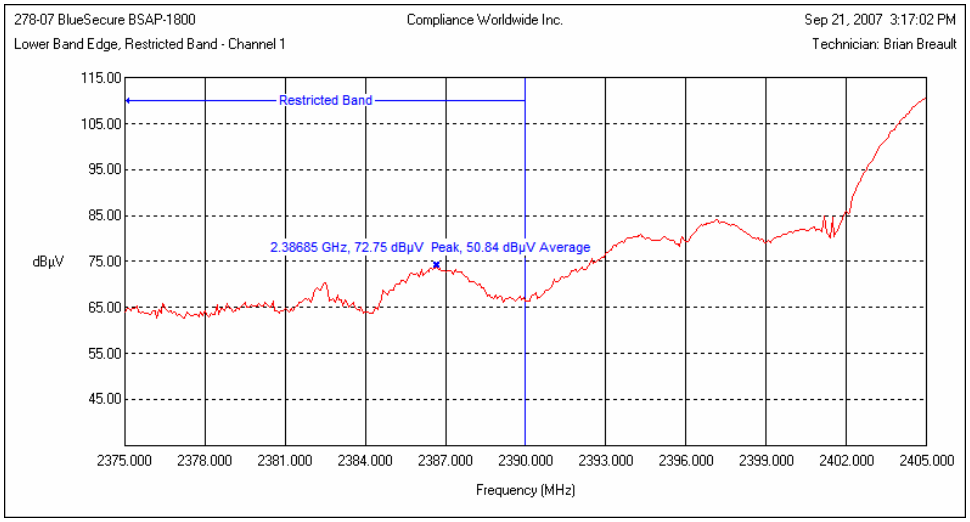


Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.8. Lower and Upper Band Edge Measurements (15.247 (d)) (continued)

6.8.1.1.4. Lower Band Edge: Worst Case Measurement – Restricted Out of Band



6.8.1.2. Upper Band Edge

6.8.1.2.1. Measurement Results – Upper Band Edge

Highest Channel (MHz)	Field Strength (dBµV/m)		Band Edge Frequency (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)	Margin	Result
	Peak	Average		Peak	Average	Average	Average	
2462.000	118.39	99.47	2483.5	70.25	50.44	54.0	-3.56	Compliant

6.8.1.2.2. Worst case measurement – Out of Band (100 kHz BW)

Frequency (MHz)	Field Strength (dBµV/m)		Limit (dBµV/m)	Margin	Result
	Peak	Average	Average	Average	
2483.93	71.30	52.66	54.0	-1.34	Compliant

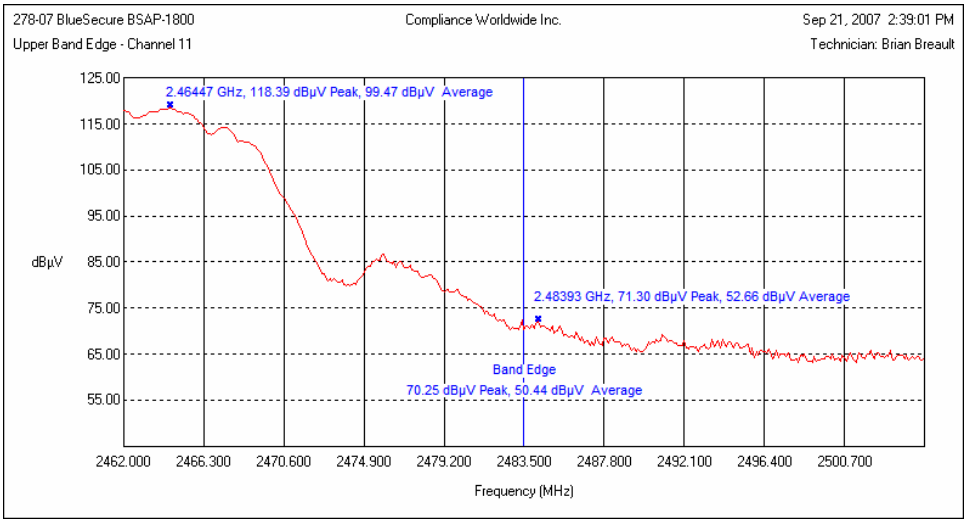
See the following page for plot.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.8. Lower and Upper Band Edge Measurements (15.247 (d)) (continued)

6.8.1.2.3. Upper Band Edge: Worst case measurement – Out of Band (100 kHz BW)



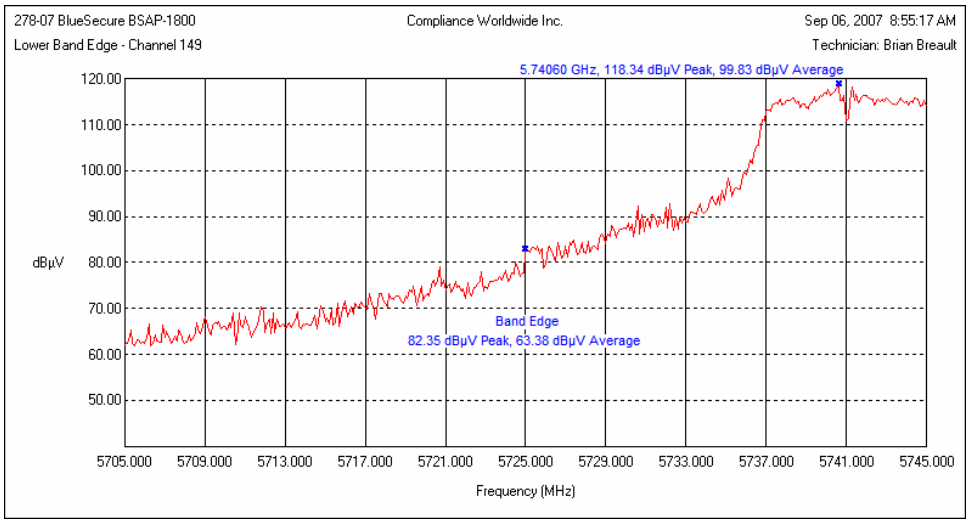
6.8.2. 5725 MHz to 5850 MHz

6.8.2.1. Lower Band Edge

6.8.2.1.1. Measurement Results – Lower Band Edge

Lowest Channel (MHz)	Field Strength (dBµV/m)		Band Edge Frequency (MHz)	Field Strength (dBµV/m)		Margin (dB)		Result
	Peak	Average		Peak	Average	Peak	Avg	
5745	118.34	99.83	5725	82.35	63.38	>20 dB	> 20 dB	Compliant

6.8.2.1.2. Lower Band Edge: Band Edge Measurement



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

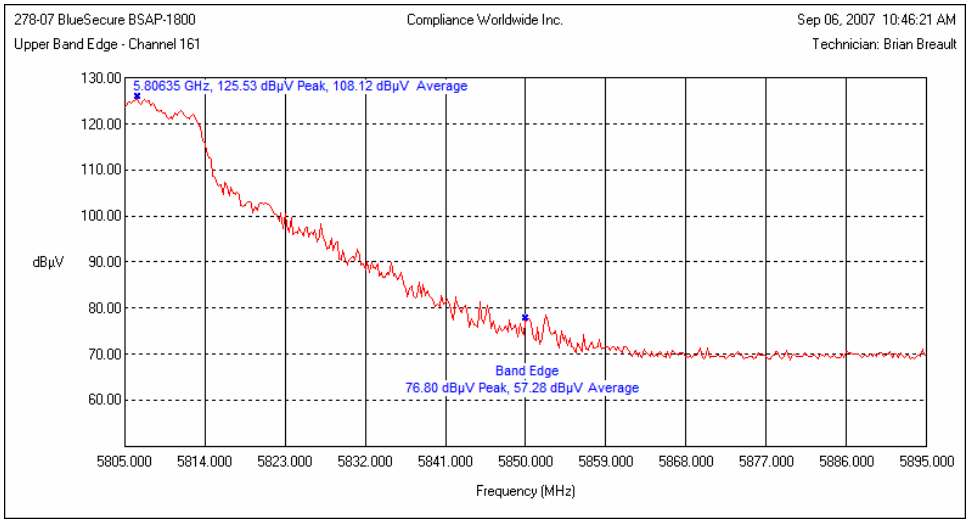
6.8. Lower and Upper Band Edge Measurements (15.247 (d)) (continued)

6.8.2.2. Upper Band Edge

6.8.2.2.1. Measurement Results – Upper Band Edge

Highest Channel (MHz)	Field Strength (dBµV/m)		Band Edge Frequency (MHz)	Field Strength (dBµV/m)		Margin (dB)		Result
	Peak	Average		Peak	Average	Peak	Avg	
5805	125.53	108.12	5850	76.80	57.28	>20 dB	> 20 dB	Compliant

6.8.2.2.2. Upper Band Edge: Band Edge Measurement



Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.9. Power Spectral Density (15.247(e))

Requirement: For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Note: This test was performed in accordance with the information outlined in Measurement of Digital Transmission Systems Operating under Section 15.247, March 23 2005, Section 15.247(d): Power spectral density (PSD), PSD Option 1. Refer to the graphs in Section 6.1.2 of this report for the noise power density values used for the following table. A 35 dB correction factor was used to convert dBµV /Hz or dBm/Hz values to a 3 kHz Resolution Bandwidth.

dBm = dBµV – 107.

6.9.1. Measurement Results (From Radiated Measurements)

Channel	Channel Frequency	Noise Power Density	BW Correction Factor	Power Spectral Density	Limit	Result
	GHz	dBµV/Hz	dB	dBm	dBm	
1	2.412	54.34	+35	-17.66	+8	Compliant
6	2.437	55.88	+35	-16.12	+8	Compliant
11	2.462	55.26	+35	-16.74	+8	Compliant
149	5.745	55.42	+35	-16.58	+8	Compliant
153	5.765	55.72	+35	-16.28	+8	Compliant
161	5.805	56.21	+35	-15.79	+8	Compliant

6.9.2. Measurement Results (From Conducted Measurements)

Channel	Channel Frequency	Noise Power Density Chain 0	Noise Power Density Chain 2	BW Correction Factor	Power Spectral Density	Limit	Result
	GHz	dBm/Hz	dBm/Hz	dB	dBm	dBm	
1	2.412	-52.42	-52.06	+35	-14.23	+8	Compliant
6	2.437	-52.80	-52.35	+35	-14.56	+8	Compliant
11	2.462	-52.76	-51.78	+35	-14.23	+8	Compliant
149	5.745	-52.38	-52.70	+35	-14.53	+8	Compliant
153	5.765	-52.65	-53.13	+35	-14.87	+8	Compliant
161	5.805	-52.88	-53.51	+35	-15.17	+8	Compliant

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.10. Power Line Conducted Emissions (15.207)

Requirement: For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

Test Note: A D-Link model DSA-0421S-50 1 24 power adapter was used to power the BSAP-1800. The power adapter was not serialized.

6.10.1 Power Line Conducted Emissions Test Setup

6.10.1.1 Regulatory Limit: (15.207) (FCC Part 15, Class B)

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50
* Decreases with the logarithm of the frequency.		

6.10.1.2 Measurement Equipment Used to Perform Test

Device	Manufacturer	Model	Serial No.	Cal Due
EMI Receiver	Hewlett Packard	8546A	3650A00360	3/14/2008
LISN	EMCO	3825/2	9109-1860	1/11/2008

6.10.1.3 Measurement & Equipment Setup

Test Date:	10/09/2007
Test Engineer:	Brian Breault
Site Temperature (°C):	20.8
Relative Humidity (%RH):	30
Frequency Range:	0.15 MHz to 30 MHz
EMI Receiver IF Bandwidth:	9 kHz
EMI Receiver Avg Bandwidth:	30 kHz
Detector Functions:	Peak, Quasi-Peak. & Average

6.10.1.4 Test Procedure

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

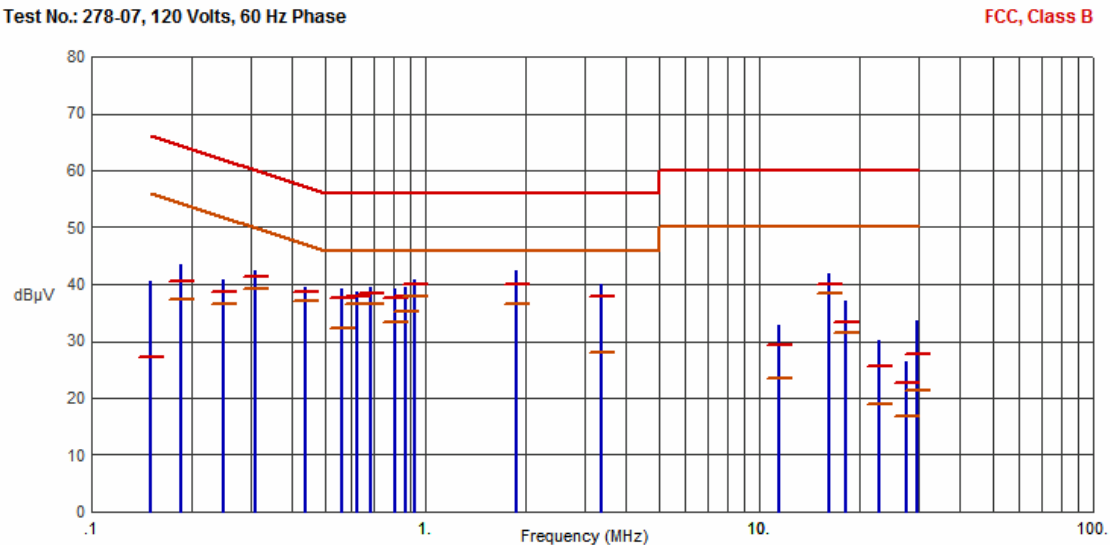
Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.10 Power Line Conducted Emissions (15.207) (continued)

6.10.2 Conducted Emissions Test Data

6.10.2.1 120 Volts, 60 Hz Phase



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.1506	40.63	27.24	65.97	-38.73	-2.55	55.97	-58.52	
.1861	43.34	40.62	64.21	-23.59	37.32	54.21	-16.89	
.2479	40.85	38.54	61.83	-23.29	36.41	51.83	-15.42	
.3112	42.35	41.21	59.94	-18.73	39.26	49.94	-10.68	
.4356	39.48	38.61	57.15	-18.54	37.18	47.15	-9.97	
.5598	39.07	37.67	56.00	-18.33	32.32	46.00	-13.68	
.6215	38.72	37.94	56.00	-18.06	36.54	46.00	-9.46	
.6843	39.53	38.35	56.00	-17.65	36.43	46.00	-9.57	
.8074	39.14	37.62	56.00	-18.38	33.31	46.00	-12.69	
.8693	39.59	37.81	56.00	-18.19	35.16	46.00	-10.84	
.9329	40.85	39.90	56.00	-16.10	37.91	46.00	-8.09	
1.8677	42.38	40.07	56.00	-15.93	36.53	46.00	-9.47	
3.3576	40.05	37.85	56.00	-18.15	28.01	46.00	-17.99	
11.4471	32.90	29.22	60.00	-30.78	23.43	50.00	-26.57	
16.2273	41.98	40.08	60.00	-19.92	38.30	50.00	-11.70	
18.2433	36.96	33.21	60.00	-26.79	31.50	50.00	-18.50	
22.8803	30.19	25.65	60.00	-34.35	18.93	50.00	-31.07	
27.5497	26.39	22.70	60.00	-37.30	16.93	50.00	-33.07	
29.7892	33.55	27.78	60.00	-32.22	21.37	50.00	-28.63	

Result: Passed

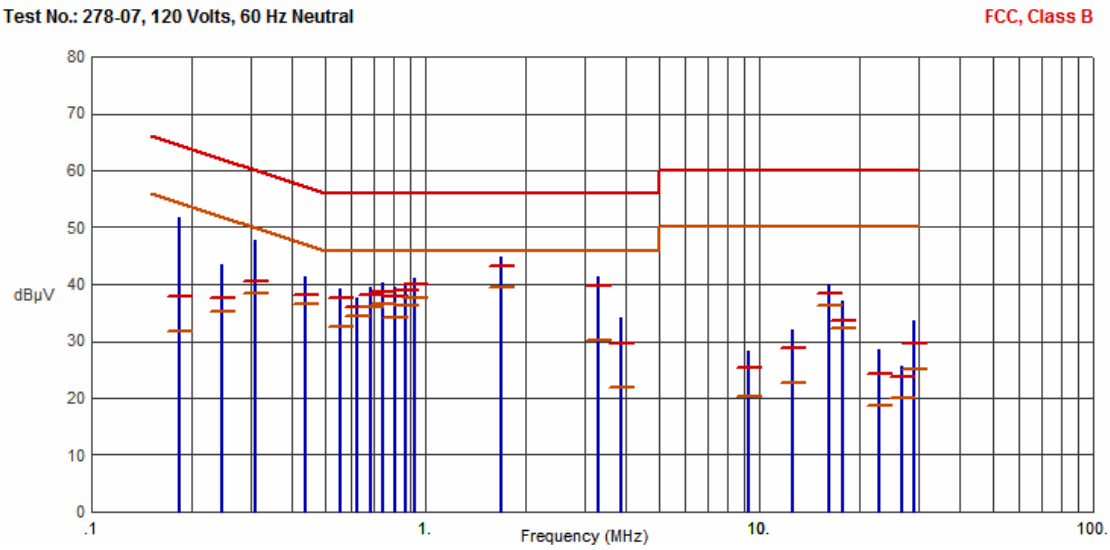
Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.10. Power Line Conducted Emissions (15.207) (continued)

6.10.2 Conducted Emissions Test Data (continued)

6.10.2.2 120 Volts, 60 Hz Neutral



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.1828	51.63	37.92	64.36	-26.44	31.73	54.36	-22.63	
.2469	43.46	37.49	61.86	-24.37	35.11	51.86	-16.75	
.3091	47.77	40.46	59.99	-19.53	38.37	49.99	-11.62	
.4353	41.43	38.20	57.15	-18.95	36.55	47.15	-10.60	
.5593	39.11	37.68	56.00	-18.32	32.66	46.00	-13.34	
.6246	37.50	36.04	56.00	-19.96	34.33	46.00	-11.67	
.6836	39.44	38.18	56.00	-17.82	36.13	46.00	-9.87	
.7459	40.17	38.68	56.00	-17.32	36.48	46.00	-9.52	
.8082	39.38	37.95	56.00	-18.05	34.12	46.00	-11.88	
.8701	39.87	38.85	56.00	-17.15	36.29	46.00	-9.71	
.9320	40.95	39.90	56.00	-16.10	37.65	46.00	-8.35	
1.6790	44.86	43.17	56.00	-12.83	39.50	46.00	-6.50	
3.2951	41.42	39.69	56.00	-16.31	30.08	46.00	-15.92	
3.8559	34.00	29.62	56.00	-26.38	21.81	46.00	-24.19	
9.3256	28.32	25.46	60.00	-34.54	20.22	50.00	-29.78	
12.6255	31.90	28.90	60.00	-31.10	22.73	50.00	-27.27	
16.1674	40.11	38.36	60.00	-21.64	36.20	50.00	-13.80	
17.6924	37.12	33.56	60.00	-26.44	32.25	50.00	-17.75	
22.8820	28.54	24.38	60.00	-35.62	18.76	50.00	-31.24	
26.6083	25.69	23.78	60.00	-36.22	19.96	50.00	-30.04	
29.1111	33.71	29.65	60.00	-30.35	24.96	50.00	-25.04	

Result: Passed

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

6. Measurement Data (continued)

6.11. Public Exposure to Radio Frequency Energy Levels (15.247(i) (1.1307 (b)(1)) RSS-GEN 5.5, RSS 102

Channel	MPE Distance (cm)	DUT Output Power (dBm)	DUT Antenna Gain (dBi)	Power Density		Limit (mW/cm^2)	Result
				(mW/cm^2)	(W/m^2)		
	(1)	(2)	(3)	(4)		(5)	
1	20	28.17	3.95	0.324	3.2425	1	Compliant
6	20	29.71	3.95	0.462	4.6225	1	Compliant
11	20	29.09	3.95	0.401	4.0075	1	Compliant
149	20	28.14	5.06	0.416	4.1580	1	Compliant
153	20	28.44	5.06	0.446	4.4554	1	Compliant
161	20	28.93	5.06	0.499	4.9876	1	Compliant

$$PD = \frac{OP + AG}{(4 \times \pi \times d^2)}$$

1. Reference CFR 2.1093(b): For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.
2. Section 6.1.1 of this test report.
3. Data supplied by the client.
4. Power density is calculated from field strength measurement and antenna gain.
5. Reference CFR 1.1310, Table 1: Limits for Maximum Permissible Exposure (MPE), Section (B): Limits for General Population/Uncontrolled Exposure.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com

7. Test Site Description

Compliance Worldwide is located at 357 Main Street in Sandown, New Hampshire. The test sites at Compliance Worldwide are used for conducted and radiated emissions testing in accordance with Federal Communications Commission (FCC) and Industry Canada standards. A description of the test sites is on file with the FCC (registration number **96392**) and Industry Canada (file number **IC 3023A-1)**.

The radiated emissions test site is a 3 and 10 meter enclosed open area test site (OATS). Personnel, support equipment and test equipment are located in the basement beneath the OATS ground plane.

The conducted emissions site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical ground plane required by EN 55022.

Both sites are designed to test products or systems 1.5 meter W x 1.5 meter L x 2.0 meter H, floor standing or table top.

Compliance Worldwide, Inc. - 357 Main Street - Sandown, NH 03873
(603) 887 3903 Fax 887 6445
http://www.cw-inc.com