



**ADDENDUM TO FC03-032**

**FOR THE**

**SOHO6 WIRELESS, BF4S16E5W**

**FCC PART 15 SUBPART C SECTIONS 15.207, 15.209 & 15.247 AND RSS 210**

**COMPLIANCE**

**DATE OF ISSUE: MAY 21, 2003**

**PREPARED FOR:**

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Date of test: May 6-9, 2003

**Report No.: FC03-032A**

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## ADMINISTRATIVE INFORMATION

**DATE OF TEST:** May 6-9, 2003

**DATE OF RECEIPT:** May 6, 2003

**PURPOSE OF TEST:** To demonstrate the compliance of the SOHO6 Wireless, BFS16E5W, with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209 & 15.247 and RSS 210 devices.  
**Addendum A** is to revise the model number.

**TEST METHOD:** ANSI C63.4 (1992) and RSS 210

**MANUFACTURER:** SerComm Corp.  
10F, No 19-13, San-chung Road, Nan Kang  
Taipei, Taiwan, R.O.C.

**REPRESENTATIVE:** George Stults

**TEST LOCATION:** CKC Laboratories, Inc.  
5473A Clouds Rest  
Mariposa, CA 95338

## SUMMARY OF RESULTS

As received, the Watchguard Technologies Inc. SOHO6 Wireless, BF4S16E5W was found to be fully compliant with the following standards and specifications:

### United States

- FCC Part 15 Subpart C Section 15.207, 15.209 & 15.247
- ANSI C63.4 (1992) method

### Japan

VCCI (April 2000) for the digital portion of the EUT using:

- FCC Part 15 Subpart C Section 15.207 & 15.209

VCCI Acceptance Nos. R-565 & C-580

### Canada

RSS-210 6.2.2(o)(b) using:

- FCC Part 15 Subpart C Section 15.207, 15.209 & 15.247
- ANSI C63.4 (1992) method

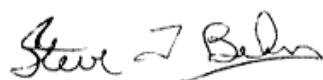
Industry of Canada File No. IC 3082-B

## CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

## APPROVALS

### QUALITY ASSURANCE:



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Steve Behm, Director of Engineering Services and Quality Assurance



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Joyce Walker, Quality Assurance Administrative Manager

### TEST PERSONNEL:



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Mike Wilkinson, Lab Manager

### FCC 15.31(e) Voltage Variations

CHANNEL	FREQUENCY MHz	CORRECTED READING	CORRECTED READING	CORRECTED READING	SPEC LIMIT dB $\mu$ V/m
		dB $\mu$ V/m 85%	dB $\mu$ V/m 100%	dB $\mu$ V/m 115%	
1	2412.6	119.0	119.0	118.8	137.0
6	2437.5	119.6	119.5	119.5	137.0
11	2461.5	120.3	120.3	120.3	137.0

Test Method: ANSI C63.4 (1992)  
 Spec Limit: FCC Part 15 Subpart C Section 15.247(b)(1)/15.31(e)  
 Test Distance: No Distance  
 Tested By: Mike Wilkinson

### FCC 15.31(m) Number Of Channels

This device was tested on three channels.

### FCC 15.33(a) Frequency Ranges Tested

15.207 Conducted: 150 kHz – 30 MHz

15.209 Radiated: 30 MHz – 25 GHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	25 GHz	1 MHz

### FCC 15.203 Antenna Requirements

The antenna uses a reverse SMA connector; therefore the EUT complies with Section 15.203 of the FCC rules.

### FCC 15.205 Restricted Bands

The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules. Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

### Eut Operating Frequency

The EUT was operating at 2400-2462 MHz.

The EUT is a Direct Sequencing Device operating in the 2400 – 2433.5 MHz band.

## EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit. The EUT is an 802.11b Wireless Internet Firewall.

The following model was tested by CKC Laboratories: **BFS16E5W**

Since the time of testing the manufacturer has chosen to use the following model name in its place. Any differences between the names does not affect their EMC characteristics and therefore complies to the level of testing equivalent to the tested model name shown on the data sheets: **BF4S16E5W**

## EQUIPMENT UNDER TEST

### SOHO6 Wireless

Manuf: Watchguard Technologies Inc.  
 Model: BF4S16E5W  
 Serial: 001  
 FCC ID: pending

### Power Supply

Manuf: Watchguard Technologies Inc.  
 Model: EPA-121DA-12  
 Serial: NA  
 FCC ID: NA

## PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

### Remote PC (2 each)

Manuf: Computer Sonics  
 Model: 167494  
 Serial: WG1 & WG2  
 FCC ID: DoC

### Remote Laptop

Manuf: Fujitsu  
 Model: Lifebook  
 Serial: R1500401  
 FCC ID: DoC

### Remote Monitor (2 each)

Manuf: Micron  
 Model: RMD5L11  
 Serial: 7225L1120185 & 8205L1128429  
 FCC ID: DoC

### Remote Keyboard (2 each)

Manuf: Microsoft  
 Model: E0641PS2  
 Serial: NA  
 FCC ID: DoC

## MEASUREMENT UNCERTAINTY

TEST	HIGHEST UNCERTAINTY
Radiated Emissions	+/- 2.94 dB
Conducted Emissions	+/- 1.56 dB

Note: Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Statements of compliance are based on the nominal values only.

## REPORT OF MEASUREMENTS

The following tables report the six highest worst case levels recorded during the tests performed on the EUT. All readings taken are peak readings unless otherwise noted. The data sheets from which these tables were compiled are contained in Appendix C.

<b>Table 1: FCC 15.207 Six Highest Conducted Emission Levels</b>									
FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V	SPEC LIMIT dB $\mu$ V	MARGIN dB	NOTES
		Lisn dB	dB	Cable dB	dB				
0.317256	45.5	0.2		0.1		45.8	49.8	-4.0	WA
0.544508	42.4	0.0		0.1		42.5	46.0	-3.5	B
0.551780	42.0	0.2		0.1		42.3	46.0	-3.7	W
0.947380	42.9	0.1		0.0		43.0	46.0	-3.0	B
0.947380	42.4	0.2		0.0		42.6	46.0	-3.4	W
19.714180	46.0	0.0		0.2		46.2	50.0	-3.8	B

Test Method: ANSI C63.4 (1992)  
 Spec Limit: FCC Part 15 Subpart C Section 15.207

NOTES: A = Average Reading  
 B = Black Lead  
 W = White Lead

COMMENTS: EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on channel 11. Antennas are connected to both ports of the EUT. EUT WAN port connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 server software. EUT Trusted port 0 connected via 6-UTP cable to desktop PC running windows 98, web browser and running ping. EUT Trusted port 1 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 2 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 3 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Wireless interface is in test mode and transmits constantly on selected channel but does not respond to any nearby 802.11b device. EUT is running SOHO6 software vers 6.2.1 (Salinas BETA) configured to allow any traffic. The temperature was 72°F and the humidity was 45%. Frequency range investigated was 150 kHz to 30 MHz.



**Table 2: FCC 15.209/15.247(c) Six Highest Radiated Emission Levels**

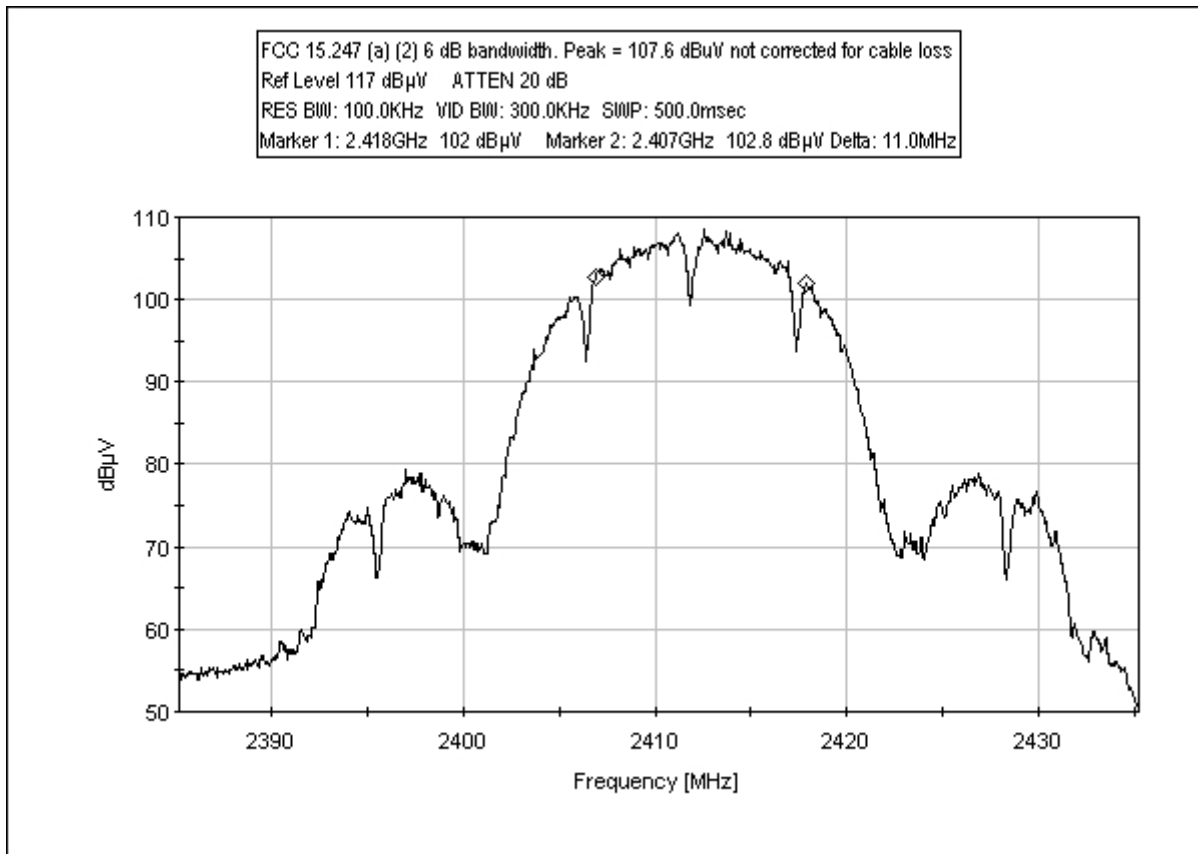
FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS				CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB					
162.800	50.5	10.6	-26.9	2.1		36.3	43.5	-7.2	V
162.808	50.1	10.6	-26.9	2.1		35.9	43.5	-7.6	V
162.900	48.6	10.6	-26.9	2.1		34.4	43.5	-9.1	V
297.900	47.0	12.9	-26.5	3.0		36.4	46.0	-9.6	V
320.500	48.3	13.6	-26.6	3.2		38.5	46.0	-7.5	V
373.339	48.5	15.2	-27.0	3.5		40.2	46.0	-5.8	VQ

Test Method: ANSI C63.4 (1992)  
 Spec Limit: FCC Part 15 Subpart C Section 15.209/15.247(c)  
 Test Distance: 3 Meters

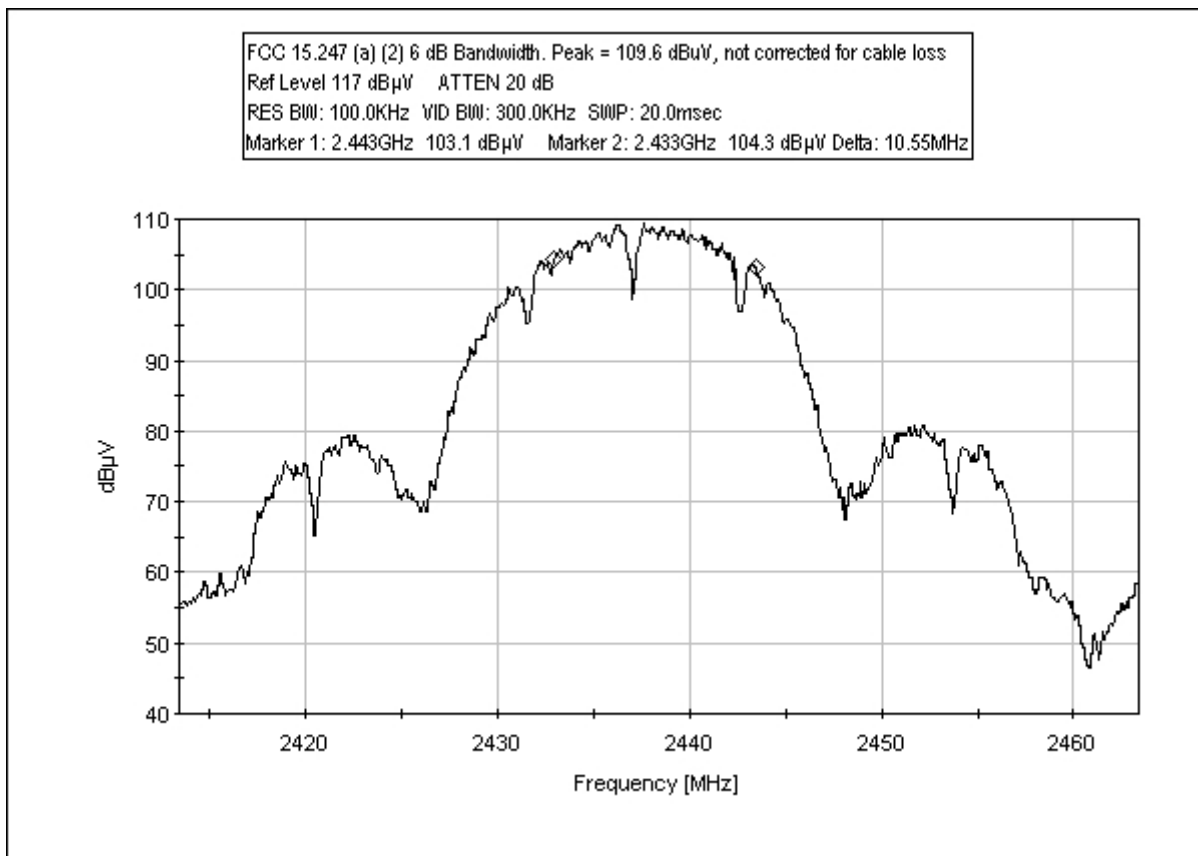
NOTES: Q = Quasi Peak Reading  
 V = Vertical Polarization

COMMENTS: EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on the channel indicated in each reading. Antennas are connected to both ports of the EUT. EUT WAN port connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 server software. EUT Trusted port 0 connected via 6-UTP cable to desktop PC running windows 98, web browser and running ping. EUT Trusted port 1 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 2 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 3 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Wireless interface is in test mode and transmits constantly on selected channel but does not respond to any nearby 802.11b device. EUT is running SOHO6 software vers 6.2.1 (Salinas BETA) configured to allow any traffic The temperature was 72°F and the humidity was 45%. Frequency range investigated was 30 MHz to 25GHz. No signal detected above 1 GHz. Channels 1, 6 & 11 were investigated in receive and transmit modes.

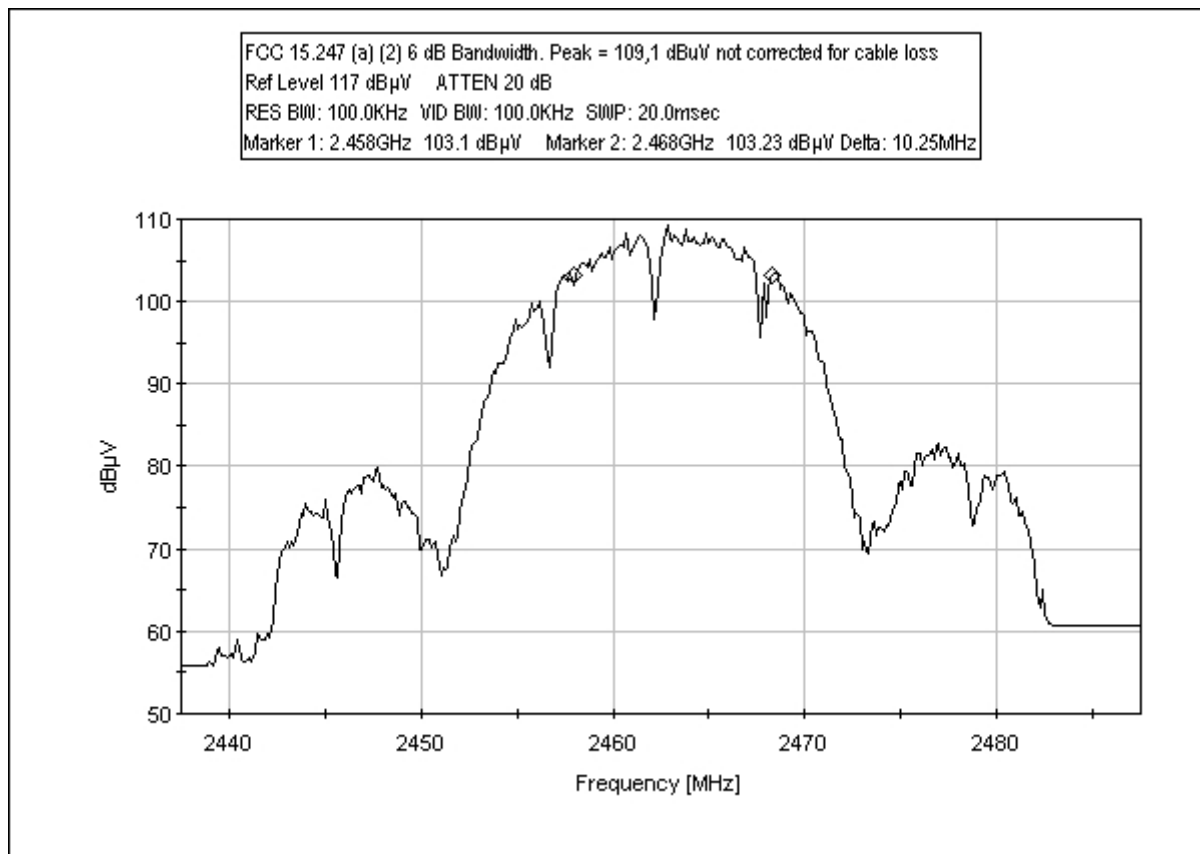
### FCC 15.247(a)(2) BANDWIDTH CHANNEL 1



### FCC 15.247(a)(2) BANDWIDTH CHANNEL 6



### FCC 15.247(a)(2) BANDWIDTH CHANNEL 11



**Table 3: FCC 15.247(b)(3) Antenna Terminal Peak Output Emission Levels**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		dB	Corr dB	Cable dB	dB				
2412.600	111.3		5.6	2.1		119.0	137.0	-18.0	NA
2438.400	112.0		5.6	2.1		119.7	137.0	-17.3	NA
2462.500	112.4		5.6	2.1		120.1	137.0	-16.9	NA

Test Method: ANSI C63.4 (1992)  
 Spec Limit: FCC Part 15 Subpart C Section 15.247(b)(3)  
 Test Distance: No Distance

NOTES: N = No Polarization  
 A = Average Reading

COMMENTS: EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on the channel indicated in each reading. The Laptop is connected to the EUT via a 1.5 meter Ethernet cable and the laptop is controlling the operational mode of the EUT. The spectrum analyzer is connected directly to the EUT transmitter port via a 10 foot coax cable. A bandwidth correction factor is added to each reading which was derived as follows:  $10 \log (\text{EUT BW of 11 MHz} / \text{Analyzer BW of 3 MHz}) = 5.6 \text{ dB}$ . The temperature was 72°F and the humidity was 45%. Measurements made with the SA RES BW & Vid BW set to 3 MHz. Peak readings for each channel converted to Watts are as follows; Channel 1 = corrected reading 124.3 dBV = 0.054 Watt, Channel 6 = corrected reading 125.4 dBV = 0.069 Watt, Channel 11 = corrected reading 127.5 dBV = 0.112 Watt. EIRP for Directional Gain Reduction on each channel based on the declared antenna gain of 5 dBi is as follows: Channel 1 = 5dB + 124.3 dBuV = 129.3 dB = 0.170 Watt, Channel 6 = 5dB + 125.4 dBuV = 130.4 dB = 0.219 Watt, Channel 11 = 5dB + 127.5 dBuV = 132.5 dB = 0.355 Watt.

#### FCC 15.247(b)(4) Directional Gain Reduction

EIRP for Directional Gain Reduction on each channel based on the declared antenna gain of 5 dBi is as follows:

Channel 1 = 5dB + 124.3 dBuV = 129.3 dB = 0.170 Watt

Channel 6 = 5dB + 125.4 dBuV = 130.4 dB = 0.219 Watt

Channel 11 = 5dB + 127.5 dBuV = 132.5 dB = 0.355 Watt

**Table 4: FCC 15.247(c) Antenna Conducted Six Highest Emission Levels**

FREQUENCY MHz	METER READING dB $\mu$ V	CORRECTION FACTORS				CORRECTED READING dB $\mu$ V/m	SPEC LIMIT dB $\mu$ V/m	MARGIN dB	NOTES
		Cable dB							
4922.300	53.0	3.1				56.1	88.1	-32.0	N
4923.300	50.9	3.1				54.0	88.1	-34.1	N
7384.300	57.1	3.8				60.9	88.1	-27.2	N
7385.300	55.8	3.8				59.6	88.1	-28.5	N
14471.000	48.8	5.3				54.1	88.1	-34.0	N
16884.500	48.9	5.7				54.6	88.1	-33.5	N

Test Method: ANSI C63.4 (1992)

Spec Limit: FCC Part 15 Subpart C Sections 15.247(c)

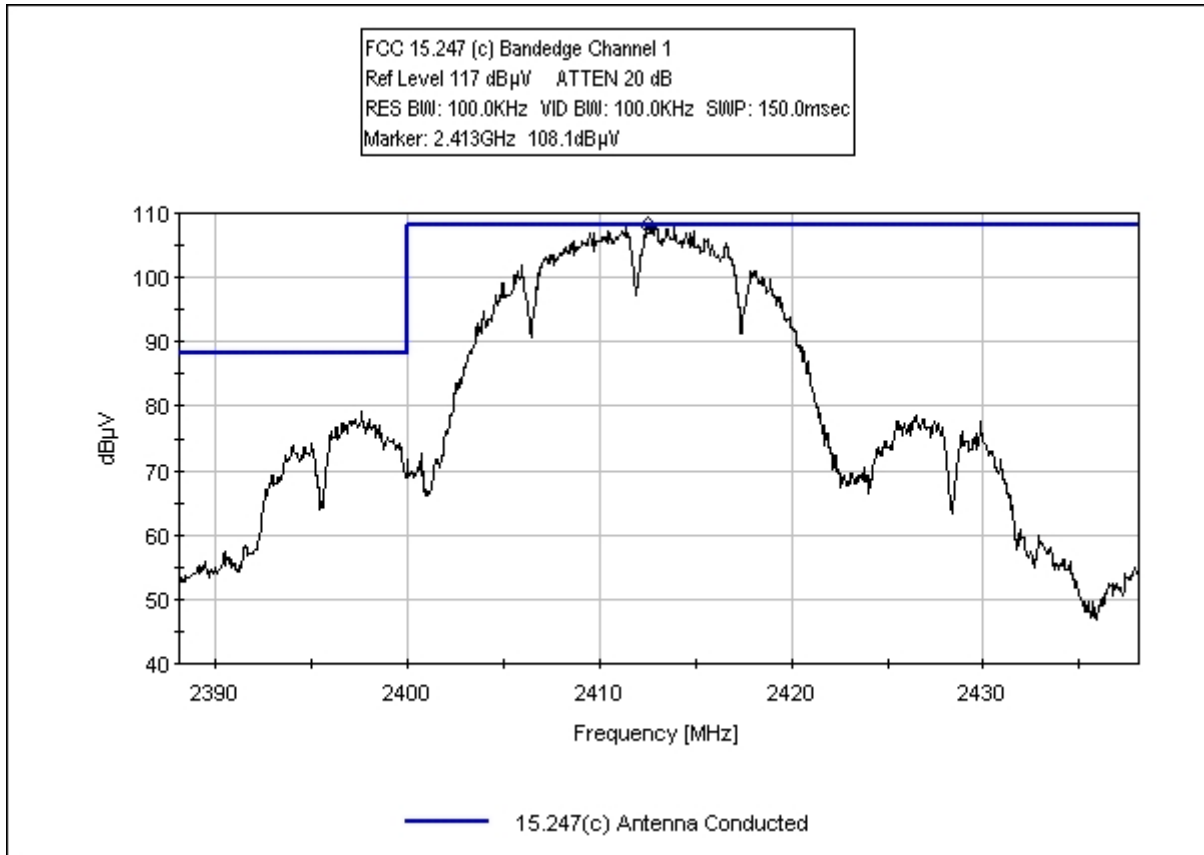
Test Distance: No Distance

NOTES:

N = No Polarization

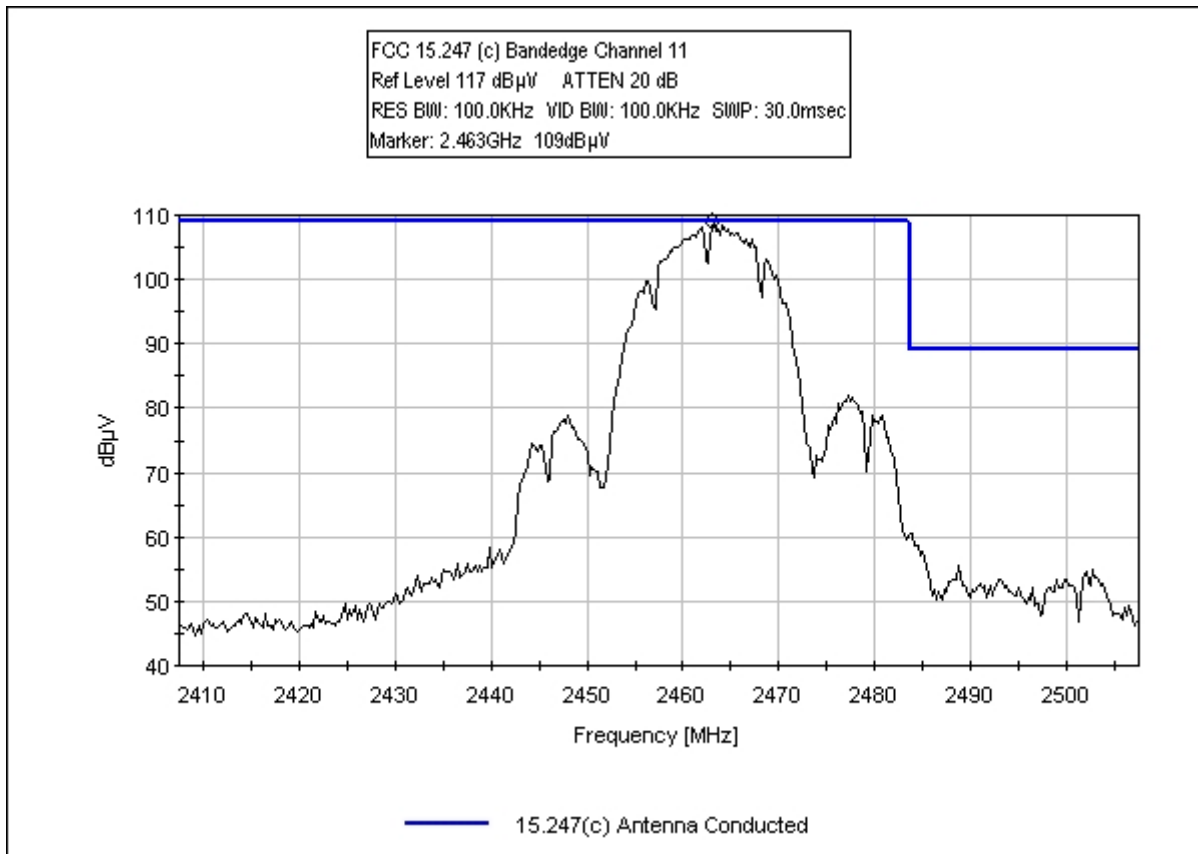
**COMMENTS:** EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on the channel indicated in each reading. The Laptop is connected to the EUT via a 1.5 meter Ethernet cable and the laptop is controlling the operational mode of the EUT. The spectrum analyzer is connected directly to the EUT transmitter port via a 10 foot coax cable. The temperature was 72°F and the humidity was 45%. Measurements made with the SA RES BW & Vid BW set to 100 kHz. Transmit and receive ports were measured on each channel as indicated for each reading.

### FCC 15.247(c) BANDEDGE CHANNEL 1

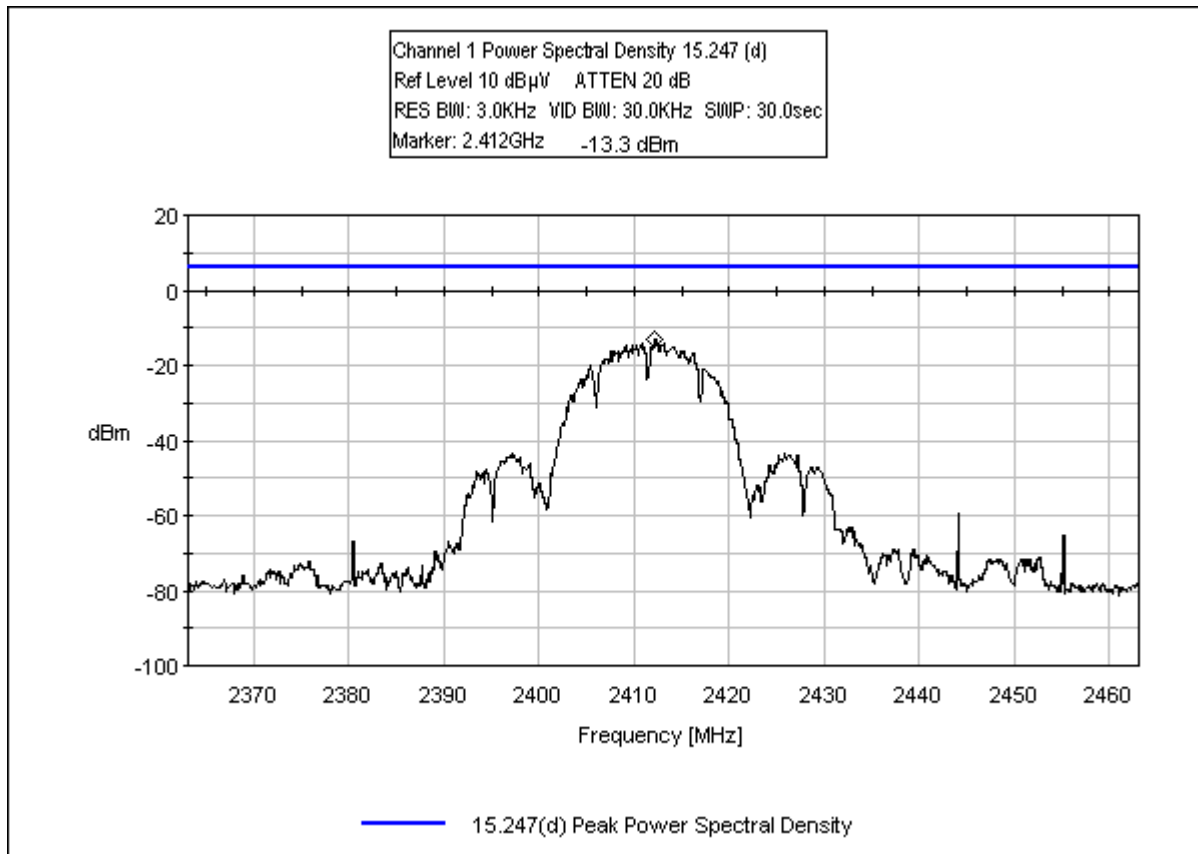




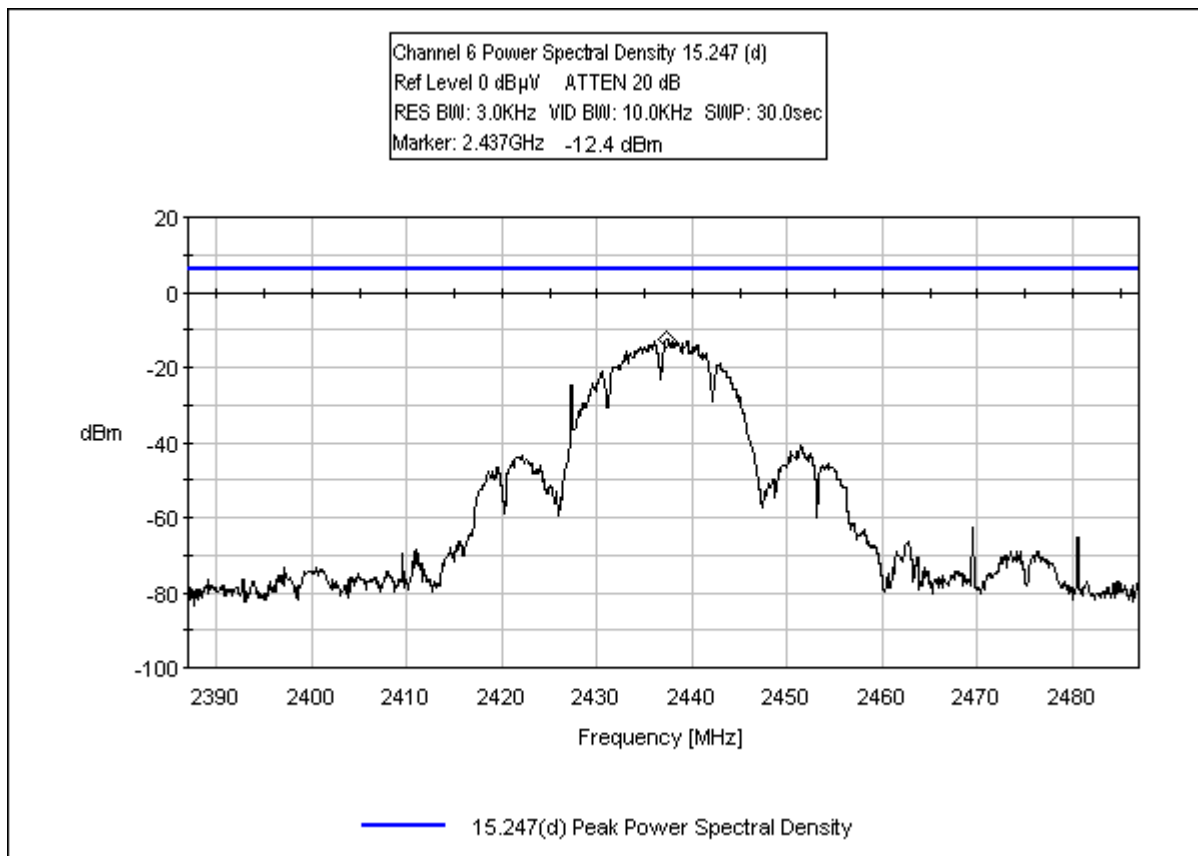
### FCC 15.247(c) BANDEDGE CHANNEL 11



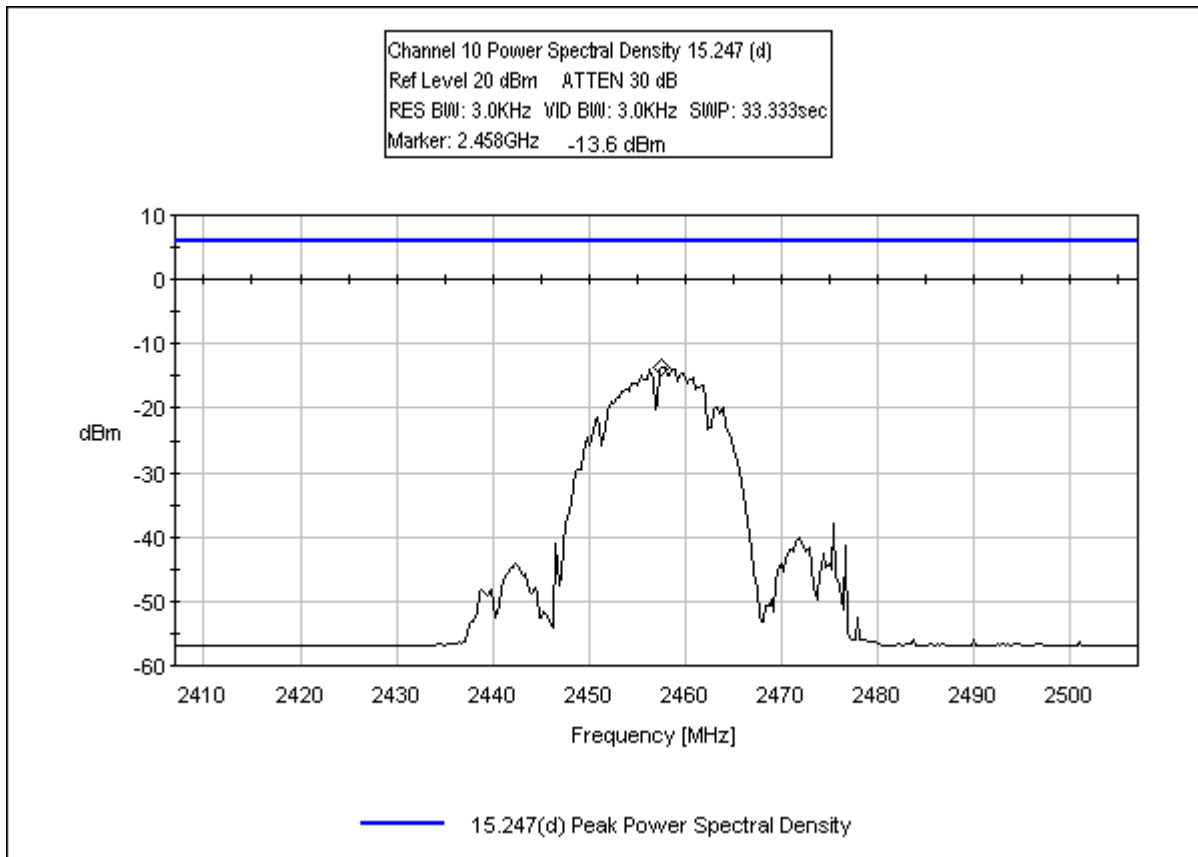
### FCC 15.247(d) SPECTRAL DENSITY CHANNEL 1



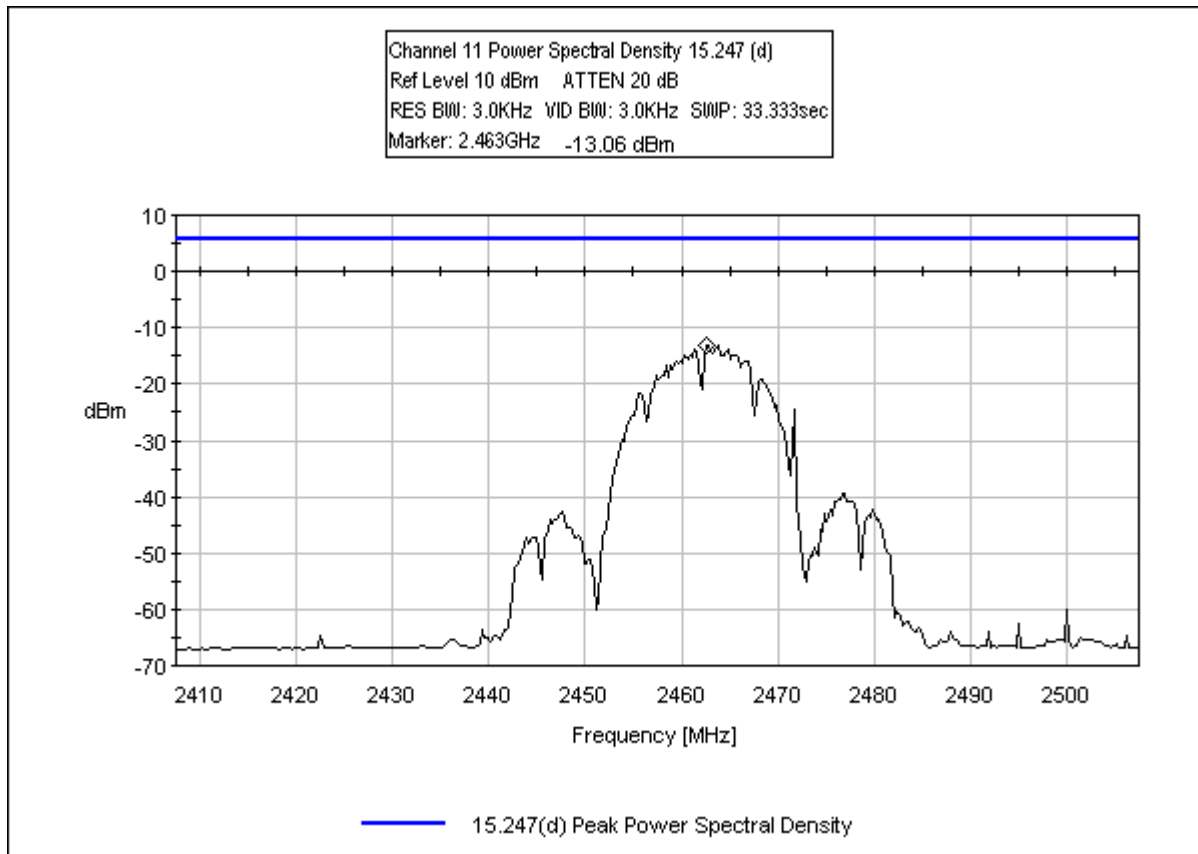
### FCC 15.247(d) SPECTRAL DENSITY CHANNEL 6



### FCC 15.247(d) SPECTRAL DENSITY CHANNEL 10



### FCC 15.247(d) SPECTRAL DENSITY CHANNEL 11



## 2.1093 MAXIMUM PERMISSIBLE EXPOSURE CALCULATIONS

Calculations prepared for:

Calculations prepared by:

*Watchguard*  
WO 80520

CKC Laboratories, Inc.  
5473A Clouds Rest Road  
Mariposa, CA 95338

Model Number: BF4S16E5W  
FCC Identification:

Fundamental Operating Frequency: 2400 TO 2462 MHz

Maximum Rated Output Power Average at antenna terminals: 31 mW

Measured Output Power: Peak EIRP 355 mW

Power Output and Operating Frequency Information used for these calculations were from:  
CKC Laboratories, Test Report # FC03-032

MPE Limit in accordance with 1.1310(b): Limits for general population/uncontrolled exposure

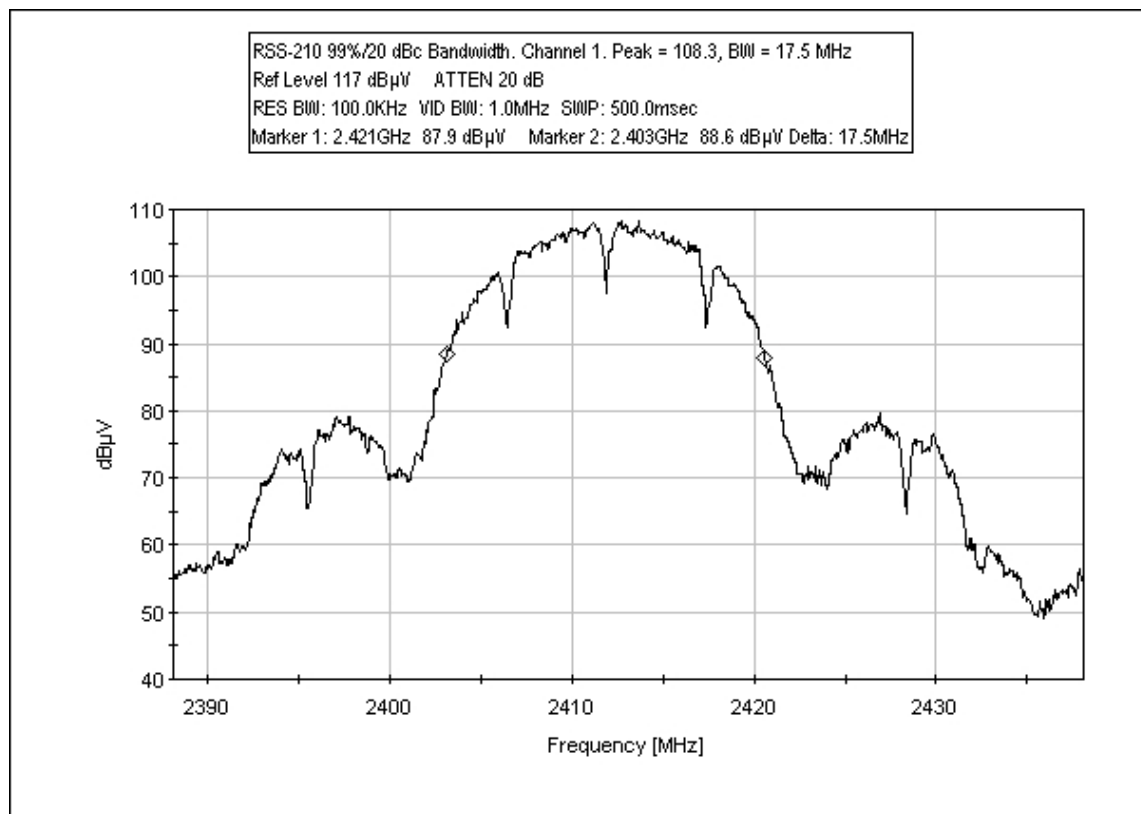
MPE Limit = 1

EIRP (mW)	Distance (Meters)	Power Density (mW/cm <sup>2</sup> )	Result
<b>355</b>	<b>.053</b>	<b>1</b>	<b>Pass</b>

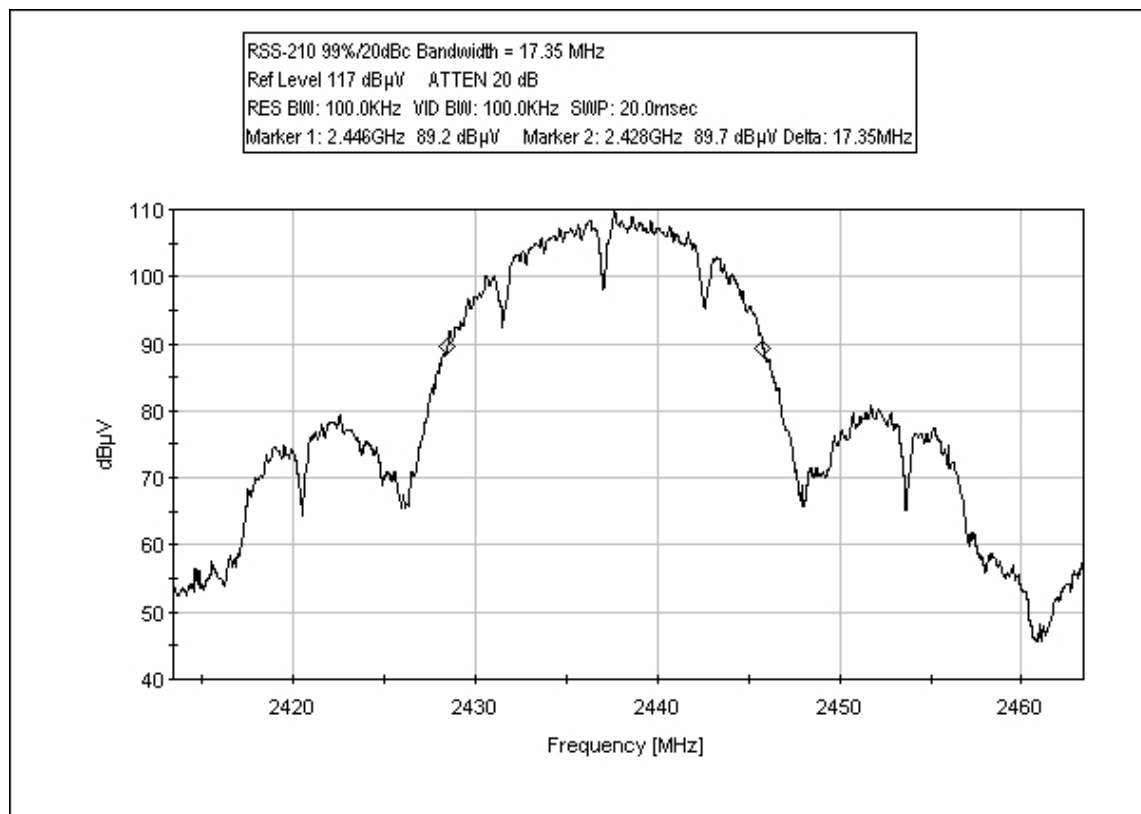
$$PowerDensity(mW / cm^2) = \frac{EIRP}{4\pi d^2} \quad \text{Given: } \mathbf{EIRP} \text{ in } mW \text{ and } \mathbf{d} \text{ in } cm$$

Under normal operating conditions, the antenna is designed to maintain a separation distance of 20 cm from all persons. As can be seen from the MPE results, this device passes the limits specified in 1.1310 at a distance of 5.3 cm and at an output power of 355 mW.

### RSS 210 BANDWIDTH CHANNEL 1

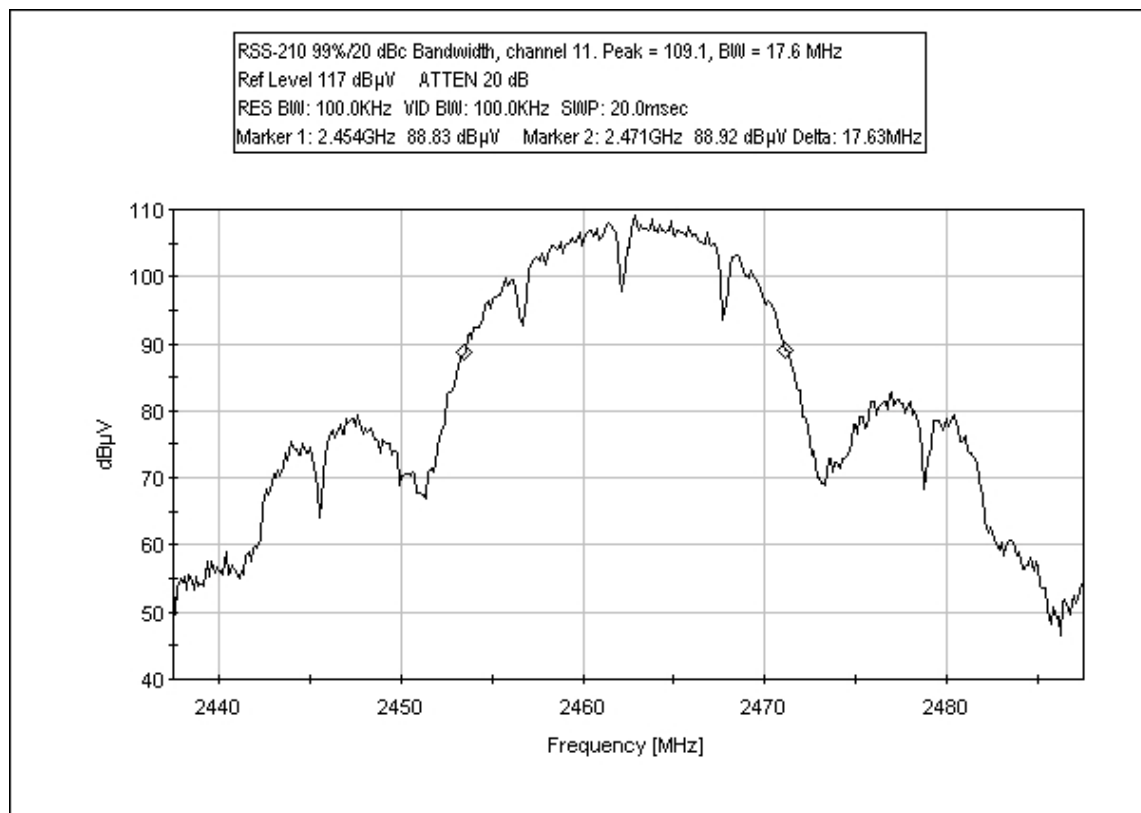


### RSS 210 BANDWIDTH CHANNEL 6

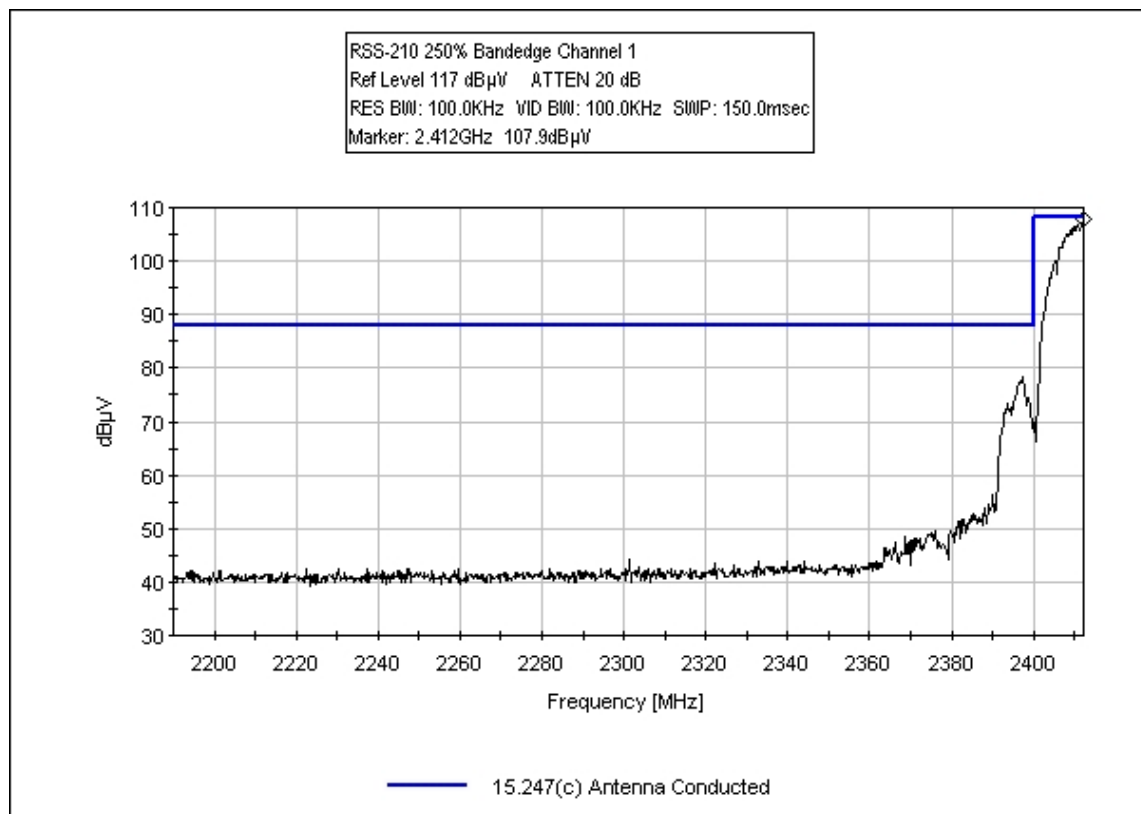




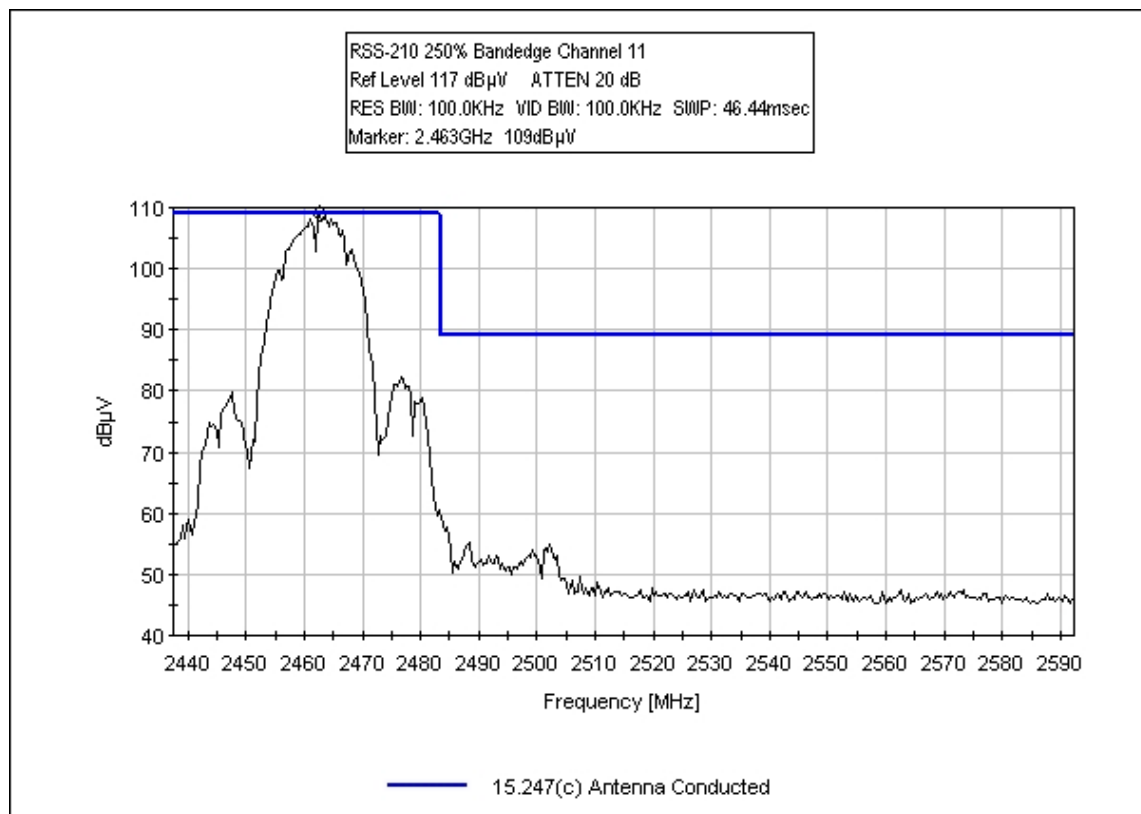
### RSS 210 BANDWIDTH CHANNEL 11



### RSS 210 250% BANEDGE CHANNEL 1



### RSS 210 250% BANDEDGE CHANNEL 11



## TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

## EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The radiated and conducted emissions data of the EUT was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

## CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dB $\mu$ V/m, the spectrum analyzer reading in dB $\mu$ V was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

<b>TABLE A: SAMPLE CALCULATIONS</b>		
	Meter reading	(dB $\mu$ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB $\mu$ V/m)

## **TEST INSTRUMENTATION AND ANALYZER SETTINGS**

The test instrumentation and equipment listed in Table A were used to collect both the radiated and conducted emissions data for the EUT. For radiated measurements from 30 to 1000 MHz, the biconilog antenna was used. The horn antenna was used for frequencies above 1000 MHz. All antennas were located at a distance of 3 meters from the edge of the EUT. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB $\mu$ V, and a vertical scale of 10 dB per division.

## **SPECTRUM ANALYZER DETECTOR FUNCTIONS**

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

### **Peak**

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

### **Quasi-Peak**

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

### **Average**

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

## **EUT TESTING**

### **Mains Conducted Emissions**

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

The LISNs used were 50  $\mu\text{H}$  +/- 50 ohms. Above 150 kHz, a 0.15  $\mu\text{F}$  series capacitor was added in-line prior to connecting the analyzer to restore the proper impedance for the range. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

### **Antenna Conducted Emissions**

For measuring the signal strength on the RF output port of the EUT, the spectrum analyzer was connected directly to the EUT. The sweep time of the analyzer was adjusted so that the spectrum analyzer readings were always in a calibrated range. All readings within 20 dB of the limit were recorded.

### **Radiated Emissions**

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. For frequencies exceeding 1000 MHz, the horn antenna was used. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. The test engineer maximized the readings with respect to the table rotation and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

**APPENDIX A**

**INFORMATION ABOUT THE EQUIPMENT UNDER TEST**



<b>INFORMATION ABOUT THE EQUIPMENT UNDER TEST</b>	
Test Software/Firmware:	
CRT was displaying:	Web Polygraph traffic
Power Supply Manufacturer:	ENG Electric Co Ltd Ming Sheng N. Road, Sec. 1 Kuei-Shan Hsiang Taiwan
Power Supply Part Number:	EPA-121DA-12
AC Line Filter Manufacturer:	
AC Line Filter Part Number:	

<b>I/O PORTS</b>	
Type	#
Ethernet	5
5dbi whip antenna/reverse polarity SMA connector	2

<b>CRYSTAL OSCILLATORS</b>	
Type	Freq In MHz
Xtal	25
Xtal	20
CPU PLL	150

<b>PRINTED CIRCUIT BOARDS</b>				
Function	Model & Rev	Clocks, MHz	Layers	Location
Main Board	K818321.OL 30814392	See Above	4	Chassis - Internal
802.11b Wireless PCMCIA Card	LANEscape XI-325 FCC ID#M4Y-03251	44 MHz Xtal OSC		Mounted via socket on Main Board

### CABLE INFORMATION

<b>Cable #:</b>		Cable(s) of this type:	4
Cable Type:	Cat 5 Ethernet	Shield Type:	None
Construction:	UTP	Length In Meters:	15
Connected To End (1):	EUT	Connected To End (2):	Remote PCs
Connector At End (1):	RJ45	Connector At End (2):	RJ45
Shield Grounded At (1):	None	Shield Grounded At (2):	None
Part Number:	Generic	Number of Conductors:	8
Notes and/or description:			

<b>Cable #:</b>		Cable(s) of this type:	1
Cable Type:	Cat 5 Ethernet	Shield Type:	None
Construction:	UTP	Length In Meters:	2
Connected To End (1):	EUT	Connected To End (2):	Desktop PC
Connector At End (1):	RJ45	Connector At End (2):	RJ45
Shield Grounded At (1):	None	Shield Grounded At (2):	None
Part Number:	Generic	Number of Conductors:	8
Notes and/or description:			

**PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS**



Mains Conducted Emissions - Front View

**PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS**



Mains Conducted Emissions - Side View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



Radiated Emissions - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



Radiated Emissions - Back View

**PHOTOGRAPH SHOWING DIRECT CONNECT EMISSIONS**



Setup Used for Direct Connect Tests

## APPENDIX B

### TEST EQUIPMENT LIST

***15.31(e)/15.247(b)(1)***

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B SA	2209A01404	02/26/2003	02/26/2004	490
HP 85650A QPA	2811A01267	02/26/2003	02/26/2004	478
Autotransformer Powerstat 126	None	05/01/2003	05/01/2005	2037

***15.207***

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP E7405A Spectrum Analyzer	US40240225	03/31/2003	03/31/2004	2467
LISN Model 8028-50-TS-24-BNC	474 & 493	06/05/2002	06/05/2003	2056

***15.209/15.247(c)***

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP E7405A Spectrum Analyzer	US40240225	03/31/2003	03/31/2004	2467
EMCO 3115 Horn Antenna	9006-3413	11/25/2002	11/25/2003	327
Chase CBL6111C Bilog	2456	12/13/2002	12/13/2004	1991
HP 8447D Preamp	1937A02604	03/07/2003	03/07/2004	99
HP 8449B Preamp	3008A00301	10/21/2002	10/18/2003	2010

***15.247(a)(2), 15.247(b)(3), 15.247(c) Bandedge, 15.247(d), RSS210***

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B SA	2209A01404	02/26/2003	02/26/2004	490
HP 85650A QPA	2811A01267	02/26/2003	02/26/2004	478



## **APPENDIX C**

### **MEASUREMENT DATA SHEETS**

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, Ca 95338 • (209) 966-5240

Customer: **WatchguardTechnologies**  
 Specification: **FCC 15.207 - AVE**  
 Work Order #: **80520** Date: 05/09/2003  
 Test Type: **Conducted Emissions** Time: 11:03:00  
 Equipment: **Wireless Internet Firewall w/wireless PCMICA card** Sequence#: 4  
 Manufacturer: Watchguard Technologies Tested By: Mike Wilkinson  
 Model: BFS16E5W 120V 60Hz  
 S/N: 001

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Internet Firewall w/wireless PCMICA card*	Watchguard Technologies	BFS16E5W	001
Power Supply	Watchguard Technologies	EPA-121DA-12	None

**Support Devices:**

Function	Manufacturer	Model #	S/N
Remote Laptop	Fujitsu	Lifebook	R1500401
Remote PC	Computer Sonics	167494	WG1
Remote PC	Computer Sonics	167494	WG2
Remote Monitor	Micron	RMD5L11	7225L1120185
Remote Monitor	Micron	RMD5L11	8205L1128429
Remote Keyboard	Microsoft	E0641PS2	NONE
Remote Keyboard	Microsoft	E0641PS2	NONE

**Test Conditions / Notes:**

EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on the channel 11. Antennas are connected to both ports of the EUT. EUT WAN port connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 server software. EUT Trusted port 0 connected via 6-UTP cable to desktop PC running windows 98, web browser and running ping. EUT Trusted port 1 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 2 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 3 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Wireless interface is in test mode and transmits constantly on selected channel but does not respond to any nearby 802.11b device. EUT is running SOHO6 software vers 6.2.1 (Salinas BETA) configured to allow any traffic The temperature was 72°F and the humidity was 45%. Frequency range investigated was 150 kHz to 30 MHz.

**Transducer Legend:**

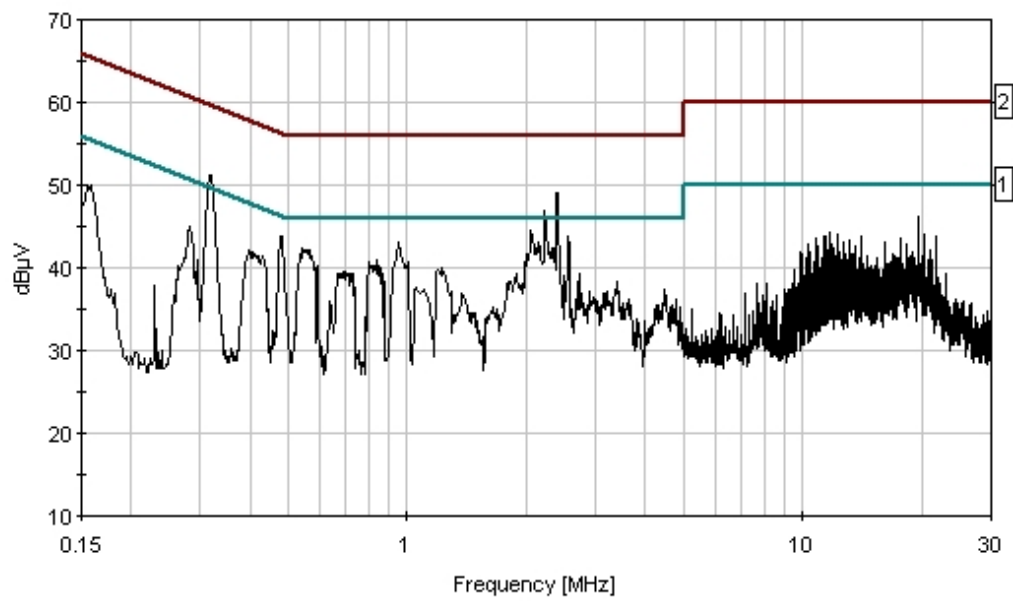
T1=Cable & Cap (Bench)	T2=LISN Insertion Loss s/n474
------------------------	-------------------------------

**Measurement Data:** Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	dB	dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	947.380k	42.9	+0.0	+0.1			+0.0	43.0	46.0	-3.0	Black
2	544.508k	42.4	+0.1	+0.0			+0.0	42.5	46.0	-3.5	Black
3	19.714M	46.0	+0.2	+0.0			+0.0	46.2	50.0	-3.8	Black

4	317.256k Ave	45.5	+0.1	+0.1	+0.0	45.7	49.8	-4.1	Black
^	317.257k	50.9	+0.1	+0.1	+0.0	51.1	49.8	+1.3	Black
6	839.026k	40.8	+0.0	+0.1	+0.0	40.9	46.0	-5.1	Black
7	159.090k	49.9	+0.1	+0.0	+0.0	50.0	55.5	-5.5	Black
8	11.764M	43.4	+0.2	+0.7	+0.0	44.3	50.0	-5.7	Black
9	280.897k	44.9	+0.0	+0.1	+0.0	45.0	50.8	-5.8	Black
10	399.067k	42.0	+0.1	+0.0	+0.0	42.1	47.9	-5.8	Black
11	591.776k	40.0	+0.1	+0.1	+0.0	40.2	46.0	-5.8	Black
12	12.246M	43.3	+0.2	+0.6	+0.0	44.1	50.0	-5.9	Black
13	20.266M	43.9	+0.2	+0.0	+0.0	44.1	50.0	-5.9	Black
14	1.228M	39.8	+0.0	+0.1	+0.0	39.9	46.0	-6.1	Black
15	11.283M	43.0	+0.2	+0.7	+0.0	43.9	50.0	-6.1	Black
16	11.444M	42.9	+0.2	+0.7	+0.0	43.8	50.0	-6.2	Black
17	14.150M	43.2	+0.2	+0.4	+0.0	43.8	50.0	-6.2	Black
18	477.241k Ave	37.3	+0.1	+0.0	+0.0	37.4	46.4	-9.0	Black
^	477.242k	43.8	+0.1	+0.0	+0.0	43.9	46.4	-2.5	Black
20	2.391M Ave	36.7	+0.1	+0.1	+0.0	36.9	46.0	-9.1	Black
^	2.391M	48.9	+0.1	+0.1	+0.0	49.1	46.0	+3.1	Black
22	2.231M Ave	36.4	+0.0	+0.1	+0.0	36.5	46.0	-9.5	Black
^	2.231M	46.9	+0.0	+0.1	+0.0	47.0	46.0	+1.0	Black

CKC Laboratories Date: 05/09/2003 Time: 11:03:00 WatchguardTechnologies VWO#: 80520  
 FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 4



— Sweep Data      — 1 - FCC 15.207 - AVE      — 2 - FCC 15.207 - QP

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, Ca 95338 • (209) 966-5240

Customer: **WatchguardTechnologies**

Specification: **FCC 15.207 - AVE**

Work Order #: **80520**

Date: 05/09/2003

Test Type: **Conducted Emissions**

Time: 11:12:15

Equipment: **Wireless Internet Firewall w/wireless**

Sequence#: 5

**PCMICA card**

Manufacturer: Watchguard Technologies

Tested By: Mike Wilkinson

Model: BFS16E5W

120V 60Hz

S/N: 001

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Internet Firewall w/wireless PCMICA card*	Watchguard Technologies	BFS16E5W	001
Power Supply	Watchguard Technologies	EPA-121DA-12	None

**Support Devices:**

Function	Manufacturer	Model #	S/N
Remote Laptop	Fujitsu	Lifebook	R1500401
Remote PC	Computer Sonics	167494	WG1
Remote PC	Computer Sonics	167494	WG2
Remote Monitor	Micron	RMD5L11	7225L1120185
Remote Monitor	Micron	RMD5L11	8205L1128429
Remote Keyboard	Microsoft	E0641PS2	NONE
Remote Keyboard	Microsoft	E0641PS2	NONE

**Test Conditions / Notes:**

EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on the channel 11. Antennas are connected to both ports of the EUT. EUT WAN port connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 server software. EUT Trusted port 0 connected via 6-UTP cable to desktop PC running windows 98, web browser and running ping. EUT Trusted port 1 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 2 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 3 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Wireless interface is in test mode and transmits constantly on selected channel but does not respond to any nearby 802.11b device. EUT is running SOHO6 software vers 6.2.1 (Salinas BETA) configured to allow any traffic The temperature was 72°F and the humidity was 45%. Frequency range investigated was 150 kHz to 30 MHz.

**Transducer Legend:**

T1=Cable & Cap (Bench)	T2=LISN Insertion Loss s/n493
------------------------	-------------------------------

**Measurement Data:**

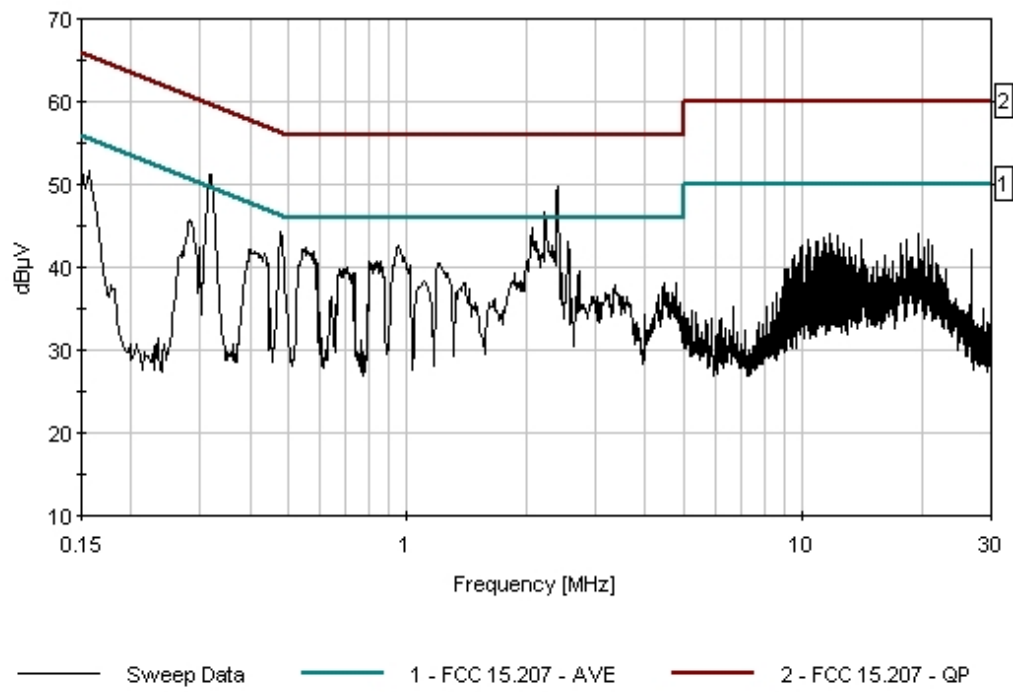
Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	dB	dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	947.380k	42.4	+0.0	+0.2			+0.0	42.6	46.0	-3.4	White
2	551.780k	42.0	+0.1	+0.2			+0.0	42.3	46.0	-3.7	White
3	317.256k	45.5	+0.1	+0.2			+0.0	45.8	49.8	-4.0	White
	Ave										
^	317.257k	51.0	+0.1	+0.2			+0.0	51.3	49.8	+1.5	White

5	150.000k	51.3	+0.1	+0.2	+0.0	51.6	56.0	-4.4	White
6	280.897k	45.4	+0.0	+0.2	+0.0	45.6	50.8	-5.2	White
7	804.484k	40.4	+0.0	+0.2	+0.0	40.6	46.0	-5.4	White
8	591.776k	40.2	+0.1	+0.2	+0.0	40.5	46.0	-5.5	White
9	400.885k	42.0	+0.1	+0.1	+0.0	42.2	47.8	-5.6	White
10	1.198M	40.3	+0.0	+0.1	+0.0	40.4	46.0	-5.6	White
11	19.714M	43.5	+0.2	+0.4	+0.0	44.1	50.0	-5.9	White
12	11.774M	43.2	+0.2	+0.6	+0.0	44.0	50.0	-6.0	White
13	704.493k	39.7	+0.0	+0.2	+0.0	39.9	46.0	-6.1	White
14	12.246M	43.0	+0.2	+0.6	+0.0	43.8	50.0	-6.2	White
15	2.722M	39.3	+0.1	+0.2	+0.0	39.6	46.0	-6.4	White
16	11.293M	42.8	+0.2	+0.6	+0.0	43.6	50.0	-6.4	White
17	2.401M	38.9	+0.1	+0.2	+0.0	39.2	46.0	-6.8	White
	Ave								
^	2.401M	49.4	+0.1	+0.2	+0.0	49.7	46.0	+3.7	White
19	479.059k	37.6	+0.1	+0.2	+0.0	37.9	46.4	-8.5	White
	Ave								
^	479.060k	44.1	+0.1	+0.2	+0.0	44.4	46.4	-2.0	White
21	2.231M	36.1	+0.0	+0.2	+0.0	36.3	46.0	-9.7	White
	Ave								
^	2.231M	46.5	+0.0	+0.2	+0.0	46.7	46.0	+0.7	White
23	2.070M	30.8	+0.0	+0.2	+0.0	31.0	46.0	-15.0	White
	Ave								
^	2.070M	44.5	+0.0	+0.2	+0.0	44.7	46.0	-1.3	White

CKC Laboratories Date: 05/09/2003 Time: 11:12:15 WatchguardTechnologies WWO#: 80520  
 FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 5



Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, Ca 95338 • (209) 966-5240

Customer: **WatchguardTechnologies**  
 Specification: **FCC 15.247 / 15.209**  
 Work Order #: **80520** Date: 05/09/2003  
 Test Type: **Maximized Emissions** Time: 17:14:59  
 Equipment: **Wireless Internet Firewall w/wireless PCMICA card** Sequence#: 8  
 Manufacturer: Watchguard Technologies Tested By: Mike Wilkinson  
 Model: BFS16E5W  
 S/N: 001

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Internet Firewall w/wireless PCMICA card*	Watchguard Technologies	BFS16E5W	001
Power Supply	Watchguard Technologies	EPA-121DA-12	None

**Support Devices:**

Function	Manufacturer	Model #	S/N
Remote Laptop	Fujitsu	Lifebook	R1500401
Remote PC	Computer Sonics	167494	WG1
Remote PC	Computer Sonics	167494	WG2
Remote Monitor	Micron	RMD5L11	7225L1120185
Remote Monitor	Micron	RMD5L11	8205L1128429
Remote Keyboard	Microsoft	E0641PS2	NONE
Remote Keyboard	Microsoft	E0641PS2	NONE

**Test Conditions / Notes:**

EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on the channel indicated in each reading. Antennas are connected to both ports of the EUT. EUT WAN port connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 server software. EUT Trusted port 0 connected via 6-UTP cable to desktop PC running windows 98, web browser and running ping. EUT Trusted port 1 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 2 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Trusted port 3 connected via 50-UTP cable to remote PC running Webpolygraph 2.5.5 client software. EUT Wireless interface is in test mode and transmits constantly on selected channel but does not respond to any nearby 802.11b device. EUT is running SOHO6 software vers 6.2.1 (Salinas BETA) configured to allow any traffic The temperature was 72°F and the humidity was 45%. Frequency range investigated was 30 MHz to 25 GHz. No signal detected above 1 GHz. Channels 1, 6 & 11 were investigated in receive and transmit modes.

**Transducer Legend:**

T1=Amp - S/N 604	T2=Bilog B
T3=Cable - 10 Meter	

**Measurement Data:** Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist Table dB	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	373.339M	48.5	-27.0	+15.2	+3.5	+0.0	40.2	46.0	-5.8	Vert
	QP							Channel 11		
^	373.346M	47.7	-27.0	+15.2	+3.5	+0.0	39.4	46.0	-6.6	Vert
								Channel 6		
^	373.346M	44.2	-27.0	+15.2	+3.5	+0.0	35.9	46.0	-10.1	Vert
								Channel 1		



4	162.800M	50.5	-26.9	+10.6	+2.1	+0.0	36.3	43.5	-7.2	Vert
								Channel 6		
5	320.500M	48.3	-26.6	+13.6	+3.2	+0.0	38.5	46.0	-7.5	Vert
								Channel 11		
6	162.808M	50.1	-26.9	+10.6	+2.1	+0.0	35.9	43.5	-7.6	Vert
								Channel 1		
7	162.900M	48.6	-26.9	+10.6	+2.1	+0.0	34.4	43.5	-9.1	Vert
								Channel 11		
8	297.900M	47.0	-26.5	+12.9	+3.0	+0.0	36.4	46.0	-9.6	Vert
								Channel 11		
9	495.500M QP	40.7	-27.8	+18.8	+4.5	+0.0	36.2	46.0	-9.8	Horiz
								Channel 11		
10	495.500M QP	40.6	-27.8	+18.8	+4.5	+0.0	36.1	46.0	-9.9	Horiz
								Channel 6		
11	320.488M	45.3	-26.6	+13.6	+3.2	+0.0	35.5	46.0	-10.5	Vert
								Channel 6		
12	250.004M	46.3	-26.5	+12.8	+2.7	+0.0	35.3	46.0	-10.7	Vert
								Channel 1		
13	297.275M	44.7	-26.5	+12.9	+3.0	+0.0	34.1	46.0	-11.9	Vert
								Channel 1		
14	297.415M	44.2	-26.5	+12.9	+3.0	+0.0	33.6	46.0	-12.4	Vert
								Channel 6		
15	320.388M	43.1	-26.6	+13.6	+3.2	+0.0	33.3	46.0	-12.7	Vert
								Channel 1		
16	248.900M	44.0	-26.5	+12.7	+2.7	+0.0	32.9	46.0	-13.1	Vert
								Channel 11		
17	373.342M	40.4	-27.0	+15.2	+3.5	+0.0	32.1	46.0	-13.9	Horiz
								Channel 6		
18	249.895M	37.6	-26.5	+12.8	+2.7	+0.0	26.6	46.0	-19.4	Vert
								Channel 6		
19	373.089M	34.3	-27.0	+15.2	+3.5	+0.0	26.0	46.0	-20.0	Horiz
								Channel 11		

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa, Ca 95338 • (209) 966-5240  
 Customer: **WatchguardTechnologies**  
 Specification: **15.247(b)(3) Antenna Terminal Power Output**  
 Work Order #: **80520** Date: 05/08/2003  
 Test Type: **Maximized Emissions** Time: 08:15:32  
 Equipment: **Wireless Internet Firewall w/wireless PCMICA card** Sequence#: 1  
 Manufacturer: Watchguard Technologies Tested By: Mike Wilkinson  
 Model: BFS16E5W S/N: 001

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Internet Firewall w/wireless PCMICA card*	Watchguard Technologies	BFS16E5W	001
Power Supply	Watchguard Technologies	EPA-121DA-12	None

**Support Devices:**

Function	Manufacturer	Model #	S/N
Remote Laptop	Fujitsu	Lifebook	R1500401

**Test Conditions / Notes:**

EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on the channel indicated in each reading. The Laptop is connected to the EUT via a 1.5 meter Ethernet cable and the laptop is controlling the operational mode of the EUT. The spectrum analyzer is connected directly to the EUT transmitter port via a 10 foot coax cable. A bandwidth correction factor is added to each reading which was derived as follows:  $10 \log (\text{EUT BW of 11 MHz} / \text{Analyzer BW of 3 MHz}) = 5.6 \text{ dB}$ . The temperature was 72°F and the humidity was 45%. Measurements made with the SA RES BW & Vid BW set to 3 MHz. Peak readings for each channel converted to Watts are as follows; Channel 1 = corrected reading 124.3 dBV = 0.054 Watt, Channel 6 = corrected reading 125.4 dBV = 0.069 Watt, Channel 11 = corrected reading 127.5 dBV = 0.112 Watt. EIRP for Directional Gain Reduction on each channel based on the declared antenna gain of 5 dBi is as follows: Channel 1 = 5dB + 124.3 dBuV = 129.3 dB = 0.170 Watt, Channel 6 = 5dB + 125.4 dBuV = 130.4 dB = 0.219 Watt, Channel 11 = 5dB + 127.5 dBuV = 132.5 dB = 0.355 Watt.

**Transducer Legend:**

T1=Cable HF P-1403	T2=5.6 dB Bandwidth correction
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**Measurement Data:** Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dB $\mu$ V	T1 dB	T2 dB	dB	dB	Dist Table	Corr dB $\mu$ V	Spec dB $\mu$ V	Margin dB	Polar Ant
1	2462.500M	112.4	+2.1	+5.6			+0.0	120.1	137.0	-16.9	None
	Ave										
^	2462.500M	119.8	+2.1	+5.6			+0.0	127.5	137.0	-9.5	None
									Channel 11, 2462 MHz		
3	2438.400M	112.0	+2.1	+5.6			+0.0	119.7	137.0	-17.3	None
	Ave										
^	2438.400M	117.7	+2.1	+5.6			+0.0	125.4	137.0	-11.6	None
									Channel 6, 2437 MHz		
5	2412.600M	111.3	+2.1	+5.6			+0.0	119.0	137.0	-18.0	None
	Ave										
^	2412.600M	116.6	+2.1	+5.6			+0.0	124.3	137.0	-12.7	None
									Channel 1, 2312 MHz		

Test Location: CKC Laboratories •5473A Clouds Rest • Mariposa, Ca 95338 • (209) 966-5240  
 Customer: **WatchguardTechnologies**  
 Specification: **15.247(c) Antenna Conducted**  
 Work Order #: **80520** Date: 05/09/2003  
 Test Type: **Maximized Emissions** Time: 10:51:36  
 Equipment: **Wireless Internet Firewall w/wireless PCMICA card** Sequence#: 3  
 Manufacturer: Watchguard Technologies Tested By: Mike Wilkinson  
 Model: BFS16E5W S/N: 001

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Wireless Internet Firewall w/wireless PCMICA card*	Watchguard Technologies	BFS16E5W	001
Power Supply	Watchguard Technologies	EPA-121DA-12	None

**Support Devices:**

Function	Manufacturer	Model #	S/N
Remote Laptop	Fujitsu	Lifebook	R1500401

**Test Conditions / Notes:**

EUT is transmitting continuously with modulation (CCK @ 11MB/Sec) on the channel indicated in each reading. The Laptop is connected to the EUT via a 1.5 meter Ethernet cable and the laptop is controlling the operational mode of the EUT. The spectrum analyzer is connected directly to the EUT transmitter port via a 10 foot coax cable. The temperature was 72°F and the humidity was 45%. Measurements made with the SA RES BW & Vid BW set to 100 kHz. Transmit and receive ports were measured on each channel as indicated for each reading.

**Transducer Legend:**

T1=Cable HF P-1403
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**Measurement Data:** Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBμV	T1 dB	dB			Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	7384.300M	57.1	+3.8				+0.0	60.9	88.1	-27.2	None
											Channel 11, receive port
2	7385.300M	55.8	+3.8				+0.0	59.6	88.1	-28.5	None
											Channel 11, transmit port
3	4922.300M	53.0	+3.1				+0.0	56.1	88.1	-32.0	None
											Channel 11, receive port
4	16884.500 M	48.9	+5.7				+0.0	54.6	88.1	-33.5	None
											Channel 1, transmit port
5	14471.000 M	48.8	+5.3				+0.0	54.1	88.1	-34.0	None
											Channel 1, transmit port
6	4923.300M	50.9	+3.1				+0.0	54.0	88.1	-34.1	None
											Channel 11, transmit port

7	12059.000 M	45.8	+4.8	+0.0	50.6	88.1	-37.5	None
						Channel 1, transmit port		
8	9648.199M	46.3	+4.3	+0.0	50.6	88.1	-37.5	None
						Channel 1, transmit port		
9	7236.000M	46.2	+3.7	+0.0	49.9	88.1	-38.2	None
						Channel 1, transmit port		
10	9647.801M	45.4	+4.3	+0.0	49.7	88.1	-38.4	None
						Channel 1, receive port		
11	12060.900 M	44.4	+4.8	+0.0	49.2	88.1	-38.9	None
						Channel 1, receive port		
12	7235.800M	44.8	+3.7	+0.0	48.5	88.1	-39.6	None
						Channel 1, receive port		
13	7372.000M	44.5	+3.8	+0.0	48.3	88.1	-39.8	None
						Channel 10, receive port		
14	9748.600M	43.7	+4.4	+0.0	48.1	88.1	-40.0	None
						Channel 6, Transmit port		
15	7311.600M	43.8	+3.8	+0.0	47.6	88.1	-40.5	None
						Channel 6, Receive port		
16	7372.000M	43.3	+3.8	+0.0	47.1	88.1	-41.0	None
						Channel 10, transmit port		
17	4915.000M	41.0	+3.1	+0.0	44.1	88.1	-44.0	None
						Channel 10, transmit port		
18	4823.800M	40.5	+3.0	+0.0	43.5	88.1	-44.6	None
						Channel 1, receive port		
19	4874.600M	39.4	+3.1	+0.0	42.5	88.1	-45.6	None
						Channel 6, Transmit port		
20	4915.000M	39.2	+3.1	+0.0	42.3	88.1	-45.8	None
						Channel 10, receive port		
21	4874.600M	39.0	+3.1	+0.0	42.1	88.1	-46.0	None
						Channel 6, Receive port		
22	4824.300M	39.0	+3.0	+0.0	42.0	88.1	-46.1	None
						Channel 1, transmit port		