



TROY GROUP, INC. WIRELESS AND CONDUCTIVITY DIVISION

TEST REPORT FOR THE

BLUETOOTH WIRELESS PRINT ADAPTER, WINDCONNECT

**FCC PART 15 SUBPART C SECTIONS 15.207 & 15.247 AND
FCC PART 15 SUBPART B SECTIONS 15.107 & 15.109 CLASS B
COMPLIANCE**

DATE OF ISSUE: SEPTEMBER 14, 2001

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Date of test: August 16 –
September 12, 2001

Report No.: FC01-062A

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CKC Laboratories, Inc. has received Certificates of Accreditation from the following agencies:

A2LA (USA); DATech (Germany); BSMI (Taiwan); Nemko (Norway); and GOST (Russia).

CKC Laboratories, Inc. has received test site Registration Acceptance from the following agencies:

FCC (USA); VCCI (Japan); and Industry Canada.

CKC Laboratories, Inc. has received Letters of Acceptance through an MRA for the following agencies:

ACA/NATA (Australia); SABS (South Africa); SWEDAC (Sweden); Radio Communications Agency (RA); HOKLAS (Hong Kong); Bakom (Swiss); BIPT (Belgium); Denmark Telestyrelsen; RvA (Netherlands); SEE (Luxembourg) SITTEL (Bolivia); and UKAS (UK).

ADMINISTRATIVE INFORMATION

DATE OF TEST:	August 16 – September 12, 2001
DATE OF RECEIPT:	August 16, 2001
PURPOSE OF TEST:	To demonstrate the compliance of the Bluetooth Wireless Print Adapter, WindConnect, with the requirements for FCC Part 15 Subpart C Section 15.207 & 15.247 and FCC Part 15 Subpart B Section 15.107 & 15.109 Class B devices. The purpose of this addendum is to add channel separation and correct Table 2.
TEST METHOD:	ANSI C63.4 (1992)
MANUFACTURER:	Troy Group, Inc. Wireless and Conductivity Division 1692 Browning Irvine, CA 92606-4809
REPRESENTATIVE:	Bob Bruns
TEST LOCATION:	CKC Laboratories, Inc. 110 Olinda Place Brea, CA 92621 5473A Clouds Rest Mariposa, CA 95338

SUMMARY OF RESULTS

As received, the Troy Group, Inc. Wireless and Conductivity Division Bluetooth Wireless Print Adapter, WindConnect was found to be fully compliant with the following standards and specifications:

United States

FCC Part 15 Subpart B Section 15.107 and
15.109 Class B
FCC Part 15 Subpart C Section 15.207 and
15.247
ANSI C63.4 (1992) method

Canada

RSS-210 using:
FCC Part 15 Subpart B Section 15.107
and 15.109 Class B
FCC Part 15 Subpart C Section 15.207
and 15.247
ANSI C63.4 (1992) method

The results in this report apply only to the items tested, as identified herein.

MODIFICATIONS REQUIRED FOR COMPLIANCE

No modifications to the EUT were required to comply.

APPROVALS

QUALITY ASSURANCE:



Dennis Ward, Quality Manager



Septimiu Apahidean, EMC/Lab
Manager

TEST PERSONNEL:



Stuart Yamamoto, EMC Engineer



Randy Clark, EMC Engineer



Chuck Kendall, EMC/Lab Manager

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The Troy WindConnect enables Bluetooth wireless communications capabilities on printers and other devices. By using the WindConnect, users with Bluetooth enabled laptop computers can send jobs to a printer without connecting a cable to their computer. Although the WindConnect is especially well-suited for wireless printing, it can also be used for general-purpose wireless cable replacement applications. The EUT tested by CKC Laboratories was a production unit.

EQUIPMENT UNDER TEST

Bluetooth Wireless Print Adapter

Manuf: Troy Group, Inc. Wireless and Conductivity Division
Model: WindConnect
Serial: 00700004
FCC ID: PTY90150

PERIPHERAL DEVICES

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

Color Printer

Manuf: HP
Model: Deskjet 930C
Serial: CN1141Q1Y7
FCC ID: DoC

Power Supply

Manuf: Potrans Electrical Corp
Model: UP01011050
Serial: NA
FCC ID: DoC

Power Supply

Manuf: Toshiba
Model: PA2450U
Serial: 9707
FCC ID: DoC

Laptop Computer

Manuf: Toshiba
Model: PA1241EYX-ENDI
Serial: 97183683E PCN0049
FCC ID: DoC

Laptop Computer

Manuf: Sony
Model: PCM-161M
Serial: 5100013
FCC ID: DoC

15.33 FREQUENCY RANGE TESTED

Radiated: 30 kHz – 26.5 GHz
Conducted: 450 kHz – 30 MHz

EUT OPERATING FREQUENCY

The EUT was operating at 2402 – 2480 MHz within the 2400 – 2483.5 MHz range.

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

REPORT OF MEASUREMENTS

The following tables report the six highest worst case levels recorded during the tests performed on the Bluetooth Wireless Print Adapter, WindConnect. All readings taken are peak readings unless otherwise noted. The data sheets from which these tables were compiled are contained in Appendix B.

Table 1: Fundamental Radiated Emission Levels									
FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
2401.958	98.5	28.5	-34.6	9.1		101.5	127.0	-25.5	H
2401.963	88.9	28.5	-34.6	9.1		91.9	127.0	-35.1	V
2439.955	98.0	28.6	-34.6	9.0		101.0	127.0	-26.0	H
2439.987	83.6	28.6	-34.6	9.0		86.6	127.0	-40.4	V
2479.965	96.2	28.7	-34.5	9.2		99.6	127.0	-27.4	H
2479.965	87.5	28.7	-34.5	9.2		90.9	127.0	-36.1	V

Test Method: ANSI C63.4 (1992)
 Spec Limit: FCC Part 15 Subpart C Section 15.247(b)(1)
 Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
 V = Vertical Polarization

COMMENTS: EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission.

Table 2: Highest Radiated Emission Levels: 30 kHz - 30 MHz

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Loop DB		Cable dB	15.31 dB				
16.040	30.4	9.6		0.6	-20.0	20.6	29.5	-8.9	V

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

NOTES: V = Vertical Polarization

COMMENTS: EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Test distance correction factors included in accordance with FCC 15.31. Frequency Range Tested: 30 kHz – 30 MHz.

Table 3: Six Highest Radiated Emission Levels: 30 - 1000 MHz

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
120.003	37.0	14.9	-28.5	2.1	10.0	35.5	43.5	-8.0	V
120.005	36.0	14.9	-28.5	2.1	10.0	34.5	43.5	-9.0	H
399.976	38.0	15.2	-28.1	4.0	10.0	39.1	46.0	-6.9	H
400.012	36.7	15.2	-28.1	4.0	10.0	37.8	46.0	-8.2	V
420.020	36.0	15.6	-28.2	4.1	10.0	37.5	46.0	-8.5	H
481.192	37.3	16.6	-28.1	4.4	10.0	40.2	46.0	-5.8	H

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 10 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: The EUT and host printer are placed stand alone on the wooden tabletop. The EUT is connected to the centronics connector of the host printer. The EUT receives and transmit digital data to a remote laptop via transmission scheme set by Blue Tooth technology. DC power to the EUT is supplied by an external power supply. Voltage to EUT power adapter is 110 Vac, 60 Hz. Temperature 25°C, Humidity 49%, Pressure 100kPa. Frequency range tested: 30-1000 MHz.

Table 4: Six Highest Radiated Emission Levels: 1-18 GHz

FREQUENCY MHz	METER	CORRECTION FACTORS					CORRECT ED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
	READING dB μ V	Ant dB	Amp dB	Cable dB	15.35 dB	Filter dB				
4803.890	54.5	33.1	-32.7	11.8	-20.0	0.7	47.4	54.0	-6.6	H
4804.070	47.3	33.1	-32.7	11.8	-20.0	0.7	40.2	54.0	-13.8	V
4879.810	53.8	33.1	-32.8	12.0	-20.0	0.8	46.9	54.0	-7.1	H
4879.980	48.1	33.1	-32.8	12.0	-20.0	0.8	41.2	54.0	-12.8	V
4959.740	48.3	33.2	-32.9	12.3	-20.0	0.9	41.8	54.0	-12.2	V
4960.060	52.7	33.2	-32.9	12.3	-20.0	0.9	46.2	54.0	-7.8	H

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

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Dwell time correction factor used in accordance with DA00-705 (20dB maximum). Frequency Range Tested: 1-18 GHz.

Table 5: Six Highest Radiated Emission Levels: 1-26.5 GHz

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
20368.330	39.7	40.5	-32.2		-24.0	24.0	54.0	-30.0	V
23273.330	42.8	40.0	-34.1		-24.0	24.7	54.0	-29.3	H
23425.000	42.5	39.9	-34.1		-24.0	24.3	54.0	-29.7	V
24475.000	42.3	40.0	-33.8		-24.0	24.5	54.0	-29.5	V
24708.330	44.5	40.3	-33.8		-24.0	27.0	54.0	-27.0	V
24930.000	44.0	40.6	-33.9		-24.0	26.7	54.0	-27.3	V

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart C Section 15.247(c)/
15.209
Test Distance: .2 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is a print server transceiver operating continuously on 2402 - 2480 MHz.
Carrier is modulated with data transmission. Distance correction factor in accordance with FCC
15.31. Frequency range tested: 1-26.5 GHz.

Table 6: Six Highest Conducted Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V	SPEC LIMIT dB μ V	MARGIN dB	NOTES
		Lisn dB							
11.050760	40.8	0.0				40.8	48.0	-7.2	W
11.254150	41.3	0.0				41.3	48.0	-6.7	W
11.660940	43.8	0.0				43.8	48.0	-4.2	B
11.849800	44.0	0.0				44.0	48.0	-4.0	B
12.474500	42.8	0.0				42.8	48.0	-5.2	W
12.692420	41.1	0.0				41.1	48.0	-6.9	W

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

NOTES: B = Black Lead
W = White Lead

COMMENTS: The EUT and host printer are placed stand alone on the wooden tabletop. The EUT is connected to the centronics connector of the host printer. The EUT receives and transmit digital data to a remote laptop via transmission scheme set by Blue Tooth technology. DC power to the EUT is supplied by an external power supply. Voltage to EUT power adapter is 110 Vac, 60 Hz. Temperature 25°C, Humidity 49%, Pressure 100kPa.

Table 7: Six Highest Radiated Emission Levels: Receiver Verification

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
35.358	42.8	11.0	-27.2	0.5		27.1	40.0	-12.9	V
85.202	43.7	8.1	-27.1	1.0		25.7	40.0	-14.3	V
200.064	38.7	17.9	-26.7	1.3		31.2	43.5	-12.3	H
750.081	35.2	21.4	-27.8	3.1		31.9	46.0	-14.1	H
5089.000	32.6	33.6	-33.1	8.2		41.3	54.0	-12.7	H
5284.150	32.1	34.1	-33.5	7.9		40.6	54.0	-13.4	H

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart B Section 15.109 Class B
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Transmitter disabled and the receiver is always on. Frequency range tested: 30 MHz – 26 GHz. RECEIVE MODE ONLY.

Table 8: Six Highest Conducted Emission Levels: Receiver Verification

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V	SPEC LIMIT dB μ V	MARGIN dB	NOTES
		Lisn dB		Cable dB					
0.461701	40.3	0.4		0.1		40.8	48.0	-7.2	B
3.022076	40.3	0.4		0.1		40.8	48.0	-7.2	B
3.368336	39.7	0.4		0.1		40.2	48.0	-7.8	B
3.425648	40.3	0.4		0.1		40.8	48.0	-7.2	B
3.454304	40.2	0.4		0.1		40.7	48.0	-7.3	B
3.514004	39.9	0.4		0.1		40.4	48.0	-7.6	B

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart B Section 15.107 Class B

NOTES: B = Black Lead

COMMENTS: The EUT and host printer are placed stand alone on the wooden tabletop. The EUT is connected to the centronics connector of the host printer. The EUT is set to receive mode. DC power to the EUT is supplied by an external power supply. Voltage to EUT power adapter is 110 Vac, 60 Hz.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4 dB measurement uncertainty.

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. The interval between different pieces of equipment was approximately 10 centimeters. All excessive interconnecting cable was bundled in 30-40 centimeter lengths.

The radiated and conducted emissions data of the Bluetooth Wireless Print Adapter, WindConnect, 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 μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

A typical data sheet will display the following in column format:

#	Freq	Rdng	Amp	Bicon	Log 1 Log_3	Cable	Corr	Spec	Margin	Polar
		15.35	15.31	Horn	LISN	Loop	Filte			

means reading number.

Freq is the frequency in MHz of the obtained reading.

Rdng is the reading obtained on the spectrum analyzer in dB μ V.

Amp is the preamplifier factor or gain in dB.

Bicon is the biconical antenna factor in dB.

Log 1 and Log_3 are the log periodic antenna factors in dB.

Horn is the horn antenna factor in dB.

Cable is the cable loss in dB of the coaxial cable on the OATS.

Dist is the distance factor in dB used when testing at a different test distance than the one stated in the spec.

Corr is the corrected reading in dB μ V/m (field strength).

Spec is the specification limit (dB) stated in the FCC regulations.

Margin is the closeness to the specified limit in dB; + is over and - is under the limit.

Polar is the polarity of the antenna with respect to earth.

LISN is the line impedance stabilization network factor in dB for conducted emissions.

15.31 is the average correction called in FCC Part 15.31.

15.35 is the average correction called in FCC Part 15.35.

Loop is the magnetic loop antenna factor in dB.

Filte is the filter factor in dB.

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 Bluetooth Wireless Print Adapter, WindConnect. For frequencies below 30 MHz the magnetic loop antenna was used. For radiated measurements below 300 MHz, the biconical antenna was used. Then frequencies from 300 to 1000 MHz, the log periodic antenna was used. The horn antenna was used for frequencies above 1000 MHz. 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 μ V, and a vertical scale of 10 dB per division.

FCC SECTION 15.35: TABLE B: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	450 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	26.5 GHz	1 MHz

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 for the Bluetooth Wireless Print Adapter, WindConnect.

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

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 host PC was powered up and operating in its defined FCC test mode. Frequencies below 30 MHz were tested using the magnetic loop antenna. The frequency range of 30 MHz - 88 MHz was scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. The frequency range of 100 to 300 MHz was then scanned in the same manner using the biconical antenna and the peaks recorded. Lastly, a scan of the FM band from 88 to 110 MHz was made, using a reduced resolution bandwidth and frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 to 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 to 1000 MHz was again scanned. 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, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

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.

For conducted emissions testing, a 30 to 50 second sweep time was used for automated measurements in the frequency bands of 450 kHz to 1.705 MHz, 1.705 MHz to 3 MHz, and 3 MHz to 30 MHz. All readings within 20 dB of the limit were recorded. At frequencies where the recorded emissions were close to the limit, further investigation was performed manually at a slower sweep rate.

TRANSMITTER CHARACTERISTICS

15.203 Antenna Requirements

EUT is equipped with a non-removable antenna.

15.205 Restricted Bands

Operating frequency:

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.

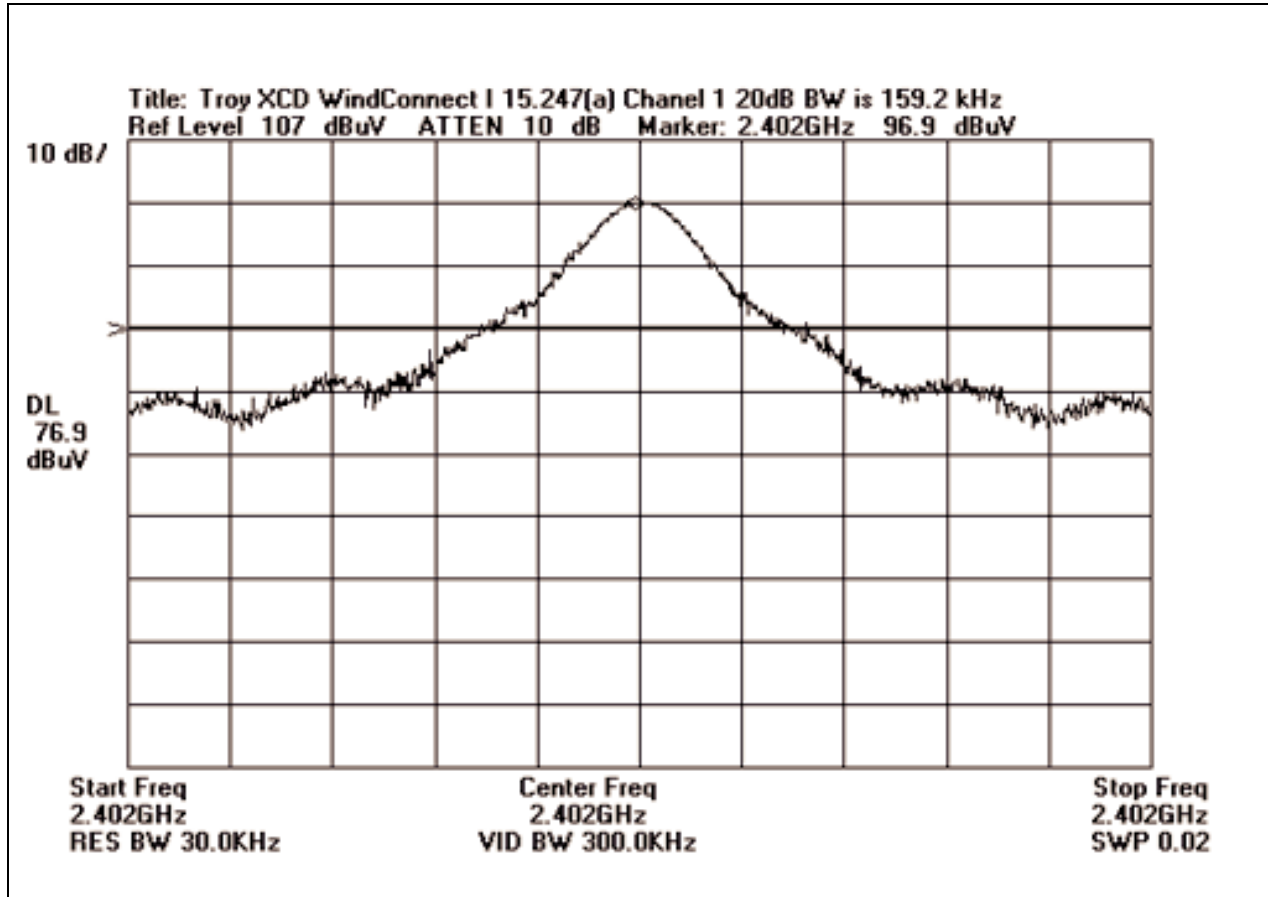
15.215 Additional Provisions To The General Radiated Emission Limitations

The fundamental frequency was kept within at least the central 80% of the permitted band.

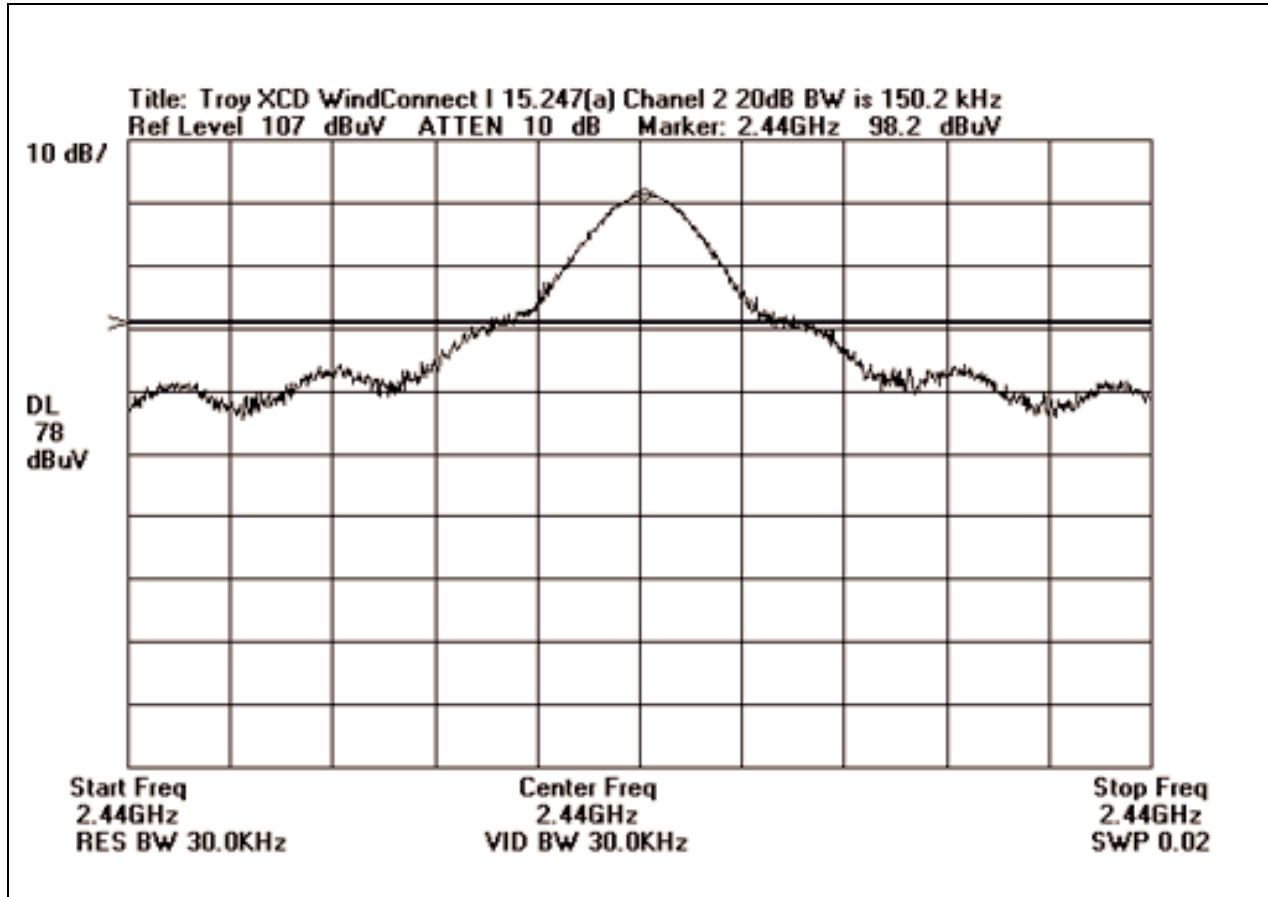
15.247(a)(1)(ii) Bandwidth Measurements (Frequency Hopping 2400-2483.5 MHz)

The fundamental frequency was kept within the permitted band 2400-2483.5 MHz. This band shall use a minimum of 75 hopping frequencies. The hopping channel carrier frequencies shall be separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. In a 30 second period, the average time of occupancy on any frequency shall be no more than 0.4 seconds.

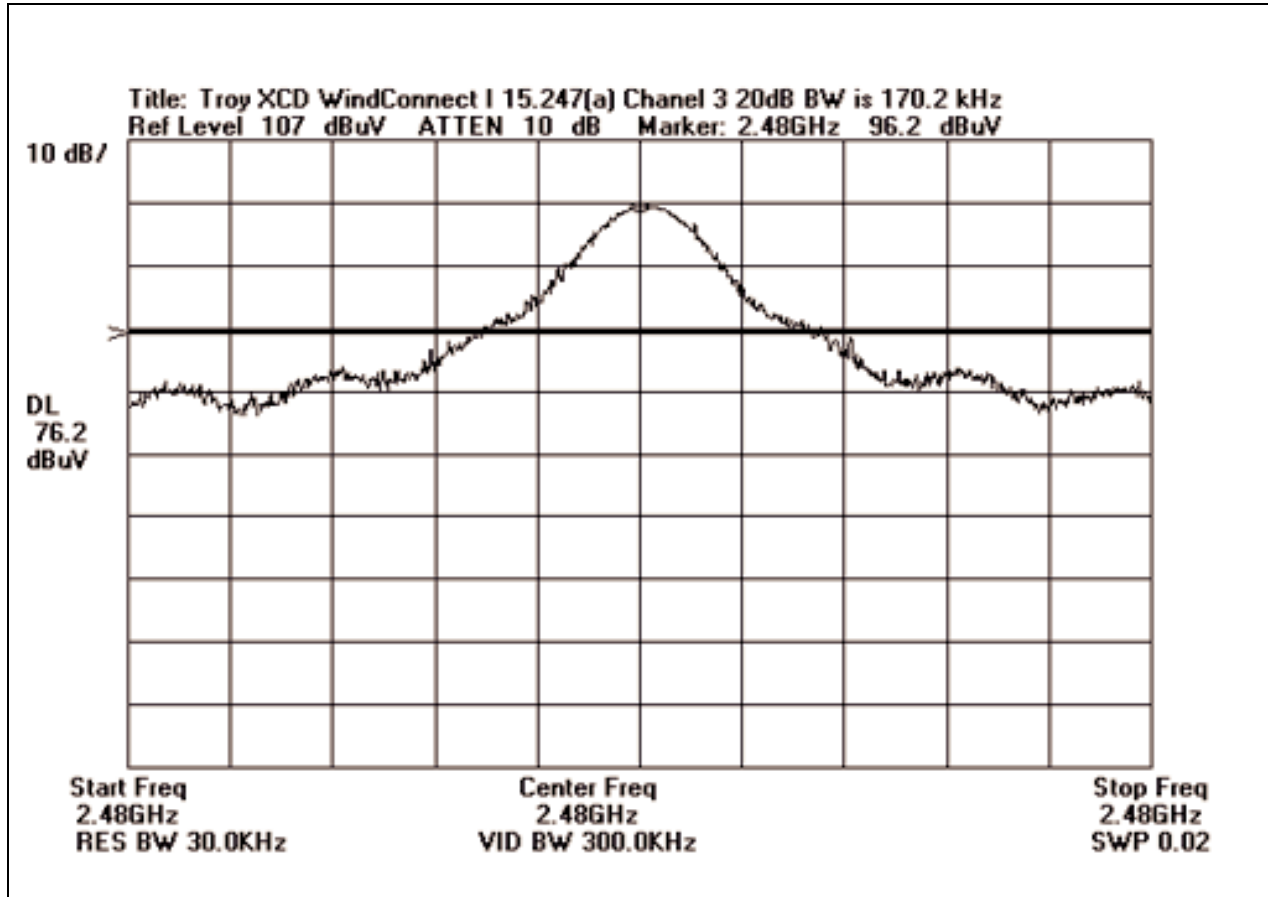
CHANNEL 1 BANDWIDTH



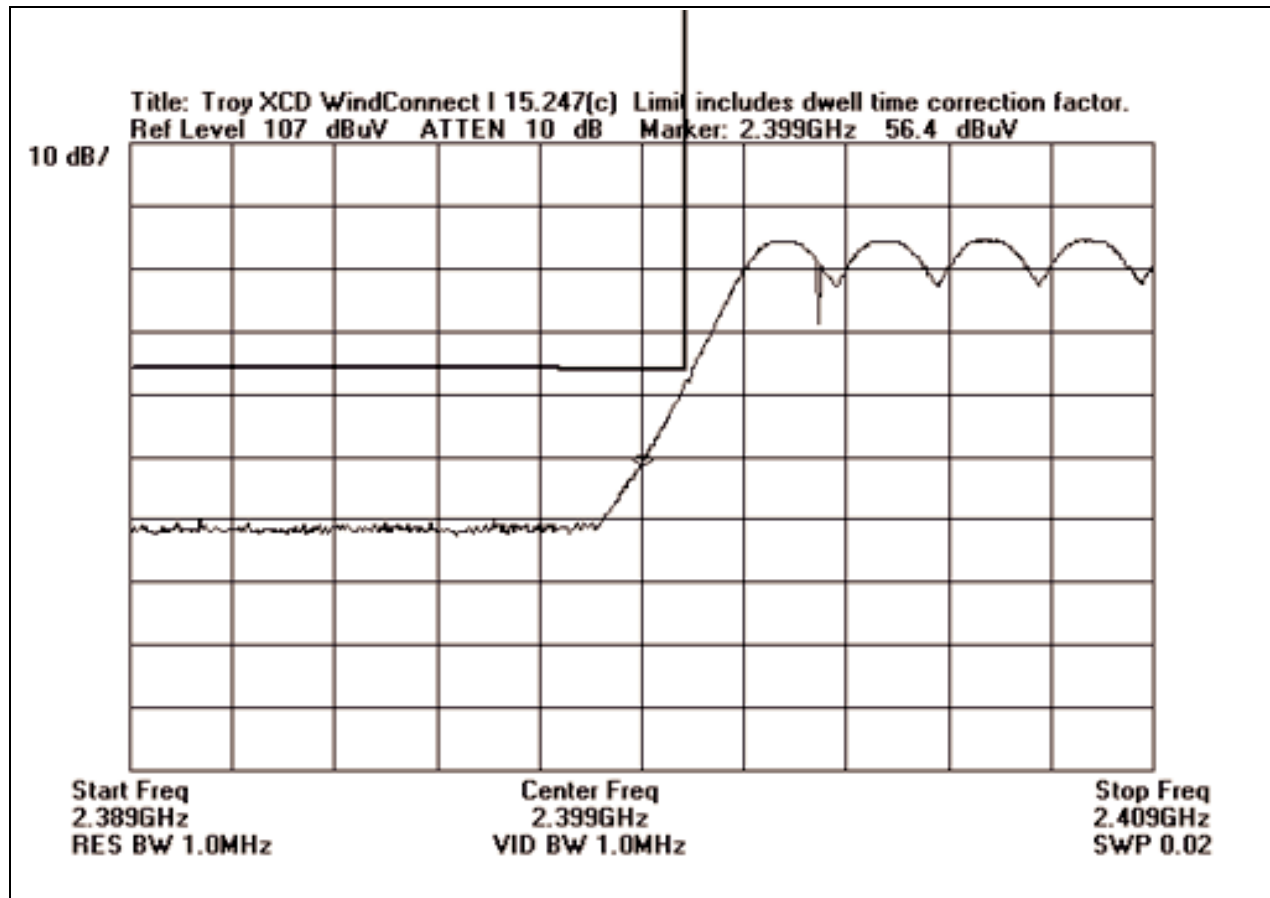
CHANNEL 2 BANDWIDTH



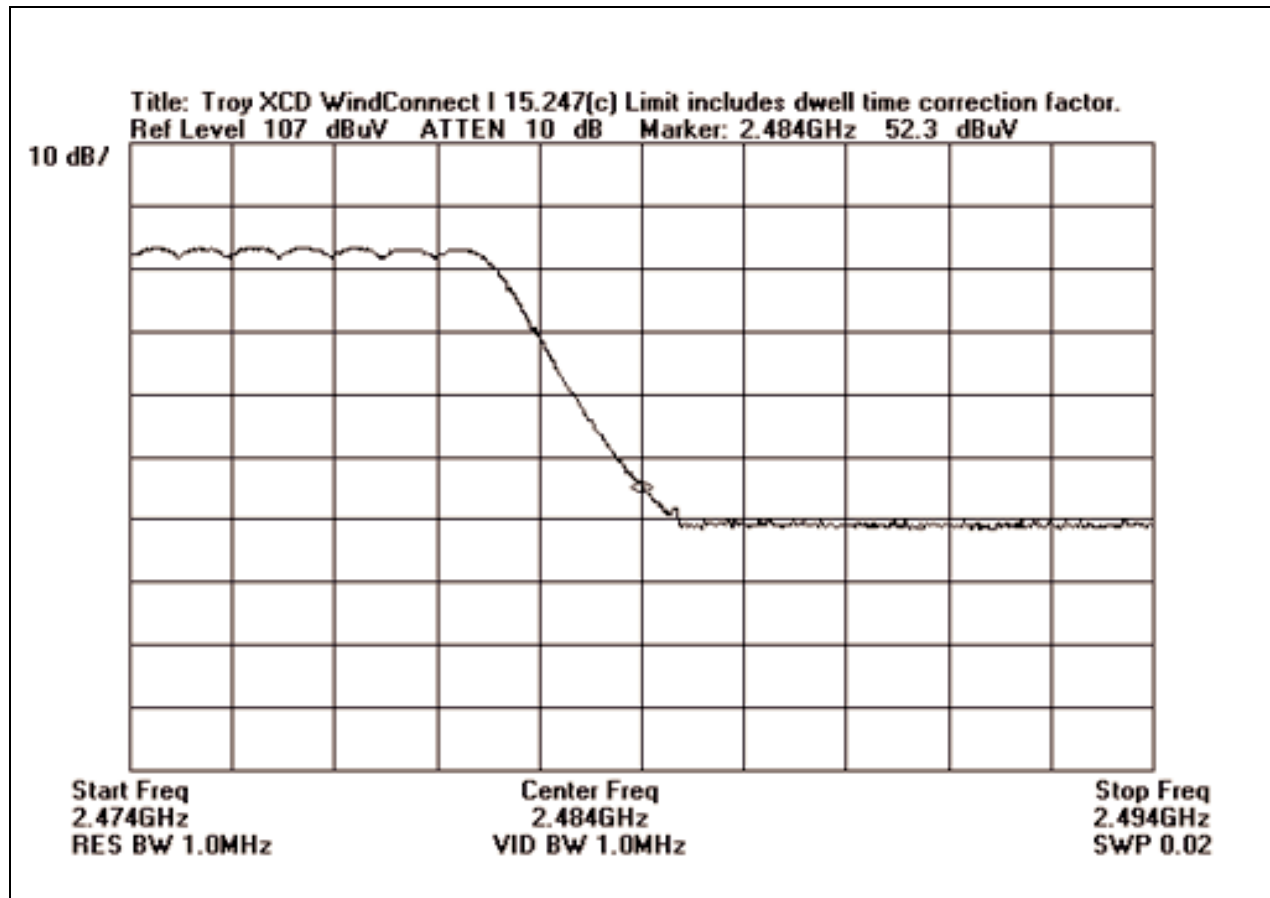
CHANNEL 3 BANDWIDTH



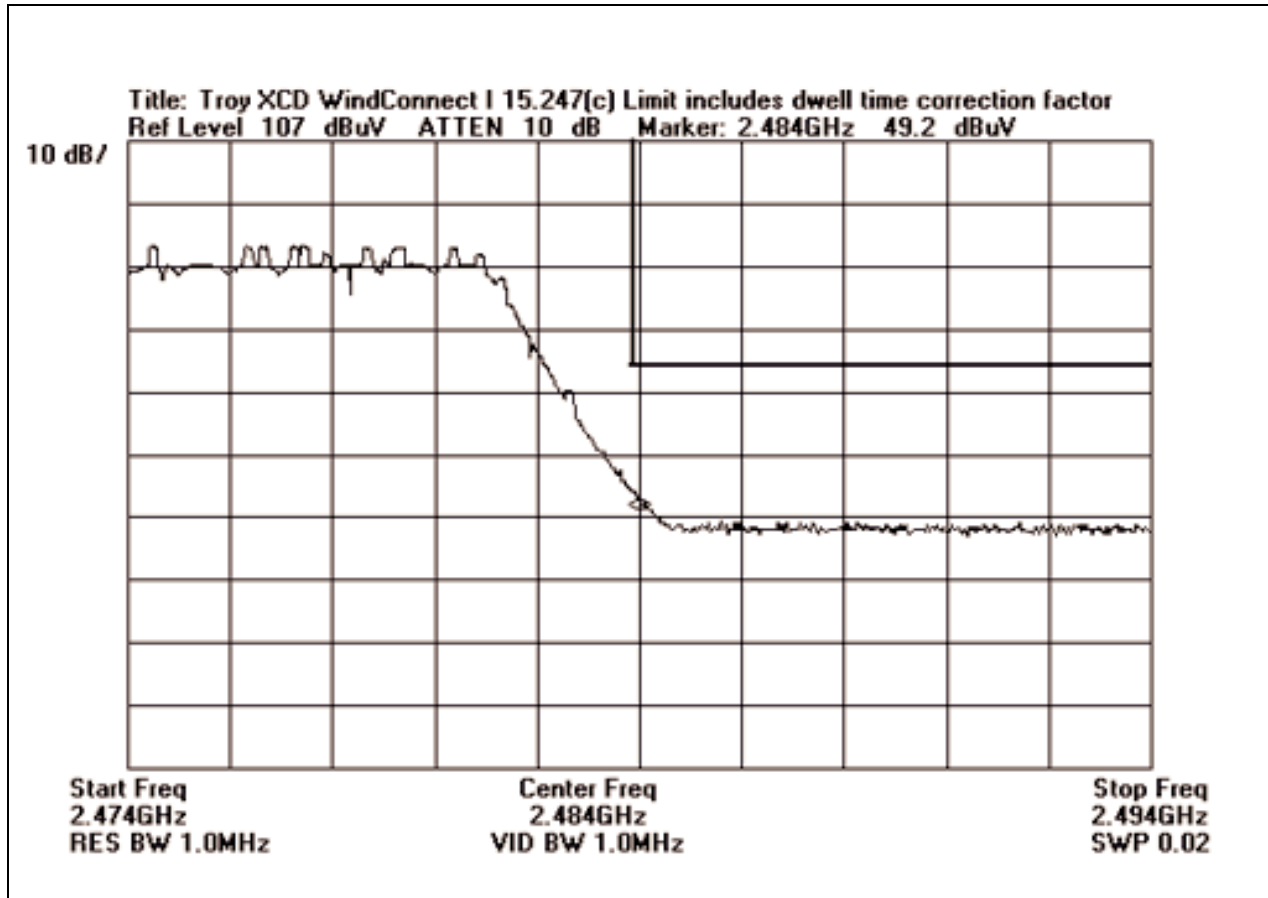
BANDEDGE PLOT: LOWER EDGE



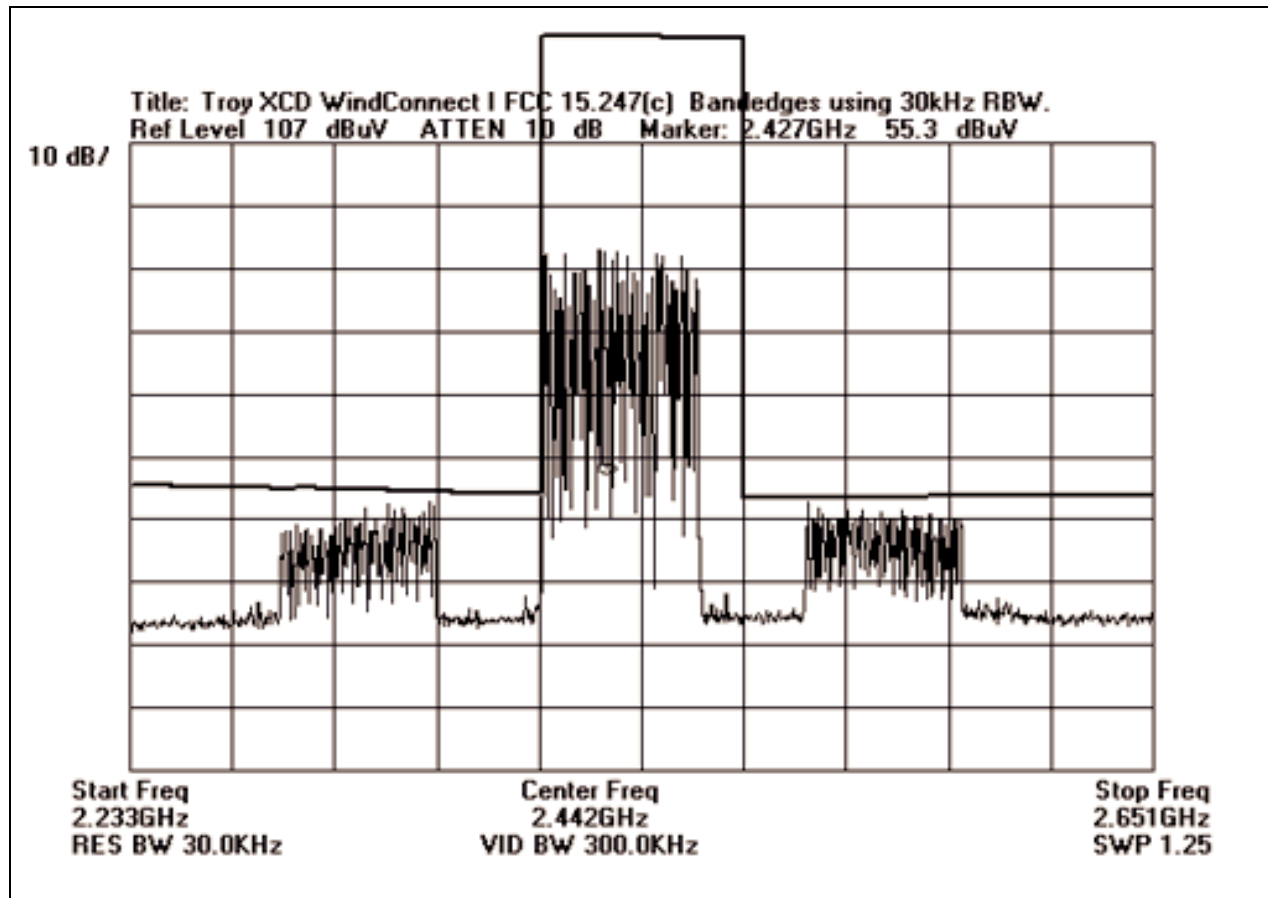
BANDEDGE PLOT: UPPER EDGE



BANDEDGE PLOT: UPPER EDGE



BANDEDGE PLOT: ENTIRE RANGE



15.247(f) Average Time of Occupancy

Pulse timing calculations are as follows:

The pulse timing requirements of FCC 15.247(f) require no more than 0.4 seconds of transmission time on a channel in a period defined by the number of hopping channels (in this case, 79) multiplied by 0.4: $79 \times 0.4 = 31.6$

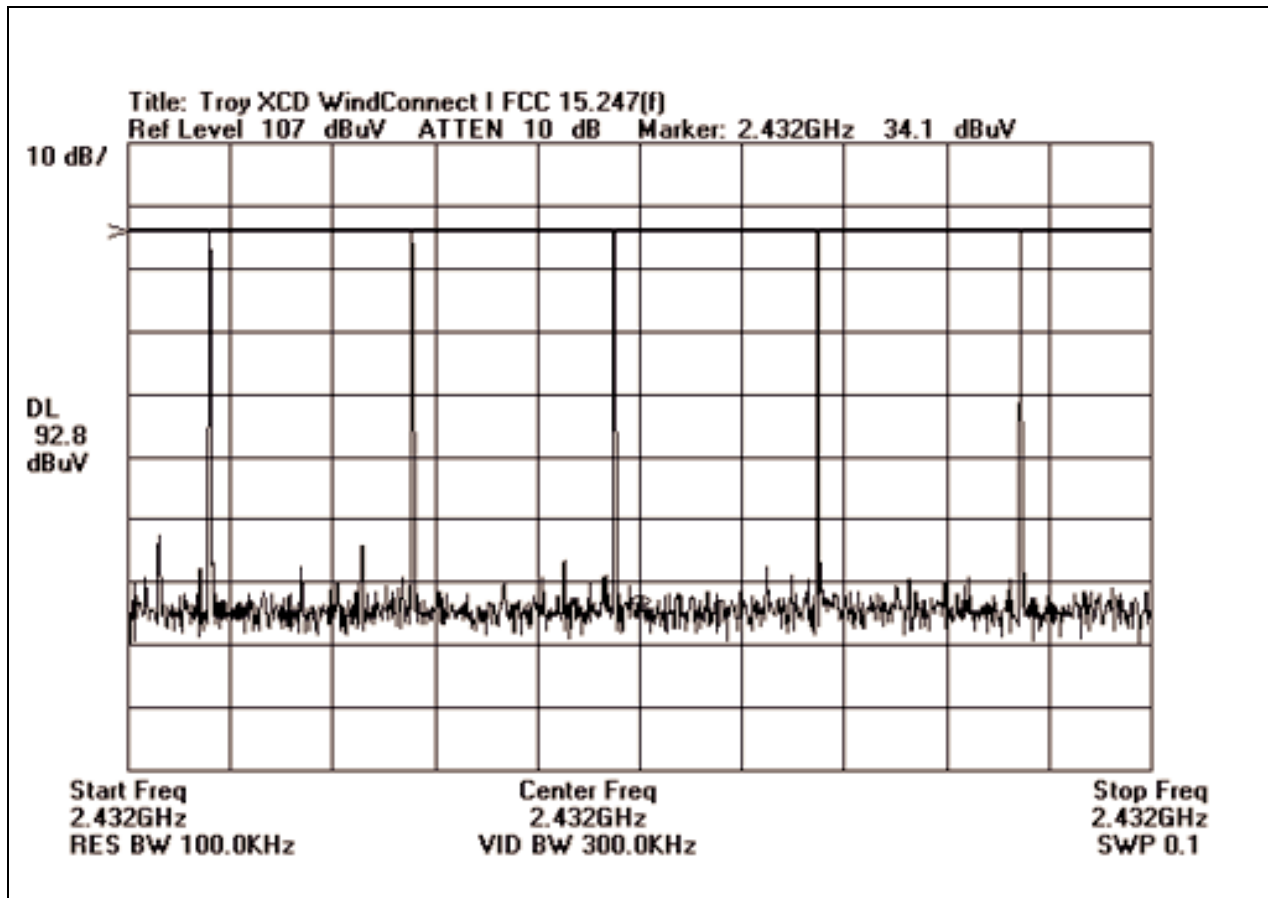
In 31.6 seconds, there are two, 5.08second transmit blocks measured with direct sequencing off. Within the transmit block, the EUT is transmitting 140uSec per 20mSec period. There are five 140uSec pulses in any 100mSec period. Therefore, there are 508 pulses per any 31.6 second period such that;

$$5 / 0.1 = X / 10.16$$

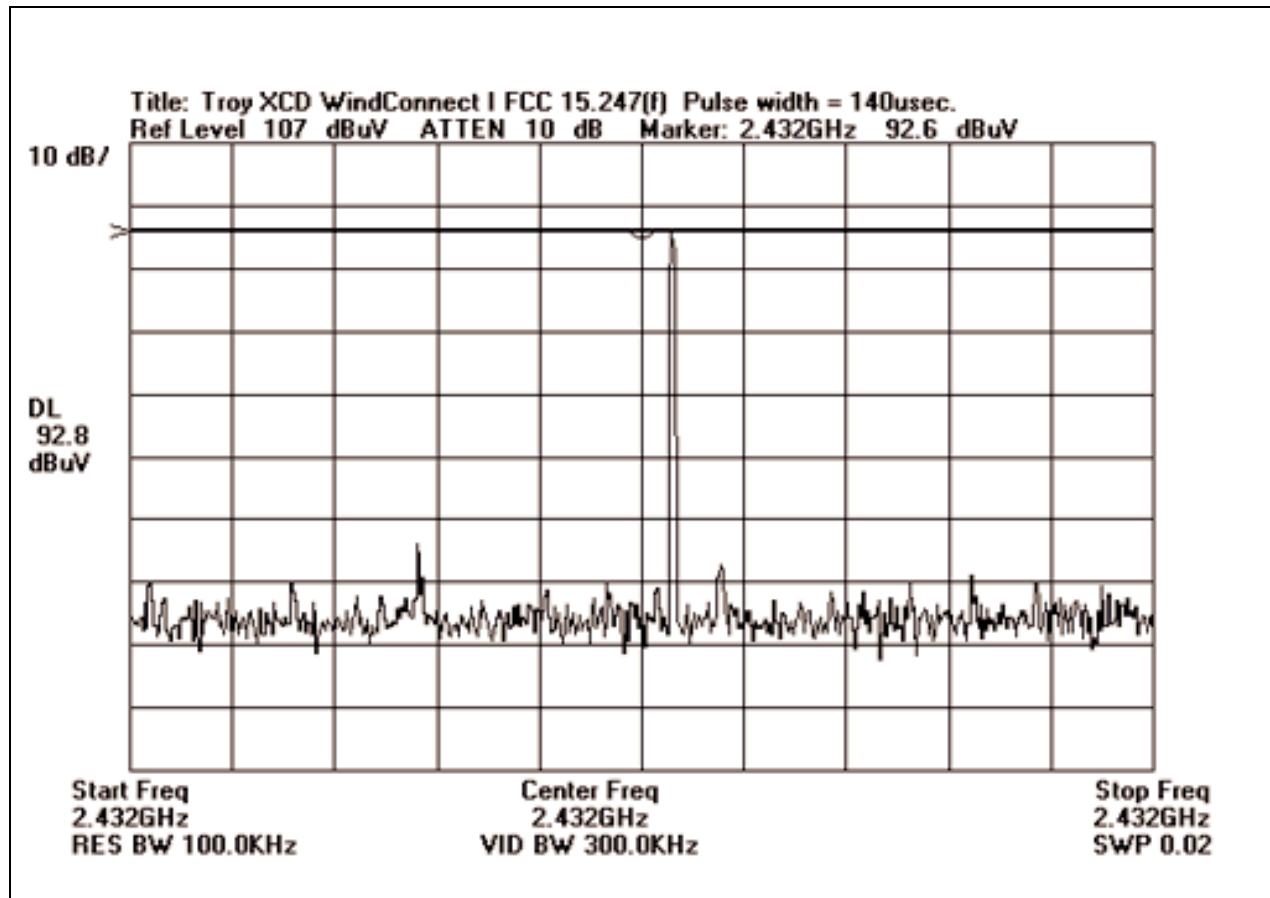
$$X = 508;$$

$508 \text{ pulses} \times 140 \text{ uSec} = 71120 \text{ uSec}$ in any 31.6 second period, or rather; 0.07112 seconds per any 31.6 second period which is passes the criteria set forth in 15.247(f).

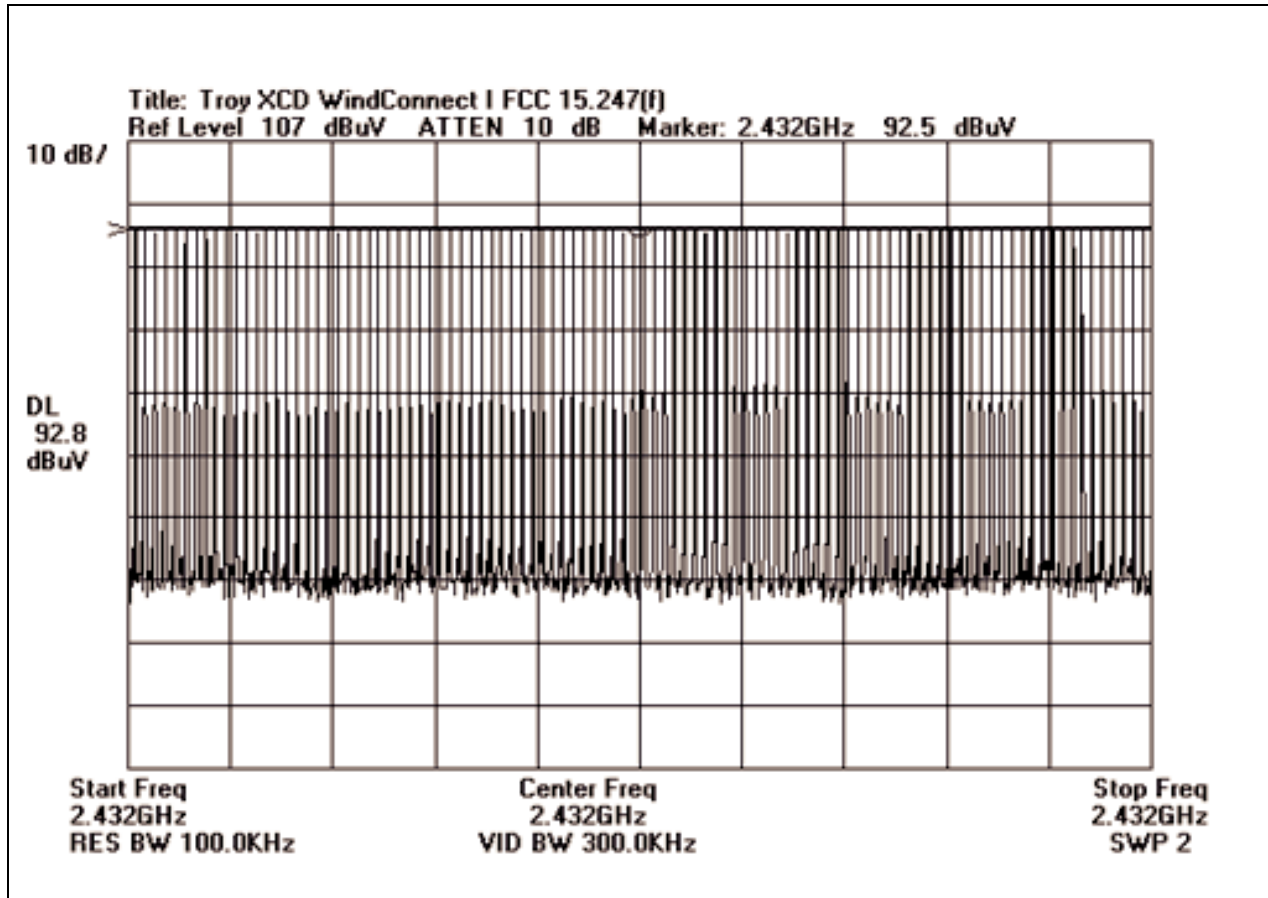
PULSE TIMING: 100 msec



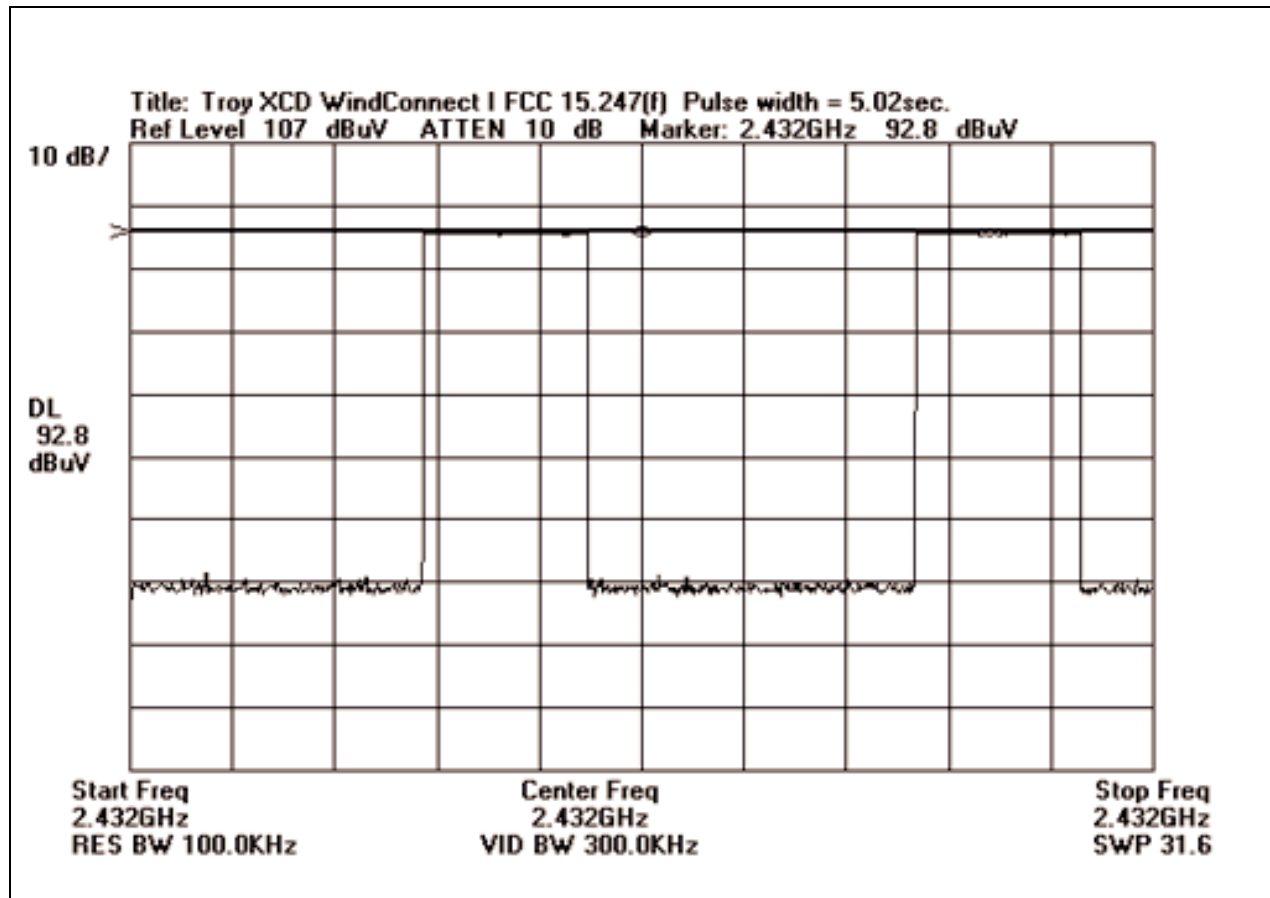
PULSE TIMING: 20 msec



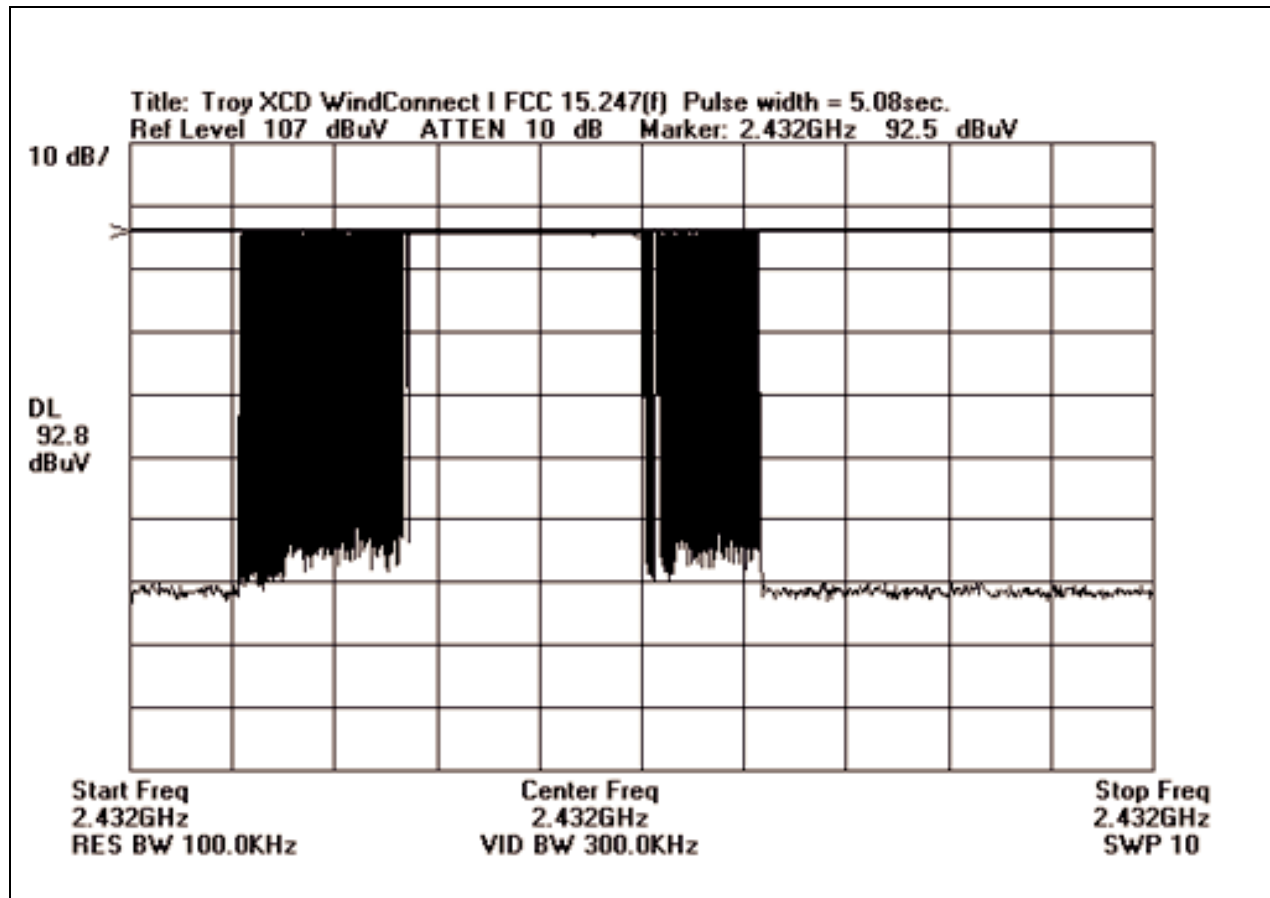
PULSE TIMING: 2 sec



PULSE TIMING: 31.6 sec



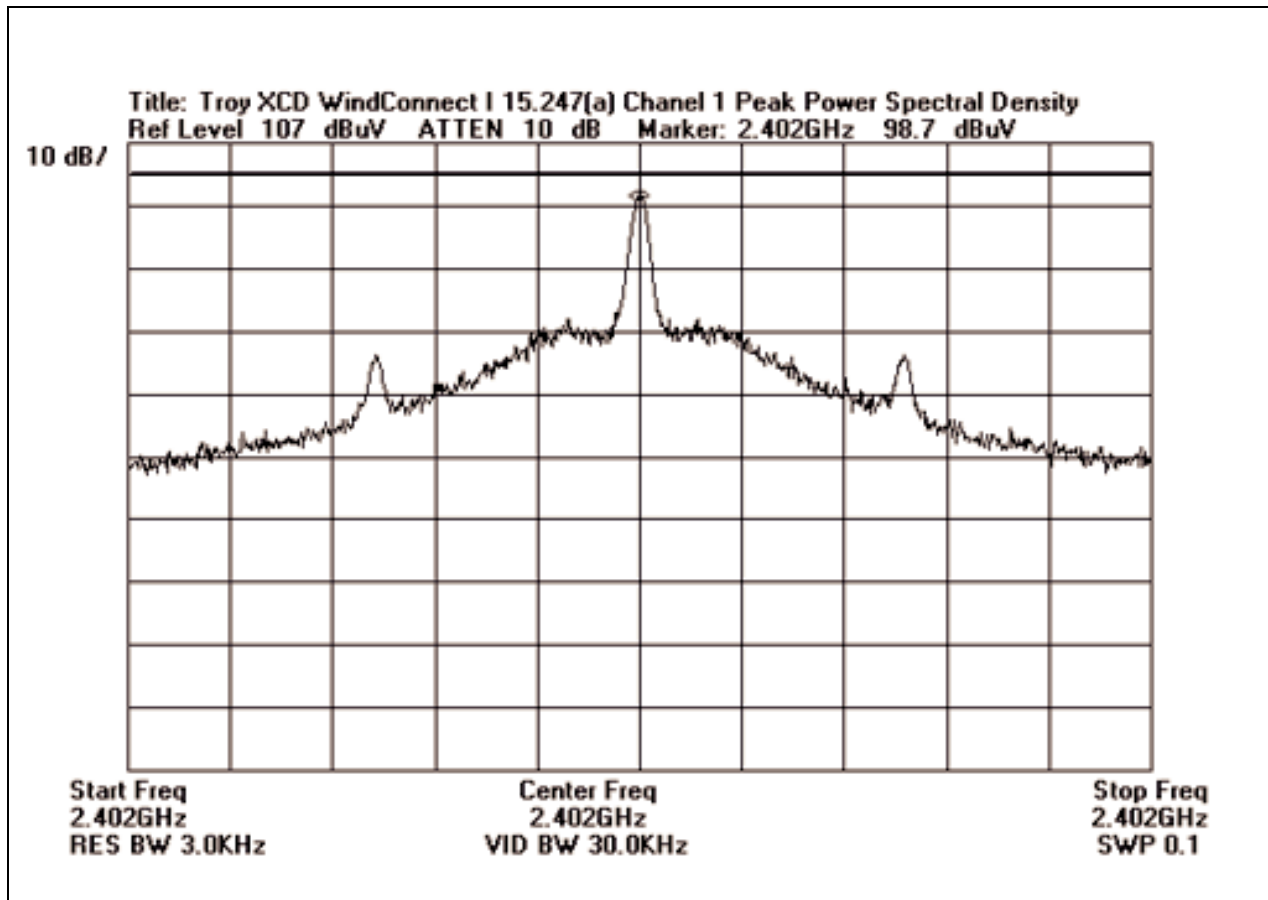
PULSE TIMING: 10 sec



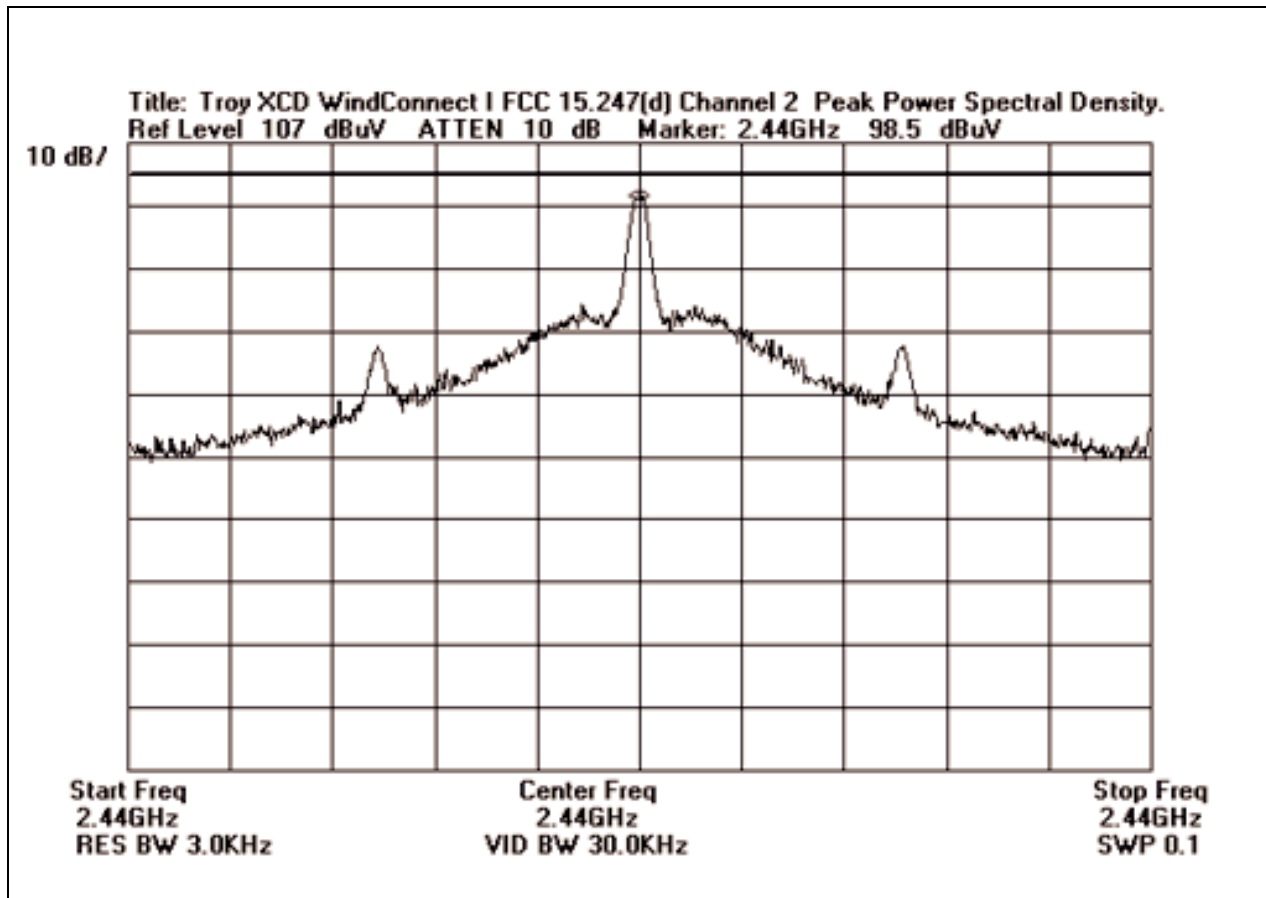
15.247(d) Peak Power Spectral Density

The peak power spectral density conducted from the EUT to the antenna was not greater than 8 dm in any 3 kHz band during any time interval of continuous transmission.

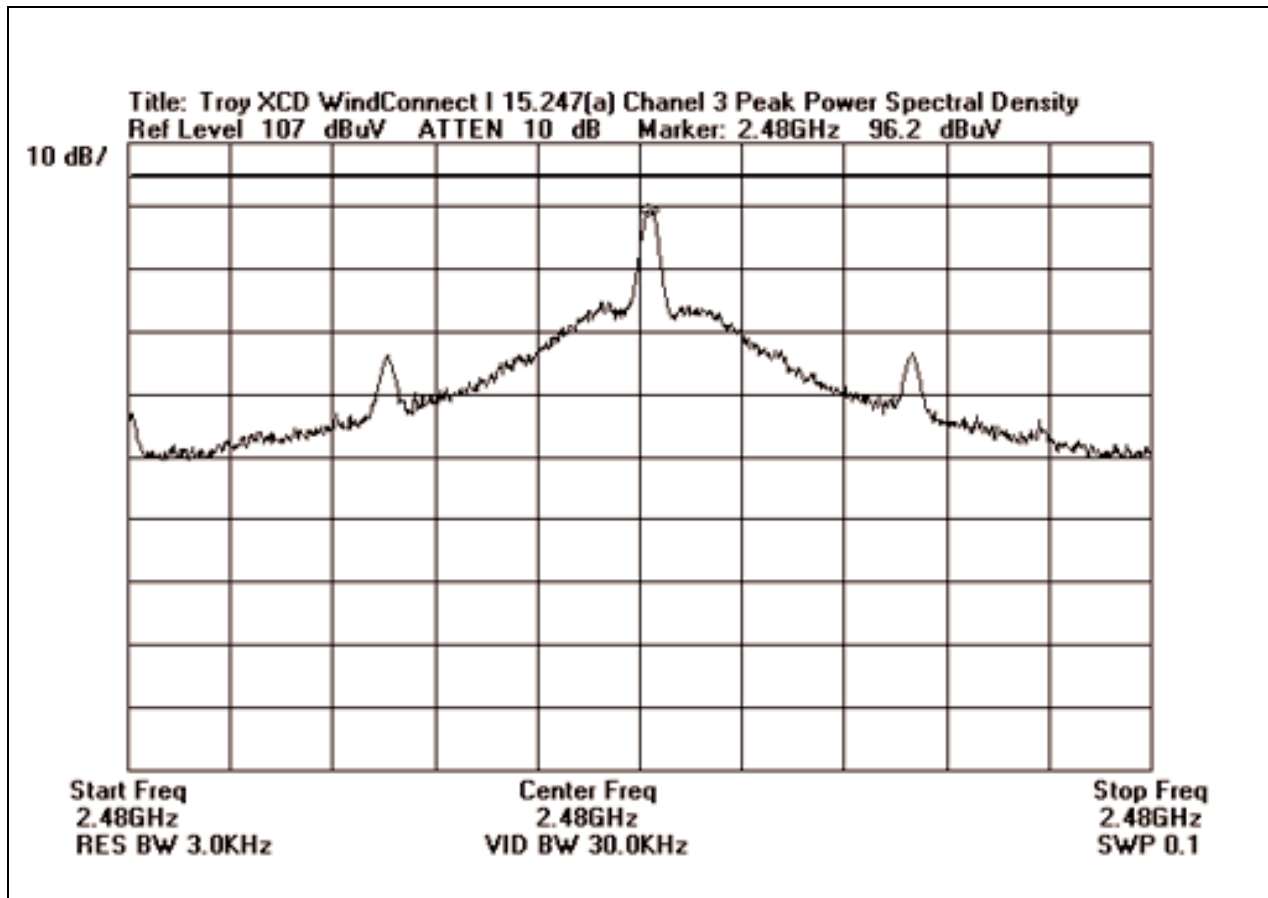
CHANNEL 1:



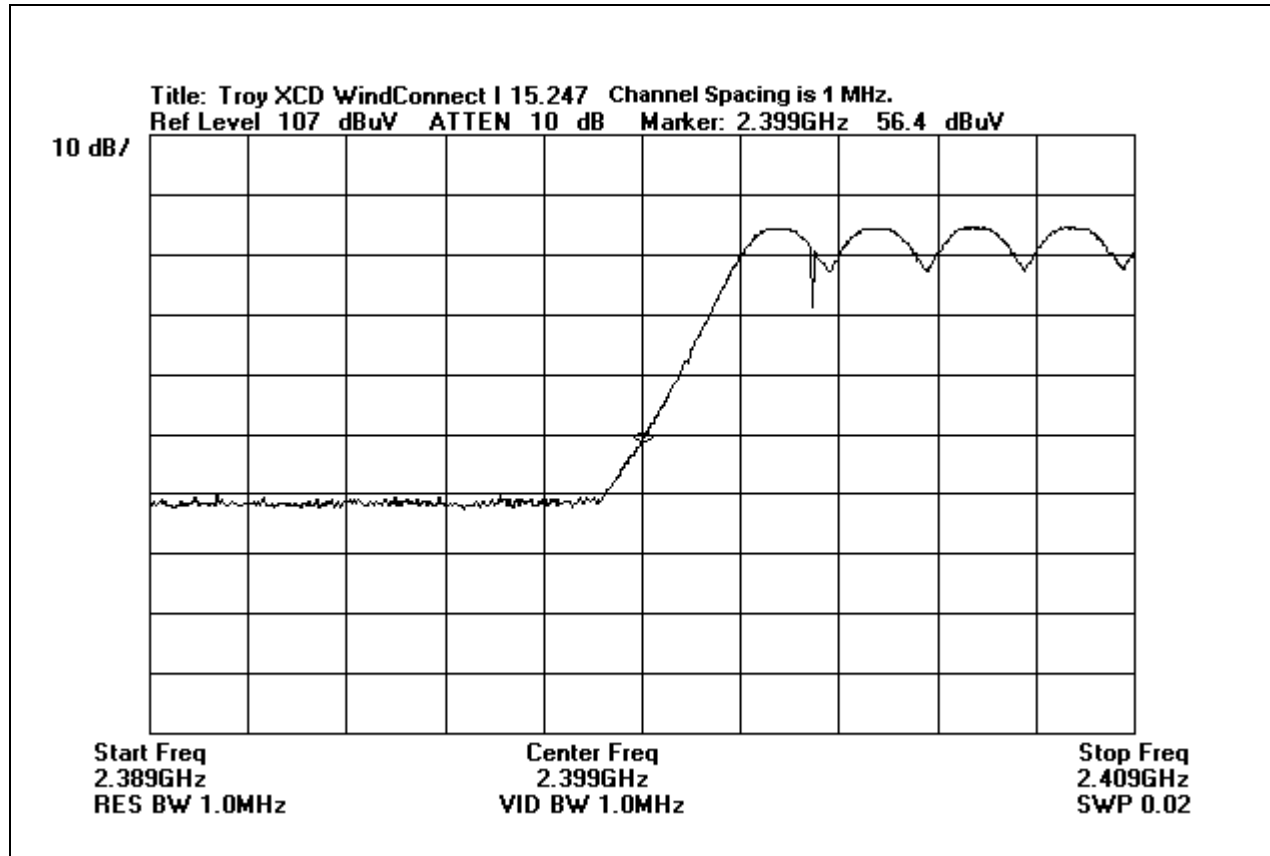
CHANNEL 2



CHANNEL 3



CHANNEL SEPARATION



APPENDIX A

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

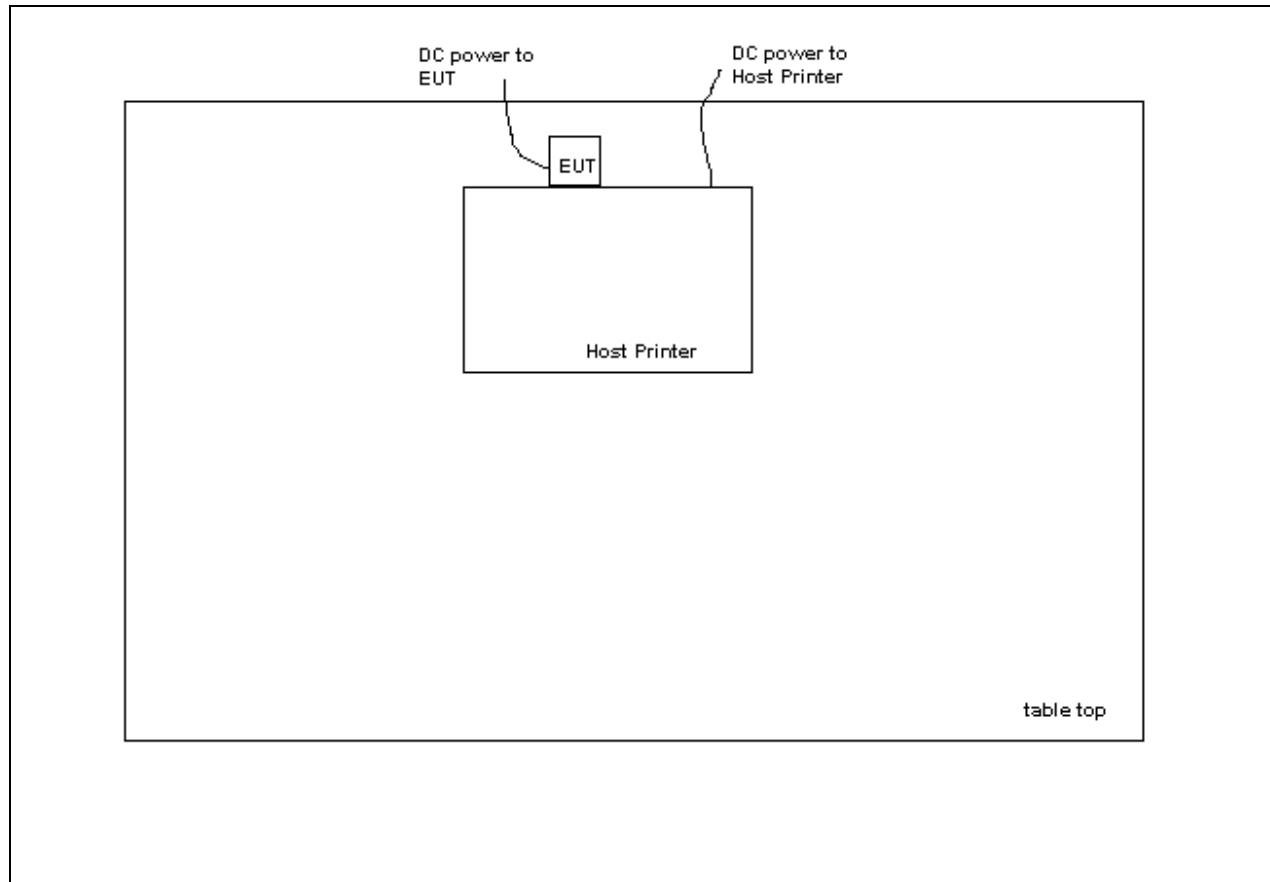
INFORMATION ABOUT THE EQUIPMENT UNDER TEST	
Test Software/Firmware:	123-00150-10
CRT was displaying:	NA
Power Supply Manufacturer:	PoTrans
Power Supply Part Number:	UP01011050
AC Line Filter Manufacturer:	NA
AC Line Filter Part Number:	NA

I/O PORTS	
Type	#
IEEE1284 Host Parallel Port	1
RS-232 Diagnostics Port	1

CRYSTAL OSCILLATORS	
Type	Freq In MHz
AT	4.000 MHz
AT	20.000 MHz
	32.768 KHz

PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks, MHz	Layers	Location
Main Board	110-0150 Rev E1		6	

EQUIPMENT TEST SETUP DIAGRAM

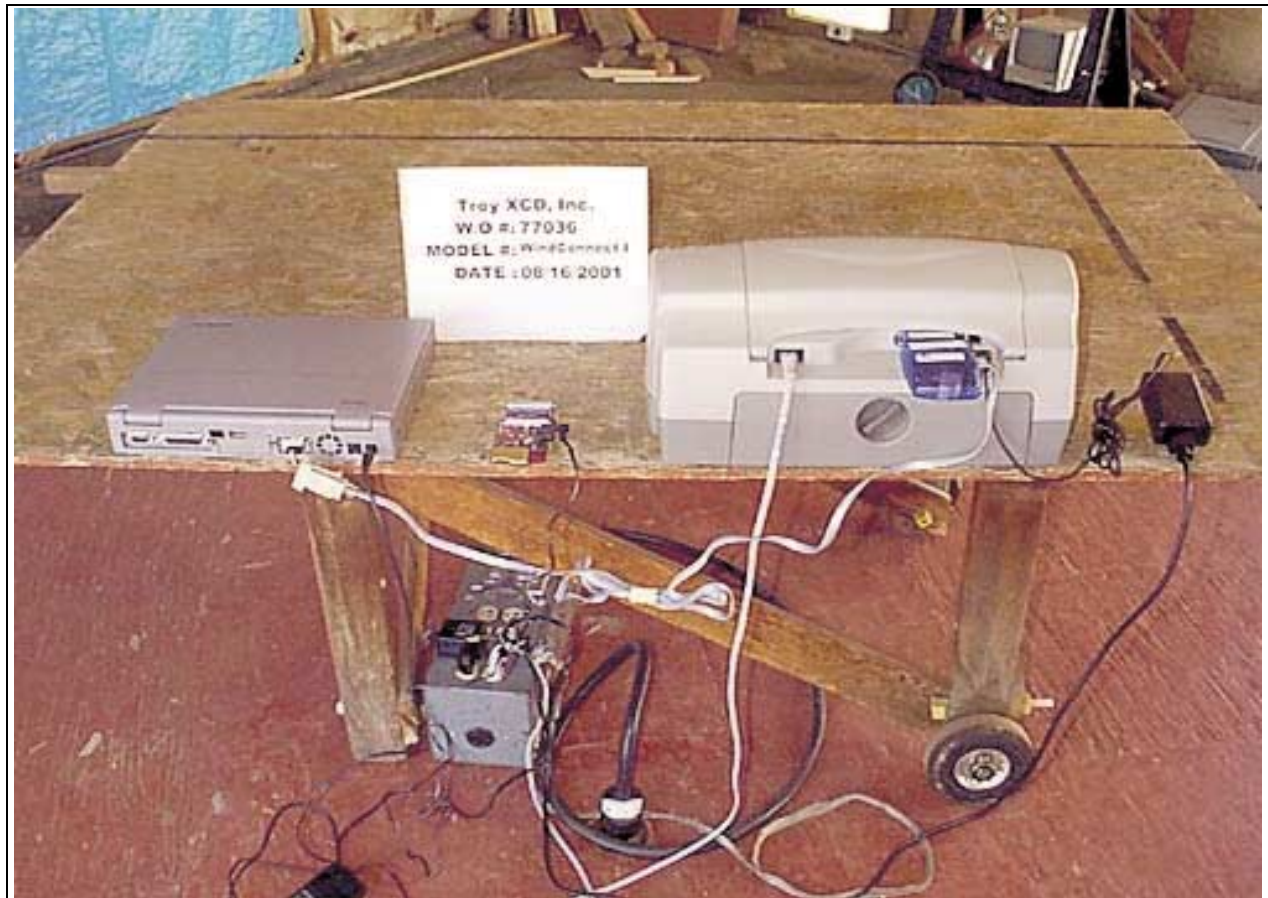


PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View (Mariposa Setup)

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View (Mariposa Setup)

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View Using the Horn Antenna

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View (Brea Setup)

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View (Brea Setup)

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Front View (Brea Setup)

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Back View (Brea Setup)

APPENDIX B

TEST EQUIPMENT LIST

Industry of Canada File No. IC 3172-A

Industry of Canada File No. IC 3082-D

Radiated Emissions – Brea Test Site

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	102500	102501
QP Adapter	01437	HP	85650A	3303A01884	092600	092601
Bicon Antenna	00306	A.H. System	SAS-200/540	220	092000	092001
Log Periodic Antenna	00300	A.H. System	SAS-200/516	331	092000	092001
Pre-amp	00309	HP	8447D	1937A02548	091800	091801
Antenna cable	NA	NA	RG214	Cable#15	122000	122001
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	071601	071602
Horn Antenna	00849	EMCO	3115	6246	092500	092501
Microwave Pre-amp	00798	HP	83017A	3123A00281	101100	101101
¼” Helix Coaxial Cable	NA	Andrew	LDF1-50	Cable 70ft	091500	091501

Conducted Emissions – Brea Test Site

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	01865	HP	8566B	2532A02509	102500	102501
QP Adapter	01437	HP	85650A	3303A01884	092600	092601
LISN	02128	EMCO	3816/2NM	9809-1090	030701	030702

Radiated Emissions – Mariposa Test Site

Equipment	Manufacturer	Model #	Serial #	Asset #	Cal Date	Cal Due
18-26GHz Horn Antenna	HP	84125-80008	942126-003	01413	7/9/01	7/9/02
2.4GHz Low Pass Filter	K&L Microwave, Inc.	10L121-2200/T2400-0/0	1	01439	10/03/00	10/3/01
Cable #3 (2')	Andrew	FSJ1-50A	N/A	N/A	4/16/01	4/16/02
Cable #4 (50')	Andrew	FSJ1-50A	N/A	N/A	4/16/01	4/16/02
Cable #7 (25')	Andrew	FSJ1-50A	N/A	N/A	4/16/01	4/16/02
Preamplifier	HP	8449B	3008A00301	02010	10/13/00	10/13/01
QP Adapter	HP	85650A	2811A01267	00478	11/03/00	11/3/01
S/A Display	HP	8566B	2403A08241	00489	11/3/00	11/3/01
Spectrum Analyzer	HP	8566B	2209A01404	00490	11/3/00	11/3/01
Spectrum Analyzer	HP	8564E	3623A00539	01406	12/12/00	12/12/01
3/10 meter Cable	Andrews	Hardline	N/A	N/A	2/27/01	2/27/02
Bicon Antenna	A&H	SAS-200/542	156	00225	12/8/00	12/8/01
Log Antenna	A&H	SAS-200/510	154	01330	5/07/01	5/7/02
Magnetic Loop	EMCO	6502	1074	00226	5/31/01	5/31/02
Preamplifier	HP	8447D	1937A02604	00099	3/29/01	3/29/02
QP Adapter	HP	85650A	2811A01267	00478	11/03/00	11/3/01
S/A Display	HP	8566B	2403A08241	00489	11/3/00	11/3/01
Spectrum Analyzer	HP	8566B	2209A01404	00490	11/3/00	11/3/01

Conducted Emissions – Mariposa Test Site

LISN Set	Solar	8028-50-TS-24-BNC	814493, 474	02056	5/22/01	5/22/02
QP Adapter	HP	85650A	2811A01267	00478	11/03/00	11/3/01
S/A Display	HP	8566B	2403A08241	00489	11/3/00	11/3/01
Spectrum Analyzer	HP	8566B	2209A01404	00490	11/3/00	11/3/01

APPENDIX C

15.247(c) MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Troy XCD**

Specification: **15.247(b)(1)**

Work Order #: **77036**

Date: 08/20/2001

Test Type: **Maximized Emissions**

Time: 10:11:47

Equipment: **Print Server**

Sequence#: 1

Manufacturer: Troy XCD, Inc.

Tested By: Randal Clark

Model: WindConnect I Rev. D/E1

S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049
Power Supply	Toshiba	PA2450U	9707

Test Conditions / Notes:

EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Amp Cable dB	Horn dB	Cable dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	2401.958M	98.5	-34.6 +2.7	+28.5	+1.2	+5.2	+0.0	101.5	127.0	-25.5	Horiz
									Low Channel		
2	2439.955M	98.0	-34.6 +2.7	+28.6	+1.1	+5.2	+0.0	101.0	127.0	-26.0	Horiz
									Mid Channel		
3	2479.965M	96.2	-34.5 +2.8	+28.7	+1.1	+5.3	+0.0	99.6	127.0	-27.4	Horiz
									High Channel		
4	2401.963M	88.9	-34.6 +2.7	+28.5	+1.2	+5.2	+0.0	91.9	127.0	-35.1	Vert
									Low Channel		
5	2479.965M	87.5	-34.5 +2.8	+28.7	+1.1	+5.3	+0.0	90.9	127.0	-36.1	Vert
									High Channel		
6	2439.987M	83.6	-34.6 +2.7	+28.6	+1.1	+5.2	+0.0	86.6	127.0	-40.4	Vert
									Mid Channel		

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Troy XCD**
 Specification: **FCC 15.209**
 Work Order #: **77036** Date: 09/12/2001
 Test Type: **Maximized Emissions** Time: 07:55:32
 Equipment: **Print Server** Sequence#: 32
 Manufacturer: Troy XCD, Inc. Tested By: Randal Clark
 Model: WindConnect I Rev. D/E1
 S/N: 00700004

EMI Meters:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	2209A01404	11/03/2000	11/03/2001	490
RF Section				
Spectrum Analyzer	2403A08241	11/03/2000	11/03/2001	489
Display				
QP Adapter	2811A01267	11/03/2000	11/03/2001	478
Preamplifier	1937A02604	03/29/2001	03/29/2002	0
Log Periodic	154	05/07/2001	05/07/2002	0
Biconical Antenna	156	12/18/2000	12/18/2001	0

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049
Power Supply	Toshiba	PA2450U	9707

Test Conditions / Notes:

EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Test distance correction factors included in accordance with FCC 15.31. Frequency Range Tested: 30kHz - 30MHz.

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dB μ V	Loop dB	Cable dB	15.31 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	16.040M	30.4	+9.6	+0.6	-20.0	+0.0	20.6	29.5	-8.9	Vert

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Troy XCD, Inc.**

Specification: **FCC 15.209**

Work Order #: **77036**

Date: 08/16/2001

Test Type: **Maximized Emissions**

Time: 11:01:48

Equipment: **Print Server**

Sequence#: 33

Manufacturer: Troy XCD, Inc.

Tested By: Stuart Yamamoto

Model: WindConnect I Rev. D/E1

S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Laptop Computer	Sony	PCM-161M	5100013

Test Conditions / Notes:

The EUT and host printer are placed stand alone on the wooden tabletop. The EUT is connected to the centronics connector of the host printer. The EUT receives and transmit digital data to a remote laptop via transmission scheme set by Blue Tooth technology. DC power to the EUT is supplied by an external power supply. Voltage to EUT power adapter is 110 Vac, 60 Hz. Temperature 25°C, Humidity 49%, Pressure 100kPa.

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

#	Freq MHz	Rdng dBμV	Bicon Amp dB	Log_3 dB	Cable dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	481.192M	37.3	+0.0 -28.1	+16.6	+4.0	+0.4	+10.0 361	40.2	46.0	-5.8	Horiz 153
2	399.976M	38.0	+0.0 -28.1	+15.2	+3.6	+0.4	+10.0 359	39.1	46.0	-6.9	Horiz 100
3	120.003M	37.0	+14.9 -28.5	+0.0	+1.9	+0.2	+10.0 361	35.5	43.5	-8.0	Vert 100
4	400.012M	36.7	+0.0 -28.1	+15.2	+3.6	+0.4	+10.0 360	37.8	46.0	-8.2	Vert 100
5	420.020M	36.0	+0.0 -28.2	+15.6	+3.7	+0.4	+10.0 1	37.5	46.0	-8.5	Horiz 100
6	120.005M	36.0	+14.9 -28.5	+0.0	+1.9	+0.2	+10.0 360	34.5	43.5	-9.0	Horiz 159
7	200.001M	33.4	+16.2 -28.6	+0.0	+2.4	+0.3	+10.0 360	33.7	43.5	-9.8	Vert 100
8	374.980M	35.4	+0.0 -28.1	+15.0	+3.5	+0.4	+10.0	36.2	46.0	-9.8	Horiz 100
9	199.991M	32.2	+16.2 -28.6	+0.0	+2.4	+0.3	+10.0	32.5	43.5	-11.0	Horiz 254
10	260.016M	32.3	+18.0 -28.5	+0.0	+2.8	+0.3	+10.0 201	34.9	46.0	-11.1	Vert 100
11	420.007M	32.9	+0.0 -28.2	+15.6	+3.7	+0.4	+10.0 360	34.4	46.0	-11.6	Vert 169
12	350.005M	33.5	+0.0 -28.2	+14.7	+3.4	+0.3	+10.0 360	33.7	46.0	-12.3	Vert 100

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Troy XCD**

Specification: **FCC 15.247 / 15.209**

Work Order #: **77036**

Date: 08/20/2001

Test Type: **Maximized Emissions**

Time: 16:48:03

Equipment: **Print Server**

Sequence#: 5

Manufacturer: Troy XCD, Inc.

Tested By: Randal Clark

Model: WindConnect I Rev. D/E1

S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049
Power Supply	Toshiba	PA2450U	9707

Test Conditions / Notes:

EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Dwell time correction factor used in accordance with DA00-705 (20dB maximum). Frequency Range Tested: 1-18 GHz.

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Amp Cable dB	Horn Filtre dB	Cable 15.35 dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	4803.890M	54.5	-32.7 +3.4	+33.1 +0.7	+1.2 -20.0	+7.2	+0.0	47.4	54.0	-6.6	Horiz
2	4879.810M	53.8	-32.8 +3.5	+33.1 +0.8	+1.3 -20.0	+7.2	+0.0	46.9	54.0	-7.1	Horiz
3	4960.060M	52.7	-32.9 +3.6	+33.2 +0.9	+1.4 -20.0	+7.3	+0.0	46.2	54.0	-7.8	Horiz
4	4959.740M	48.3	-32.9 +3.6	+33.2 +0.9	+1.4 -20.0	+7.3	+0.0	41.8	54.0	-12.2	Vert
5	4879.980M	48.1	-32.8 +3.5	+33.1 +0.8	+1.3 -20.0	+7.2	+0.0	41.2	54.0	-12.8	Vert
6	4804.070M	47.3	-32.7 +3.4	+33.1 +0.7	+1.2 -20.0	+7.2	+0.0	40.2	54.0	-13.8	Vert
7	2484.660M	44.4	-34.5 +2.8	+28.8 +0.0	+1.1 -20.0	+5.3	+0.0	27.9	54.0	-26.1	Vert
8	1193.660M	51.6	-35.4 +1.7	+25.0 +0.0	+0.3 -20.0	+3.5	+0.0	26.7	54.0	-27.3	Horiz
9	1193.720M	51.2	-35.4 +1.7	+25.0 +0.0	+0.3 -20.0	+3.5	+0.0	26.3	54.0	-27.7	Vert
10	1127.322M	46.6	-35.5 +1.6	+24.6 +0.0	+0.3 -20.0	+3.4	+0.0	21.0	54.0	-33.0	Horiz
11	1094.008M	45.4	-35.5 +1.6	+24.5 +0.0	+0.3 -20.0	+3.3	+0.0	19.6	54.0	-34.4	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Troy XCD**

Specification: **FCC 15.247 / 15.209**

Work Order #: **77036**

Date: 08/21/2001

Test Type: **Maximized Emissions**

Time: 11:56:01

Equipment: **Print Server**

Sequence#: 7

Manufacturer: Troy XCD, Inc.

Tested By: Chuck Kendall

Model: WindConnect I Rev. D/E1

S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049
Power Supply	Toshiba	PA2450U	9707

Test Conditions / Notes:

EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Distance correction factor in accordance with FCC 15.31. Frequency range tested: 1-26.5 GHz.

Measurement Data:

Reading listed by margin.

Test Distance: .2

#	Freq MHz	Rdng dBμV	Amp		Horn		Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
			dB		dB	dB					
1	23273.330M	42.8	-34.1		+40.0		-24.0	24.7	54.0	-29.3	Horiz
2	18198.330M	39.3	-31.8		+40.3		-24.0	23.8	54.0	-30.2	Horiz
3	22060.000M	40.8	-33.5		+40.3		-24.0	23.6	54.0	-30.4	Horiz
4	21418.330M	41.3	-34.1		+40.1		-24.0	23.3	54.0	-30.7	Horiz
5	20333.330M	38.5	-32.3		+40.5		-24.0	22.7	54.0	-31.3	Horiz
6	25000.000M	39.3	-33.9		+40.7		-24.0	22.1	54.0	-31.9	Horiz
7	19050.000M	37.2	-31.4		+40.2		-24.0	22.0	54.0	-32.0	Horiz
8	19260.000M	37.3	-32.0		+40.3		-24.0	21.6	54.0	-32.4	Horiz
9	18035.000M	36.0	-32.4		+40.3		-24.0	19.9	54.0	-34.1	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362
 Customer: **Troy XCD**
 Specification: **FCC 15.247/15.209**
 Work Order #: **77036** Date: 08/21/2001
 Test Type: **Maximized Emissions** Time: 12:00:46
 Equipment: **Print Server** Sequence#: 8
 Manufacturer: Troy XCD, Inc. Tested By: Chuck Kendall
 Model: WindConnect I Rev. D/E1 S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049
Power Supply	Toshiba	PA2450U	9707

Test Conditions / Notes:

EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Distance correction factor in accordance with FCC 15.31. Frequency range tested: 1-26.5 GHz.

Measurement Data:

Reading listed by margin.

Test Distance: .2

#	Freq MHz	Rdng dB μ V	Amp Horn				Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	24708.330M	44.5	-33.8	+40.3			-24.0	27.0	54.0	-27.0	Vert
2	24930.000M	44.0	-33.9	+40.6			-24.0	26.7	54.0	-27.3	Vert
3	24475.000M	42.3	-33.8	+40.0			-24.0	24.5	54.0	-29.5	Vert
4	23425.000M	42.5	-34.1	+39.9			-24.0	24.3	54.0	-29.7	Vert
5	20368.330M	39.7	-32.2	+40.5			-24.0	24.0	54.0	-30.0	Vert
6	22036.670M	41.0	-33.6	+40.3			-24.0	23.7	54.0	-30.3	Vert
7	23145.000M	41.8	-34.2	+40.0			-24.0	23.6	54.0	-30.4	Vert
8	21663.330M	41.0	-34.0	+40.2			-24.0	23.2	54.0	-30.8	Vert
9	21150.000M	40.8	-33.9	+40.2			-24.0	23.1	54.0	-30.9	Vert
10	19050.000M	37.7	-31.4	+40.2			-24.0	22.5	54.0	-31.5	Vert
11	18210.000M	37.8	-31.7	+40.3			-24.0	22.4	54.0	-31.6	Vert
12	25000.000M	39.3	-33.9	+40.7			-24.0	22.1	54.0	-31.9	Vert
13	18023.330M	34.8	-32.4	+40.3			-24.0	18.7	54.0	-35.3	Vert

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Troy XCD, Inc.**

Specification: **FCC 15.207**

Work Order #: **77036**

Date: 08/16/2001

Test Type: **Conducted Emissions**

Time: 15:36:47

Equipment: **Print Server**

Sequence#: 35

Manufacturer: Troy XCD, Inc.

Tested By: Stuart Yamamoto

Model: WindConnect I Rev. D/E1

S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Laptop Computer	Sony	PCM-161M	5100013

Test Conditions / Notes:

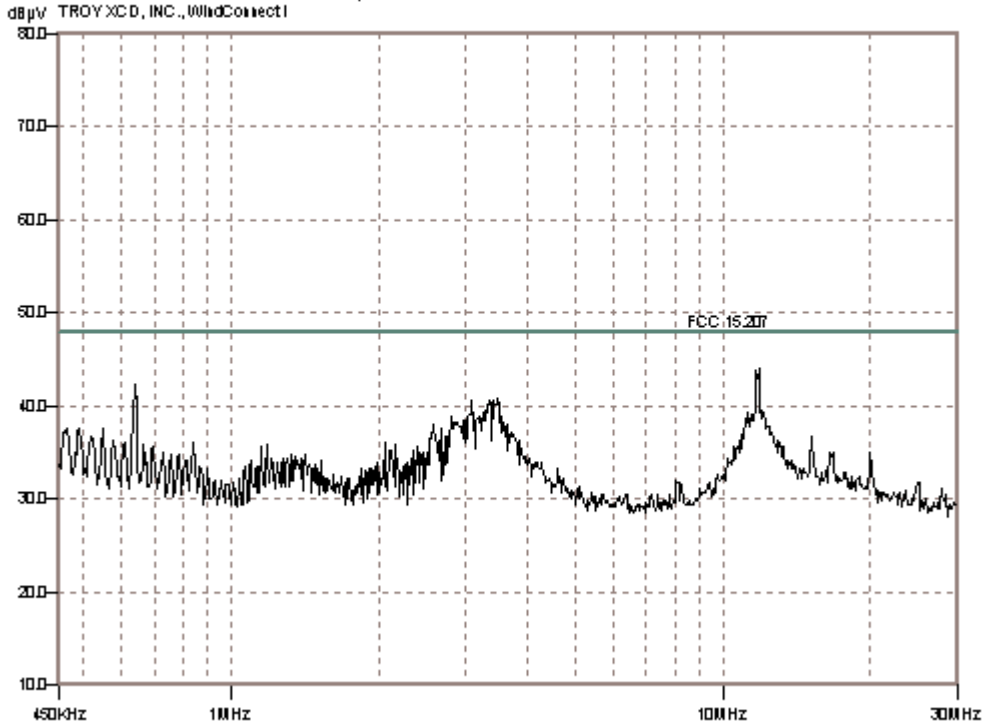
The EUT and host printer are placed stand alone on the wooden tabletop. The EUT is connected to the centronics connector of the host printer. The EUT receives and transmit digital data to a remote laptop via transmission scheme set by Blue Tooth technology. DC power to the EUT is supplied by an external power supply. Voltage to EUT power adapter is 110 Vac, 60 Hz. Temperature 25°C, Humidity 49%, Pressure 100kPa.

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

#	Freq MHz	Rdng dBμV					Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	11.850M	44.0					+0.0	44.0	48.0	-4.0	Black
2	11.661M	43.8					+0.0	43.8	48.0	-4.2	Black
3	3.499M	40.7					+0.0	40.7	48.0	-7.3	Black
4	3.413M	40.5					+0.0	40.5	48.0	-7.5	Black
5	3.354M	40.5					+0.0	40.5	48.0	-7.5	Black
6	3.093M	40.5					+0.0	40.5	48.0	-7.5	Black
7	3.295M	39.5					+0.0	39.5	48.0	-8.5	Black
8	3.126M	39.4					+0.0	39.4	48.0	-8.6	Black
9	3.215M	38.9					+0.0	38.9	48.0	-9.1	Black
10	3.559M	38.8					+0.0	38.8	48.0	-9.2	Black
11	2.806M	38.8					+0.0	38.8	48.0	-9.2	Black
12	3.007M	38.5					+0.0	38.5	48.0	-9.5	Black

13	2.984M	38.4	+0.0	38.4	48.0	-9.6	Black
14	2.892M	38.3	+0.0	38.3	48.0	-9.7	Black
15	3.648M	38.1	+0.0	38.1	48.0	-9.9	Black
16	2.601M	38.1	+0.0	38.1	48.0	-9.9	Black
17	465.012k	37.6	+0.0	37.6	48.0	-10.4	Black
18	2.687M	37.6	+0.0	37.6	48.0	-10.4	Black
19	492.796k	37.5	+0.0	37.5	48.0	-10.5	Black
20	550.176k	37.5	+0.0	37.5	48.0	-10.5	Black
21	3.729M	37.2	+0.0	37.2	48.0	-10.8	Black
22	2.776M	37.1	+0.0	37.1	48.0	-10.9	Black
23	519.372k	36.8	+0.0	36.8	48.0	-11.2	Black
24	2.746M	36.7	+0.0	36.7	48.0	-11.3	Black
25	2.717M	36.7	+0.0	36.7	48.0	-11.3	Black
26	3.875M	36.3	+0.0	36.3	48.0	-11.7	Black
27	579.772k	36.3	+0.0	36.3	48.0	-11.7	Black
28	2.657M	36.2	+0.0	36.2	48.0	-11.8	Black
29	2.055M	36.1	+0.0	36.1	48.0	-11.9	Black
30	839.856k	36.1	+0.0	36.1	48.0	-11.9	Black
31	608.764k	36.0	+0.0	36.0	48.0	-12.0	Black
32	638.346k	35.1	+0.0	35.1	48.0	-12.9	Black
Ave							
^	638.360k	42.4	+0.0	42.4	48.0	-5.6	Black
see average data							

CKC Laboratories, Inc. Date: 08/16/2001 Time: 15:36:47 WOI#: 77036
 FCC 15.207 Test Lead: Black Sequence#: 35
 TROY XCD, INC., WindConnect1



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **Troy XCD, Inc.**

Specification: **FCC 15.207**

Work Order #: **77036**

Date: 08/16/2001

Test Type: **Conducted Emissions**

Time: 15:42:50

Equipment: **Print Server**

Sequence#: 34

Manufacturer: Troy XCD, Inc.

Tested By: Stuart Yamamoto

Model: WindConnect I Rev. D/E1

S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Laptop Computer	Sony	PCM-161M	5100013

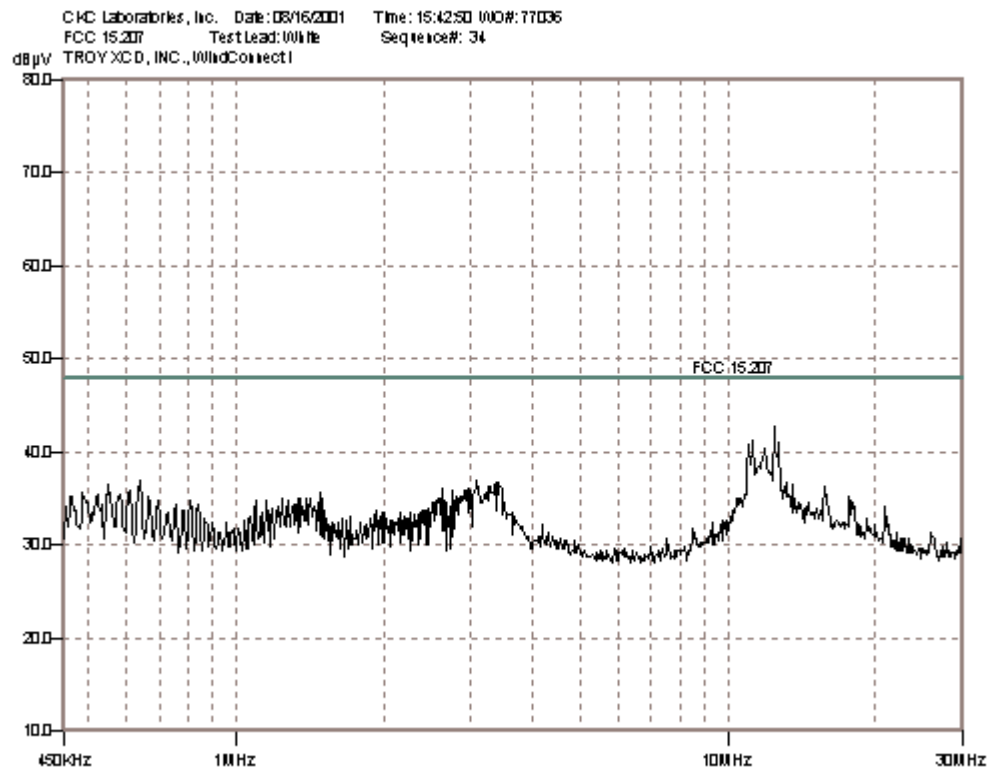
Test Conditions / Notes:

The EUT and host printer are placed stand alone on the wooden tabletop. The EUT is connected to the centronics connector of the host printer. The EUT receives and transmit digital data to a remote laptop via transmission scheme set by Blue Tooth technology. DC power to the EUT is supplied by an external power supply. Voltage to EUT power adapter is 110 Vac, 60 Hz. Temperature 25°C, Humidity 49%, Pressure 100kPa.

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	12.475M	42.8					+0.0	42.8	48.0	-5.2	White
2	11.254M	41.3					+0.0	41.3	48.0	-6.7	White
3	12.692M	41.1					+0.0	41.1	48.0	-6.9	White
4	11.051M	40.8					+0.0	40.8	48.0	-7.2	White
5	11.937M	40.3					+0.0	40.3	48.0	-7.7	White
6	3.096M	36.9					+0.0	36.9	48.0	-11.1	White
7	638.360k	36.9					+0.0	36.9	48.0	-11.1	White
8	3.413M	36.8					+0.0	36.8	48.0	-11.2	White
9	3.387M	36.7					+0.0	36.7	48.0	-11.3	White
10	553.196k	36.6					+0.0	36.6	48.0	-11.4	White
11	3.271M	36.3					+0.0	36.3	48.0	-11.7	White
12	3.126M	36.2					+0.0	36.2	48.0	-11.8	White

13	2.984M	36.1	+0.0	36.1	48.0	-11.9	White
14	2.631M	36.0	+0.0	36.0	48.0	-12.0	White
15	3.010M	35.9	+0.0	35.9	48.0	-12.1	White
16	609.972k	35.9	+0.0	35.9	48.0	-12.1	White
17	2.951M	35.8	+0.0	35.8	48.0	-12.2	White
18	2.921M	35.8	+0.0	35.8	48.0	-12.2	White
19	2.749M	35.8	+0.0	35.8	48.0	-12.2	White
20	1.477M	35.7	+0.0	35.7	48.0	-12.3	White
21	487.964k	35.6	+0.0	35.6	48.0	-12.4	White
22	3.218M	35.6	+0.0	35.6	48.0	-12.4	White
23	580.980k	35.5	+0.0	35.5	48.0	-12.5	White
24	522.996k	35.5	+0.0	35.5	48.0	-12.5	White
25	518.164k	35.3	+0.0	35.3	48.0	-12.7	White
26	2.865M	35.2	+0.0	35.2	48.0	-12.8	White
27	2.809M	35.2	+0.0	35.2	48.0	-12.8	White
28	663.728k	35.2	+0.0	35.2	48.0	-12.8	White
29	2.835M	35.1	+0.0	35.1	48.0	-12.9	White
30	2.601M	35.1	+0.0	35.1	48.0	-12.9	White
31	1.361M	35.1	+0.0	35.1	48.0	-12.9	White
32	1.390M	35.0	+0.0	35.0	48.0	-13.0	White
33	1.244M	35.0	+0.0	35.0	48.0	-13.0	White



Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Troy XCD**

Specification: **15.109 CLASS B**

Work Order #: **77036**

Date: 08/21/2001

Test Type: **Maximized Emissions**

Time: 16:53:27

Equipment: **Print Server**

Sequence#: 31

Manufacturer: Troy XCD, Inc.

Tested By: Chuck Kendall

Model: WindConnect I Rev. D/E1

S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049
Power Supply	Toshiba	PA2450U	9707

Test Conditions / Notes:

EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Transmitter disabled and the receiver is always on. Frequency range tested: 30 – 1000 MHz. RECEIVE MODE ONLY.

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

#	Freq MHz	Rdng dBμV	Amp dB	Bicon dB	Log 1 dB	Cable dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	200.064M	38.7	-26.7	+17.9	+0.0	+1.3	+0.0	31.2	43.5	-12.3	Horiz
2	35.358M	42.8	-27.2	+11.0	+0.0	+0.5	+0.0	27.1	40.0	-12.9	Vert
3	750.081M	35.2	-27.8	+0.0	+21.4	+3.1	+0.0	31.9	46.0	-14.1	Horiz
4	85.202M	43.7	-27.1	+8.1	+0.0	+1.0	+0.0	25.7	40.0	-14.3	Vert
5	440.098M	36.0	-27.4	+0.0	+16.6	+2.2	+0.0	27.4	46.0	-18.6	Horiz
6	160.101M	37.2	-26.8	+13.2	+0.0	+1.2	+0.0	24.8	43.5	-18.7	Horiz
7	300.126M	29.9	-26.5	+0.0	+21.3	+1.8	+0.0	26.5	46.0	-19.5	Horiz
8	740.080M	29.1	-27.8	+0.0	+21.4	+3.1	+0.0	25.8	46.0	-20.2	Horiz
9	180.101M	31.8	-26.8	+16.4	+0.0	+1.3	+0.0	22.7	43.5	-20.8	Horiz
10	220.080M	33.1	-26.5	+17.0	+0.0	+1.4	+0.0	25.0	46.0	-21.0	Horiz
11	240.054M	33.8	-26.6	+16.1	+0.0	+1.5	+0.0	24.8	46.0	-21.2	Horiz
12	120.086M	34.1	-27.0	+14.2	+0.0	+1.0	+0.0	22.3	43.5	-21.2	Horiz

13	450.058M	32.7	-27.5	+0.0	+16.8	+2.2	+0.0	24.2	46.0	-21.8	Horiz
14	420.095M	32.7	-27.3	+0.0	+16.2	+2.1	+0.0	23.7	46.0	-22.3	Vert
15	465.060M	31.9	-27.6	+0.0	+17.1	+2.2	+0.0	23.6	46.0	-22.4	Horiz
16	420.043M	32.3	-27.3	+0.0	+16.2	+2.1	+0.0	23.3	46.0	-22.7	Horiz
17	425.083M	31.9	-27.3	+0.0	+16.3	+2.2	+0.0	23.1	46.0	-22.9	Horiz
18	450.072M	31.2	-27.5	+0.0	+16.8	+2.2	+0.0	22.7	46.0	-23.3	Vert
19	85.167M	34.4	-27.1	+8.1	+0.0	+1.0	+0.0	16.4	40.0	-23.6	Horiz
20	85.176M	34.0	-27.1	+8.1	+0.0	+1.0	+0.0	16.0	40.0	-24.0	Horiz
21	80.078M	35.0	-27.0	+6.8	+0.0	+0.9	+0.0	15.7	40.0	-24.3	Horiz
22	430.055M	30.2	-27.3	+0.0	+16.4	+2.2	+0.0	21.5	46.0	-24.5	Horiz

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362
 Customer: **Troy XCD**
 Specification: **15.109 CLASS B**
 Work Order #: **77036** Date: 08/21/2001
 Test Type: **Maximized Emissions** Time: 15:50:50
 Equipment: **Print Server** Sequence#: 30
 Manufacturer: Troy XCD, Inc. Tested By: Chuck Kendall
 Model: WindConnect I Rev. D/E1 S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049
Power Supply	Toshiba	PA2450U	9707

Test Conditions / Notes:

EUT is a print server transceiver operating continuously on 2402 - 2480 MHz. Carrier is modulated with data transmission. Transmitter disabled and the receiver is always on. Frequency range tested: 1000 MHz – 26 GHz. RECEIVE MODE ONLY.

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

#	Freq MHz	Rdng dBµV	Amp Cable dB	Horn dB	Cable dB	Cable dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	5089.000M	32.6	-33.1 +0.9	+33.6	+3.7	+3.6	+0.0	41.3	54.0	-12.7	Horiz
2	5284.150M	32.1	-33.5 +0.8	+34.1	+3.7	+3.4	+0.0	40.6	54.0	-13.4	Horiz
3	4561.640M	32.6	-32.3 +0.9	+32.3	+3.0	+2.9	+0.0	39.4	54.0	-14.6	Horiz
4	4430.240M	32.8	-32.5 +0.9	+32.1	+2.8	+2.7	+0.0	38.8	54.0	-15.2	Horiz
5	4374.090M	32.8	-32.7 +0.8	+32.1	+2.8	+2.7	+0.0	38.5	54.0	-15.5	Horiz
6	3577.290M	32.0	-34.2 +0.3	+31.0	+2.8	+3.3	+0.0	35.2	54.0	-18.8	Horiz
7	2335.200M	36.7	-34.7 +0.3	+28.1	+1.7	+2.6	+0.0	34.7	54.0	-19.3	Vert
8	4239.090M	29.9	-33.2 +0.7	+31.9	+2.7	+2.6	+0.0	34.6	54.0	-19.4	Horiz
9	4447.200M	26.9	-32.4 +0.9	+32.2	+2.9	+2.8	+0.0	33.3	54.0	-20.7	Vert
10	4653.200M	26.0	-32.5 +0.9	+32.6	+3.2	+3.1	+0.0	33.3	54.0	-20.7	Vert
11	3799.800M	25.0	-34.2 +0.4	+32.3	+2.6	+2.8	+0.0	28.9	54.0	-25.1	Vert
12	2740.200M	26.7	-34.6 +0.9	+28.9	+1.3	+3.1	+0.0	26.3	54.0	-27.7	Vert

Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Troy XCD, Inc.**

Specification: **FCC 15.107 Class B**

Work Order #: **77036**

Date: 08/29/2001

Test Type: **Conducted Emissions**

Time: 4:59:04 PM

Equipment: **Print Server**

Sequence#: 36

Manufacturer: Troy XCD, Inc.

Tested By: Randal Clark

Model: WindConnect I Rev. D/E1

S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Power Supply	Toshiba	PA2450U	9707
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049

Test Conditions / Notes:

The EUT and host printer are placed stand alone on the wooden tabletop. The EUT is connected to the centronics connector of the host printer. The EUT is set to receive mode. DC power to the EUT is supplied by an external power supply. Voltage to EUT power adapter is 110 Vac, 60 Hz.

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

#	Freq MHz	Rdng dBμV	Cable		LISN		Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	3.426M	40.3	+0.1	+0.4			+0.0	40.8	48.0	-7.2	Black
2	3.022M	40.3	+0.1	+0.4			+0.0	40.8	48.0	-7.2	Black
3	461.701k	40.3	+0.1	+0.4			+0.0	40.8	48.0	-7.2	Black
4	3.454M	40.2	+0.1	+0.4			+0.0	40.7	48.0	-7.3	Black
5	3.514M	39.9	+0.1	+0.4			+0.0	40.4	48.0	-7.6	Black
6	3.368M	39.7	+0.1	+0.4			+0.0	40.2	48.0	-7.8	Black
7	3.282M	39.6	+0.1	+0.4			+0.0	40.1	48.0	-7.9	Black
8	3.168M	39.6	+0.1	+0.4			+0.0	40.1	48.0	-7.9	Black
9	577.042k	39.6	+0.1	+0.4			+0.0	40.1	48.0	-7.9	Black
10	550.296k	39.6	+0.1	+0.4			+0.0	40.1	48.0	-7.9	Black
11	3.574M	39.5	+0.1	+0.4			+0.0	40.0	48.0	-8.0	Black
12	3.082M	39.5	+0.1	+0.4			+0.0	40.0	48.0	-8.0	Black

13	3.110M	39.4	+0.1	+0.4	+0.0	39.9	48.0	-8.1	Black
14	3.048M	39.4	+0.1	+0.4	+0.0	39.9	48.0	-8.1	Black
15	2.996M	39.3	+0.1	+0.4	+0.0	39.8	48.0	-8.2	Black
16	3.313M	39.2	+0.1	+0.4	+0.0	39.7	48.0	-8.3	Black
17	3.225M	39.2	+0.1	+0.4	+0.0	39.7	48.0	-8.3	Black
18	3.254M	39.1	+0.1	+0.4	+0.0	39.6	48.0	-8.4	Black
19	3.201M	38.9	+0.1	+0.4	+0.0	39.4	48.0	-8.6	Black
20	2.848M	38.9	+0.1	+0.4	+0.0	39.4	48.0	-8.6	Black

CKC Laboratories, Inc. Date: 08/29/2001 Time: 4:59:04 P W/O#: 77036
FCC 15.107 Class B Test Lead: Black Sequence#: 36
dB μ V TROY XCD, INC., WindConnect I Powered by 120VAC 60Hz.





Test Location: CKC Laboratories, Inc. • 5473A Clouds Rest • Mariposa, CA 95338 • 800-500-4362

Customer: **Troy XCD, Inc.**
 Specification: **FCC 15.107 Class B**
 Work Order #: **77036** Date: 08/29/2001
 Test Type: **Conducted Emissions** Time: 5:09:04 PM
 Equipment: **Print Server** Sequence#: 37
 Manufacturer: Troy XCD, Inc. Tested By: Randal Clark
 Model: WindConnect I Rev. D/E1
 S/N: 00700004

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Print Server*	Troy XCD, Inc.	WindConnect I Rev. D/E1	00700004

Support Devices:

Function	Manufacturer	Model #	S/N
Color Printer	HP	Deskjet 930C	CN1141Q1Y7
Power Supply	Potrans Electrical Corp	UP01011050	
Power Supply	Toshiba	PA2450U	9707
Laptop Computer	Toshiba	PA1241EYX-ENDI	97183683E PCN0049

Test Conditions / Notes:

The EUT and host printer are placed stand alone on the wooden tabletop. The EUT is connected to the centronics connector of the host printer. The EUT is set to receive mode. DC power to the EUT is supplied by an external power supply. Voltage to EUT power adapter is 110 Vac, 60 Hz.

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBμV	Cable		LISN		Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	490.118k	38.3	+0.1		+0.6		+0.0	39.0	48.0	-9.0	White
2	575.370k	38.1	+0.1		+0.5		+0.0	38.7	48.0	-9.3	White
3	460.030k	37.9	+0.1		+0.6		+0.0	38.6	48.0	-9.4	White
4	518.536k	37.7	+0.1		+0.6		+0.0	38.4	48.0	-9.6	White
5	465.044k	37.4	+0.1		+0.6		+0.0	38.1	48.0	-9.9	White
6	545.281k	37.3	+0.1		+0.6		+0.0	38.0	48.0	-10.0	White
7	3.029M	37.2	+0.1		+0.4		+0.0	37.7	48.0	-10.3	White
8	3.399M	36.9	+0.1		+0.4		+0.0	37.4	48.0	-10.6	White
9	3.087M	36.9	+0.1		+0.4		+0.0	37.4	48.0	-10.6	White
10	3.110M	36.6	+0.1		+0.4		+0.0	37.1	48.0	-10.9	White
11	2.996M	36.6	+0.1		+0.4		+0.0	37.1	48.0	-10.9	White
12	3.488M	36.3	+0.1		+0.5		+0.0	36.9	48.0	-11.1	White

13	3.053M	36.4	+0.1	+0.4	+0.0	36.9	48.0	-11.1	White
14	3.139M	36.0	+0.1	+0.4	+0.0	36.5	48.0	-11.5	White
15	2.910M	35.9	+0.1	+0.4	+0.0	36.4	48.0	-11.6	White
16	12.324M	35.5	+0.2	+0.6	+0.0	36.3	48.0	-11.7	White
17	3.173M	35.8	+0.1	+0.4	+0.0	36.3	48.0	-11.7	White
18	694.889k	35.5	+0.1	+0.5	+0.0	36.1	48.0	-11.9	White
19	2.857M	35.5	+0.1	+0.4	+0.0	36.0	48.0	-12.0	White
20	603.787k	35.4	+0.1	+0.5	+0.0	36.0	48.0	-12.0	White

CKC Laboratories, Inc. Date: 08/29/2001 Time: 5:09:04 PM WO#: 77036
FCC 15.107 Class B Test Lead: White Sequence#: 37
dBµV TROY XCD, INC., WindConnect I Powered by 120VAC 60Hz.

