

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

TEST REPORT

Report Number: 3078050LAX-001

Project Number: 3078050

September 12, 2005

Testing performed on the
Wireless Physiologic Monitoring System

Model: WPT1000, WTMXXX

to

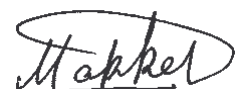
FCC Part 95, subpart H
FCC Part 15, subpart C

For
Edwards Lifesciences, LLC

Test Performed by:
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Laguna Niguel, CA 92677

Test Authorized by:
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Irvine, CA 92614

Prepared by:


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Date: 9/12/05

Reviewed by:


Suresh Kondapalli

Date: 9/16/05

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Table of Contents

1.0	Summary of Test Results.....	4
2.0	General Description	5
2.1	Product Description	5
2.2	Related Submittal(s) Grants.....	7
2.3	Test Methodology	7
2.4	Test Facility	7
3.0	System Test Configuration.....	8
3.1	Justification	8
3.2	EUT Exercising Software	8
3.3	System Test Configuration	8
3.3.1	Support Equipment	8
3.3.2	Block Diagram of Test Setup.....	9
3.4	Equipment Modification	10
3.5	Mode(s) of operation	10
4.0	Field Strength of Emission	11
4.1	Test Description (95.1115)	11
4.1.1	Test Procedure	11
4.1.2	Field Strength Calculation	11
4.1.3	Calculation of Average Factor.....	12
4.1.4	Radiated Emission Data.....	14
4.2	Test Description (15.209)	18
4.2.1	Test Procedure	18
4.2.2	Field Strength Calculation	18
4.2.3	Radiated Emission Data.....	19
4.3	Test Description (15.109)	21
4.3.1	Test Procedure	21
4.3.2	Field Strength Calculation	21
4.3.3	Radiated Emission Data.....	22
4.3.3	Radiated Emission Data.....	24
5.0	Out of Band Emission.....	26
5.1	Test Description.....	26
5.2	Test Procedure.....	26
5.3	Test Results.....	26
5.4	Radiated Emission Data.....	41
6.0	Antenna Requirement	42
6.1	Test Description.....	42
6.2	Test Procedure.....	42
6.3	Test Result.....	42

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

7.0	Line Conducted Emission.....	43
7.1	Test Description.....	43
7.2	Test Procedure	43
7.3	Line Conducted Emission Data (15.107).....	44
7.4	Line Conducted Emission Data (15.207).....	46
8.0	Occupied Bandwidth	47
8.1	Test Description.....	47
8.2	Test Procedure.....	47
8.3	Test Result.....	47
9.0	Emission Type	49
9.1	Test Description.....	49
9.2	Test Procedure.....	49
9.3	Test Result.....	49
10.0	Channel Use.....	50
10.1	Test Description.....	50
10.2	Test Procedure.....	50
10.3	Test Result.....	50
11.0	Frequency Stability.....	51
11.1	Test Description.....	51
11.2	Test Procedure.....	51
11.3	Test Result.....	52
12.0	RF Safety	53
12.1	RF Exposure Evaluation.....	53
12.1.1	Test Procedure.....	53
12.1.2	Test Result.....	53
13.0	Test Equipment.....	54

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS**1.0 Summary of Test Results**

FCC RULE	DESCRIPTION OF TEST	RESULT	PAGE
95.1115 (a)(2)	Field Strength of Fundamental	Worst case: 78.4 dB(μ V/m) @ 1395.625 MHz Margin: 39.0 dB	14
95.1115 (b)(2)	Field Strength of Harmonics	Worst case: 44.9 dB(μ V/m) @ 14276.25 MHz. Margin: 9.1 dB	15
15.209	Field Strength of Fundamental RFID reader system	Worst case: 1.4 dB(μ V/m) @ 137.14 kHz Margin: 23.5 dB	19
15.209	Field Strength of Harmonics RFID reader system	Worst case: 3.6 dB(μ V/m) @ 685.7 kHz. Margin: 7.3 dB	19
95.1115 (b)(2)	Radiated emissions outside the band, except harmonics.	Worst case: 26.8 dB(μ V/m) @ 171.8 MHz Margin: 19.2 dB	41
15.109	Radiated Emission (receiving mode)	Worst case: 26.8 dB(μ V/m) @ 171.8 MHz Margin: 16.7 dB	22
15.203	Antenna requirement	Complies	42
15.207	Line Conducted Emissions (transmitter mode)	Worst case: 36.3 dB μ V @ 13.1 MHz Margin: 13.7 dB	44
15.107	Line Conducted Emissions (receiver mode)	Worst case: 36.3 dB μ V @ 13.1 MHz Margin: 13.7 dB	44
2.1049	Occupied Bandwidth	594 kHz	47
95.1115(c)	Emission Types	Complies	49
95.1115(d)	Channel Use	Complies	50
2.1055 95.1115(e)	Frequency Stability	Complies	52
95.1125	RF Safety	Complies	54

EMC Department

Date of issue: September 12, 2005

Test Engineer:


Sergey Marker

Reviewing Engineer:


Suresh Kondapalli

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5**2.0 General Description****2.1 Product Description*****EQUIPMENT UNDER TEST***

Type of equipment	Wireless Physiologic Monitoring System		
Type/Model	WPT1000 – Transducer Module (X Unit) WTMXXX – Monitor Module (M Unit)		
Technical Specifications:	Range:	15 feet (4.6m)	
	Frequency:		
	Operating Frequencies:	WMTS Bands	
		1395 – 1400 MHz,	
		1427 – 1429.5 MHz	
	Channels:	Ch.1: 1395.625 MHz	
		Ch.2: 1396.875 MHz	
		Ch.3: 1398.125 MHz	
		Ch.4: 1399.375 MHz	
		Ch.5: 1427.625 MHz	
		Ch.6: 1428.875 MHz	
	RFID Reader System:	127 - 142 kHz	
	Modulation:		
	Operating system:	FSK (Frequency Shifted Keyed)	
	RFID Reader system:	OOK (On Off Keyed)	
	Output Power:		
	Operating system:	-5dBm	
	RFID Reader System:	150 dBμA/m	
	Supply voltage, wattage:		
	X Unit:	1.5 VDC AA Alkaline battery	
	M Unit:	9 VDC, 25 mA	
		AC Adapter:	100 -240 VAC Input
			9 VDC, 1.1 A Output
	Operational environment:	Indoors, 15°C to 40°C	
	Antenna:		
		Operating System:	Vertical Antenna (permanently attached)
		RFID Reader System:	Coil integrated inside the EUT
Manufacturer	Edwards Lifesciences, LLC One Edwards Way Irvine, CA 92614		

Date of Test: September 2 to 8, 2005**FCC ID: S8IWPMS*****Tested by request of***

Mr. Don Parikh
Phone: (949) 588-7568
Fax: (949) 588-8871

Standards:

FCC Part 95 H (95.1115)
FCC Part 15 C (15.109/209)

Test Report No.

3078050LAX-001

FCC ID:

S8IWPMS

EUT Description:

The Wireless Physiological Monitoring System is a wireless device designed to be used in place of standard cable. The system communication operates using frequency bands designed for use by the Wireless Medical Telemetry Service.

The system utilized RFID link process, which operates at 127 - 142 kHz frequency band.

Date of Test: September 2 to 8, 2005FCC ID: S8IWPMS

2.2 Related Submittal(s) Grants

This report is for use with an application for certification as a composite device, and subject to an additional equipment authorization. Two transmitters are included in the report. This specific report details the emission characteristics of transmitters.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated emission measurements were performed in 10 m Open Area Test Site. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

2.4 Test Facility

The test facility was a specially designed and constructed Open Area Test Site (OATS). Test site included a metal ground plane constructed of 22-gauge sheet metal. It contained a 2.5 meter diameter turntable for floor standing equipment, and a fiber glass table measuring 1.5 x 1.5 x 0.8 meters for table top equipment. To facilitate testing, also it has heat and air conditioning systems to control environmental test conditions.

This test facility and site measurement data have been fully placed on file with the FCC, Industry of Canada and A2LA accredited.

Test Facility: Intertek ETL Semko
27611 La Paz Road, Suite C
Laguna Niguel, CA 92677

Accreditations:

FCC	Registration Number: 90711
A2LA	Certificate Number: 2085-01
IC	Reference Number: IC 3753

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS**3.0 System Test Configuration****3.1 Justification**

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst case emissions.

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

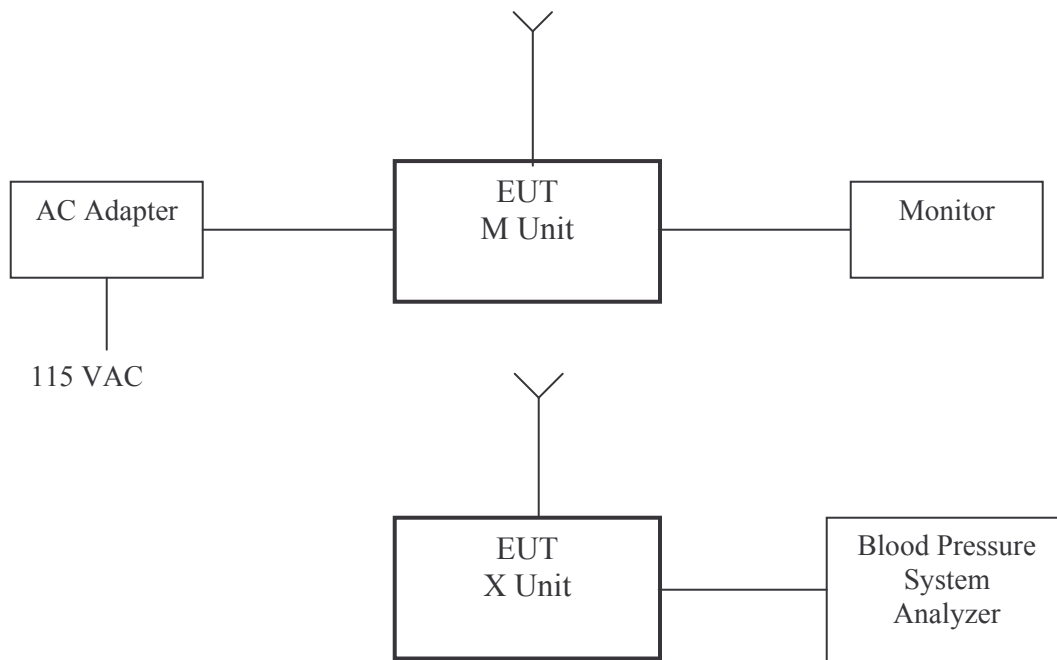
3.2 EUT Exercising Software

No software was required to exercise the EUT.

3.3 System Test Configuration**3.3.1 Support Equipment**

Support Equipment				
Equipment	Manufacturer	Model #	S/N #	FCC ID
Monitor	GE	Dash 4000	N/A	N/A
Blood Pressure System Analyzer	Bio-Tek Instruments	601	1182	N/A
AC Adapter	Ault Inc.	MW117	N/A	N/A

3.3.2 Block Diagram of Test Setup



S:	Shielded	U:	Unshielded	F:	With Ferrite Core
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Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

3.4 Equipment Modification

None

3.5 Mode(s) of operation

The X Unit was powered from the battery. This component transmits the transducer signal via radiofrequency to the M unit. The EUT utilizes Frequency Shift Keyed (FSK) modulation in normal operation. During the tests EUT was wired to operate at continuous transmitting mode (CW).

The M Unit was powered from 9 VDC power adapter. This component connects to the patient monitor via IBP connection and receives the radiofrequency data transmission from X Unit. The EUT utilizes Frequency Shift Keyed (FSK) modulation in normal operation. During the tests EUT was wired to operate at continuous transmitting mode (CW).

NOTE:

Both units are transceivers utilizing the same transmitters in operation frequency range, and RFID reader system. The difference is only in control circuits.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5**4.0 Field Strength of Emission****4.1 Test Description**

Parameter:	FCC 95.1115(a)(2) & (b)(2)
Requirement:	FCC 95.1115(a)(2) & (b)(2)
Fundamental: 1395 – 1400 MHz	Limit 117.4 dB μ V
Harmonics: above 960 MHz	Limit 54 dB μ V
Distance:	3 m

4.1.1 Test Procedure

For the measurements, the EUT is attached to a cardboard box (if necessary) and placed on the wooden turntable which is 0.8 m above the ground plane on the open test site. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power in CW mode. Average Factor was calculated and added to the peak emission obtained in CW mode. The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Radiated emission measurements were performed from 30 MHz to the 10th harmonic of transmitter frequency. Analyzer resolution is 120 KHz for 30 to 1000 MHz, 1 MHz for >1000 MHz. This test was performed per test procedure specified in ANSI C63.4 (2003).

4.1.2 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with antennas, cables, preamplifiers (if any) and average factors (when specified limits is in average and measurements are made with peak detectors) The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG + AV$$

where FS = Field Strength in dB(μ V/m)
RA = Receiver Amplitude in dB(μ V)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB/m
AG = Amplifier Gain in dB
AV = Average Factor in (-dB)

Assume a receiver reading of 52.0 dB(μ V) is obtained. The antenna factor of 7.4 dB/m, cable factor of 4.6 dB and average factor of -5.1 dB are added. The amplifier gain of 27 dB is subtracted, giving a field strength of 32 dB(μ V/m).

$$\begin{array}{lll} RA = 52 \text{ dB}(\mu\text{V}) & CF = 1.6 \text{ dB} & AV = -5.1 \text{ dB} \\ AF = 7.4 \text{ dB/m} & AG = 29 \text{ dB} & FS = 52 + 7.4 + 4.6 - 27 - 5.1 = 32 \text{ dB}(\mu\text{V/m}) \end{array}$$

This value in dB(μ V/m) was converted to its corresponding level in μ V/m.

Level in μ V/m = Common Antilogarithm $\{[32 \text{ dB}(\mu\text{V/m})]/20\} = 39.8 \mu\text{V/m}$

Note: In the following table(s), the level shown on the data table includes the antenna factor, cable factor and preamplifier gain.

4.1.3 Calculation of Average Factor.

Average Factor (AV) in dB = $20 \log (\text{duty cycle})$

The specification for output field strength for frequencies above 1000 MHz according to FCC rules specify measurements with average detectors. The EUT use Frequency Shift Keyed (FSK) modulation in normal operation. During the tests EUT was wired to operate at continuous transmitting mode (CW). For field strength measurements of emission from transmitter, average factor was calculated and added to the peak emission obtained in CW mode and compared to the limit specified for average detector.

The time period over the duty cycle is measured is 100 milliseconds, or the repetition cycle, whichever is a shorter time frame. The worst case (highest percentage on) duty cycle is used for calculation. The duty cycle is simply the On-time divided by the period:

Time period = 25 ms

Effective period of the cycle = $1.625 \text{ ms} \times 2 = 3.25 \text{ ms}$

DC = $3.25 \text{ ms} / 25 \text{ ms} = 0.13$

AV = $20 \log 0.13 = -17.7 \text{ dB}$

Plot on the next page shows the transmission timing over 25 ms time frame.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

08:59:17 SEP 06, 2005

MARKER Δ
1.6250 msec
-3.03 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 1.6250 msec
-3.03 dB

Last Hrd
Key Menu

SPAN

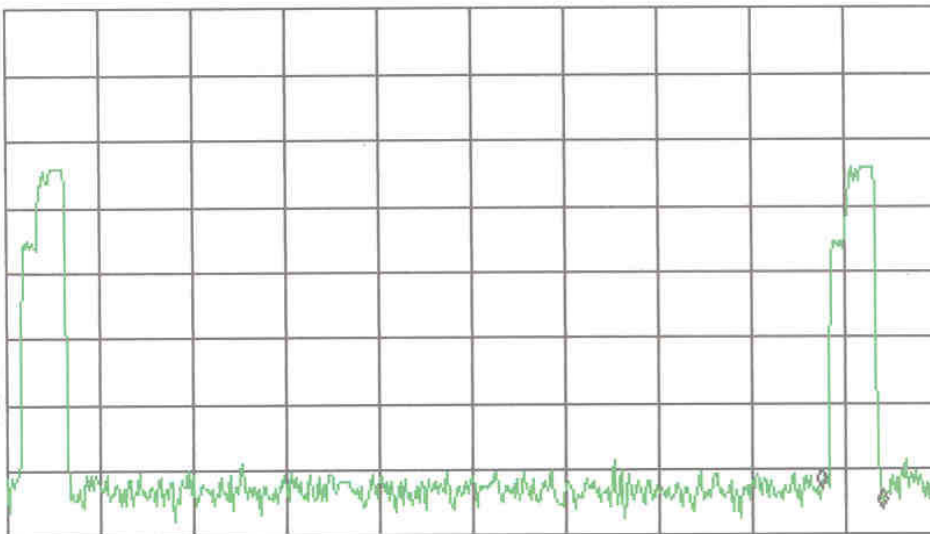
LOG REF 00.0 dB μ V

PREAMP ON

MARKER
NORMAL

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



MARKER
 Δ

MARKER
AMPTD

SELECT
1 2 3 4

MARKER 1
ON OFF

CENTER 1.395050 GHz

SPAN 0 Hz

#IF BW 100 kHz

#AVG BW 100 kHz

#SWP 25.0 msec

More
1 of 2

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

4.1.4 Radiated Emission Data**Standard:** FCC Part 95.1115(a)(2) & (b)(2)**Company:** Edwards Lifesciences, LLC**Job No.** 3078050LAX-001**Model Name:** X Unit**Test Channel:** Channel 1 & 4**Mode:** Transmitting (CW)

Measurement Uncertainty: 3.92dB

Temperature: 24°C

Relative Humidity: 49 %

NOTE:

Both units are transceivers utilizing the same transmitters/receivers in operation frequency range, and RFID reader system. The difference is only in control circuits.

Frequency	Distance	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz	m	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
1395.625	3.0	71.8	78.4	0.0	117.4	-39.0
2791.250	3.0	34.2	35.7	0.0	54.0	-18.3
4186.875	3.0	32.4	32.8	0.0	54.0	-21.2
5582.250	3.0	34.4	35.3	0.0	54.0	-18.7
6978.125	3.0	37.3	37.0	0.0	54.0	-16.7
8373.750	3.0	40.8	40.4	0.0	54.0	-13.2
9769.375	3.0	42.8	43.5	0.0	54.0	-10.5
11165.000	1.0	45.6	45.8	9.5	54.0	-17.7
12560.625	1.0	45.4	45.7	9.5	54.0	-17.8
13956.250	1.0	53.0	52.6	9.5	54.0	-10.5
1399.375	3.0	72.3	78.3	0.0	117.4	-39.1
2798.750	3.0	34.1	35.3	0.0	54.0	-18.7
4198.125	3.0	32.5	32.2	0.0	54.0	-21.5
5597.500	3.0	34.6	34.8	0.0	54.0	-19.2
6996.875	3.0	37.7	37.7	0.0	54.0	-16.3
8396.250	3.0	40.4	40.2	0.0	54.0	-13.6
9795.250	3.0	43.5	43.3	0.0	54.0	-10.5
11195.000	1.0	45.6	45.8	9.5	54.0	-17.7
12594.375	1.0	45.5	44.8	9.5	54.0	-18.0
13993.750	1.0	52.7	53.1	9.5	54.0	-10.4

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

Model Name: X Unit

Test Channel: Channel 5 & 6

Frequency	Distance	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz	m	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
1427.625	3.0	71.1	76.0	0.0	117.4	-41.4
2855.250	3.0	33.8	33.7	0.0	54.0	-20.2
4282.875	3.0	32.9	32.2	0.0	54.0	-21.1
5710.500	3.0	34.7	34.5	0.0	54.0	-19.3
7138.125	3.0	37.4	37.8	0.0	54.0	-16.2
8565.750	3.0	41.3	41.2	0.0	54.0	-12.7
9993.375	3.0	43.8	43.8	0.0	54.0	-10.2
11421.000	1.0	45.0	44.9	9.5	54.0	-18.5
12848.625	1.0	45.4	45.2	9.5	54.0	-18.1
14276.250	1.0	54.4	53.8	9.5	54.0	-9.1
1428.875	3.0	71.0	75.9	0.0	117.4	-41.5
2857.750	3.0	34.9	34.1	0.0	54.0	-19.1
4286.625	3.0	32.2	32.3	0.0	54.0	-21.7
5715.500	3.0	34.9	35.1	0.0	54.0	-18.9
7144.375	3.0	37.5	37.3	0.0	54.0	-16.5
8573.250	3.0	41.3	41.4	0.0	54.0	-12.6
10002.250	3.0	44.3	43.9	0.0	54.0	-9.7
11431.000	1.0	45.1	44.6	9.5	54.0	-18.4
12859.875	1.0	45.1	45.2	9.5	54.0	-18.3
14288.750	1.0	54.3	53.6	9.5	54.0	-9.2

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

Model Name: M Unit

Test Channel: Channel 1 & 5

Frequency	Distance	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz	m	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
1395.625	3.0	69.0	74.0	0.0	117.4	-43.4
2791.250	3.0	33.0	33.9	0.0	54.0	-20.1
4186.875	3.0	32.7	32.1	0.0	54.0	-21.3
5582.250	3.0	34.4	34.7	0.0	54.0	-19.3
6978.125	3.0	37.4	35.6	0.0	54.0	-16.6
8373.750	3.0	40.2	39.3	0.0	54.0	-13.8
9769.375	3.0	43.5	43.3	0.0	54.0	-10.5
11165.000	1.0	45.4	45.3	9.5	54.0	-18.1
12560.625	1.0	45.6	45.2	9.5	54.0	-17.9
13956.250	1.0	53.0	52.3	9.5	54.0	-10.5
1427.625	3.0	65.5	73.5	0.0	117.4	-43.9
2855.250	3.0	37.5	35.1	0.0	54.0	-16.5
4282.875	3.0	32.9	32.6	0.0	54.0	-21.1
5710.500	3.0	35.3	35.2	0.0	54.0	-18.7
7138.125	3.0	37.8	37.5	0.0	54.0	-16.2
8565.750	3.0	41.3	40.7	0.0	54.0	-12.7
9993.375	3.0	43.8	43.9	0.0	54.0	-10.1
11421.000	1.0	44.7	45.0	9.5	54.0	-18.5
12848.625	1.0	45.8	45.3	9.5	54.0	-17.7
14276.250	1.0	53.5	53.4	9.5	54.0	-10.0

Notes:

- The field strength shown in the table (Vertical and Horizontal levels) included Antenna factor, Cable loss, Average factor (-17.7) and Pre-amplifier Gain (if applicable).
- Negative signs (-) in Margin column signify levels below the limits.
- For frequencies below 1000 MHz the, above limits are based on quasi-peak limits.
Analyzer setting: RBW =120 KHz, VBW =300 KHz
- For frequencies above 1000 MHz the, above limits are based on average limits.
- Analyzer setting: RBW =1 MHz, VBW =1 MHz
- All other emissions not reported are below the equipment noise floor which is at least 10 dB below the limits.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

g) D.C.F: Distance Correction Factor.

Test Result	FCC 95.1115 (a)(2): Passed with 39.0 dB margin at 1395.625 MHz. FCC 95.1115 (b)(2): Passed with 9.1 dB margin at 14276.25 MHz.
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Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS**4.2 Test Description**

Parameter:	FCC 15.209
Requirement:	FCC 15.209
0.009 – 0.490 MHz	2400/F (kHz) (μ V/m) @ 300 m
0.490 – 1.705 MHz	2400/F (kHz) (μ V/m) @ 30 m
1.705 – 30.0 MHz	29.5 dB μ V @ 30 m
30-88 MHz	40 dB μ V @ 3 m
88-216 MHz	43.5 dB μ V @ 3 m
216-960 MHz	46 dB μ V @ 3 m
Above 960 MHz	54 dB μ V @ 3 m

4.2.1 Test Procedure

See section 4.1.1.

4.2.2 Field Strength Calculation

See section 4.1.2.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

4.2.3 Radiated Emission Data

Standard: FCC Part 15.209

Company: Edwards Lifesciences, LLC

Job No. 3078050LAX-001

Model Name: X Unit (RFID Reader System)

Test Channel: Channel 1 & 4

Mode: Transmitting (RFID Reader System)

Distance: 3 m

Measurement Uncertainty: 3.92dB

Temperature: 24°C

Relative Humidity: 49 %

Frequency	Detector	Distance	Vertical level	Horizontal level	D.C.F.	Limit	Margin
kHz		m	(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
137.14	Ave.	3	78.0	81.4	-80	24.9	-23.5
274.28	Ave.	3	41.7	41.2	-80	18.8	-57.1
411.42	Ave.	3	39.4	37.6	-80	15.3	-55.9
548.56	Q-peak	1	40.5	41.1	-80	12.8	-11.7
685.7	Q-peak	1	43.6	38.9	-80	10.9	-7.3
822.84	Q-peak	1	37.2	37.1	-80	9.3	-12.1
960.0	Q-peak	1	37.5	35.6	-80	8.0	-10.5
1097.12	Q-peak	1	34.2	34.2	-80	6.8	-12.6
1234.26	Q-peak	1	33.8	32.9	-80	5.8	-12.0
1371.4	Q-peak	1	32.0	31.8	-80	4.9	-12.9

Notes:

- The field strength shown in the table (Vertical and Horizontal levels) included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- All emissions not reported were at least 20 dB below the limits.
- Negative signs (-) in Margin column signify levels below the limits.
- Analyzer setting:
 - RBW $\geq$ 1 MHz, VBW $\geq$ 1 MHz, for freq. $>$ 1 GHz
 - RBW $\geq$ 100 kHz, VBW $\geq$ 100 kHz, for freq. $<$ 1 GHz
 - RBW $\geq$ 1 kHz, VBW $\geq$ 1 kHz for freq. $<$ 150 kHz
- D.C.F: Distance Correction Factor

Test Result	Passed with 7.3 dB margin at 685.7 kHz.
--------------------	--

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

11:46:07 SEP 07, 2005

MARKER
690 kHz
31.05 dBμV

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKA 690 kHz
31.05 dBμV

Last Hrd
Key Menu

SPAN

LOG REF 75.0 dBμV

10
dB/
ATN
10 dB

VA SB
SC FC
CORR

START 120 kHz

#IF BW 9.0 kHz

AVG BW 30 kHz

STOP 1.400 MHz

SWP 107 msec

CLEAR
WRITE A

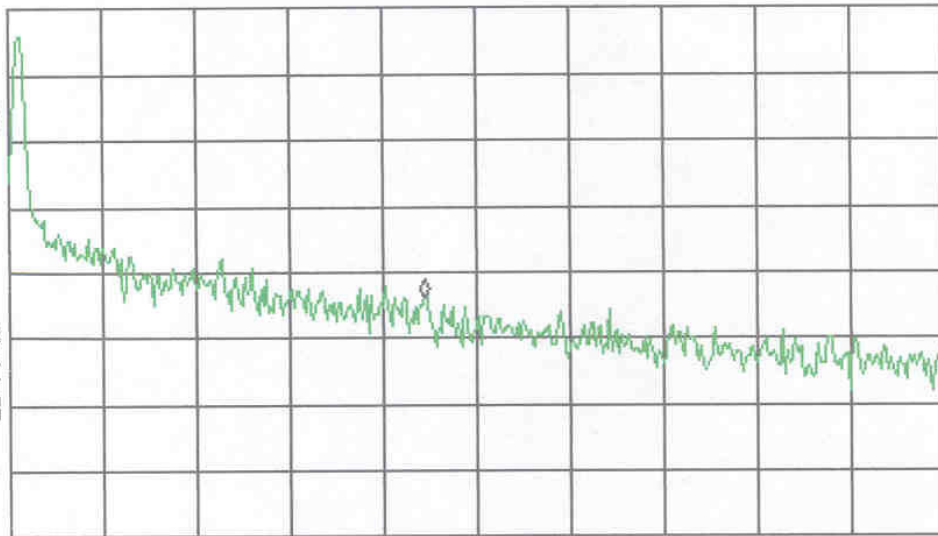
MAX
HOLD A

VIEW A

BLANK A

Trace
A B C

More
1 of 3



Radiated emission peak scan for RFID reader system

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS**4.3 Test Description**

Parameter:	FCC 15.109
Requirement:	FCC 15.109
30-88 MHz	40 dB μ V @ 3 m
88-216 MHz	43.5 dB μ V @ 3 m
216-960 MHz	46 dB μ V @ 3 m
Above 960 MHz	54 dB μ V @ 3 m

4.3.1 Test Procedure

See section 4.1.1.

4.3.2 Field Strength Calculation

See section 4.1.2.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

4.3.3 Radiated Emission Data**Standard:** FCC Part 15.109**Company:** Edwards Lifesciences, LLC**Job No.** 3078050LAX-001**Model Name:** X Unit**Test Channel:** Channel 1**Mode:** Receiving**Distance:** 3 m

Measurement Uncertainty: 3.92dB

Temperature: 24°C

Relative Humidity: 49 %

Frequency	Detector	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz		(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
166.3	Q-peak	18.4	18.6	0	43.5	-24.9
168.0	Q-peak	19.9	22.4	0	43.5	-21.1
169.1	Q-peak	18.6	23.9	0	43.5	-19.6
171.8	Q-peak	19.4	26.8	0	43.5	-16.7
177.6	Q-peak	19.5	25.3	0	43.5	-18.2
182.9	Q-peak	19.7	26.0	0	43.5	-17.5
190.8	Q-peak	19.9	25.7	0	43.5	-17.8

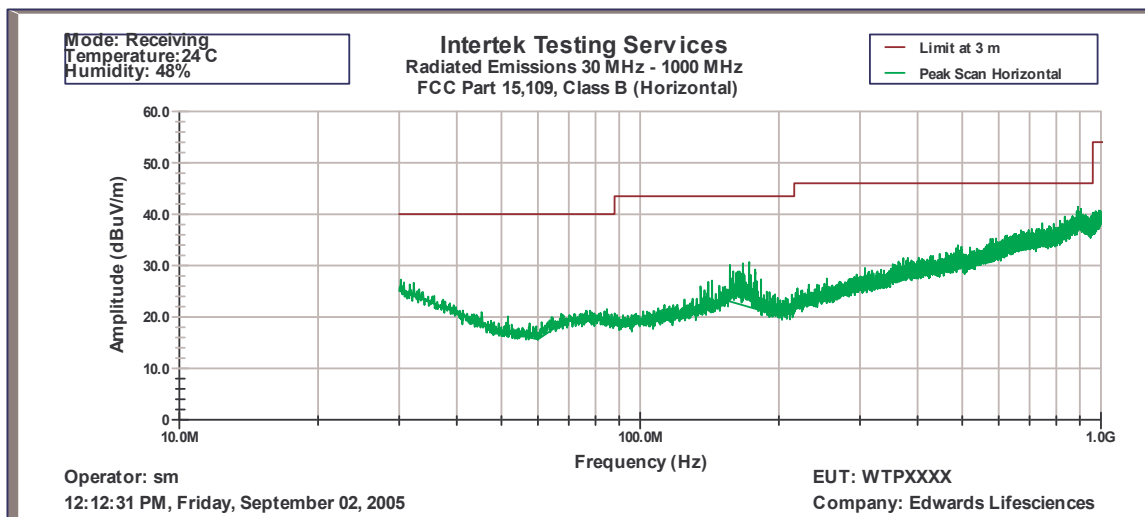
Notes:

- a) The field strength shown in the table (Vertical and Horizontal levels) included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- e) All emissions not reported were at least 20 dB below the limits.
- f) Negative signs (-) in Margin column signify levels below the limits.
- g) Analyzer setting: RBW $\geq$ 1 MHz, VBW $\geq$ 1 MHz, for freq. > 1 GHz
RBW $\geq$ 100 kHz, VBW $\geq$ 100 kHz, for freq. < 1 GHz
RBW $\geq$ 1 kHz, VBW $\geq$ 1 kHz for freq. < 150 kHz
- e) D.C.F: Distance Correction Factor

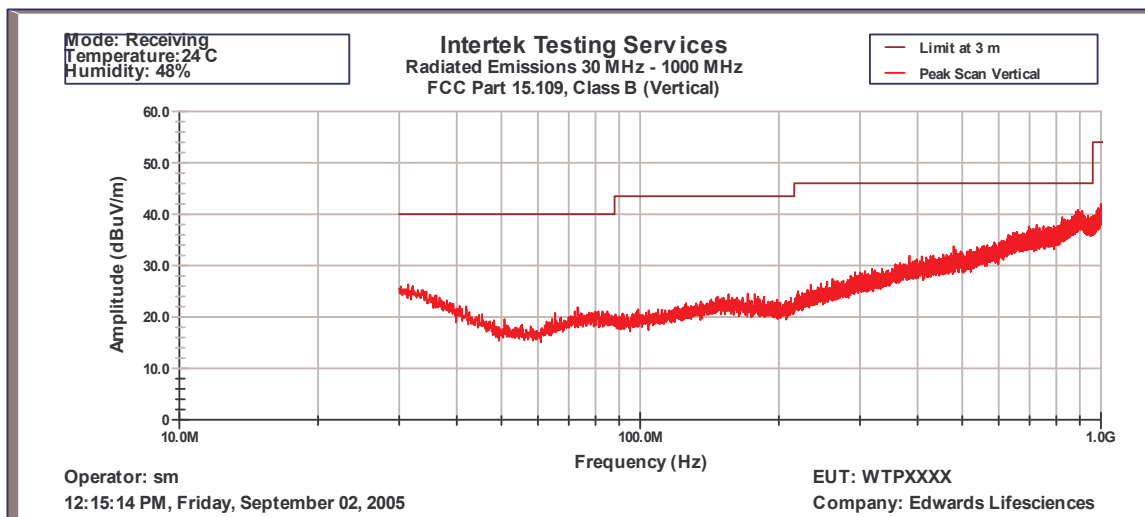
Test Result	Passed with 16.7 dB margin at 171.8 MHz.
--------------------	---

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5



Radiated Emission, X Unit, Horizontal Polarization



Radiated Emission, X Unit, Vertical Polarization

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

4.3.4 Radiated Emission Data**Standard:** FCC Part 15.109**Company:** Edwards Lifesciences, LLC**Job No.** 3078050LAX-001**Model Name:** M Unit**Test Channel:** Channel 1**Mode:** Receiving**Distance:** 3 m

Measurement Uncertainty: 3.92dB

Temperature: 24°C

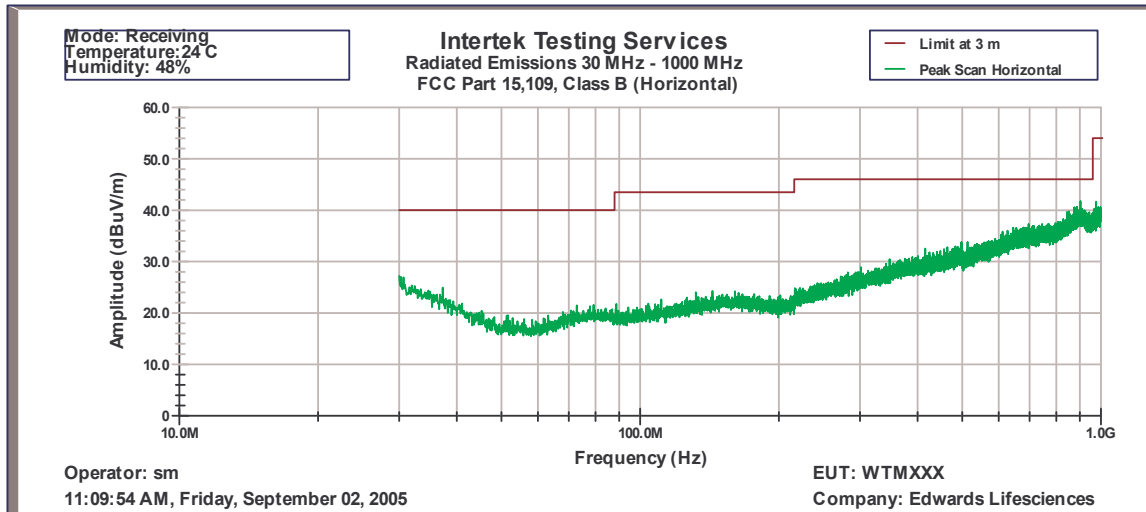
Relative Humidity: 49 %

Notes:

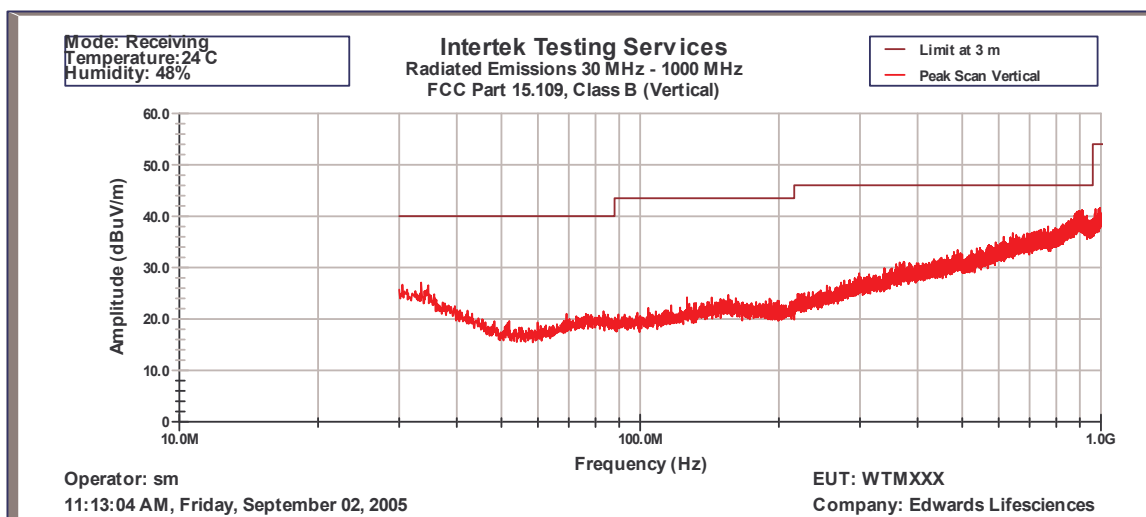
No emissions were found below the noise level of EMI receiver. See next page for peak scans

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5



Radiated Emission, M Unit, Horizontal Polarization



Radiated Emission, M Unit, Vertical Polarization

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

5.0 Out of Band Emission**5.1 Test Description**

Parameter:	FCC 95.1115(b)
Requirement:	FCC 95.1115(b) & (b)(2)
below: 960 MHz above: 960 MHz Distance:	Limit 46 dB μ V Limit 54 dB μ V 3 m

5.2 Test Procedure

See section 4.1.1.

5.3 Test Results

See attached plots.

The following plots show the relative spurious emission level of the X Unit in transmitting mode.

Plot #	Description
5.3.a	Plot shows peak scan emission from 30 to 1000 MHz. Plot show emissions which verified below for compliance to section 95.1115(b)
5.3.b	Plot shows peak measurements differential between ch.1 fundamental and frequency range from 1000 to 1400 MHz. (78.4-40.8=37.6 dB μ V) < 54 dB μ V
5.3.c	Plot shows peak measurements differential between ch.1 fundamental and lower edge of the frequency band (78.4-37.1=41.3 dB μ V) < 54 dB μ V
5.3.d	Plot shows peak measurements differential between ch.1 fundamental and upper edge of the frequency band (78.4-39.1=39.3 dB μ V) < 54 dB μ V
5.3.e	Plot shows peak measurements differential between ch.4 fundamental and lower edge of the frequency band (78.3-46.7=31.6 dB μ V) < 54 dB μ V
5.3.f	Plot shows peak measurements differential between ch.4 fundamental and upper edge of the frequency band (78.3-39.1=39.2 dB μ V) < 54 dB μ V
5.3.g	Plot shows peak measurements differential between ch.5 fundamental and lower edge of the frequency band (76-39.5=36.5 dB μ V) < 54 dB μ V
5.3.h	Plot shows peak measurements differential between ch.5 fundamental and upper edge of the frequency band (76-39.7=36.3 dB μ V) < 54 dB μ V
5.3.i	Plot shows peak measurements differential between ch.6 fundamental and lower edge of the frequency band (75.9-38.3=38.8 dB μ V) < 54 dB μ V
5.3.j	Plot shows peak measurements differential between ch.6 fundamental and upper edge of the frequency band (75.9-37.6=38.3dB μ V) < 54 dB μ V
5.3.k	Plot shows peak measurements differential between ch.6 fundamental and frequency range from 1400 to 2000 MHz (75.9-42.5=33.4dB μ V) < 54 dB μ V

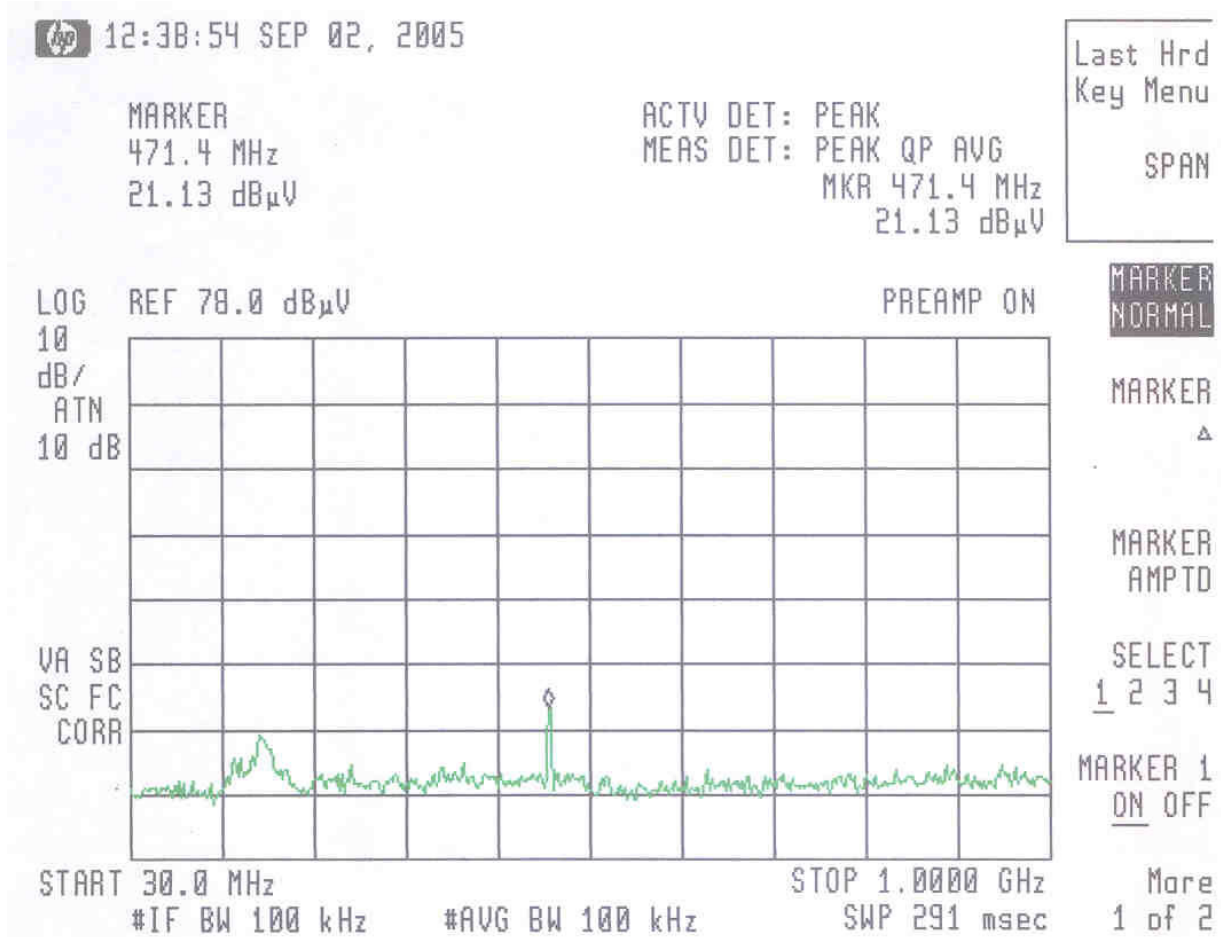
Date of Test: September 2 to 8, 2005**FCC ID: S8IWPMS**

5.3.1	Plot shows no spurious emission from 2000 to 4000 MHz.
5.3.m	Plot shows no spurious emission from 4000 to 6500 MHz.

Note 1: There are no emissions, except harmonics, observed above frequency 2000 MHz. All spurious emissions outside the frequency bands 1395 – 1400 and 1427 – 1431.5 MHz are attenuated below the limits in reference of level of fundamental.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5



Plot 5.3.a

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

14:22:18 SEP 02, 2005

MARKER Δ
-228.0 MHz
-40.80 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ -228.0 MHz
-40.80 dB

Last Hrd
Key Menu

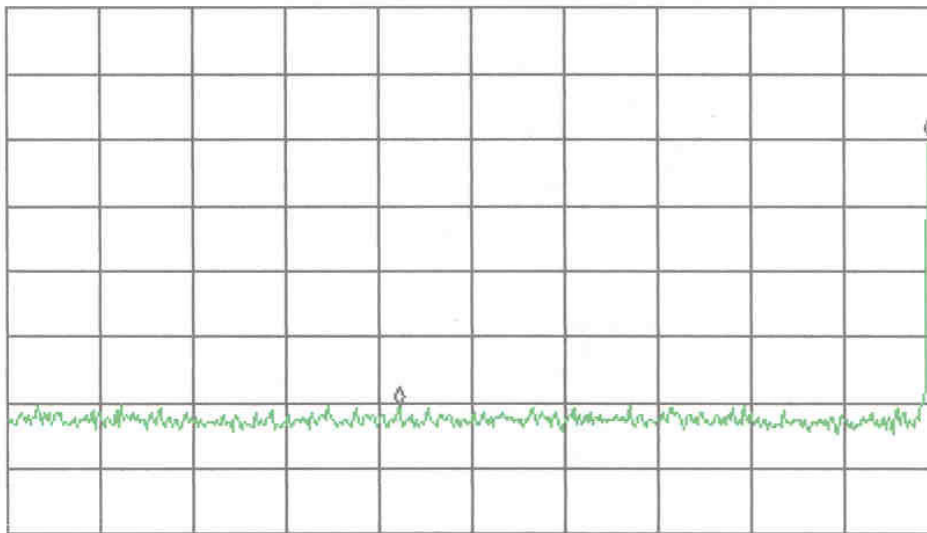
SPAN

LOG REF 72.0 dB μ V

PREAMP ON

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



START 1.0000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 1.4000 GHz

SWP 120 msec

MARKER
 Δ CF

MARKER
 Δ

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More
1 of 2

Plot 5.3.b

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

14:19:22 SEP 02, 2005

MARKER Δ
-468 kHz
-37.05 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ -468 kHz
-37.05 dB

Last Hrd
Key Menu

SPAN

LOG REF 72.0 dB μ V

PREAMP ON

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



START 1.395000 GHz

STOP 1.396000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

SWP 20.0 msec

MARKER
 Δ CF

MARKER
 Δ

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More
1 of 2

Plot 5.3.c

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

14:26:52 SEP 02, 2005

MARKER Δ
775 kHz
-39.06 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 775 kHz
-39.06 dB

Last Hrd
Key Menu
SPAN

LOG REF 72.0 dB μ V

PREAMP ON

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



START 1.399000 GHz

STOP 1.400000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

SWP 20.0 msec

MARKER
NORMAL

MARKER
 Δ

MARKER
AMPTD

SELECT
1 2 3 4

MARKER 1
ON OFF

More
1 of 2

Plot 5.3.d

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

14:28:30 SEP 02, 2005

MARKER Δ
-4.213 MHz
-46.71 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ -4.213 MHz
-46.71 dB

Last Hrd
Key Menu

SPAN

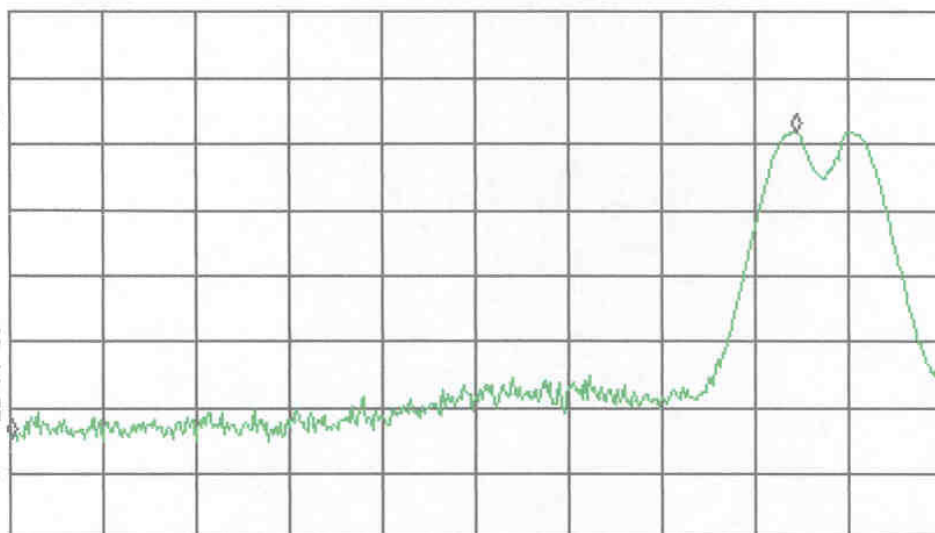
LOG REF 72.0 dB μ V

PREAMP ON

MARKER
NORMAL

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



MARKER
 Δ

MARKER
AMPTD

SELECT
1 2 3 4

MARKER 1
ON OFF

START 1.395000 GHz

STOP 1.400000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

SWP 20.0 msec

More
1 of 2

Plot 5.3.e

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

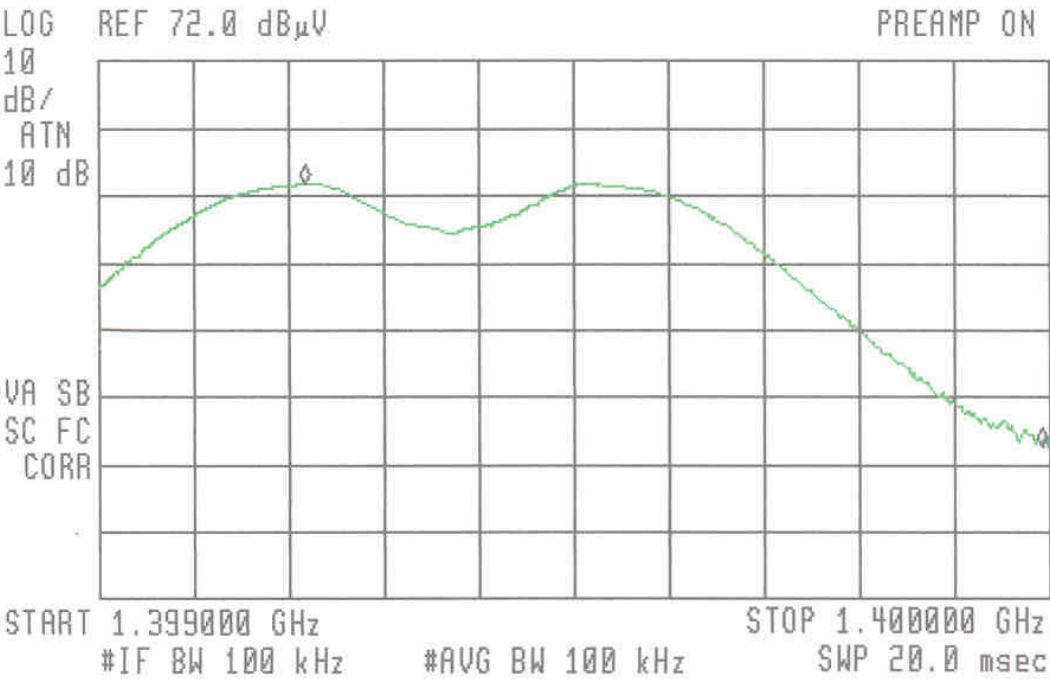
 14:26:52 SEP 02, 2005

MARKER Δ
775 kHz
-39.06 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 775 kHz
-39.06 dB

Last Hrd
Key Menu

SPAN



MARKER
NORMAL



MARKER
AMPTD

SELECT
1 2 3 4

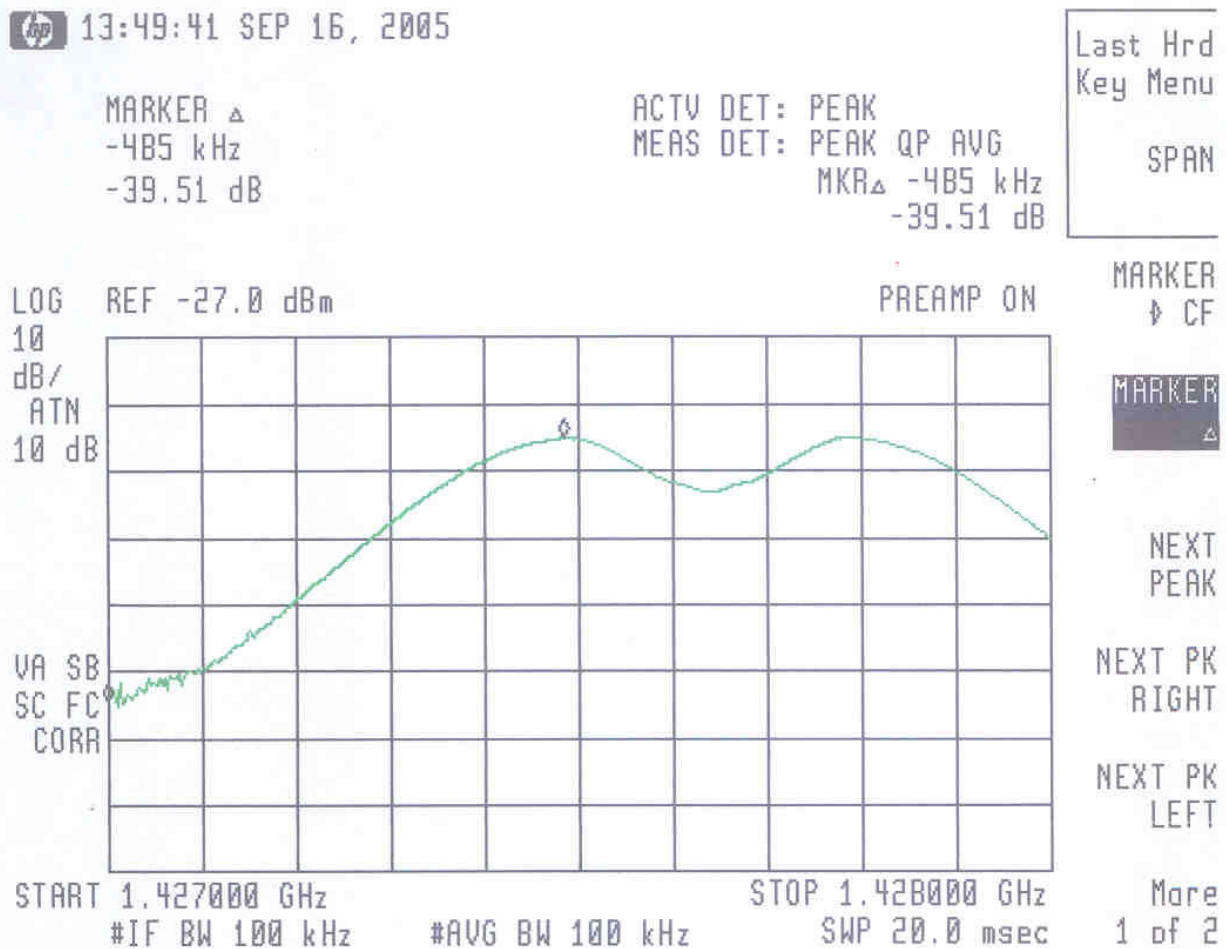
MARKER 1
ON OFF

More
1 of 2

Plot 5.3.f

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS



Plot 5.3.g

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

 13:52:24 SEP 16, 2005

MARKER Δ
1.710 MHz
-39.65 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 1.710 MHz
-39.65 dB

Last Hrd
Key Menu

SPAN

LOG REF -27.0 dBm

PREAMP ON

10
dB/
ATN
10 dB

VA SB
SC FC
CORR

START 1.427013 GHz
#IF BW 100 kHz

#AVG BW 100 kHz

STOP 1.429500 GHz
SWP 20.0 msec

MARKER
 Δ CF

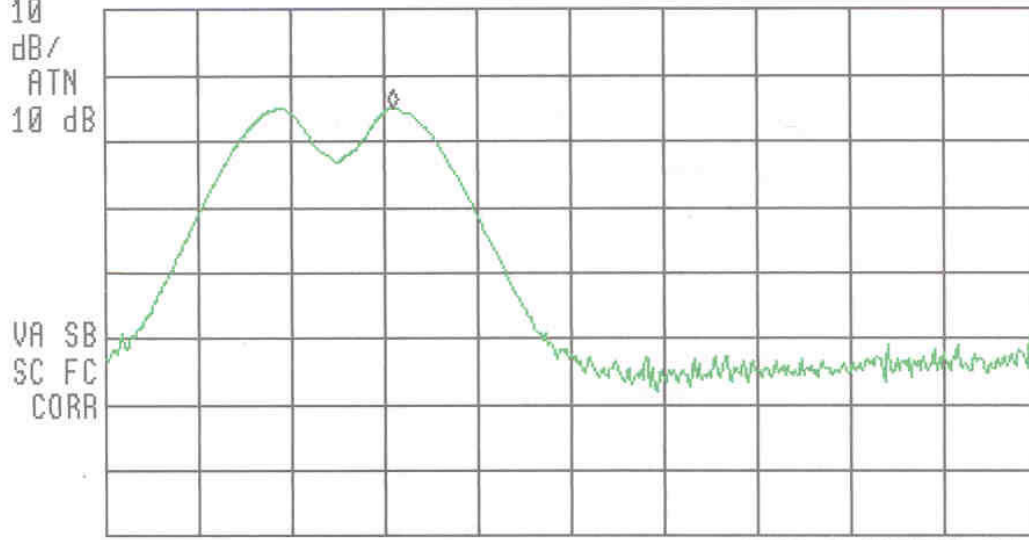
MARKER
 Δ

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More
1 of 2



Plot 5.3.h

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

13:41:49 SEP 16, 2005

MARKER Δ
-1.731 MHz
-39.06 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ -1.731 MHz
-39.06 dB

Last Hrd
Key Menu

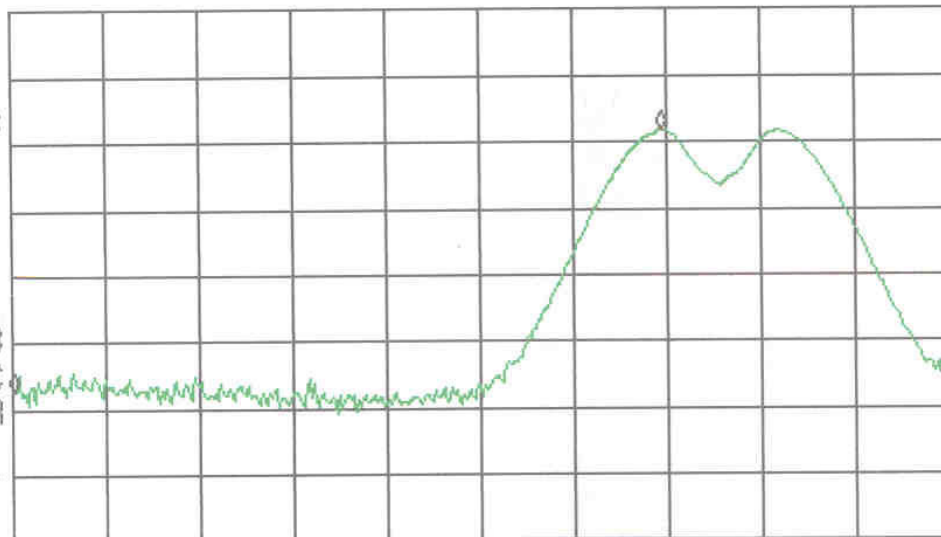
SPAN

LOG REF -27.0 dBm

PREAMP ON

MARKER
D CF

10
dB/
ATN
10 dB



MARKER Δ

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

START 1.427000 GHz

STOP 1.429500 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

SWP 20.0 msec

More
1 of 2

Plot 5.3.i

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

13:47:56 SEP 16, 2005

MARKER Δ
75B kHz
-37.64 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 758 kHz
-37.64 dB

Last Hrd
Key Menu

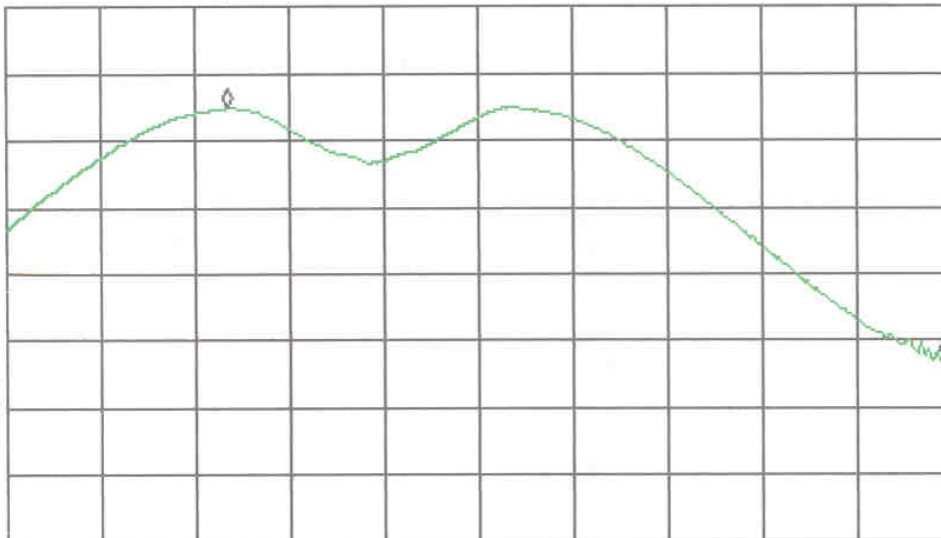
SPAN

LOG REF -27.0 dBm

PREAMP ON

MARKER
+ CF

10
dB/
ATN
10 dB



MARKER

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

START 1.428500 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 1.429500 GHz

SNP 20.0 msec

More

1 of 2

Plot 5.3.j

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

14:42:29 SEP 02, 2005

MARKER Δ
171.9 MHz
-42.53 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 171.9 MHz
-42.53 dB

Last Hrd
Key Menu

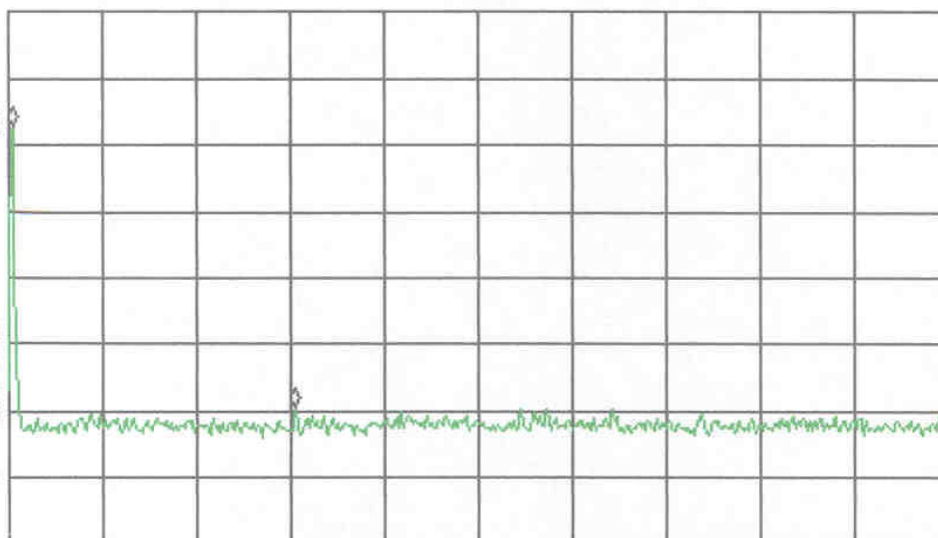
SPAN

LOG REF 72.0 dB μ V

PREAMP ON

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



MARKER
 Δ CF

MARKER
 Δ

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

#IF BW 100 kHz

#AVG BW 100 kHz

SWP 172 msec

More
1 of 2

Plot 5.3.k

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

14:45:27 SEP 02, 2005

MARKER
2.866 GHz
12.83 dBμV

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 2.866 GHz
12.83 dBμV

Last Hrd
Key Menu

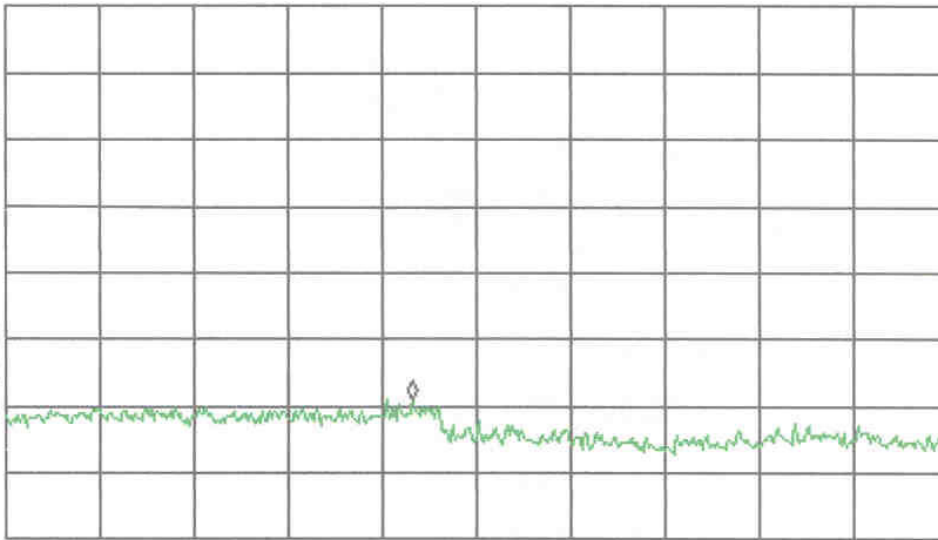
SPAN

LOG REF 72.0 dBμV

PREAMP ON

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



START 2.000 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

STOP 4.000 GHz

SWP 600 msec

MARKER
↓ CF

MARKER
Δ

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

More

1 of 2

Plot 5.3.1

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

14:46:37 SEP 02, 2005

STOP
6.500 GHz

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 5.575 GHz
9.68 dBμV

Last Hrd
Key Menu

SPAN

LOG REF 72.0 dBμV

PREAMP ON

MARKER
↓ CF

10
dB/
ATN
10 dB

MARKER
△

VA SB
SC FC
CORR

NEXT
PEAK

NEXT PK
RIGHT

NEXT PK
LEFT

START 4.000 GHz

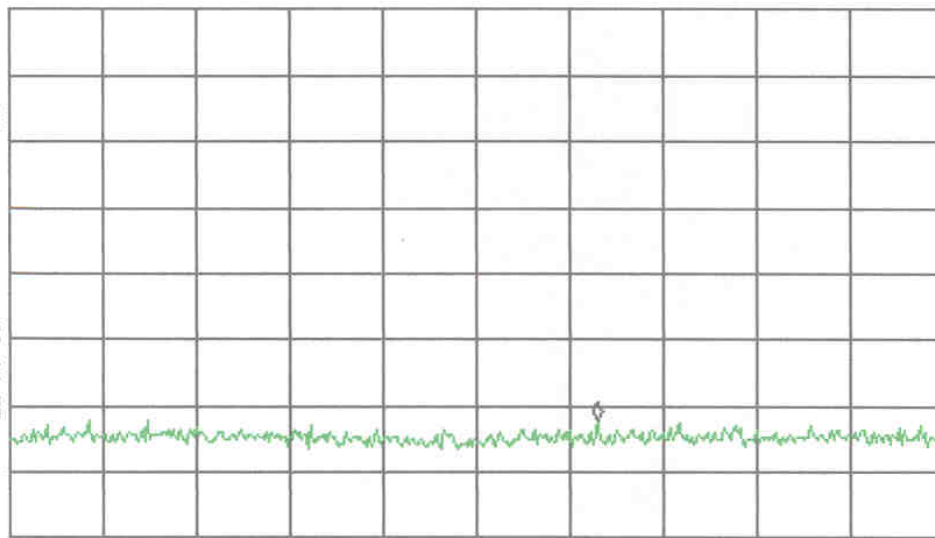
STOP 6.500 GHz

#IF BW 100 kHz

#AVG BW 100 kHz

SWP 750 msec

More
1 of 2



Plot 5.3.m

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5**5.4 Radiated Emission Data****Standard:** FCC Part 95.1115(b)**Company:** Edwards Lifesciences, LLC**Job No.** 3078050LAX-001**Model Name:** X Unit**Test Channel:** Channel 1**Mode:** Transmitting

Measurement Uncertainty: 3.92dB

Temperature: 24°C

Relative Humidity: 49 %

Frequency	Detector	Vertical level	Horizontal level	D.C.F.	Limit	Margin
MHz		(dBuV/m)	(dBuV/m)	dB	(dBuV/m)	(dB)
166.3	Q-peak	18.4	18.6	0	46.0	-27.4
168.0	Q-peak	19.9	22.4	0	46.0	-23.6
169.1	Q-peak	18.6	23.9	0	46.0	-22.1
171.8	Q-peak	19.4	26.8	0	46.0	-19.2
177.6	Q-peak	19.5	25.3	0	46.0	-20.7
182.9	Q-peak	19.7	26.0	0	46.0	-20.0
190.8	Q-peak	19.9	25.7	0	46.0	-20.3
471.7	Q-peak	21.5	20.5	0	46.0	-24.5

Notes:

- a) The field strength shown in the table (Vertical and Horizontal levels) included Antenna factor, Cable loss and Pre-amplifier Gain (if applicable).
- h) All emissions not reported were at least 20 dB below the limits.
- i) Negative signs (-) in Margin column signify levels below the limits.
- j) Analyzer setting: RBW $\geq$ 1 MHz, VBW $\geq$ 1 MHz, for freq. $>$ 1 GHz
RBW $\geq$ 100 kHz, VBW $\geq$ 100 kHz, for freq. $<$ 1 GHz
RBW $\geq$ 1 kHz, VBW $\geq$ 1 kHz for freq. $<$ 150 kHz
- e) D.C.F: Distance Correction Factor

Test Result	Passed with 19.2 dB margin at 171.8 MHz.
--------------------	---

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS**6.0 Antenna Requirement****6.1 Test description**

Parameter:	FCC 15.203
Requirement:	FCC 15.203
Descriptions:	No antenna other than furnished by the responsible party shall be used with the device.

6.2 Test Procedure

None

6.3 Test Result

The device is considered to comply with the requirements by:

	Description
X	The transmitter uses a permanently connected antennas.
	The antenna is affixed to the EUT using a unique connector which allows for replacement of a broken antenna, but does NOT use a standard antenna jack or electrical connector.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5**7.0 Line Conducted Emission****7.1 Test Description**

Parameter:	FCC 15.107, 15.207	
Requirement:	FCC 15.107, class B; 15.207	
Frequency (MHz)	QP Limits (dB μ V)	AVG Limits (dB μ V)
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

7.2 Test Procedure

All conducted voltage measurements were made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension by the use of mating plugs and receptacles on the EUT and LISN/AMN if used. Equipment was tested with power cords that were normally used or that have electrical and shielding characteristics that were the same as those cords normally used. For those measurements using a LISN/AMN, the 50 Ω measuring port was terminated by a 50 Ω receiver or a 50 Ω resistive load. Hence all 50 Ω measuring ports of the LISN/AMN were terminated by 50 Ω .

If a screened room or chamber was used, the EUT was placed 40 cm from a conductive wall, with the wall at the lead of the EUT. IF the test was being performed on an OATS or sheltered site, the vertical ground plane was placed 40 cm away from the rear of the EUT.

The excess length of the lead between the EUT and the LISN/AMN receptacle (or mains outlet where a LISN/AMN cannot be used) was folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length. If the EUT does not have a flexible power lead, then it was placed at a distance of 80 cm from the LISN/AMN (or mains outlet where a LISN/AMN cannot be used) and connected to it by a lead or appropriate connection no longer than 1 m. Measurements were made at the LISN/AMN end of this lead or connection

Conducted emission measurements were performed according to the procedures in ANSI C63.4 (2003)

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

7.3 Line Conducted Emission Data

Standard: FCC part 15.107, Class B / 15.207

Measurement Uncertainty: 1.94dB

Company: Edwards Lifesciences, LLC

Temperature: 24°C

Job No. 3078050LAX-001

Relative Humidity: 49 %

Model Name: M Unit

Tested by: Sergey Marker

Mode: Receiving / Transmitting

Measurements made on selected frequencies from neutral conductor are given below:

Frequency	AV	AV Limit	Q. Peak	QP Limit	Margin
MHz	(dBμV)	(dBμV)	(dBμV)	(dBμV)	(dBμV)
0.199	16.8	53.7	31.4	63.7	-32.3
0.6	25.7	46	29.7	56	-20.3
4.4	28.8	46	30.5	56	-17.2
13.1	26.4	50	37.7	60	-22.3
14.8	35.7	50	36.4	60	-14.3
15.5	34.7	50	35.3	60	-15.3

Measurements made on selected frequencies from line conductor are given below:

Frequency	AV	AV Limit	Q. Peak	QP Limit	Margin
MHz	(dBμV)	(dBμV)	(dBμV)	(dBμV)	(dBμV)
0.199	16.7	53.7	31.7	63.7	-32
0.6	25.6	46	30.2	56	-20.4
4.4	28.6	46	30.2	56	-17.4
13.1	36.3	50	37.5	60	-13.7
14.8	35.8	50	36.5	60	-14.2
15.5	34.8	50	35.5	60	-15.2

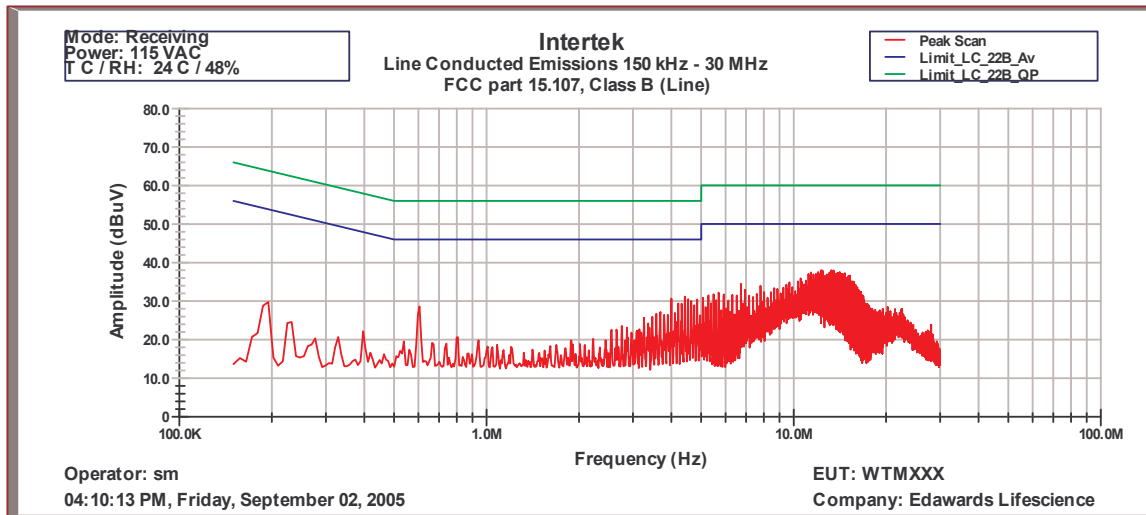
- Note 1: a) A complete scan from 0.15 - 30 MHz was made.
b) Analyzer setting: RBW = 9 kHz, VBW = 30 kHz
c) Detector mode: Quasi-peak and Average.
d) All other measurements were more than 10 dB below the limit lines.
e) Numbers with a minus sign in margin column are below the limit.

The next two pages are the peak scan made on line and neutral conductors

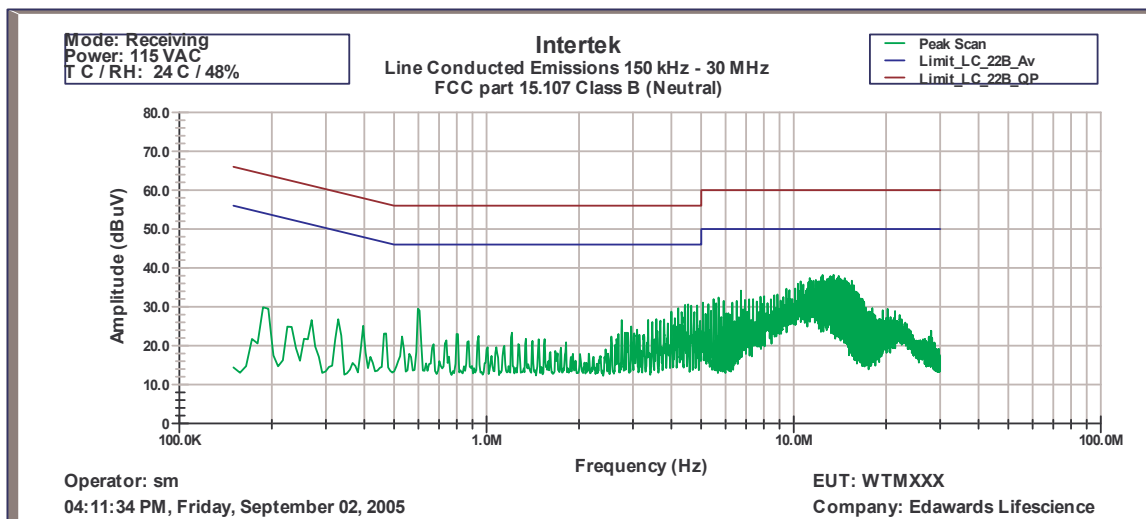
Test Result	Passed with margin 13.7 dB at 13.1 MHz
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Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5



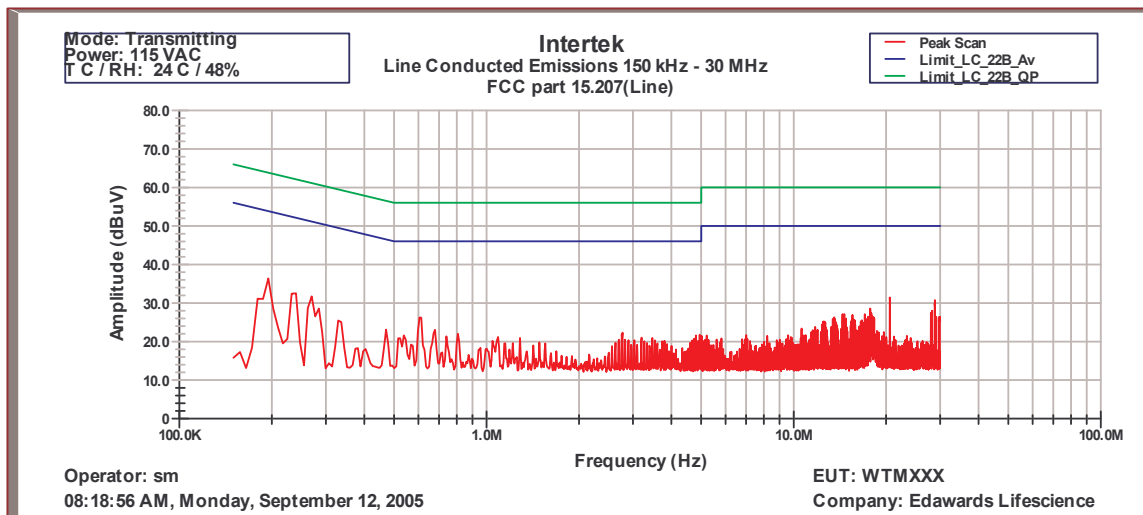
Conducted emission, Receiving mode, Line conductor



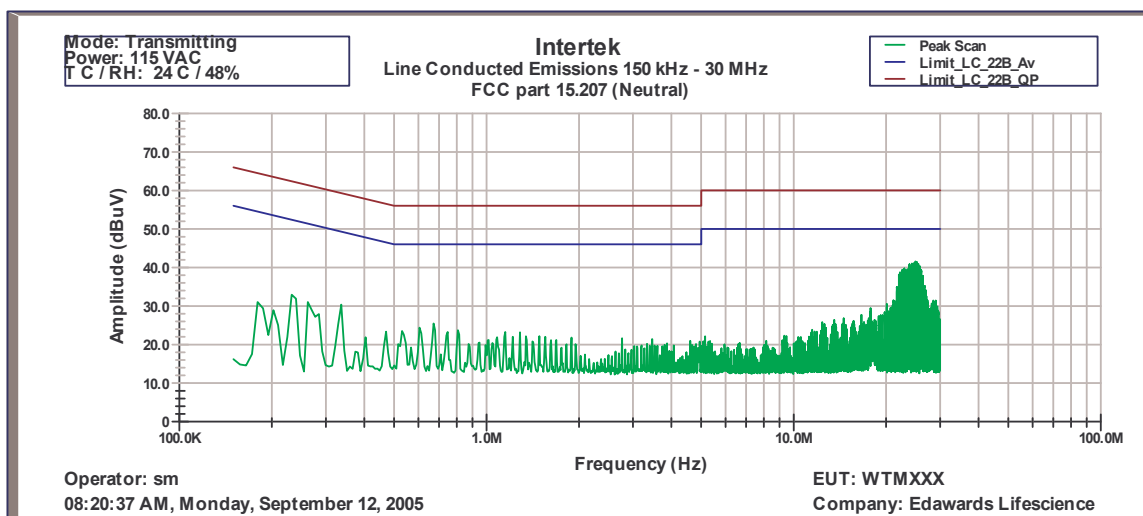
Conducted emission, Receiving mode, Neutral conductor

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5



Conducted emission, Transmitting mode, Line conductor



Conducted emission, Transmitting mode, Neutral conductor

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS**8.0 Occupied Bandwidth****8.1 Test description**

Requirement:	FCC §2.1049
Emission Bandwidth:	20 dB

8.2 Test Procedure

The measurement antenna was positioned at distance 3 m from the transmitter.
Span = approximately 2 to 3 times of the 20 dB bandwidth, centered on the channel.
RBW $\geq$ 1% of the 20 dB bandwidth.
The bandwidth is measured at the 20 dB RF output.

8.3 Test Results

Please see next page for the occupied bandwidth plot:

Test Result:	The Occupied Bandwidth is 594 kHz
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Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

14:57:10 SEP 02, 2005

MARKER Δ
594 kHz
-19 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 594 kHz
-19 dB

Last Hrd
Key Menu

SPAN

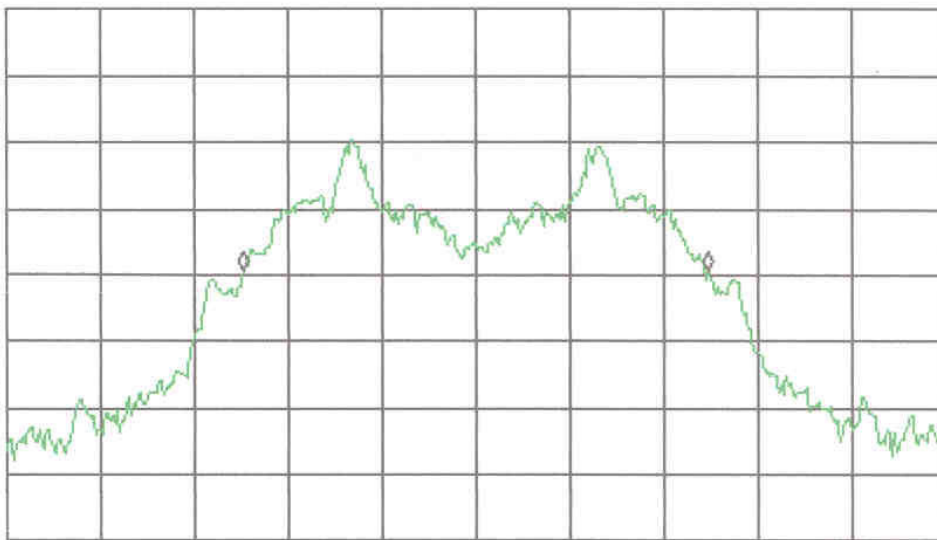
LOG REF 72.0 dB μ V

PREAMP ON

MARKER
NORMAL

10
dB/
ATN
10 dB

VA SB
SC FC
CORR



MARKER
 Δ

MARKER
AMPTD

SELECT
1 2 3 4

MARKER 1
ON OFF

CENTER 1.428875 GHz
#IF BW 10 kHz

#AVG BW 10 kHz

SPAN 1.200 MHz
SWP 36.0 msec

More
1 of 2

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS**9.0 Emission Types****9.1 Test Description**

Parameter:	FCC 95.1115(c)
Requirement:	FCC 95.1115(c)
Descriptions:	Any emission type is accepted except for video and voice. Waveforms such as electrocardiograms (ECGs) are not considered video. Operation may be under manual or automatic control, and on continuous basis.

9.2 Test Procedure

None

9.3 Test Result

The device is considered to comply with the requirements by:

	Description
X	This device transmits data only.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

10.0 Channel Use**10.1 Test Description**

Parameter:	FCC 95.1115(d)
Requirement:	FCC 95.1115(d)
Descriptions:	Within the 1395 -1400 MHz and 1427 – 1431.5 MHz WMTS device may operate on any channels – none are specified.

10.2 Test Procedure

None

10.3 Test Result

The device is considered to comply with the requirements by:

	Description
X	Avoids harmful interference to other WMTS devices. Channels use is shared and cannot be assigned exclusively use by any one entity.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5**11.0 Frequency Stability****11.1 Test description**

Requirement:	FCC § 2.1055, § 95.1115(e)
Frequency Tolerance:	Within 0.004% (40ppm)

11.2 Test Procedure

The ppm frequency error of the transmitter was calculated by:

$$ppm\ error = \left(\frac{MCF}{ACF} - 1 \right) \cdot 10^6$$

Where MCF is the Measured Carrier Frequency in MHz
ACF is the Assigned Carrier Frequency in MHz

11.2.1 Frequency Stability vs. Temperature*For X Unit:*

The equipment under the test was connected to an external DC power supply and the RF output was connected to a frequency counter via feedthrough attenuators. The EUT was placed inside the temperature chamber.

The temperature stability was measured with variation of ambient temperature as follows:

- From -30°C to +50°C with intervals of 10°C
- After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter.

11.2.2 Frequency Stability vs. Voltage*For M Unit with AC power adapter:*

At room temperature (25 ± 5 °C), an external variable AC power supply was connected to the EUT. The frequency of the transmitter was measured for 115%, 100% and 85% of the nominal operating input voltage.

For M Unit with 9 VDC power pack:

At room temperature (25 ± 5 °C), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 9 VDC and 4 VDC.

For X Unit with 1.5 VDC battery:

At room temperature (25 ± 5 °C), an external variable DC power supply was connected to the EUT. The frequency of the transmitter was measured for 1.5 VDC and 1.0 VDC.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5

11.3 Test Results

X Unit:

Frequency Stability vs Temperature		
ACF (MHz): 1395.625		Limit: 40 ppm
Temperature, C	MCF (MHz)	PPM Error
50	1395.64083	11.34258845
40	1395.63922	10.18898343
30	1395.63813	9.407971339
20	1395.63783	9.193013883
10	1395.63662	8.326018809
0	1395.63489	7.086430811
-10	1395.63141	4.592924317
-20	1395.62655	1.110613524
-30	1395.616	-6.44872369

M Unit with AC adapter:

Frequency Stability vs Voltage			
ACF (MHz): 1395.625			Limit: 40 ppm
%	Voltage	MCF (MHz)	PPM Error
115	138.00	1395.626	0.72
100	120.00	1395.6264	1.00
85	102.00	1395.62618	0.85

M Unit with 9 VDC battery pack:

Frequency Stability vs Voltage			
ACF (MHz): 1395.625			Limit: 40 ppm
%	Voltage	MCF (MHz)	PPM Error
	9 VDC	1395.6264	1.00
	4 VDC	1395.6261	0.79

X Unit with 1.5 VDC battery:

Frequency Stability vs Voltage			
ACF (MHz): 1395.625			Limit: 40 ppm
%	Voltage	MCF (MHz)	PPM Error
	1.5 VDC	1395.63783	9.19
	1.0 VDC	1395.63745	8.92

Note: 40 ppm (60) kHz frequency change would not shift emission outside the band of operation and sideband emission would not exceed specified limits. See margins in section 5.0

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPMS

12.0 RF Safety**12.1 RF Exposure Evaluation**

Parameter:	FCC 95.1125
Requirement:	FCC 2.1093, 1.1307(b)(2)
Descriptions:	This "WMTS device can be classified as "Portable" and subject for routine environmental evaluation.

12.1.1 Test Procedure

None

12.1.2 Test Result

The device is considered to comply with the requirements by:

	Description
X	<u>Limit for general population:</u> No SAR evaluation is required for user distance < 2.5 cm: $P < 60/f(\text{GHz}) \text{ mW}$ $\text{EIRP} = E - 95.3 = 78.4 \text{ dB}\mu\text{V} - 95.3 = -16.9 \text{ dBm} \rightarrow 0.02 \text{ mW}$ $0.02 \text{ mW} < 60/1.4 = 42.8 \text{ mW}$
	<u>Conclusion:</u> No SAR evaluation is required.

Date of Test: September 2 to 8, 2005

FCC ID: S8IWPM5**13.0 TEST EQUIPMENT**

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Receivers / Spectrum Analyzers / Pre amp

DESCRIPTION	SERIAL NO.	LAST CAL DATE	CAL DUE	TICK IF USED
HP 8546A Receiver RF Section	3549A00261	11/16/04	11/16/05	X
HP 85460A RF Filter Section	3448A00265	11/16/04	11/16/05	X
Tile Software	Rev. 3.0 G	N/A	N/A	X
R & S FSP40 Spectrum Analyzer	100027	2/21/05	2/21/06	X
Agilent 8447D RF Pre Amplifier	2944A10141	1/27/05	1/27/06	X
HP 8449B RF Pre Amplifier	300801168	1/27/05	1/27/06	X

Antennas

DESCRIPTION	SERIAL NO.	LAST CAL DATE	CAL DUE	TICK IF USED
Electro-metrics LPA-25 Log Periodic	1077	08/27/05	08/27/06	
Comp Power Biconical Antenna AB 900	15299	03/22/05	03/22/06	X
Com-Power AL-100 Logperiodic Antenna	16055	05/02/05	05/02/06	X
ETS Lindgren 3115 Horn Antenna	00031626	03/09/05	03/09/06	X
Chase Bilog Antenna CBL6112	2040	11/23/04	11/23/05	

Artificial Mains Networks/Absorbing Clamps

DESCRIPTION	SERIAL NO.	LAST CAL DATE	CAL DUE	TICK IF USED
EMCO 3825/2 25A LISN	2527	7/20/05	7/20/06	X
FCC LISN 50 Amp 5 μ H	9827	02/07/05	02/07/06	