Exhibit B – Test Report

Wireless Computing
RF-015 Compact Receiver

Project Number: 03437-10

Prepared for:
WIRELESS COMPUTING
14101 West Highway 290, Bldg. 700
Austin, TX

By

Professional Testing (EMI), Inc.
1601 FM 1460, Suite B
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June 2003

CERTIFICATION
Electromagnetic Interference
Test Report

WIRELESS COMPUTING
RF-015 COMPACT RECEIVER

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Certificate of Compliance

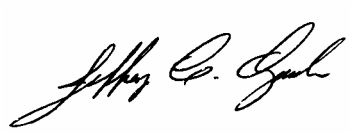
Applicant:	Wireless Computing
Applicant's Address:	14101 West Highway 290, Bldg. 700 Austin, TX
Model:	RF-015 Compact Receiver
Project Number:	03437-10

The **Wireless Computing RF-015 Compact Receiver** was tested to and found to be in compliance with FCC Part 15.203, 15.205, 15.207, 15.209, and 15.249 for Intentional Radiators.

The highest average emissions generated by the above equipments are listed below:

	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Peak Fundamental	916.6	93.2	94	-0.8
Harmonics	1833	52.5	63.5	-11.0
Spurious	691.2	38.7	46	-7.3

I, Jeffrey A. Lenk, for Professional Testing (EMI), Inc., being familiar with the FCC rules and test procedures have reviewed the test setup, measured data and this report. I believe them to be true and accurate.



Jeffrey A. Lenk
President

1.0 EUT Description

The RF-015 is a wireless receiver/transceiver for use with the RF-150 wireless Mouse and other products. The receiver can be used on computers operating on Windows and Macintosh systems. The EUT draws power from the computer through USB cable. RF packets from the remote device are received by the RF-015 receiver. These are passed to the computer via USB. Packets are acknowledged via an RF packet sent to the remote device. Commands from the computer are received via the USB and passed along to the appropriate device via RF.

The EUT operates on a frequency of 916.5 MHz and is designed for compliance with 47 CFR 15.249 of the FCC rules. Specific test requirements for the devices include the following:

47 CFR 15.249	Fundamental and Harmonic Radiated Power
47 CFR 15.209	General Radiated Emission Limits
47 CFR 15.207	Conducted Emissions
47 CFR 15.203	Antenna Requirements
47 CFR 15.205	Restricted Bands of Operation

The system tested consisted of the following:

Manufacturer & Model	**Serial #**	**FCC ID #**	**Description**
Wireless Computing RF-015 Compact Receiver	None	L7MR015	Transceiver to be used with remote handheld mouse and such other devices

System Peripherals
None.

1.1 EUT Operation

The **Wireless Computing RF-015 Compact Receiver** was plugged into the USB port of the test computer. The EUT was sending and receiving RF packets to and from the remote device. The host PC provided power to the EUT.

2.0 Electromagnetic Emissions Testing

Professional Testing (EMI), Inc. (PTI), follows the guidelines of NIST for all uncertainty calculations, estimates and expressions thereof for EMC testing. . A copy of PTI's policy for EMC Measurement Uncertainty is provided in Appendix C.

2.1 Conducted Emissions Measurements

Conducted emissions measurements were made on the mains terminals of the host computer from which the **Wireless Computing RF-015 Compact Receiver** receives power, to determine the line-to-ground radio noise emitted from each power-input terminal. Conducted emissions measurements on the mains terminals were performed at Professional Testing, located in Round Rock, Texas.

2.1.1 Test Procedure

The EUT was configured and operated in a manner consistent with typical applications. The PC power cord in excess of one meter was folded back and forth forming a bundle 30 to 40 cm long in the approximate center of the cable. Power supply cords for the peripheral equipment were powered from an auxiliary LISN. Excess interface cable lengths were separately bundled in a non-inductive arrangement at the approximate center of the cable with the bundle 30 to 40 centimeters in length. The conducted emissions were maximized, by varying the operating states and configuration of the EUT.

The tests were performed in a 12' x 16' RayProof modular shielded room. The EUT was placed on a non-metallic table 0.4 meters from a vertical metal reference plane and 0.8 meters from a horizontal metal reference plane.

The measurements were taken using a Line Impedance Stabilization Network (LISN). A Spectrum Analyzer with a measurement bandwidth of 10 kHz was used to record the conducted emissions measurements. The configuration of the shielded room showing the location of the EUT and the measurement equipment is given as Figure 1.

2.1.2 Test Criteria

The FCC Part 15.207 conducted emission limits are given below.

Frequency (MHz)	Limits (dBμV) Average	Limits (dBμV) Quasi-peak
0.15 – .50	56 - 46	66 -56
.50 - 5	46	56
5 – 30	50	60

The lower limit shall apply at the transition frequency.

2.1.3 Test Results

The conducted emissions data is included in Appendix A. The conducted emissions generated by the host computer with the **Wireless Computing RF-015 Compact Receiver** attached as measured on its mains terminals were found to be below FCC 15.207 maximum emissions criteria.

2.2 Radiated Emissions Measurements

Radiated emission measurements were made on transmitter Fundamental and Spurious Emission levels generated by the **Wireless Computing RF-015 Compact Receiver**.

Measurements of the maximum emission levels for the fundamental and the spurious emissions of the transmitter were made at the Professional Testing "Open Field" Site 3, located in Round Rock, Texas. A "Description of Measurement Facilities" has been submitted to the FCC and approved pursuant to Section 2.948 of CFR 47 of the FCC rules.

Tests of the fundamental for the device were performed to determine the worst case orientation and polarization of the device.

2.2.1 Test Procedure

The following testing procedure was applied to the EUT mentioned above.

The EUT was placed on a non-conductive table 0.8 meters above the ground plane. The table was centered on a motorized turntable, which allows 360-degree rotation. For measurements of the fundamental signal, a measurement antenna was positioned at a distance of 3 meters as measured from the closest point of the EUT. For spurious/harmonic measurements above 1 GHz, the measurement antenna was placed at a distance of 1 meter from the EUT. The radiated emissions were maximized by energizing the EUT and by rotating the EUT.

A Spectrum Analyzer with peak detection was used to find the maximums of the radiated emissions during the variability testing. A drawing showing the test setup is given as Figure 2.

2.2.2 Test Criteria

The table below shows FCC 15.249 radiated limits for an intentional radiator operating at 902 to 928 MHz. In addition to these requirements, the EUT must meet the restricted emission band requirements of §15.205 and §15.209. The measurements of the harmonics and spurious emissions were performed to the 10th harmonic of the fundamental.

Signal Type	Frequency (MHz)	3 m Limit Per §15.249 or§15.209	Field Strength (dB uV/m)
Fundamental	916.5	50 mV/m	94
2nd Harmonic	1831.4	500 µV/m	63.5
3rd Harmonic	2749.5	500 µV/m	63.5
4th Harmonic	3666.0	500 µV/m	63.5
5th Harmonic	4582.5	500 µV/m	63.5
6th Harmonic	5499.0	500 µV/m	63.5
7th Harmonic	6415.0	500 µV/m	63.5
8th Harmonic	7332.0	500 µV/m	63.5
9th Harmonic	8248.8	500 µV/m	63.5
10th Harmonic	9165.0	500 µV/m	63.5

Note: Radiated emissions above 1000 MHz were measured at 1 meter and the limit was increased to 63.5 dBuV/m.

2.2.3 Test Results

The radiated test data for the fundamental is included in Appendix A. The emissions were maximized at each frequency and the highest emissions identified were measured using peak detection. The radiated emissions test data for the harmonics is included in Appendix A.

The radiated emissions generated by the transmitter portion of the Wireless Computing RF-015 Compact Receiver are below the FCC Part 15 maximum emission criteria.

2.3 Occupied Bandwidth Measurements

As per §15.249 measurements of occupied bandwidth for the fundamental signal of the EUT are not required. The operating frequencies are near the center of the band.

3.0 Antenna Requirement

An analysis of the **Wireless Computing RF-015 Compact Receiver** was performed to determine compliance with Section 15.203 of the Rules. This section requires specific handling and control of antennas used for devices subject to regulations under the Intentional Radiator portions of Part 15.

3.1 Evaluation Procedure

The structure and application of the **Wireless Computing RF-015 Compact Receiver** were analyzed with respect to the rules. The antenna for this unit is an internal antenna. An auxiliary antenna port is not present.

3.2 Evaluation Criteria

Section 15.203 of the rules states that the subject device must meet at least one of the following criteria:

(a) Antenna be permanently attached to the unit.

(b) Antenna must use a unique type of connector to attach to the EUT.

(c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

3.3 Evaluation Results

The **Wireless Computing RF-015 Compact Receiver** meets the criteria of this rule by virtue of having an internal antenna located inside the enclosure. There is no means of relocating the antenna externally without seriously compromising the intrinsic safety feature of this industrial device. The EUT is therefore compliant with §15.203.

4.0 RF Safety

The FCC safety criteria that invokes measurement of specific absorption rate (SAR), from OET Bulletin 65 Supplement C, is 300 mW for 915 MHz operating frequency. The power output of this transmitter is thus 1/100th of the threshold for RF safety concern, and therefore meets the requirements of FCC rules 2.1091 & 2.1093.

5.0 Receiver Portion

The **Wireless Computing, RF-015 Compact Receiver – Receiver Portion** was tested and found to be in compliance with FCC Part 15 for Receivers and for Class B Digital Devices.

The Receiver portion was verified for compliance with 47 CFR 15.109 of the FCC rules. Radiated emission measurements were made on the emission levels generated by the Receiver portion of the **Wireless Computing RF-015 Compact Receiver** and were found to be below the FCC Part 15.109 maximum emission criteria. A DoC has been prepared for the receiver portion.

6.0 Modifications to Equipment

The following modification was made to the **Wireless Computing RF-015 Compact Receiver** during the testing process.

- Resistor R6 was changed to 13KOhms.

7.0 List of Test Equipment

A list of the test equipment utilized to perform the testing is given below. The date of calibration is given for each.

Electromagnetic Emissions Test Equipment

Model	Description	Calibration Due
HP8566B	Spectrum Analyzer	November 2003
Tektronix 2706	RF Preselector	December 2003
HP 8447D	Preamplifier	November 2003
Compliance Design B-100	Biconical Antenna	October 2003
EMCO 3115	Ridge Guide Antenna	July 2003
EMCO 3146	Log Periodic Antenna	December 2003
MITEQ	20 dB Preamp	December 2003
MITEQ	30 dB Preamp	December 2003
Armored 10 meter microwave cable		June 2004
Site Cables for 3 meters (30 -1000 MHz)		December 2003

FIGURE 1: Conducted Emissions Mains Terminal Measurements

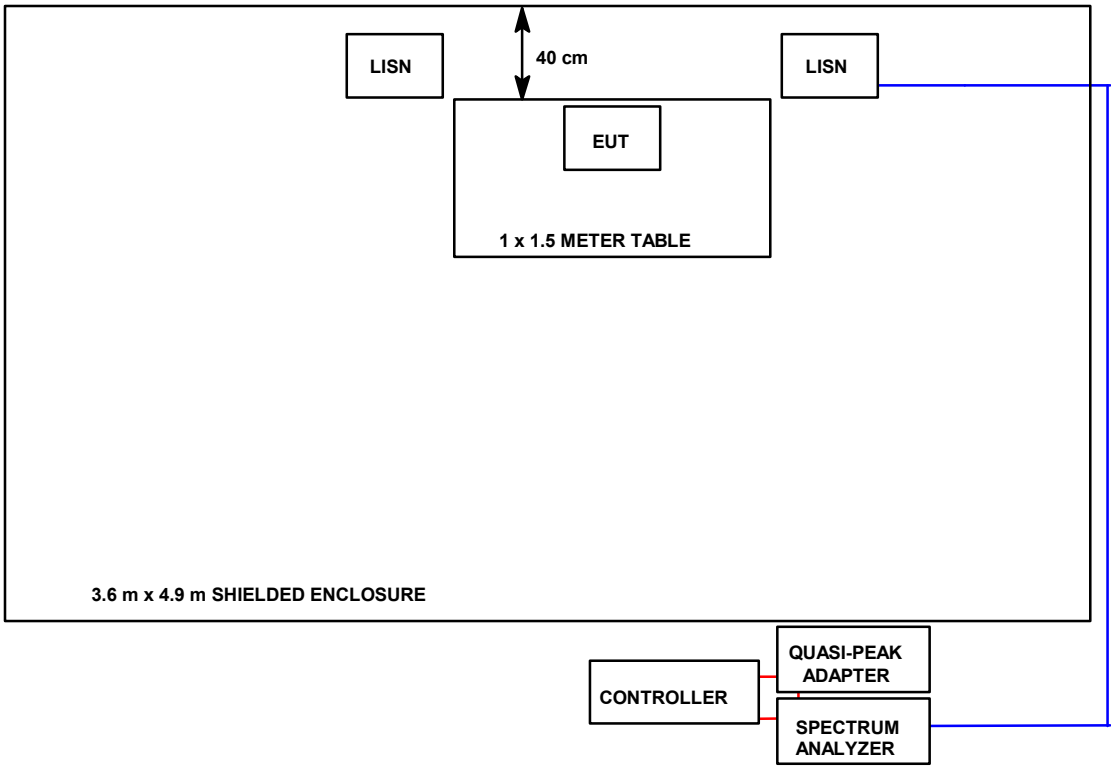
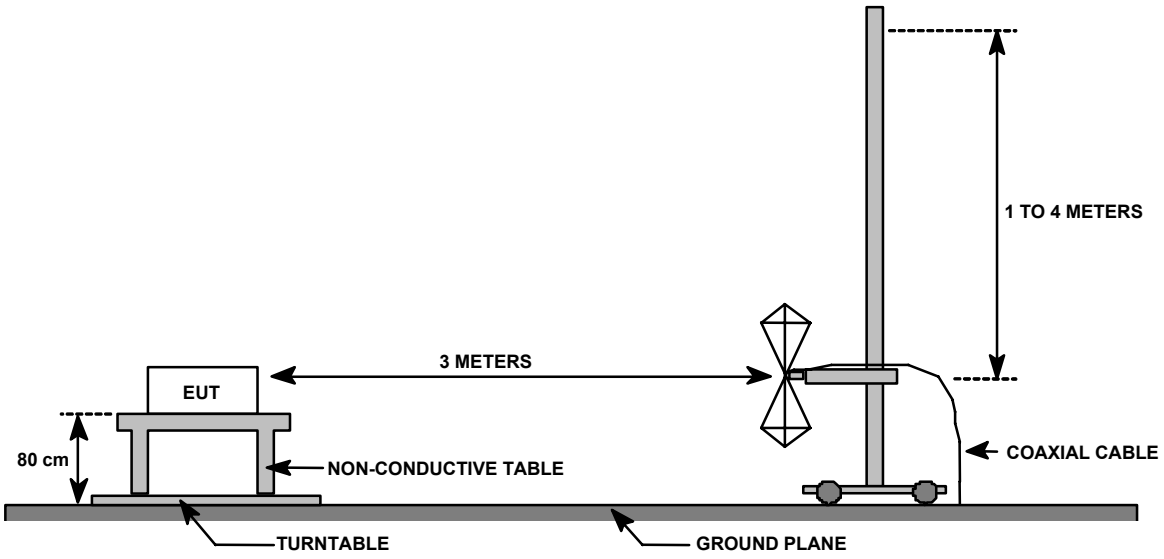
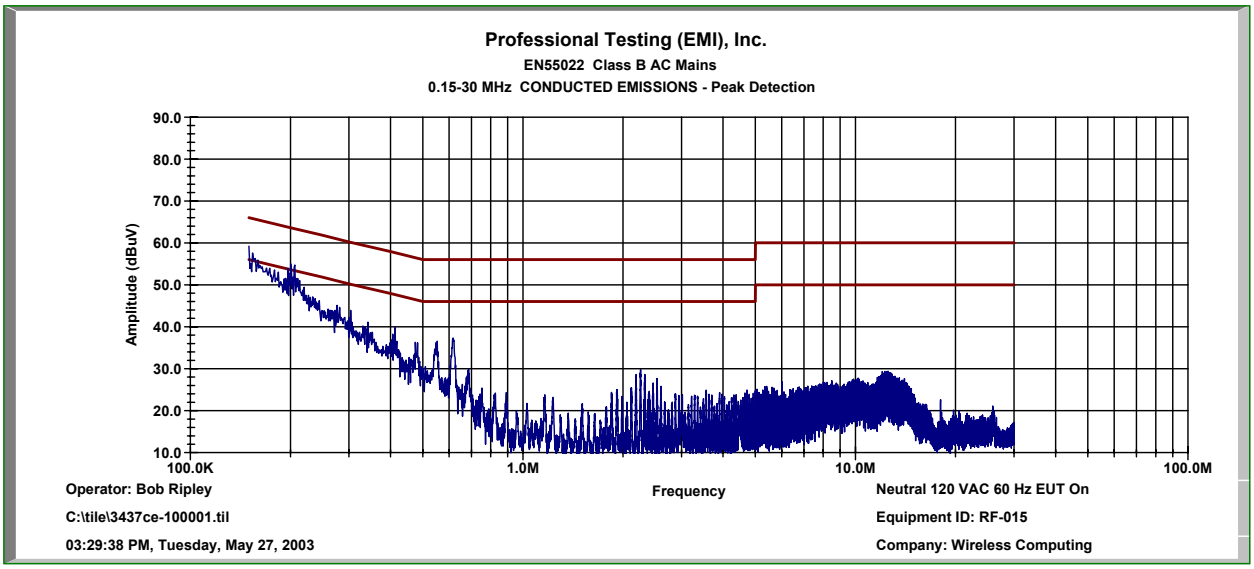


FIGURE 2: Radiated Emissions Test Setup



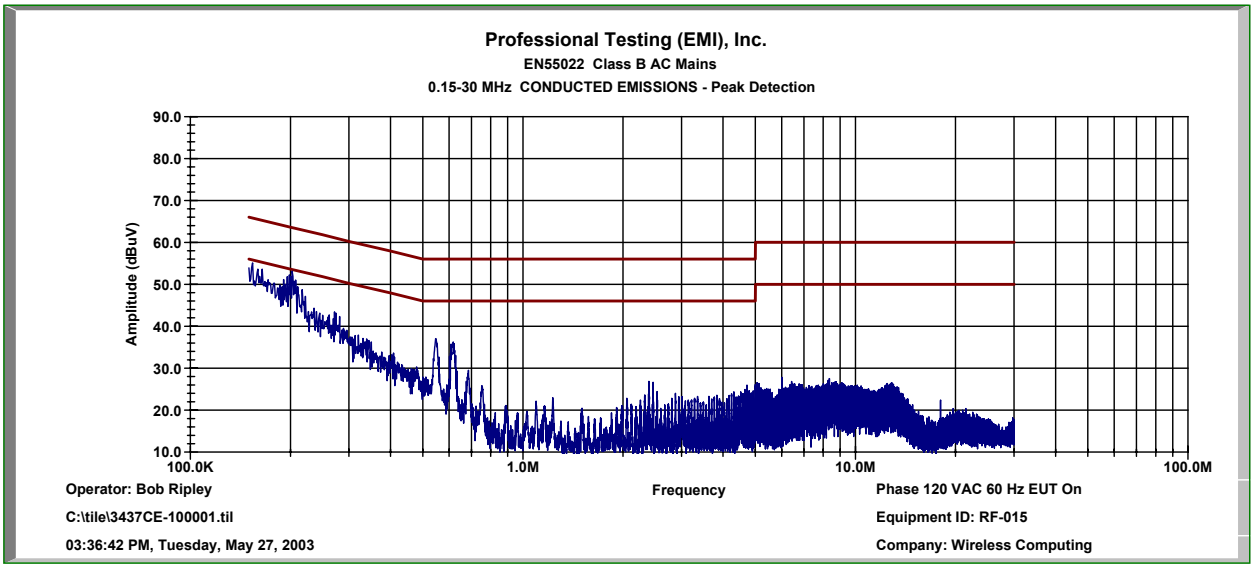
Appendix A Emissions Data Sheets

Conducted Data Sheet
Wireless Computing
RF-015 Compact Receiver



Conducted Data Sheet

FREQ INPUT MHz	READING INPUT dBuV	CORR FACTOR dB	CORR READING dBuV	Limit dBuV	Margin dB	Detector Function
0.15	31.4	0.3	31.7	56	-24.3	Average
0.205	40.1	0.2	40.3	53.4	-13.1	Average



All Peaks below Average limits.

Fundamental Radiated Data Sheet
Wireless Computing
RF-015 Compact Receiver

DATE: May 27, 2003
PROJECT #: 03437-10

DETECTOR FUNCTION: Quasi-Peak
MEASUREMENT DISTANCE (m): 3

Antenna Polarization: Horizontal

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
916.6	0	1	82.6	26.1	25.2	12.0	93.7	94	-0.3

Antenna Polarization: Vertical

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
916.6	270	2	82.1	26.1	25.2	12.0	93.2	94	-0.8

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Comment: Test Type FCC 15.249

Test Engineer: Jason Haley

Harmonics Radiated Data Sheet
Wireless Computing
RF-015 Compact Receiver

DATE: May 8, 2003
PROJECT #: 03437-10

DETECTOR FUNCTION: Average
MEASUREMENT DISTANCE (m): 1

Antenna Polarization: Horizontal

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/M)	Cable Loss (dB)	Corrected Level (dBuV/M)	Limit (dBuV/M)	Margin (dB)
1833	0	1	38.3	22.0	26.7	2.4	45.4	63.5	-18.1
2750	210	1	30.2	21.8	27.3	3.1	38.8	63.5	-24.8
4583	45	1	21	22.1	30.5	4.1	33.5	63.5	-30.0
5500	0	1	22.8	21.9	32.5	4.4	37.8	63.5	-25.7
8667	0	1	14.6	20.2	37.3	5.5	37.2	63.5	-26.3
9167	0	1	13.4	20.2	37.5	5.7	36.3	63.5	-27.2

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Comment: Emission limit over 1 GHz: 500 uV/m

Test Engineer: Jason Haley

Harmonics Radiated Data Sheet
Wireless Computing
RF-015 Compact Receiver

DATE: May 8, 2003
PROJECT #: 03437-10

DETECTOR FUNCTION: Average
MEASUREMENT DISTANCE (m): 1

Antenna Polarization: Vertical

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/M)	Cable Loss (dB)	Corrected Level (dBuV/M)	Limit (dBuV/M)	Margin (dB)
1833	220	1	45.4	22.0	26.7	2.4	52.5	63.5	-11.0
2750	90	1	28.6	21.8	27.3	3.1	37.2	63.5	-26.4
5500	90	1	20.1	21.9	32.5	4.4	35.1	63.5	-28.4
8250	0	1	13.2	20.3	36.4	5.4	34.7	63.5	-28.9
9166	0	1	14.4	20.2	37.5	5.7	37.3	63.5	-26.2

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Comment: Emission limit over 1 GHz: 500 uV/m

Test Engineer: Jason Haley

Spurious Radiated Data Sheet
Wireless Computing
RF-015 Compact Receiver

DATE: May 27, 2003
PROJECT #: 03437-10

DETECTOR FUNCTION: Quasi-Peak
MEASUREMENT DISTANCE (m): 3

Antenna Polarization: Horizontal

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
165.6	200	1	26.7	26.5	14.7	5.5	20.3	43.5	-23.2
232.7	270	1.5	26.2	26.6	13.6	6.3	19.5	46	-26.5
298.8	180	3.2	42	27.0	15.9	6.9	37.8	46	-8.2
691.3	180	1.4	33.2	26.2	24.1	9.3	40.4	46	-5.6

Antenna Polarization: Vertical

Freq. (MHz)	EUT Dir (Deg.)	Antenna Elevation (Meters)	Recorded Level (dBuV)	Amplifier Gain (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Corrected Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
166.2	60	1	35.4	26.5	14.7	5.5	29.1	43.5	-14.4
195.6	0	1	39.7	26.7	17.0	5.5	35.5	43.5	-8.0
232.7	320	1	32.9	26.6	13.6	6.3	26.2	46	-19.8
299.2	170	1	40.4	27.0	15.9	6.9	36.2	46	-9.8
691.2	160	1.2	31.5	26.2	24.1	9.3	38.7	46	-7.3

Corrected Level = Recorded Level - Amplifier Gain + Antenna Factor + Cable Loss

Comment: Spurious Emissions below 1 GHz

Test Engineer: Jason Haley