

Exhibit B: Test Report
Xanboo
XWS50M Motion Detector Transmitter

Project Number: 04447-10

Prepared for:
Xanboo
400 Columbus Avenue
Valhalla, New York 10595

By

Professional Testing (EMI), Inc.
1601 FM 1460, Suite B
Round Rock, Texas 78664

May 2004

CERTIFICATION
Electromagnetic Interference Test Report
Xanboo
XWS50M Motion Detector Transmitter
(Intentional Radiator Portion)

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THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF PROFESSIONAL TESTING (EMI), INC.



Certificate of Compliance

Applicant: Xanboo
Applicant's Address: 400 Columbus Avenue
Valhaua, New York 10595
FCC ID: OU4-XWS50M
Project Number: 04447-10
Test Dates: April 14, 2004, April 15, 2004

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.

The **Xanboo, XWS50M Motion Detector Transmitter** was tested to and found to be in compliance with FCC Part 15 Subpart C for an Intentional Radiator.

The highest emissions generated by the above equipment are listed below:

	<u>Frequency (MHz)</u>	<u>Level (dBμV/m)</u>	<u>Limit (dBμV/m)</u>	<u>Margin (dB)</u>
Fundamental	418	70.3	72.3	-2.0
Occupied Bandwidth	136 (kHz)		1.045 (MHz)	

Jeffrey A. Lenk
President

This report has been reviewed and accepted by Xanboo. The undersigned is responsible for ensuring that **Xanboo, XWS50M Motion Detector Transmitter** will continue to comply with the FCC rules.

1.0 EUT Description

The Equipment under Test (EUT) is the **Xanboo, XWS50M Motion Detector Transmitter**. The **XWS50M Motion Detector Transmitter** is a Passive Infra Red detector compatible with the protocols of the Xanboo system. In normal use the XWS50M would be placed in a semi concealed location with a view of the owners car, gate, front door, etc. When an Infra Red event is detected, th XWS50M transmits it's unique ID code on 418 MHz to the Xanboo system.:

47 CFR 15.231e	Fundamental Transmit Power
47 CFR 15.231e	Occupied Bandwidth
47 CFR 15.203	Antenna Requirement

The system tested consisted of the following:

<u>Manufacturer & Model</u>	<u>Serial #</u>	<u>FCC ID #</u>	<u>Description</u>
Xanboo, XWS50M Motion Detector Transmitter	N/A	OU4-XWS50M	Motion Sensor Transmitter

1.1 EUT Operation

The **Xanboo XWS50M Motion Detector Transmitter** was tested using internal batteries. The frequency of the transmitting television signal is 2470 MHz. This signal is transmitted continuously. The Infrared Motion Sensor Transmitter operating at 418 MHz under normal configuration can only be triggered once per fifteen seconds and transmits a recognition code for 24 milliseconds.

For the purpose of testing, a special mode was used, for most of the testing, allowing the 418 MHz infrared transmitter to transmit continuously.

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.

2.1 Radiated Emissions Measurements

Radiated emission measurements were made of the Fundamental and Spurious Emission levels for the **Xanboo XWS50M Motion Detector Transmitter**. Measurements of the occupied bandwidth were also made for the Infrared Transmitter.

Measurements of the maximum emission levels for the fundamental and the spurious/harmonic emissions of the **Xanboo XWS50M Motion Detector Transmitter** were made at the Professional Testing "Open Field" Site 3, located in , Texas to determine the radio noise radiated from the EUT. 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 polarization of the devices. The fundamental emissions of the device were measured with the antennas of the device in the three orthogonal axes. The on/off switch is activated by raising the antenna to the vertical position.

2.1.1 Test Procedure

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 1 meter from the EUT. The radiated emissions were maximized 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.

2.1.2 Test Criteria

The table below shows FCC Part 15.231e radiated limits for an intentional radiator operating at 418 MHz band. FCC Part 15.231e allows the use of its spurious limit which is higher than the 15.209 limit normally associated with the restricted bands outlined in 15.205. The spurious measurements of the harmonic were performed to the 10th harmonic of the fundamental. The reference distance for each limit is also shown in this table.

<u>Signal Type</u>	<u>Test Distance</u> <u>(Meters)</u>	<u>Field Strength</u>	
		<u>(μV/m)</u>	<u>(dBμV/m)</u>
Fundamental 418 MHz	3	10333.35	80.3
Harmonics (2nd through 10th)	3	1033.335	60.3

Note: Radiated emissions above 1000 MHz were measured at 1 meter and the limit was increased by 9.5 dB.

2.1.3 Test Results

The radiated test data for the fundamental is included in Appendix A. Peak detection was used during the test and the corrected signal level was then averaged to account for the duty cycle of the pulsed transmission of the 418 MHz transmitter. The radiated emission test data for the harmonics 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 generated by the **Xanboo XWS50M Motion Detector Transmitter** are below the FCC Part 15.231e maximum emission criteria.

3.0 Occupied Bandwidth Measurements

Measurements of the occupied bandwidth for the fundamental signals of the FCC Part 15.231e were made at the Professional Testing's Round Rock, Texas site. All measurements were made in a controlled indoor environment in a configuration which did not present measurement distortion or ambient interference.

3.1 Test Procedure

The EUT was placed on a non-conductive table 0.8 meters above the floor. The table was rotated to an angle which presented the highest signal level. The occupied bandwidth was also measured on the device. Peak detection was used for all tests. The occupied bandwidth was based on a 20 dB criteria (20 dB down either side of the emission from the peak emission). A drawing showing the test setup is given as Figure 1.

3.2 Test Criteria

According to FCC Part 15.231e, the bandwidth of the emission shall not be wider than 0.25 % of the center frequency for the devices operating above 70 MHz and below 900 MHz. The limit is 1.045 MHz for the transmitter working at 418 MHz.

Measurement of the occupied bandwidth was performed to verify that the emission bandwidth from the EUT did not exceed 1.045 MHz. The typical occupied bandwidth for the module is 170 kHz.

FCC Part 15.249 deals with frequency bands. No occupied bandwidth criteria is set forth.

3.3 Test Results

The occupied bandwidth test data is included in Appendix B. The occupied bandwidth for the fundamental frequency 418MHz is 136 kHz. The figure is typical for the **XWS50M Motion Detector Transmitter**. This occupied bandwidth complies with the FCC Part 15.231e requirement.

4.0 Antenna Requirement

An analysis of the **Xanboo XWS50M Motion Detector Transmitter** 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.

4.1 Evaluation Procedure

The structure and application of the **Xanboo XWS50M Motion Detector Transmitter** were analyzed with respect to the rules. The antenna for the television transmitter is an external antenna, which is molded as part of the EUT housing and is not accessible to the user. The antenna for the motion sensor transmitter is a wire that is soldered to the PCB and is inside of the EUT housing and is not accessible to the user. An auxiliary antenna port is not present in either case.

4.2 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.

4.3 Evaluation Results

The **XWS50M Motion Detector Transmitter** meets the criteria of this rule by virtue of having an internal antenna not accessible to the user. The EUT is therefore compliant with §15.203.

5.0 Modifications to Equipment

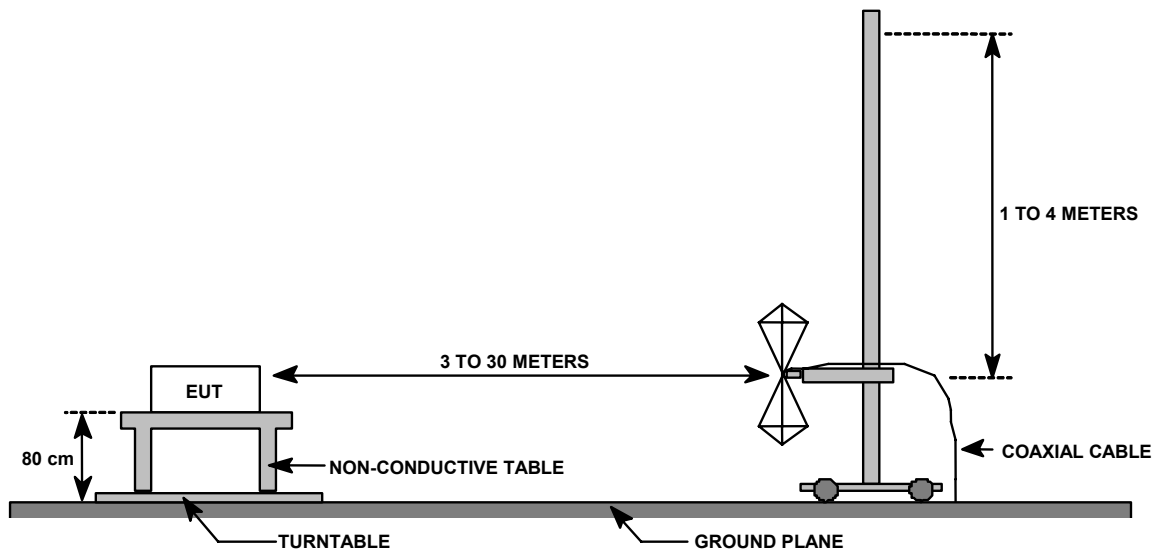
The inductor L4 was reversed.

6.0 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.

<u>Device</u>	<u>Description</u>	<u>Calibration Due</u>
<u>Electromagnetic Emissions Test Equipment</u>		
EMCO 3146	Log Periodic Antenna	December 2004
HP 8447D	Preamplifier	November 2004
HP 8566B	Spectrum Analyzer	November 2004
Cond. EMI Cable	RG-223	November 2004
Tektronix 2706	RF Preselctor	January 2005
MITEQ	8GHz 20dB Preamplifier	June 2004
SOLAR 8012-50-R-24-	LISN	October 2004
EMCO 3115	Ridge Guide Antenna	June 2004
Compliance Design B-100	Biconical Antenna	December 2004

FIGURE 1 Radiated Emissions Test Setup



Radiated Data Sheet
Xanboo
XWS50M Motion Detector Transmitter
Peak Detection

Test Date: April 14, 2004
 Measurement Distance (Meters): 3
 Test Software / Mode: transmit -6dBm

Vertical

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

Freq.	EUT	Antenna	Recorded	Amplifier	Antenna	Cable	Corrected	Limit	Margin
	Dir	Elevation	Level	Gain	Factor	Loss	Level		
(MHz)	(Deg.)	(Meters)	(dBuV)	(dB)	(dB/m)	(dB)	(dBuV/m)	(dBu V/m)	(dB)
418	120	1.5	75.2	27.1	18.7	7.8	74.5	92.3	-17.8
418	90	1	62.6	27.1	18.7	7.8	61.9	92.3	-30.4
Average calculation uses 24mS/100mS = 12.4 dB									
418	120	1.5					62.1	72.3	-10.2
418	90	1					49.5	72.3	-22.8

Horizontal

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

Freq.	EUT	Antenna	Recorded	Amplifier	Antenna	Cable	Corrected	Limit	Margin
	Dir	Elevation	Level	Gain	Factor	Loss	Level		
(MHz)	(Deg.)	(Meters)	(dBuV)	(dB)	(dB/m)	(dB)	(dBuV/m)	(dBu V/m)	(dB)
418	70	1.5	62.7	27.1	18.7	7.8	62.0	72.3	-10.3
418	270	2	71	27.1	18.7	7.8	70.3	72.3	-2.0

TEST ENGINEER: Mike Royer

Vertical Microwave Radiated Data Sheet
Xanboo
XWS50M Motion Detector Transmitter
Peak Detection

Test Date: April 15, 2004

Measurement Distance (Meters): 1

Test Software / Mode: Transmitter

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

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)
1254	270	1	58.9	23.3	24.4	2.0	62.0	74	-12.0
1672	noise	floor	39	23.0	26.0	2.3	44.3	74	-29.7
2090	noise	floor	39	22.7	27.7	2.6	46.6	74	-27.4
2508	noise	floor	39	22.5	28.3	2.9	47.7	74	-26.3
2926	noise	floor	39	22.8	30.3	3.2	49.7	74	-24.3
3344	noise	floor	39	22.9	31.3	3.4	50.8	74	-23.2
3762	noise	floor	39	22.9	32.5	3.7	52.3	74	-21.7
4180	noise	floor	39	23.0	33.4	4.0	53.3	74	-20.7
Average calculation uses 24mS/100mS = 12.4 dB									
1254	270	1					42.0	54	-12.0
1672	noise	floor					24.3	54	-29.7
2090	noise	floor					26.6	54	-27.4
2508	noise	floor					27.7	54	-26.3
2926	noise	floor					29.7	54	-24.3
3344	noise	floor					30.8	54	-23.2
3762	noise	floor					32.3	54	-21.7
4180	noise	floor					33.3	54	-20.7

TEST ENGINEER: Mike Royer

Horizontal Microwave Radiated Data Sheet
Xanboo
XWS50M Motion Detector Transmitter
Peak Detection

Test Date: April 15, 2004

Measurement Distance (Meters): 1

Test Software / Mode: Transmitter

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

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)
1254	270	1	57.6	23.3	24.4	2.0	60.7	74	-13.3
1672	noise	floor	39	23.0	26.0	2.3	44.3	74	-29.7
2090	noise	floor	39	22.7	27.7	2.6	46.6	74	-27.4
2508	noise	floor	39	22.5	28.3	2.9	47.7	74	-26.3
2926	noise	floor	39	22.8	30.3	3.2	49.7	74	-24.3
3344	noise	floor	39	22.9	31.3	3.4	50.8	74	-23.2
3762	noise	floor	39	22.9	32.5	3.7	52.3	74	-21.7
4180	noise	floor	39	23.0	33.4	4.0	53.3	74	-20.7
Average calculation uses 24mS/100mS = 12.4 dB									
1254	270	1					40.7	54	-13.3
1672	noise	floor					24.3	54	-29.7
2090	noise	floor					26.6	54	-27.4
2508	noise	floor					27.7	54	-26.3
2926	noise	floor					29.7	54	-24.3
3344	noise	floor					30.8	54	-23.2
3762	noise	floor					32.3	54	-21.7
4180	noise	floor					33.3	54	-20.7

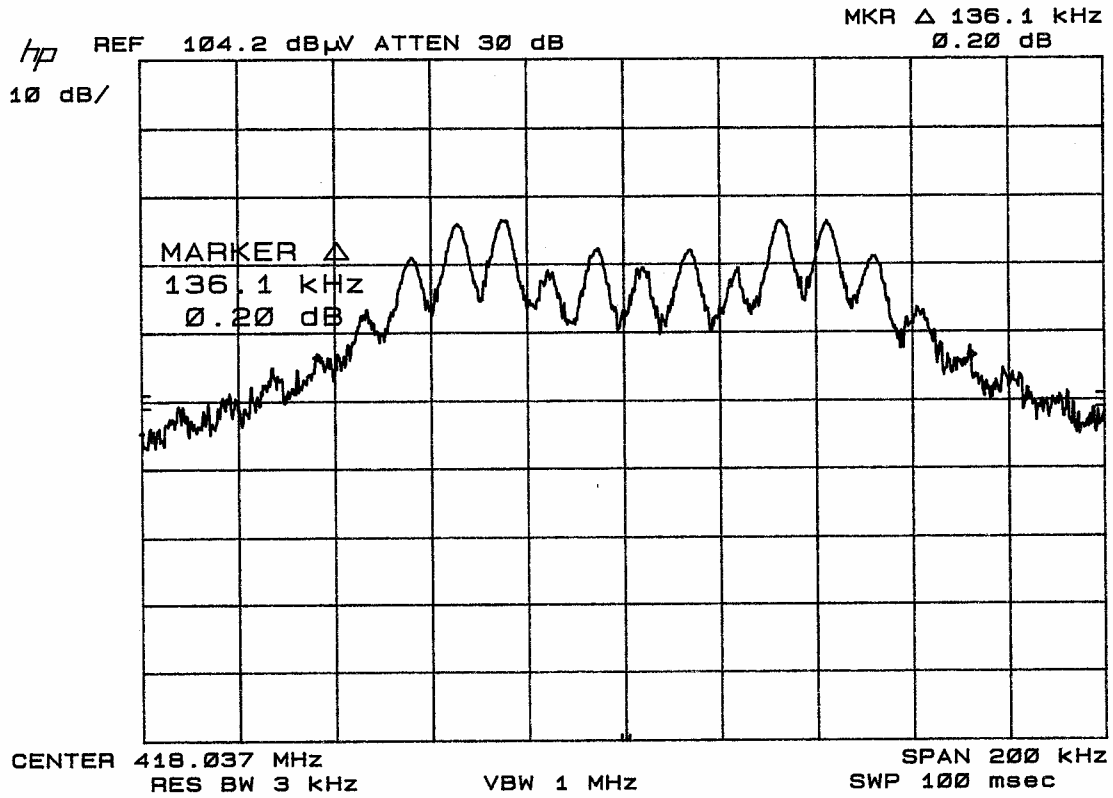
TEST ENGINEER: Mike Royer

Appendix B Occupied Bandwidth Data Sheets

Occupied Bandwidth Datasheet
Xanboo
XWS50M Motion Detector Transmitter

418 MHz Transmitter

4-15-04 Occupied BW motion detector



Occupied Bandwidth Datasheet
Xanboo
XWS50M Motion Detector Transmitter

418 MHz Transmitter

4-15-04 Motion Sensor 24ms on followed by off
Transmitter timing plot

