

Exhibit B: Test Report
Xanboo
Door Sensor XSC501

Project Number: 03194-10

Prepared for:
Xanboo
1626 Vineyard
Grand Praire , TX 75052

By

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

CERTIFICATION
Electromagnetic Interference Test Report
Xanboo
Door Sensor, Model XSC501
(Intentional Radiator)

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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: 1626 Vineyard
Grand Praire, TX 75052
Model: XSC501
FCC ID: OU4-XSC501
Project Number: 03194-10
Test Dates: March 20, 2003

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, Door Sensor, Model XSC501** 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	77.1	80.3	-3.2
Harmonics	1254	55.2	69.8	-14.6
Occupied Bandwidth	166 (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, Door Sensor, Model XSC501** will continue to comply with the FCC rules.

1.0 EUT Description

The Equipment under Test (EUT) is the **Xanboo, Door Sensor, Model XSC501**. The **Door Sensor, Model XSC501** is battery powered and activated when the door is opened and the sensor is separated from a permanent magnet mounted on the door frame. The EUT operates at 418 MHz and is designed for compliance with 47 CFR 15.231 of the FCC rules. Specific test requirements for this device include the following:

47 CFR 15.231	Fundamental Transmit Power
47 CFR 15.231 & 15.205	Spurious Radiated Power
47 CFR 15.231	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, Door Sensor, Model XSC501	N/A	OU4-XSC501	Door Sensor

1.1 EUT Operation

The **Xanboo Door Sensor, Model XSC501** was tested using internal batteries. The frequency of the transmitting signal is 418 MHz. The Transmitter operating at 418 MHz under normal configuration can only be triggered once per fifteen seconds and transmits a recognition code for 52 milliseconds.

For the purpose of testing, a special mode was used, for most of the testing, allowing the Door Sensor 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 Door Sensor, Model XSC501**. Measurements of the occupied bandwidth were also made for the Door Sensor Transmitter.

Measurements of the maximum emission levels for the fundamental and the spurious/harmonic emissions of the **Xanboo Door Sensor, Model XSC501** were made at the Professional Testing "Open Field" Site 3, located in Round Rock, 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 orientation and polarization of the device.

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 1.

2.1.2 Test Criteria

The table below shows FCC Part 15.231 radiated limits for an intentional radiator operating at 418 MHz band. FCC Part 15.231 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 measurements of the harmonics and spurious emissions 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 Door Sensor, Model XSC501** are below the FCC Part 15.231 maximum emission criteria.

3.0 Occupied Bandwidth Measurements

Measurements of the occupied bandwidth for the fundamental signals of the FCC Part 15.231 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 15.231, 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.

3.3 Test Results

The occupied bandwidth test data is included in Appendix B. The occupied bandwidth for the fundamental frequency 418MHz is 166 kHz. The figure is typical for the **Door Sensor, Model XSC501**. This occupied bandwidth complies with the FCC Part 15.231 requirement.

4.0 Antenna Requirement

An analysis of the **Xanboo Door Sensor, Model XSC501** 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 Door Sensor, Model XSC501** were analyzed with respect to the rules. The antenna for the door sensor transmitter is a wire that is soldered to the PCB and protrudes through the plastic case for several inches. 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 **Door Sensor, Model XSC501** meets the criteria of this rule by virtue of having an external antenna permanently attached to the unit . The EUT is therefore compliant with §15.203.

5.0 Modifications to Equipment

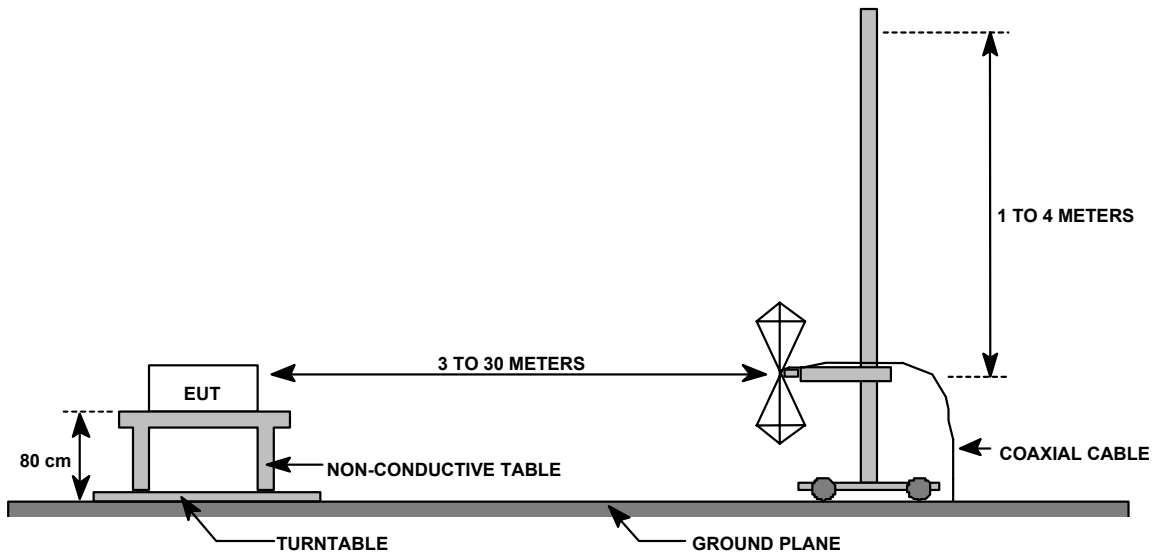
There were no modifications made on the **Door Sensor, Model XSC501** during the performance of the test program in order to meet the FCC criteria.

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</u>		
<u>Test Equipment</u>		
EMCO 3146	Log Periodic Antenna	November 2004
HP 85662A	Display unit	November 2004
HP 85662B	Spectrum Analyzer	November 2004
HP 8447D	Preamplifier	November 2004
HP 8566B	Spectrum Analyzer	November 2004
Tektronix 2706	RF Preselctor	January 2005
MITEQ	18GHz 20dB Preamplifier	December 2004

FIGURE 1: Radiated Emissions Test Setup



**Average Radiated Data Sheet
Fundamental and Harmonics
Xanboo
Door Sensor, Model XSC501**

DATE: March 20, 2003
PROJECT: 03194-10

Detector Function: < 1 GHz = Peak
Detector Function: > 1 GHz = RBW 1 MHz
VBW = 10 KHz

Antenna Horizontal

Freq. (MHz)	EUT Orientation	EUT Dir (Deg.)	Antenna Elevation (Meters)	Test Distance (Meters)	Peak Corr Level (dBuV/m)	Averaging Factor (dB)	Average Corr Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
418	Vertical	80	2.1	3.0	79.6	-11.7	67.9	80.3	-12.4
836	Vertical	45	1.8	3.0	51.4	-11.7	39.7	60.3	-20.6
1254	Vertical	220	1	1.0	58.4	-11.7	46.7	69.8	-23.1
1672	Vertical	120	1	1.0	50.9	-11.7	39.2	69.8	-30.6
2090	Vertical	350	1	1.0	42.7	-11.7	31.0	69.8	-38.8
2508	Vertical	Noise	Floor	1.0	40.8	0.0	40.8	69.8	-29.0
2926	Vertical	Noise	Floor	1.0	41.7	0.0	41.7	69.8	-28.1
3344	Vertical	Noise	Floor	1.0	42.1	0.0	42.1	69.8	-27.7
3762	Vertical	30	1	1.0	49.5	-11.7	37.8	69.8	-32.0
4180	Vertical	10	1	1.0	46.7	-11.7	35.0	69.8	-34.8

Average Corrected Level = Peak Corrected Level + Averaging Factor

*Averaging Factor = 20 * Log (.5 X 52ms / (100 ms)) which in this case = -11.7 dB*

Comment: Measurements below 1 GHz were made at 3m. Measurements taken above 1 GHz were made at 1m separation distance.

The emissions recorded are the worst case result of measurements in the three orthogonal axes.

TEST ENGINEER: Bob Ripley

**Average Radiated Data Sheet
Fundamental and Harmonics
Xanboo
Door Sensor, Model XSC501**

DATE: March 20, 2003
PROJECT: 03194-10

Detector Function: < 1 GHz = Peak
Detector Function: > 1 GHz = RBW 1 MHz
VBW = 10 KHz

Antenna Vertical

Freq. (MHz)	EUT Orientation	EUT Dir (Deg.)	Antenna Elevation (Meters)	Test Distance Meters	Peak Corr Level (dBuV/m)	Averaging Factor (dB)	Average Corr Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
418	Vertical	65	1	3.0	88.8	-11.7	77.1	80.3	-3.2
836	Vertical	60	1.6	3.0	41.2	-11.7	29.5	60.3	-30.8
1254	Vertical	0	1	1.0	66.9	-11.7	55.2	69.8	-14.6
1672	Vertical	0	1	1.0	53.1	-11.7	41.4	69.8	-28.4
2090	Vertical	270	1	1.0	40.9	-11.7	29.2	69.8	-40.6
2508	Vertical	0	1	1.0	43.3	-11.7	31.6	69.8	-38.2
2926	Vertical	Noise	Floor	1.0	42.2	0.0	42.2	69.8	-27.6
3344	Vertical	Noise	Floor	1.0	42.1	0.0	42.1	69.8	-27.7
3762	Vertical	220	1	1.0	48.5	-11.7	36.8	69.8	-33.0
4180	Vertical	Noise	Floor	1.0	44.5	0.0	44.5	69.8	-25.3

Average Corrected Level = Peak Corrected Level + Averaging Factor

*Averaging Factor = 20 * Log (.5 X 52ms / (100 ms)) which in this case = -11.7 dB*

Comment: Measurements below 1 GHz were made at 3m. Measurements taken above 1 GHz were made at 1m separation distance.

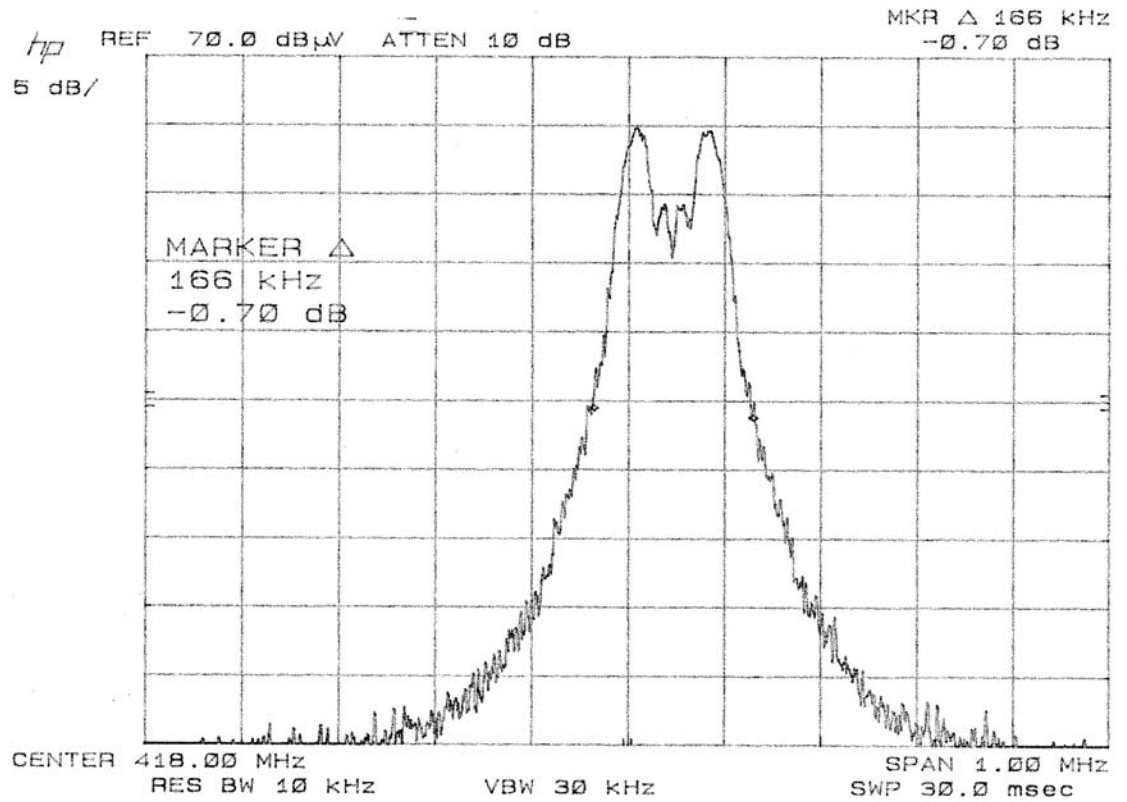
The emissions recorded are the worst case result of measurements in the three orthogonal axes.

TEST ENGINEER: Bob Ripley

Appendix B Occupied Bandwidth Data Sheets

Occupied Bandwidth Datasheet
Xanboo
Door Sensor, Model XSC501

418 MHz Trasmmitter



Transmitter Timing Measurement
Xanboo
Door Sensor, Model XSC501

