DIVERSIFIED
T.E.S.T.
TECHNOLOGIES, INC.
4675 Burr Drive ● Liverpool, NY 13088 ● 1-800-724-6452 ● FAX: 315-457-0428 ● 315-457-0245

March 23, 2011

James Curry
Xpresense LLC
7528 Tynewind Drive
Wake Forest, NC 27587

Dear Mr. Curry**:**

Enclosed is the test report for the **Xpresense LLC** WAG Ring WAGWR1 tested at our facility, located at 4675 Burr Drive in Liverpool, NY. This facility is on file with the Federal Communications Commission (FCC) per 47 CFR 2.948 (Site File Number 31040/SIT).

We have completed our testing of Radiated to the FCC per 47 CFR Part 15.249 Class C for intentional radiators.

Thank you for selecting Diversified T.E.S.T. Technologies, Inc. for your testing needs. We look forward to working with you on future projects. Should you have any questions or concerns regarding this report, contact me at 315-457-0245. Please feel free to visit our website at www.dttlab.com.

Sincerely,

Michael McElroy
Technical Associate

Test Report – Table of Contents

Test Information - Section 1

Laboratory
Diversified TEST Technologies, Inc.
4675 Burr Drive
Liverpool, NY 13088
315-457-0245

Manufacturer
Xpresense LLC
7528 Tynewind Drive
Wake Forest, NC 27587

Report Issue Date: April 14, 2011
Report Number: 6284-041411 (Edition 3) FCCC
Project Number: 6284

Date Received: March 17, 2011
Date Tested: March 17, 2011 - March 18, 2011

Product: WAG Ring
Model: WAGWR1
FCC ID: UBDWR1

Traceability: *Reference standards of measurement have been calibrated by a competent body using standards traceable to NIST.*

The testing performed by Diversified TEST Technologies, Inc. has shown that the product referenced above complies with the electromagnetic compatibility requirements according to the FCC per 47 CFR Part 15.249. The results in this test report apply only to the WAG Ring WAGWR1.

It is the responsibility of the manufacturer to ensure that the product identification and labeling are in compliance with the applicable standards requirements. The manufacturer is also responsible for ensuring that additional units are manufactured with identical mechanical and electrical characteristics.

The equipment listed above conforms to the specified requirements of the test standards listed in the Test Regulations section of this report.

Complied by:
Signature: _____ Date: April 14, 2011
Michael McElroy
Technical Associate

Reviewed by:
Signature: _____ Date: April 14, 2011
Steven Frierson
Technical Lab Manager

Authorized by:
Signature: _____ Date: April 14, 2011
Tom Sims
President

Test Regulations- Section 2

The tests were performed according to the following standards:

☐ EN 55011:2007 / A1:2004 / A2:2007 Industrial, Scientific and Medical (ISM) ra0 dio-frequency equipment – Electromagnetic disturbance characteristics - Limits and methods of measurement	☐ Group 1 ☐ Class A	☐ Group 2 ☐ Class B
☐ EN 55022:2006 Information Technology Equipment (ITE) – Radio disturbance characteristics - Limits and methods of measurement	☐ Class A	☐ Class B
☒ FCC Part 15.249	☐ Class A	☒ Class C
☐ FCC Part 18	☐ Class A	☐ Class B
☐ EN 61000-6-1:2007 Electromagnetic compatibility (EMC) - Generic standards – Immunity for residential, commercial and light-industrial environments ☐ EN 61000-6-2:2005 Electromagnetic compatibility (EMC) - Generic standards – Immunity for industrial environments	☐ EN 61000-4-2 ☐ EN 61000-4-3 ☐ EN 61000-4-4 ☐ EN 61000-4-5 ☐ EN 61000-4-6 ☐ EN 61000-4-8 ☐ EN 61000-4-11 ☐ EN 61000-3-2 ☐ EN 61000-3-3	

☒Certification
☐Verification

Equipment Under Test (EUT) Testing Operation Mode Section 3

The EUT was operated under the following conditions during testing:

☐ Standby

☒ Normal Operating Mode

☐ Practice Operation

Description / Configuration of the EUT:

The WAGWR1 is a 2.4GHz transmitter. It senses capacitance on finger position changed then encodes data and transmits to the WAGRX1 receiver.

The EUT was powered with a 3.6 V battery during the collection of data included within this report.

Rationale for EUT setup / configuration:

ANSI C63.4 (2003) / FCC Part 15.249

Modifications:

None

Technical Contact:

Lyn Williams
MTS Communication Products
950 NC Hwy 42 West
Clayton, NC 27520

Test Setup Photographs - Section 4

1.1 Spurious Emissions / Occupied Bandwidth / Power Output

Emissions Testing Conditions - Section 5
Radiated Emissions

The Radiated Emissions measurements, in the frequency range of 1000 MHz – 12500 MHz, were tested in a horizontal and vertical polarization at the following test location:

☒ Diversified TEST Technologies, Inc. Open Area Test Site
☐ Diversified TEST Technologies, Inc. Lab

at a test distance of:

☒ 3 meters
☐ 10 meters
☐ 30 meters

DTT uses automated data reductions to determine product compliance to Radiated Emissions regulations. The product's signal data is compared to a current ambient scan. The frequencies that are of significant amplitude are sorted and are brought out to be further analyzed and maximized.

Test equipment used:

Manufacturer	Model	Description	Serial #	Last Cal	Cal Due
Hewlett Packard	8593EM	Spectrum Analyzer	3536A00139	8/10/10	8/10/11
Electro-Metrics	RGA60	Ridge Horn Antenna	2981	8/4/10	8/4/11
Hewlett Packard	7550A	Plotter	2407A00476	N/A	N/A
	MFR-57500	Blue low-loss transmit cable	337	N/A	N/A
Sonoma Instruments	305-1052	Broadband Pre-Amplifier	193202	5/14/10	5/14/11
		Non-conductive wooden turntable		N/A	N/A
		10-meter open field test range, grounded with 1/4” x 1/4” hardware cloth		N/A	N/A

Measurement Parameters - Section 6

Measurement Procedure

Test Measurements were made in accordance to FCC Part 15.249, IC RSS-210 Annex II: Operation within the bands 902 – 928 MHz, 2400 – 2483.5 MHz, 5725 – 5875 MHz, and 24.0 – 24.25 GHz.

The test methods used to generate the data in this test report is in accordance with ANSI C63.4: 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz.

The equipment under test was testing in a tabletop orientation. Rotating the device was not required in accordance with ANSI C63.4:2003, section 13.1.4.1, c).

Choice of Operating Frequencies

The Xpresense Wag Ring WAGWR1 employs 4 channels in the 2405 MHz to 2465 MHz range. In accordance with ANSI C63.4, Section 13.1.1, three channels are detailed in this test report.

Low Channel - Channel 11: 2405 MHz
Middle Channel – Channel 19: 2445 MHz
High Channel – Channel 23: 2465 MHz

Measurement Summary - Section 7

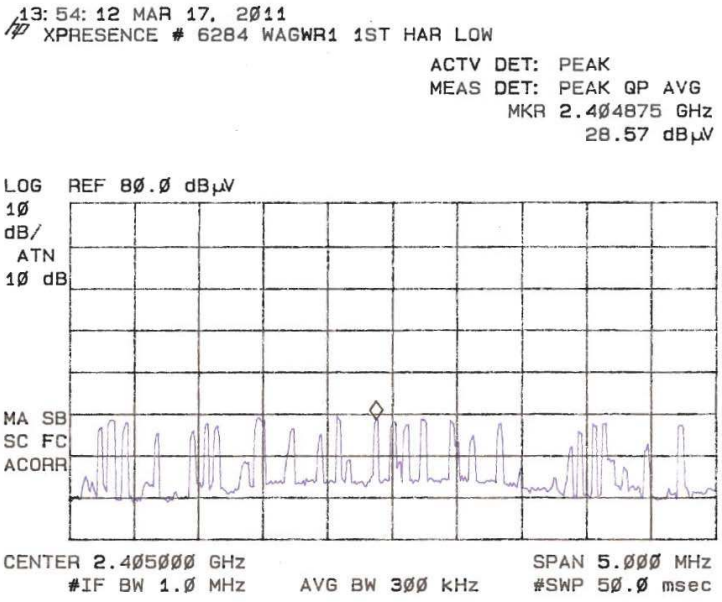
Test Requirement	FCC Requirement	Test Section	Result
Radiated Field Strength of the Fundamental	15.249 (a), (c)	8.1.0, 8.1.1, 8.1.2, and 8.1.3	Pass
Radiated Field Strength of Harmonics	15.249 (a), (c)	8.2.1, 8.2.2, and 8.2.3	Pass
Band Edge Measurements	15.249 (d) 15.209	8.4.1, and 8.4.2	Pass
Occupied Bandwidth	ANSI C63.4 Section 13.1.7	8.3.0, 8.3.1, and 8.3.2	Pass

Measurement Data – Section 8

8.1.0 - Radiated Field Strength of Fundamental Table

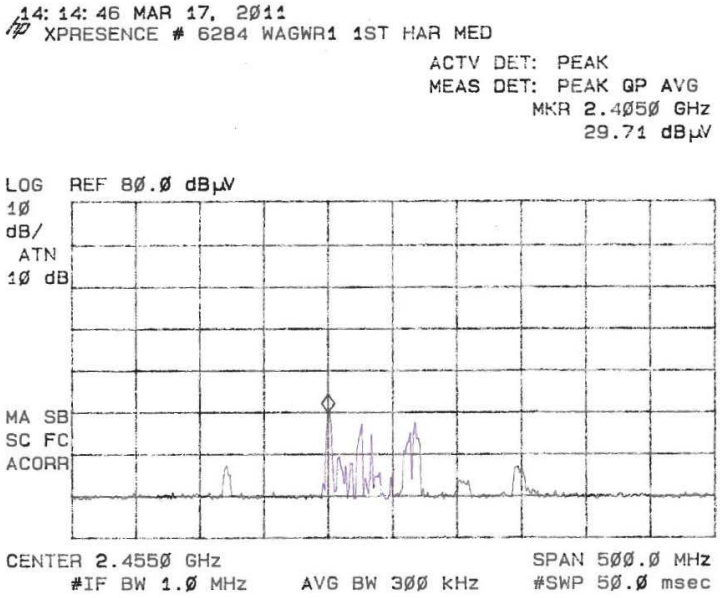
FCC Part 15.231 Transmitter Test												
						MTS Communications						
Measured Field Strength (dBµV)	Res. Bandwidth (Khz)	DUT Frequency (Mhz)	Measured Frequency (Mhz)	Calculated Field Strength (dBm)	Cable Factor (dB)	Amplifier Gain (dB)	Measurement Distance (Meters)	Duty Cycle Correction (dB)	FCC Limit (uV/M)	Corrected Field Strength (uV/M)	Delta Limit (dB)	Polarity
57.77	1000	2405	2405	-49.23	2.0	26	3	2.8	11872.5	67.38	-44.92	H
58.91	1000	2455	2455	-48.09	2.0	25.97	3	2.8	11872.5	77.09	-43.75	H
57.75	1000	2465	2465	-49.25	2.0	25.97	3	2.8	11872.5	67.45	-44.91	H
	*Antenna factors are pre-calculated into Measured Field Strength (dBµV)											
Unit Under Test:		WAGWR1			17-Mar-11		UBDWR1					

8.1.1 - Radiated Field Strength of Fundamental – Low Channel

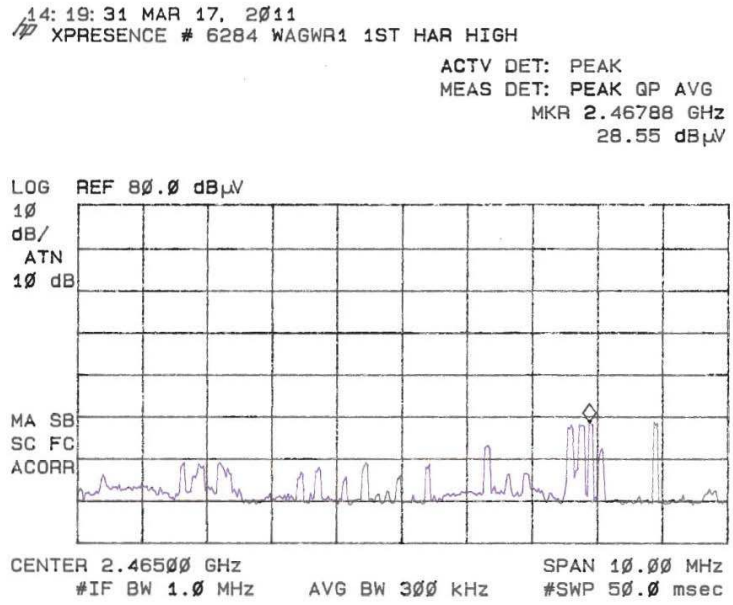


Measurement Data (Continued) - Section 8

8.1.2 - Radiated Field Strength of Fundamental – Middle Channel



8.1.3 - Radiated Field Strength of Fundamental- High Channel



Measurement Data (Continued) – Section 8

Spurious Radiated Emissions of EUT's Fundamental frequency to EUT's 10th Harmonic (15.249, Section (d))

Requirement: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in Section 15.209, whichever is the lesser of the attenuation.

Test Note: The spurious emissions detailed in this section represent the combined worst case emissions of the low, middle, and high operating frequencies.

Regulatory Limit: FCC Part 209, Quasi-Peak

Frequency Range (MHz)	Distance (Meters)	Limit (dBuV/m)
30 to 88	3	40
88 to 216	3	43.5
216 to 960	3	46
Above 960	3	54

Spurious Radiated Emissions, 1000 MHz to EUT 10th Harmonic (15.249, Section (d)),

There were no measureable emissions above 1 GHz except the Harmonic emissions detailed in Section 8.2 of this test report.

Measurement Data (Continued) – Section 8

8.2.1 - Radiated Field Strength of Harmonics
Low Frequency *

Frequency (MHz)	Measured Field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Ant Pol (H or V)	Antenna Height (m)
2405	33.77	54	-20.23	H	1
4810	20.15	54	-33.85	H	1
7215	20.7	54	-33.3	H	1
9620	23.03	54	-30.97	H	1
12025	23.73	54	-30.27	H	1

8.2.2 - Radiated Field Strength of Harmonics
Middle Frequency *

Frequency (MHz)	Measured Field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Ant Pol (H or V)	Antenna Height (m)
2445	34.91	54	-19.09	H	1
4890	20.12	54	-33.88	H	1
7335	22.7	54	-31.3	H	1
9780	23.65	54	-30.35	H	1
12225	23.8	54	-30.2	H	1

8.2.3 - Radiated Field Strength of Harmonics
High Frequency *

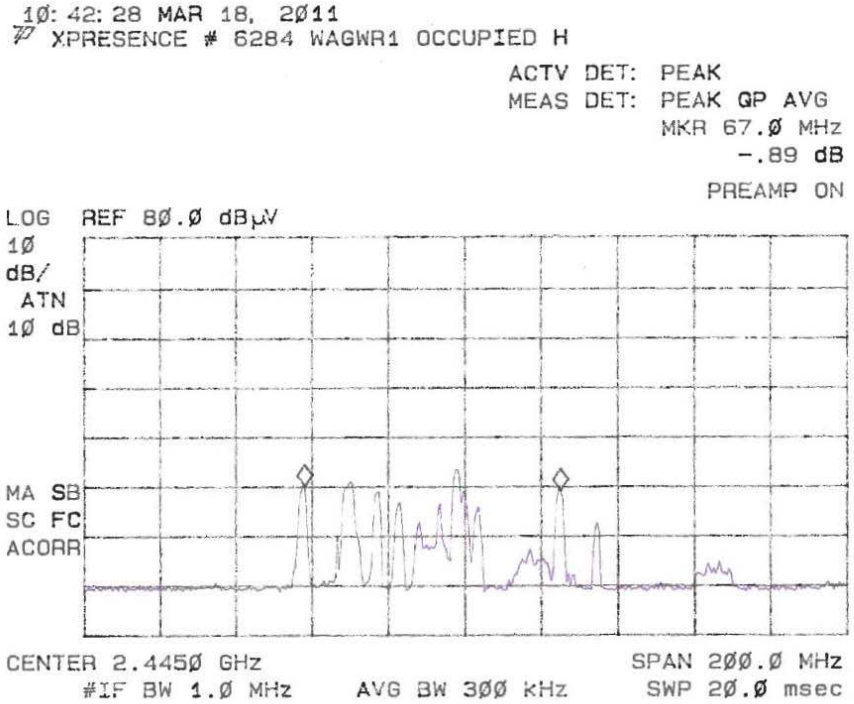
Frequency (MHz)	Measured Field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Ant Pol (H or V)	Antenna Height (m)
2465	33.75	54	-20.25	H	1
4930	20.13	54	-33.87	H	1
7395	22.27	54	-31.73	H	1
9860	23.7	54	-30.3	H	1
12325	22.85	54	-31.15	H	1

-Antenna factors, cable loss, and amplifier gain are pre calculated into the measured field strength.
* There were no measureable harmonic emissions of the fundamental beyond the 5th harmonic.

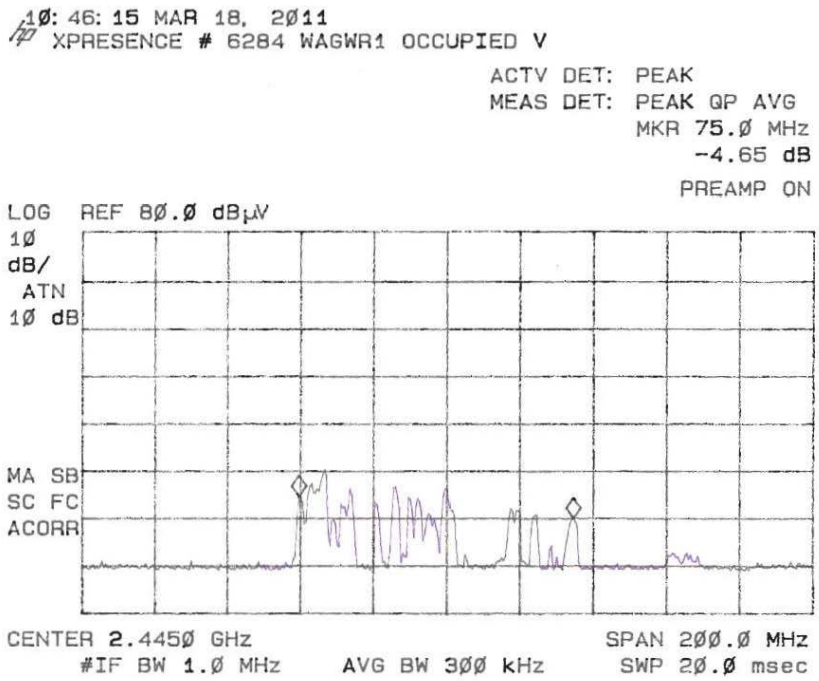
Measurement Data (Continued) – Section 8

8.3.1 - Band Edge Measurements

Band Edge Measurements- Lower Band Edge



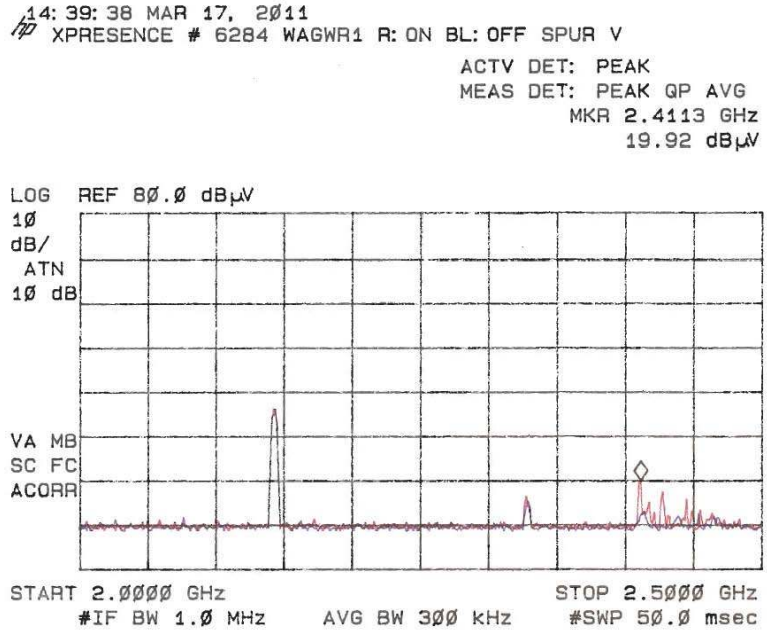
8.3.2 - Band Edge Measurements- Upper Band Edge



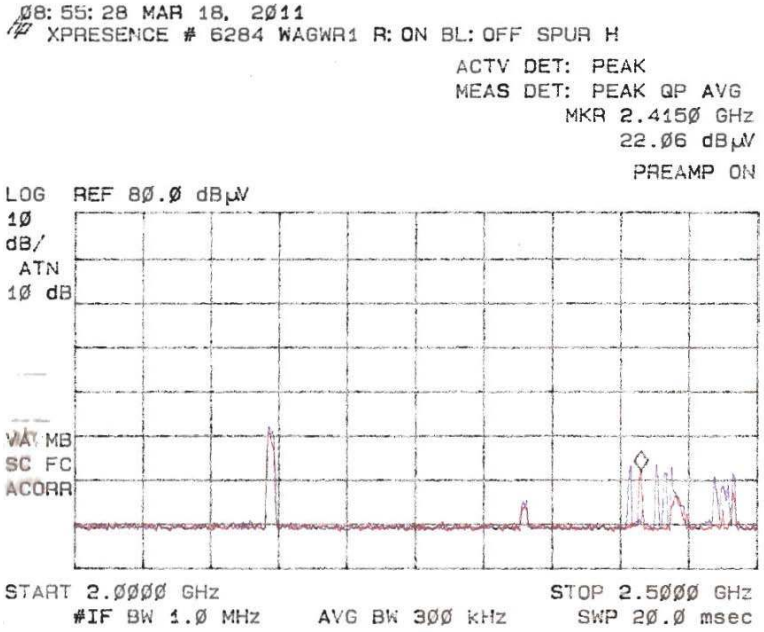
Measurement Data-Continued
Band Edge Measurement

FCC Part 15.249 (d) Emissions radiated outside the specified frequency bands, except for harmonics shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in section 15.209, whichever is the lesser attenuation

8.4.1 - Band Edge Compliance: 2310MHz – 2390 MHz Restricted Band, Low Channel (See table 1 below)



8.4.2 - Band Edge : 2483.5 MHz – 2500 MHz Restricted Band High Channel (See table 2 below)



Measurement Data - Continued

8.4.3 Table 1 Band Edge Compliance: 2310MHz – 2390 MHz Restricted Band, Low Channel

Frequency (MHz)	Measured Field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Ant Pol (H or V)	Antenna Height (m)
2310-2390	15.4	54	-38.6	H	1

8.4.4 Table 2 Band Edge : 2483.5 MHz – 2500 MHz Restricted Band High Channel

Frequency (MHz)	Measured Field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)	Ant Pol (H or V)	Antenna Height (m)
2483.5-2500	15.7	54	-38.3	V	1

-Antenna factors, cable loss, and amplifier gain are pre-calculated into the measured field strength table.

Certificate of Conformity

Diversified T.E.S.T. Technologies, Inc. has tested the product to the current appropriate standards and finds that the product is in compliance with those requirements.

Rules and Regulations:

-United States 47 Code of Federal Regulations Part 15.249 – Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

Standards:

ANSI C63.4-2003, Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical Equipment in the Range of 9kHz to 40GHz.

Section 11.0 Measurement of Information Technology Equipment (ITE)

Manufacturer's Name:	**Xpresense LLC**
Manufacturer's Address:	7528 Tynewind Drive Wake Forest, NC 27587
Product:	WAG Receiver
Model Number:	WAGRX1
FCC ID:	**UDBWR1**

This Certificate of Compliance issued March 23, 2011 is valid for the test sample of the product specified above and that it conforms to the Directive(s) and Standard(s).

Signature: Annelle Frierson

Annelle Frierson
Vice President
Diversified T.E.S.T. Technologies, Inc.
4675 Burr Drive
Liverpool, NY 13088
Phone: 315-457-0245
Fax: 315-457-0428