EMISSION TEST REPORT

Report Number: 100216049BOX-006c
Project Number: G100216049

Report Issue Date: 11/29/2010

Product Designation: **Igeacare Wireless Pullcord**

Standards: **RSS-210 Issue 7 June 2007 Annex A1.1**
RSS-GEN Issue 2 June 2007
ICES 003:1997, Class B

Tested by:
Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719

Client:
IGEACare Solutions Inc
163 Rivalda Road
North York M9M 2M7

Report prepared by

Vathana F. Ven, Senior Project Engineer

Report reviewed by

Michael F. Murphy/EMC Staff Engineer

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 3.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	
4	Description of Equipment Under Test	
5	System Setup and Method	
6	A1.1.2 – Fundamental Field Strength	Pass
7	A1.1.2 – Harmonics and Spurious Field Strength	Pass
8	A1.1.3 – 20 dB Bandwidth	Pass
9	A1.1.1 – 5 Seconds Off	Pass
10	Revision History	

3 Client Information

This EUT was tested at the request of:

Company: IGEACare Solutions Inc
163 Rivalda Road
North York M9M 2M7

Contact: Mike Mahoney
Telephone: (416) 745-4608 ext. 251
Fax: N/A
Email: mmahoney@igeacare.com

4 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Igeacare Wireless Pullcord	IGEACare Solutions Inc	4001150	B4

Receive Date:	09/27/2010
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)
The EUT is a transmitter. It runs on 3VDC battery.

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
3 VDC	N/A	N/A	N/A

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	The EUT was programmed to transmit continuously.
2	

5 System Setup and Method

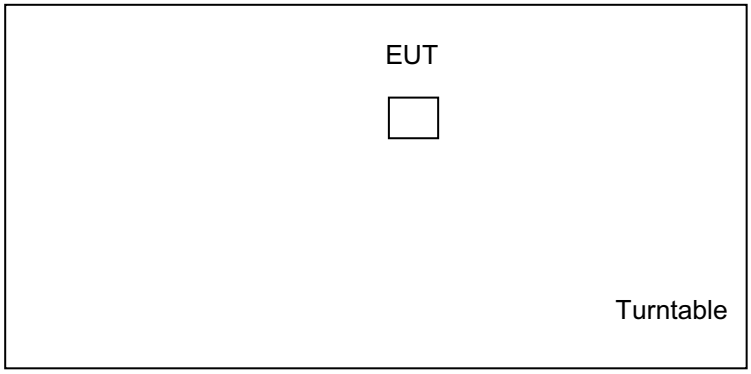
Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
	None				

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
None			

5.1 Method:

Configuration as required by Section A1.1.1 to A1.1.3 of Standard taking Precedence.

5.2 EUT Block Diagram:



6 Fundamental Field Strength

6.1 Method

Tests are performed in accordance with RSS-210 Annex A1.1.2.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < U_{CISPR} (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG
Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV
AF = 7.4 dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dBμV/m

To convert from dBμV to μV or mV the following was used:

$UF = 10^{(NF / 20)}$ where UF = Net Reading in μV
NF = Net Reading in dBμV

Example:

FS = RA + AF + CF – AG = 52.0 + 7.4 + 1.6 – 29.0 = 32.0
$UF = 10^{(32\ dB\mu V / 20)}$ = 39.8 μV/m

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
145 106	Bilog Antenna	Sunol Sciences	JB5	A111003	07/20/2010	07/20/2011
145 003	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	09/16/2010	09/16/2011
145 128	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESI	837771/027	08/10/2010	08/10/2011
145-410	Cables 145-400 145-406 145-407 145-405 145-403	Huber + Suhner	10m Track A Cables	multiple	08/31/2010	08/31/2011
DAV 003	Weather Station	Davis Instruments	7400	PE80529A39 A	06/11/2010	06/11/2011
145-416	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	08/31/2011
HORN3	HORN ANTENNA	EMCO	3115	9610-4980	03/22/2010	03/22/2011

Software Utilized:

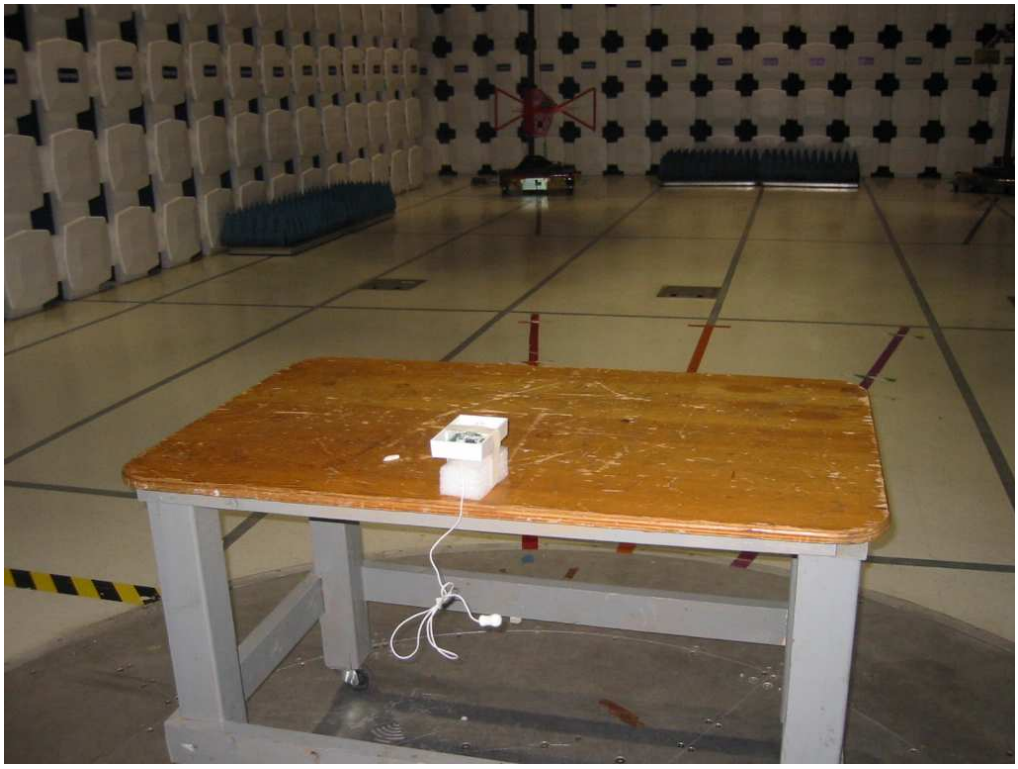
Name	Manufacturer	Version
Excel 2003	Microsoft	(11.8231.8221) SP3
EMI Boxborough.xls	Intertek	4/17/09

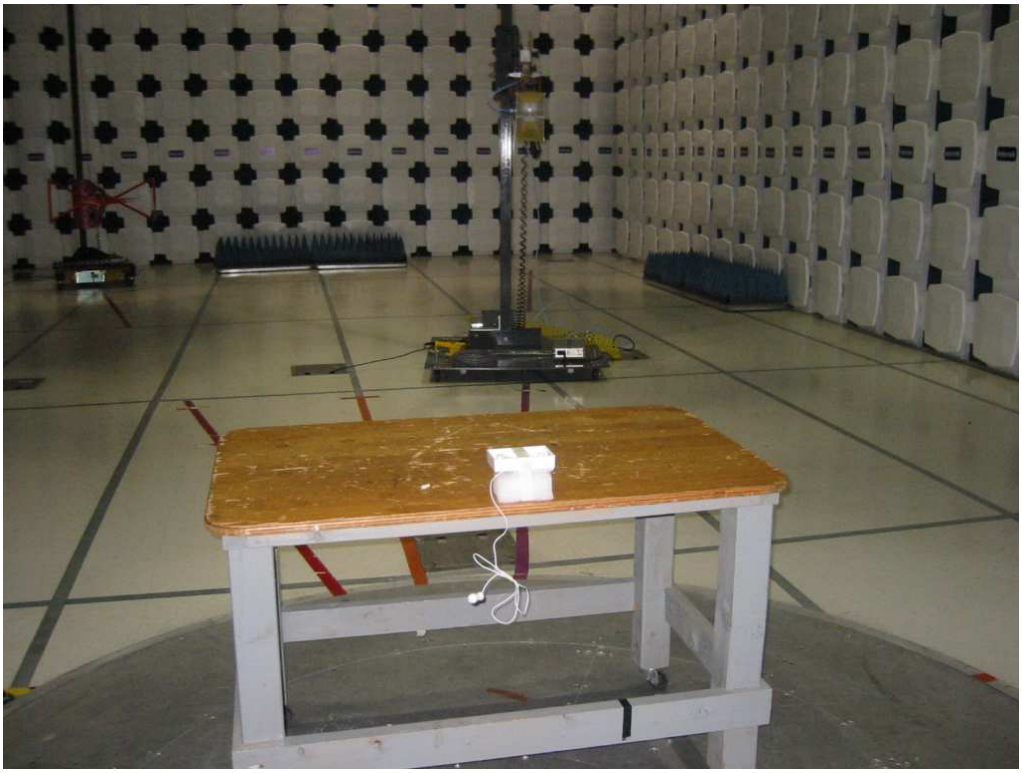
Note: Your Laptop may use a different version of Excel. Record the version you actually used!

6.3 Results:

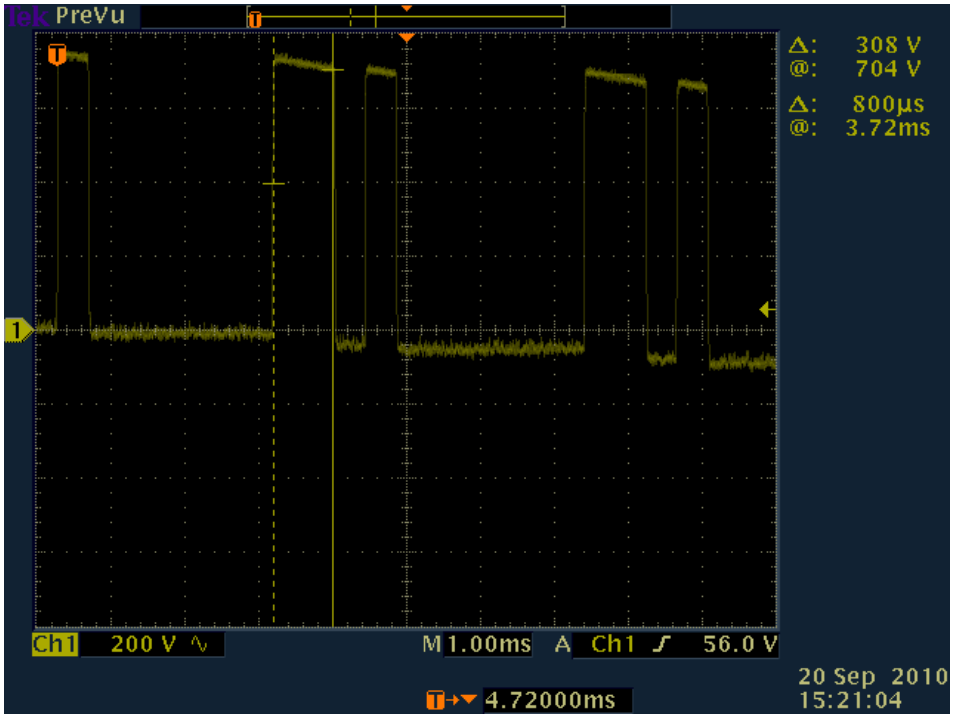
The sample tested was found to Comply.

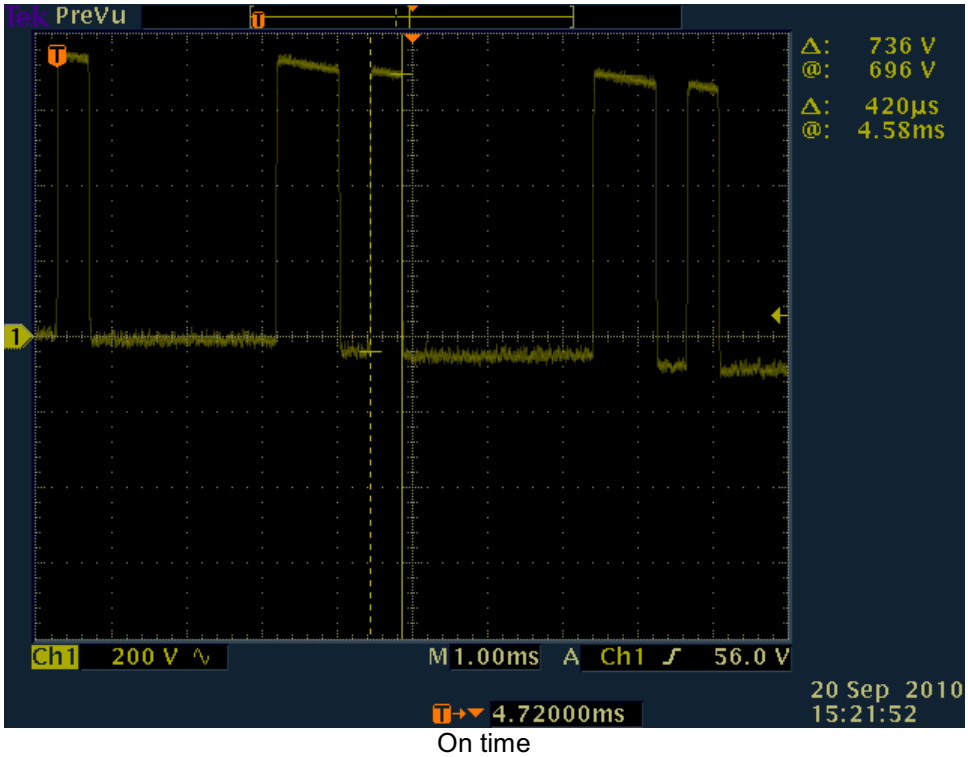
6.4 Setup Photographs:





6.5 Plots and data:





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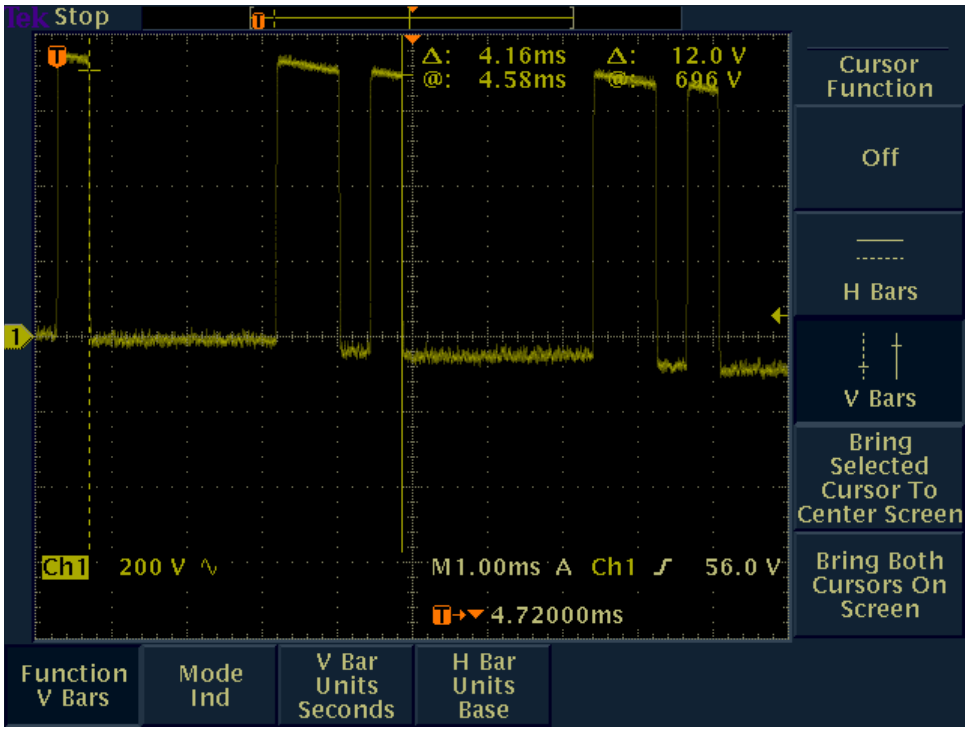

Period

Average factor = 20*LOG ((0.420+0.800)/4.16) = 10.7 dB

Radiated Emissions

Company: IGEACare Solutions Inc
Model #: 4001150
Serial #: B4
Engineers: Vathana Ven
Project #: G100216049
Standard: RSS-210, ICES 003
Receiver: R&S ESI (145-128) 07-29-2011
PreAmp: 10mPreamplifier 145-003 09-16-2010.txt

Location: 10M
Date(s): 09/29/10
Limit Distance (m): 3
Test Distance (m): 10

Antenna & Cables: N
Antenna: 145-106 10M VER 07-20-11.txt
Cable(s): 10mTrackA 145-410 08-31-2011.txt
Barometer: DAV003

Bands: N, LF, HF, SHF
145-106 10M HOR 07-20-11.txt
NONE.
Filter: NONE
Temp/Humidity/Pressure: 22 deg. C 54% 1014 mB

PreAmp Used? (Y or N): Y
Voltage/Frequency: 3VDC battery
Frequency Range: 433.92MHz, 30-1000 MHz

Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	Harmonic?
PK	H	433.928	74.14	16.58	3.54	28.10	0.24	65.91	80.80	-14.89	120/300 kHz			

Average factor = 20*LOG ((0.420+0.800)/4.16) = -10.7 dB, average factors were applied to Peak readings to get Net readings

Test Personnel:	Vathana Ven	Test Date:	09/29/2010
Product Standard:	RSS-210	Test Levels:	Below specified limits
Input Voltage:	3VDC		
Pretest Verification w/ BB Source:	**No**	Ambient Temperature:	22 ºC
		Relative Humidity:	54 %
		Atmospheric Pressure:	1014 mbars

Deviations, Additions, or Exclusions: None

7 Harmonics and Spurious Field Strength

7.1 Method

Tests are performed in accordance with RSS-210 Annex A1.1.2.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

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7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
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145 003	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	09/16/2010	09/16/2011
145 128	EMI Test Receiver (20Hz - 40GHz)	Rohde & Schwarz	ESI	837771/027	08/10/2010	08/10/2011
145-410	Cables 145-400 145-406 145-407 145-405 145-403	Huber + Suhner	10m Track A Cables	multiple	08/31/2010	08/31/2011
DAV 003	Weather Station	Davis Instruments	7400	PE80529A39 A	06/11/2010	06/11/2011
145-416	Cables 145-400 145-408 145-402 145-404	Huber + Suhner	3m Track B cables	multiple	08/31/2010	08/31/2011
HORN3	HORN ANTENNA	EMCO	3115	9610-4980	03/22/2010	03/22/2011

Software Utilized:

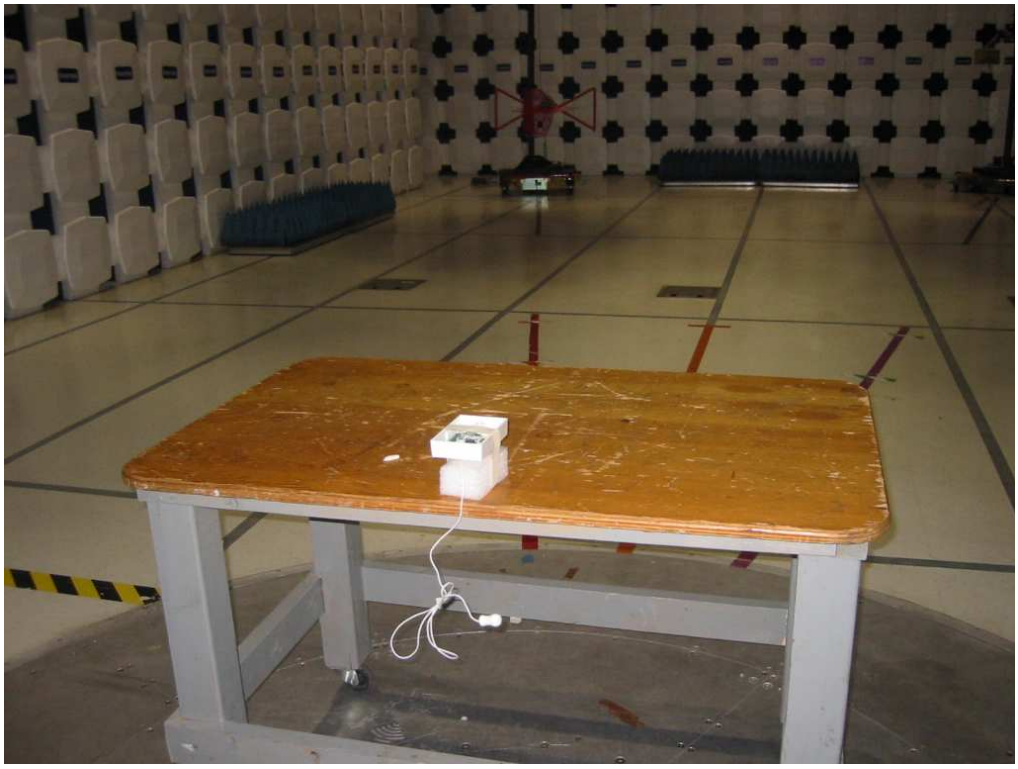
Name	Manufacturer	Version
Excel 2003	Microsoft	(11.8231.8221) SP3
EMI Boxborough.xls	Intertek	4/17/09

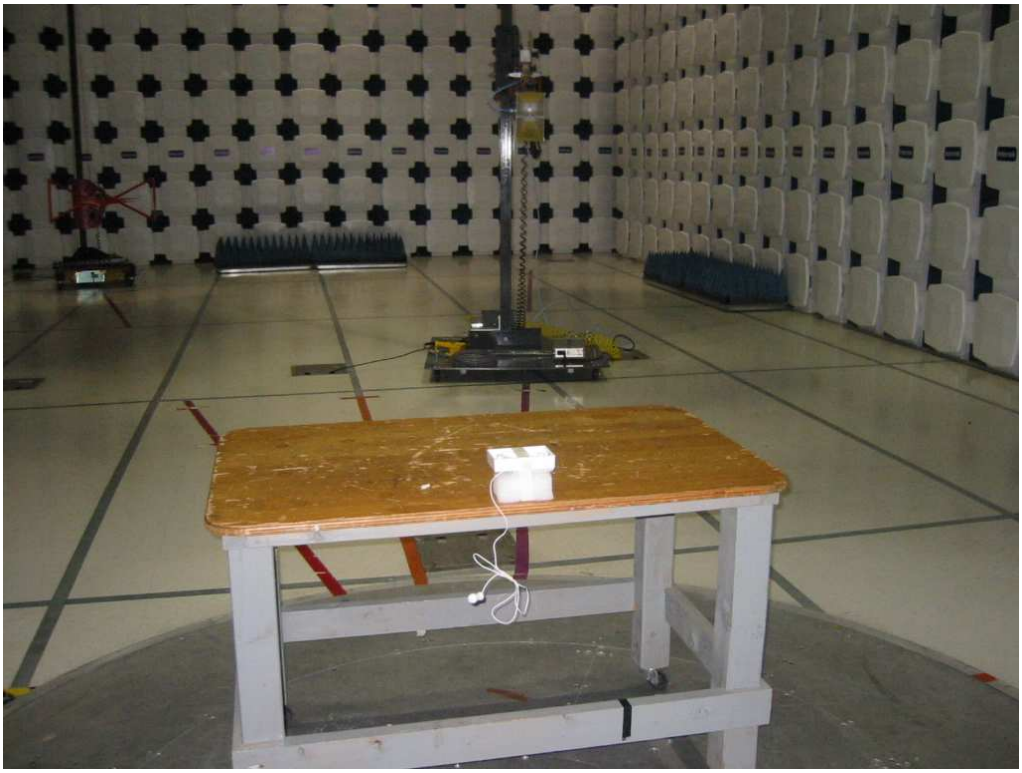
Note: Your Laptop may use a different version of Excel. Record the version you actually used!

7.3 Results:

The sample tested was found to Comply.

7.4 Setup Photographs:





7.5 Plots and data:

Radiated Emissions

Company: IGEACare Solutions Inc
Model #: 4001150
Serial #: B4
Engineers: Vathana Ven
Project #: G100216049
Standard: RSS-210, ICES 003
Receiver: R&S ESI (145-128) 07-29-2011
PreAmp: 10mPreamplifier 145-003 09-16-2010.txt

Location: 10M
Date(s): 09/29/10
Limit Distance (m): 3
Test Distance (m): 3

Antenna & Cables: HF
Antenna: HORN3 V3m 03-22-2011.txt
Cable(s): 3mTrackB 145-416 08-31-2011.txt
Barometer: DAV003
Temp/Humidity/Pressure: 22 deg. C

Bands: N, LF, HF, SHF
HORN3 H3m 03-22-2011.txt
NONE.
Filter: NONE
54%
1014 mB

PreAmp Used? (Y or N): N
Voltage/Frequency: 3VDC battery
Frequency Range: 30MHz-4.4GHz

Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Average Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	FCC	IC	Harmonic?
PK	H	867.847	31.00	21.80	4.94	27.83	0.24	29.67	60.80	-31.13	120/300 kHz			Yes
PK	H	1301.787	25.00	25.74	4.10	0.00	10.70	44.15	54.00	-9.85	1/3 MHz	RB	RB	Yes
PK	H	1735.816	20.00	26.40	4.90	0.00	10.70	40.60	60.80	-20.20	1/3 MHz			Yes
PK	H	2169.619	19.00	27.84	5.37	0.00	10.70	41.51	60.80	-19.29	1/3 MHz			Yes
PK	H	2603.520	18.50	29.06	6.01	0.00	10.70	42.87	60.80	-17.93	1/3 MHz			Yes
PK	H	3037.456	16.70	30.34	6.44	0.00	10.70	42.78	60.80	-18.02	1/3 MHz			Yes
PK	H	3471.360	17.30	31.32	7.04	0.00	10.70	44.97	60.80	-15.83	1/3 MHz	RB	RB	Yes
PK	H	3905.391	16.80	32.50	7.60	0.00	10.70	46.20	54.00	-7.80	1/3 MHz	RB	RB	Yes
PK	H	4339.184	16.40	32.29	7.82	0.00	10.70	45.81	54.00	-8.19	1/3 MHz			

Test Personnel: Vathana Ven
Product Standard: RSS-210
Input Voltage: 3VDC
Pretest Verification w/ BB Source: **No**

Test Date: 09/29/2010
Test Levels: Below specified limits
Ambient Temperature: 22 ºC
Relative Humidity: 54 %
Atmospheric Pressure: 1014 mbars

Deviations, Additions, or Exclusions: None

8 20 dB Bandwidth

8.1 Method

Tests are performed in accordance with RSS-210 Annex A1.1.3.

TEST SITE: EMC

The EMC Lab has two Semi-anechoic Chambers and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
HORN2	HORN ANTENNA	EMCO	3115	9602-4675	09/24/2010	09/24/2011
DAV001	Weather Station	Davis Instruments	7400	PE80519A61	06/11/2010	06/11/2011

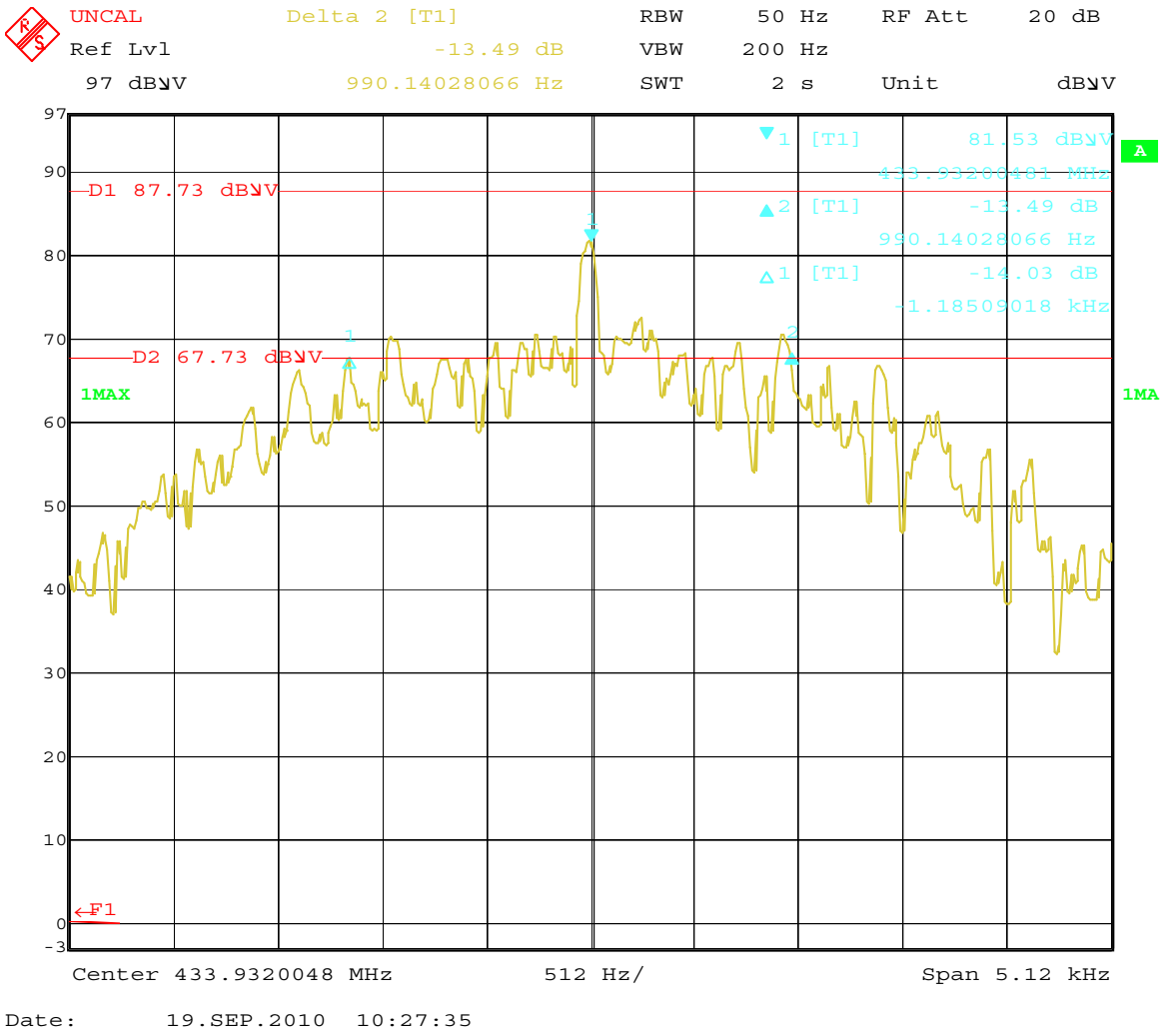
Software Utilized:

Name	Manufacturer	Version
None		

8.3 Results:

The sample tested was found to Comply.

8.4 Data:



20 dB Bandwidth is 2.175 kHz

Test Personnel:	Vathana Ven	Test Date:	09/19/2010
Product Standard:	RSS-210	Test Levels:	Below specified limits
Input Voltage:	3VDC		
Pretest Verification w/ BB Source:	**No**	Ambient Temperature:	21 ºC
		Relative Humidity:	58 %
		Atmospheric Pressure:	995 mbars

9 5 Seconds Off

9.1 Method

Tests are performed in accordance with RSS-210 Annex A1.1.1.

TEST SITE: EMC

The EMC Lab has two Semi-anechoic Chambers and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
ROS001	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	12/04/2009	12/04/2010
HORN2	HORN ANTENNA	EMCO	3115	9602-4675	09/24/2010	09/24/2011
DAV001	Weather Station	Davis Instruments	7400	PE80519A61	06/11/2010	06/11/2011

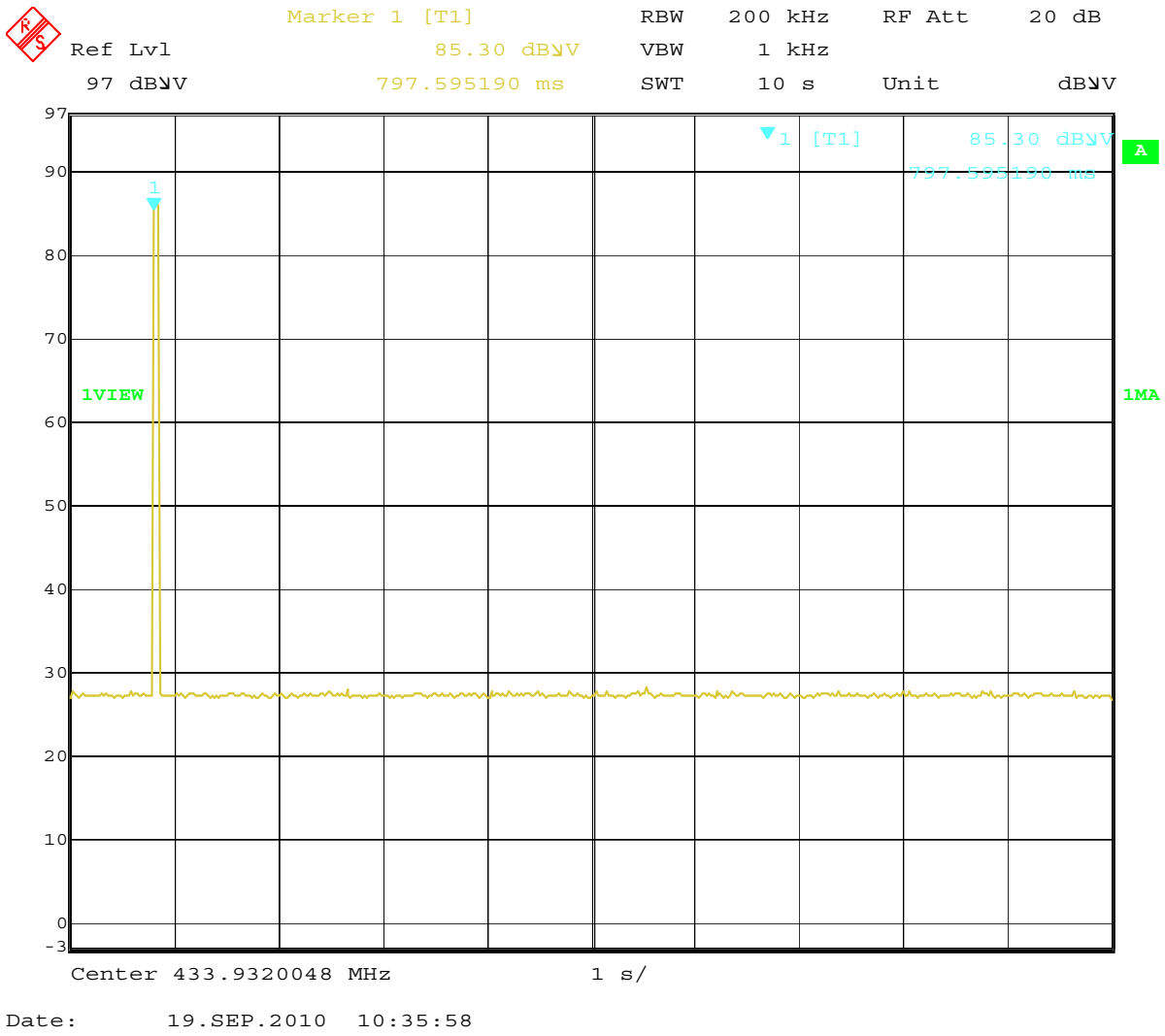
Software Utilized:

Name	Manufacturer	Version
None		

9.3 Results:

The sample tested was found to Comply.

9.4 Data:



Test Personnel:	Vathana Ven	Test Date:	09/19/2010
Product Standard:	RSS-210	Test Levels:	Below specified limits
Input Voltage:	3VDC		
Pretest Verification w/ BB Source:	**No**	Ambient Temperature:	21 ºC
		Relative Humidity:	58 %
		Atmospheric Pressure:	995 mbars

10 Revision History

Revision Level	Date	Report Number	Notes
0	09/30/2010	100216049BOX-006a	Original Issue
1	11/29/2010	100216049BOX-006c	Model number correction