

TEST REPORT

Report Number: 100563022DEN-001
Project Number: G100563022

Report Issue Date: 11/28/2011

Product Designation: EN1501-XL

Standards: FCC title 47 CFR part 15 subpart C
RSS-210: 2010 Issue 8
AS/NZS 4268:2008

Tested by:
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1795 Dogwood St. Suite 200
Louisville, CO 80027

Client:
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TABLE OF CONTENTS

1	<i>Introduction and Conclusion</i>	3
2	<i>Test Summary</i>	3
3	<i>Description of Equipment Under Test</i>	4
4	<i>System setup including cable interconnection details, support equipment and simplified block diagram</i>	5
5	<i>Radiated Emissions – Intentional Radiators: Output Power - Fundamental & Harmonics of the Fundamental for 15.247</i>	7
6	<i>Radiated Emissions Unintentional & Spurious</i>	13
7	<i>Measurement Uncertainty</i>	19
8	<i>Revision History</i>	20

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 Passed 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	Test date	Result
5	Radiated Emissions – Output power of the Fundamental & Harmonics of the Fundamental - FCC 247(b)(2) (d)/15.205 Covers RSS-210 A8.4(1)	3/18/2009	Pass
6	Radiated Emissions – Unintentional & Spurious - FCC 15.247(d) / FCC 15.209/109 Covers RSS-210 A8.5	11/16/2011	Pass
	Bandwidth – FCC 15.247 (a)(1)(i)	-----	N/A
	Power Spectral Density (PSD) – FCC 15.247(e)	-----	N/A
	Band Edge Measurements – FCC 15.247(d) / 15.209	-----	N/A
	Duty Cycle & Duty Cycle Correction Factor	-----	N/A
	AC Conducted Emissions – FCC 15.207 – Not Applicable	-----	N/A

Notes:

- 1) Only the fundamental, harmonics of the fundamental and Spurious emissions are covered in this test report as requested by the customer.
- 2) Only the high channel of the transmitter at 927.64 MHz falls within the frequency band specified in AS/NZS 4268:2008
- 3) FCC CFR47 Part 15.31: Measurement Standards: In any case where the device is powered off a battery, a fresh battery was used during test. In cases where the device is powered off an AC supply, voltage was varied per Part 15.31 to find worst case emissions.

3 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
902-928MHz wireless transmitter.	Inovonics	EN1501-XL	4101085/90406920
Receive Date:		3/18/2009	
		11/16/2011	
Received Condition:	Good		
Type:	Production		

Description of Equipment Under Test (provided by client)

The EN1501-XL is a transmit-only device with built-in antenna and long battery life. It is intended for use in the submetering industry, to continuously monitor water or electricity usage from a meter sensor with a digital output, and upon reaching a preset count, it transmits the appropriate message to the central receiver. An internal sensor also monitors the case of the product and will generate an alarm should the device be tampered with. In addition to alarm messages, supervisory messages are also sent to verify battery status and link functionality. The supervision interval is typically factory preset to one hour.

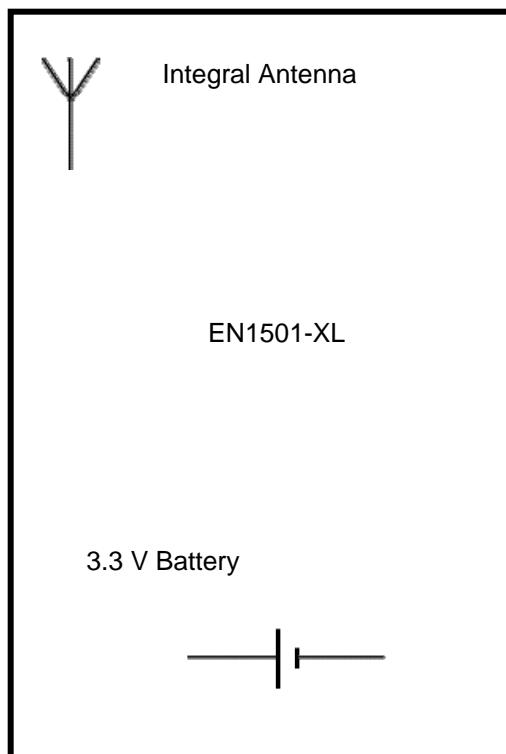
Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
3.3 VDC - Battery	-----	-----	-----

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	For section 5 - Fundamental and Harmonics of the fundamental the EUT was placed in an unmodulated continuous wave mode.
2	For section 6 – Unintentional and Spurious emissions the EUT was placed in normal operating mode.

4 System setup including cable interconnection details, support equipment and simplified block diagram**4.1 Method:**

Record the details of EUT cabling, document the support equipment, and show the interconnections in a block diagram.

4.2 EUT Block Diagram:

4.3 Support Data:

ID	Description	Length	Shielding	Ferrites

Support Equipment			
Description	Manufacturer	Model Number	Serial Number

General notes:

1. Product has no I/O or signal cables.
2. Product did not require any support equipment.

5 Radiated Emissions – Intentional Radiators: Output Power - Fundamental & Harmonics of the Fundamental for 15.247**5.1 Method**

Unless otherwise stated no deviations were made from ANSI C63.10 and FCC public notice DA 00-705.

This testing was performed at Intertek Denver's OATS site, located at 40 Meadow Rd. Pinewoods Springs, CO 80540.

5.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
18882	Spectrum Analyzer	HP	8566B	2410A00154	12/10/2008	12/10/2009
18886	Horn Antenna	TENSOR	4105	2020	4/6/2008	4/6/2009
18900	RF Pre-Amplifier (4-8 GHz)	Avantek	AFT97-8434-10F	1007	5/2/2008	5/2/2009
18901	RF Pre-Amplifier (8-18 GHz)	Avantek	AWT-18037	1002	5/2/2008	5/2/2009
18906	Amplifier	Mini-Circuits	ZHL-42	N052792-2	5/2/2008	5/2/2009
18888	Log Periodic Antenna	EMCO	3146	9402-3775	10/21/2008	10/21/2009

5.3 Results:

The sample tested was found to Comply.

5.4 Setup Photographs:

5.5 Plots: None**5.6 Test Data:**

Field Strength Measurements (Fundamental & Spurious)

Test Report #:	3-18-09 Run 01	Test Area:	Pinewood Site 1 (3m)	Temperature:	24.6 °C
Test Method:	N/A	Test Date:	18-Mar-2009	Relative Humidity:	38.4 %
EUT Model #:	EN1501XL	EUT Power:	3.3VDC Battery	Air Pressure:	80.4 kPa
EUT Serial #:	4101085				
Manufacturer:	Inovonics				
EUT Description:	Tapwatch Water Meter Pulse Counter				
Notes:	For testing <1GHz the following bandwidth settings were used - 100kHz RBW/300kHz VBW				
	For testing >1GHz the following bandwidth settings were used - 1MHz RBW/1MHz VBW				

Level Key

Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	DELTA (dB)
The following Duty Cycle was declared by the manufacturer:								
19.4%								
Averaging method for pulsed signals and calculation in accordance to FCC CFR47 Part 15.35 utilized to calculate field strength emissions.								
The testing performed in accordance to FCC CFR47 Part 15.205 (restricted bands of operation) and 15.247 emissions and delta limits were calculated as follows:								
Final Corrected Peak Measurement – Duty Cycle Correction Factor* = Final Calculated Emission								
The Final Calculated Emission was then compared to the Limits in CFR47 Part 15.209 and 15.247 and the emission/limit delta was calculated.								
the DTCF is calculated as follows $20 \times \log_{10}(\text{duty cycle in } 100\text{mS})$ “not to exceed 20dB”								
Part 15.247 and 15.205 Respectively								
Fundamental Measurements								
Low Channel Axis 1 - EUT is Flat on the table.								
902.44	80.4 Pk	3.6 / 22.0 / 0.0	106	V / 1.3 / 295.0	0.0	106.0	119.2	-13.2
902.44	89.1 Pk	3.6 / 22.0 / 0.0	114.7	H / 1.1 / 12.0	0.0	114.7	119.2	-4.5
Axis 2 - EUT is Vertical on the table.								
902.44	83.3 Pk	3.6 / 22.0 / 0.0	108.9	H / 1.4 / 180.0	0.0	108.9	119.2	-10.3
902.44	87.8 Pk	3.6 / 22.0 / 0.0	113.4	V / 1.2 / 102.0	0.0	113.4	119.2	-5.8
Axis 3 - EUT is Vertical on the table & Rotated 90 Deg.								
902.44	90.1 Pk	3.6 / 22.0 / 0.0	115.7	V / 1.1 / 242.0	0.0	115.7	119.2	-3.5
902.44	82.0 Pk	3.6 / 22.0 / 0.0	107.5	H / 2.1 / 354.0	0.0	107.5	119.2	-11.7
Mid Channel Axis 1								
914.84	89.8 Pk	3.6 / 22.4 / 0.0	115.8	H / 1.1 / 48.0	0.0	115.8	119.2	-3.4
914.84	80.2 Pk	3.6 / 22.4 / 0.0	106.2	V / 1.3 / 320.0	0.0	106.2	119.2	-13.0
Axis 2								

Intertek

Report Number: 100563022DEN-001

Issued: 11/28/2011

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB/m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
914.84	85.0 Pk	3.6 / 22.4 / 0.0	111.1	V / 1.1 / 122.0	0.0	111.1	119.2	-8.1
914.84	83.0 Pk	3.6 / 22.4 / 0.0	109	H / 1.5 / 178.0	0.0	109.0	119.2	-10.2
Axis 3								
914.84	80.5 Pk	3.6 / 22.4 / 0.0	106.5	H / 1.3 / 324.0	0.0	106.5	119.2	-12.7
914.84	90.4 Pk	3.6 / 22.4 / 0.0	116.4	V / 1.1 / 240.0	0.0	116.4	119.2	-2.8
High Channel Axis 1								
927.64	77.8 Pk	3.6 / 22.1 / 0.0	103.6	V / 1.1 / 94.0	0.0	103.6	119.2	-15.6
927.64	88.2 Pk	3.6 / 22.1 / 0.0	113.9	H / 1.0 / 38.0	0.0	113.9	119.2	-5.3
Axis 2								
927.64	79.2 Pk	3.6 / 22.1 / 0.0	104.9	H / 1.9 / 160.0	0.0	104.9	119.2	-14.3
927.64	88.8 Pk	3.6 / 22.1 / 0.0	114.5	V / 1.1 / 232.0	0.0	114.5	119.2	-4.7
Axis 3								
927.64	84.2 Pk	3.6 / 22.1 / 0.0	110	V / 1.2 / 18.0	0.0	110.0	119.2	-9.2
927.64	81.3 Pk	3.6 / 22.1 / 0.0	107.1	H / 1.7 / 174.0	0.0	107.1	119.2	-12.1
Axis 1 was determined to be the worst case axis								
All Harmonics will be measured in Axis 1 – Harmonics in Restricted Bands are Highlighted in Yellow								
Harmonics - Low Channel								
1804.89	78.3 Pk	2.8 / 26.5 / 37.1	70.5	V / 1.7 / 60.0	-14.2	56.3	94.7	-38.4
1804.89	73.0 Pk	2.8 / 26.5 / 37.1	65.2	H / 1.1 / 148.0	-14.2	51	94.7	-43.7
2707.34	61.4 Pk	3.5 / 28.3 / 37.6	55.6	V / 1.4 / 118.0	-14.2	41.4	54	-12.6
2707.35	64.6 Pk	3.5 / 28.3 / 37.6	58.8	H / 1.2 / 165.0	-14.2	44.6	54	-9.4
3609.79	54.3 Pk	4.5 / 31.0 / 38.4	51.4	V / 1.6 / 118.0	-14.2	37.2	54	-16.8
3609.79	55.7 Pk	4.5 / 31.0 / 38.4	52.8	H / 1.7 / 68.0	-14.2	38.6	54	-15.4
4512.25	63.0 Pk	5.3 / 31.3 / 40.7	58.8	H / 1.8 / 312.0	-14.2	44.6	54	-9.4
4512.25	62.9 Pk	5.3 / 31.3 / 40.7	58.7	V / 1.8 / 348.0	-14.2	44.5	54	-9.5
5414.7	66.7 Pk	6.0 / 33.3 / 39.9	66.1	H / 1.6 / 312.0	-14.2	51.9	54	-2.1
6317.2	66.5 Pk	6.6 / 33.8 / 40.4	66.4	H / 1.6 / 342.0	-14.2	52.2	54	-1.8
7219.65	60.9 Pk	7.3 / 35.9 / 39.9	64.2	H / 1.4 / 24.0	-14.2	50	94.7	-44.7
8122.1	55.6 Pk	7.7 / 36.3 / 47.5	52.2	H / 1.4 / 337.0	-14.2	38	94.7	-56.7
8122.12	51.6 Pk	7.7 / 36.3 / 47.5	48.2	V / 1.2 / 188.0	-14.2	34	94.7	-60.7
9024.56	60.8 Pk	8.4 / 36.7 / 48.5	57.4	H / 1.4 / 10.0	-14.2	43.2	94.7	-51.5
9024.56	57.4 Pk	8.4 / 36.7 / 48.5	54	V / 1.1 / 188.0	-14.2	39.8	54	-14.2
Harmonics - Mid Channel								
1829.7	60.5 Pk	2.8 / 26.6 / 37.1	52.8	H / 1.8 / 24.0	-14.2	38.6	95.8	-57.2
1829.69	64.2 Pk	2.8 / 26.6 / 37.1	56.5	V / 1.2 / 111.0	-14.2	42.3	95.8	-53.5
2744.55	62.6 Pk	3.5 / 28.2 / 37.6	56.7	H / 1.8 / 188.0	-14.2	42.5	54	-11.5
2744.55	61.6 Pk	3.5 / 28.2 / 37.6	55.7	V / 1.4 / 264.0	-14.2	41.5	54	-12.5
3659.41	59.8 Pk	4.5 / 30.8 / 38.4	56.8	H / 1.7 / 60.0	-14.2	42.6	54	-11.4
3659.41	51.5 Pk	4.5 / 30.8 / 38.4	48.5	V / 1.8 / 264.0	-14.2	34.3	54	-19.7
4574.26	68.6 Pk	5.3 / 31.3 / 40.7	64.5	V / 1.5 / 311.0	-14.2	50.3	54	-3.7
4574.26	67.1 Pk	5.3 / 31.3 / 40.7	63	H / 1.6 / 328.0	-14.2	48.8	54	-5.2
5489.12	62.8 Pk	6.1 / 33.3 / 40.1	62.1	V / 1.6 / 311.0	-14.2	47.9	95.8	-47.9
5489.12	67.8 Pk	6.1 / 33.3 / 40.1	67.1	H / 1.6 / 308.0	-14.2	52.9	95.8	-42.9

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	Duty Cycle Correction	Final Corrected	Limit	DELTA
(MHz)	(dBuV)	(dB) (dB/m) (dB)	(dBuV)	(m) (DEG)	(dB)	(dBuV/m)	(dBuV/m)	(dB)
6404.02	67.0 Pk	6.7 / 34.0 / 40.5	67.2	H / 1.3 / 311.0	-14.2	53	95.8	-42.8
6404.03	65.0 Pk	6.7 / 34.0 / 40.5	65.3	V / 1.4 / 311.0	-14.2	51.1	95.8	-44.7
7318.88	59.1 Pk	7.4 / 36.2 / 40.3	62.3	V / 1.2 / 311.0	-14.2	48.1	54	-5.9
7318.88	62.8 Pk	7.4 / 36.2 / 40.3	66	H / 1.4 / 311.0	-14.2	51.8	54	-2.2
8233.73	56.4 Pk	7.9 / 36.1 / 47.7	52.7	V / 1.2 / 12.0	-14.2	38.5	54	-15.5
8233.73	64.2 Pk	7.9 / 36.1 / 47.7	60.5	H / 1.4 / 348.0	-14.2	46.3	54	-7.7
9148.59	56.8 Pk	8.5 / 36.6 / 48.6	53.2	V / 1.3 / 184.0	-14.2	39	54	-15
9148.59	59.1 Pk	8.5 / 36.6 / 48.6	55.6	H / 1.3 / 184.0	-14.2	41.4	54	-12.6
Harmonics - High Channel								
1855.28	67.2 Pk	2.9 / 26.6 / 37.1	59.5	V / 1.1 / 288.0	-14.2	45.3	93.9	-48.6
1855.3	64.2 Pk	2.9 / 26.6 / 37.1	56.6	H / 1.8 / 144.0	-14.2	42.4	93.9	-51.5
2782.95	59.9 Pk	3.5 / 28.5 / 37.6	54.4	V / 1.2 / 288.0	-14.2	40.2	54	-13.8
2782.97	59.6 Pk	3.5 / 28.5 / 37.6	54.1	H / 1.5 / 144.0	-14.2	39.9	54	-14.1
3710.61	50.0 Pk	4.5 / 31.0 / 38.2	47.3	V / 2.2 / 288.0	-14.2	33.1	54	-20.9
3710.61	62.6 Pk	4.5 / 31.0 / 38.2	59.9	H / 1.6 / 288.0	-14.2	45.7	54	-8.3
4638.28	69.5 Pk	5.4 / 31.5 / 40.5	65.8	H / 1.7 / 144.0	-14.2	51.6	54	-2.4
4638.28	66.7 Pk	5.4 / 31.5 / 40.5	63.1	V / 1.7 / 208.0	-14.2	48.9	54	-5.1
5565.93	69.5 Pk	6.1 / 33.4 / 39.8	69.2	H / 1.5 / 346.0	-14.2	55	93.9	-38.9
5565.93	60.4 Pk	6.1 / 33.4 / 39.8	60.1	V / 1.6 / 215.0	-14.2	45.9	93.9	-48
6493.63	70.5 Pk	6.8 / 33.8 / 40.2	70.9	H / 1.6 / 348.0	-14.2	56.7	93.9	-37.2
6493.63	63.4 Pk	6.8 / 33.8 / 40.2	63.7	V / 1.2 / 215.0	-14.2	49.5	93.9	-44.4
7421.29	60.2 Pk	7.4 / 36.2 / 39.8	64.1	H / 1.5 / 348.0	-14.2	49.9	54	-4.1
7421.29	56.0 Pk	7.4 / 36.2 / 39.8	59.8	V / 1.5 / 215.0	-14.2	45.6	54	-8.4
8348.95	62.7 Pk	8.0 / 36.0 / 47.9	58.8	H / 1.4 / 336.0	-14.2	44.6	54	-9.4
8348.96	54.4 Pk	8.0 / 36.0 / 47.9	50.5	V / 1.2 / 295.0	-14.2	36.3	54	-17.7
9276.6	61.9 Pk	8.5 / 36.8 / 48.5	58.7	H / 1.3 / 336.0	-14.2	44.5	93.9	-49.4
9276.6	59.4 Pk	8.5 / 36.8 / 48.5	56.1	V / 1.3 / 295.0	-14.2	41.9	93.9	-52

Example calculation for Intentional Radiated Emissions:

Measured Level	+	Transducer, Cable Loss Pre-Amplifier	=	Corrected Reading	-	Duty Cycle Correction	=	FINAL Measurement	-	Specification Limit	=	Delta from Specification Limit
(dB μ V)		(dB)		(dB μ V/m)		(dB μ V/m)		(dB μ V/m)		(dB μ V/m)		
24.0		14.9		38.9		10.0		28.9		40.0		-11.1

Conversion of RF Port Output Power of the Fundamental Limit to Radiated Field Strength Limit

When limits are defined as conducted port power measurements and the product has an integral antenna, radiated field strength tests to demonstrate compliance are acceptable per FCC 15.247.

The following equation was used to convert RF Port Power (Watts) limit into a Radiated Field Strength (dBuV/m) limit:

$$P = \frac{(E*d)^2}{30G}$$

Therefore:

$$E = \frac{\sqrt{30PG}}{d}$$

Power Limit Fundamental Frequency = 250mW = 119 dBuV/m

Where:

E = Measured Field Strength in V/m (converted to dBuV/m in test data)

P = 250mW Fundamental Limit

G = Numeric Gain of transmitting antenna over an ideal isotropic radiator = 1 (unknown)

d = EUT-to-Antenna Test Distance = 3-meters

6 Radiated Emissions Unintentional & Spurious**6.1 Method**

Unless otherwise stated no deviations were made from ANSI C63.10 and FCC public notice DA 00-705.

This testing was performed at Intertek Denver, located at 1795 Dogwood St., Suite 200, Louisville, CO 80027.

6.2 Test Equipment Used:

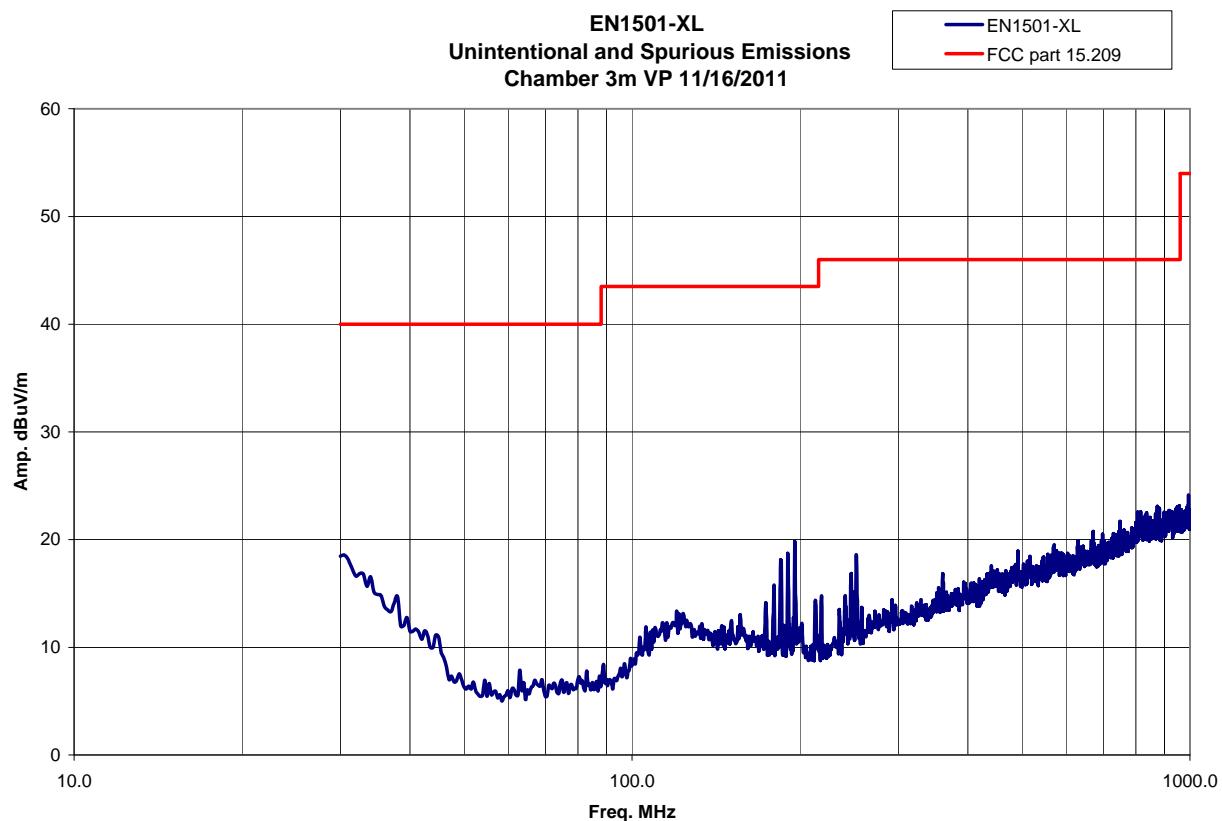
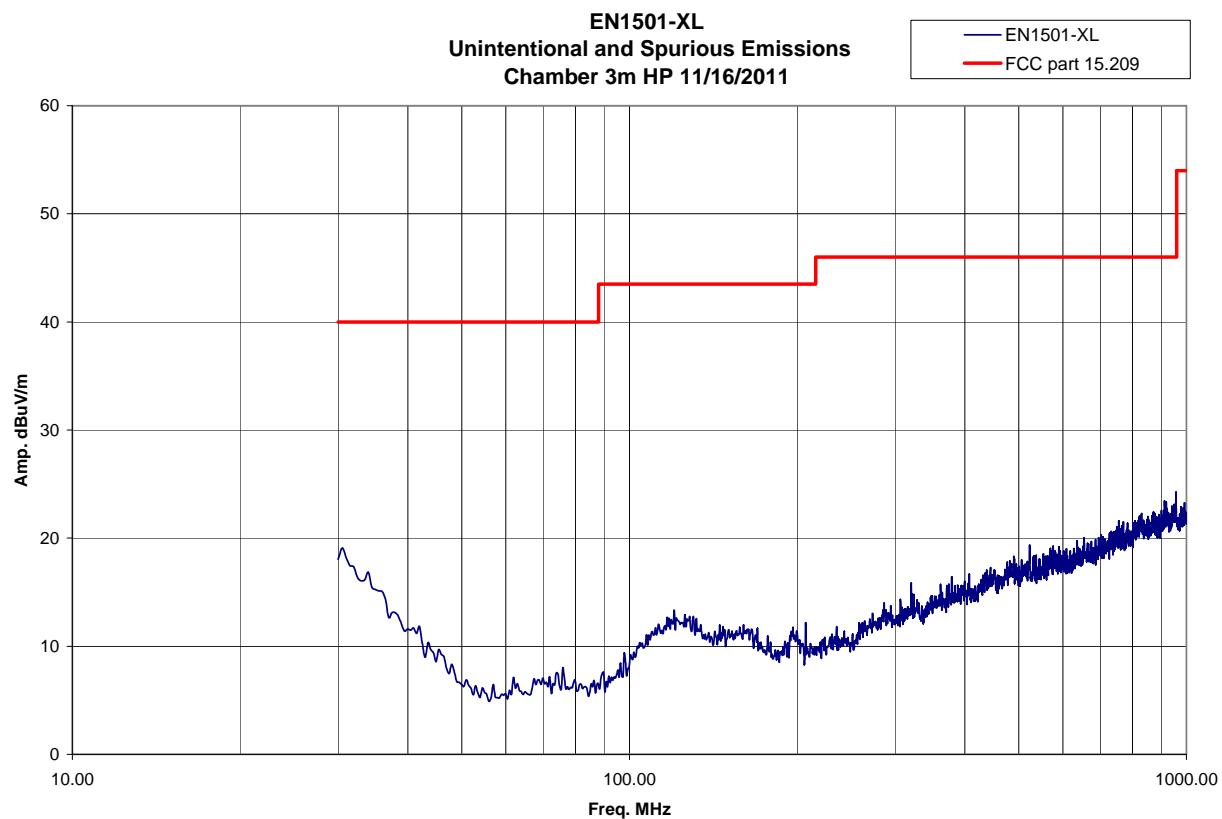
<u>Asset ID</u>	<u>Description</u>	<u>Manufacture</u>	<u>Model</u>	<u>Serial</u>	<u>Cal Date</u>	<u>Cal Due</u>
18882	Spectrum Analyzer (dc-22 GHz)	Hewlett-Packard	8566B	2410A00154	12/06/2010	12/06/2011
18660	Spectrum Analyzer Display Section (set 1)	Hewlett-Packard	85662A	2318A04983	12/10/2010	12/10/2011
18880	Q.P Adapter	Hewlett-Packard	85650A	2811A01300	12/06/2010	12/06/2011
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	06/03/2011	06/03/2012
18906	RF Pre-Amplifier (1-4 GHz)	Mini-Circuits Lab	ZHL-42	N052792-2	06/03/2011	06/03/2012
18900	RF Pre-Amplifier (4-8 GHz)	Avantek	AFT97-8434-10F	1007	06/03/2011	06/03/2012
18901	RF Pre-Amplifier (8-18 GHz)	Avantek	AWT-18037	1002	06/03/2011	06/03/2012
19937	Bilog Antenna 30MHz - 6GHz	Sunol Sciences	JB6	A050707-2	01/31/2011	01/31/2012
18887	Horn Antenna 1-18GHz	EMCO	3115	9205-3886	12/09/2010	12/09/2011
SW-6	Software for Radiated and Conducted emissions.	Intertek	OATS cvi	V. 1.0	01/01/2011	01/01/2012

6.3 Results:

The sample tested was found to Comply.

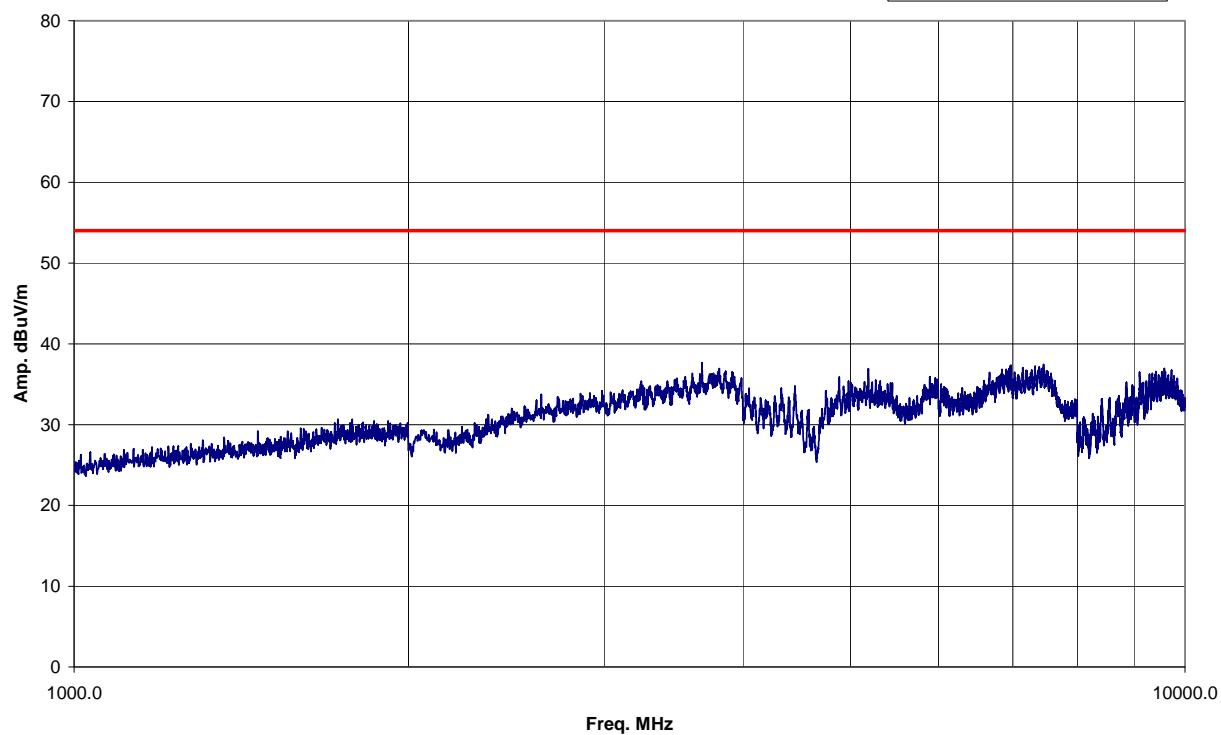
6.4 Setup Photographs:

6.5 Plots:



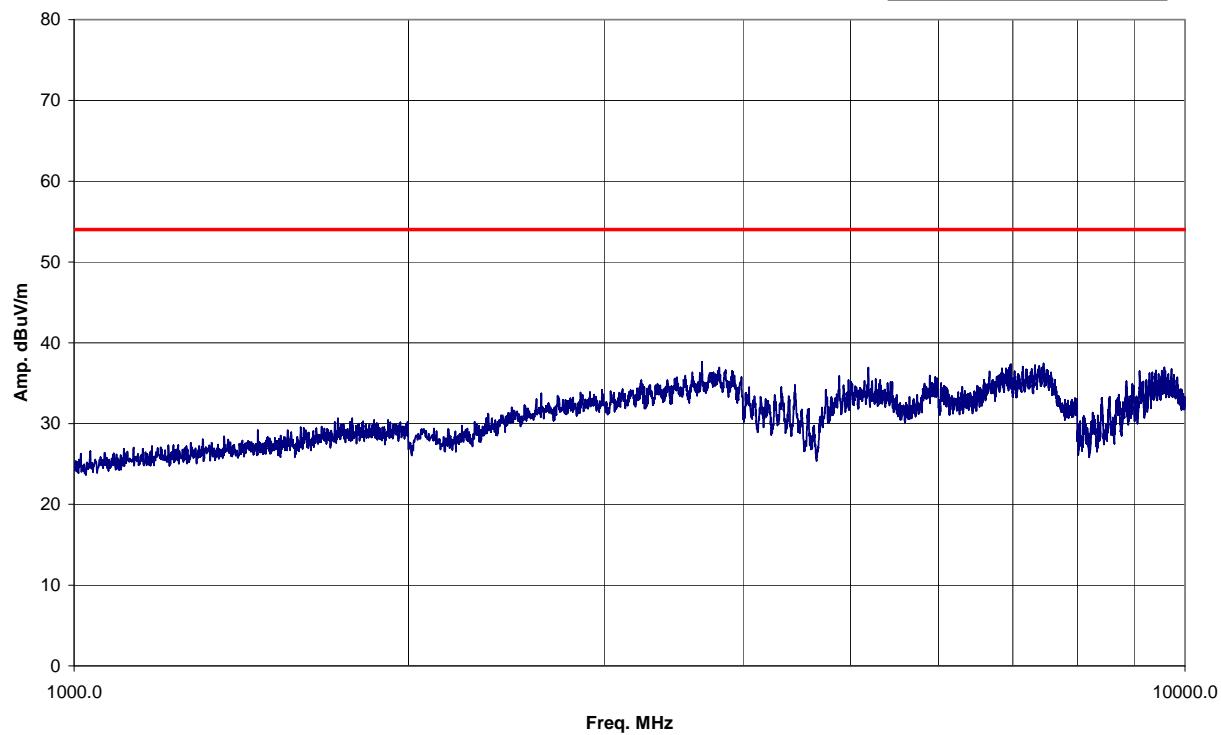
EN1501-XL
Unintentional and Spurious Emissions
Chamber 3m VP 11/16/2011

EN1501-XL
FCC part 15.209



EN1501-XL
Unintentional and Spurious Emissions
Chamber 3m HP 11/16/2011

EN1501-XL
FCC part 15.209



6.6 Data:**Radiated Electromagnetic Emissions**

Test Report #:	G100563022 Run 1	Test Area:	CC1 Radiated	Temperature:	21.4 °C
Test Method:	EN55022	Test Date:	16-Nov-2011	Relative Humidity:	16.9 %
EUT Model #:	EN1501-XL	EUT Power:	3V Battery	Air Pressure:	84.00 kPa
EUT Serial #:	90406920				
Manufacturer:	Innovonics				
EUT Description:	Tapwatch Water Meter Pulse Counter				
Notes:	For testing <150kHz the CISPR QP bandwidth settings were used - 200Hz				
	For testing 150kHz to 30MHz the CISPR QP bandwidth settings were used - 9kHz				
	For testing >30MHz the CISPR QP bandwidth settings were used - 120kHz				

Level Key	
Pk – Peak	Nb – Narrow Band
Qp – QuasiPeak	Bb – Broad Band
Av - Average	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA (dB)
					15.209 <1GHz
32.00	20.0 Qp	0.4 / 19.8 / 28.2	12.0	H / 1.0 / 0.0	-28.0
48.00	20.2 Qp	0.8 / 9.3 / 28.2	2.1	H / 1.0 / 0.0	-37.9
64.00	20.1 Qp	0.8 / 8.0 / 28.1	0.8	H / 1.0 / 0.0	-39.2
80.00	20.6 Qp	0.8 / 7.8 / 28.1	1.1	H / 1.0 / 0.0	-38.9
96.00	20.2 Qp	0.8 / 9.4 / 28.0	2.4	H / 1.0 / 0.0	-41.1
32.77	19.9 Qp	0.4 / 19.2 / 28.2	11.3	H / 1.0 / 0.0	-28.7
65.54	19.9 Qp	0.8 / 8.1 / 28.1	0.6	H / 1.0 / 0.0	-39.4
98.30	20.1 Qp	0.8 / 9.9 / 28.0	2.7	H / 1.0 / 0.0	-40.8
98.30	20.1 Qp	0.8 / 9.9 / 28.0	2.8	H / 1.0 / 0.0	-40.7
131.07	20.1 Qp	0.8 / 13.1 / 27.8	6.2	H / 1.0 / 0.0	-37.3
163.84	20.1 Qp	0.9 / 12.3 / 27.7	5.7	H / 1.0 / 0.0	-37.8
32.00	19.9 Qp	0.4 / 19.8 / 28.2	11.9	V / 1.0 / 0.0	-28.1
32.77	19.9 Qp	0.4 / 19.2 / 28.2	11.3	V / 1.0 / 0.0	-28.7
48.00	20.2 Qp	0.8 / 9.3 / 28.2	2.1	V / 1.0 / 0.0	-37.9
64.00	20.2 Qp	0.8 / 8.0 / 28.1	0.8	V / 1.0 / 0.0	-39.2
65.54	20.1 Qp	0.8 / 8.1 / 28.1	0.7	V / 1.0 / 0.0	-39.3
80.00	20.5 Qp	0.8 / 7.8 / 28.1	1.0	V / 1.0 / 0.0	-39.0
96.00	20.2 Qp	0.8 / 9.4 / 28.0	2.4	V / 1.0 / 0.0	-41.1
98.30	20.1 Qp	0.8 / 9.9 / 28.0	2.8	V / 1.0 / 0.0	-40.7
131.07	20.1 Qp	0.8 / 13.1 / 27.8	6.1	V / 1.0 / 0.0	-37.4
163.84	20.1 Qp	0.9 / 12.3 / 27.7	5.7	V / 1.0 / 0.0	-37.8
915.00	20.1 Qp	2.1 / 21.8 / 27.6	16.4	H / 1.0 / 0.0	-29.6
915.00	20.1 Qp	2.1 / 21.8 / 27.6	16.4	V / 1.0 / 0.0	-29.6

FREQ	LEVEL	CABLE / ANT / PREAMP	FINAL	POL / HGT / AZ	DELTA (dB)
(MHz)	(dBuV)	(dB) (dB\m) (dB)	(dBuV/m)	(m) (DEG)	15.209 <1GHz
***** Measurement Summary *****					
32.00	20.0 Qp	0.4 / 19.8 / 28.2	12.0	H / 1.0 / 0.0	-28.0
32.77	19.9 Qp	0.4 / 19.2 / 28.2	11.3	V / 1.0 / 0.0	-28.7
915.00	20.1 Qp	2.1 / 21.8 / 27.6	16.4	V / 1.0 / 0.0	-29.6
131.07	20.1 Qp	0.8 / 13.1 / 27.8	6.2	H / 1.0 / 0.0	-37.3
163.84	20.1 Qp	0.9 / 12.3 / 27.7	5.7	V / 1.0 / 0.0	-37.8
98.30	20.1 Qp	0.8 / 9.9 / 28.0	2.8	V / 1.0 / 0.0	-40.7
48.00	20.2 Qp	0.8 / 9.3 / 28.2	2.1	V / 1.0 / 0.0	-37.9
96.00	20.2 Qp	0.8 / 9.4 / 28.0	2.4	V / 1.0 / 0.0	-41.1
80.00	20.6 Qp	0.8 / 7.8 / 28.1	1.1	H / 1.0 / 0.0	-38.9
64.00	20.2 Qp	0.8 / 8.0 / 28.1	0.8	V / 1.0 / 0.0	-39.2
65.54	20.1 Qp	0.8 / 8.1 / 28.1	0.7	V / 1.0 / 0.0	-39.3

No spurious or unintentional emissions found above 1GHz, see peak plots in section 6.5.

Example calculation for Unintentional Radiated Emissions:

Measured Level	+	Transducer, Cable Loss & Amplifier corrections	=	Corrected Reading	Specification Limit	-	Corrected Reading	=	Delta Specification
			(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)			
14.0				14.9	28.9	40.0		28.9	-11.1

Deviations, Additions, or Exclusions: None

7 Measurement Uncertainty

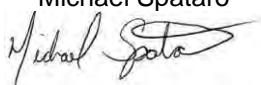
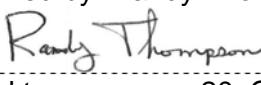
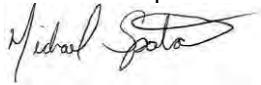
The measured value related to the corresponding limit will be used to decide whether the equipment meets the requirements.

The measurement uncertainty figures were calculated and correspond to a coverage factor of $k = 2$, providing a confidence level of respectively 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian).

Measurement uncertainty Table

Parameter	Uncertainty \pm	Notes
Radiated emissions, 10kHz to 1000 MHz	4.8 dB	
Radiated emissions, 1 to 18 GHz	4.9 dB	
AC mains Conducted emissions, 150kHz to 30 MHz	3.14 dB	
Disturbance Power 30 to 1000 MHz	3.3 dB	
Telecom Port Conducted emissions, Voltage 150 kHz to 30 MHz	TBD	In Process
Harmonics	-	Meets the requirements specified by the standard.
Flicker	-	Meets the requirements specified by the standard.
ESD	4.4 %	
Radiated RF field immunity 80MHz to 2.7GHz	2.2 dB	
EFT	4.3 %	
Surge	4.3 %	
Conducted RF immunity	2.1 dB	
Power frequency magnetic field immunity	2.3 dB	
Voltage dips / interruptions immunity	0.3 mV	

8 Revision History

Revision Level	Date	Report Number	Notes
1	11/28/2011	100563022DEN-001	<p>This report is an update of report numbers: 3175935DEN-005</p> <p>Additional testing was performed for unintentional and spurious emissions. Also, validation for the latest version of RSS-210 was performed.</p> <p>Michael Spataro</p> 
2	12/06/2011	100563022DEN-001	<p>Changed duty cycle correction to 19.4% and recalculated data.</p> <p>Michael Spataro</p>  <p>Reviewed by: Randy Thompson</p> 
3	12/19/2011 12/22/2011	100563022DEN-001	<p>Changed typo on page 20, Qp to Pk.</p> <p>Michael Spataro</p>  <p>Reviewed by: Randy Thompson</p> 