



TEST REPORT

Report Number: 100744278DEN-001

Project Number: G100744278

Report Issue Date: 6/28/2012

Product Designation: Model: RC-03-PRX-K

Standards: FCC 47CFR Part 15C
RSS-210 - Issue 8: 2010
RSS-GEN - Issue 3: 2010

Tested by:

Intertek Testing Services NA, Inc.
1795 Dogwood St. Suite 200
Louisville, CO 80027

Client:

ISONAS Security Systems
4720 Walnut Street, Suite 200
Boulder, CO 80301

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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>	5
4	<i>System setup including cable interconnection details, support equipment and simplified block diagram</i>	8
5	<i>Radiated Unintentional & Spurious Emissions.....</i>	10
6	<i>Tx Voltage Variation – FCC 15.31</i>	28
7	<i>Radiated Tx Intentional Emissions – Fundamental & Harmonics of the Fundamental</i>	29
8	<i>AC Mains Conducted Emissions</i>	45
9	<i>Telecom Port Conducted Emissions (CISPR 22) – Test not Applicable</i>	58
10	<i>Occupied Bandwidth (OBW) – RSS-GEN, Section 4.6.1</i>	59
11	<i>Measurement Uncertainty.....</i>	62
12	<i>Revision History</i>	63

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	Test date	Result
5	Radiated Unintentional Spurious Emissions (FCC 15.209) Covers IC RSS-210: 2010	06/11/2012 06/12/2012	Pass
6	Tx Voltage Variation (FCC 15.31)	06/11/2012	N/A
7	Tx Radiated Emissions (FCC 15.209) Covers IC RSS-210: 2010	06/11/2012 06/12/2012	Pass
8	AC Conducted Emissions (FCC 15.207) Covers RSS-GEN: 2010	05/03/2012 06/12/2012	Pass
9	Telecom Port Conducted Emissions (CISPR 22: 2008)	-----	N/A
10	Occupied Bandwidth Measurement (RSS-GEN: 2010)	06/26/2012	Pass

General Notes:

- 1) The testing in this report covers the following product models: RC-03-HLF (non-keypad) and RC-03-PRX-K (keypad). Both models are the low-frequency Tx operation – 122.8kHz.
- 2) The following product options were covered in this testing:
 - Power Over Ethernet (POE)
 - 12/24VDC
- 3) Product is RSS-210 Category 1 equipment.

Radio Notes:

- 1) Test Method used for this report: ANSI C63.10:2009 – “American National Standard for Testing Unlicensed Wireless Devices”.
- 2) 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) FCC CFR47 Part 15.35: Measurement Detector Functions and Bandwidths: FCC Part 15.35 was utilized when performing the measurements within this report.

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

2.1 Test Facility

Intertek Denver's testing facilities are located at 1795 Dogwood St. Suite 200 Louisville, CO 80027. The testing facility is ISO17025:2005 accredited by A2LA, our lab code is 2506.02, our VCCI registration numbers are. R-1643, C-1752 and T-1558, our FCC designation no. US1121 and our IC lab no. 2042N.

Testing contained in this test report may not be covered under the laboratories scope of accreditation. A note will be placed in the specific test section for testing not covered under the laboratories scope.

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

3 Description of Equipment Under Test

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
RC-03 LF Keypad	Isonas	RC-03-PRX-K	FCC1

Receive Date:	05/03/2012
Received Condition:	Good
Type:	Production Sample

Description of Equipment Under Test (provided by client)
The product tested is a Low-Frequency, network-enabled, RFID Security Access Reader. The RC-03 is a Radio Frequency Identification Device (RFID) Reader / Controller that can be hardware configured with or without a 12 position numeric keypad for manual PIN entry. It can further be hardware configured to operate either as a low frequency device or a multi frequency unit combining low frequency and high frequency operation. The RC-03 intended uses are instances where items of value requiring the ability to control access to said items is desired, also known as "Access Control". The RC-03 provides a way to input access credentials either in the form of a RFID transponder (credential) operating in the low frequency band of the radio spectrum or in the High Frequency band of the radio spectrum by powering the credential and receiving said information via magnetic induction or by manual input of a PIN via keypad for the controller portion of the device to either act on or pass on via Ethernet connectivity to a control program resident elsewhere. The RC-03 has provision to be powered via IEEE802.3 Power Over Ethernet (POE) or by external DC voltage. It also has provision to source power out to and control or receive input from other external devices such as electromagnetic door locks and motion sensors. The RC-03 can operate either in "Standalone" mode where all access rules and allowable credentials are stored on board the unit locally with access decisions being made exclusively by the unit locally or in "Host" mode where the RC-03 is connected to a controlling computer via Ethernet. In this case all the access rules and credentials are handled by the remote computer, which could be handling many RC-03 controllers in different locations. Specific Product Option tested in this report: Low-Frequency (122.8kHz), POE and VDC. Clocks: 32.768kHz, 14.7456MHz and 25MHz Radio: Tx Frequency 122.8kHz (+/- 100Hz), inductive loop single integral antenna, carrier duty-cycled Product will marketed in the US and Canada.

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
Power Over Ethernet (POE) 48VDC	0.26A	----	----
12/24VDC	0.130A/ 0.07A max	----	----

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	Verify transponder read.
2	Exercise communications with the UUT from a PC via serial command test scripts.

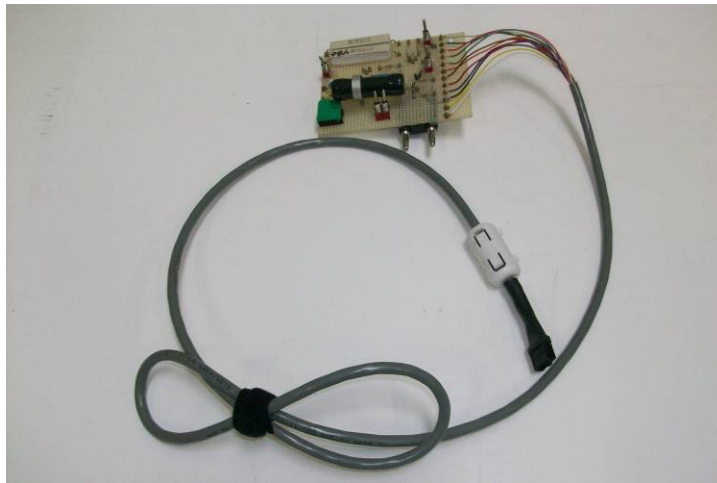
3.1 Photo: Product Under Test

Model: RC-03-PRX-K



Photo: Product Under Test

RC-03-PRX-K

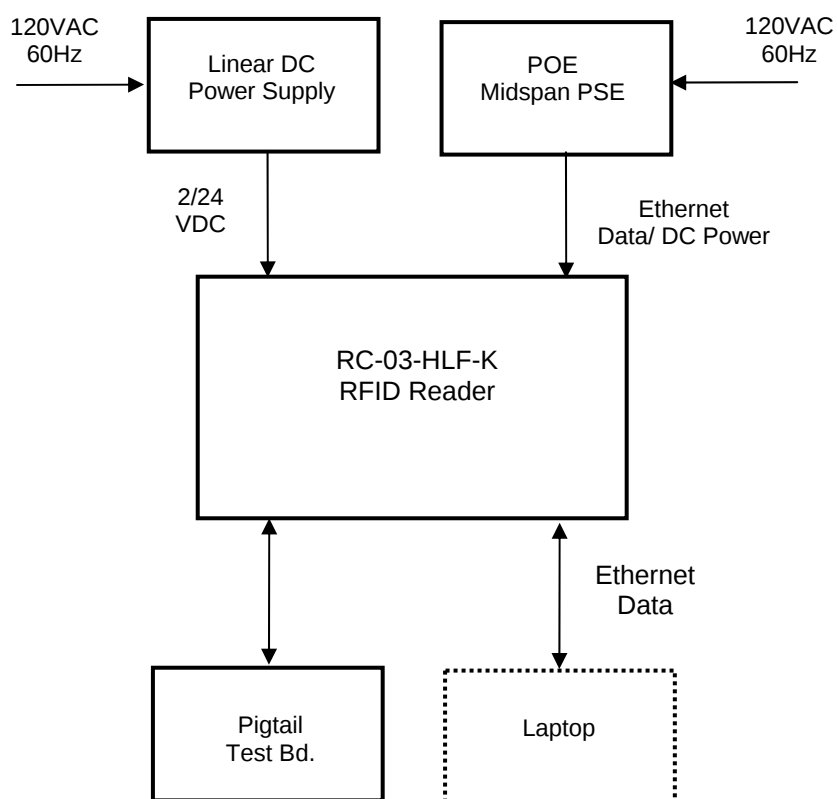


4 System setup including cable interconnection details, support equipment and simplified block diagram

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:



Notes:

1. Items in dashed line are support equipment – not directly tested.
2. Product tested in (2) configurations: Power over Ethernet (POE) & 12/24VDC

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

4.3 Support Data:

ID	Description/ Function	Shield	Length	Connector	Connection	Ferrites
1	AC Cable	None	1.2 meter	AC	Midspan PSE	None
2	AC Cable	None	1.2 meter	AC	Linear DC Supply	None
3	Ethernet	None	3 meter	RJ45	Midspan PSE	Yes
4	Ethernet	None	3 meter	RJ45	Laptop	No
5	Pigtail Load	None	1 meter	RC-03	-----	Yes

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Midspan PSE	PowerDsine	PowerDsine 3001	R07066050004C2
Linear Power supply +24V / +48VDC out.	Isonas	Engineering only	N/A
Linear Power supply +12VDC out.	Isonas	Engineering only	N/A
Pigtail Test Board	Isonas	Engineering only	N/A
Tablet PC	HP	HP-300RT	Unknown

Notes:

Support equipment was required for testing - The linear power supply provided DC power, the Midspan PSE provided DC power and data. The pigtail test board provided typical loading and data feedback to the product under test.

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

5 Radiated Unintentional & Spurious Emissions

5.1 Method

Unless otherwise stated no deviations were made from FCC 15.209/ IC RSS-210.

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

5.2 Test Equipment Used:

<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18912	9 kHz- 1.3GHz Pre Amp	Hewlett-Packard	8447F	3113A05545	06/06/2012	06/06/2013
19936	Bilog Antenna 30MHz – 6GHz	Sunol Sciences	JB6	A050707-1	11/15/2011	11/15/2012
18897	Active Loop Antenna	EMCO	6502	9205-2738	11/22/2011	11/22/2012
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V003	VBV	VBV

5.3 Results:

The sample tested was found to Comply.

5.4 Setup Photographs: Product Configuration – POE

Test setup – Front view



RC-03-PRX-K Product Under Test



Pigtail Test Board (Load)

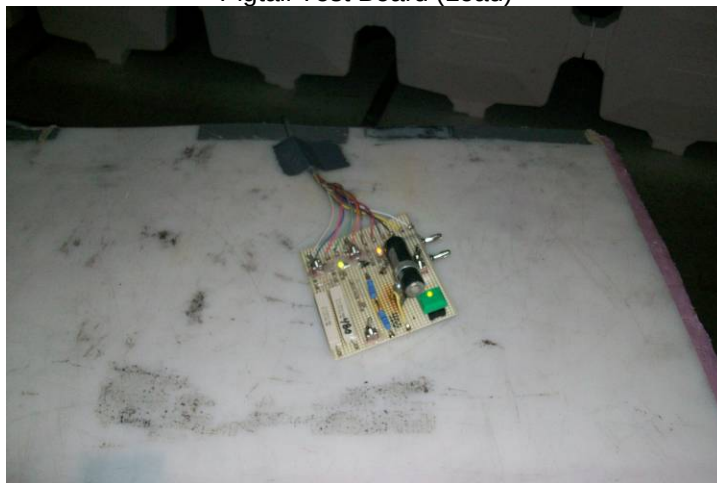


Photo: POE

Test setup – Rear view



Midspan PSE located on floor



5.5 Setup Photographs: Product Configuration – 12/24VDC

Test setup – Front view



RC-03-PRX-K Product Under Test

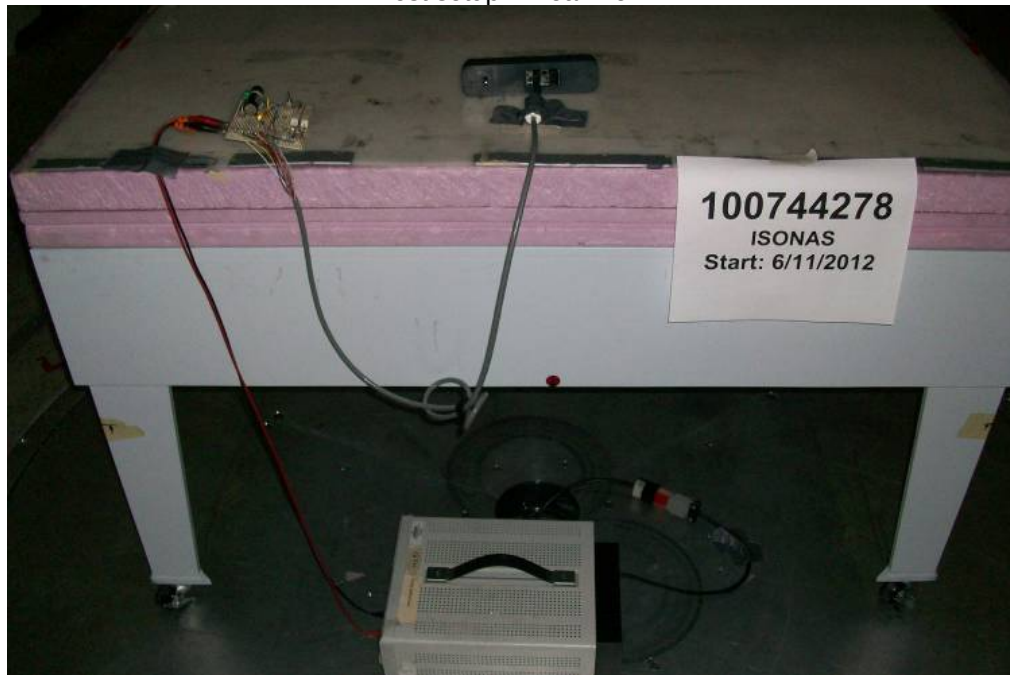


Pigtail Test Board (Right)



Photo: 12/24VDC

Test setup – Rear view



DC Power Supply on floor



Photo: Antenna Setup

Antenna Setup: Active Loop Antenna - 10kHz to 30MHz



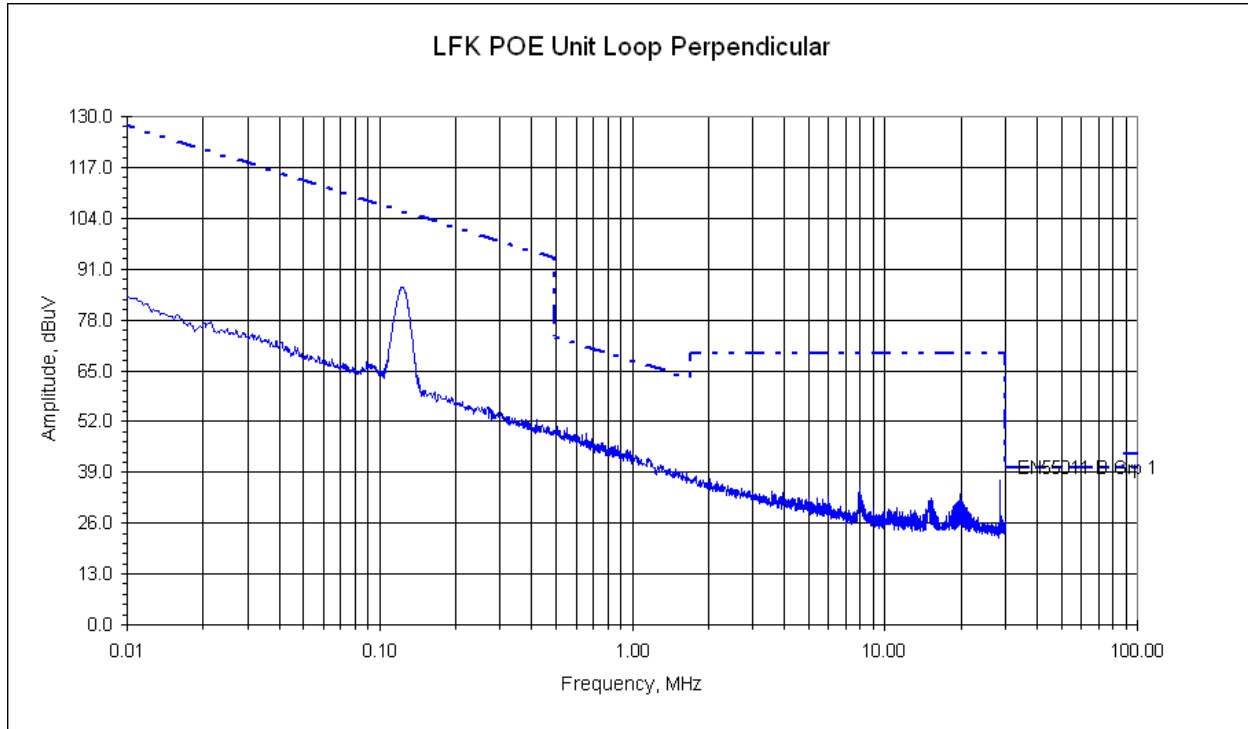
Antenna Setup: BiLog Antenna - 30MHz to 1000MHz



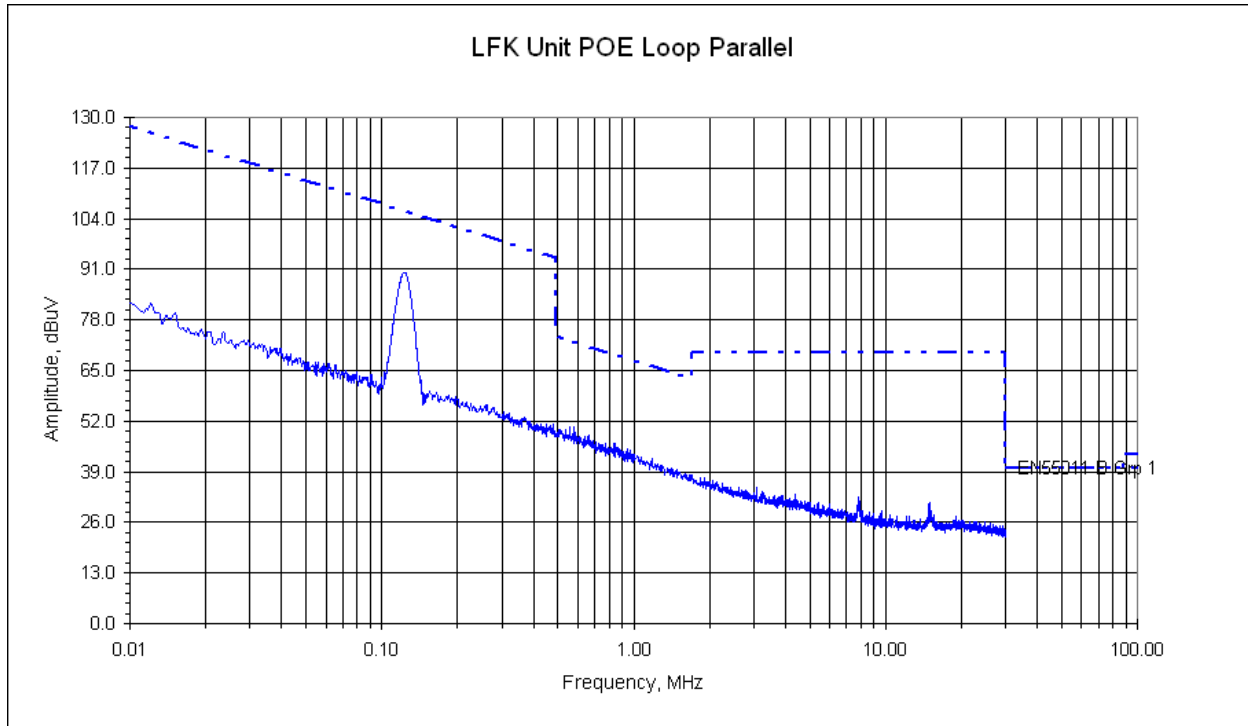
5.6 Pre-scan Plots: Reference Only – Not Final Data: POE

Radiated Emissions – FCC 15.209/IC RSS-210 (10kHz to 30MHz)

Vertical.



Horizontal

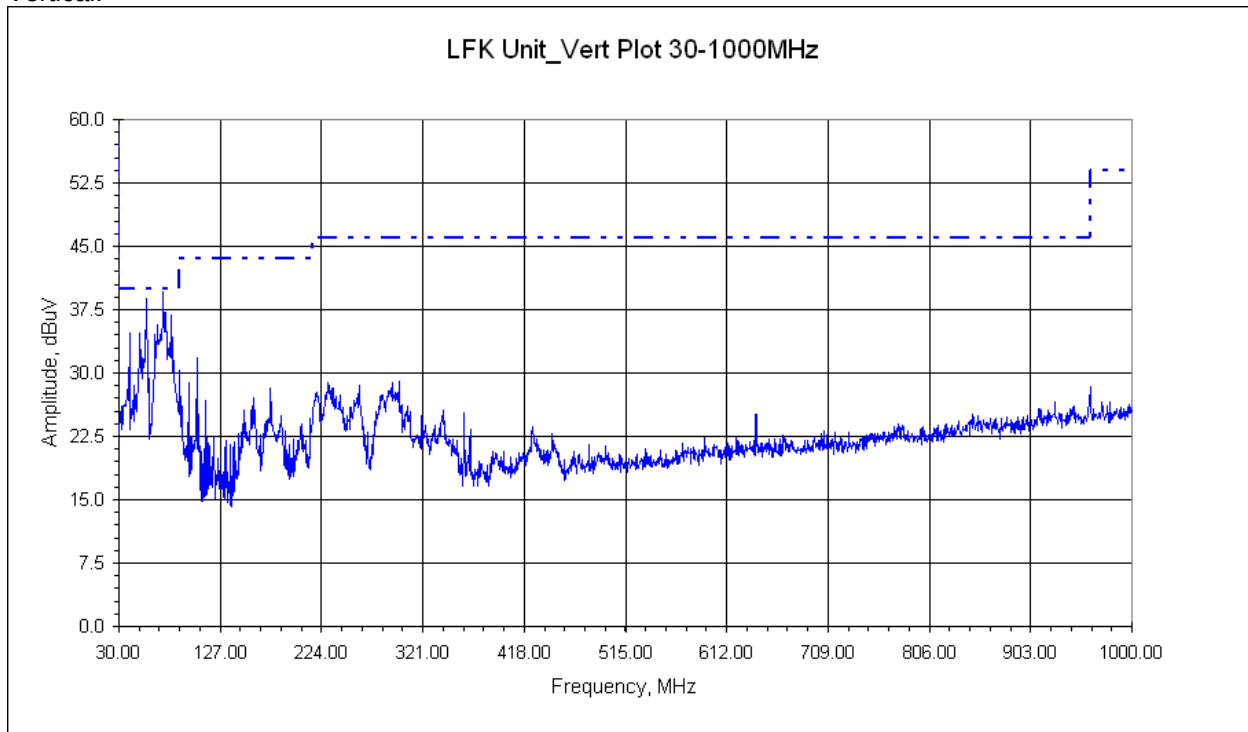


Note: Peak detector measurements plotted against quasi-peak limits

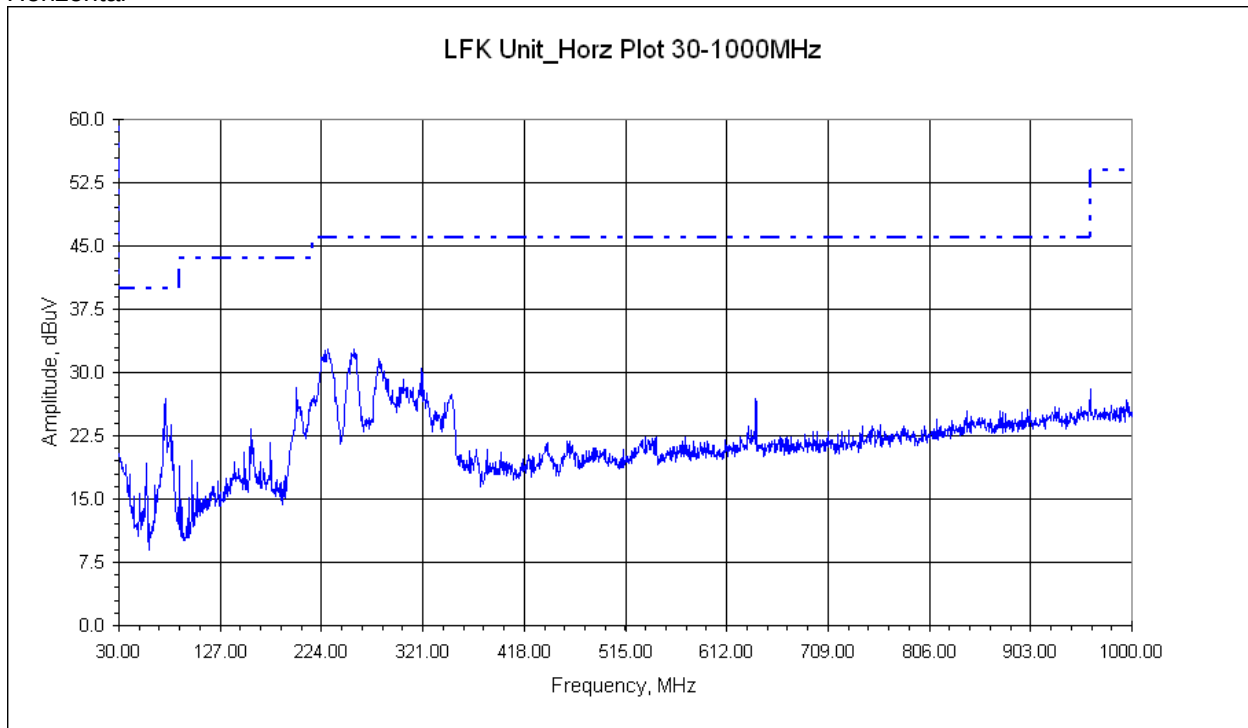
5.7 Pre-scan Plots: Reference Only – Not Final Data: POE

Radiated Emissions – FCC 15.209/IC RSS-210 (30MHz to 1000MHz)

Vertical.



Horizontal

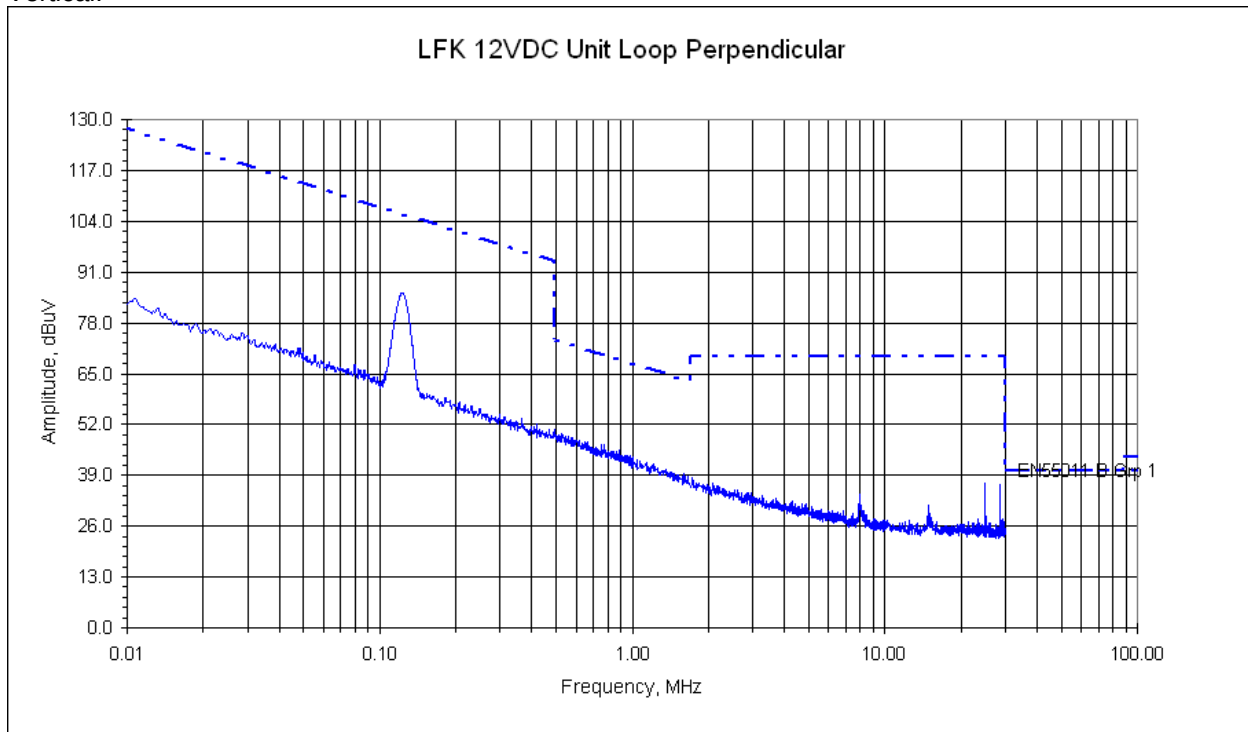


Note: Peak detector measurements plotted against quasi-peak limits

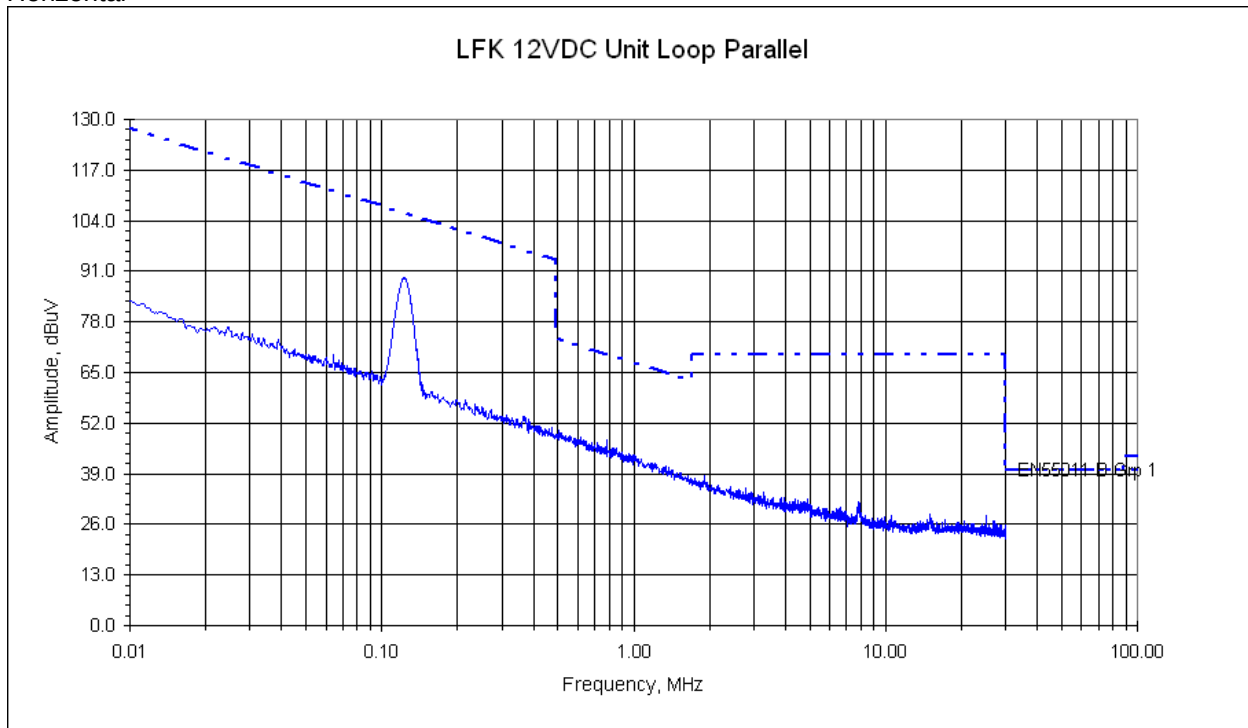
5.8 Pre-scan Plots: Reference only – Not Final Data: 12VDC

Radiated Emissions – FCC 15.209/ IC RSS-210 (10kHz to 30MHz)

Vertical.



Horizontal

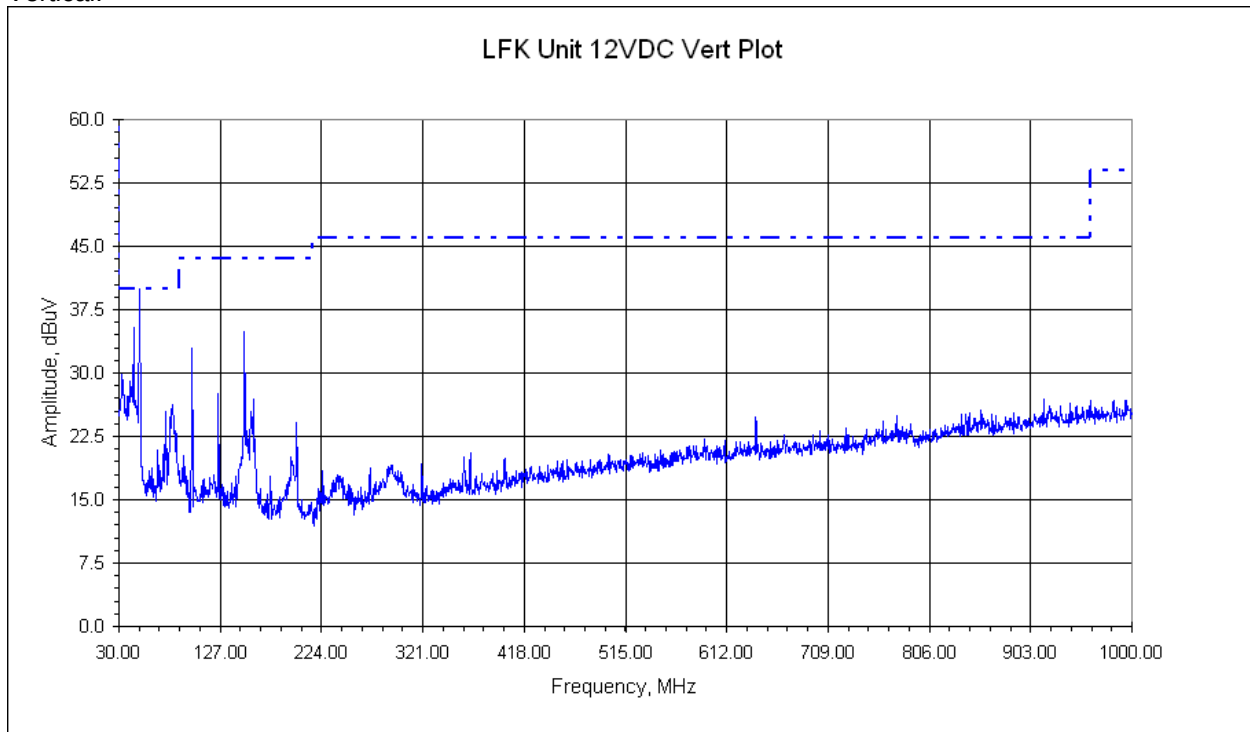


Note: Peak detector measurements plotted against quasi-peak limits

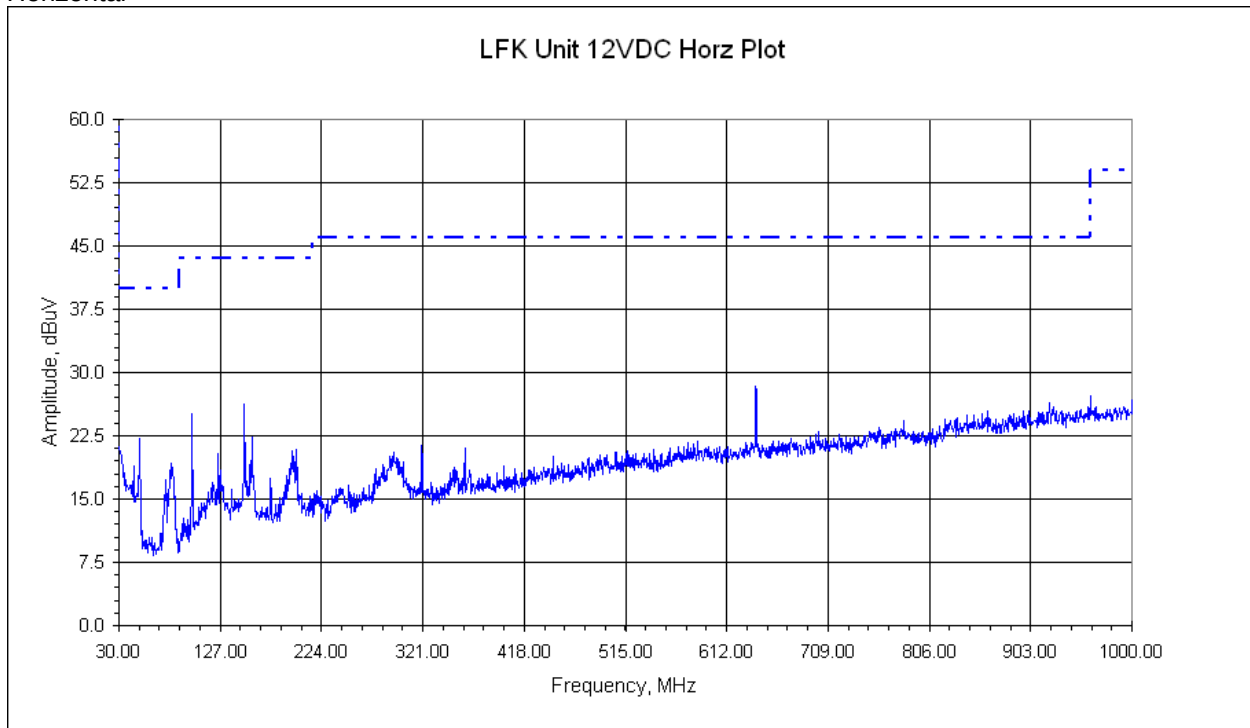
5.9 Pre-scan Plots: Reference only – Not Final Data: 12VDC

Radiated Emissions – FCC 15.209/ IC RSS-210 (30MHz to 1000MHz)

Vertical.



Horizontal

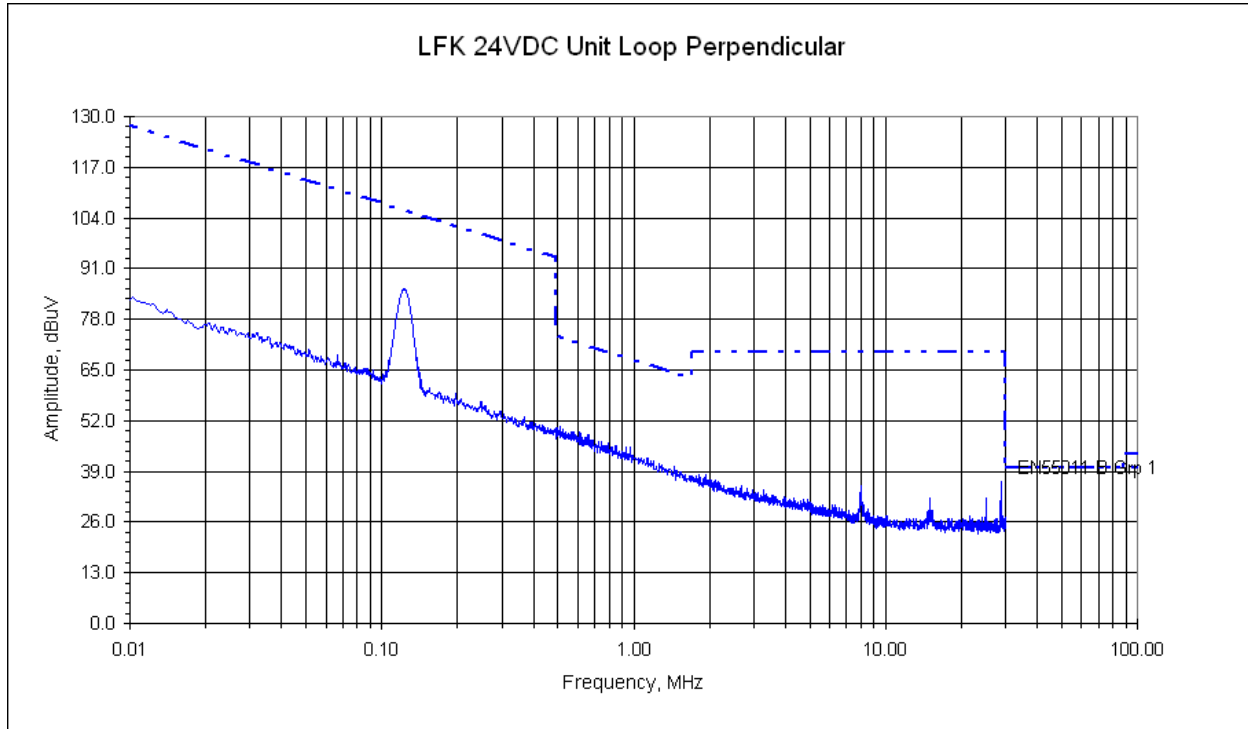


Note: Peak detector measurements plotted against quasi-peak limits

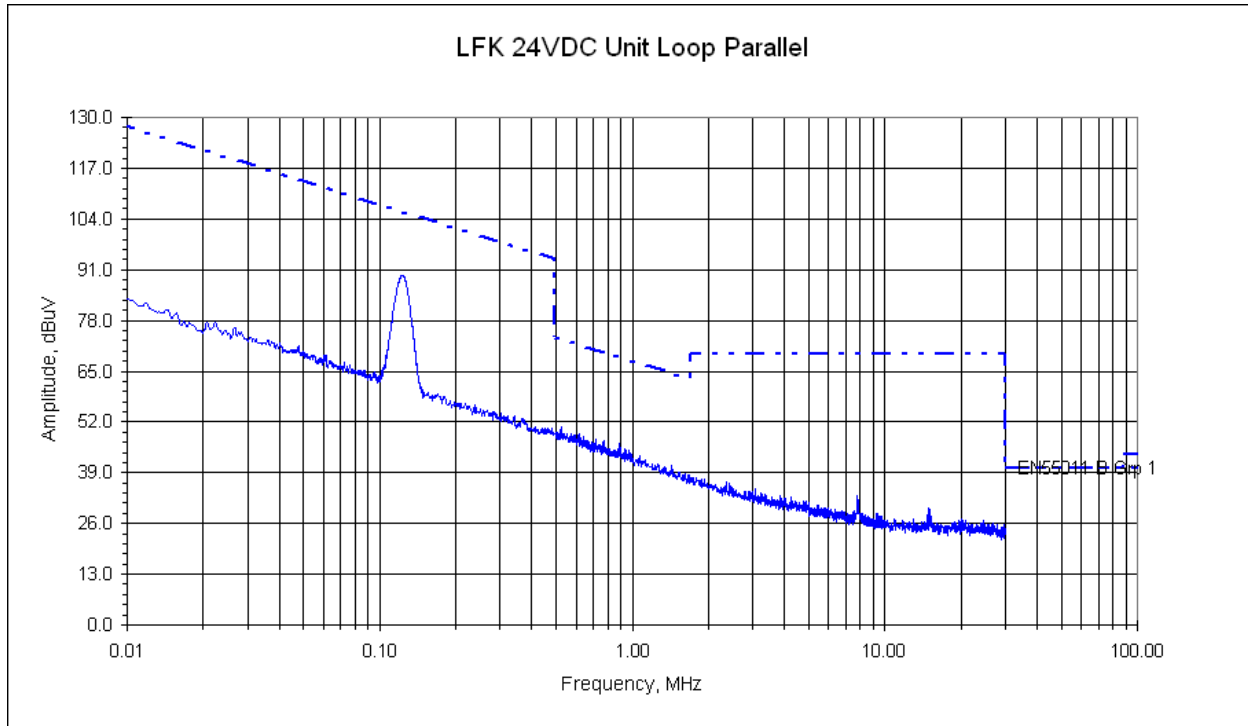
5.10 Pre-scan Plots: Reference only – Not Final Data: 24VDC

Radiated Emissions – FCC 15.209/ IC RSS-210 (10kHz to 30MHz)

Vertical.



Horizontal

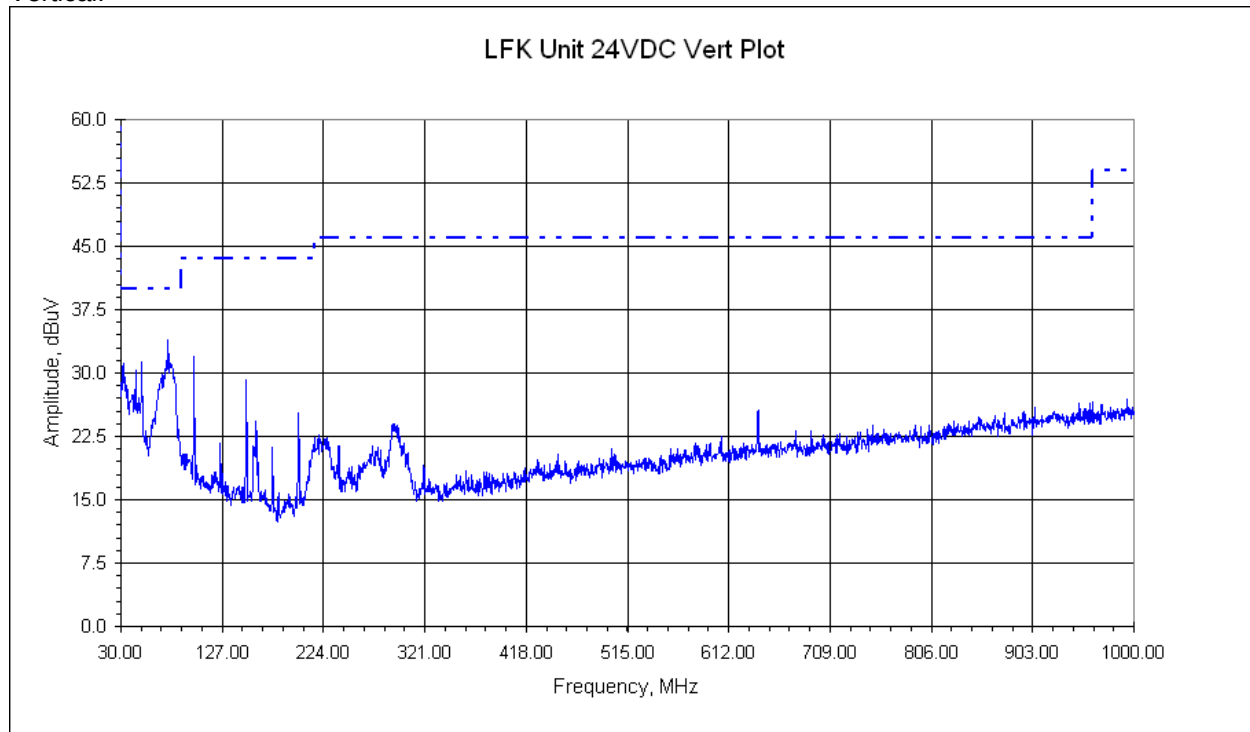


Note: Peak detector measurements plotted against quasi-peak limits

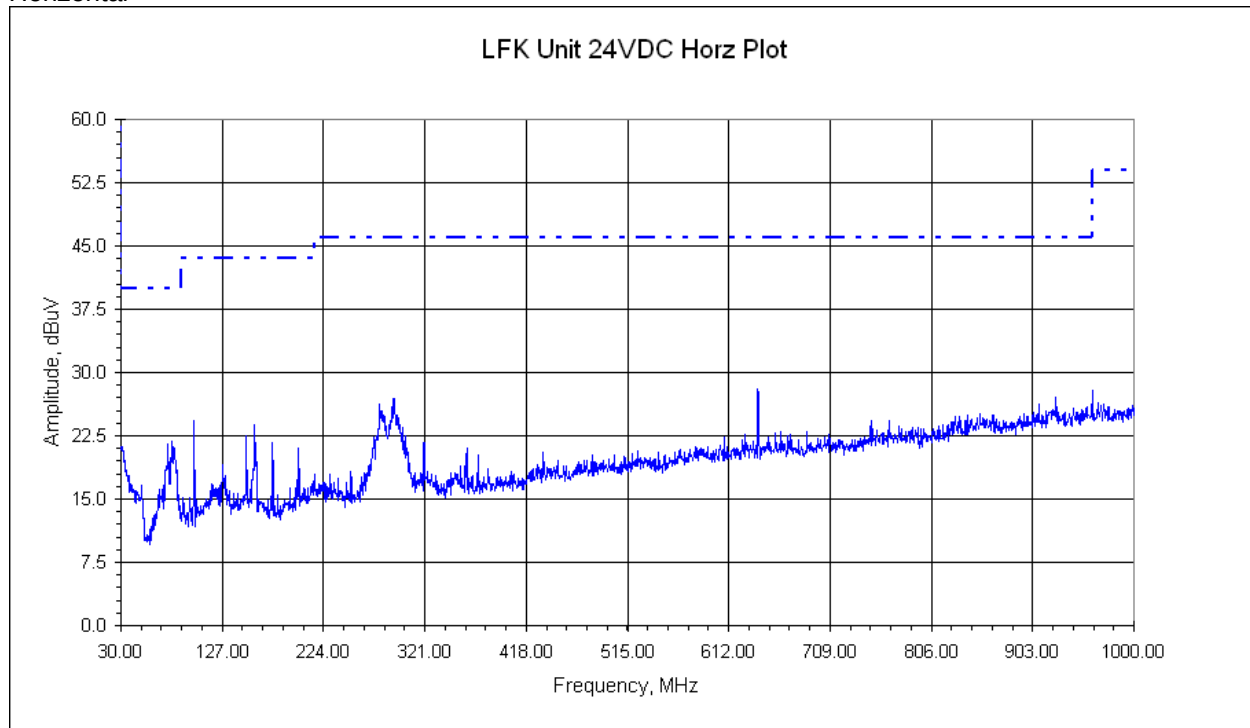
5.11 Pre-scan Plots: Reference only – Not Final Data: 24VDC

Radiated Emissions – FCC 15.209/ IC RSS-210 (30MHz to 1000MHz)

Vertical.



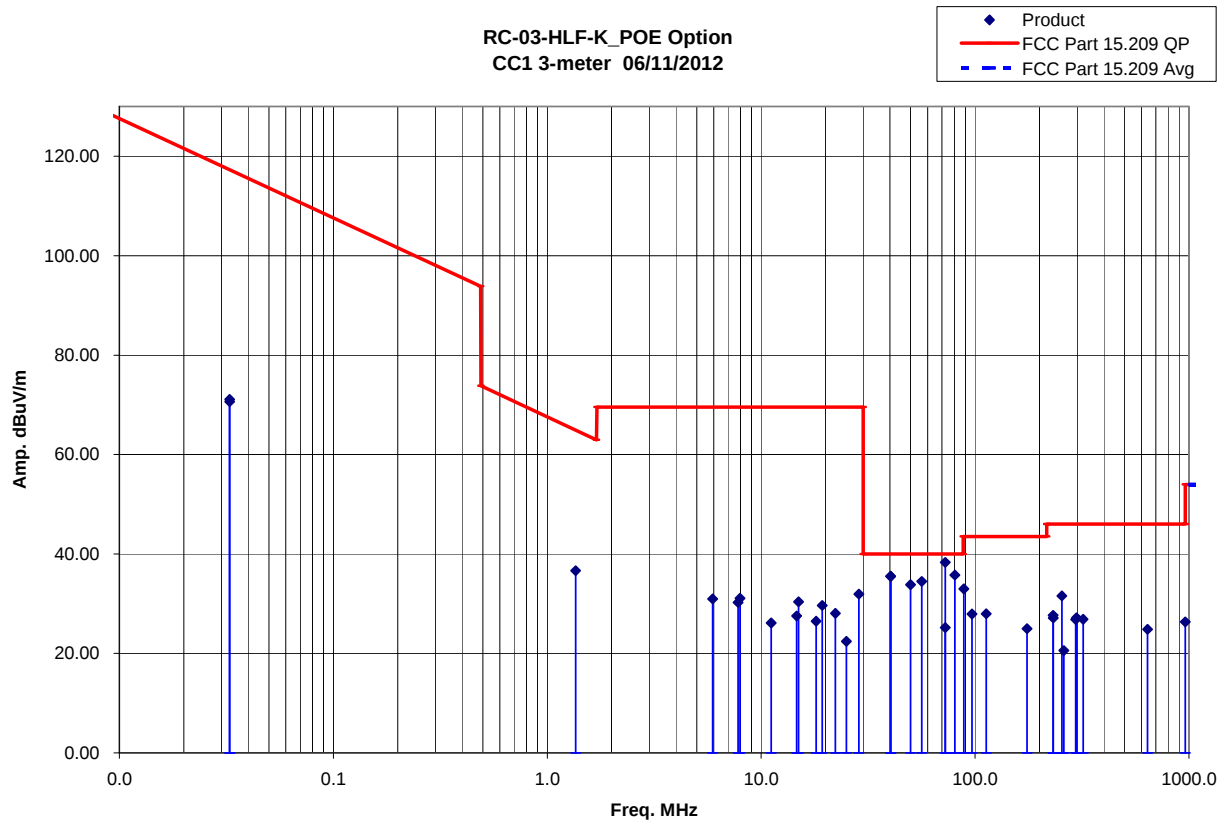
Horizontal



Note: Peak detector measurements plotted against quasi-peak limits

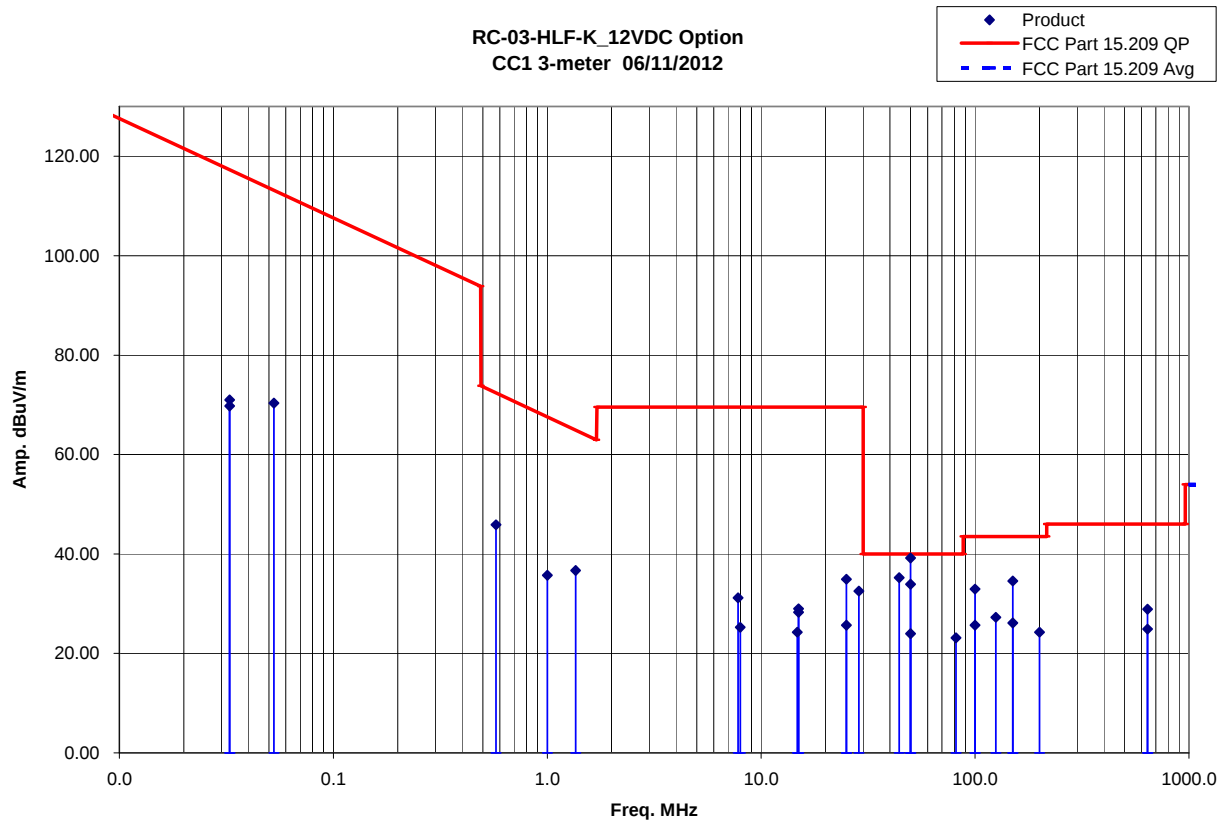
5.12 Final Plots: POE

Radiated Emissions – FCC 15.209/ IC RSS-210 (10kHz to 1000MHz)



5.13 Final Plots: 12VDC

Radiated Emissions – FCC 15.209/ IC RSS-210 (10kHz to 1000MHz)



5.14 Test Data: POE

Radiated Electromagnetic Emissions

Test Report #: G100744278	Test Area: CC1 Radiated	Temperature: <u>23.1</u> °C
Test Method: FCC 15.209	Test Date: <u>06/11/2012</u> <u>06/12/2012</u>	Relative Humidity: <u>21.9</u> %
EUT Model #: RC-03-PRX-K	EUT Power: POE	Air Pressure: <u>83.7</u> kPa
EUT Serial #: FCC1		

Manufacturer: ISONAS Security Systems

EUT Description: Network-Enabled RFID Reader/Controller – Low Frequency Option 122.8kHz

Notes: Product Tested in the following configuration: Power Over Ethernet (POE)

Product continuously operating/active during all testing – normal operation

Level Key

Pk – Peak

Qp – Quasi Peak

Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209	IC RSS- 210	(MHz)
Product POE Option													
Loop Antenna Perpendicular: 10kHz to 30MHz Data													
0.0328	57.44	Qp	0.02	13.21	0.00	0.00	70.67	V	1.00	248.0	- 45.94	- 45.94	0.009
1.3574	25.98	Qp	0.10	10.56	0.00	0.00	36.64	V	1.00	183.0	- 28.25	- 28.25	0.009
5.9304	20.15	Qp	0.20	10.60	0.00	0.00	30.95	V	1.00	186.0	- 38.59	- 38.59	0.009
7.9637	20.31	Qp	0.20	10.60	0.00	0.00	31.11	V	1.00	149.0	- 38.43	- 38.43	0.009
11.1337	15.53	Qp	0.20	10.39	0.00	0.00	26.12	V	1.00	149.0	- 43.42	- 43.42	0.009
14.9577	20.11	Qp	0.30	10.00	0.00	0.00	30.41	V	1.00	221.0	- 39.13	- 39.13	0.009
18.0577	15.82	Qp	0.30	10.37	0.00	0.00	26.49	V	1.00	203.0	- 43.05	- 43.05	0.009
19.2962	18.82	Qp	0.30	10.52	0.00	0.00	29.64	V	1.00	95.0	- 39.90	- 39.90	0.009
22.2412	17.60	Qp	0.30	10.15	0.00	0.00	28.05	V	1.00	150.0	- 41.49	- 41.49	0.009
25.0000	12.44	Qp	0.40	9.60	0.00	0.00	22.44	V	1.00	92.0	- 47.10	- 47.10	0.009
28.6360	22.89	Qp	0.40	8.65	0.00	0.00	31.94	V	1.00	333.0	- 37.60	- 37.60	0.009
Loop Antenna Parallel : 10kHz to 30MHz Data													
0.0328	57.86	Qp	0.02	13.21	0.00	0.00	71.09	H	1.00	333.0	- 45.52	- 45.52	0.009
7.8060	19.46	Qp	0.20	10.62	0.00	0.00	30.28	H	1.00	308.0	- 39.26	- 39.26	0.009
14.6360	17.21	Qp	0.30	10.04	0.00	0.00	27.55	H	1.00	59.0	- 41.99	- 41.99	0.009
0.0328	57.86	Qp	0.02	13.21	0.00	0.00	71.09	H	1.00	333.0	- 45.52	- 45.52	0.009
7.8060	19.46	Qp	0.20	10.62	0.00	0.00	30.28	H	1.00	308.0	- 39.26	- 39.26	0.009
14.6360	17.21	Qp	0.30	10.04	0.00	0.00	27.55	H	1.00	59.0	- 41.99	- 41.99	0.009

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	DEG	FCC 15.209	IC RSS- 210	(MHz)
Product POE Option													
BiLog Antenna Vertical: 30MHz to 1000MHz Data													
40.2600	49.61	Qp	0.77	13.34	28.20	0.00	35.52	V	1.00	70.0	- 4.48	- 4.48	0.120
50.0000	53.36	Qp	0.77	7.90	28.20	0.00	33.83	V	1.00	333.0	- 6.17	- 6.17	0.120
56.3600	54.77	Qp	0.77	7.10	28.17	0.00	34.47	V	1.00	102.0	- 5.53	- 5.53	0.120
72.4600	57.49	Qp	0.77	8.15	28.09	0.00	38.31	V	1.00	82.0	- 1.69	- 1.69	0.120
80.5200	55.09	Qp	0.77	7.94	28.05	0.00	35.75	V	1.00	46.0	- 4.25	- 4.25	0.120
88.5700	52.34	Qp	0.77	7.91	28.01	0.00	33.01	V	1.00	224.0	- 10.51	- 10.51	0.120
96.6200	45.73	Qp	0.77	9.42	27.98	0.00	27.95	V	1.00	153.0	- 15.57	- 15.57	0.120
112.7200	42.25	Qp	0.77	12.87	27.90	0.00	27.99	V	1.00	146.0	- 15.53	- 15.53	0.120
175.0000	40.30	Qp	0.88	11.40	27.60	0.00	24.98	V	1.00	62.0	- 18.54	- 18.54	0.120
232.0000	42.15	Qp	1.02	11.32	27.33	0.00	27.16	V	1.00	0.0	- 18.86	- 18.86	0.120
259.6500	34.21	Qp	1.09	12.47	27.20	0.00	20.57	V	1.63	312.0	- 25.45	- 25.45	0.120
297.9000	39.45	Qp	1.18	13.74	27.17	0.00	27.20	V	1.58	0.0	- 18.82	- 18.82	0.120
639.9900	31.92	Qp	1.76	19.50	28.32	0.00	24.86	V	1.82	231.0	- 21.16	- 21.16	0.120
959.9800	29.13	Qp	2.17	22.50	27.45	0.00	26.35	V	1.29	73.0	- 19.67	- 19.67	0.120
BiLog Antenna Horizontal: 30MHz to 1000MHz Data													
72.4700	44.38	Qp	0.77	8.15	28.09	0.00	25.20	H	2.32	16.0	- 14.80	- 14.80	0.120
231.4400	42.72	Qp	1.02	11.29	27.33	0.00	27.69	H	2.29	271.0	- 18.33	- 18.33	0.120
254.6000	45.76	Qp	1.08	11.98	27.22	0.00	31.59	H	1.29	250.0	- 14.43	- 14.43	0.120
295.5100	39.03	Qp	1.17	13.79	27.16	0.00	26.84	H	1.73	314.0	- 19.18	- 19.18	0.120
320.0000	38.91	Qp	1.23	14.00	27.25	0.00	26.90	H	1.25	109.0	- 19.12	- 19.12	0.120
72.4700	44.38	Qp	0.77	8.15	28.09	0.00	25.20	H	2.32	16.0	- 14.80	- 14.80	0.120
231.4400	42.72	Qp	1.02	11.29	27.33	0.00	27.69	H	2.29	271.0	- 18.33	- 18.33	0.120
254.6000	45.76	Qp	1.08	11.98	27.22	0.00	31.59	H	1.29	250.0	- 14.43	- 14.43	0.120
295.5100	39.03	Qp	1.17	13.79	27.16	0.00	26.84	H	1.73	314.0	- 19.18	- 19.18	0.120
320.0000	38.91	Qp	1.23	14.00	27.25	0.00	26.90	H	1.25	109.0	- 19.12	- 19.12	0.120

Example calculation:

Measure d Level	+	Cable Loss	+	Antenna Factor	-	Pre- Amp	+	Atten	=	Final Correcte d Reading	Specificatio n Limit	-	Final Correcte d Reading	=	Delta Specificatio n
(dBμV)		(dB)		(dB)		(dB)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		
20.0		3.0		5.0		10.0		0.0		18.0	40.0		18.0		- 22.0

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Report Number: 100744278DEN-001

Issued:6/28/2012

5.15 Test Data: 12VDC

Radiated Electromagnetic Emissions

Test Report #:	G100744278	Test Area:	CC1 Radiated	Temperature:	23.5 °C
Test Method:	FCC 15.209 IC RSS-210/ RSS-GEN	Test Date:	06/11/2012 06/12/2012	Relative Humidity:	24.1 %
EUT Model #:	RC-03-PRX-K	EUT Power:	12VDC	Air Pressure:	83.8 kPa

EUT Serial #: FCC1

Manufacturer: ISONAS Security Systems

EUT Description: Network-Enabled RFID Reader/Controller – Low Frequency Option
122.8kHz

Notes: Product Tested in the following configuration: 12VDC

Product continuously operating/active during all testing – normal operation

Level Key

Pk – Peak

Qp – Quasi Peak

Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209	IC RSS- 210	(MHz)
Product 12VDC Option													
Loop Antenna Perpendicular: 10kHz to 30MHz Data													
1.0000	25.04	Qp	0.10	10.60	0.00	0.00	35.74	V	1.00	195.0	- 31.82	- 31.82	0.009
0.0328	57.12	Qp	0.02	13.21	0.00	0.00	70.35	V	1.00	117.0	- 46.26	- 46.26	0.009
14.7456	13.96	Qp	0.30	10.03	0.00	0.00	24.29	V	1.00	252.0	- 45.25	- 45.25	0.009
7.9800	14.46	Qp	0.20	10.60	0.00	0.00	25.26	V	1.00	252.0	- 44.28	- 44.28	0.009
14.9580	18.68	Qp	0.30	10.00	0.00	0.00	28.98	V	1.00	105.0	- 40.56	- 40.56	0.009
25.0000	24.94	Qp	0.40	9.60	0.00	0.00	34.94	V	1.00	64.0	- 34.60	- 34.60	0.009
28.6350	23.50	Qp	0.40	8.65	0.00	0.00	32.55	V	1.00	335.0	- 36.99	- 36.99	0.009
0.0328	56.55	Qp	0.02	13.21	0.00	0.00	69.78	V	1.00	41.0	- 46.83	- 46.83	0.009
0.5760	35.29	Qp	0.10	10.50	0.00	0.00	45.89	V	1.00	221.0	- 26.50	- 26.50	0.009
Loop Antenna Parallel : 10kHz to 30MHz Data													
0.0328	57.78	Pk	0.02	13.21	0.00	0.00	71.01	H	1.00	221.0	- 45.60	- 45.60	0.009
1.3574	26.02	Qp	0.10	10.56	0.00	0.00	36.68	H	1.00	305.0	- 28.21	- 28.21	0.009
7.8004	20.39	Qp	0.20	10.62	0.00	0.00	31.21	H	1.00	78.0	- 38.33	- 38.33	0.009
14.9600	18.00	Qp	0.30	10.00	0.00	0.00	28.30	H	1.00	232.0	- 41.24	- 41.24	0.009
25.0000	15.71	Qp	0.40	9.60	0.00	0.00	25.71	H	1.00	26.0	- 43.83	- 43.83	0.009
0.0328	57.78	Qp	0.02	13.21	0.00	0.00	71.01	H	1.00	221.0	- 45.60	- 45.60	0.009

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Report Number: 100744278DEN-001

Issued:6/28/2012

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	DEG	FCC 15.209	IC RSS- 210	(MHz)
Product 12VDC Option													
BiLog Antenna Vertical: 30MHz to 1000MHz Data													
44.2300	52.14	Qp	0.77	10.51	28.20	0.00	35.22	V	1.00	285.0	- 4.78	- 4.78	0.120
50.0000	53.43	Qp	0.77	7.90	28.20	0.00	33.90	V	1.00	22.0	- 6.10	- 6.10	0.120
50.0000	59.38	Qp	0.77	7.90	28.20	0.00	39.85	V	1.00	22.0	- 0.15	- 0.15	0.120
81.3400	42.64	Qp	0.77	7.77	28.05	0.00	23.13	V	1.00	327.0	- 16.87	- 16.87	0.120
99.9900	49.86	Qp	0.77	10.30	27.96	0.00	32.97	V	1.00	20.0	- 10.55	- 10.55	0.120
124.9900	40.94	Qp	0.77	13.40	27.84	0.00	27.27	V	1.00	41.0	- 16.25	- 16.25	0.120
150.0000	49.07	Qp	0.82	12.40	27.72	0.00	34.57	V	1.00	195.0	- 8.95	- 8.95	0.120
200.0000	38.74	Qp	0.94	12.10	27.48	0.00	24.30	V	1.06	318.0	- 19.22	- 19.22	0.120
640.0100	31.98	Qp	1.76	19.50	28.32	0.00	24.92	V	1.22	112.0	- 21.10	- 21.10	0.120
BiLog Antenna Horizontal: 30MHz to 1000MHz Data													
50.0000	43.51	Qp	0.77	7.90	28.20	0.00	23.98	H	1.79	50.0	- 16.02	- 16.02	0.120
100.0000	42.59	Qp	0.77	10.30	27.96	0.00	25.70	H	1.74	164.0	- 17.82	- 17.82	0.120
150.0000	40.63	Qp	0.82	12.40	27.72	0.00	26.13	H	1.57	335.0	- 17.39	- 17.39	0.120
639.9800	35.97	Qp	1.76	19.50	28.32	0.00	28.91	H	1.41	350.0	- 17.11	- 17.11	0.120

Example calculation:

Measure d Level	+	Cable Loss	+	Antenna Factor	-	Pre- Amp	+	Atten	=	Final Correcte d Reading	Specificatio n Limit	-	Final Correcte d Reading	=	Delta Specificatio n
(dBμV)		(dB)		(dB)		(dB)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		
20.0		3.0		5.0		10.0		0.0		18.0	40.0		18.0		- 22.0

Notes:

- 1) The following product options were tested: Power Over Ethernet (POE) and 12/24VDC.
- 2) For the 12/24 VDC product option, pre-scans were taken for both 12VDC & 24VDC. The worst-case VDC product option was fully tested.
- 3) Per client, the product is never operated in receive/standby-mode only. Therefore, all unintentional radiated emissions testing was performed with the product configured for normal operation – with the transmit function active.

Deviations, Additions, or Exclusions: None

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

6 Tx Voltage Variation – FCC 15.31

6.1 Method

Unless otherwise stated no deviations were made from FCC 15.31.

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

6.2 Test Equipment Used:

Asset ID:	Description:	Manufacturer:	Model:	Serial:	Cal Date	Cal Due
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18897	Active Loop Antenna	EMCO	6502	9205-2738	11/22/2011	11/22/2012
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V003	VBU	VBU

Tx Voltage Variation

Test Report #:	G100744278	Test Area:	CC1 Radiated	Temperature:	23.5 °C
Test Method:	FCC 15.31	Test Date:	06/11/2012 06/12/2012	Relative Humidity:	24.1 %
EUT Model #:	RC-03-PRX-K	EUT Power:	12VDC	Air Pressure:	83.8 kPa

EUT Serial #: FCC1

Manufacturer:	ISONAS Security Systems	Level Key
EUT Description:	Network-Enabled RFID Reader/Controller – Low Frequency Option 122.8kHz	Pk – Peak
Notes:	Product Tested in the following configuration: 12VDC Product continuously operating/active during all testing – normal operation	Qp – Quasi Peak
		Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	Delta2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)			(MHz)
Product 12VDC Option													
Voltage Nominal – 12VDC													
0.1228	79.68	Pk	0.02	10.32	0.00	0.00	90.03	H	1.16	199.0	N/A	N/A	.009
Minus 10% of Nominal - 10.8VDC													
0.1228	79.68	Pk	0.02	10.32	0.00	0.00	90.03	H	1.16	199.0	N/A	N/A	.009
Plus 10% of Nominal 13.2VDC													
0.1228	79.62	Pk	0.02	10.32	0.00	0.00	89.97	H	1.16	199.0	N/A	N/A	.009

Note: All testing will be performed at the nominal dc voltage: 12VDC (worst-case)

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

7 Radiated Tx Intentional Emissions – Fundamental & Harmonics of the Fundamental

7.1 Method

Unless otherwise stated no deviations were made from FCC 15.209/ IC RSS-210.

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

7.2 Test Equipment Used:

<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18897	Active Loop Antenna	EMCO	6502	9205-2738	11/22/2011	11/22/2012
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V003	VBU	VBU

7.3 Results:

The sample tested was found to Comply.

7.4 Product Test Orientations: POE

Axis 1



Axis 2



Axis 3



7.5 Product Test Orientations: 12/24VDC

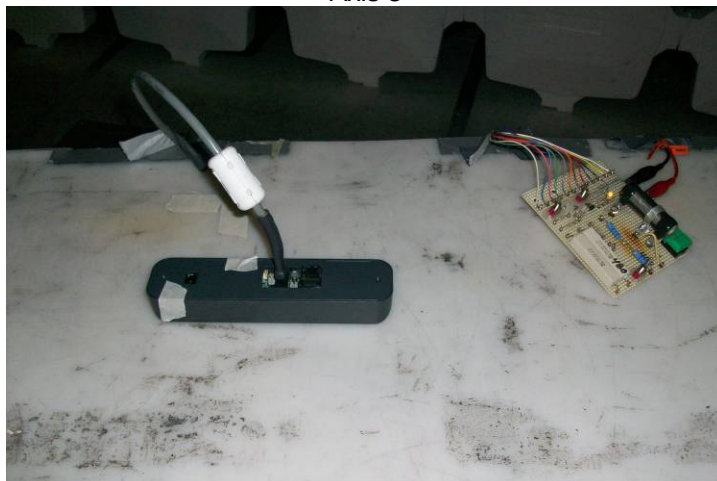
Axis 1



Axis 2



Axis 3



7.6 Setup Photographs: POE

Test setup – Front view



RC-03-PRX-K Product Under Test



Pigtail Test Board

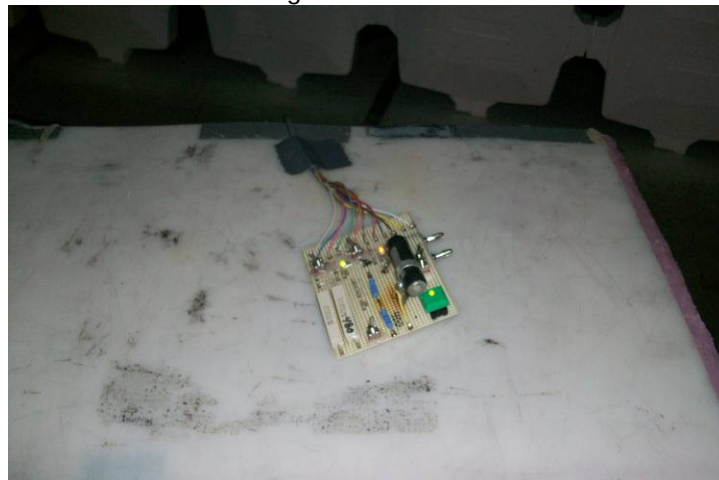


Photo: POE

Test setup – Rear view

Midspan PSE on floor



7.7 Setup Photographs: 12/24VDC

Test setup – Front view



RC-03-PRX-K Product Under test



Pigtail Test Board

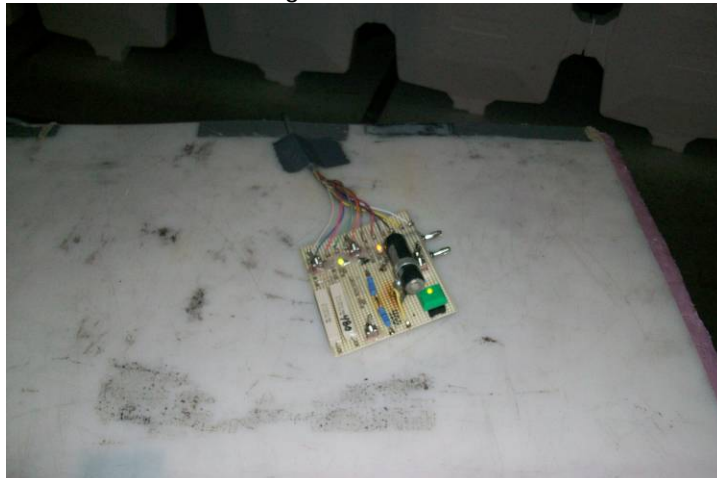


Photo: 12/24VDC

Test setup – Rear view

DC Power Supply on floor



Photo: Antenna Setup

Antenna Setup: Active Loop Antenna - 10kHz to 30MHz



7.8 Test Data: POE

Tx Intentional Radiated Electromagnetic Emissions

Test Report #: G100744278	Test Area: CC1 Radiated	Temperature: <u>23.9</u> °C
Test Method: FCC 15.209	Test Date: <u>06/11/2012</u> <u>06/12/2012</u>	Relative Humidity: <u>19.8</u> %
EUT Model #: RC-03-PRX-K	EUT Power: POE	Air Pressure: <u>83.5</u> kPa
EUT Serial #: FCC1		

Manufacturer: ISONAS Security Systems

EUT Description: Network-Enabled RFID Reader/Controller – Low Frequency Option
Tx = 122.8kHz (Inductive Loop Antenna)

Notes: Product Tested in the following configuration: Power Over Ethernet (POE)

Product continuously operating/active during all testing – normal operation

Limits below 30 MHz were extrapolated using 15.31 and RSS-GEN section 4.11

Level Key

Pk – Peak

Qp – Quasi Peak

Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209 IC RSS- 210	FCC 15.209 ICRSS- 210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 1													
Loop antenna perpendicular to EUT													
Fundamental Measurement													
0.1228	75.95	Pk	0.02	10.32	0.00	0.00	86.30	V	1.00	360.0	- 19.17	105.47	0.009
Harmonics measurements													
0.2456	44.13	Pk	0.03	10.35	0.00	0.00	54.51	V	1.00	360.0	- 45.11	99.62	0.009
0.3684	40.18	Pk	0.04	10.16	0.00	0.00	50.38	V	1.00	360.0	- 45.83	96.21	0.009
0.4912	36.90	Pk	0.10	10.46	0.00	0.00	47.46	V	1.00	360.0	- 26.31	73.77	0.009
0.6140	34.10	Pk	0.10	10.47	0.00	0.00	44.67	V	1.00	360.0	- 27.16	71.83	0.009
0.7368	32.28	Pk	0.10	10.37	0.00	0.00	42.75	V	1.00	360.0	- 27.48	70.23	0.009
0.8596	31.50	Pk	0.10	10.56	0.00	0.00	42.16	V	1.00	360.0	- 26.73	68.89	0.009
0.9824	29.53	Pk	0.10	10.60	0.00	0.00	40.23	V	1.00	360.0	- 27.49	67.72	0.009
1.1052	29.91	Pk	0.10	10.59	0.00	0.00	40.60	V	1.00	360.0	- 26.09	66.69	0.009
1.2280	29.59	Pk	0.10	10.58	0.00	0.00	40.27	V	1.00	360.0	- 25.50	65.77	0.009
Loop antenna parallel to EUT													
Fundamental Measurement													
0.1228	79.58	Pk	0.02	10.32	0.00	0.00	89.93	H	1.00	360.0	- 15.54	105.47	0.009
Harmonics measurements													
0.2456	43.64	Pk	0.03	10.35	0.00	0.00	54.02	H	1.00	360.0	- 45.60	99.62	0.009
0.3684	40.94	Pk	0.04	10.16	0.00	0.00	51.14	H	1.00	360.0	- 45.07	96.21	0.009
0.4912	35.94	Pk	0.10	10.46	0.00	0.00	46.50	H	1.00	360.0	- 27.27	73.77	0.009
0.6140	35.89	Pk	0.10	10.47	0.00	0.00	46.46	H	1.00	360.0	- 25.37	71.83	0.009
0.7368	34.94	Pk	0.10	10.37	0.00	0.00	45.41	H	1.00	360.0	- 24.82	70.23	0.009
0.8596	33.38	Pk	0.10	10.56	0.00	0.00	44.04	H	1.00	360.0	- 24.85	68.89	0.009
0.9824	30.50	Pk	0.10	10.60	0.00	0.00	41.20	H	1.00	360.0	- 26.52	67.72	0.009
1.1052	29.59	Pk	0.10	10.59	0.00	0.00	40.28	H	1.00	360.0	- 26.41	66.69	0.009
1.2280	29.07	Pk	0.10	10.58	0.00	0.00	39.75	H	1.00	360.0	- 26.02	65.77	0.009

Intertek

Report Number: 100744278DEN-001

Issued:6/28/2012

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209 IC RSS- 210	FCC 15.209 IC RSS- 210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 2													
Loop antenna perpendicular to EUT													
Fundamental Measurement													
0.1228	75.33	Pk	0.02	10.32	0.00	0.00	85.68	V	1.00	360.0	- 19.79	105.47	0.009
Harmonics measurements													
0.2456	42.38	Pk	0.03	10.35	0.00	0.00	52.76	V	1.00	360.0	- 46.86	99.62	0.009
0.3684	39.92	Pk	0.04	10.16	0.00	0.00	50.12	V	1.00	360.0	- 46.09	96.21	0.009
0.4912	36.55	Pk	0.10	10.46	0.00	0.00	47.11	V	1.00	360.0	- 26.66	73.77	0.009
0.6140	35.52	Pk	0.10	10.47	0.00	0.00	46.09	V	1.00	360.0	- 25.74	71.83	0.009
0.7368	34.15	Pk	0.10	10.37	0.00	0.00	44.62	V	1.00	360.0	- 25.61	70.23	0.009
0.8596	32.01	Pk	0.10	10.56	0.00	0.00	42.67	V	1.00	360.0	- 26.22	68.89	0.009
0.9824	30.96	Pk	0.10	10.60	0.00	0.00	41.66	V	1.00	360.0	- 26.06	67.72	0.009
1.1052	29.80	Pk	0.10	10.59	0.00	0.00	40.49	V	1.00	360.0	- 26.20	66.69	0.009
1.2280	29.33	Pk	0.10	10.58	0.00	0.00	40.01	V	1.00	360.0	- 25.76	65.77	0.009
Loop antenna parallel to EUT													
Fundamental Measurement													
0.1228	79.27	Pk	0.02	10.32	0.00	0.00	89.62	H	1.00	360.0	- 15.85	105.47	0.009
Harmonics measurements													
0.2456	43.85	Pk	0.03	10.35	0.00	0.00	54.23	H	1.00	360.0	- 45.39	99.62	0.009
0.3684	41.00	Pk	0.04	10.16	0.00	0.00	51.20	H	1.00	360.0	- 45.01	96.21	0.009
0.4912	38.01	Pk	0.10	10.46	0.00	0.00	48.57	H	1.00	360.0	- 25.20	73.77	0.009
0.6140	35.63	Pk	0.10	10.47	0.00	0.00	46.20	H	1.00	360.0	- 25.63	71.83	0.009
0.7368	33.46	Pk	0.10	10.37	0.00	0.00	43.93	H	1.00	360.0	- 26.30	70.23	0.009
0.8596	32.37	Pk	0.10	10.56	0.00	0.00	43.03	H	1.00	360.0	- 25.86	68.89	0.009
0.9824	31.34	Pk	0.10	10.60	0.00	0.00	42.04	H	1.00	360.0	- 25.68	67.72	0.009
1.1052	30.22	Pk	0.10	10.59	0.00	0.00	40.91	H	1.00	360.0	- 25.78	66.69	0.009
1.2280	29.08	Pk	0.10	10.58	0.00	0.00	39.76	H	1.00	360.0	- 26.01	65.77	0.009

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209 IC RSS-210	FCC 15.209 IC RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 3													
Loop antenna perpendicular to EUT													
Fundamental Measurement													
0.1228	52.59	Pk	0.02	10.32	0.00	0.00	62.94	V	1.00	360.0	- 42.53	105.47	0.009
Harmonics measurements													
0.2456	41.97	Pk	0.03	10.35	0.00	0.00	52.35	V	1.00	360.0	- 47.27	99.62	0.009
0.3684	39.68	Pk	0.04	10.16	0.00	0.00	49.88	V	1.00	360.0	- 46.33	96.21	0.009
0.4912	36.27	Pk	0.10	10.46	0.00	0.00	46.83	V	1.00	360.0	- 26.94	73.77	0.009
0.6140	36.32	Pk	0.10	10.47	0.00	0.00	46.89	V	1.00	360.0	- 24.94	71.83	0.009
0.7368	32.68	Pk	0.10	10.37	0.00	0.00	43.15	V	1.00	360.0	- 27.08	70.23	0.009
0.8596	31.74	Pk	0.10	10.56	0.00	0.00	42.40	V	1.00	360.0	- 26.49	68.89	0.009
0.9824	29.97	Pk	0.10	10.60	0.00	0.00	40.67	V	1.00	360.0	- 27.05	67.72	0.009
1.1052	29.30	Pk	0.10	10.59	0.00	0.00	39.99	V	1.00	360.0	- 26.70	66.69	0.009
1.2280	29.49	Pk	0.10	10.58	0.00	0.00	40.17	V	1.00	360.0	- 25.60	65.77	0.009
Loop antenna parallel to EUT													
Fundamental Measurement													
0.1228	64.59	Pk	0.02	10.32	0.00	0.00	74.94	H	1.00	0.0	- 30.53	105.47	0.009
Harmonics measurements													
0.2456	42.08	Pk	0.03	10.35	0.00	0.00	52.46	H	1.00	0.0	- 47.16	99.62	0.009
0.3684	39.55	Pk	0.04	10.16	0.00	0.00	49.75	H	1.00	0.0	- 46.46	96.21	0.009
0.4912	37.51	Pk	0.10	10.46	0.00	0.00	48.07	H	1.00	0.0	- 25.70	73.77	0.009
0.6140	34.71	Pk	0.10	10.47	0.00	0.00	45.28	H	1.00	0.0	- 26.55	71.83	0.009
0.7368	33.36	Pk	0.10	10.37	0.00	0.00	43.83	H	1.00	0.0	- 26.40	70.23	0.009
0.8596	31.78	Pk	0.10	10.56	0.00	0.00	42.44	H	1.00	0.0	- 26.45	68.89	0.009
0.9824	30.14	Pk	0.10	10.60	0.00	0.00	40.84	H	1.00	0.0	- 26.88	67.72	0.009
1.1052	29.71	Pk	0.10	10.59	0.00	0.00	40.40	H	1.00	0.0	- 26.29	66.69	0.009
1.2280	29.86	Pk	0.10	10.58	0.00	0.00	40.54	H	1.00	0.0	- 25.23	65.77	0.009

Example calculation:

Measure d Level	+	Cable Loss	+	Antenna Factor	-	Pre- Amp	+	Atten	=	Final Correcte d Reading	Specificatio n Limit	-	Final Correcte d Reading	=	Delta Specificatio n
(dBμV)		(dB)		(dB)		(dB)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		(dBμV/m)
20.0		3.0		5.0		10.0		0.0		18.0	40.0		18.0		- 22.0

7.9 Test Data: 12/24VDC

Tx Intentional Radiated Electromagnetic Emissions

Test Report #: G100744278	Test Area: CC1 Radiated	Temperature: <u>23.9</u> °C
Test Method: FCC 15.209	Test Date: <u>06/11/2012</u> <u>06/12/2012</u>	Relative Humidity: <u>19.8</u> %
EUT Model #: RC-03-PRX-K	EUT Power: <u>12VDC</u>	Air Pressure: <u>83.5</u> kPa

EUT Serial #: FCC1

Manufacturer: ISONAS Security Systems

EUT Description: Network-Enabled RFID Reader/Controller – Low Frequency Option
Tx = 122.8kHz (Inductive Loop Antenna)

Notes: Product Tested in the following configuration: 12VDC

Product continuously operating/active during all testing – normal operation

Limits below 30 MHz were extrapolated using 15.31 and RSS-GEN section 4.11

Level Key

Pk – Peak

Qp – Quasi Peak

Av - Average

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209 IC RSS-210	FCC 15.209 IC RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 1													
Loop antenna perpendicular to EUT													
Fundamental Measurement													
0.1228	76.04	Pk	0.02	10.32	0.00	0.00	86.39	V	1.00	243.0	- 19.08	105.47	0.009
Harmonics measurements													
0.2456	42.52	Pk	0.03	10.35	0.00	0.00	52.90	V	1.00	19.0	- 46.72	99.62	0.009
0.3684	40.09	Pk	0.04	10.16	0.00	0.00	50.29	V	1.00	344.0	- 45.92	96.21	0.009
0.4912	36.27	Pk	0.10	10.46	0.00	0.00	46.83	V	1.00	44.0	- 26.94	73.77	0.009
0.6140	34.71	Pk	0.10	10.47	0.00	0.00	45.28	V	1.00	260.0	- 26.55	71.83	0.009
0.7368	33.69	Pk	0.10	10.37	0.00	0.00	44.16	V	1.00	99.0	- 26.07	70.23	0.009
0.8596	32.25	Pk	0.10	10.56	0.00	0.00	42.91	V	1.00	152.0	- 25.98	68.89	0.009
0.9824	29.79	Pk	0.10	10.60	0.00	0.00	40.49	V	1.00	225.0	- 27.23	67.72	0.009
1.1052	28.73	Pk	0.10	10.59	0.00	0.00	39.42	V	1.00	269.0	- 27.27	66.69	0.009
1.2280	28.46	Pk	0.10	10.58	0.00	0.00	39.14	V	1.00	112.0	- 26.63	65.77	0.009
Loop antenna parallel to EUT													
Fundamental Measurement													
0.1228	80.02	Pk	0.02	10.32	0.00	0.00	90.37	H	1.00	59.0	- 15.10	105.47	0.009
Harmonics measurements													
0.2456	43.02	Pk	0.03	10.35	0.00	0.00	53.40	H	1.00	59.0	- 46.22	99.62	0.009
0.3684	41.05	Pk	0.04	10.16	0.00	0.00	51.25	H	1.00	185.0	- 44.96	96.21	0.009
0.4912	37.04	Pk	0.10	10.46	0.00	0.00	47.60	H	1.00	15.0	- 26.17	73.77	0.009

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

0.6140	35.27	Pk	0.10	10.47	0.00	0.00	45.84	H	1.00	195.0	- 25.99	71.83	0.009
0.7368	33.21	Pk	0.10	10.37	0.00	0.00	43.68	H	1.00	18.0	- 26.55	70.23	0.009
0.8596	31.85	Pk	0.10	10.56	0.00	0.00	42.51	H	1.00	321.0	- 26.38	68.89	0.009
0.9824	30.85	Pk	0.10	10.60	0.00	0.00	41.55	H	1.00	16.0	- 26.17	67.72	0.009
1.1052	29.39	Pk	0.10	10.59	0.00	0.00	40.08	H	1.00	342.0	- 26.61	66.69	0.009
1.2280	28.48	Pk	0.10	10.58	0.00	0.00	39.16	H	1.00	27.0	- 26.61	65.77	0.009

Intertek

Report Number: 100744278DEN-001

Issued:6/28/2012

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209 IC RSS-210	FCC 15.209 IC RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 2													
Loop antenna perpendicular to EUT													
Fundamental Measurement													
0.1228	75.21	Pk	0.02	10.32	0.00	0.00	85.56	V	1.00	0.0	- 19.91	105.47	0.009
Harmonics measurements													
0.2456	43.43	Pk	0.03	10.35	0.00	0.00	53.81	V	1.00	0.0	- 45.81	99.62	0.009
0.3684	39.58	Pk	0.04	10.16	0.00	0.00	49.78	V	1.00	0.0	- 46.43	96.21	0.009
0.4912	38.27	Pk	0.10	10.46	0.00	0.00	48.83	V	1.00	0.0	- 24.94	73.77	0.009
0.6140	34.32	Pk	0.10	10.47	0.00	0.00	44.89	V	1.00	0.0	- 26.94	71.83	0.009
0.7368	33.82	Pk	0.10	10.37	0.00	0.00	44.29	V	1.00	0.0	- 25.94	70.23	0.009
0.8596	32.03	Pk	0.10	10.56	0.00	0.00	42.69	V	1.00	0.0	- 26.20	68.89	0.009
0.9824	30.20	Pk	0.10	10.60	0.00	0.00	40.90	V	1.00	0.0	- 26.82	67.72	0.009
1.1052	30.38	Pk	0.10	10.59	0.00	0.00	41.07	V	1.00	0.0	- 25.62	66.69	0.009
1.2280	28.98	Pk	0.10	10.58	0.00	0.00	39.66	V	1.00	0.0	- 26.11	65.77	0.009
Loop antenna parallel to EUT													
Fundamental Measurement													
0.1228	78.99	Pk	0.02	10.32	0.00	0.00	89.34	H	1.00	112.0	- 16.13	105.47	0.009
Harmonics measurements													
0.2456	42.83	Pk	0.03	10.35	0.00	0.00	53.21	H	1.00	360.0	- 46.41	99.62	0.009
0.3684	41.92	Pk	0.04	10.16	0.00	0.00	52.12	H	1.00	360.0	- 44.09	96.21	0.009
0.4912	37.66	Pk	0.10	10.46	0.00	0.00	48.22	H	1.00	360.0	- 25.55	73.77	0.009
0.6140	36.04	Pk	0.10	10.47	0.00	0.00	46.61	H	1.00	360.0	- 25.22	71.83	0.009
0.7368	33.04	Pk	0.10	10.37	0.00	0.00	43.51	H	1.00	360.0	- 26.72	70.23	0.009
0.8596	32.03	Pk	0.10	10.56	0.00	0.00	42.69	H	1.00	360.0	- 26.20	68.89	0.009
0.9824	32.06	Pk	0.10	10.60	0.00	0.00	42.76	H	1.00	360.0	- 24.96	67.72	0.009
1.1052	30.38	Pk	0.10	10.59	0.00	0.00	41.07	H	1.00	360.0	- 25.62	66.69	0.009
1.2280	29.38	Pk	0.10	10.58	0.00	0.00	40.06	H	1.00	360.0	- 25.71	65.77	0.009

Intertek

Report Number: 100744278DEN-001

Issued:6/28/2012

Freq	Level	Det	Cable	Ant	Preamp	Atten	Final	Pol	Hgt	Az	Delta1	LIMIT	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	(V/H)	(m)	(DEG)	FCC 15.209 IC RSS-210	FCC 15.209 IC RSS-210	(MHz)
Tx Fundamental & Harmonics Measurements – Axis 3													
Loop antenna perpendicular to EUT													
Fundamental Measurement													
0.1228	50.26	Pk	0.02	10.32	0.00	0.00	60.61	V	1.00	0.0	- 44.86	105.47	0.009
Harmonics measurements													
0.2456	42.64	Pk	0.03	10.35	0.00	0.00	53.02	V	1.00	0.0	- 46.60	99.62	0.009
0.3684	38.92	Pk	0.04	10.16	0.00	0.00	49.12	V	1.00	0.0	- 47.09	96.21	0.009
0.4912	35.69	Pk	0.10	10.46	0.00	0.00	46.25	V	1.00	0.0	- 27.52	73.77	0.009
0.6140	36.06	Pk	0.10	10.47	0.00	0.00	46.63	V	1.00	0.0	- 25.20	71.83	0.009
0.7368	32.67	Pk	0.10	10.37	0.00	0.00	43.14	V	1.00	0.0	- 27.09	70.23	0.009
0.8596	32.28	Pk	0.10	10.56	0.00	0.00	42.94	V	1.00	0.0	- 25.95	68.89	0.009
0.9824	30.68	Pk	0.10	10.60	0.00	0.00	41.38	V	1.00	0.0	- 26.34	67.72	0.009
1.1052	30.52	Pk	0.10	10.59	0.00	0.00	41.21	V	1.00	0.0	- 25.48	66.69	0.009
1.2280	27.71	Pk	0.10	10.58	0.00	0.00	38.39	V	1.00	0.0	- 27.38	65.77	0.009
Loop antenna parallel to EUT													
Fundamental Measurement													
0.1228	64.42	Pk	0.02	10.32	0.00	0.00	74.77	H	1.00	0.0	- 30.70	105.47	0.009
Harmonics measurements													
0.2456	42.80	Pk	0.03	10.35	0.00	0.00	53.18	H	1.00	0.0	- 46.44	99.62	0.009
0.3684	38.86	Pk	0.04	10.16	0.00	0.00	49.06	H	1.00	0.0	- 47.15	96.21	0.009
0.4912	35.71	Pk	0.10	10.46	0.00	0.00	46.27	H	1.00	0.0	- 27.50	73.77	0.009
0.6140	35.17	Pk	0.10	10.47	0.00	0.00	45.74	H	1.00	0.0	- 26.09	71.83	0.009
0.7368	33.80	Pk	0.10	10.37	0.00	0.00	44.27	H	1.00	0.0	- 25.96	70.23	0.009
0.8596	32.66	Pk	0.10	10.56	0.00	0.00	43.32	H	1.00	0.0	- 25.57	68.89	0.009
0.9824	30.63	Pk	0.10	10.60	0.00	0.00	41.33	H	1.00	0.0	- 26.39	67.72	0.009
1.1052	30.26	Pk	0.10	10.59	0.00	0.00	40.95	H	1.00	0.0	- 25.74	66.69	0.009
1.2280	29.07	Pk	0.10	10.58	0.00	0.00	39.75	H	1.00	0.0	- 26.02	65.77	0.009

Example calculation:

Measure d Level	+	Cable Loss	+	Antenna Factor	-	Pre- Amp	+	Atten	=	Final Correcte d Reading	Specificatio n Limit	-	Final Correcte d Reading	=	Delta Specificatio n
(dBμV)		(dB)		(dB)		(dB)		(dB)		(dBμV/m)	(dBμV/m)		(dBμV/m)		
20.0		3.0		5.0		10.0		0.0		18.0	40.0		18.0		- 22.0

Notes:

- 1) The product was fully tested in (3) Axes. Refer to photos for details. Axis 1 was worst-case.
- 2) The product was tested in the following product options: Power Over Ethernet (POE) and 12/24VDC.
- 3) Limits below 30 MHz were extrapolated using FCC 15.31 and RSS-GEN section 4.11

Deviations, Additions, or Exclusions: None

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

8 AC Mains Conducted Emissions

8.1 Method

Unless otherwise stated no deviations were made from FCC 15.207.

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

8.2 Test Equipment Used:

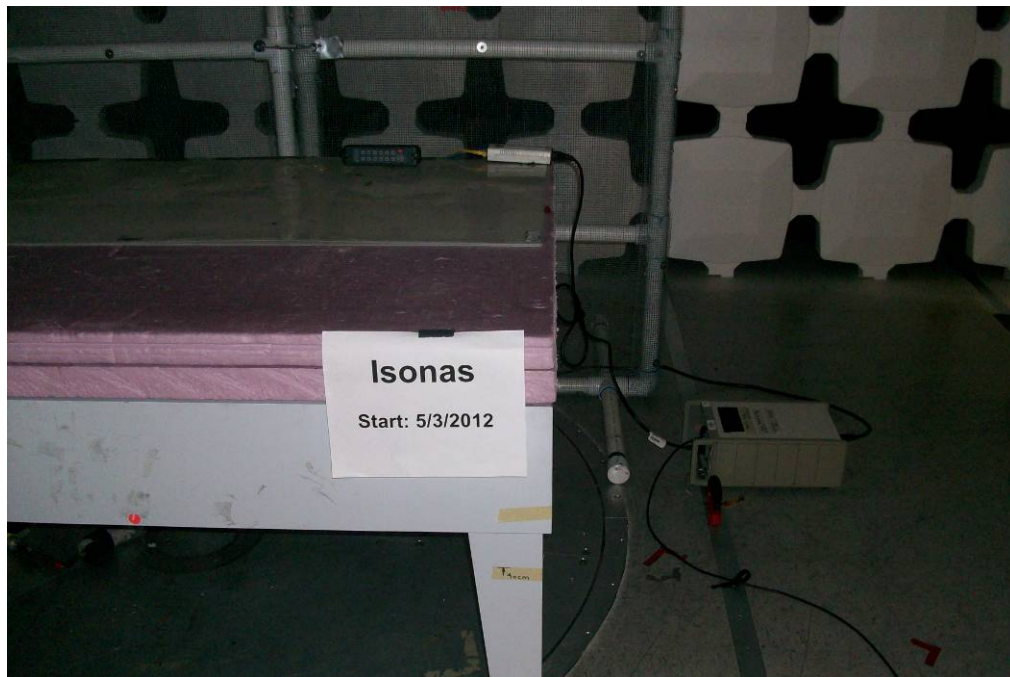
<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
DEN-073	EMI Receiver	RHODE & SCHWARZ	ESU 26	100265	01/11/2012	01/11/2013
18885	Transient Limiter	Hewlett-Packard	11947A	3107A00700	05/03/2012	05/03/2013
18914	Single Phase LISN	EMCO	3816/NM	9408-1003	04/05/2012	04/05/2013
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V002	VBV	VBV

8.3 Results:

The product tested was found to comply.

8.4 Setup Photographs: POE

Test Setup (Front View)

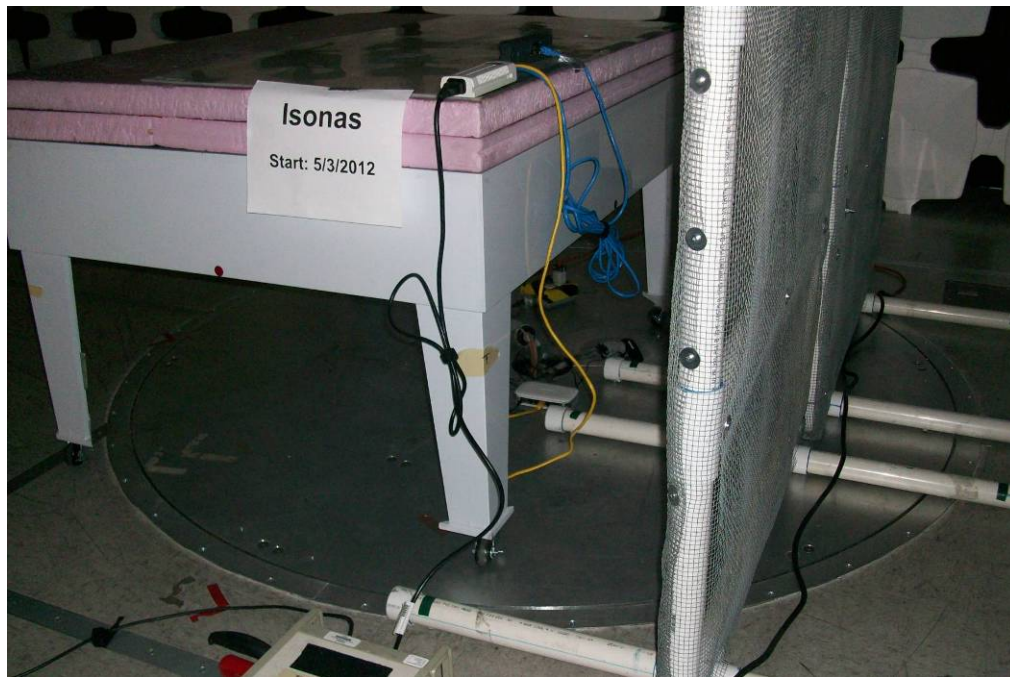
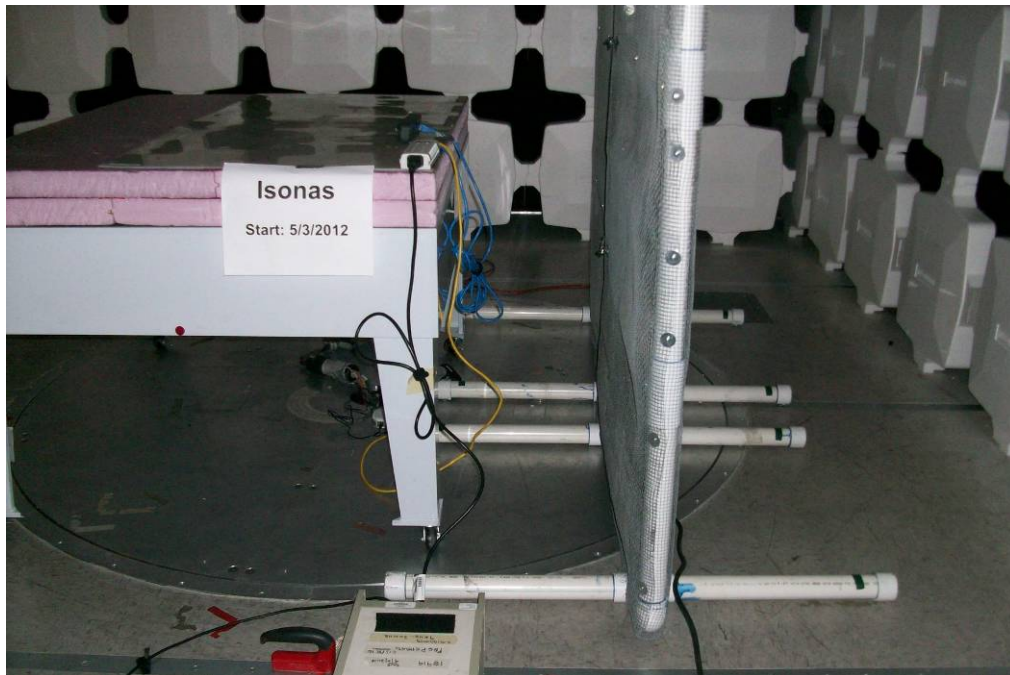


RC-03-PRX-K Product Under Test & Midspan PSE (right)



Setup Photographs: POE

Test Setup (Side View)



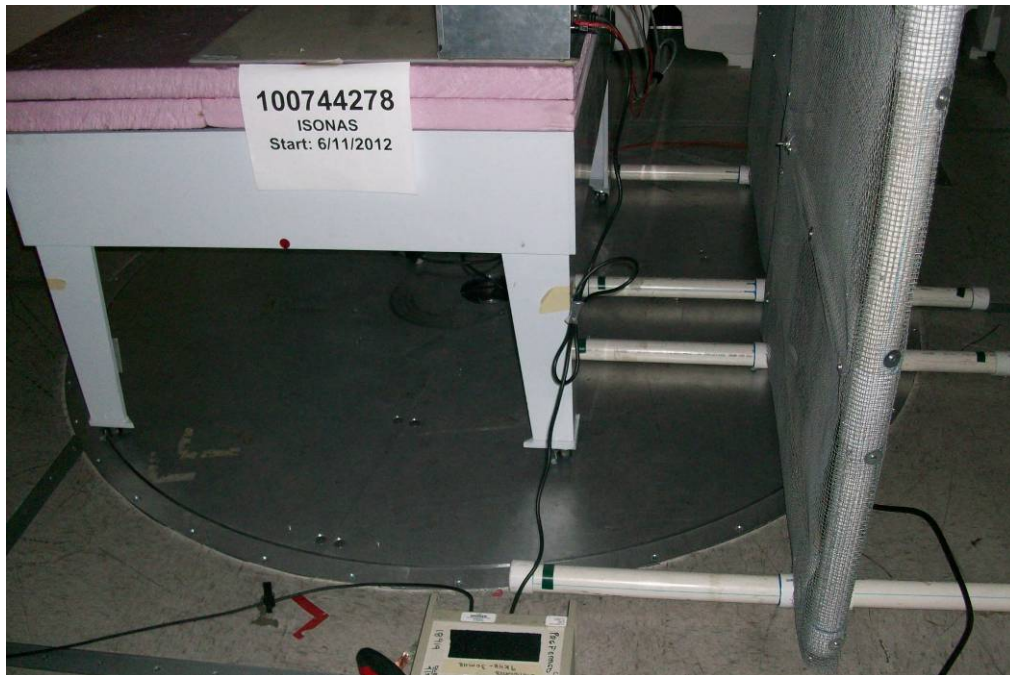
8.5 Setup Photographs: 12/24VDC

Test Setup (Front View)



Setup Photographs: 12/24VDC

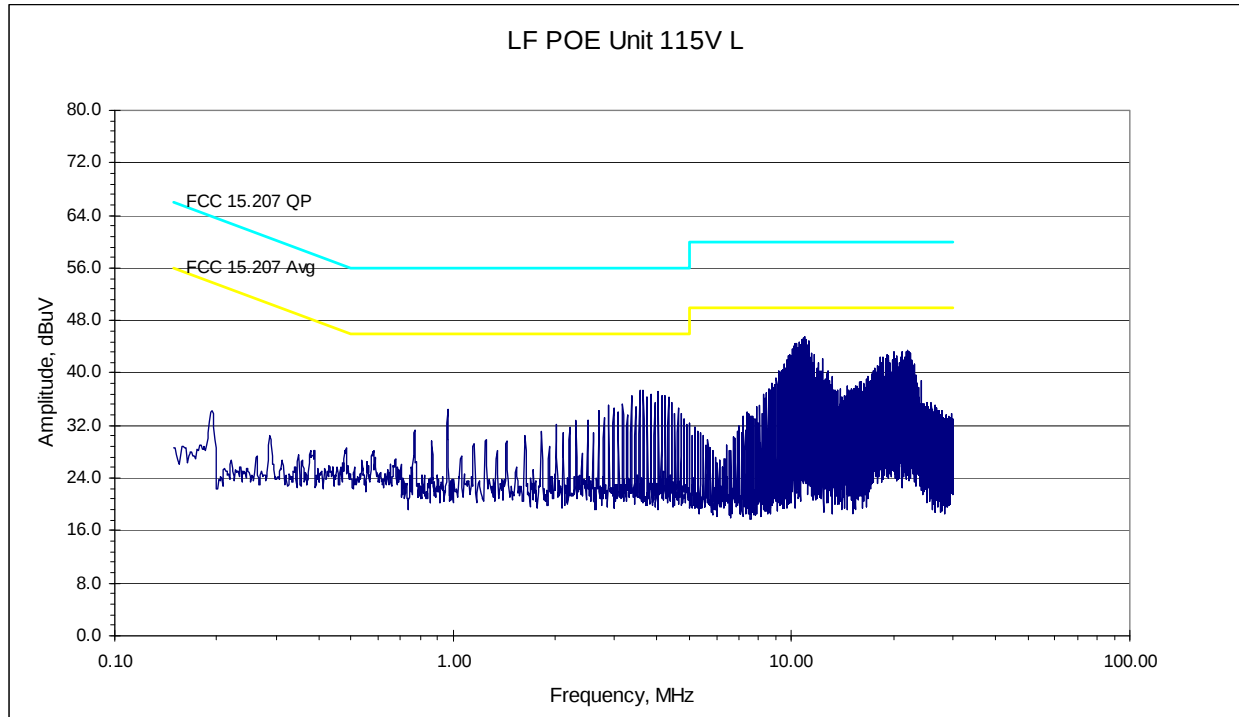
Test Setup (Side View)



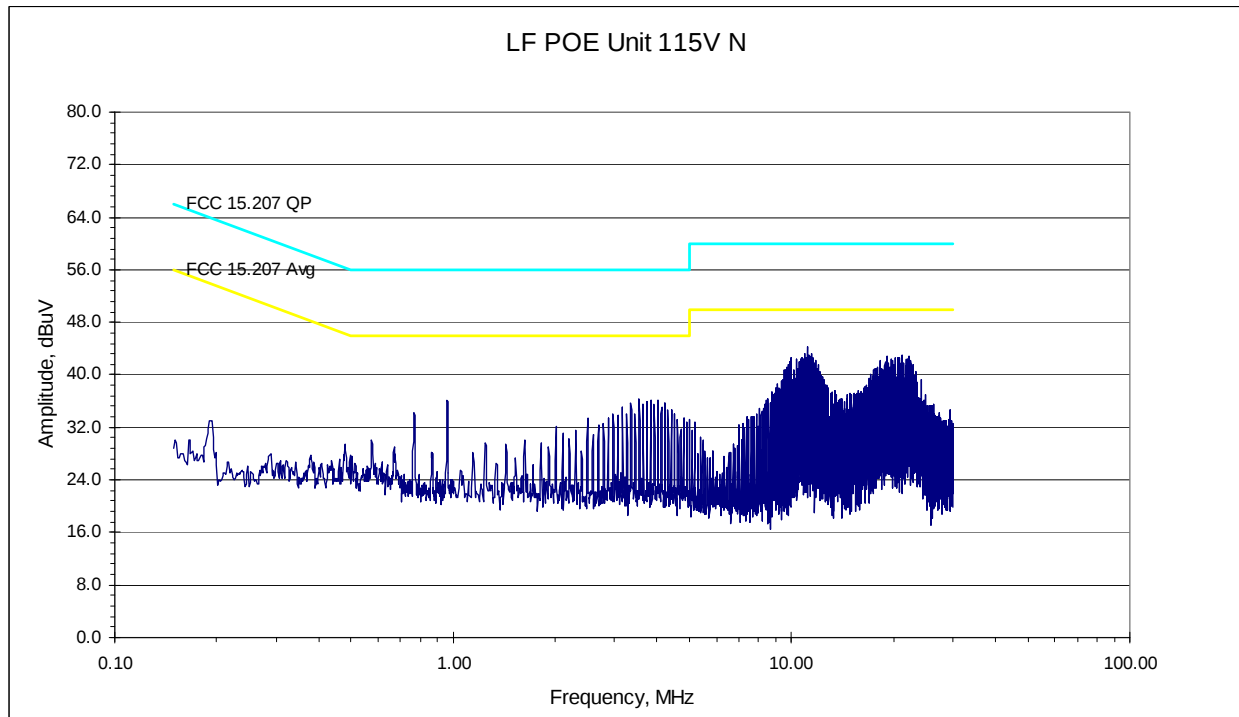
8.6 Pre-scan Plots: Reference Only – Not Final Data: POE

Conducted Emissions – FCC 15.207 (150kHz to 30MHz)

Line 1



Line 2

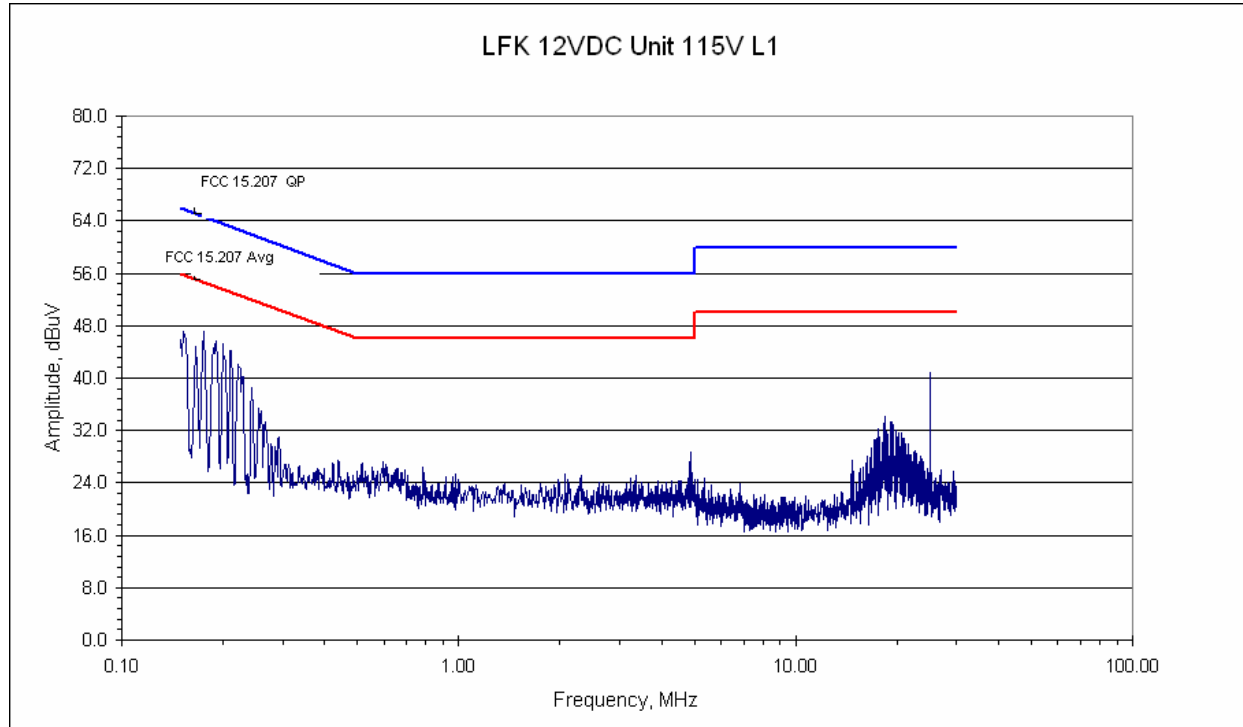


Note: Peak measurements plotted against Average and QP limits

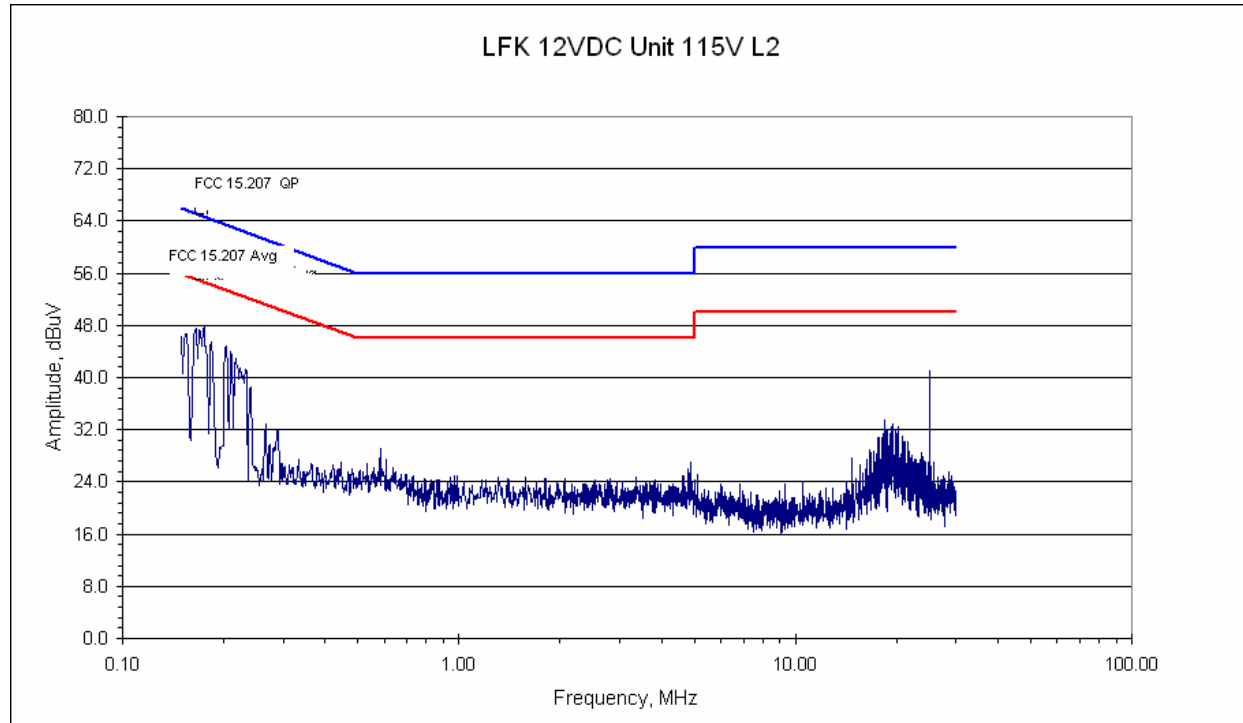
8.7 Pre-scan Plots: Reference Only - Not Final Data: 12/24VDC

Conducted Emissions – FCC 15.207 (150kHz to 30MHz)

Line 1



Line 2

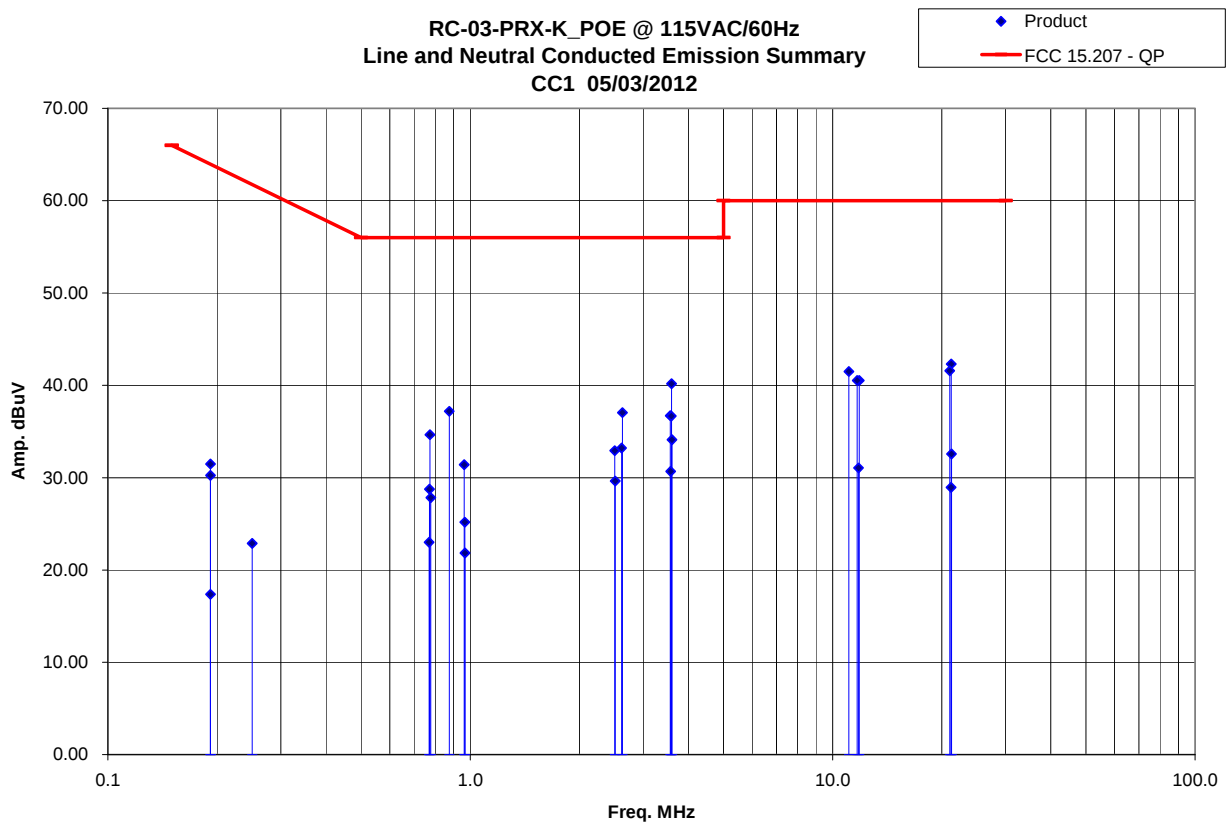


Note: Peak measurements plotted against Average and QP limits

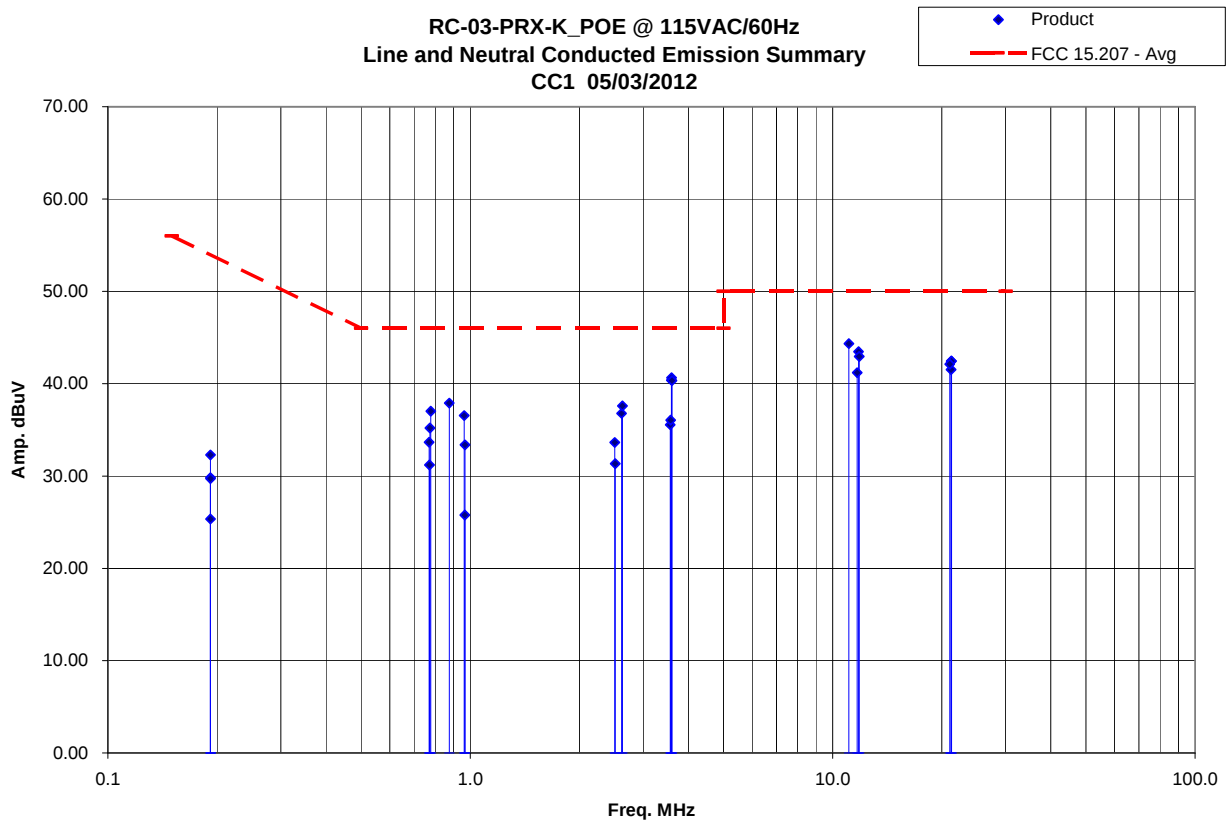
8.8 Final Plots: POE

Conducted Emissions – FCC 15.207 (150kHz to 30MHz)

RC-03-PRX-K_POE @ 115VAC/60Hz
Line and Neutral Conducted Emission Summary
CC1 05/03/2012



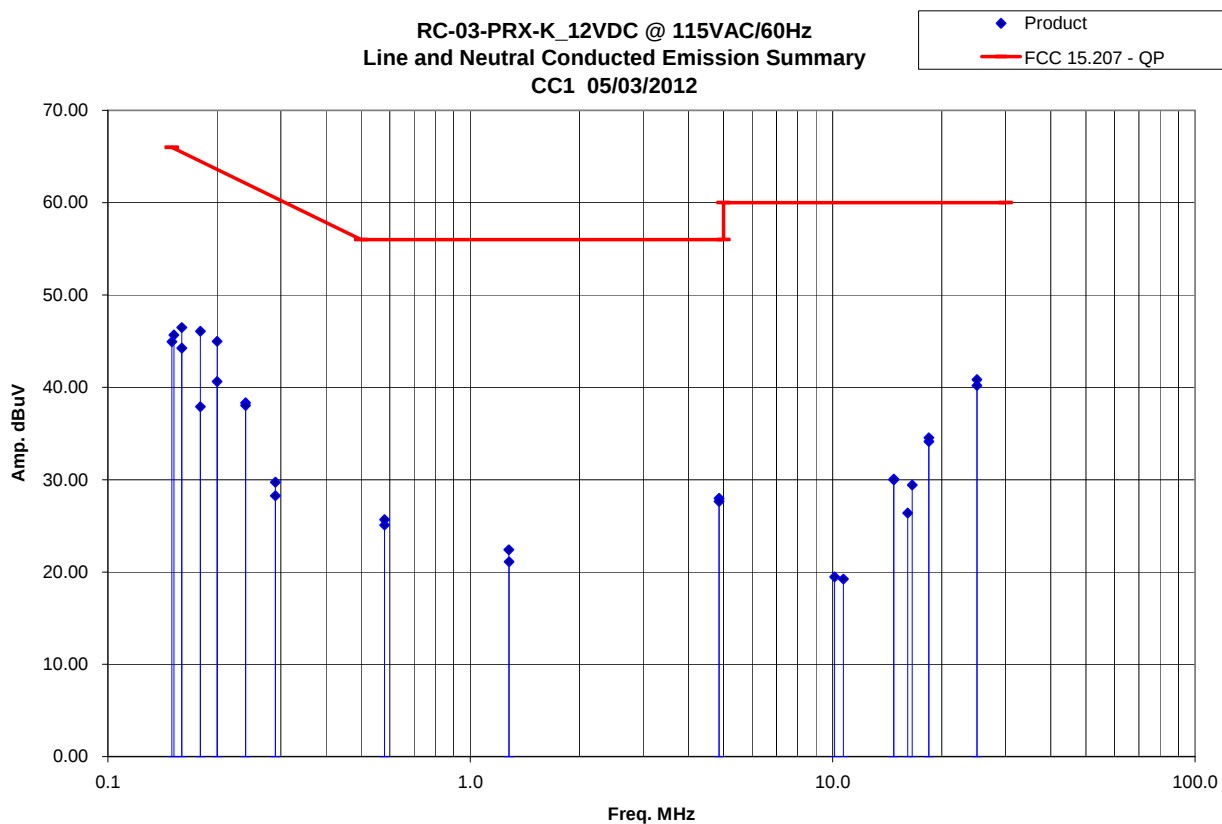
RC-03-PRX-K_POE @ 115VAC/60Hz
Line and Neutral Conducted Emission Summary
CC1 05/03/2012



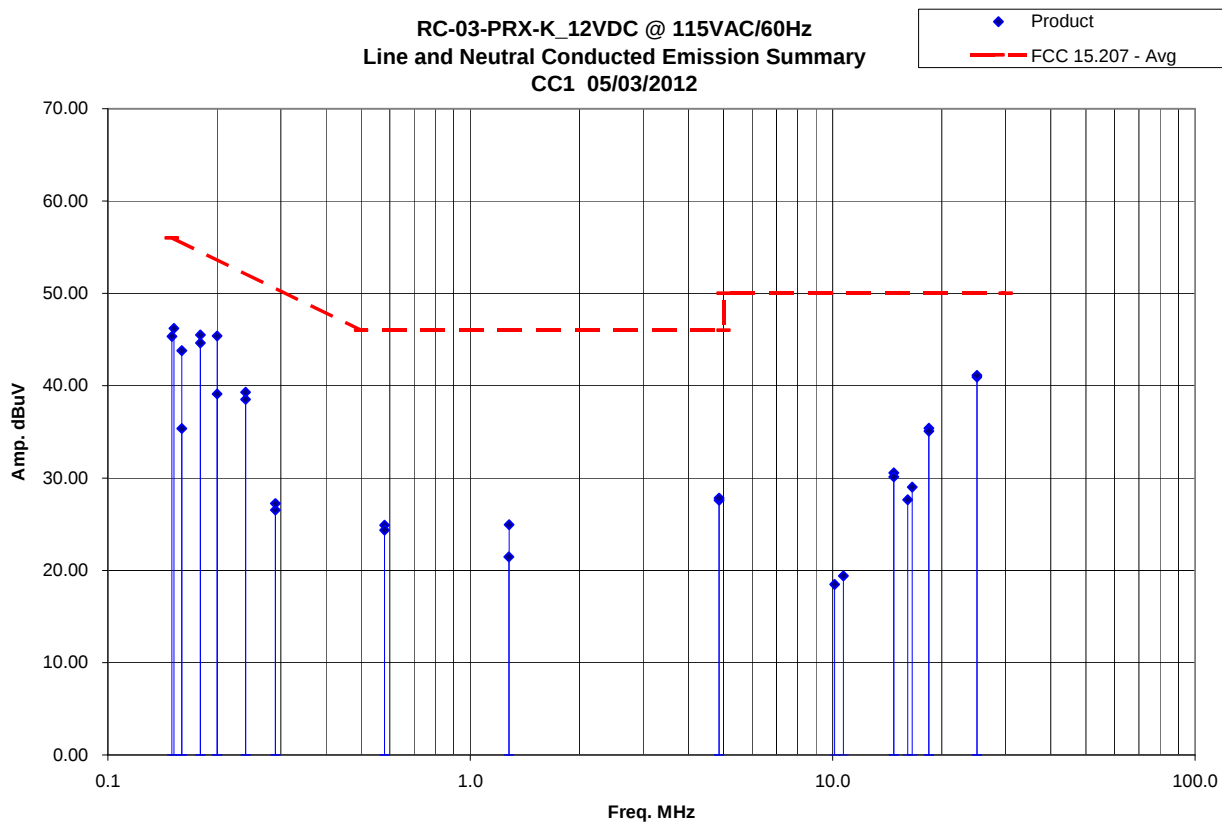
8.9 Final Plots: 12/24VDC

Conducted Emissions – FCC 15.207 (150kHz to 30MHz)

RC-03-PRX-K_12VDC @ 115VAC/60Hz
Line and Neutral Conducted Emission Summary
CC1 05/03/2012



RC-03-PRX-K_12VDC @ 115VAC/60Hz
Line and Neutral Conducted Emission Summary
CC1 05/03/2012



8.10 Test Data: POE

AC Conducted Electromagnetic Emissions

Test Report #:	G100744278	Test Area:	CC1 Radiated	Temperature:	23.4	C
Test Method:	FCC 15.207	Test Date:	05-May-2012	Relative Humidity:	25.2	%
EUT Model #:	RC-03-PRX-K	EUT Power:	POE	Air Pressure:	83.2	kPa
EUT Serial #:	FCC1					
Manufacturer:	ISONAS Security Systems			Level Key		
EUT Description:	Network-Enabled RFID Reader/Controller			Pk - Peak		
Notes:	Product continuously active during testing – normal operation			Qp - QuasiPeak		
	Product Configuration: Power Over Ethernet (POE)			Av - Average		

FREQ	LEVEL	DET	CABLE	LISN	PREAMP	ATTEN	FINAL	TEST POINT	DELTA1	DELTA2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	Line 1 Line 2 (Neutral)	FCC15.207 Average	FCC15.207 QP	(MHz)
LF POE Unit @ 115VAC/60Hz											
Line 1 Data											
0.19200	22.26	Av	0.10	0.03	0.00	9.90	32.29	Line 1	- 21.66	NA	0.009
0.25000	12.85	Qp	0.10	0.03	0.00	9.90	22.88	Line 1	NA	- 38.88	0.009
0.77000	23.42	Av	0.20	0.03	0.00	10.00	33.65	Line 1	- 12.35	NA	0.009
0.77000	12.77	Qp	0.20	0.03	0.00	10.00	23.00	Line 1	NA	- 33.00	0.009
0.96200	26.31	Av	0.20	0.03	0.00	10.00	36.54	Line 1	- 9.46	NA	0.009
0.96200	21.19	Qp	0.20	0.03	0.00	10.00	31.42	Line 1	NA	- 24.58	0.009
2.50300	23.40	Av	0.20	0.03	0.00	10.00	33.63	Line 1	- 12.37	NA	0.009
2.50300	22.70	Qp	0.20	0.03	0.00	10.00	32.93	Line 1	NA	- 23.07	0.009
3.56300	25.21	Av	0.30	0.04	0.00	10.00	35.55	Line 1	- 10.45	NA	0.009
3.56300	26.37	Qp	0.30	0.04	0.00	10.00	36.71	Line 1	NA	- 19.29	0.009
11.08248	33.53	Av	0.70	0.12	0.00	10.00	44.35	Line 1	- 5.65	NA	0.009
11.08248	30.68	Qp	0.70	0.12	0.00	10.00	41.50	Line 1	NA	- 18.50	0.009
21.21348	30.18	Av	1.10	0.24	0.00	10.00	41.52	Line 1	- 8.48	NA	0.009
21.21348	17.61	Qp	1.10	0.24	0.00	10.00	28.95	Line 1	NA	- 31.05	0.009
0.19188	19.79	Av	0.10	0.03	0.00	9.90	29.82	Line 1	- 24.13	NA	0.009
0.19188	21.46	Qp	0.10	0.03	0.00	9.90	31.49	Line 1	NA	- 32.46	0.009
0.77200	20.96	Av	0.20	0.03	0.00	10.00	31.19	Line 1	- 14.81	NA	0.009
0.77200	18.52	Qp	0.20	0.03	0.00	10.00	28.75	Line 1	NA	- 27.25	0.009
0.96600	15.55	Av	0.20	0.03	0.00	10.00	25.78	Line 1	- 20.22	NA	0.009
0.96600	14.95	Qp	0.20	0.03	0.00	10.00	25.18	Line 1	NA	- 30.82	0.009
2.51000	21.11	Av	0.20	0.03	0.00	10.00	31.34	Line 1	- 14.66	NA	0.009
2.51000	19.41	Qp	0.20	0.03	0.00	10.00	29.64	Line 1	NA	- 26.36	0.009
3.57400	25.71	Av	0.30	0.04	0.00	10.00	36.05	Line 1	- 9.95	NA	0.009
3.57400	20.34	Qp	0.30	0.04	0.00	10.00	30.68	Line 1	NA	- 25.32	0.009
11.78200	32.59	Av	0.76	0.12	0.00	10.00	43.47	Line 1	- 6.53	NA	0.009
11.78200	20.18	Qp	0.76	0.12	0.00	10.00	31.06	Line 1	NA	- 28.94	0.009
21.25000	31.11	Av	1.10	0.24	0.00	10.00	42.45	Line 1	- 7.55	NA	0.009
21.25000	30.96	Qp	1.10	0.24	0.00	10.00	42.30	Line 1	NA	- 17.70	0.009

Intertek

Report Number: 100744278DEN-001

Issued:6/28/2012

LF POE Unit @ 115VAC/60Hz											
Line 2 (Neutral) Data											
0.19200	15.32	Av	0.10	0.03	0.00	9.90	25.35	Line 2	- 28.60	NA	0.009
0.19200	7.33	Qp	0.10	0.03	0.00	9.90	17.36	Line 2	NA	- 46.59	0.009
0.77400	24.96	Av	0.20	0.03	0.00	10.00	35.19	Line 2	- 10.81	NA	0.009
0.77400	24.43	Qp	0.20	0.03	0.00	10.00	34.66	Line 2	NA	- 21.34	0.009
0.96700	23.14	Av	0.20	0.03	0.00	10.00	33.37	Line 2	- 12.63	NA	0.009
0.96700	11.60	Qp	0.20	0.03	0.00	10.00	21.83	Line 2	NA	- 34.17	0.009
2.61400	26.55	Av	0.20	0.03	0.00	10.00	36.78	Line 2	- 9.22	NA	0.009
2.61400	22.99	Qp	0.20	0.03	0.00	10.00	33.22	Line 2	NA	- 22.78	0.009
3.58600	30.06	Av	0.30	0.04	0.00	10.00	40.40	Line 2	- 5.60	NA	0.009
3.58600	26.32	Qp	0.30	0.04	0.00	10.00	36.66	Line 2	NA	- 19.34	0.009
3.59000	30.31	Av	0.30	0.04	0.00	10.00	40.65	Line 2	- 5.35	NA	0.009
3.59000	29.84	Qp	0.30	0.04	0.00	10.00	40.18	Line 2	NA	- 15.82	0.009
11.84200	32.06	Av	0.77	0.12	0.00	10.00	42.95	Line 2	- 7.05	NA	0.009
11.84200	29.64	Qp	0.77	0.12	0.00	10.00	40.53	Line 2	NA	- 19.47	0.009
21.26400	31.11	Av	1.10	0.24	0.00	10.00	42.45	Line 2	- 7.55	NA	0.009
21.26400	21.23	Qp	1.10	0.24	0.00	10.00	32.57	Line 2	NA	- 27.43	0.009
0.19200	19.71	Av	0.10	0.03	0.00	9.90	29.74	Line 2	- 24.21	NA	0.009
0.19200	20.23	Qp	0.10	0.03	0.00	9.90	30.26	Line 2	NA	- 33.69	0.009
0.77800	26.79	Av	0.20	0.03	0.00	10.00	37.02	Line 2	- 8.98	NA	0.009
0.77800	17.61	Qp	0.20	0.03	0.00	10.00	27.84	Line 2	NA	- 28.16	0.009
0.87500	27.68	Av	0.20	0.03	0.00	10.00	37.91	Line 2	- 8.09	NA	0.009
0.87500	26.95	Qp	0.20	0.03	0.00	10.00	37.18	Line 2	NA	- 18.82	0.009
2.62800	27.37	Av	0.20	0.03	0.00	10.00	37.60	Line 2	- 8.40	NA	0.009
2.62800	26.81	Qp	0.20	0.03	0.00	10.00	37.04	Line 2	NA	- 18.96	0.009
3.60200	30.01	Av	0.30	0.04	0.00	10.00	40.35	Line 2	- 5.65	NA	0.009
3.60200	23.76	Qp	0.30	0.04	0.00	10.00	34.10	Line 2	NA	- 21.90	0.009
11.68600	30.34	Av	0.74	0.12	0.00	10.00	41.20	Line 2	- 8.80	NA	0.009
11.68600	29.66	Qp	0.74	0.12	0.00	10.00	40.52	Line 2	NA	- 19.48	0.009
21.04300	30.79	Av	1.10	0.24	0.00	10.00	42.13	Line 2	- 7.87	NA	0.009
21.04300	30.24	Qp	1.10	0.24	0.00	10.00	41.58	Line 2	NA	- 18.42	0.009

8.11 Test Data: 12/24VDC

AC Conducted Electromagnetic Emissions

Test Report #:	G100744278	Test Area:	CC1 Radiated	Temperature:	23.4	C
Test Method:	FCC 15.207	Test Date:	05-May-2012	Relative Humidity:	25.2	%
EUT Model #:	RC-03-PRX-K	EUT Power:	12VDC	Air Pressure:	83.2	kPa
EUT Serial #:	FCC1					
Manufacturer:	ISONAS Security Systems			Level Key		
EUT Description:	Network-Enabled RFID Reader/Controller			Pk - Peak		
Notes:	Product continuously active during testing – normal operation			Qp - QuasiPeak		
	Product Configuration: 12VDC			Av - Average		

FREQ	LEVEL	DET	CABLE	LISN	PREAMP	ATTEN	FINAL	TEST POINT	DELTA1	DELTA2	RBW
MHz	dBuV	Qp Av Pk	+ [dB]	+ [dB/m]	- [dB]	+ [dB]	= [dBuV]	Line 1 Line 2 (Neutral)	FCC15.207 Average	FCC15.207 QP	(MHz)
LF 12VDC Unit @ 115VAC/60Hz											
Line 1 Data											
0.15200	36.17	Av	0.10	0.04	0.00	9.91	46.22	Line 1	- 9.67	NA	0.009
0.15200	35.62	Qp	0.10	0.04	0.00	9.91	45.67	Line 1	NA	- 20.22	0.009
0.16000	25.33	Av	0.10	0.04	0.00	9.90	35.36	Line 1	- 20.10	NA	0.009
0.16000	34.22	Qp	0.10	0.04	0.00	9.90	44.25	Line 1	NA	- 21.21	0.009
0.18000	34.59	Av	0.10	0.03	0.00	9.90	44.62	Line 1	- 9.86	NA	0.009
0.18000	27.88	Qp	0.10	0.03	0.00	9.90	37.91	Line 1	NA	- 26.57	0.009
0.20000	35.35	Av	0.10	0.03	0.00	9.90	45.38	Line 1	- 8.23	NA	0.009
0.20000	30.59	Qp	0.10	0.03	0.00	9.90	40.62	Line 1	NA	- 22.99	0.009
0.24000	28.49	Av	0.10	0.03	0.00	9.90	38.52	Line 1	- 13.58	NA	0.009
0.24000	28.30	Qp	0.10	0.03	0.00	9.90	38.33	Line 1	NA	- 23.77	0.009
0.29000	16.45	Av	0.10	0.03	0.00	9.96	26.54	Line 1	- 23.99	NA	0.009
0.29000	19.65	Qp	0.10	0.03	0.00	9.96	29.74	Line 1	NA	- 30.79	0.009
0.58000	14.78	Av	0.10	0.02	0.00	10.00	24.90	Line 1	- 21.10	NA	0.009
0.58000	14.96	Qp	0.10	0.02	0.00	10.00	25.08	Line 1	NA	- 30.92	0.009
1.28000	14.72	Av	0.20	0.03	0.00	10.00	24.95	Line 1	- 21.05	NA	0.009
1.28000	10.87	Qp	0.20	0.03	0.00	10.00	21.10	Line 1	NA	- 34.90	0.009
4.86300	17.26	Av	0.30	0.04	0.00	10.00	27.60	Line 1	- 18.40	NA	0.009
4.86300	17.64	Qp	0.30	0.04	0.00	10.00	27.98	Line 1	NA	- 28.02	0.009
10.12600	7.77	Av	0.60	0.11	0.00	10.00	18.48	Line 1	- 31.52	NA	0.009
10.12600	8.76	Qp	0.60	0.11	0.00	10.00	19.47	Line 1	NA	- 40.53	0.009
14.74740	19.42	Av	1.00	0.14	0.00	10.00	30.56	Line 1	- 19.44	NA	0.009
14.74740	18.92	Qp	1.00	0.14	0.00	10.00	30.06	Line 1	NA	- 29.94	0.009
16.09740	16.42	Av	1.08	0.15	0.00	10.00	27.65	Line 1	- 22.35	NA	0.009
16.09740	15.17	Qp	1.08	0.15	0.00	10.00	26.40	Line 1	NA	- 33.60	0.009
18.43340	24.11	Av	1.10	0.19	0.00	10.00	35.40	Line 1	- 14.60	NA	0.009
18.43340	22.84	Qp	1.10	0.19	0.00	10.00	34.13	Line 1	NA	- 25.87	0.009
24.99940	29.54	Av	1.20	0.20	0.00	10.00	40.94	Line 1	- 9.06	NA	0.009
24.99940	28.80	Qp	1.20	0.20	0.00	10.00	40.20	Line 1	NA	- 19.80	0.009

Intertek

Report Number: 100744278DEN-001

Issued:6/28/2012

LF12VDC Unit @ 115VAC/60Hz											
Line 2 (Neutral) Data											
0.15020	35.30	Av	0.10	0.04	0.00	9.92	45.35	Line 2	- 10.63	NA	0.009
0.15020	34.89	Qp	0.10	0.04	0.00	9.92	44.94	Line 2	NA	- 21.04	0.009
0.16000	33.76	Av	0.10	0.04	0.00	9.90	43.79	Line 2	- 11.67	NA	0.009
0.16000	36.44	Qp	0.10	0.04	0.00	9.90	46.47	Line 2	NA	- 18.99	0.009
0.18000	35.47	Av	0.10	0.03	0.00	9.90	45.50	Line 2	- 8.98	NA	0.009
0.18000	36.05	Qp	0.10	0.03	0.00	9.90	46.08	Line 2	NA	- 18.40	0.009
0.20000	29.08	Av	0.10	0.03	0.00	9.90	39.11	Line 2	- 14.50	NA	0.009
0.20000	34.96	Qp	0.10	0.03	0.00	9.90	44.99	Line 2	NA	- 18.62	0.009
0.24000	29.28	Av	0.10	0.03	0.00	9.90	39.31	Line 2	- 12.79	NA	0.009
0.24000	28.01	Qp	0.10	0.03	0.00	9.90	38.04	Line 2	NA	- 24.06	0.009
0.29000	17.16	Av	0.10	0.03	0.00	9.96	27.25	Line 2	- 23.28	NA	0.009
0.29000	18.16	Qp	0.10	0.03	0.00	9.96	28.25	Line 2	NA	- 32.28	0.009
0.58000	14.24	Av	0.10	0.02	0.00	10.00	24.36	Line 2	- 21.64	NA	0.009
0.58000	15.57	Qp	0.10	0.02	0.00	10.00	25.69	Line 2	NA	- 30.31	0.009
1.27800	11.23	Av	0.20	0.03	0.00	10.00	21.46	Line 2	- 24.54	NA	0.009
1.27800	12.19	Qp	0.20	0.03	0.00	10.00	22.42	Line 2	NA	- 33.58	0.009
4.86300	17.49	Av	0.30	0.04	0.00	10.00	27.83	Line 2	- 18.17	NA	0.009
4.86300	17.30	Qp	0.30	0.04	0.00	10.00	27.64	Line 2	NA	- 28.36	0.009
10.71300	8.60	Av	0.67	0.12	0.00	10.00	19.39	Line 2	- 30.61	NA	0.009
10.71300	8.45	Qp	0.67	0.12	0.00	10.00	19.24	Line 2	NA	- 40.76	0.009
14.74800	18.98	Av	1.00	0.15	0.00	10.00	30.13	Line 2	- 19.87	NA	0.009
14.74800	18.85	Qp	1.00	0.15	0.00	10.00	30.00	Line 2	NA	- 30.00	0.009
16.59000	17.76	Av	1.10	0.17	0.00	10.00	29.03	Line 2	- 20.97	NA	0.009
16.59000	18.16	Qp	1.10	0.17	0.00	10.00	29.43	Line 2	NA	- 30.57	0.009
18.43300	23.80	Av	1.10	0.19	0.00	10.00	35.09	Line 2	- 14.91	NA	0.009
18.43300	23.25	Qp	1.10	0.19	0.00	10.00	34.54	Line 2	NA	- 25.46	0.009
25.00000	29.61	Av	1.20	0.32	0.00	10.00	41.13	Line 2	- 8.87	NA	0.009
25.00000	29.31	Qp	1.20	0.32	0.00	10.00	40.83	Line 2	NA	- 19.17	0.009

Notes:

- 1) The product was tested in the following product options: Power Over Ethernet (POE) and 12/24VDC.

Deviations, Additions, or Exclusions: None

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

9 Telecom Port Conducted Emissions (CISPR 22) – Test not Applicable

9.1 Method

Unless otherwise stated no deviations were made from CISPR 22: 2008.

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

9.2 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>

9.3 Results:

Not Applicable

9.4 Setup Photographs:

9.5 Pre-scan Plots: Reference Only - Not Final Data

9.6 Final Plots:

9.7 Test Data:

Notes: None

Deviations, Additions, or Exclusions: None

Intertek	
Report Number: 100744278DEN-001	Issued:6/28/2012

10 Occupied Bandwidth (OBW) – RSS-GEN, Section 4.6.1

10.1 Method

Unless otherwise stated no deviations were made from RSS-GEN:2010, Section 4.6.1.

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

10.2 Test Equipment Used:

<u>Asset ID:</u>	<u>Description:</u>	<u>Manufacturer:</u>	<u>Model:</u>	<u>Serial:</u>	<u>Cal Date</u>	<u>Cal Due</u>
18913	Spectrum Analyzer	Hewlett-Packard	E7405A	My44211889	06/28/2011	06/28/2012
18897	Active Loop Antenna	EMCO	6502	9205-2738	11/22/2011	11/22/2012
SW-6	Software application for Radiated and Conducted Emissions	Intertek	OATS_Vba	V003	VBU	VBU

10.3 Results:

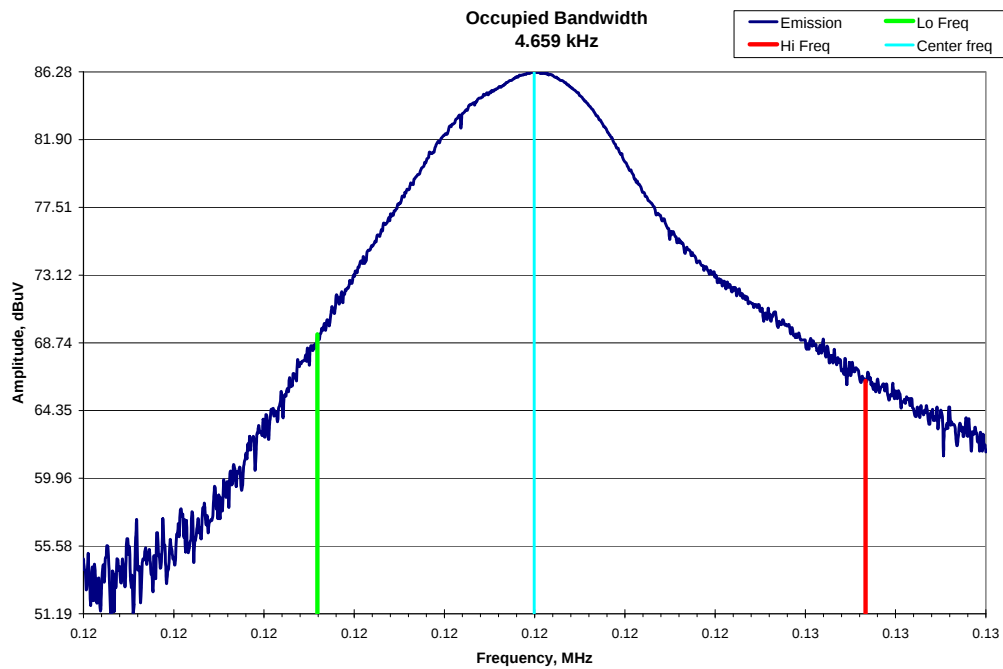
The product tested was found to comply.

10.4 Setup Photographs:

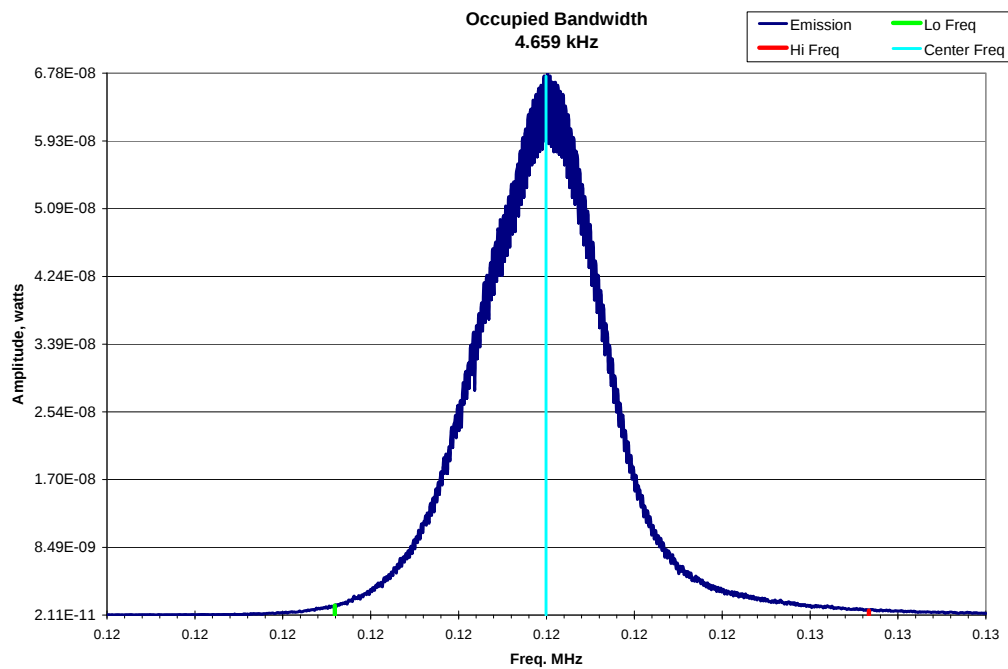
10.5 Final Plots:

Occupied Bandwidth - (RSS-GEN, Section 4.6.1) – RC-03-PRX-K
Tx – 122.8kHz

Field Strength Graph



Power Graph



Notes: The measured OBW for the product: 4.659 kHz

Deviations, Additions, or Exclusions: None

11 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	4.4 dB	
Radiated emissions, 1 to 18 GHz	4.7 dB	
AC mains Conducted emissions, 9kHz 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	3.11 dB	
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	

12 Revision History

Revision Level	Date	Report Number	Notes
0	6/28/2012	100744278DEN-001	Original Issue
1	1/02/2013	100744278DEN-001	1. Product Model Changed throughout report per Client Changed From: RC-03-HLF-K Changed To: RC-03-PRX-K 2. Updated pre-scan plots and final plots pages 50-53 – changed text for limit from CISPR 22, Class B to FCC 15.207 (verbiage only). Revised by: Randy Thompson <i>R.T.</i> Reviewed by: Michael Spataro <i>MAS</i>
2	1/31/2013	100744278DEN-001	1. added test method reference per TCB (page 3) Revised by Randy Thompson <i>R.T.</i> Reviewed by: Michael Spataro <i>MAS</i>