

EMISSIONS TEST REPORT

Report Number: 102014290BOX-001ee Project Number: G102014290

Report Issue Date: 08/10/2015

Product Designation: Modular Device (RF Card)

Standards: FCC 47CFR Part 15 Subpart C Section 15.231 (2015)

RSS-210 Issue 8 December 2010 RSS-Gen Issue 4 November 2014 ICES-003 Issue 5 August 2012

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

Client: IntelliSAW 100 Burtt Road Andover, MA 01810 USA

Report prepared by

Report reviewed by

Vathana F. Ven / Staff Engineer, EMC

Kouma Sinn / Staff Engineer, EMC

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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 4.0. 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.

Test Summary

Section	Test full name	Result
3	Client Information	
4	Description of Equipment Under Test	
5	System Setup and Method	
6	Fundamental Field Strength and Conducted Output Power (CFR47 Part 15 Subpart C Section 15.231(e), RSS-210 Annex I)	Pass
7	Occupied Bandwidth (CFR47 Part 15 Subpart C Sections 15.215, 15.231(c), RSS-Gen Section 6.6)	Pass
8	Radiated Spurious Emissions (CFR47 Part 15 Subpart C Sections 15.205, 15.209, and 15.231(e), RSS-210 Annex I, RSS-Gen)	Pass
9	Duty Cycle (CFR47 Part 15 Section 15.35 and Subpart C Section 15.231(b)(2), RSS-Gen Section 6.10)	Pass
10	Automatically Limiting Operation (CFR47 Part 15 Subpart C Section 15.231(e), RSS-210 A1.1.5)	Pass
11	AC Line-Conducted Emissions (CFR47 FCC Part 15 Subpart C 15.207, ICES-003)	Pass
12	Receiver Radiated Spurious Emissions (CFR47 Part 15 Subpart B Sections 15.205, 5.209, ICES-003)	Pass
13	Revision History	-

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3 Client Information

This EUT was tested at the request of:

Client: IntelliSAW

> 100 Burtt Road Andover, MA 01810

USA

Contact: Jonathan P. Murray Telephone: +1.978.409.1534 x204

Fax: None

Email: jmurray@intellisaw.com

Description of Equipment Under Test

Manufacturer: IntelliSAW

> 100 Burtt Road Andover, MA 01810

USA

	Equipment	Under Test	
Description	Manufacturer	Model Number	Serial Number
Modular Device (RF Card)	IntelliSAW	400.00152	08150695

Receive Date: 02/26/2015, 03/05/2015, & 06/01/2015 Received Condition: Good Production Type:

Description of Equipment Under Test (provided by client)

The IntelliSAW RF card is a circuit board assembly integral to multiple current and future products. It is not sold to third parties and is therefore eligible for certain exceptions as a Limited Modular Approval. The module was tested with a PIFA patched and 17 cm monopole antennas.

400.00152 (ASSEMBLY, INTERROGATOR RF BOARD, PARTIAL DISCHARGE, SMA)

	Equipment Under Tes	st Power Configuration						
Rated Voltage Rated Current Rated Frequency Number of Phase								
Powered from 24VDC	Not provided	N/A	N/A					
Class II power supply	-							

Operating modes of the EUT:

	No.	Descriptions of EUT Exercising
	1	The EUT was programmed to transmit between 425-442 MHz with a 100% duty cycle
Γ	2	Device was in Rx/idle mode

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	None

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Client: IntelliSAW, Product Designation: Modular Device (RF Card)

5 **System Setup and Method**

Description of Equipment Under Test (provided by client)

The IntelliSAW RF card is a circuit board assembly integral to multiple current and future products. It is not sold to third parties and is therefore eligible for certain exceptions as a Limited Modular Approval. The module was tested with a PIFA patch antenna and a 17 cm monopole antenna.

400.00152 (ASSEMBLY, INTERROGATOR RF BOARD, PARTIAL DISCHARGE, SMA)

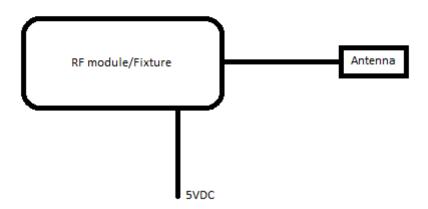
	Equipment Under Tes	t Power Configuration						
Rated Voltage	Rated Current	Rated Frequency	Number of Phases					
	IntelliSAW RF Module							
4.3 to 5.5 Vdc	500 mA	N/A	N/A					
	IS485 host	equipment						
24 Vdc	125 mA	N/A	N/A					

Notes: All tests except CEMI - Cotek 80 ~ 265 Vac/dc class II power supply (meets class A CEMI) CEMI test of module: Agilent E3620 120Vac variable DC supply. Module-only, 5 Vdc; IS485 host unit 24 Vdc.

5.1 Method:

Configuration as required by FCC 47 CFR PT 15.231(e), ANSI C63.10:2013, ANSI C63.4-2014, ICES-003, RSS-Gen, RSS-210.

5.2 EUT Block Diagram:



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Fundamental Field Strength and Output power 6

6.1 Method

Tests are performed in accordance with FCC 47 CFR PT 15.231(e), RSS-210, and ANSI C63.10.

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_{tab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < $U_{\it CISPR}$ (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.

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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 $FS = Field Strength in dB_{\mu}V/m$

RA = Receiver Amplitude (including preamplifier) in $dB\mu V$

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 dB μ V 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 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

 $RA = 52.0 dB\mu V$ AF = 7.4 dB/m CF = 1.6 dB AG = 29.0 dB $FS = 32 dB\mu V/m$

To convert from $dB\mu V$ to μV or mV the following was used:

UF =
$$10^{(NF/20)}$$
 where UF = Net Reading in μ V
NF = Net Reading in dB μ V

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 $\mu V/m$

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6.2 **Test Equipment Used:**

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/17/2014	03/17/2015
145-410'	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2014	10/04/2015
145106'	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	10/24/2014	10/24/2015
Dav004'	Weather Station	Davis Instruments	7400	PE80529A61A	10/06/2014	10/06/2015

Software Utilized:

Name	Manufacturer	Version
EMI Boxborough.xls	Intertek	08/27/2010

6.3 Results:

The sample tested was found to Comply.

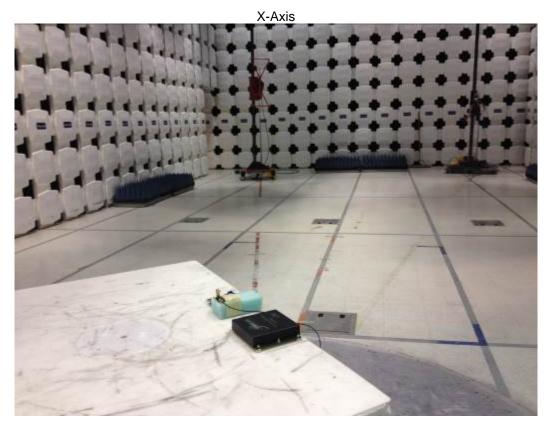
(e) Intentional radiators may operate at a periodic rate exceeding that specified in paragraph (a) of this section and may be employed for any type of operation, including operation prohibited in paragraph (a) of this section, provided the intentional radiator complies with the provisions of paragraphs (b) through (d) of this section, except the field strength table in paragraph (b) of this section is replaced by the following:

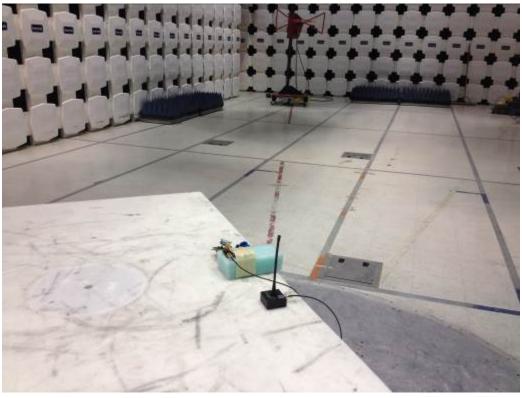
Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66-40.70	1,000	100
70-130	500	50
130-174	500 to 1,500 ¹	50 to 150 ¹
174-260	1,500	150
260-470	1,500 to 5,000 ¹	150 to 500 ¹
Above 470	5,000	500

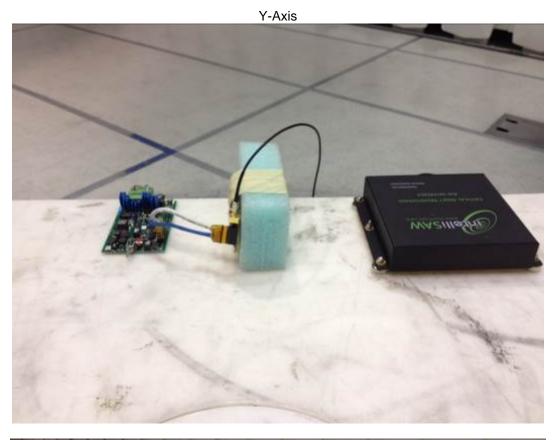
¹Linear interpolations.

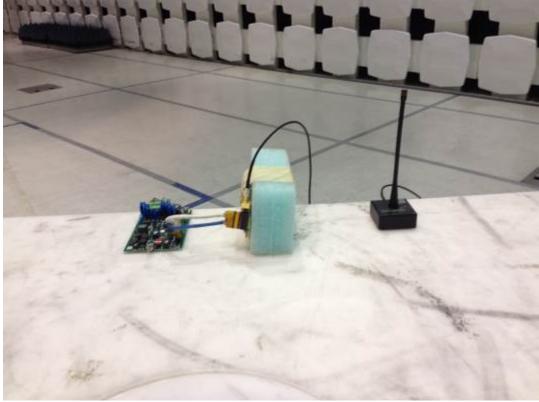
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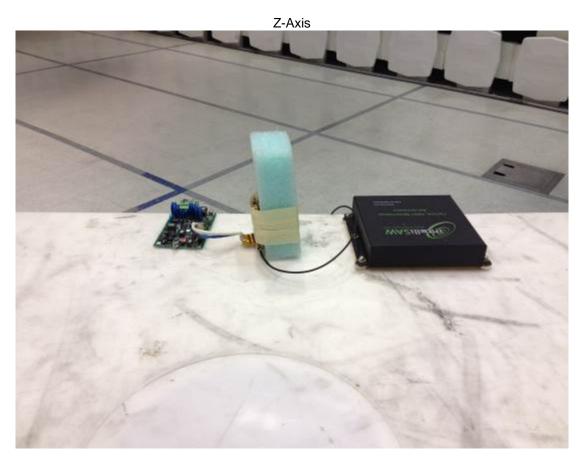
6.4 Setup Photographs:

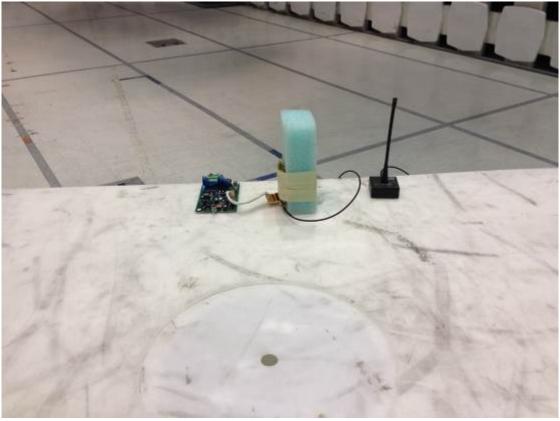












6.5 Test Data:

Radiated Emissions

 Company: Intellisaw
 Antenna & Cables:
 N
 Bands: N, LF, HF, SHF

 Model #: 400.00152
 Antenna: 145106 10mh 10-21-15.txt 145106 10mh 10-21-15.txt

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3
PreAmp: NONE. Test Distance (m): 10

PreAmp Used? (Y or N): N Voltage/Frequency: 5VDC Frequency Range: Fundamental 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

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	Ant.		J	Antenna	Cable	Pre-amp	Distance	,				Ī
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth	
Туре	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FCC
	F=	= 425 MHz, X	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)		Ī
PK	Н	425.030	60.36	16.30	3.42	0.00	-10.46	90.54	92.57	-2.03	120/300 kHz	:
AVG	Н	425.030	40.36	16.30	3.42	0.00	-10.46	70.54	72.57	-2.03	120/300 kHz	:[
PK	V	425.030	60.79	16.30	3.42	0.00	-10.46	90.97	92.57	-1.60	120/300 kHz	:[
AVG	V	425.030	40.79	16.30	3.42	0.00	-10.46	70.97	72.57	-1.60	120/300 kHz	[
	F=	= 425 MHz, Y	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)		I
PK	Н	425.030	59.25	16.30	3.42	0.00	-10.46	89.43	92.57	-3.14	120/300 kHz	:[
AVG	Н	425.030	39.25	16.30	3.42	0.00	-10.46	69.43	72.57	-3.14	120/300 kHz	:
PK	V	425.030	58.76	16.30	3.42	0.00	-10.46	88.94	92.57	-3.63	120/300 kHz	:[
AVG	V	425.030	38.76	16.30	3.42	0.00	-10.46	68.94	72.57	-3.63	120/300 kHz	:[
	F=	= 425 MHz, Z	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA Pa	atched Inve	rted F anten	na)		Ī
PK	Н	425.030	61.07	16.30	3.42	0.00	-10.46	91.25	92.57	-1.32	120/300 kHz	1
AVG	Н	425.030	41.07	16.30	3.42	0.00	-10.46	71.25	72.57	-1.32	120/300 kHz	
PK	V	425.030	59.36	16.30	3.42	0.00	-10.46	89.54	92.57	-3.03	120/300 kHz	
AVG	V	425.030	39.36	16.30	3.42	0.00	-10.46	69.54	72.57	-3.03	120/300 kHz	I

Note: 20 dB of average factor was applied to peak readings to obtain average readings.

Radiated Emissions

Company: Intellisaw Ν Antenna & Cables: Bands: N, LF, HF, SHF Model #: 400.00152 Antenna: 145106 10mh 10-21-15.txt 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): 145-410 DED POINTS 10-04-15.16 NONE.

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3 PreAmp: NONE. Test Distance (m): 10

> PreAmp Used? (Y or N): Ν Voltage/Frequency: 5VDC Frequency Range: Fundamental

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

	Ant.			Antenna	Cable	Pre-amp	Distance					1
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth	
Type	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		F
	F:	= 425 MHz,)	K-Axis, PPS	= 0 and PA	= 2, Anteni	na (IA-MM-1	7, 17cm mo	onopole ante	enna, +3.2 d	Bi)		
PK	Н	425.030	55.37	16.30	3.42	0.00	-10.46	85.55	92.57	-7.02	120/300 kHz	
AVG	Η	425.030	35.37	16.30	3.42	0.00	-10.46	65.55	72.57	-7.02	120/300 kHz	
PK	٧	425.030	54.20	16.30	3.42	0.00	-10.46	84.38	92.57	-8.19	120/300 kHz	
AVG	٧	425.030	34.20	16.30	3.42	0.00	-10.46	64.38	72.57	-8.19	120/300 kHz	
	F:	= 425 MHz, \	Y-Axis, PPS	= 0 and PA	= 2, Anteni	na (IA-MM-1	7, 17cm mo	onopole ante	enna, +3.2 d	Bi)		
PK	Η	425.030	51.73	16.30	3.42	0.00	-10.46	81.91	92.57	-10.66	120/300 kHz	
AVG	Η	425.030	31.73	16.30	3.42	0.00	-10.46	61.91	72.57	-10.66	120/300 kHz	
PK	٧	425.030	54.65	16.30	3.42	0.00	-10.46	84.83	92.57	-7.74	120/300 kHz	
AVG	V	425.030	34.65	16.30	3.42	0.00	-10.46	64.83	72.57	-7.74	120/300 kHz	
	F:	= 425 MHz, 2	Z-Axis, PPS	= 0 and PA	= 2, Antenr	na (IA-MM-1	7, 17cm mc	nopole ante	enna, +3.2 d	Bi)		
PK	Η	425.030	55.23	16.30	3.42	0.00	-10.46	85.41	92.57	-7.16	120/300 kHz	
AVG	Н	425.030	35.23	16.30	3.42	0.00	-10.46	65.41	72.57	-7.16	120/300 kHz	
PK	٧	425.030	49.13	16.30	3.42	0.00	-10.46	79.31	92.57	-13.26	120/300 kHz	
AVG	٧	425.030	29.13	16.30	3.42	0.00	-10.46	59.31	72.57	-13.26	120/300 kHz	

Note: 20 dB of average factor was applied to peak readings to obtain average readings

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Radiated Emissions

 Company: Intellisaw
 Antenna & Cables:
 N
 Bands: N, LF, HF, SHF

 Model #: 400.00152
 Antenna: 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): 16 413 0817 Trans. A Cable 1800 12 (904 Trans. A Cable 18

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3
PreAmp: NONE. Test Distance (m): 10

PreAmp Used? (Y or N): N Voltage/Frequency: 5VDC Frequency Range: 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

Peak. I	N Quasi-F	reak. QP AV	erage. AvG	KIVIO. KIVI	5, INF = INOR	se riooi, RE	= Restricte	u banu, bai	iawiath den	oted as Rb	VV/VDVV
	Ant.			Antenna	Cable	Pre-amp	Distance				
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth
Type	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB	
F = 434 MHz, X-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-TPD, PIFA Patched Inverted F antenna)											
PK	Н	434.000	56.30	16.48	3.47	0.00	-10.46	86.70	92.87	-6.17	120/300 kHz
AVG	Н	434.000	36.30	16.48	3.47	0.00	-10.46	66.70	72.87	-6.17	120/300 kHz
PK	V	434.000	59.51	16.48	3.47	0.00	-10.46	89.91	92.87	-2.96	120/300 kHz
AVG	V	434.000	39.51	16.48	3.47	0.00	-10.46	69.91	72.87	-2.96	120/300 kHz
	F=	= 434 MHz, Y	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)	
PK	Н	434.000	60.23	16.48	3.47	0.00	-10.46	90.63	92.87	-2.24	120/300 kHz
AVG	Н	434.000	40.23	16.48	3.47	0.00	-10.46	70.63	72.87	-2.24	120/300 kHz
PK	V	434.000	57.27	16.48	3.47	0.00	-10.46	87.67	92.87	-5.20	120/300 kHz
AVG	V	434.000	37.27	16.48	3.47	0.00	-10.46	67.67	72.87	-5.20	120/300 kHz
	F =	= 434 MHz, Z	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)	
PK	Н	434.000	60.06	16.48	3.47	0.00	-10.46	90.46	92.87	-2.41	120/300 kHz
AVG	Н	434.000	40.06	16.48	3.47	0.00	-10.46	70.46	72.87	-2.41	120/300 kHz
PK	V	434.000	57.66	16.48	3.47	0.00	-10.46	88.06	92.87	-4.81	120/300 kHz
AVG	V	434.000	37.66	16.48	3.47	0.00	-10.46	68.06	72.87	-4.81	120/300 kHz

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Radiated Emissions

 Company: Intellisaw
 Antenna & Cables:
 N
 Bands: N, LF, HF, SHF

 Model #: 400.00152
 Antenna: 145106 10mh 10-21-15.txt 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): 14-810 000 Trans A Committee (signature of the state o

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3
PreAmp: NONE. Test Distance (m): 10

PreAmp Used? (Y or N): N Voltage/Frequency: 5VDC Frequency Range: 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

					,	,						_	
	Ant.			Antenna	Cable	Pre-amp	Distance						
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth		
Type	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FCC	IC
	F:	= 434 MHz, X	K-Axis, PPS	= 0 and PA	= 2, Anteni	na (IA-MM-1	7, 17cm mo	nopole ante	enna, +3.2 d	Bi)	•	I	
PK	Н	434.000	54.38	16.48	3.47	0.00	-10.46	84.78	92.87	-8.09	120/300 kHz		
AVG	Н	434.000	34.38	16.48	3.47	0.00	-10.46	64.78	72.87	-8.09	120/300 kHz	Ī	
PK	V	434.000	56.29	16.48	3.47	0.00	-10.46	86.69	92.87	-6.18	120/300 kHz	Ī	
AVG	V	434.000	36.29	16.48	3.47	0.00	-10.46	66.69	72.87	-6.18	120/300 kHz	Ī	
	F:	= 434 MHz, `	Y-Axis, PPS	= 0 and PA	= 2, Antenr	na (IA-MM-1	7, 17cm mo	nopole ante	enna, +3.2 d	Bi)	•		
PK	Η	434.000	54.32	16.48	3.47	0.00	-10.46	84.72	92.87	-8.15	120/300 kHz		
AVG	Н	434.000	34.32	16.48	3.47	0.00	-10.46	64.72	72.87	-8.15	120/300 kHz	Ī	
PK	V	434.000	56.66	16.48	3.47	0.00	-10.46	87.06	92.87	-5.81	120/300 kHz	Ī	
AVG	V	434.000	36.66	16.48	3.47	0.00	-10.46	67.06	72.87	-5.81	120/300 kHz	Ì	
	F:	= 434 MHz, 2	Z-Axis, PPS	= 0 and PA	= 2, Antenr	na (IA-MM-1	7, 17cm mo	onopole ante	enna, +3.2 d	Bi)		Ī	
PK	Н	434.000	55.42	16.48	3.47	0.00	-10.46	85.82	92.87	-7.05	120/300 kHz	Ī	
AVG	Н	434.000	35.42	16.48	3.47	0.00	-10.46	65.82	72.87	-7.05	120/300 kHz	Ī	
PK	V	434.000	53.27	16.48	3.47	0.00	-10.46	83.67	92.87	-9.20	120/300 kHz	Ī	
AVG	٧	434.000	33.27	16.48	3.47	0.00	-10.46	63.67	72.87	-9.20	120/300 kHz	I	

Radiated Emissions

Company: Intellisaw Antenna & Cables: Ν Bands: N, LF, HF, SHF Model #: 400.00152 Antenna: 145106 10mh 10-21-15.txt 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): 145-410 10M Track A Cables SMfz to 2 GHz REDUCED POINTS 10-04-15.bd NONE.

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 02/26/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3 PreAmp: NONE. Test Distance (m): 10

> PreAmp Used? (Y or N): Ν Voltage/Frequency: 5VDC Frequency Range: 30-1000 MHz

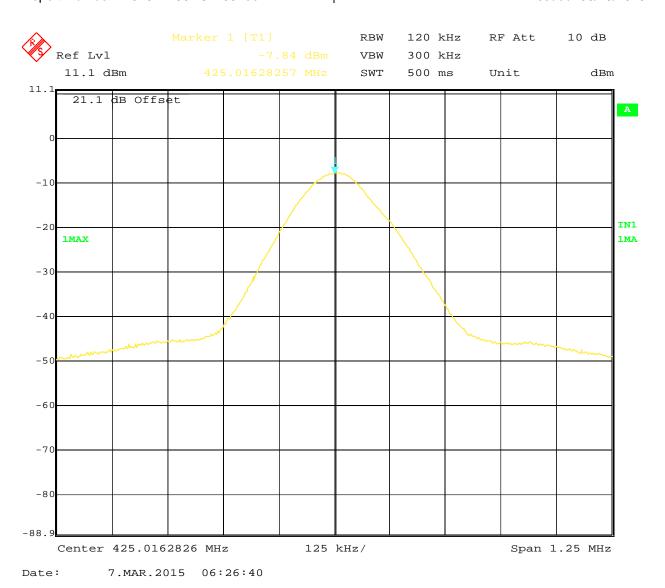
Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)

Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS: NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

i can. i	it Quasi i	can. Qi Av	ciago. 7170	TAIVIO. TAIVIO	J, 141 - 140K	oc i looi, itt	- 1103tiloto	a Dana, Dai	iawiatii acii	oted do IND	VV/ V D V V	_
	Ant.			Antenna	Cable	Pre-amp	Distance					
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth	
Туре	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FC
	F=	= 445 MHz, X	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)		Ì
PK	Н	445.000	59.21	16.70	3.52	0.00	-10.46	89.89	93.22	-3.33	120/300 kHz	Ī
AVG	Н	445.000	39.21	16.70	3.52	0.00	-10.46	69.89	73.22	-3.33	120/300 kHz	Ī
PK	V	445.000	59.43	16.70	3.52	0.00	-10.46	90.11	93.22	-3.11	120/300 kHz	Ī
AVG	V	445.000	39.43	16.70	3.52	0.00	-10.46	70.11	73.22	-3.11	120/300 kHz	1
	F=	445 MHz, Y	'-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)		Ì
PK	Н	445.000	58.92	16.70	3.52	0.00	-10.46	89.60	93.22	-3.62	120/300 kHz	
AVG	Н	445.000	38.92	16.70	3.52	0.00	-10.46	69.60	73.22	-3.62	120/300 kHz	Ī
PK	V	445.000	57.12	16.70	3.52	0.00	-10.46	87.80	93.22	-5.42	120/300 kHz	
AVG	V	445.000	37.12	16.70	3.52	0.00	-10.46	67.80	73.22	-5.42	120/300 kHz	Ī
	F =	= 445 MHz, Z	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)		Ī
PK	Н	445.000	59.47	16.70	3.52	0.00	-10.46	90.15	93.22	-3.07	120/300 kHz	Ī
AVG	Н	445.000	39.47	16.70	3.52	0.00	-10.46	70.15	73.22	-3.07	120/300 kHz	Ì
PK	V	445.000	58.17	16.70	3.52	0.00	-10.46	88.85	93.22	-4.37	120/300 kHz	Ī
AVG	V	445.000	38.17	16.70	3.52	0.00	-10.46	68.85	73.22	-4.37	120/300 kHz	Ī

Intertek

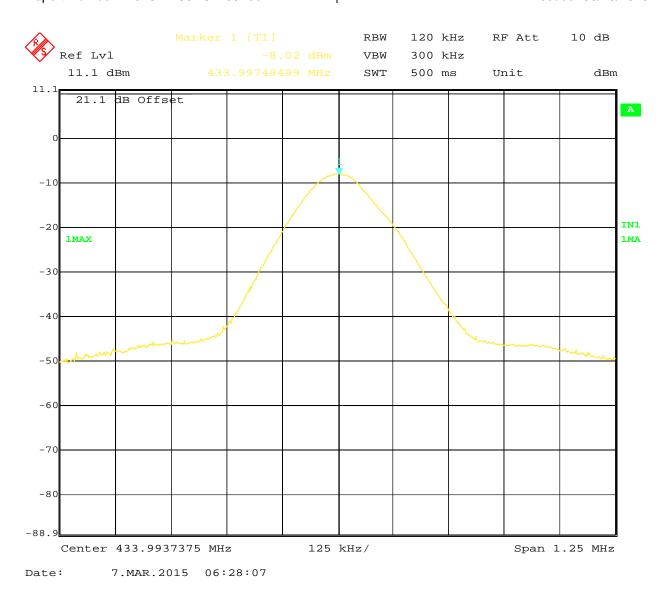




Output power for frequency 425MHz is -7.84 d(Bm)

Intertek

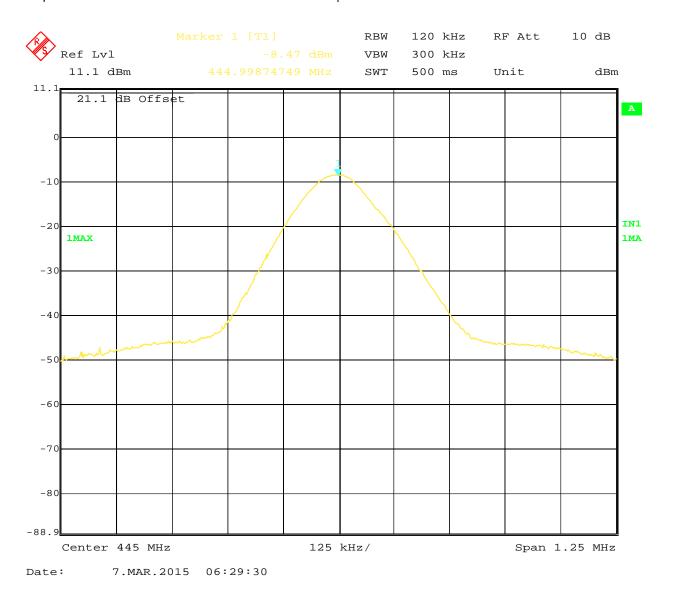




Output power for frequency 434 MHz is -5.02 d(Bm)

Intertek

Report Number: 102014290BOX-001ee Issued: 08/10/2015



Output power for frequency 445 MHz is -8.47 d(Bm)

Test Personnel: Supervising/Reviewing	Vathana Ven	Test Date:	03/06/2015
Engineer:	NI/A		
(Where Applicable) Product Standard:	N/A FCC Part 15 Subpart C, RSS-210	Limit Applied:	Section 15.231(e)
	Powered from 24VDC Host	11	
Pretest Verification w/		Ambient Temperature:	See data tables
Ambient Signals or	A 1:	5 1 2 11 12	•
BB Source:	Ambient Signals	Relative Humidity:	See data tables
		Atmospheric Pressure:	See data tables

Deviations, Additions, or Exclusions: None

7 **Occupied Bandwidth**

7.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart C Section 15.231(c), ANSI C63.10, and RSS-Gen.

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.

7.2 **Test Equipment Used:**

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/17/2014	03/17/2015
145-410'	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2014	10/04/2015
145106'	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	10/24/2014	10/24/2015
Dav004'	Weather Station	Davis Instruments	7400	PE80529A61A	10/06/2014	10/06/2015

Software Utilized:

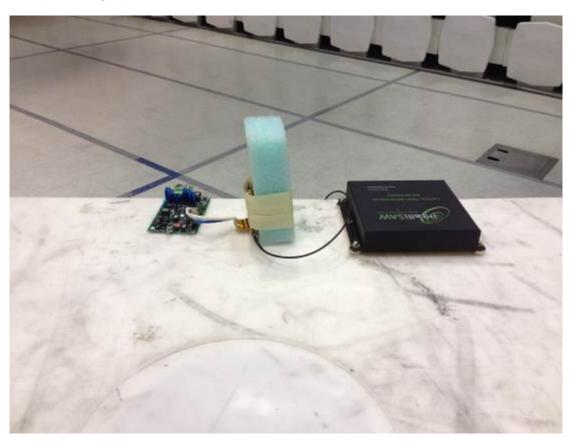
Name	Manufacturer	Version
None		

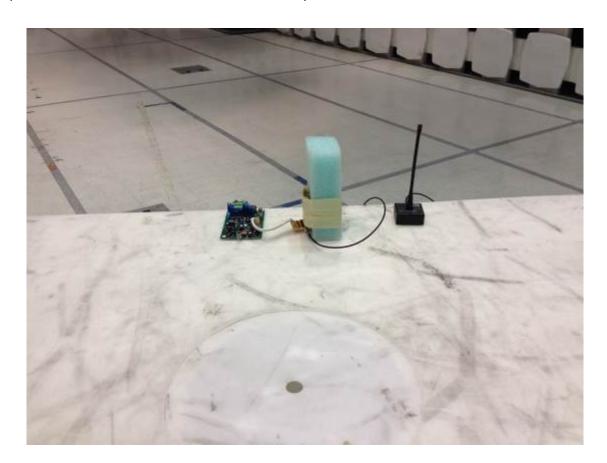
7.3 Results:

The sample tested was found to Comply. The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier. Therefore the bandwidth must not exceed 1.06 MHz for 425 MHz, 1.09 MHz for 434 MHz, and 1.11 MHz for 445 MHz.

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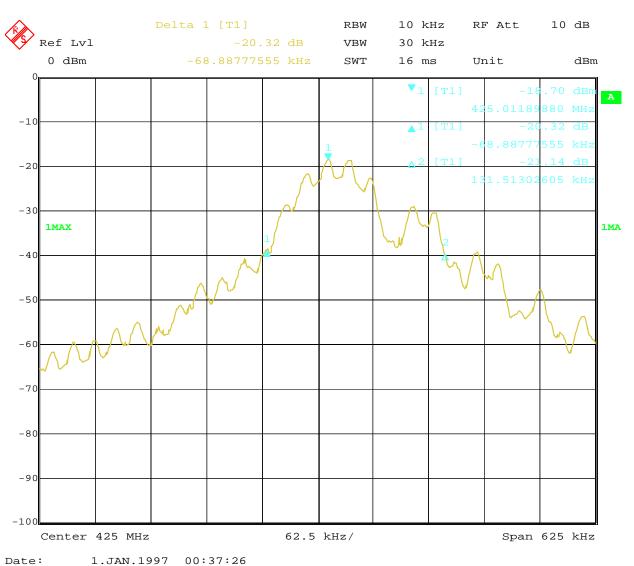
7.4 Setup Photographs:





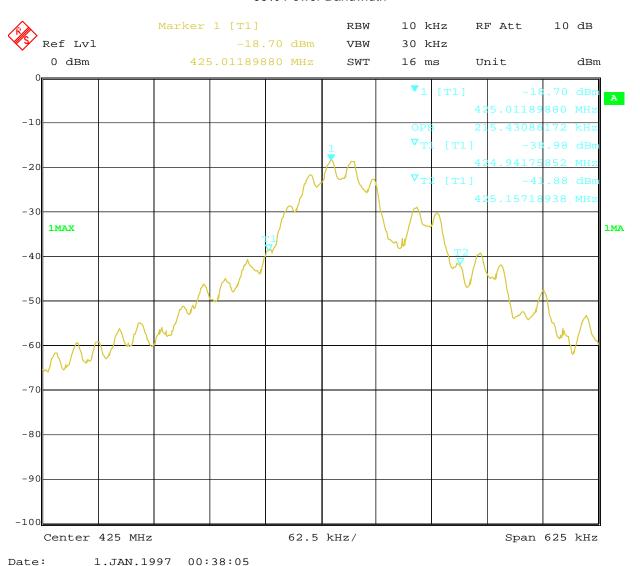
7.5 Plots/Data:

20 dB Bandwidth

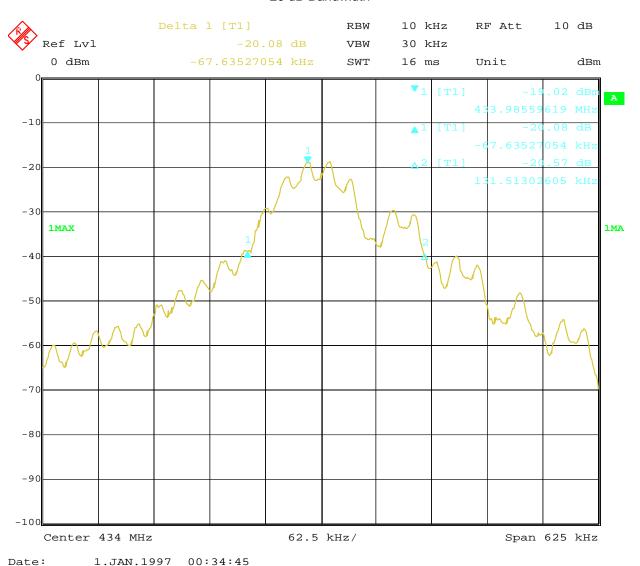


Date: 1.0AN.1997 00:37:26

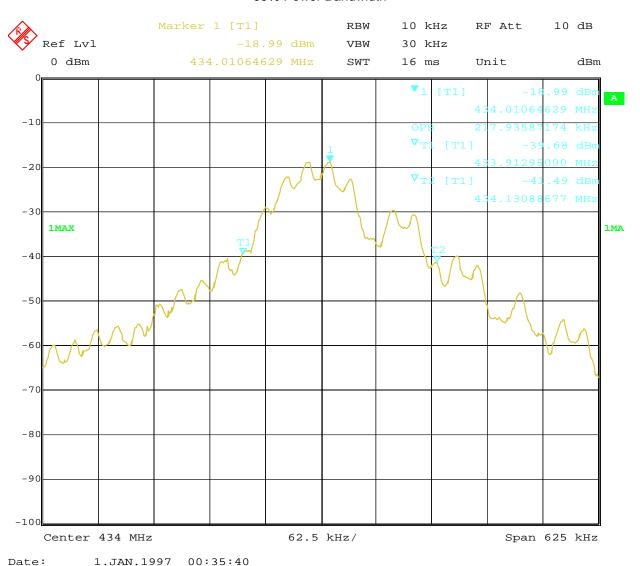
99% Power Bandwidth



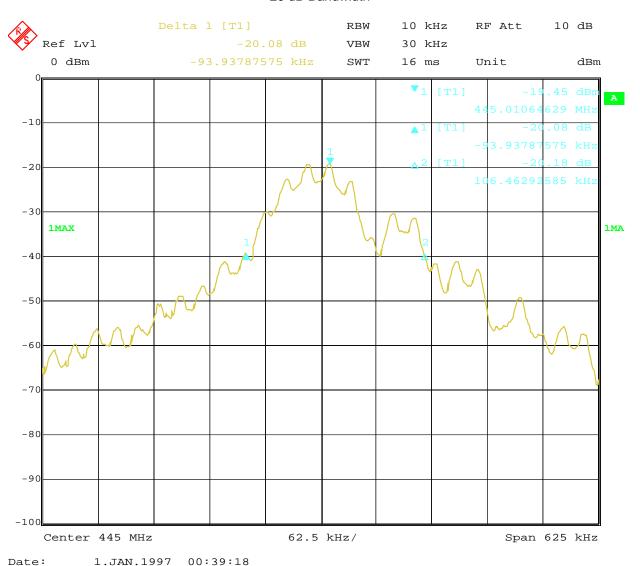
20 dB Bandwidth



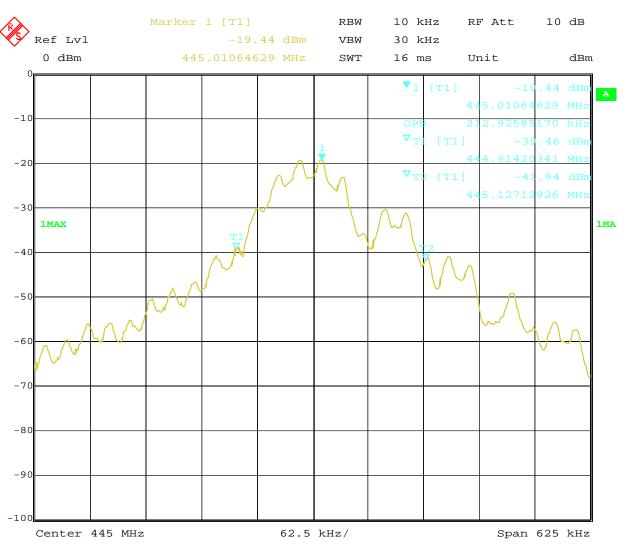
99% Power Bandwidth



20 dB Bandwidth



99% Power Bandwidth



1.JAN.1997 00:39:57 Date:

Test Personnel:	Vathana VenV5V	Test Date:	02/26/2015
Supervising/Reviewing Engineer:			
(Where Applicable)	N/A		
Product Standard:	FCC Part 15 Subpart C, RSS-Gen	Limit Applied:	Section 15.231(c)
Input Voltage:	Powered from 24VDC Host		
Pretest Verification w/		Ambient Temperature:	22 °C
Ambient Signals or			
9	Ambient Signals	Relative Humidity:	10 %
	-	·	
		Atmospheric Pressure:	1007 mbars

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8 **Radiated and Spurious Emissions**

8.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart C Section 15.231(e), ANSI C63.10, and RSS-210.

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_{tab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < $U_{\it CISPR}$ (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.

Page 28 of 84 Client: IntelliSAW, Product Designation: Modular Device (RF Card)

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 $FS = Field Strength in dB\mu V/m$

RA = Receiver Amplitude (including preamplifier) in $dB\mu V$

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 dB μ V 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 dB_µV/m. This value in $dB\mu V/m$ was converted to its corresponding level in $\mu V/m$.

 $RA = 52.0 dB\mu V$ AF = 7.4 dB/mCF = 1.6 dBAG = 29.0 dBFS = 32 dBuV/m

To convert from $dB\mu V$ to μV or mV the following was used:

UF =
$$10^{(NF/20)}$$
 where UF = Net Reading in μ V
NF = Net Reading in dB μ V

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 $\mu V/m$

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8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/17/2014	03/17/2015
145-410'	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2014	10/04/2015
145106'	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	10/24/2014	10/24/2015
Dav004'	Weather Station	Davis Instruments	7400	PE80529A61A	10/06/2014	10/06/2015
REA003'	1GHz High Pass Filter	Reactel, Inc	7HS-1G/10G-S11	06-1	12/30/2013	12/30/2015
145-416'	Cables 145-400 145-402 145-404 145-408	Huber + Suhner	3m Track B cables	multiple	10/04/2014	10/04/2015
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	05/05/2014	05/05/2015
ETS002'	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	03/20/2014	03/20/2015

Software Utilized:

Name	Manufacturer	Version
EMI Boxborough	Intertek	8/27/2010
C5	TESEQ	Build 5.26.46.46

8.3 Results:

The sample tested was found to Comply.

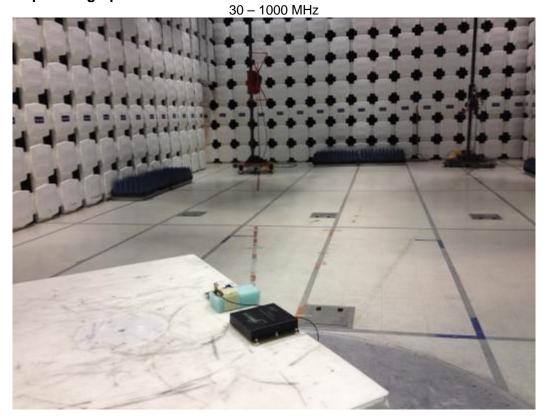
(e) Intentional radiators may operate at a periodic rate exceeding that specified in paragraph (a) of this section and may be employed for any type of operation, including operation prohibited in paragraph (a) of this section, provided the intentional radiator complies with the provisions of paragraphs (b) through (d) of this section, except the field strength table in paragraph (b) of this section is replaced by the following:

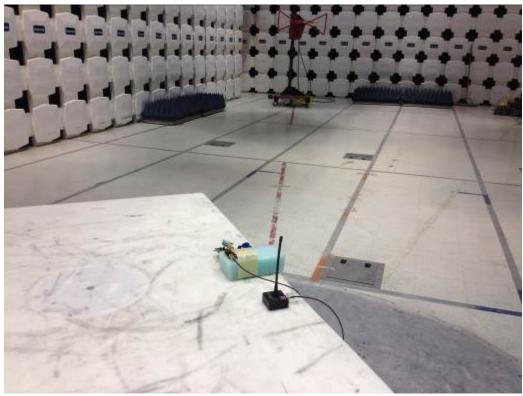
Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66-40.70	1,000	100
70-130	500	50
130-174	500 to 1,500 ¹	50 to 150 ¹
174-260	1,500	150
260-470	1,500 to 5,000 ¹	150 to 500 ¹
Above 470	5,000	500

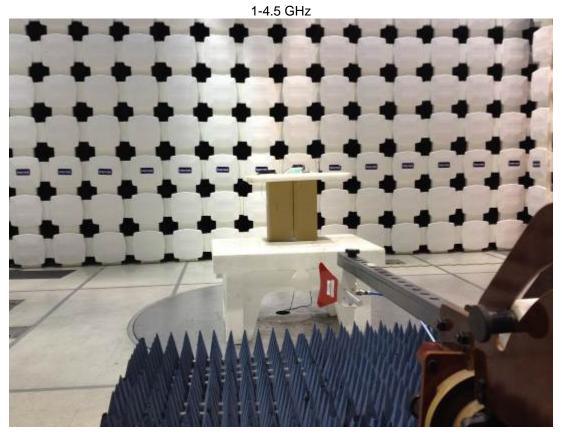
¹Linear interpolations.

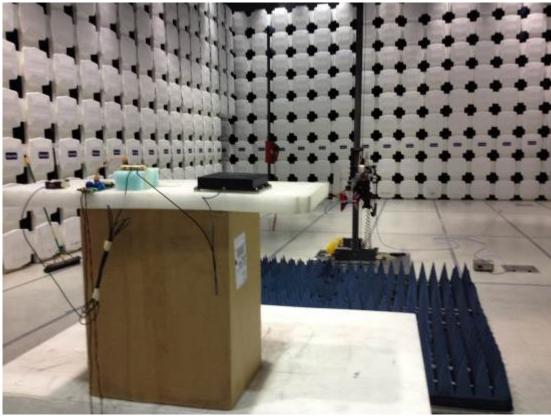
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8.4 Setup Photographs:









8.5 Plots/Data:

Radiated Emissions

 Company: Intellisaw
 Antenna & Cables:
 N
 Bands: N, LF, HF, SHF

 Model #: 400.00152
 Antenna: 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): 14-44 100 AT TRISK A CABBAN BAPPEN 2 DIRECTOR FORMS 104-41 State A PAPEN 2 DIRE

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3
PreAmp: NONE. Test Distance (m): 10

PreAmp Used? (Y or N): N Voltage/Frequency: 5VDC Frequency Range: 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

	Ant.	ear. Qi Av		Antenna	Cable	Pre-amp	Distance					Ī	
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth		
Туре	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FCC	IC
	F=	= 425 MHz, X	Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)			
AVG	V	45.000	10.50	10.60	1.07	0.00	-10.46	32.62	52.57	-19.95	120/300 kHz		
PK	V	64.985	30.00	7.90	1.28	0.00	-10.46	49.64	72.57	-22.93	120/300 kHz		
AVG	V	64.985	10.00	7.90	1.28	0.00	-10.46	29.64	52.57	-22.93	120/300 kHz		
PK	V	850.000	16.00	21.90	4.76	0.00	-10.46	53.12	72.57	-19.45	120/300 kHz	Noise Floor	
AVG	V	850.000	-4.00	21.90	4.76	0.00	-10.46	33.12	52.57	-19.45	120/300 kHz	Noise Floor	
	F=	= 425 MHz, Y	'-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)			
PK	V	45.000	32.50	10.60	1.07	0.00	-10.46	54.62	72.57	-17.95	120/300 kHz		
AVG	V	45.000	12.50	10.60	1.07	0.00	-10.46	34.62	52.57	-17.95	120/300 kHz		
PK	V	64.985	36.99	7.90	1.28	0.00	-10.46	56.63	72.57	-15.94	120/300 kHz		
AVG	V	64.985	16.99	7.90	1.28	0.00	-10.46	36.63	52.57	-15.94	120/300 kHz		
PK	V	850.000	16.45	21.90	4.76	0.00	-10.46	53.57	72.57	-19.00	120/300 kHz	Noise Floor	
AVG	V	850.000	-3.55	21.90	4.76	0.00	-10.46	33.57	52.57	-19.00	120/300 kHz	Noise Floor	
	F=	= 425 MHz, Z	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)			
PK	V	45.000	31.89	10.60	1.07	0.00	-10.46	54.01	72.57	-18.56	120/300 kHz		
AVG	V	45.000	11.89	10.60	1.07	0.00	-10.46	34.01	52.57	-18.56	120/300 kHz		
PK	V	64.985	35.00	7.90	1.28	0.00	-10.46	54.64	72.57	-17.93	120/300 kHz		
AVG	V	64.985	15.00	7.90	1.28	0.00	-10.46	34.64	52.57	-17.93	120/300 kHz		
PK	V	850.000	15.00	21.90	4.76	0.00	-10.46	52.12	72.57	-20.45	120/300 kHz	Noise Floor	
AVG	V	850.000	-5.00	21.90	4.76	0.00	-10.46	32.12	52.57	-20.45	120/300 kHz	Noise Floor	

Radiated Emissions

 Company: Intellisaw
 Antenna & Cables:
 N
 Bands: N, LF, HF, SHF

 Model #: 400.00152
 Antenna: 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): M64-10 1000 Trick A Cable address 2 One MEDICATO POINTS 10-04-15am NONE.

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3
PreAmp: NONE. Test Distance (m): 10

PreAmp Used? (Y or N): N Voltage/Frequency: 5VDC Frequency Range: 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

		Cart. Q1 7tv	orago. 717 O					I Barra, Bar	lawiatii aeti	I	1	1
	Ant.			Antenna	Cable	Pre-amp	Distance					
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth	
Туре	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FCC
	F	= 425 MHz, X	X-Axis, PPS	= 0 and PA	= 2, Anteni	na (IA-MM-1	7, 17cm m	onopole ante	enna, +3.2 c	lBi)		
PK	V	45.000	31.10	10.60	1.07	0.00	-10.46	53.22	72.57	-19.35	120/300 kHz	
AVG	V	45.000	11.10	10.60	1.07	0.00	-10.46	33.22	52.57	-19.35	120/300 kHz	
PK	V	55.000	32.20	7.00	1.18	0.00	-10.46	50.84	72.57	-21.73	120/300 kHz	
AVG	V	55.000	12.20	7.00	1.18	0.00	-10.46	30.84	52.57	-21.73	120/300 kHz	
PK	V	850.000	14.50	21.90	4.76	0.00	-10.46	51.62	72.57	-20.95	120/300 kHz	Noise Floor
AVG	V	850.000	-5.50	21.90	4.76	0.00	-10.46	31.62	52.57	-20.95	120/300 kHz	Noise Floor
	F	= 425 MHz, `	Y-Axis, PPS	= 0 and PA	= 2, Anteni	na (IA-MM-1	7, 17cm mo	onopole ante	enna, +3.2 c	lBi)		
PK	V	45.000	32.00	10.60	1.07	0.00	-10.46	54.12	72.57	-18.45	120/300 kHz	
AVG	V	45.000	12.00	10.60	1.07	0.00	-10.46	34.12	52.57	-18.45	120/300 kHz	
PK	V	55.000	32.14	7.00	1.18	0.00	-10.46	50.78	72.57	-21.79	120/300 kHz	
AVG	V	55.000	12.14	7.00	1.18	0.00	-10.46	30.78	52.57	-21.79	120/300 kHz	
PK	V	850.000	15.10	21.90	4.76	0.00	-10.46	52.22	72.57	-20.35	120/300 kHz	Noise Floor
AVG	V	850.000	-4.90	21.90	4.76	0.00	-10.46	32.22	52.57	-20.35	120/300 kHz	Noise Floor
	F	= 425 MHz, 2	Z-Axis, PPS	= 0 and PA	= 2, Antenr	na (IA-MM-1	7, 17cm mo	onopole ante	enna, +3.2 d	lBi)		
PK	V	45.000	30.51	10.60	1.07	0.00	-10.46	52.63	72.57	-19.94	120/300 kHz	Noise Floor
AVG	V	45.000	10.51	10.60	1.07	0.00	-10.46	32.63	52.57	-19.94	120/300 kHz	Noise Floor
PK	V	55.000	32.11	7.00	1.18	0.00	-10.46	50.75	72.57	-21.82	120/300 kHz	Noise Floor
AVG	V	55.000	12.11	7.00	1.18	0.00	-10.46	30.75	52.57	-21.82	120/300 kHz	Noise Floor
PK	V	850.000	14.87	21.90	4.76	0.00	-10.46	51.99	72.57	-20.58	120/300 kHz	Noise Floor
AVG	V	850.000	-5.13	21.90	4.76	0.00	-10.46	31.99	52.57	-20.58	120/300 kHz	Noise Floor

IC

Radiated Emissions

Company: Intellisaw Antenna & Cables: Ν Bands: N, LF, HF, SHF

Model #: 400.00152 Antenna: 145106 10mh 10-21-15.txt 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): MS-410 10M Track A Cables SMYz to 2 GHz REDUCED POINTS 10-04-15 to NONE.

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Temp/Humidity/Pressure: 22 deg C 8% Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3 PreAmp: NONE. Test Distance (m): 10

Voltage/Frequency: PreAmp Used? (Y or N): Ν 5VDC Frequency Range: 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

Peak: F	N Quasi-F	reak: QP AV	erage: AVG	KIVIS: KIVIS	5; INF = INOIS	se Floor, RB	= Restricte	u banu; bar	iawiain aen	oled as RB	/V/ V B V V	_	
	Ant.			Antenna	Cable	Pre-amp	Distance						
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth		
Type	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FCC	IC
	F=	= 434 MHz, X	Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)	-		
PK	V	45.000	31.81	10.60	1.07	0.00	-10.46	53.93	72.87	-18.94	120/300 kHz		
AVG	V	45.000	12.00	10.60	1.07	0.00	-10.46	34.12	52.87	-18.75	120/300 kHz		
PK	V	64.985	12.30	7.90	1.28	0.00	-10.46	31.94	72.87	-40.93	120/300 kHz	Noise Floor	
AVG	V	64.985	-7.70	7.90	1.28	0.00	-10.46	11.94	52.87	-40.93	120/300 kHz	Noise Floor	
PK	V	868.000	15.45	21.80	4.79	0.00	-10.46	52.49	72.87	-20.38	120/300 kHz	Noise Floor	
AVG	V	868.000	-4.55	21.80	4.79	0.00	-10.46	32.49	52.87	-20.38	120/300 kHz	Noise Floor	
	F=	= 434 MHz, Y	'-Axis, PPS	= 0 and PA	= 2, Antenn	ıa (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)			
PK	V	45.000	30.00	10.60	1.07	0.00	-10.46	52.12	72.87	-20.75	120/300 kHz		
AVG	V	45.000	10.00	10.60	1.07	0.00	-10.46	32.12	52.87	-20.75	120/300 kHz		
PK	V	64.985	35.00	7.90	1.28	0.00	-10.46	54.64	72.87	-18.23	120/300 kHz	ĺ	
AVG	V	64.985	15.00	7.90	1.28	0.00	-10.46	34.64	52.87	-18.23	120/300 kHz		
PK	V	868.000	16.90	21.80	4.79	0.00	-10.46	53.94	72.87	-18.93	120/300 kHz	Noise Floor	
AVG	V	868.000	-3.10	21.80	4.79	0.00	-10.46	33.94	52.87	-18.93	120/300 kHz	Noise Floor	
	F=	= 434 MHz, Z	-Axis, PPS	= 0 and PA	= 2, Antenn	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)	•		
PK	V	45.000	32.36	10.60	1.07	0.00	-10.46	54.48	72.87	-18.39	120/300 kHz	ĺ	
AVG	V	45.000	12.36	10.60	1.07	0.00	-10.46	34.48	52.87	-18.39	120/300 kHz	ĺ	
PK	V	64.985	32.65	7.90	1.28	0.00	-10.46	52.29	72.87	-20.58	120/300 kHz	ĺ	
AVG	V	64.985	12.65	7.90	1.28	0.00	-10.46	32.29	52.87	-20.58	120/300 kHz	İ	
PK	V	868.000	15.10	21.80	4.79	0.00	-10.46	52.14	72.87	-20.73	120/300 kHz	Noise Floor	
AVG	V	868.000	-4.90	21.80	4.79	0.00	-10.46	32.14	52.87	-20.73	120/300 kHz	Noise Floor	

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Client: IntelliSAW, Product Designation: Modular Device (RF Card)

Radiated Emissions

 Company: Intellisaw
 Antenna & Cables:
 N
 Bands: N, LF, HF, SHF

 Model #: 400.00152
 Antenna: 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): 146-141 1081 head a Cabba Ballow 2 Green personal conditions and the condition of the condition

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3
PreAmp: NONE. Test Distance (m): 10

PreAmp Used? (Y or N): N Voltage/Frequency: 5VDC Frequency Range: 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

r can. r	Ant.	Peak: QP AV	erage. AVG	Antenna	Cable	Pre-amp	Distance	d Bariu, Bai	idwidti deii	Oled as ND	I	Ī
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth	
Type	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FCC
F = 434 MHz, X-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-17, 17cm monopole antenna, +3.2 dBi)												İ
PK	V	45.000	31.69	10.60	1.07	0.00	-10.46	53.81	72.87	-19.06	120/300 kHz	
AVG	V	45.000	11.69	10.60	1.07	0.00	-10.46	33.81	52.87	-19.06	120/300 kHz	
PK	V	64.985	23.95	7.90	1.28	0.00	-10.46	43.59	72.87	-29.28	120/300 kHz	
AVG	V	64.985	3.95	7.90	1.28	0.00	-10.46	23.59	52.87	-29.28	120/300 kHz	
PK	V	868.000	15.36	21.80	4.79	0.00	-10.46	52.40	72.87	-20.47	120/300 kHz	Noise Floor
AVG	V	868.000	-4.64	21.80	4.79	0.00	-10.46	32.40	52.87	-20.47	120/300 kHz	Noise Floor
F = 434 MHz, Y-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-17, 17cm monopole antenna, +3.2 dBi)												
PK	V	45.000	31.59	10.60	1.07	0.00	-10.46	53.71	72.87	-19.16	120/300 kHz	
AVG	V	45.000	11.59	10.60	1.07	0.00	-10.46	33.71	52.87	-19.16	120/300 kHz	
PK	V	55.000	32.14	7.00	1.18	0.00	-10.46	50.78	72.87	-22.09	120/300 kHz	
AVG	V	55.000	12.14	7.00	1.18	0.00	-10.46	30.78	52.87	-22.09	120/300 kHz	
PK	V	868.000	15.90	21.80	4.79	0.00	-10.46	52.94	72.87	-19.93	120/300 kHz	Noise Floor
AVG	V	868.000	-4.10	21.80	4.79	0.00	-10.46	32.94	52.87	-19.93	120/300 kHz	Noise Floor
F = 434 MHz, Z-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-17, 17cm monopole antenna, +3.2 dBi)												
PK	V	45.000	31.66	10.60	1.07	0.00	-10.46	53.78	72.87	-19.09	120/300 kHz	
AVG	V	45.000	11.66	10.60	1.07	0.00	-10.46	33.78	52.87	-19.09	120/300 kHz	
PK	V	56.000	32.19	7.00	1.19	0.00	-10.46	50.84	72.87	-22.03	120/300 kHz	
AVG	V	56.000	12.19	7.00	1.19	0.00	-10.46	30.84	52.87	-22.03	120/300 kHz	
PK	V	868.000	15.10	21.80	4.79	0.00	-10.46	52.14	72.87	-20.73	120/300 kHz	Noise Floor
AVG	V	868.000	-4.90	21.80	4.79	0.00	-10.46	32.14	52.87	-20.73	120/300 kHz	Noise Floor

IC

Radiated Emissions

 Company: Intellisaw
 Antenna & Cables:
 N
 Bands: N, LF, HF, SHF

 Model #: 400.00152
 Antenna: 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): 16-819 UNIT TRANS CABAN REVIEW 2 FOUNT TRANS C

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 02/26/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3
PreAmp: NONE. Test Distance (m): 10

PreAmp Used? (Y or N): N Voltage/Frequency: 5VDC Frequency Range: 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												
	Ant.			Antenna	Cable	Pre-amp	Distance					
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth	
Type	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FCC
	F=	445 MHz, X	-Axis, PPS	= 0 and PA	= 2, Antenr	ia (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)	•	I
PK	V	45.000	30.90	10.60	1.07	0.00	-10.46	53.02	73.22	-20.20	120/300 kHz	
AVG	V	45.000	10.90	10.60	1.07	0.00	-10.46	33.02	53.22	-20.20	120/300 kHz	
PK	V	54.990	32.57	7.00	1.18	0.00	-10.46	51.21	73.22	-22.01	120/300 kHz	
AVG	V	54.990	12.57	7.00	1.18	0.00	-10.46	31.21	53.22	-22.01	120/300 kHz	
PK	V	890.000	15.00	21.90	4.82	0.00	-10.46	52.17	73.22	-21.05	120/300 kHz	Noise Floor
AVG	V	890.000	-5.00	21.90	4.82	0.00	-10.46	32.17	53.22	-21.05	120/300 kHz	Noise Floor
F = 445 MHz, Y-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-TPD, PIFA Patched Inverted F antenna)										Ī		
PK	V	45.000	32.55	10.60	1.07	0.00	-10.46	54.67	73.22	-18.55	120/300 kHz	
AVG	V	45.000	12.55	10.60	1.07	0.00	-10.46	34.67	53.22	-18.55	120/300 kHz	
PK	V	64.985	31.00	7.90	1.28	0.00	-10.46	50.64	73.22	-22.58	120/300 kHz	:[
AVG	V	64.985	11.00	7.90	1.28	0.00	-10.46	30.64	53.22	-22.58	120/300 kHz	
PK	V	890.000	16.29	21.90	4.82	0.00	-10.46	53.46	73.22	-19.76	120/300 kHz	Noise Floor
AVG	V	890.000	-3.71	21.90	4.82	0.00	-10.46	33.46	53.22	-19.76	120/300 kHz	Noise Floor
	F:	= 445 MHz, Z	-Axis, PPS	= 0 and PA	= 2, Antenr	a (IA-MM-T	PD, PIFA P	atched Inve	rted F anten	na)		Ĩ
PK	V	45.000	32.12	10.60	1.07	0.00	-10.46	54.24	73.22	-18.98	120/300 kHz	:[
AVG	V	45.000	12.12	10.60	1.07	0.00	-10.46	34.24	53.22	-18.98	120/300 kHz	:[
PK	V	64.985	31.00	7.90	1.28	0.00	-10.46	50.64	73.22	-22.58	120/300 kHz	:[
AVG	V	64.985	11.00	7.90	1.28	0.00	-10.46	30.64	53.22	-22.58	120/300 kHz	:[
PK	V	890.000	20.00	21.90	4.82	0.00	-10.46	57.17	73.22	-16.05	120/300 kHz	Noise Floor
AVG	V	890.000	0.00	21.90	4.82	0.00	-10.46	37.17	53.22	-16.05	120/300 kHz	Noise Floor

Radiated Emissions

 Company: Intellisaw
 Antenna & Cables:
 N
 Bands: N, LF, HF, SHF

 Model #: 400.00152
 Antenna: 145106 10mh 10-21-15.txt
 145106 10mh 10-21-15.txt

Serial #: 08150695 Cable(s): 10-181 100 Trans A Codes above 12 Gibt MEDICAL DEPARTS 100-4 State NONE.

Engineers: Vathana Ven Location: 10M Barometer: DAV004 Filter: NONE

Project #: G102014290 Date(s): 03/06/15

Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB

Receiver: R&S ESI (145-128) 03-17-2015 Limit Distance (m): 3
PreAmp: NONE. Test Distance (m): 10

PreAmp Used? (Y or N): N Voltage/Frequency: 5VDC Frequency Range: 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

Peak: F	² K Quasi-F	eak: QP AV	erage: AVG	RMS: RMS	S; NF = NOS	se Floor, RB	s = Restricte	d Band; Bai	nawiath den	oted as RB	W/VBW	_	
	Ant.			Antenna	Cable	Pre-amp	Distance						
Detector	Pol.	Frequency	Reading	Factor	Loss	Factor	Factor	Net	Limit	Margin	Bandwidth		
Type	(V/H)	MHz	dB(uV)	dB(1/m)	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB		FCC	IC
	F	= 445 MHz,)	K-Axis, PPS	= 0 and PA	. = 2, Anteni	na (IA-MM-1	7, 17cm mo	onopole ante	enna, +3.2 d	lBi)			
PK	V	45.000	31.69	10.60	1.07	0.00	-10.46	53.81	73.22	-19.41	120/300 kHz		
AVG	V	45.000	11.69	10.60	1.07	0.00	-10.46	33.81	53.22	-19.41	120/300 kHz		
PK	V	56.000	19.00	7.00	1.19	0.00	-10.46	37.65	73.22	-35.57	120/300 kHz		
AVG	V	56.000	-1.00	7.00	1.19	0.00	-10.46	17.65	53.22	-35.57	120/300 kHz		
PK	V	890.000	15.40	21.90	4.82	0.00	-10.46	52.57	73.22	-20.65	120/300 kHz	Noise Floor	
AVG	V	890.000	-4.60	21.90	4.82	0.00	-10.46	32.57	53.22	-20.65	120/300 kHz	Noise Floor	
F = 445 MHz, Y-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-17, 17cm monopole antenna, +3.2 dBi)													
PK	V	45.000	31.69	10.60	1.07	0.00	-10.46	53.81	73.22	-19.41	120/300 kHz		
AVG	V	45.000	11.69	10.60	1.07	0.00	-10.46	33.81	53.22	-19.41	120/300 kHz		
PK	V	56.000	32.00	7.00	1.19	0.00	-10.46	50.65	73.22	-22.57	120/300 kHz		
AVG	V	56.000	12.00	7.00	1.19	0.00	-10.46	30.65	53.22	-22.57	120/300 kHz		
PK	V	890.000	15.61	21.90	4.82	0.00	-10.46	52.78	73.22	-20.44	120/300 kHz	Noise Floor	
AVG	V	890.000	-4.39	21.90	4.82	0.00	-10.46	32.78	53.22	-20.44	120/300 kHz	Noise Floor	
	F	= 445 MHz, 2	Z-Axis, PPS	= 0 and PA	= 2, Anteni	na (IA-MM-1	7, 17cm mo	nopole ante	enna, +3.2 d	Bi)			
PK	V	45.000	31.66	10.60	1.07	0.00	-10.46	53.78	73.22	-19.44	120/300 kHz		
AVG	V	45.000	11.66	10.60	1.07	0.00	-10.46	33.78	53.22	-19.44	120/300 kHz		
PK	V	56.000	31.12	7.00	1.19	0.00	-10.46	49.77	73.22	-23.45	120/300 kHz		
AVG	V	56.000	11.12	7.00	1.19	0.00	-10.46	29.77	53.22	-23.45	120/300 kHz		
PK	V	890.000	14.23	21.90	4.82	0.00	-10.46	51.40	73.22	-21.82	120/300 kHz	Noise Floor	
AVG	V	890.000	-5.77	21.90	4.82	0.00	-10.46	31.40	53.22	-21.82	120/300 kHz	Noise Floor	

1-4.5 GHz

Test Information

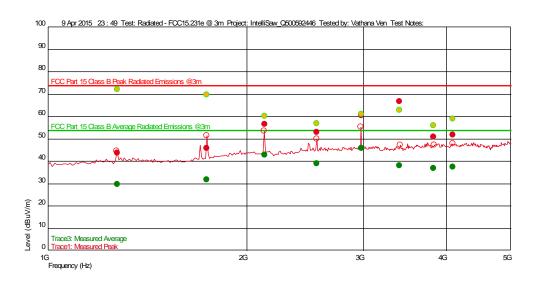
Test Details

User Entry Radiated – RSS-210 @ 3m Test: Project: IntelliSaw_Q500592446

Test Notes: Temperature: 120VAC/60Hz, 425 MHz both antennas, X-Axis, worst-case

21 deg C 29%, 1017 mB Humidity: Vathana Ven 9 Apr 2015 23 : 49 Tested by: Test Started:

Prescan Emission Graph



Measured Peak Value

Measured Quasi Peak Value

Measured Average Value

Maximum Value of Mast and Turntable

Swept Peak Data

Swept Quasi Peak Data

__ Swept Average Data

Emissions Test Data

Trace1: Measured Peak

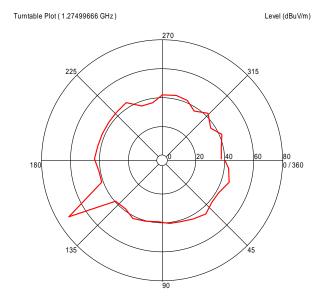
Trace II Measa	ou i ouit									
Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
1.27499666 G	43.65	28.685	-27.800	72.570	-28.92		160	1.53	1 M	
1.738383434 G	45.68	29.339	-26.815	72.570	-26.89		109	2.40	1 M	
3.829144957 G	50.83	33.594	-23.933	72.570	-21.74	İ	333	1.20	1 M	
4.093934536 G	51.82	33.463	-23.194	72.570	-20.75		164	2.51	1 M	
2.55011356 G	52.92	32.515	-25.850	72.570	-19.65		28	2.88	1 M	
2.12510354 G	56.66	31.269	-26.015	72.570	-15.91		266	2.05	1 M	
2.975317301 G	60.52	32.905	-25.127	72.570	-12.05		51	2.30	1 M	
3.40008016 G	66.86	32.966	-24.908	72.570	-5.71		105	2.17	1 M	

Trace3: Measured Average

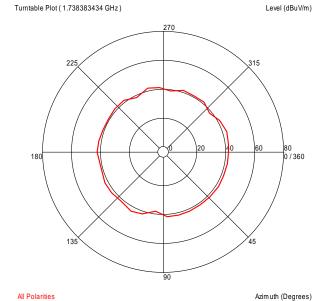
Traces. Meas	ui cu Avci e	igc								
Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin(dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
1.27499666 G	23.65	28.685	-27.800	52.570	-28.92		160	1.53	1 M	
1.738383434 G	25.68	29.339	-26.815	52.570	-26.89		109	2.40	1 M	
3.829144957 G	30.83	33.594	-23.933	52.570	-21.74	İ	333	1.20	1 M	
4.093934536 G	31.82	33.463	-23.194	52.570	-20.75		164	2.51	1 M	
2.55011356 G	32.92	32.515	-25.850	52.570	-19.65		28	2.88	1 M	
2.12510354 G	36.66	31.269	-26.015	52.570	-15.91		266	2.05	1 M	
2.975317301 G	40.52	32.905	-25.127	52.570	-12.05		51	2.30	1 M	
3.40008016 G	46.86	32.966	-24.908	52.570	-5.71		105	2.17	1 M	

Non-Specific EMC Report Shell Rev. May 2014 Client: IntelliSAW, Product Designation: Modular Device (RF Card) Additional Information

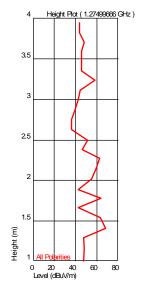
Azimuth Plots

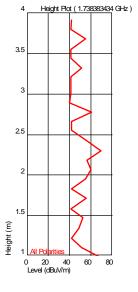


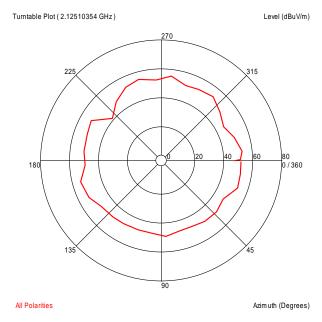
All Polarities Azimuth (Degrees)

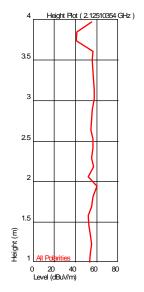


Turntable Plots



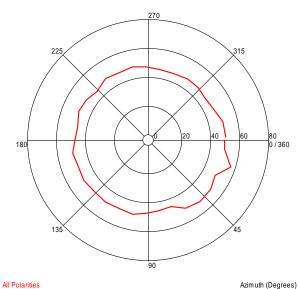


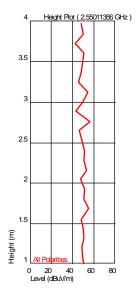


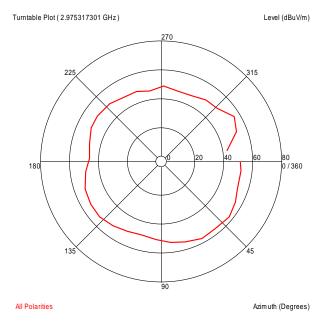


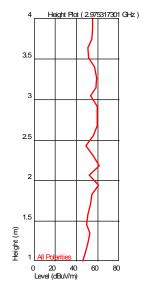




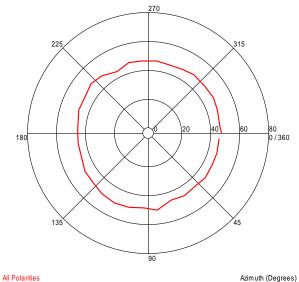


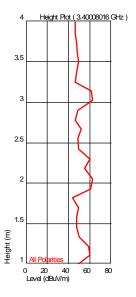




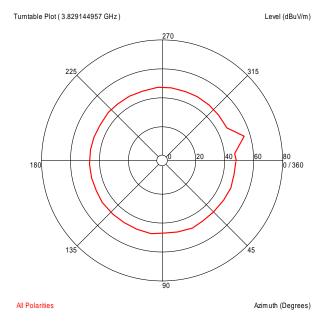


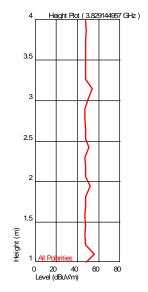


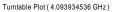




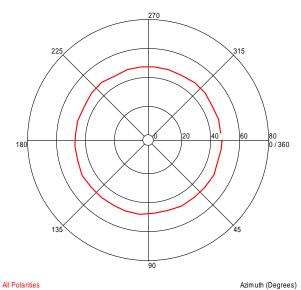
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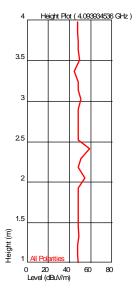












Test Information

Test Details

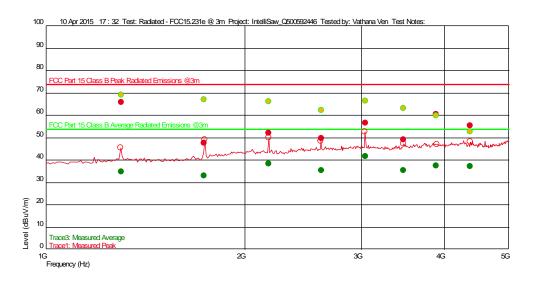
Test: Project: Test Notes:

User Entry
Radiated – RSS210 @ 3m
IntelliSaw, Q500592446
120VAC/60Hz, Both antennas, 434 MHz, X-Axis, worst-case

21 deg C 38%, 994 mB Vathana Ven 10 Apr 2015 17 : 32 Temperature: Humidity: Tested by: Test Started:

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value Maximum Value of Mast and Turntable
- Swept Peak Data
 - Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data
Trace1: Measured Peak

Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/
1.736212425 G	47.53	29.318	-26.823	72.870
3.473132933 G	49.00	32.984	-24.905	72.870
2.606800267 G	49.81	32.588	-25.681	72.870
2 169899799 G	52 13	31 286	-25 971	72 870

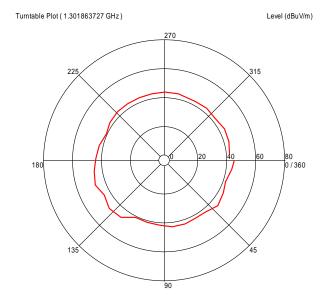
Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
1.736212425 G	47.53	29.318	-26.823	72.870	-25.34		30	2.76	1 M	
3.473132933 G	49.00	32.984	-24.905	72.870	-23.87		0	1.09	1 M	
2.606800267 G	49.81	32.588	-25.681	72.870	-23.06		8	1.80	1 M	
2.169899799 G	52.13	31.286	-25.971	72.870	-20.74		292	1.32	1 M	
4.377682031 G	55.31	33.626	-23.629	72.870	-17.56		21	2.53	1 M	
3.037822311 G	56.68	32.966	-25.105	72.870	-16.19		287	2.04	1 M	
3.890567802 G	60.50	33.670	-23.781	72.870	-12.37		360	1.09	1 M	
1.301863727 G	65.69	28.874	-27.576	72.870	-7.18		150	1.09	1 M	

Trace3:	Measured	Average
---------	----------	---------

Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
1.736212425 G	27.53	29.318	-26.823	52.870	-25.34		30	2.76	1 M	
3.473132933 G	29.00	32.984	-24.905	52.870	-23.87		0	1.09	1 M	
2.606800267 G	29.81	32.588	-25.681	52.870	-23.06	İ	8	1.80	1 M	
2.169899799 G	32.13	31.286	-25.971	52.870	-20.74		292	1.32	1 M	
4.377682031 G	35.31	33.626	-23.629	52.870	-17.56		21	2.53	1 M	
3.037822311 G	36.68	32.966	-25.105	52.870	-16.19		287	2.04	1 M	
3.890567802 G	40.50	33.670	-23.781	52.870	-12.37		360	1.09	1 M	
1.301863727 G	45.69	28.874	-27.576	52.870	-7.18		150	1.09	1 M	
	Frequency (Hz) 1.736212425 G 3.473132933 G 2.606800267 G 2.169899799 G 4.377682031 G 3.037822311 G 3.890567802 G	Frequency (Hz) (dBuV/m) 1.736212425 G 27.53 3.473132933 G 29.00 2.606800267 G 29.81 2.169899799 G 32.13 4.377682031 G 35.31 3.037822311 G 36.68 3.890567802 G 40.50	(Hz) (dBuV/m) AF 1.736212425 G 27.53 29.318 3.473132933 G 29.00 32.984 2.606800267 G 29.81 32.588 2.169899799 G 32.13 31.286 4.377682031 G 35.31 33.626 3.037822311 G 36.68 32.966 3.890567802 G 40.50 33.670	Frequency (Hz) Level (dBuV/m) AF PA+CL 1.736212425 G 27.53 29.318 -26.823 3.473132933 G 29.00 32.984 -24.905 2.606800267 G 29.81 32.588 -25.681 2.169899799 G 32.13 31.286 -25.971 4.377682031 G 35.31 33.626 -23.629 3.037822311 G 36.68 32.966 -25.105 3.890567802 G 40.50 33.670 -23.781	Frequency (Hz)	Frequency (Hz)	Frequency (Hz)	Frequency (Hz) Level (dBuV/m) AF PA+CL (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Hor (), Ver () Azimuth (deg)(Deg) 1.736212425 G 27.53 29.318 -26.823 52.870 -23.44 30 3.473132933 G 29.00 32.984 -24.905 52.870 -23.87 0 2.606800267 G 29.81 32.588 -25.681 52.870 -23.06 8 2.169899799 G 32.13 31.286 -25.971 52.870 -20.74 292 4.377682031 G 35.31 33.626 -23.629 52.870 -17.56 21 3.037822311 G 36.68 32.966 -25.105 52.870 -16.19 287 3.890567802 G 40.50 33.670 -23.781 52.870 -12.37 360	Frequency (Hz)	Frequency (Hz)

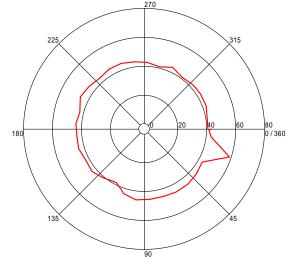
Non-Specific EMC Report Shell Rev. May 2014 Page 44 of 84

Azimuth Plots



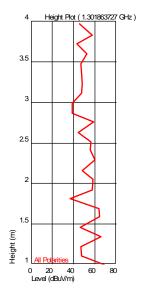
All Polarities Azimuth (Degrees)

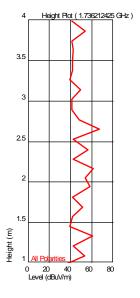
Turntable Plot (1.736212425 GHz) Level (dBuV/m)

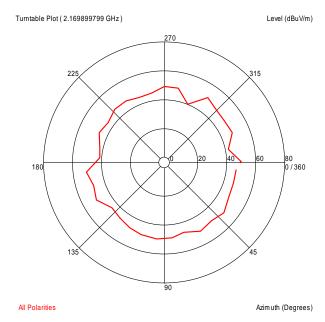


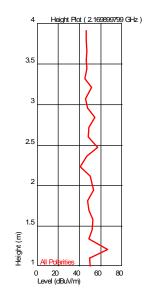
All Polarities Azimuth (Degrees)

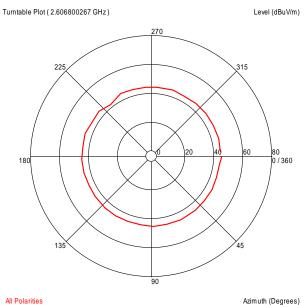
Turntable Plots

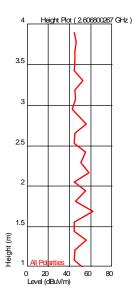


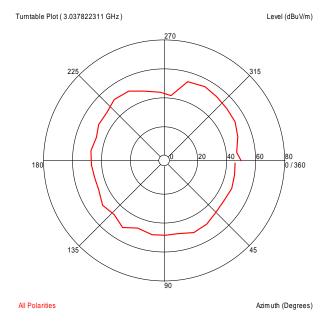


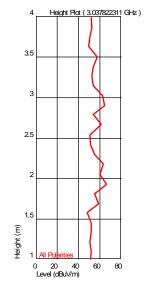




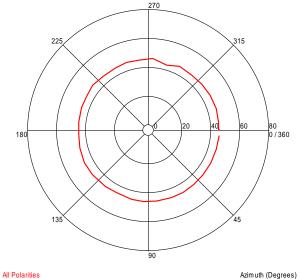


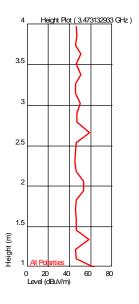


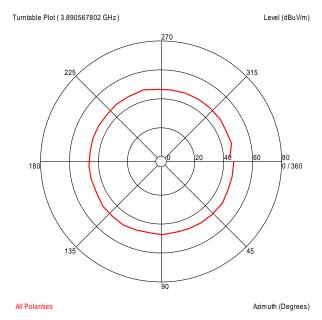


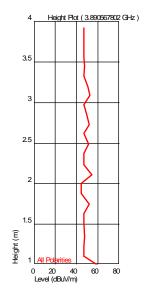






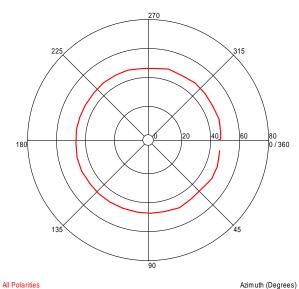


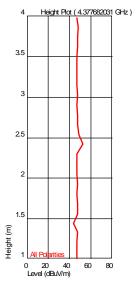












Test Information

Test Details

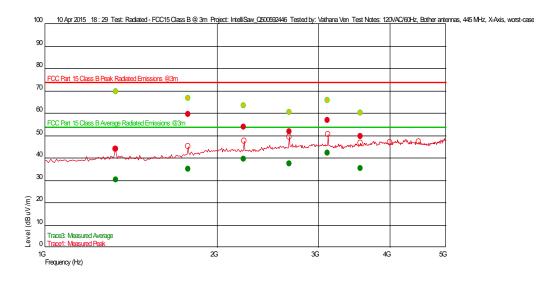
Test: Project: Test Notes:

User Entry
Radiated – RSS-210 @ 3m
IntelliSaw, Q500592446
120VAC/60Hz, Both antennas, 445 MHz, X-Axis, worst-case

21 deg C 38%, 994 mB Vathana Ven 10 Apr 2015 18 : 29 Temperature: Humidity: Tested by: Test Started:

Additional Information

Prescan Emission Graph



Measured Peak Value

Measured Quasi Peak Value

Measured Average Value

Maximum Value of Mast and Turntable

Swept Peak Data

Swept Quasi Peak Data

Swept Average Data

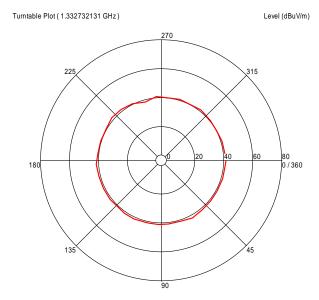
Emissions Test Data
Trace1: Measured Peak

Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
1.332732131 G	43.97	28.823	-27.486	73.220	-29.25		187	1.19	1 M	
3.550627922 G	49.67	33.042	-24.420	73.220	-23.55		50	1.80	1 M	
2.669812959 G	51.88	32.519	-25.522	73.220	-21.34	İ	317	2.29	1 M	
2.22490982 G	53.82	31.306	-26.041	73.220	-19.40	İ	192	2.52	1 M	
3.114856379 G	56.86	32.979	-25.220	73.220	-16.36		249	3.12	1 M	
1.77993988 G	59.56	29.739	-26.674	73.220	-13.66		195	1.09	1 M	

Trace3:	Measured	Average
maccs.	Micasul cu	AVCIAGO

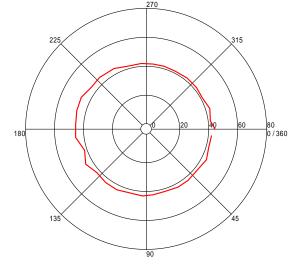
Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
1.332732131 G	23.97	28.823	-27.486	53.220	-29.25		187	1.19	1 M	
3.550627922 G	29.67	33.042	-24.420	53.220	-23.55		50	1.80	1 M	
2.669812959 G	31.88	32.519	-25.522	53.220	-21.34		317	2.29	1 M	
2.22490982 G	33.82	31.306	-26.041	53.220	-19.40	İ	192	2.52	1 M	
3.114856379 G	36.86	32.979	-25.220	53.220	-16.36		249	3.12	1 M	
1.77993988 G	39.56	29.739	-26.674	53.220	-13.66		195	1.09	1 M	

Azimuth Plots



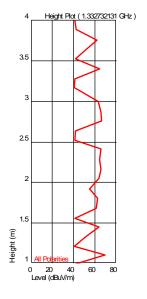
All Polarities Azimuth (Degrees)

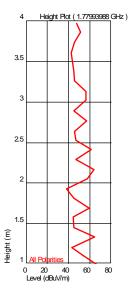
Turntable Plot (1.77993988 GHz) Level (dBuV/m)

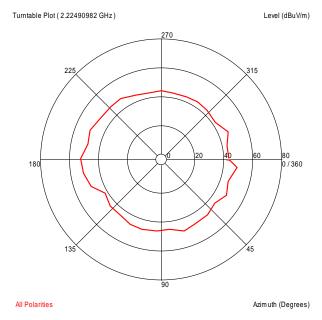


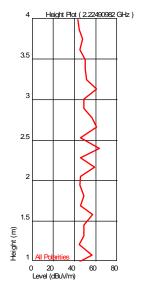
All Polarities Azimuth (Degrees)

Turntable Plots



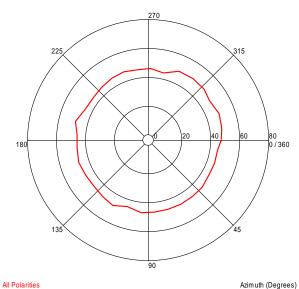


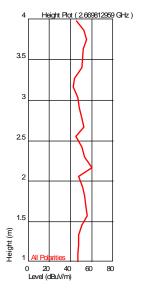




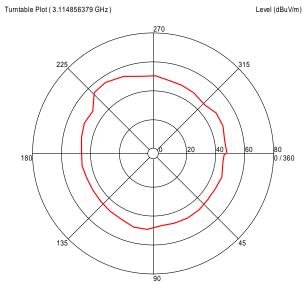


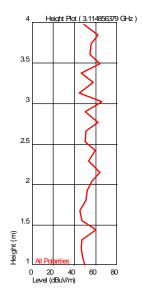




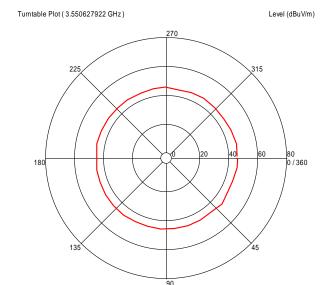


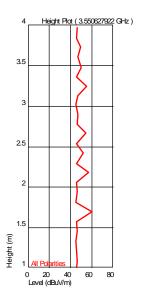
Azimuth (Degrees)





All Polarities Azimuth (Degrees)





Test Personnel:
Supervising/Reviewing
Engineer:
(Where Applicable)
Product Standard:
Input Voltage:

Pretest Verification w/
Ambient Signals or
BB Source:

Vathana Ven

N/A

RSS-210

Powered from 24VDC Host

Ambient Signals

All Polarities

Limit Applied: RSS-210

Ambient Temperature: See data tables

Relative Humidity: See data tables

Atmospheric Pressure: See data tables

Test Date: 04/09/2015

9 **Duty Cycle**

Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart C Section 15.231(c), ANSI C63.10, and RSS-Gen Section 6.10.

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.

9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/17/2014	03/17/2015
145-410'	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2014	10/04/2015
145106'	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	10/24/2014	10/24/2015
Dav004'	Weather Station	Davis Instruments	7400	PE80529A61A	10/06/2014	10/06/2015

Software Utilized:

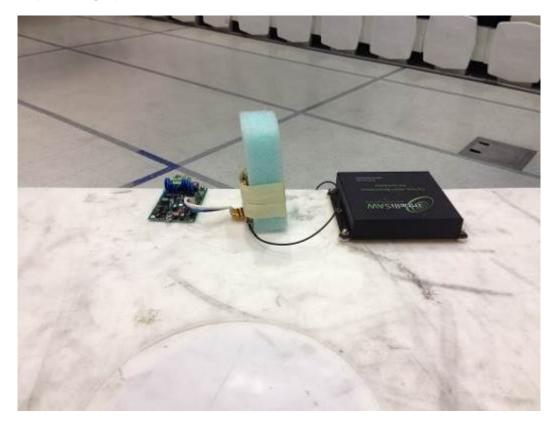
Name	Manufacturer	Version
None		

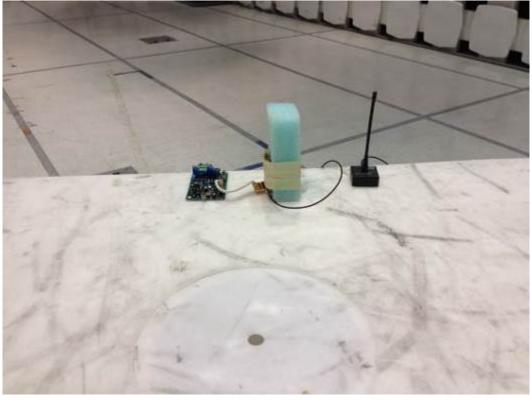
9.3 Results:

There is no limit on duty cycle, it is used to obtain the average value of emissions. The duty cycle average factor was determined to be 20 dB.

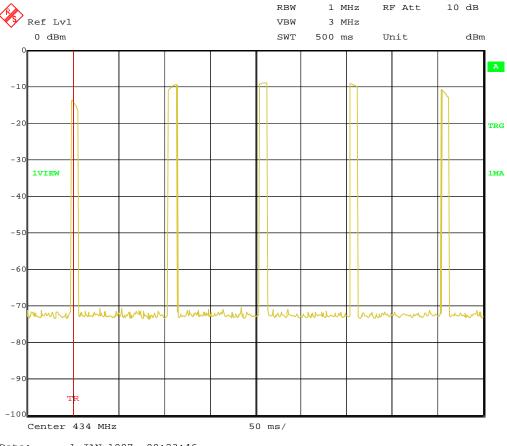
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9.4 Setup Photographs:





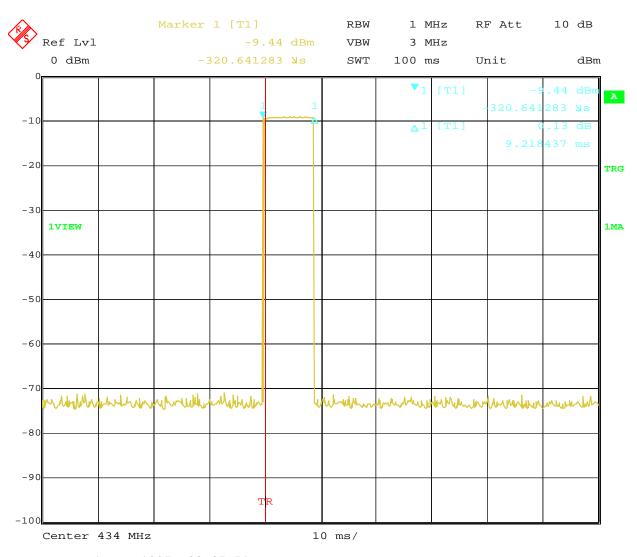
9.5 Plots/Data:



Date: 1.JAN.1997 00:23:46

Intertek

Report Number: 102014290BOX-001ee Issued: 08/10/2015



Date: 1.JAN.1997 00:25:51

Intertek

Issued: 08/10/2015 Report Number: 102014290BOX-001ee

Test Personnel:	Vathana Ven	Test Date:	02/26/2015	
Supervising/Reviewing Engineer:				
(Where Applicable)	N/A			
	FCC Part 15 Subpart C,	Limit Applied:	N/A	
Product Standard:	RSS-Gen			
Input Voltage:	Powered from 24VDC Host			
Pretest Verification w/		Ambient Temperature:	22 °C	
Ambient Signals or			10 %	
BB Source:	Ambient Signals	Relative Humidity:		
	-		1007 mbars	
		Atmospheric Pressure:		

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10 Automatically Limiting Operation

10.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart C Section 15.231(e), ANSI C63.10, and RSS-210.

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.

10.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
ROS001'	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	05/19/2014	05/19/2015
CBLSHF203'	Cable, SMA - SMA, < 18GHz	Sucoflex (Huber Suhn	104PE	CBLSHF203	06/03/2004	06/03/2015
WEI8'	Attenuator	Weinschel Corp	47-10-34	BD8309	03/26/2014	03/26/2015
Dav004'	Weather Station	Davis Instruments	7400	PE80529A61A	10/06/2014	10/06/2015

Software Utilized:

Name	Manufacturer	Version
None		

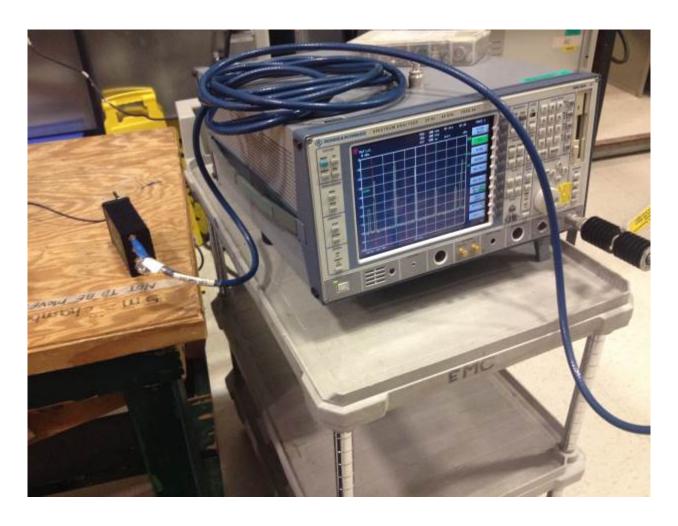
10.3 Results:

The sample tested was found to Comply.

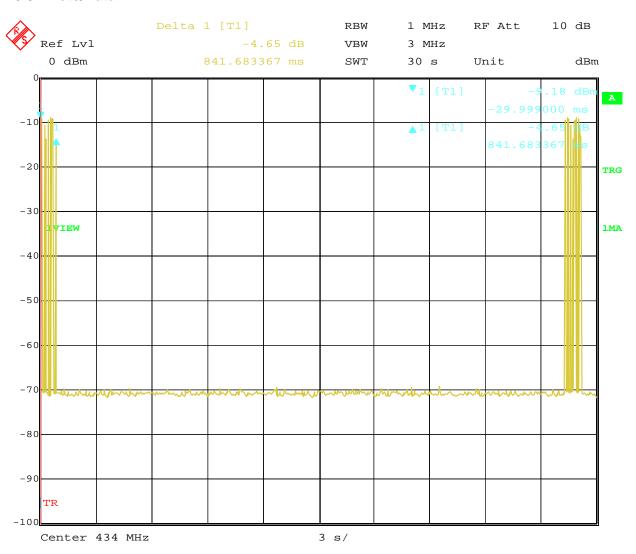
In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

Page 58 of 84 Client: IntelliSAW, Product Designation: Modular Device (RF Card)

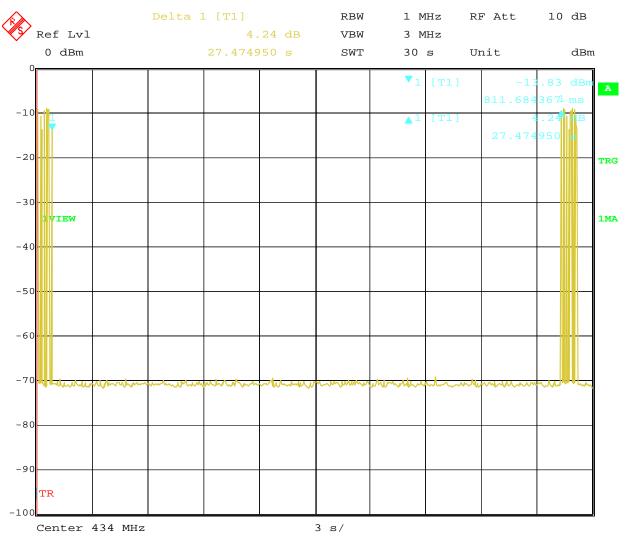
10.4 Setup Photographs:



10.5 Plots/Data:



Date: 1.JAN.1997 00:52:11



1.JAN.1997 00:53:23 Date:

Test Personnel: Supervising/Reviewing	Vathana Ven	Test Date:	02/26/2015
Engineer:	λ1/Λ		
(Where Applicable) Product Standard:	N/A FCC Part 15 Subpart C, RSS-210	Limit Applied:	Section 15.231(e), RSS-210
Input Voltage:	Powered from 24VDC Host		
Pretest Verification w/		Ambient Temperature:	
Ambient Signals or BB Source:	Ambient Signals	Relative Humidity:	10 %
		Atmospheric Pressure:	1007 mbars

11 AC Mains Conducted Emissions

11.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart B, ANSI C63.4, and ICES-003.

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. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
AC Line Conducted Emissions	150 kHz - 30 MHz	2.8	2.4
EIIIISSIOIIS	130 KHZ - 30 MHZ	2.0	3.4
Telco Port Emissions	150 kHz - 30 MHz	3.2	5

Sample Calculations

The following is how net line-conducted readings were determined:

NF = RF + LF + CF + AFWhere NF = Net Reading in $dB\mu V$ RF = Reading from receiver in dBμV LF = LISN or ISN Correction Factor in dB CF = Cable Correction Factor in dB AF = Attenuator Loss Factor in dB

To convert from $dB\mu V$ to μV or mV the following was used:

UF = $10^{(NF/20)}$ where UF = Net Reading in μV $NF = Net Reading in dB\mu V$

Example:

NF = RF + LF + CF + AF =
$$28.5 + 0.2 + 0.4 + 20.0 = 49.1 \ dB\mu V$$
 UF = $10^{(49.1 \ dB\mu V / 20)} = 285.1 \ \mu V/m$

Alternately, when C5 Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". "TF" is the Transducer Factor; in this case LISN or ISN loss.

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Client: IntelliSAW, Product Designation: Modular Device (RF Card)

Intertek

Report Number: 102014290BOX-001ee Issued: 08/10/2015

11.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61A	10/06/2014	10/06/2015
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/14/2015	03/14/2016
LISN32'	LISN - CISPR16 Compliant 9kHz-30MHz	Com-Power	LI-215A	191955	03/18/2015	03/18/2016
DS27'	Attenuator, 20dB	Mini Circuits	20dB, 50 ohm	DS27	10/01/2014	10/01/2015
CBLBNC10'	25 ft, 50 Ohm BNC Cable	Pomona	RG 58 C/U	CBLBNC10	10/04/2014	10/04/2015

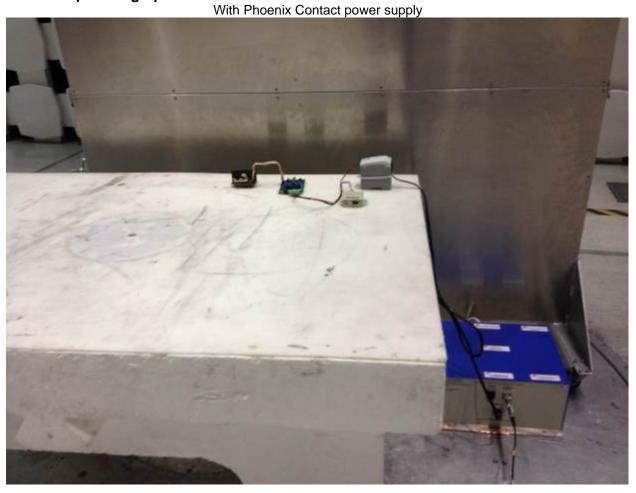
Software Utilized:

Name	Manufacturer	Version		
C5	TESEQ	Build 5.26.46.46		

11.3 Results:

The sample tested was found to Comply.

11.4 Setup Photographs:



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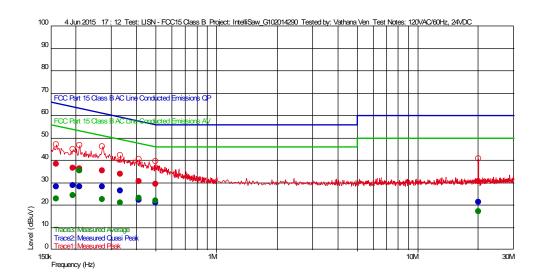
11.5 Plots/Data:

Test Information

Test Details User Entry LISN – ICES-003 Class B IntelliSaw_G102014290 Test: Project: Test Notes: 120VAC/60Hz, 24VDC Temperature: Humidity: 22 deg C 37%, 1013 mB Tested by: Vathana Ven 4 Jun 2015 17 : 12 Test Started:

Additional Information

Prescan Emission Graph



Measured Peak Value Measured Quasi Peak Value Measured Average Value Maximum Value of Mast and Turntable

Swept Peak Data Swept Quasi Peak Data Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak Limit(dBuV) RBW(Hz) Frequency(Hz) Level(dBuV) PA+CL Margin(dBuV) Comment LINE 20.02004008 M 160.220440882 k 0.110 60.000 65.453 57.567 -38.71 -37.23 -35.28 21.29 21.174 28.22 22.29 20.460 20.589 0.070 L1 L1 9 k 414.028056112 k 0.030 L1 L1 L1 194.288577154 k 497.49498998 k 28.80 21.07 0.056 0.030 20.508 20.589 63.851 56.042 -35.05 -34.97 9 k 9 k 209.619238477 k 28.26 0.048 20.521 63.220 -34.96 9 k 28.11 26.40 20.570 20.570 -32.98 -32.95 9 k 9 k L1 L1 270.941883768 k 0.040 61.089 333.967935872 k 0.033 59.352

Trace3: Measured	Average							
Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
20.02004008 M	17.30	0.110	21.174	50.000	-32.70	9 k		L1
160.220440882 k	22.92	0.070	20.460	55.453	-32.53	9 k		L1
194.288577154 k	24.25	0.056	20.508	53.851	-29.60	9 k		L1
270.941883768 k	22.65	0.040	20.570	51.089	-28.44	9 k		L1
333.967935872 k	21.06	0.033	20.570	49.352	-28.29	9 k		L1
414.028056112 k	23.01	0.030	20.589	47.567	-24.55	9 k		L1
497.49498998 k	21.90	0.030	20.589	46.042	-24.14	9 k		L1
209.619238477 k	35.34	0.048	20.521	53.220	-17.88	9 k		L1

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Client: IntelliSAW, Product Designation: Modular Device (RF Card)

Test Information

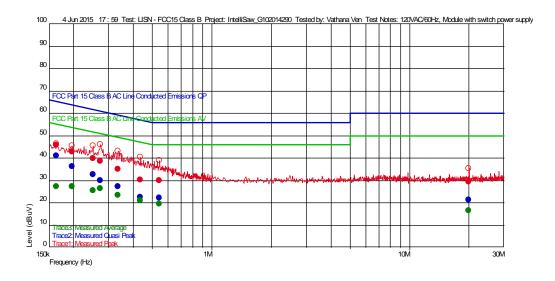
Test Details

Test: Project: Test Notes:

User Entry LISN – ICES-003 Class B IntelliSaw_G102014290 120VAC/60Hz, Module with switch power supply

Temperature: 22 deg C 37%, 1013 mB Humidity: Tested by: Test Started: Vathana Ven 4 Jun 2015 17 : 59 Additional Information

Prescan Emission Graph



Measured Peak Value Measured Quasi Peak Value

Measured Average Value Maximum Value of Mast and Turntable Swept Peak Data Swept Quasi Peak Data

Swept Average Data

Emissions Test Dat	ta							
Trace2: Measured	Quasi Peak							
Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
19.97995992 M	21.28	0.110	21.156	60.000	-38.72	9 k		L1
436.172344689 k	22.65	0.030	20.579	57.134	-34.49	9 k		N
543.486973948 k	22.30	0.030	20.598	56.000	-33.70	9 k		N
335.671342685 k	27.30	0.033	20.573	59.310	-32.01	9 k		N
272.645290581 k	29.85	0.040	20.570	61.037	-31.19	9 k		N
250.501002004 k	32.76	0.040	20.557	61.741	-28.98	9 k		N
195.991983968 k	36.20	0.054	20.498	63.779	-27.58	9 k		N
163.627254509 k	41.11	0.066	20.460	65.278	-24.17	9 k		N
Trace?, Massurad	Augraga							
Trace3: Measured	5							
Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
19.97995992 M	16.53	0.110	21.156	50.000	-33.47	9 k		L1
163.627254509 k	27.22	0.066	20.460	55.278	-28.06	9 k		N
195.991983968 k	27.24	0.054	20.498	53.779	-26.54	9 k		N
250.501002004 k	25.40	0.040	20.557	51.741	-26.34	9 k		N
543.486973948 k	19.67	0.030	20.598	46.000	-26.33	9 k		N
436.172344689 k	21.06	0.030	20.579	47.134	-26.07	9 k		N
335.671342685 k	23.34	0.033	20.573	49.310	-25.97	9 k		N
272.645290581 k	26.41	0.040	20.570	51.037	-24.63	9 k		N

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Intertek

Report Number: 102014290BOX-001ee Issued: 08/10/2015

Test Personnel: Vathana Ven Test Date: 06/04/2015 Supervising/Reviewing Engineer: (Where Applicable) Product Standard: ICES003 Limit Applied: Class B 24VDC from 120VAC/60Hz Input Voltage: Ambient Temperature: 22 °C Pretest Verification w/ Ambient Signals or BB Source: Relative Humidity: 37 % Yes Atmospheric Pressure: 1013 mbars

Deviations, Additions, or Exclusions: None

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12 Receiver Radiated Spurious Emissions

12.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart B, ANSI C63.10, and ICES-003.

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_{tab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < $U_{\it CISPR}$ (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.

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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 $FS = Field Strength in dB\mu V/m$

RA = Receiver Amplitude (including preamplifier) in $dB\mu V$

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 dB μ V 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 dB_µV/m. This value in $dB\mu V/m$ was converted to its corresponding level in $\mu V/m$.

 $RA = 52.0 dB\mu V$ AF = 7.4 dB/mCF = 1.6 dBAG = 29.0 dBFS = 32 dBuV/m

To convert from $dB\mu V$ to μV or mV the following was used:

UF =
$$10^{(NF/20)}$$
 where UF = Net Reading in μ V
NF = Net Reading in dB μ V

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 $\mu V/m$

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Client: IntelliSAW, Product Designation: Modular Device (RF Card)

Intertek

Report Number: 102014290BOX-001ee Issued: 08/10/2015

12.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/17/2014	03/17/2015
145-410'	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2014	10/04/2015
145106'	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	10/24/2014	10/24/2015
Dav004'	Weather Station	Davis Instruments	7400	PE80529A61A	10/06/2014	10/06/2015
REA003'	1GHz High Pass Filter	Reactel, Inc	7HS-1G/10G-S11	06-1	12/30/2013	12/30/2015
145-416'	Cables 145-400 145-402 145-404 145-408	Huber + Suhner	3m Track B cables	multiple	10/04/2014	10/04/2015
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	05/05/2014	05/05/2015
ETS002'	1-18GHz DRG Horn Antenna	ETS Lindaren	3117	00143260	03/20/2014	03/20/2015

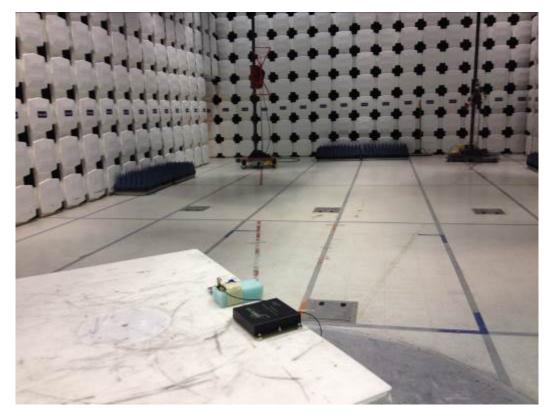
Software Utilized:

Name	Manufacturer	Version		
EMI Boxborough	Intertek	8/27/2010		
C5	TESEQ	Build 5.26.46.46		

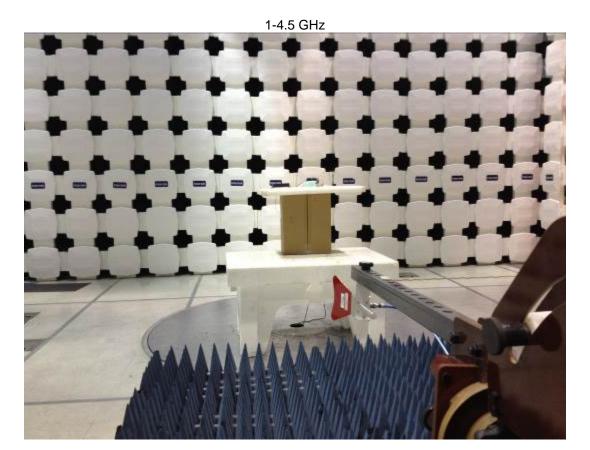
12.3 Results:

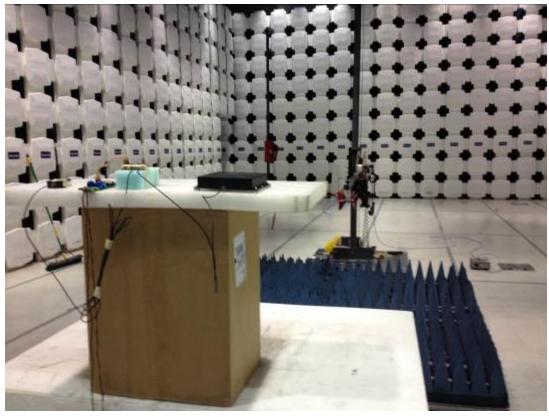
The sample tested was found to Comply.

12.4 Setup Photographs:









Test Information

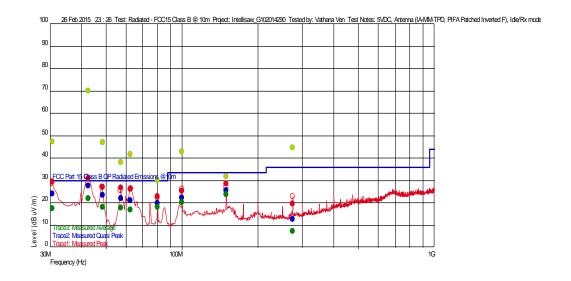
Test Details

Test: Project: Test Notes:

User Entry
Radiated – ICES-003 @ 10m
Intellisaw_G102014290
5VDC, Antenna (IA-MM-TPD, PIFA Patched Inverted F), Idle/Rx mod

22 deg C 10%, 1007 mB Vathana Ven 26 Feb 2015 23 : 26 Temperature: Humidity: Tested by: Test Started:

Prescan Emission Graph



Measured Peak Value Measured Quasi Peak Value

Measured Average Value

Maximum Value of Mast and Turntable

Swept Peak Data

Swept Quasi Peak Data

Additional Information

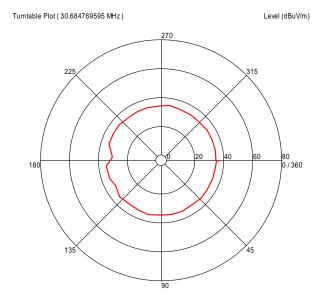
Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak

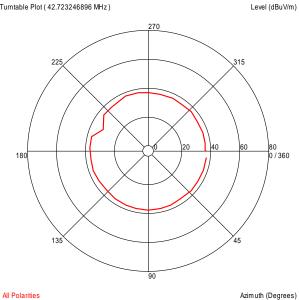
Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
275.129459198 M	12.54	13.403	-23.356	36.020	-23.48		360	1.06	120 k	
100.051302685 M	22.33	10.310	-24.729	33.520	-11.19		275	4.00	120 k	
80.030260301 M	19.85	7.497	-24.948	30.000	-10.15	İ	31	3.21	120 k	
62.621242301 M	21.01	7.700	-25.056	30.000	-8.99	İ	281	4.00	120 k	
57.327455052 M	21.86	7.200	-25.062	30.000	-8.14		328	2.83	120 k	
150.006212285 M	25.55	12.700	-24.130	33.520	-7.97	İ	328	1.16	120 k	
48.485370874 M	23.33	8.606	-25.230	30.000	-6.67	İ	259	4.00	120 k	
30.684769595 M	23.95	20.789	-25.461	30.000	-6.05	İ	1	2.72	120 k	
42.723246896 M	27.50	12.194	-25.324	30.000	-2.50		230	3.73	120 k	

Azimuth Plots

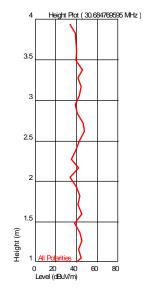


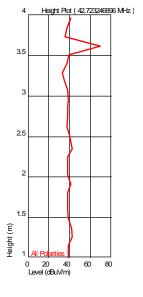
All Polarities Azimuth (Degrees)

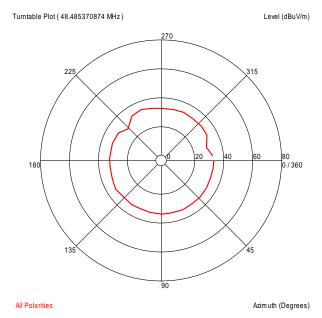
Turntable Plot (42.723246896 MHz)

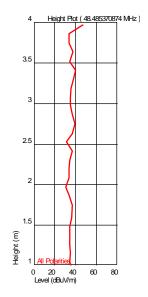


Turntable Plots



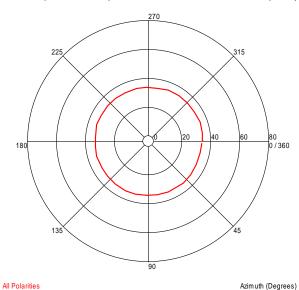


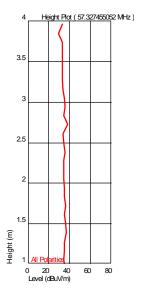


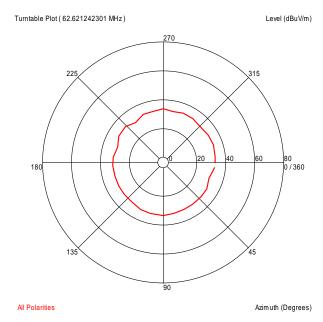


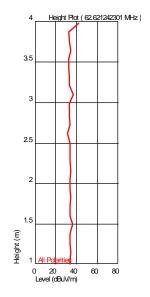
Turntable Plot (57.327455052 MHz)

Level (dBuV/m)



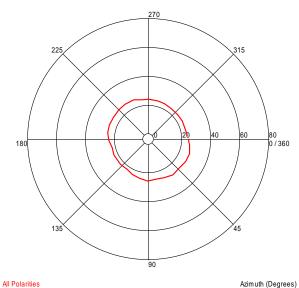


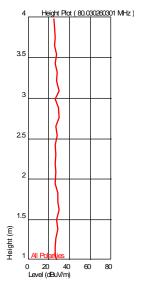


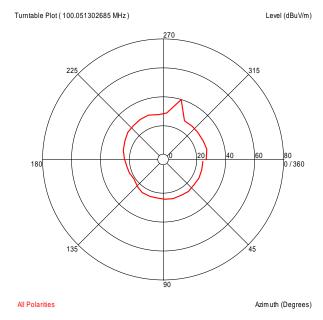


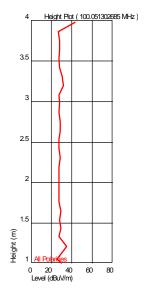






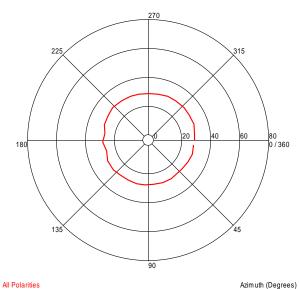


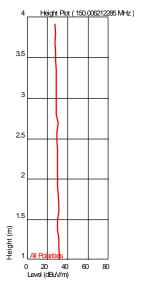


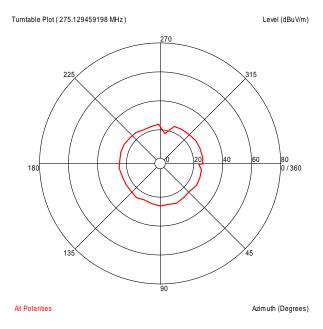


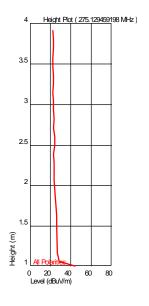












Test Information

Test Details

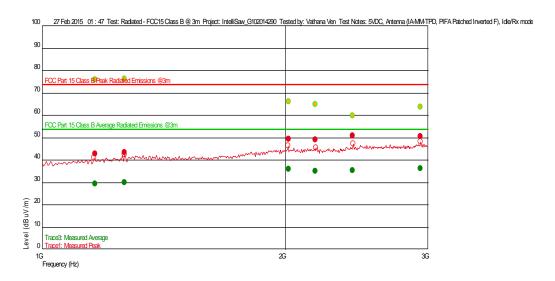
Test:

User Entry
Radiated – ICES-003 Class B @ 3m
IntelliSaw_G102014290
5VDC, Antenna (IA-MM-TPD, PIFA Patched Inverted F), Idle/Rx mod Project: Test Notes:

22 deg C 10%, 1007 mB Vathana Ven 27 Feb 2015 01 : 47 Temperature: Humidity: Tested by: Test Started:

Additional Information

Prescan Emission Graph



Measured Peak Value Measured Quasi Peak Value

Measured Average Value

Maximum Value of Mast and Turntable

Swept Peak Data

Swept Quasi Peak Data

Swept Average Data

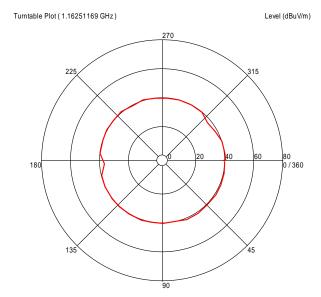
Emissions	lest Data
Trace1: Me	easured Peak

Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
1.16251169 G	42.94	27.812	-28.184	74.000	-31.06		0	1.08	1 M	
1.265190381 G	43.44	28.610	-27.839	74.000	-30.56		15	1.32	1 M	
2.178804275 G	48.98	31.290	-25.987	74.000	-25.02		320	1.06	1 M	
2.019124916 G	49.52	31.224	-25.906	74.000	-24.48	1	360	1.78	1 M	
2.937254509 G	50.45	32.853	-25.170	74.000	-23.55		172	1.91	1 M	
2.419826319 G	50.84	32.094	-25.873	74.000	-23.16		193	1.07	1 M	

Traco3.	Measured	Average
Haces:	weasured	Average

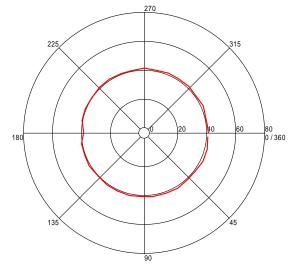
Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (), Ver ()	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
1.16251169 G	29.33	27.812	-28.184	54.000	-24.67		0	1.08	1 M	
1.265190381 G	30.01	28.610	-27.839	54.000	-23.99		15	1.32	1 M	
2.178804275 G	35.15	31.290	-25.987	54.000	-18.85		320	1.06	1 M	
2.419826319 G	35.30	32.094	-25.873	54.000	-18.70		193	1.07	1 M	
2.019124916 G	36.01	31.224	-25.906	54.000	-17.99	İ	360	1.78	1 M	
2.937254509 G	36.27	32.853	-25.170	54.000	-17.73		172	1.91	1 M	

Azimuth Plots



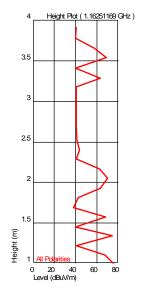
All Polarities Azimuth (Degrees)

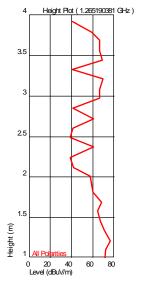
Turntable Plot (1.265190381 GHz) Level (dBuV/m)

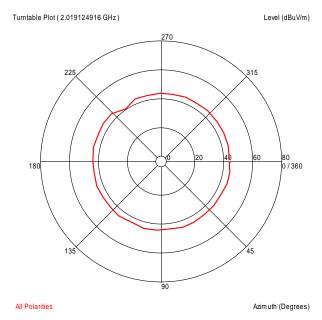


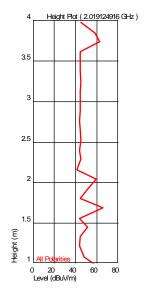
All Polarities Azimuth (Degrees)

Turntable Plots



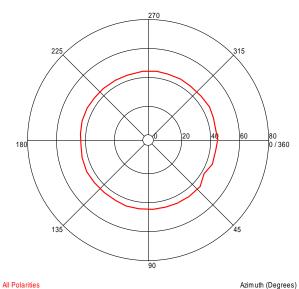


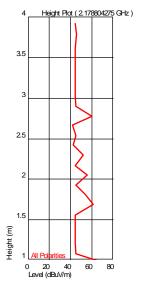


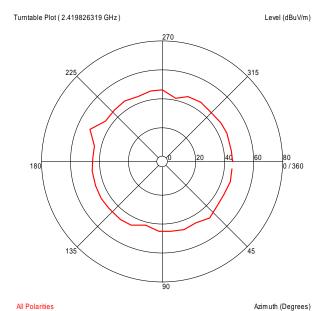


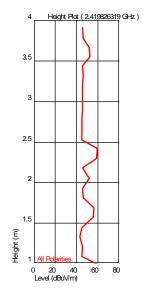






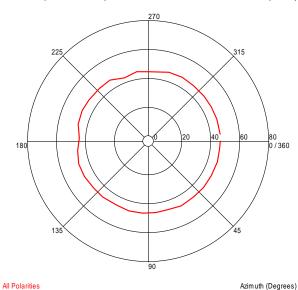


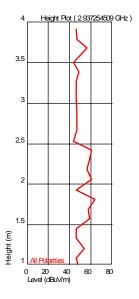




Turntable Plot (2.937254509 GHz)

Level (dBuV/m)





Supervising/Reviewing Engineer:

Test Personnel: Vathana Ven

Ambient Signals

Limit Applied: Class B

Test Date: 02/27/2015

(Where Applicable) Product Standard: Input Voltage: Pretest Verification w/

Ambient Signals or

BB Source:

N/A FCC Part 15, ICES-003 Powered from 24VDC Host

Ambient Temperature: See data tables

Relative Humidity: See data tables

Atmospheric Pressure: See data tables

Intertek

13 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	03/10/2015	102014290BOX-001c	VFVV		Original Issue
1	03/24/2015	102014290BOX-001d	VFVV		Added Industry Canada standards
2	08/10/2015	102014290BOX-001ee	VFV		Added line-conducted emissions data on page 62 and data for above 1 GHz on page 39