EMC TEST REPORT

(FULL COMPLIANCE)

Report Number: 102965577BOX-018
Project Number: G102965577

Report Issue Date: 06/11/2017

Model(s) Tested: 7100MHB (ISM)
Model(s) Not Tested but declared equivalent by the client: 7150MHB

Standards: FCC Part 15 Subpart C (15.249): 04/2017
FCC Part 15 Subpart B: 04/2017
RSS 210 Issue 9: 08/2016
RSS 102 Issue 5: 03/2015
ICES 003 Issue 6: 01/2016

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

Client:
Philips Lifeline.
111 Lawrence St
Framingham, MA 01702-8156
USA

Report prepared by Naga Suryadevara

Naga Suryadevara/EMC Engineer

Report reviewed by Kouma Sinn

Kouma Sinn/Staff Engineer, EMC

Table of Contents

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. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	--
4	Description of Equipment Under Test and Variant Models	--
5	System Setup and Method	--
6	Fundamental Field Strength and RF Exposure (CFR47 FCC Part 15 Subpart C (15.249): 04/2017 RSS 210: 08/2016 RSS 247 Issue 2: 02/2017)	Pass
7	Occupied (99%) and 6 dB Bandwidth (CFR47 FCC Part 15 Subpart C (15.249): 04/2017 RSS 210: 08/2016)	Pass
8	Transmitter Spurious Emissions (Out of Band, Digital Device and Receiver) (CFR47 FCC Part 15 Subpart C (15.249): 04/2017 CFR47 FCC Part 15 Subpart B: 04/2017 RSS 210: 08/2016 ICES 003: 01/2016)	Pass
9	Frequency Stability (CFR47 FCC Part 15 Subpart C (15.249): 04/2017 RSS 210: 08/2016)	Pass
10	AC Mains Conducted Emissions (CFR47 FCC Part 15 Subpart B: 04/2017 ICES 003: 01/2016)	Pass
11	Revision History	--

3 Client Information

This EUT was tested at the request of:

Client: Philips Lifeline
111 Lawrence St
Framingham, MA 01702-8156
USA

Contact: Bill Bekdash
Telephone: +972 9 9603900
Fax: None
Email: bill.bekdash@philips.com

4 Description of Equipment Under Test and Variant Models

Manufacturer: Philips Lifeline
111 Lawrence St
Framingham, MA 01702-8156
USA.

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Medical alert system.	Philips Lifeline	7100MHB	1040000149 (Unit 1)
Medical alert system.	Philips Lifeline	7100MHB	1040000123 (Unit 2)
AC Adapter	Philips Lifeline	MANGO018-7.5B-USA2	(Not Labeled)

Receive Date:	04/20/2017
Received Condition:	Good
Type:	Production

Description of Equipment Under Test (provided by client)
Medical alert system.

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
Button (Internal Battery)	0.5 A	N/A	Single
AC - DC Adapter (100-240 VAC)	0.5 A	50/60 Hz	Single

Operating modes of the EUT:

No.	Descriptions of EUT Exercising
1	ISM Transmit mode – Transmitting consecutively on low, mid and high channels.
2	ISM Receive mode.
3	Charging mode.

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	X2.0.41619

Radio/Receiver Characteristics	
Frequency Band(s)	917-921 MHz
Modulation Type(s)	2FSK
Data rates	4.8 kbps
Maximum Output Power	92.62 dBuV/m or -2.58 dBm
Test Channels	Low Channel – 917 MHz Mid Channel – 919 MHz High Channel – 921 MHz
Occupied Bandwidth	11.019 kHz
Frequency Hopper: Number of Hopping Channels	N/A
Frequency Hopper: Channel Dwell Time	N/A
MIMO Information (# of Transmit and Receive antenna ports)	N/A
Equipment Type	Standalone Host
ETSI LBT/Adaptivity	N/A
ETSI Adaptivity Type	N/A
ETSI Temperature Category (I, II, III)	N/A
ETSI Receiver Category (1, 2, 3)	N/A
Antenna Type and Gain	Custom Designed LDS on plastic carrier, Total Efficiency 30% (no gain specified).

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

7150MHB

The models covered are 7100MHB and 7150MHB. The tested model covered in this report is the 7100MHB. It represents the worse-case of the 7100MHB and 7150MHB. According to the manufacturer, the 7150MHB help button is physically identical to the 7100MHB. They both have the exactly same hardware, including cellular, WiFi, Bluetooth modules. The only difference is in the firmware configuration on turning ON/OFF the ISM transceiver.

The 7100MHB is configured to use the ISM transceiver to report alarm and device status via 7000C or 7000L communicator when the 7100MHB user is at home. The 7150MHB is configured NOT to use the ISM transceiver, and report alarm and device status ONLY through the cell network. Note that when the 7100MHB is out of the 7000C or 7000L communicators range, it behaves exactly the same as 7150MHB

5 System Setup and Method

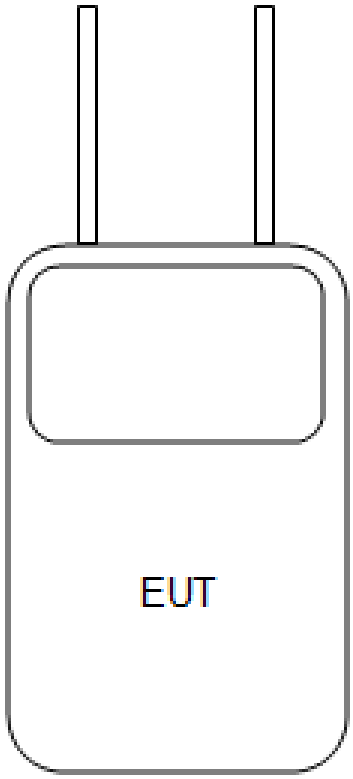
Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
--	Adapter to charging cup (fixed)	2	None	None	Charger

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
Laptop	Toshiba	Satellite-C55-B5272	5E247026P

5.1 Method:

Configuration as required by FCC Part 15 Subpart C (15.249): 04/2017, FCC Part 15 Subpart B: 04/2017, RSS 210 Issue 9: 08/2016, ICES 003 Issue 6: 01/2016, ANSI C 63.10: 2013 and ANSI C 63.4: 2014.

5.2 EUT Block Diagram:



6 Fundamental Field Strength and Human RF Exposure

6.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.249) 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 Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	4.6 dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

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

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

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

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

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

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

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

Example:

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

Alternately, when C5 Software is used, the “Level” includes all losses and gains and is compared directly in the “Margin” column to the “Limit”. “AF” is the Antenna Factor; “PA+CL” are Preamp and Cable Loss. These are already accounted for in the “Level” column.

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61A	05/02/2016	05/02/2017
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/15/2017	03/15/2018
ROS005'	ETSI Test System	Rhode & Schwartz	TS8997	N/A	09/15/2016	09/15/2017
145-145'	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	05/13/2016	05/13/2017
145-410'	Cables 145-420 145-421 145-422 145-406	Huber + Suhner	10m Track A Cables	multiple	07/30/2016	07/30/2017

Software Utilized:

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

6.3 Results:

The sample tested was found to Comply.

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

6.4 Test Data:

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
				X-axis (fundemental)							
QP	H	916.980	59.98	29.64	3.00	0.00	0.00	92.62	93.64	-1.02	120/300 kHz
QP	H	918.990	59.54	29.68	3.00	0.00	0.00	92.22	93.64	-1.42	120/300 kHz
QP	H	920.990	59.48	29.72	3.00	0.00	0.00	92.20	93.64	-1.44	120/300 kHz
				Y-axis (fundemental)							
QP	H	916.980	59.79	29.64	3.00	0.00	0.00	92.43	93.64	-1.21	120/300 kHz
QP	H	918.990	60.24	29.68	3.00	0.00	0.00	92.92	93.64	-0.72	120/300 kHz
QP	H	920.990	60.28	29.72	3.00	0.00	0.00	93.00	93.64	-0.64	120/300 kHz
				Z-axis (fundemental)							
QP	V	916.980	59.12	29.64	3.00	0.00	0.00	91.76	93.64	-1.88	120/300 kHz
QP	V	918.990	58.67	29.68	3.00	0.00	0.00	91.35	93.64	-2.29	120/300 kHz
QP	V	920.990	57.44	29.72	3.00	0.00	0.00	90.16	93.64	-3.48	120/300 kHz

FCC SAR Exemption per KDB 447498

Maximum output power measured = - 2.58 dBm = 0.55207 mW

a) For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* are determined by the following:

[(*max. power of channel, including tune-up tolerance, mW*) / (*min. test separation distance, mm*)] · [$\sqrt{f_{(GHz)}}$] ≤ 3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,[30] where

- $f_{(GHz)}$ is the RF channel transmit frequency in GHz

= (0.55207/5)*(sqrt(0.917))

= 0.9576 < 3.0 (below the limit SAR Exempt per FCC)

RSS 102 SAR Exemption

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance[4,5]

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

The exemption limits in Table 1 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 25 mm from a flat phantom, providing a SAR value of approximately 0.4 W/kg for 1 g of tissue. For low frequencies (300 MHz to 835 MHz), the exemption limits are derived from a linear fit. For high frequencies (1900 MHz and above), the exemption limits are derived from a third order polynomial fit.

The measured maximum output power 0.55207 mW is less than 7 mW limit at 1900 MHz. So the device meets the SAR exemption requirements.

Test Personnel:	Naga Suryadevara N.S	Test Date:	04/07/2017
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 15 Subpart C (15.249) RSS 210	Limit Applied:	As specified in section 6.3
Input Voltage:	Internal Battery		
Pretest Verification w/ Ambient Signals or BB Source:	Yes – Signal generator	Ambient Temperature:	21 ºC
		Relative Humidity:	32 %
		Atmospheric Pressure:	998 mbars

Deviations, Additions, or Exclusions: None

7 Occupied and 6dB Bandwidth

7.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.249) and RSS 210.

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Example:

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7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
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145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/15/2017	03/15/2018
ROS005'	ETSI Test System	Rhode & Schwartz	TS8997	N/A	09/15/2016	09/15/2017
145-145'	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	05/13/2016	05/13/2017
145-410'	Cables 145-420 145-421 145-422 145-406	Huber + Suhner	10m Track A Cables	multiple	07/30/2016	07/30/2017

Software Utilized:

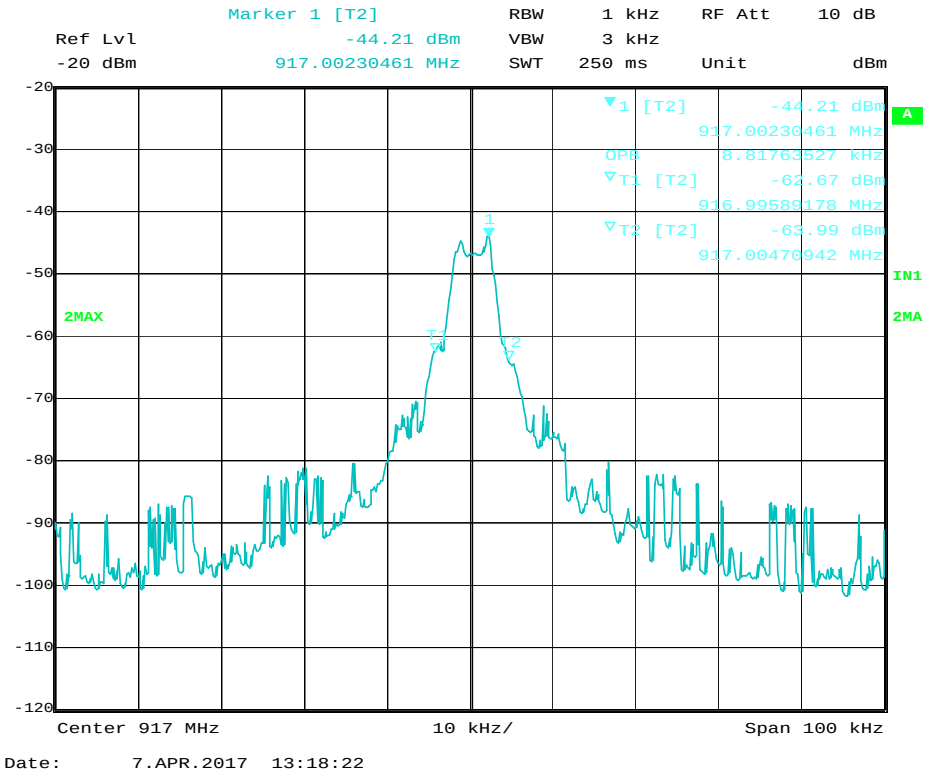
Name	Manufacturer	Version
None		

7.3 Results:

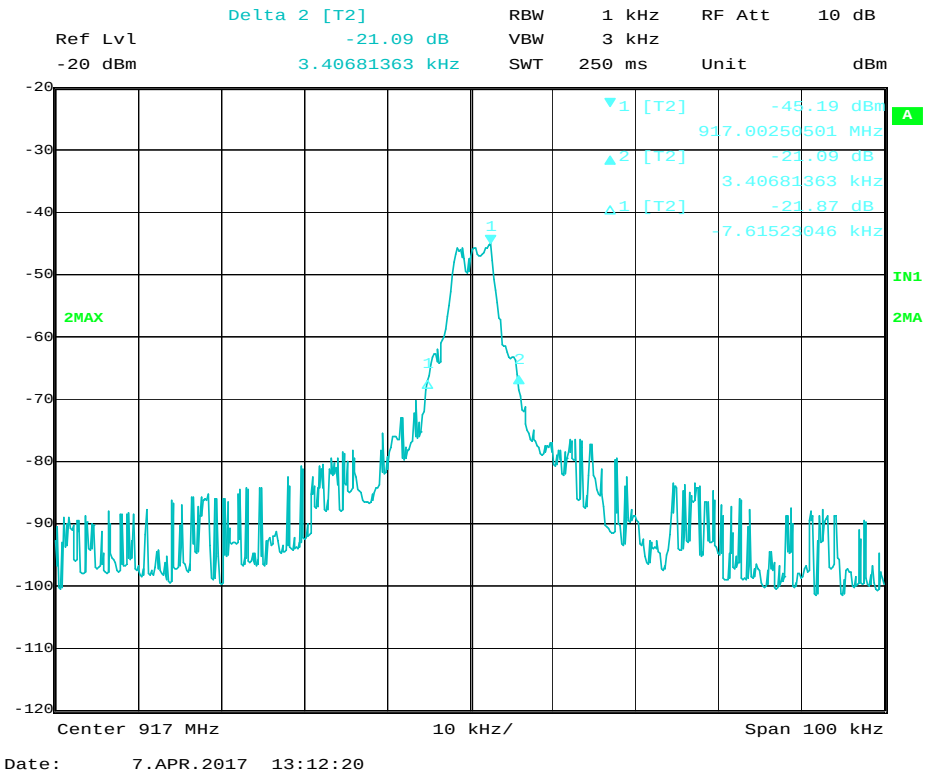
The sample tested was found to Comply. Emission shall be within the authorized band.

7.4 Plots/Data:

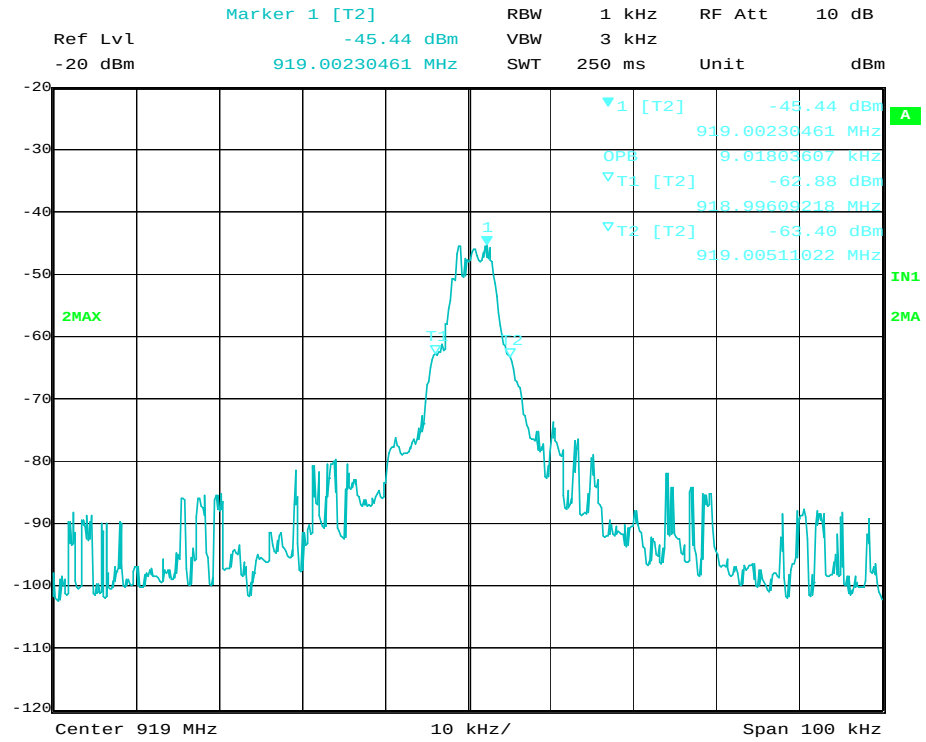
Low Channel (917 MHz), OBW = 8.817 kHz



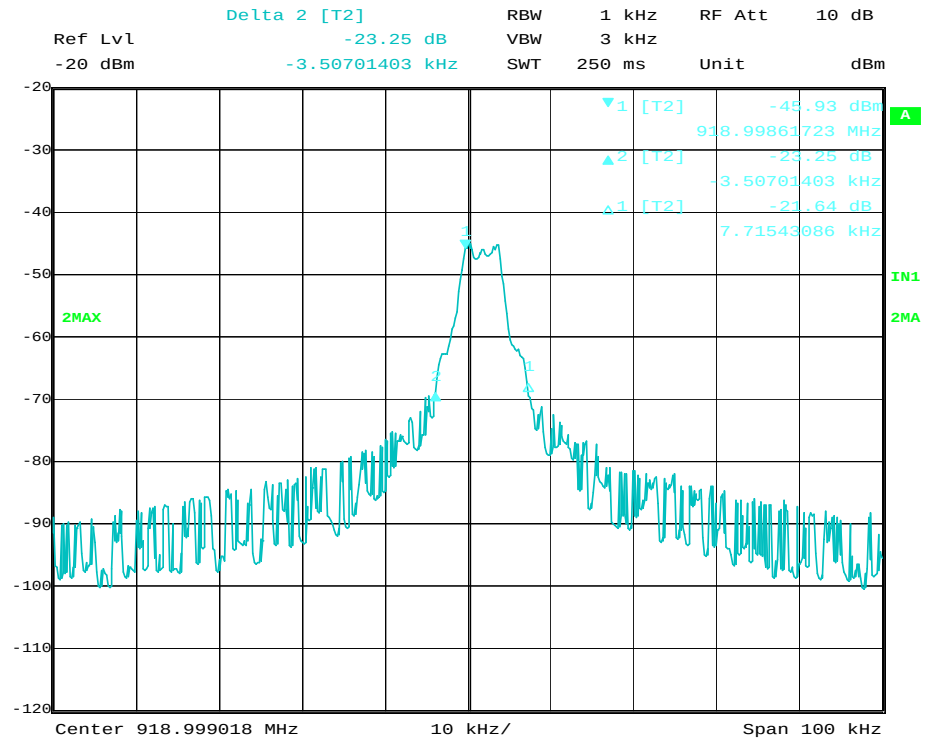
Low Channel (917 MHz), 20dB BW = 11.019 kHz



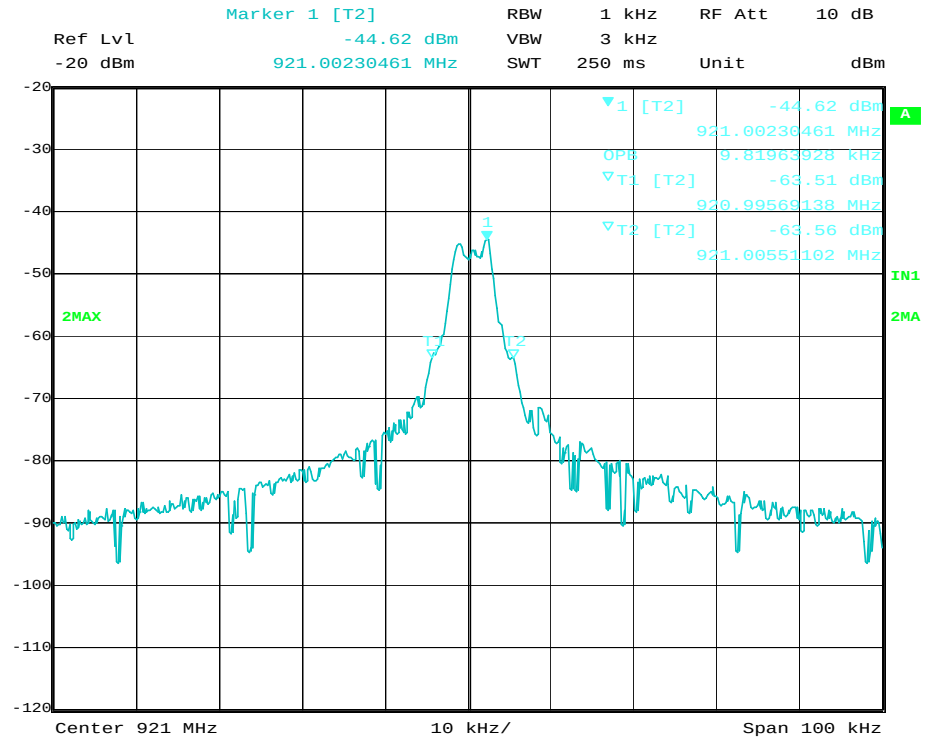
Mid Channel (919 MHz), OBW = 9.018 kHz



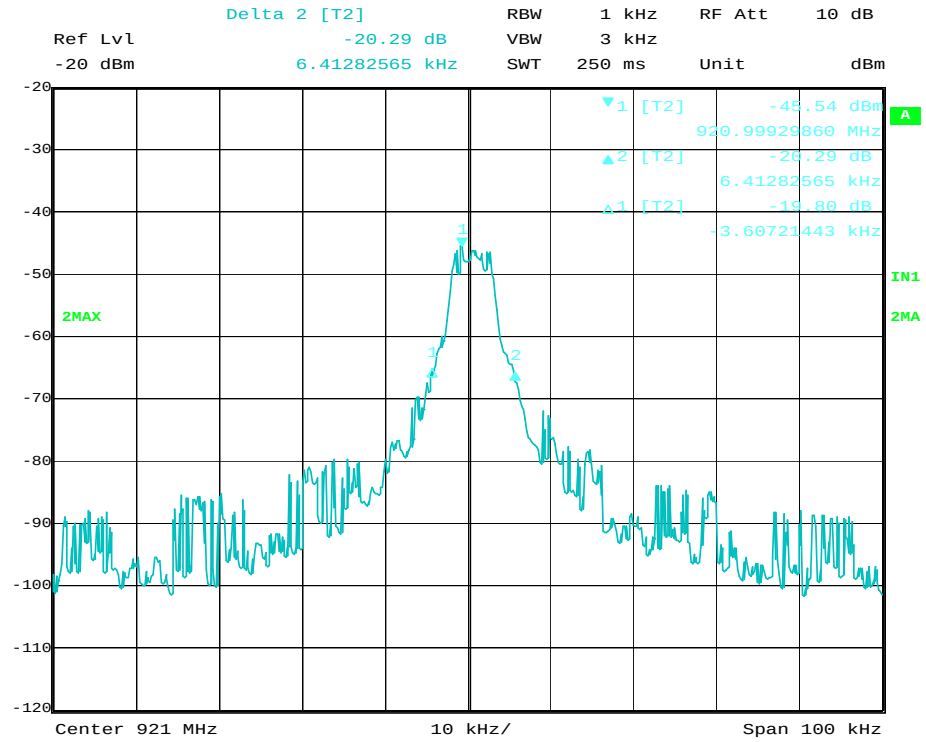
Mid Channel (919 MHz), 20dB BW = 11.01 kHz



High Channel (921 MHz), OBW = 9.81 kHz



High Channel (921 MHz), 20dB BW = 10.01 kHz



Test Personnel:	Naga Suryadevara N.S	Test Date:	04/07/2017
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 15 Subpart C (15.249) RSS 210	Limit Applied	As specified in section 7.3
Input Voltage:	Internal Battery		
Pretest Verification w/ Ambient Signals or BB Source:	Yes – Signal generator	Ambient Temperature:	21 ºC
		Relative Humidity:	32 %
		Atmospheric Pressure:	998 mbars

Deviations, Additions, or Exclusions: None

8 Radiated Emissions (Transmitter Spurious - Out of Band Emissions, Digital Device and Receiver)

8.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.249), RSS 210, FCC Part 15 Subpart B and ICES 003.

TEST SITE: 10m ALSE

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Sample Calculation

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Example:

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$UF = 10^{(32\ dB\mu V / 20)}$ = 39.8 μV/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”. “AF” is the Antenna Factor; “PA+CL” are Preamp and Cable Loss. These are already accounted for in the “Level” column.

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61 A	05/02/2016	05/02/2017
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	05/02/2017	05/02/2018
145-410'	Cables 145-420 145-421 145-422 145-406	Huber + Suhner	10m Track A Cables	multiple	07/30/2016	07/30/2017
PRE10'	30-1000MHz pre-amp	ITS	PRE10	PRE10	12/16/2016	12/16/2017
145128'	EMI Receiver (20 Hz - 40 Ghz)	Rohde & Schwarz	ESIB 40	839283/001	03/15/2017	03/15/2018
ETS002'	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	05/13/2016	05/13/2017
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	05/27/2016	05/27/2017
EMC04'	ANTENNA, RIDGED GUIDE, 18-40 GHZ	EMCO	3116	2090	09/14/2016	09/14/2017
FAIR001'	Tunable notch filter 500-1000MHz	Fairview Microwave	SBRF-0500-1000-01-N	DC 1651	03/09/2017	03/09/2018
PRE9'	100MHz-40GHz Preamp	MITEQ	NSP4000-NFG	1260417	08/23/2016	08/23/2017
CBLHF2012 -2M-1'	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252675001	02/08/2017	02/08/2018
CBLHF2012 -5M-1'	5m 9kHz-40GHz Coaxial Cable - SET 1	Huber & Suhner	SF102	252676001	02/08/2017	02/08/2018
145-416'	Cables 145-420 145-423 145-424 145-408	Huber + Suhner	3m Track B cables	multiple	07/30/2016	07/30/2017

Software Utilized:

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

8.3 Results:

The sample tested was found to Comply.

All the harmonics shall be attenuated below:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

All other emissions shall be 50dB below the fundamental. Attenuation below FCC15.209 general limit is not required; compliance is shown to the FCC 15.209 general limit.

8.4 Test Data:

30-12500 MHz – Spurious Emissions (Digital Device and Receiver – Test distance 10m)

				30 - 1000 MHz - Battery							
QP	V	37.989	27.12	15.33	1.29	40.72	0.00	3.01	30.00	-26.99	120/300 kHz
QP	H	41.120	27.68	13.32	1.31	40.72	0.00	1.59	30.00	-28.41	120/300 kHz
QP	H	288.120	29.23	13.44	3.09	40.68	0.00	5.07	36.00	-30.93	120/300 kHz
QP	H	299.976	26.19	13.50	3.14	40.69	0.00	2.14	36.00	-33.86	120/300 kHz
QP	V	303.120	24.21	13.76	3.16	40.69	0.00	0.44	36.00	-35.56	120/300 kHz
QP	V	333.190	23.56	14.37	3.33	40.73	0.00	0.53	36.00	-35.47	120/300 kHz
				30 - 1000 MHz - Charging							
QP	V	37.989	26.98	15.33	1.29	40.72	0.00	2.87	30.00	-27.13	120/300 kHz
QP	H	41.190	27.59	13.27	1.31	40.72	0.00	1.45	30.00	-28.55	120/300 kHz
QP	H	288.090	28.78	13.44	3.09	40.68	0.00	4.62	36.00	-31.38	120/300 kHz
QP	V	312.120	27.12	14.08	3.21	40.70	0.00	3.71	36.00	-32.29	120/300 kHz
QP	H	326.170	25.23	14.18	3.29	40.73	0.00	1.97	36.00	-34.03	120/300 kHz
QP	V	353.120	24.45	14.72	3.43	40.75	0.00	1.86	36.00	-34.14	120/300 kHz

Note: No emissions above noise floor were detected above 1 GHz

30-1000 MHz – Transmitter Spurious Emissions (Tx consecutively on Low (917 MHz), Mid (919 MHz) and High Channels (921 MHz – Test distance 3m))

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
					X-axis						
QP	V	30.190	38.19	28.91	0.66	40.74	0.00	27.02	40.00	-12.98	120/300 kHz
QP	V	40.860	36.23	20.70	0.83	40.72	0.00	17.04	40.00	-22.96	120/300 kHz
QP	V	85.120	46.98	14.51	1.28	40.67	0.00	22.10	43.50	-21.40	120/300 kHz
QP	V	122.230	43.23	21.60	1.55	40.66	0.00	25.72	43.50	-17.78	120/300 kHz
QP	H	125.120	48.19	21.70	1.57	40.66	0.00	30.80	43.50	-12.70	120/300 kHz
QP	V	167.760	42.19	19.10	1.86	40.69	0.00	22.46	43.50	-21.04	120/300 kHz
					Y-axis						
QP	V	30.190	39.27	28.91	0.66	40.74	0.00	28.10	40.00	-11.90	120/300 kHz
QP	V	40.860	38.19	20.70	0.83	40.72	0.00	19.00	40.00	-21.00	120/300 kHz
QP	V	85.120	49.92	14.51	1.28	40.67	0.00	25.04	43.50	-18.46	120/300 kHz
QP	V	122.230	42.12	21.60	1.55	40.66	0.00	24.61	43.50	-18.89	120/300 kHz
QP	H	125.120	47.76	21.70	1.57	40.66	0.00	30.37	43.50	-13.13	120/300 kHz
QP	V	167.760	43.30	19.10	1.86	40.69	0.00	23.57	43.50	-19.93	120/300 kHz
					Z-axis						
QP	V	30.190	38.33	28.91	0.66	40.74	0.00	27.16	40.00	-12.84	120/300 kHz
QP	V	40.860	37.12	20.70	0.83	40.72	0.00	17.93	40.00	-22.07	120/300 kHz
QP	V	85.120	47.78	14.51	1.28	40.67	0.00	22.90	43.50	-20.60	120/300 kHz
QP	H	122.230	40.09	21.60	1.55	40.66	0.00	22.58	43.50	-20.92	120/300 kHz
QP	H	125.120	47.84	21.70	1.57	40.66	0.00	30.45	43.50	-13.05	120/300 kHz
QP	V	167.760	41.19	19.10	1.86	40.69	0.00	21.46	43.50	-22.04	120/300 kHz

No emissions other than the ones listed in the above table were detected in the 30-1000 MHz frequency range.

1-10 GHz - Transmitter Spurious Emissions (Tx consecutively on Low (917 MHz), Mid (919 MHz) and High Channels (921 MHz) – Test distance 3m)

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
					X- Axis						
PK	H	1833.960	52.12	30.41	4.56	32.97	0.00	54.11	74.00	-19.89	1/3 MHz
AVG	H	1833.960	39.19	30.41	4.56	32.97	0.00	41.18	54.00	-12.82	1/3 MHz
PK	H	2750.940	48.76	32.39	5.48	33.71	0.00	52.93	74.00	-21.07	1/3 MHz
AVG	H	2750.940	37.19	32.39	5.48	33.71	0.00	41.36	54.00	-12.64	1/3 MHz
PK	H	3667.920	45.54	33.30	6.77	33.76	0.00	51.85	74.00	-22.15	1/3 MHz
AVG	H	3667.920	36.12	33.30	6.77	33.76	0.00	42.43	54.00	-11.57	1/3 MHz
PK	H	4584.900	46.67	34.12	7.90	33.91	0.00	54.78	74.00	-19.22	1/3 MHz
AVG	H	4584.900	38.19	34.12	7.90	33.91	0.00	46.30	54.00	-7.70	1/3 MHz
PK	H	5501.800	43.43	34.56	8.85	34.21	0.00	52.63	74.00	-21.37	1/3 MHz
AVG	H	5501.800	36.27	34.56	8.85	34.21	0.00	45.47	54.00	-8.53	1/3 MHz
					Y- Axis						
PK	H	1833.960	55.76	30.41	4.56	32.97	0.00	57.75	74.00	-16.25	1/3 MHz
AVG	H	1833.960	40.28	30.41	4.56	32.97	0.00	42.27	54.00	-11.73	1/3 MHz
PK	H	2750.940	49.99	32.39	5.48	33.71	0.00	54.16	74.00	-19.84	1/3 MHz
AVG	H	2750.940	39.12	32.39	5.48	33.71	0.00	43.29	54.00	-10.71	1/3 MHz
PK	H	3667.920	47.76	33.30	6.77	33.76	0.00	54.07	74.00	-19.93	1/3 MHz
AVG	H	3667.920	37.79	33.30	6.77	33.76	0.00	44.10	54.00	-9.90	1/3 MHz
PK	H	4584.900	47.12	34.12	7.90	33.91	0.00	55.23	74.00	-18.77	1/3 MHz
AVG	H	4584.900	36.28	34.12	7.90	33.91	0.00	44.39	54.00	-9.61	1/3 MHz
PK	H	5501.800	45.13	34.56	8.85	34.21	0.00	54.33	74.00	-19.67	1/3 MHz
AVG	H	5501.800	37.72	34.56	8.85	34.21	0.00	46.92	54.00	-7.08	1/3 MHz
					Z- Axis						
PK	V	1833.960	50.94	30.41	4.56	32.97	0.00	52.93	74.00	-21.07	1/3 MHz
AVG	V	1833.960	37.18	30.41	4.56	32.97	0.00	39.17	54.00	-14.83	1/3 MHz
PK	V	2750.940	47.72	32.39	5.48	33.71	0.00	51.89	74.00	-22.11	1/3 MHz
AVG	V	2750.940	36.26	32.39	5.48	33.71	0.00	40.43	54.00	-13.57	1/3 MHz
PK	V	3667.920	44.12	33.30	6.77	33.76	0.00	50.43	74.00	-23.57	1/3 MHz
AVG	V	3667.920	35.19	33.30	6.77	33.76	0.00	41.50	54.00	-12.50	1/3 MHz
PK	V	4584.900	45.43	34.12	7.90	33.91	0.00	53.54	74.00	-20.46	1/3 MHz
AVG	V	4584.900	37.72	34.12	7.90	33.91	0.00	45.83	54.00	-8.17	1/3 MHz
PK	V	5501.800	42.12	34.56	8.85	34.21	0.00	51.32	74.00	-22.68	1/3 MHz
AVG	V	5501.800	35.23	34.56	8.85	34.21	0.00	44.43	54.00	-9.57	1/3 MHz

No emissions other than the ones listed in the above table were detected in the 1-10 GHz frequency range.

Test Personnel:	Naga Suryadevara N.S	Test Date:	04/08/2017
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 15 Subpart C (15.249) RSS 210	Limit Applied:	As specified in section 8.3
Input Voltage:	Internal Battery 120VAC 60Hz		
Pretest Verification w/ Ambient Signals or BB Source:	Yes – Signal generator	Ambient Temperature:	21 ºC
		Relative Humidity:	32 %
		Atmospheric Pressure:	998 mbars

Deviations, Additions, or Exclusions: None

9 Frequency Stability

9.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C (15.249) and RSS 210.

TEST SITE: Performance Lab

9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV003'	Weather Station	Davis Instruments	7400	PE80529A39A	11/28/2016	11/28/2017
HORN2'	HORN ANTENNA	EMCO	3115	9602-4675	03/03/2017	03/03/2018
CBLSHF204'	Cable, SMA - SMA, 9kHz -40GHz, (Cable Kit 5)	Huber + Suhner	Sucoflex 102EA	234714001	08/27/2016	08/27/2017
ROS002'	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	07/29/2016	07/29/2017

Software Utilized:

Name	Manufacturer	Version
None		

9.3 Results:

The sample tested was found to Comply.

9.4 Plots/Data:

Low Channel 917 MHz

Temp Celsius	Frequency MHz	Deviation kHz	Limit kHz
-30	917.001980	-3.22	9.17
-20	917.001200	-4	9.17
-10	917.003400	-1.8	9.17
0	917.00430000	-0.9	9.17
10	917.003200	-2	9.17
20	917.005200	0	9.17
30	917.002100	-3.1	9.17
40	917.003800	-1.4	9.17
50	917.006900	1.7	9.17

Mid Channel 919 MHz

Temp Celsius	Frequency MHz	Deviation kHz	Limit kHz
-30	919.022700	5.41	9.19
-20	919.021200	3.91	9.19
-10	919.011210	-6.08	9.19
0	919.013200	-4.09	9.19
10	919.012000	-5.29	9.19
20	919.017290	0	9.19
30	919.025200	7.91	9.19
40	919.018120	0.83	9.19
50	919.021000	3.71	9.19

High Channel 921 MHz

Temp Celsius	Frequency MHz	Deviation kHz	Limit kHz
-30	920.985400	4.2	9.21
-20	920.980000	-1.2	9.21
-10	920.986500	5.3	9.21
0	920.976900	-4.3	9.21
10	920.983600	2.4	9.21
20	920.981200	0	9.21
30	920.985200	4	9.21
40	920.982100	0.9	9.21
50	920.987700	6.5	9.21

Test Personnel: Naga Suryadevara N S — Test Date: 06/11/2017

Supervising/Reviewing Engineer: (Where Applicable) N/A

Product Standard: FCC Part 15 Subpart C (15.249) RSS 210 — Limit Applied: See section 9.3

Input Voltage: Internal Battery

Pretest Verification w/ Ambient Signals or BB Source: Yes – Signal generator

Ambient Temperature: 22 ºC

Relative Humidity: 34 %

Atmospheric Pressure: 1008 mbars

10 AC Mains Conducted Emissions

10.1 Method

Tests are performed in accordance with FCC Part 15 Subpart C, FCC Part 15 Subpart B, RSS 247 and ICES 003.

TEST SITE: EMC Lab

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

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
AC Line Conducted Emissions	150 kHz - 30 MHz	2.8dB	3.4dB
Telco Port Emissions	150 kHz - 30 MHz	3.2dB	5.0dB

As shown in the table above our conducted emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculations

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

NF = RF + LF + CF + AF
Where NF = Net Reading in dBμV
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 dBμV to μV or mV the following was used:

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

Example:

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

10.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV002'	Weather Station	Davis Instruments	7400	PE80519A93	06/01/2016	06/01/2017
ROS002'	9kHz to 3GHz EMI Test Receiver	Rohde & Schwartz	ESCI 1166.5950K03	100067	07/29/2016	07/29/2017
DS22'	Attenuator, 20dB	Mini Circuits	20dB, 50 ohm	DS22	09/08/2016	09/08/2017
CBLBNC7'	30 ft 50 ohm coax, BNC - BNC	ITT Pomona	RG 58 C/U	CBLBNC7	01/10/2017	01/10/2018
LISN34'	LISN - CISPR16 Compliant 9kHz-30MHz	Com-Power	LI-215A	191956	06/27/2016	06/27/2017

Software Utilized:

Name	Manufacturer	Version
Compliance 5	Teseq	5.26.46.46

10.3 Results:

The sample tested was found to Comply.

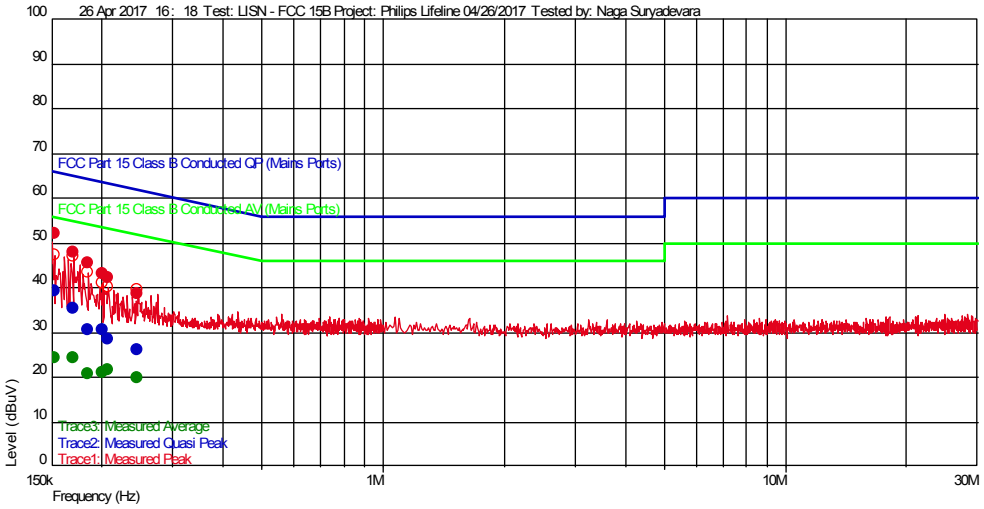
10.4 Plots/Data:

120VAC 60Hz – Charging Mode

Test Information

Test Details	User Entry	Additional Information
Test:	LISN – FCC15 Class B	
Project:	Philips Lifeline 04/26/2017	
Test Notes:	120VAC 60Hz – Charging	
Tested by:	Naga Suryadevara	
Test Started:	26 Apr 2017 16 : 18	

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

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
246.05 k	26.00	1.034	20.621	61.889	-35.89	9 k		N
207.8 k	28.57	1.272	20.620	63.293	-34.72	9 k		N
185.7 k	30.51	1.732	20.620	64.227	-33.72	9 k		L1
201.0 k	30.65	1.314	20.620	63.569	-32.92	9 k		L1
170.4 k	35.34	2.172	20.620	64.941	-29.60	9 k		N
152.55 k	39.36	2.687	20.620	65.860	-26.50	9 k		N

Trace3: Measured Average

Frequency(Hz)	Level(dBuV)	TF	PA+CL	Limit(dBuV)	Margin(dBuV)	RBW(Hz)	Comment	LINE
185.7 k	20.77	1.732	20.620	54.227	-33.45	9 k		L1
201.0 k	21.00	1.314	20.620	53.569	-32.57	9 k		L1
246.05 k	19.72	1.034	20.621	51.889	-32.17	9 k		N
207.8 k	21.50	1.272	20.620	53.293	-31.80	9 k		N
152.55 k	24.27	2.687	20.620	55.860	-31.59	9 k		N
170.4 k	24.30	2.172	20.620	54.941	-30.64	9 k		N

Test Personnel:	Naga Suryadevara N.S	Test Date:	04/26/2017
Supervising/Reviewing Engineer: (Where Applicable)	N/A		
Product Standard:	FCC Part 15 Subpart B ICES-003	Limit Applied:	All Class B
Input Voltage:	120VAC 60Hz		
Pretest Verification w/ Ambient Signals or BB Source:	Yes	Ambient Temperature:	22 ºC
		Relative Humidity:	38 %
		Atmospheric Pressure:	1002 mbars

Deviations, Additions, or Exclusions: None

11 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	06/11/2017	102965577BOX-018	NS	KPS KPS	Original Issue