

## EMISSIONS TEST REPORT

**Report Number:** G101276754BOX-001

**Project Number:** G101276754

**Report Issue Date:** 08/06/2013

**Product Designation:** Halifax

**Standards:** FCC 47CFR Part 15:2013 Subpart C 15.249  
FCC 47CFR Part 15:2013 Subpart B Class B  
RSS-210 Issue 8 December 2010  
ICES-003 Issue 5 August 2012

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

Client:  
Lifeline System Inc.  
111 Lawrence Street  
Framingham, MA 01702-8156  
USA

Report prepared by Reviewer



Vathana Ven / Senior Project Engineer

Report reviewed by



Michael F. Murphy / Sr. 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.

## 2 Test Summary

Section	Test full name	Result
3	Client Information	
4	Description of Equipment Under Test	
5	System Setup and Method	
6	Fundamental Frequency Radiated Emissions FCC 47CFR Part 15:2013 Subpart C 15.249, RSS-210 Issue 8 December 2010	Pass
--	AC Mains Conducted Emissions	N/A
7	Transmitter Spurious Radiated Emissions FCC 47CFR Part 15:2013 Subpart C 15.249, 15.209 RSS-210 Issue 8 December 2010, ICES-003 Issue 5 August 2012	Pass
8	Receiver Spurious Radiated Emissions FCC 47CFR Part 15:2013 Subpart B Class B ICES-003 Issue 5 August 2012	Pass
9	20 dB Bandwidth FCC 47CFR Part 15:2013 Subpart C 15.249, RSS-210 Issue 8 December 2010	Pass
10	Revision History	--

**3 Client Information**

This EUT was tested at the request of:

**Client:** Lifeline System Inc.  
 111 Lawrence Street  
 Framingham, MA 01702-8156 USA  
**Contact:** Escipion Baez  
**Telephone:** (508) 988-3032  
**Fax:** (508) 988-1384  
**Email:** Escipion.Baez@philips.com

**4 Description of Equipment Under Test**

**Manufacturer:** Lifeline System Inc.  
 111 Lawrence Street  
 Framingham, MA 01702-8156 USA

Equipment Under Test			
Description	Manufacturer	Model Number	Serial Number
Alert pendant	Lifeline System Inc.	Halifax	1020000121

Receive Date:	08/01/2013
Received Condition:	Good
Type:	Production

**Description of Equipment Under Test (provided by client)**

The EUT is an alert pendant.

Equipment Under Test Power Configuration			
Rated Voltage	Rated Current	Rated Frequency	Number of Phases
3.3VDC	N/A	N/A	N/A

**Operating modes of the EUT:**

No.	Descriptions of EUT Exercising
1	Transmit
2	Idle/Receive

**Software used by the EUT:**

No.	Descriptions of EUT Exercising
1	N/A

**5 System Setup and Method**

Cables					
ID	Description	Length (m)	Shielding	Ferrites	Termination
	N/A				

Support Equipment			
Description	Manufacturer	Model Number	Serial Number
None			

**5.1 Method:**

Configuration as required by FCC 47CFR Part 15:2013 Subpart C 15.249, FCC 47CFR Part 15:2013 Subpart B Class B, RSS-210 Issue 8 December 2010 ICES-003 Issue 5 August 2012, and ANSI C63.4:2009.

**5.2 EUT Block Diagram:**



## 6 Fundamental Frequency Radiated Emissions

### 6.1 Method

Tests are performed in accordance with FCC 47CFR Part 15:2013 Subpart C 15.249, RSS-210 Issue 8 December 2010 ICES-003 Issue 5 August 2012, and ANSI C63.4:2009.

**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 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**

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

### Sample Calculation

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

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in 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 $\mu$ 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 $\mu$ V/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/m  
 CF = 1.6 dB  
 AG = 29.0 dB  
 FS = 32 dB $\mu$ V/m

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

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

$$NF = \text{Net Reading in dB}\mu\text{V}$$

#### Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

**6.2 Test Equipment Used:**

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004	Weather Station	Davis Instruments	7400	PE80529A61A	09/25/2012	09/25/2014
145106	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	09/04/2012	09/04/2013
145-410	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2012	10/04/2013
145003	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	10/04/2012	10/04/2013
145128	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	09/28/2012	09/28/2013

**Software Utilized:**

Name	Manufacturer	Version
C5	Teseq	5.26.46.46

**6.3 Results:**

The sample tested was found to Comply.

**6.4 Setup Photographs:**

X-Axis

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**



Y-Axis

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**

Z-Axis

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**

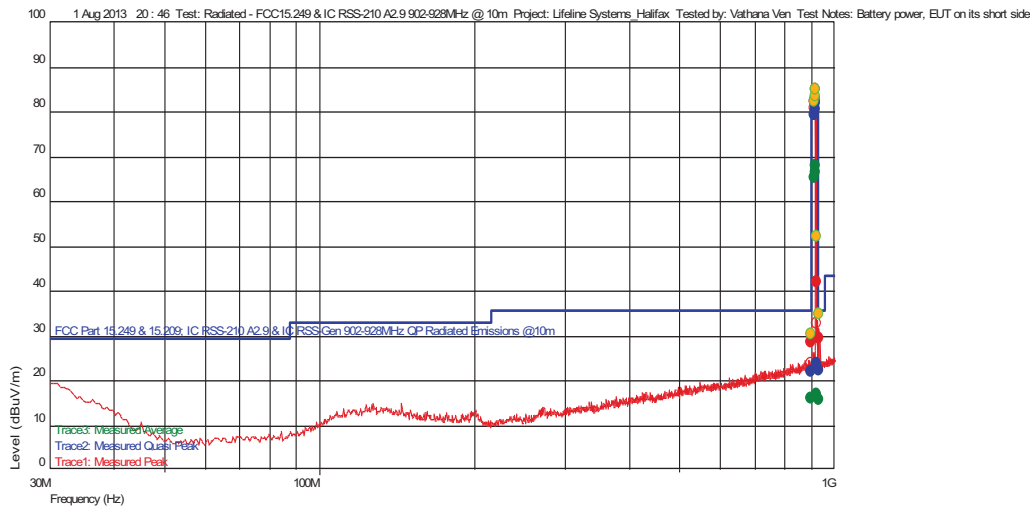
### 6.5 Plots/Data:

#### Test Information

Test Details: User Entry  
 Test: Radiated - FCC15.249 & IC RSS-210 A2.9 902-928MHz @ 10m  
 Project: Lifeline Systems\_Halifax  
 Test Notes: Battery power, EUT on its short side  
 Temperature: 22 deg C  
 Humidity: 55%, 1003mB  
 Tested by: Vathana Ven  
 Test Started: 1 Aug 2013 20 : 46

Additional Information

#### Prescan Emission Graph



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

#### Emissions Test Data

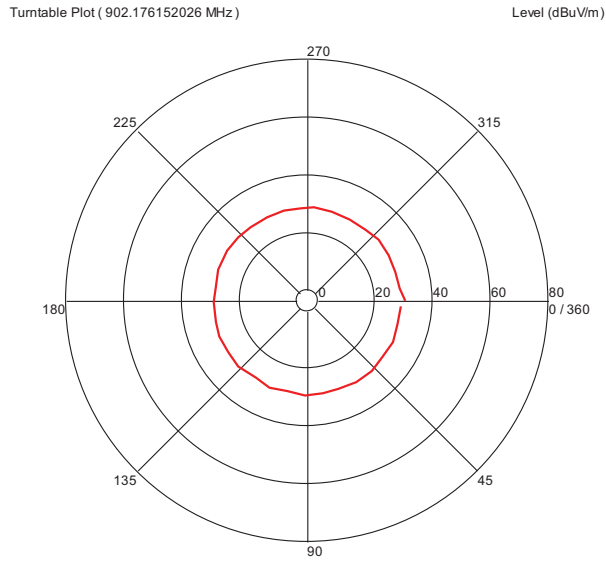
##### Trace1: Measured Peak

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
902.176152026 M	28.63	22.644	-22.845	--	--	--	360	4.00	120 k	
925.492585641 M	42.08	22.900	-22.904	--	--		264	1.87	120 k	
934.614028425 M	29.37	22.900	-22.927	--	--		353	2.45	120 k	
916.984569543 M	82.09	22.800	-22.882	--	--		266	2.05	120 k	Fundamental
918.977354339 M	83.25	22.800	-22.887	--	--		267	1.86	120 k	Fundamental
920.987975862 M	84.78	22.820	-22.892	--	--		279	1.80	120 k	Fundamental

##### 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
902.176152026 M	22.07	22.644	-22.845	83.520	-61.45	--	360	4.00	120 k	
925.492585641 M	23.80	22.900	-22.904	83.520	-59.72		264	1.87	120 k	
934.614028425 M	22.25	22.900	-22.927	35.540	-13.29	--	353	2.45	120 k	
916.984569543 M	79.19	22.800	-22.882	83.520	-4.33		266	2.05	120 k	Fundamental
918.977354339 M	80.34	22.800	-22.887	83.520	-3.18		267	1.86	120 k	Fundamental
920.987975862 M	81.91	22.820	-22.892	83.520	-1.61		279	1.80	120 k	Fundamental

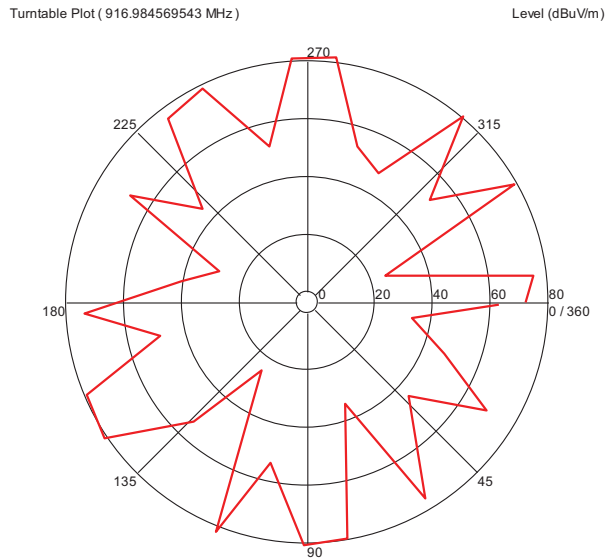
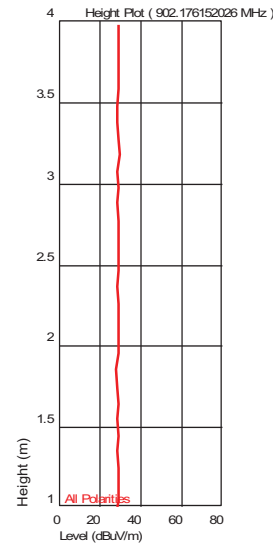
Azimuth Plots



All Polarities

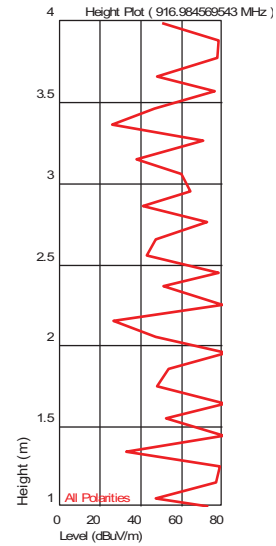
Azimuth (Degrees)

Turntable Plots



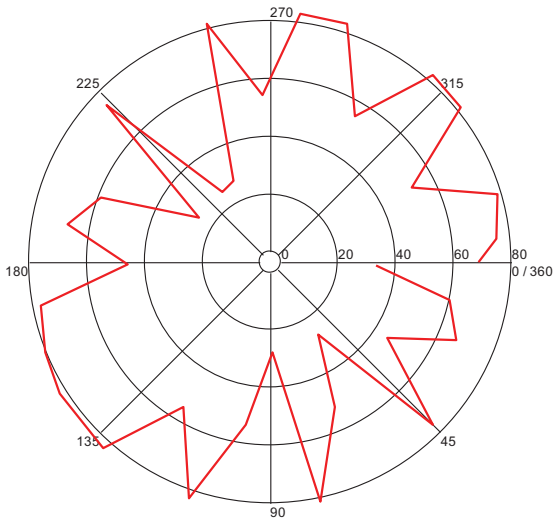
All Polarities

Azimuth (Degrees)



Turntable Plot ( 918.977354339 MHz)

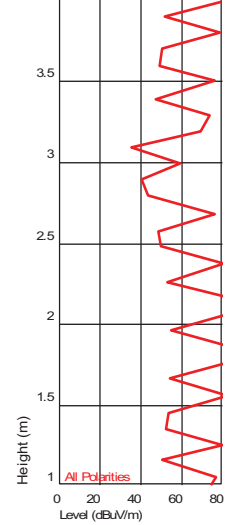
Level (dBuV/m)



All Polarities

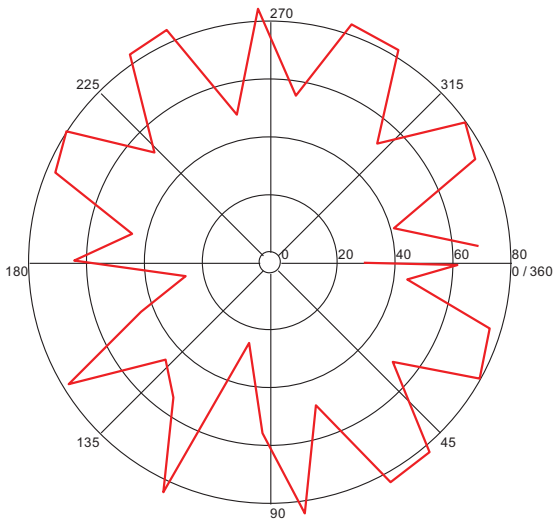
Azimuth (Degrees)

Height Plot ( 918.977354339 MHz)



Turntable Plot ( 920.987975862 MHz)

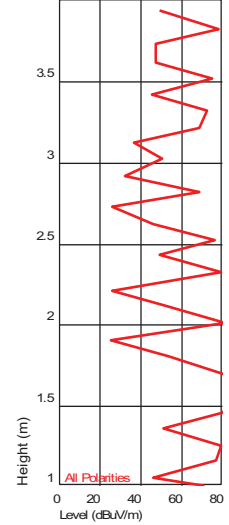
Level (dBuV/m)



All Polarities

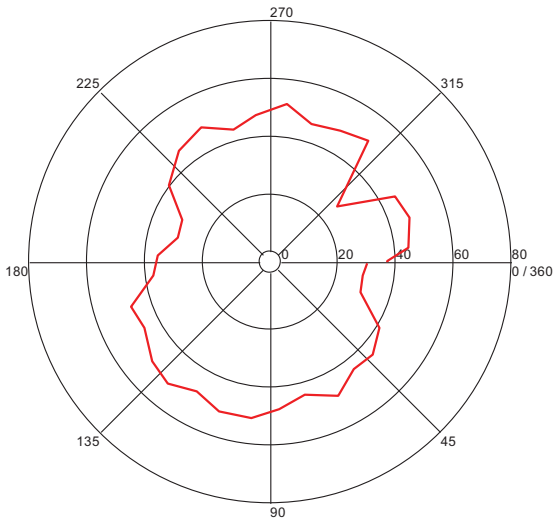
Azimuth (Degrees)

Height Plot ( 920.987975862 MHz)



Turntable Plot ( 925.492585641 MHz)

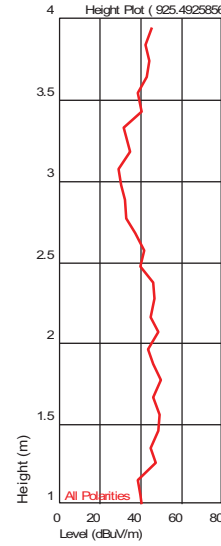
Level (dBuV/m)



All Polarities

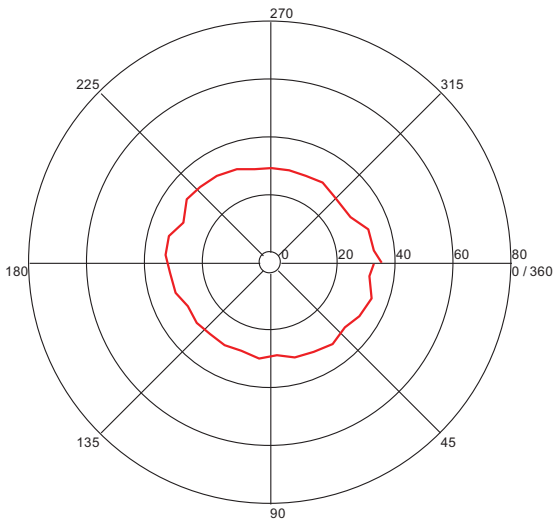
Azimuth (Degrees)

Height Plot ( 925.492585641 MHz)



Turntable Plot ( 934.614028425 MHz)

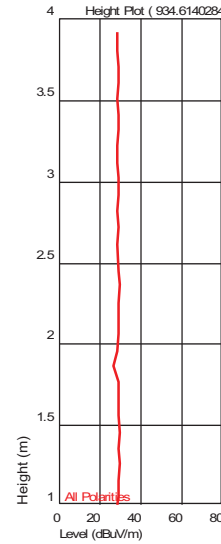
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 934.614028425 MHz)



Test Personnel: Vathana Ven *VSV*  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable)  
 Product Standard: FCC 15.249, RSS-210  
 Input Voltage: 3.3VDC  
 Pretest Verification w/ Ambient Signals or BB Source: Yes

Test Date: 08/01/2013

Limit Applied: 94 dBuV/m at 3 meters

Ambient Temperature: 22 °C

Relative Humidity: 55 %

Atmospheric Pressure: 1003 mbars

Deviations, Additions, or Exclusions: None

## 7 Transmitter Spurious Radiated Emissions

### 7.1 Method

Tests are performed in accordance with FCC 47CFR Part 15:2013 Subpart C 15.249 & 15.209, RSS-210 Issue 8 December 2010 ICES-003 Issue 5 August 2012, and ANSI C63.4:2009.

**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**

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

### Sample Calculation

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

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in 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 $\mu$ 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 $\mu$ V/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/m  
 CF = 1.6 dB  
 AG = 29.0 dB  
 FS = 32 dB $\mu$ V/m

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

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

$$NF = \text{Net Reading in dB}\mu\text{V}$$

#### Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$



**7.2 Test Equipment Used:**

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61A	09/25/2012	09/25/2014
145106'	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	09/04/2012	09/04/2013
145-410'	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2012	10/04/2013
145003'	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	10/04/2012	10/04/2013
145128'	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	09/28/2012	09/28/2013
ETS001'	1-18GHz DRG Horn Antenna	ETS-Lindgren	3117	00143259	12/17/2012	12/17/2013
145-416'	Cables 145-400 145-402 145-404 145-408	Huber + Suhner	3m Track B cables	multiple	10/04/2012	10/04/2013
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	12/13/2012	12/13/2013
REA003'	1GHz High Pass Filter	Reactel, Inc	7HS-1G/10G-S11	06-1	11/30/2011	11/30/2013

**Software Utilized:**

Name	Manufacturer	Version
C5	Teseq	5.26.46.46

**7.3 Results:**

The sample tested was found to Comply.

**7.4 Setup Photographs:**

30-1000 MHz (Transmit Mode), EUT sits on its back

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**

30-1000 MHz (Transmit Mode), EUT sits on its long side

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**

30-1000 MHz (Transmit Mode), EUT sits on its long side

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**

1-10 GHz (Transmit Mode), EUT sits on its short side

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB**

1-10 GHz (Transmit Mode), EUT sits on its long side

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**

**7.5 Plots/Data:**

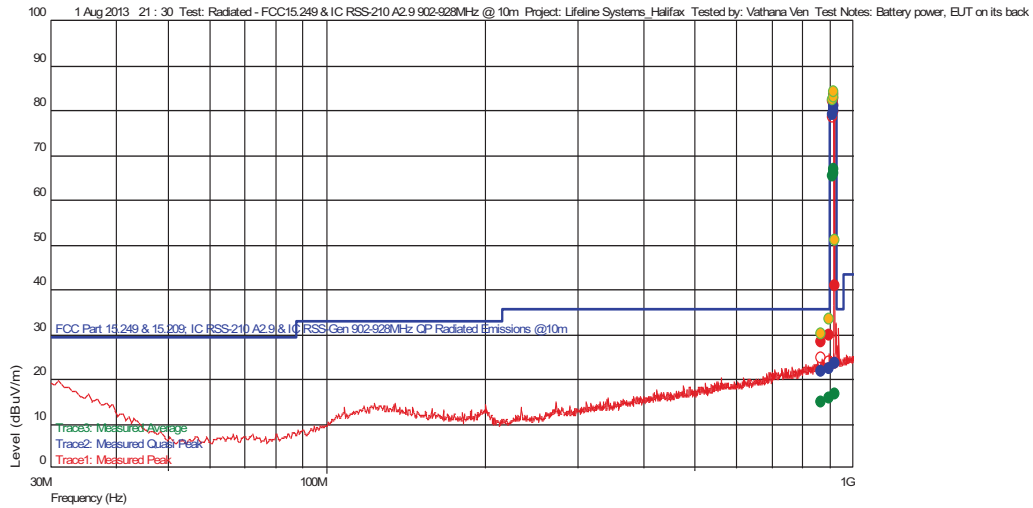
**Halifax, Tx Mode, EUT sits on its back, 30-1000MHz**

**Test Information**

Test Details            User Entry  
 Test:                    Radiated - FCC15.249 & IC RSS-210 A2.9 902-928MHz @ 10m  
 Project:                Lifeline Systems\_Halifax  
 Test Notes:            Battery power, EUT on its back  
 Temperature:         22 deg C  
 Humidity:              55%, 1003mB  
 Tested by:             Vathana Ven  
 Test Started:         1 Aug 2013 21 : 30

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
925.585571613 M	40.81	22.900	-22.904	--	--	--	136	1.04	120 k	Spurious
871.317434944 M	28.12	22.300	-23.067	--	--	--	212	2.56	120 k	Spurious
900.462124689 M	29.59	22.609	-22.841	--	--	--	127	2.97	120 k	Spurious
916.98376794 M	81.95	22.800	-22.882	--	--	--	116	1.05	120 k	
918.986171974 M	82.63	22.800	-22.887	--	--	--	265	1.15	120 k	
920.982364639 M	83.58	22.820	-22.892	--	--	--	261	2.93	120 k	

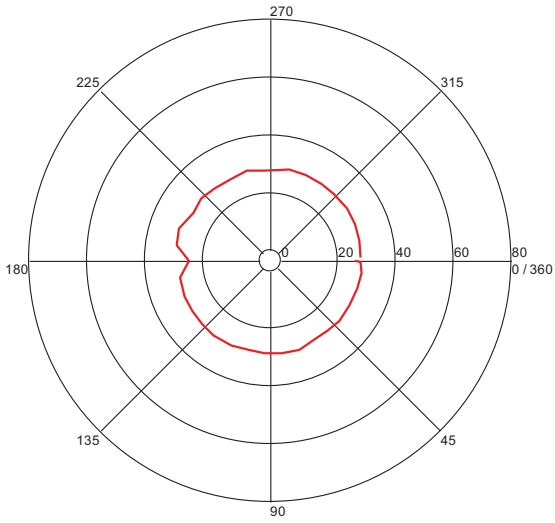
**Trace2: Measured Quasi Peak**

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
925.585571613 M	23.32	22.900	-22.904	83.520	-60.20	--	136	1.04	120 k	Spurious
871.317434944 M	21.51	22.300	-23.067	35.540	-14.03	--	212	2.56	120 k	Spurious
900.462124689 M	22.16	22.609	-22.841	35.540	-13.38	--	127	2.97	120 k	Spurious
916.98376794 M	79.10	22.800	-22.882	83.520	-4.42	--	116	1.05	120 k	
918.986171974 M	79.74	22.800	-22.887	83.520	-3.78	--	265	1.15	120 k	
920.982364639 M	80.70	22.820	-22.892	83.520	-2.82	--	261	2.93	120 k	

Azimuth Plots

Turntable Plot ( 871.317434944 MHz)

Level (dBuV/m)

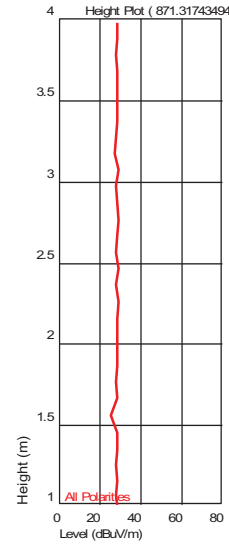


All Polarities

Azimuth (Degrees)

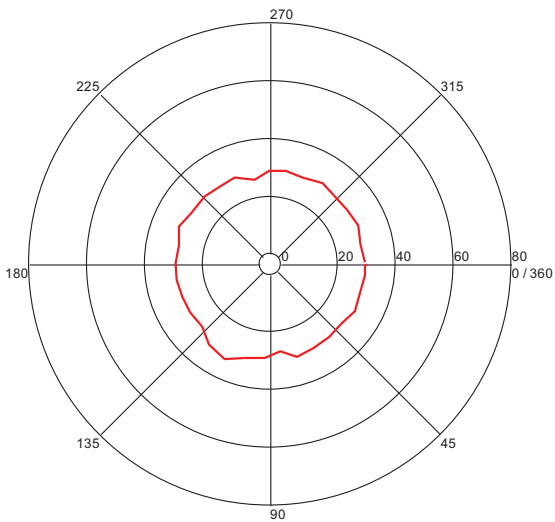
Turntable Plots

Height Plot ( 871.317434944 MHz)



Turntable Plot ( 900.462124689 MHz)

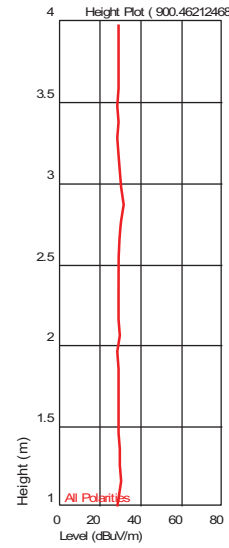
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

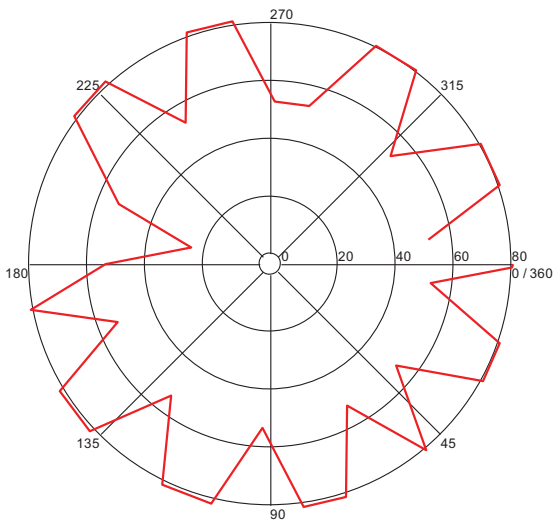
Height Plot ( 900.462124689 MHz)





Turntable Plot ( 916.98376794 MHz )

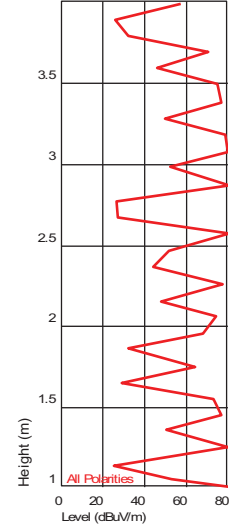
Level (dBuV/m)



All Polarities

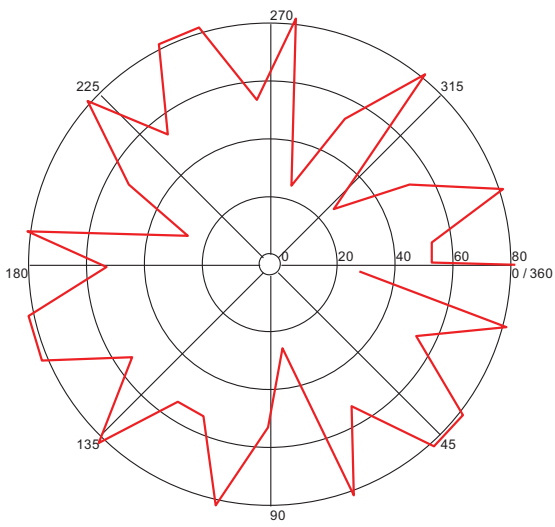
Azimuth (Degrees)

Height Plot ( 916.98376794 MHz )



Turntable Plot ( 918.986171974 MHz )

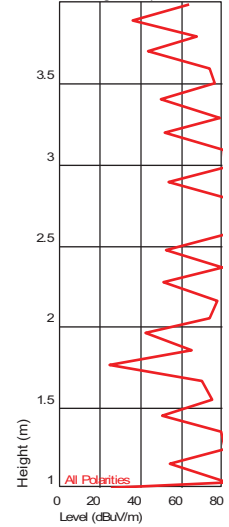
Level (dBuV/m)



All Polarities

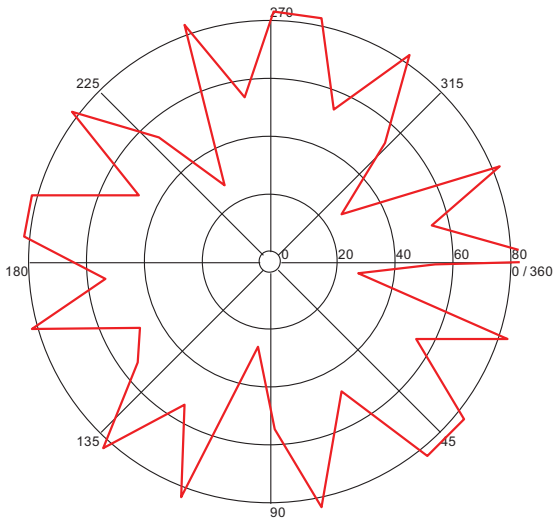
Azimuth (Degrees)

Height Plot ( 918.986171974 MHz )



Turntable Plot ( 920.982364639 MHz )

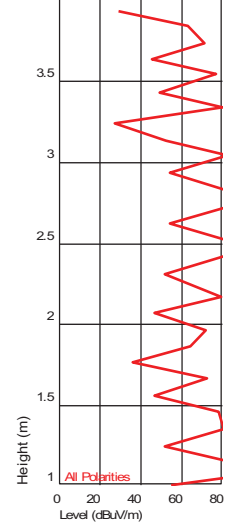
Level (dBuV/m)



All Polarities

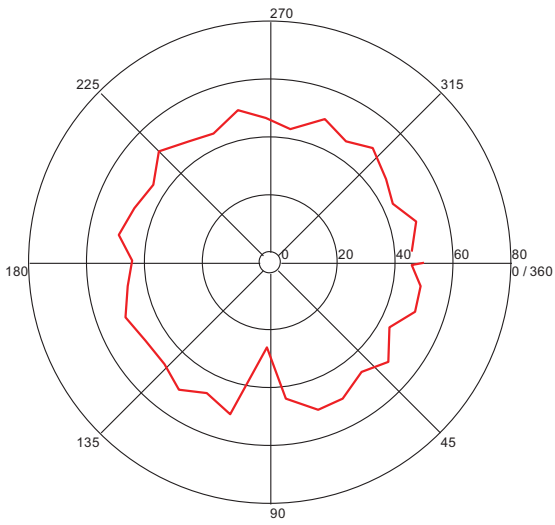
Azimuth (Degrees)

Height Plot ( 920.982364639 MHz )



Turntable Plot ( 925.585571613 MHz )

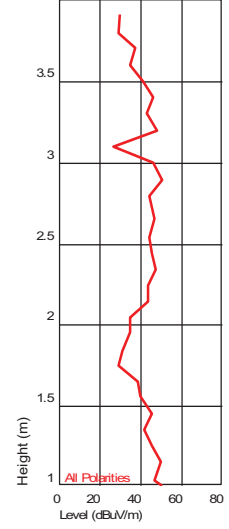
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 925.585571613 MHz )



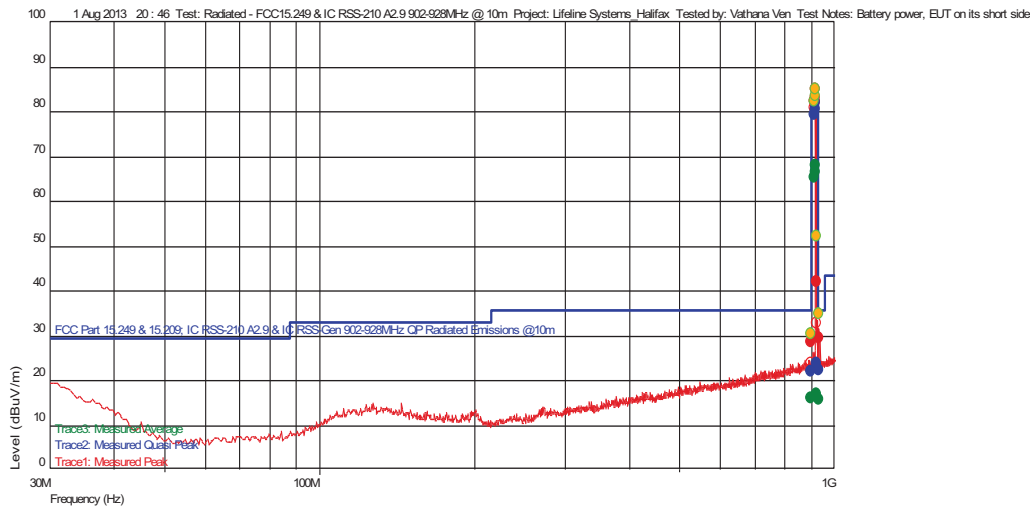
Halifax, Tx Mode, EUT sits on its short side, 30-1000MHz

Test Information

Test Details User Entry  
 Test: Radiated - FCC15.249 & IC RSS-210 A2.9 902-928MHz @ 10m  
 Project: Lifeline Systems\_Halifax  
 Test Notes: Battery power, EUT on its short side  
 Temperature: 22 deg C  
 Humidity: 55%, 1003mB  
 Tested by: Vathana Ven  
 Test Started: 1 Aug 2013 20 : 46

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

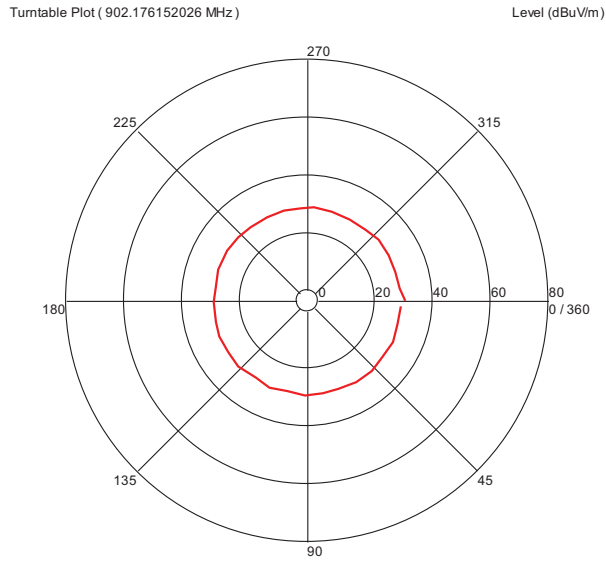
Trace1: Measured Peak

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
902.176152026 M	28.63	22.644	-22.845	--	--	--	360	4.00	120 k	Spurious
925.492585641 M	42.08	22.900	-22.904	--	--		264	1.87	120 k	Spurious
934.614028425 M	29.37	22.900	-22.927	--	--	--	353	2.45	120 k	Spurious
916.984569543 M	82.09	22.800	-22.882	--	--		266	2.05	120 k	
918.977354339 M	83.25	22.800	-22.887	--	--		267	1.86	120 k	
920.987975862 M	84.78	22.820	-22.892	--	--		279	1.80	120 k	

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
902.176152026 M	22.07	22.644	-22.845	83.520	-61.45	--	360	4.00	120 k	Spurious
925.492585641 M	23.80	22.900	-22.904	83.520	-59.72		264	1.87	120 k	Spurious
934.614028425 M	22.25	22.900	-22.927	35.540	-13.29	--	353	2.45	120 k	Spurious
916.984569543 M	79.19	22.800	-22.882	83.520	-4.33		266	2.05	120 k	
918.977354339 M	80.34	22.800	-22.887	83.520	-3.18		267	1.86	120 k	
920.987975862 M	81.91	22.820	-22.892	83.520	-1.61		279	1.80	120 k	

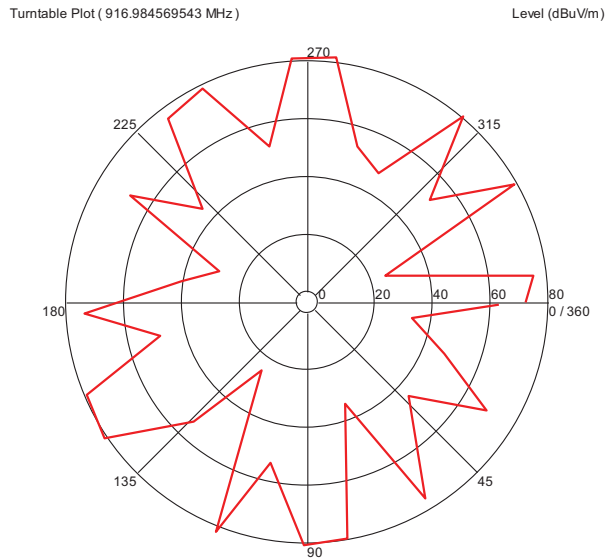
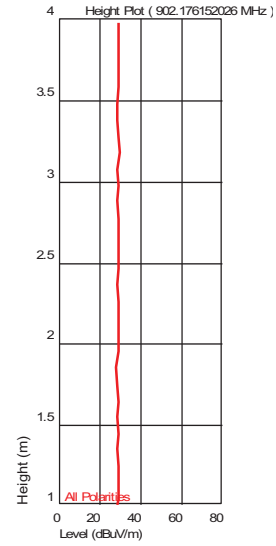
Azimuth Plots



All Polarities

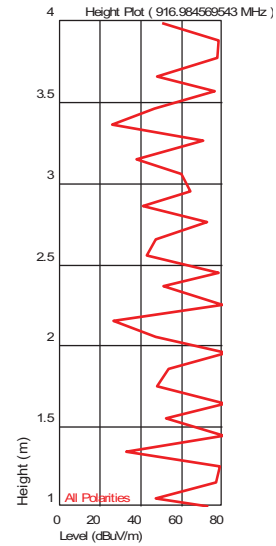
Azimuth (Degrees)

Turntable Plots



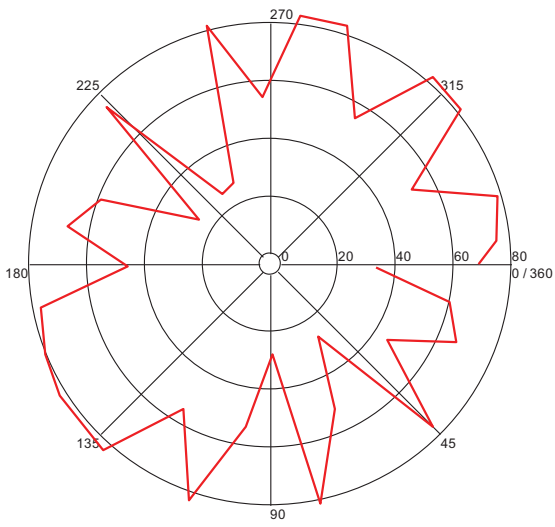
All Polarities

Azimuth (Degrees)



Turntable Plot ( 918.977354339 MHz)

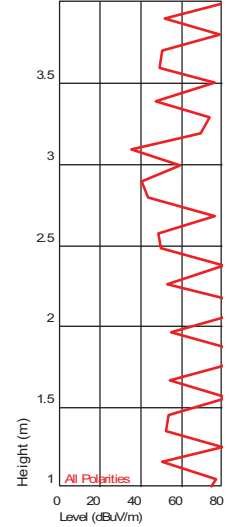
Level (dBuV/m)



All Polarities

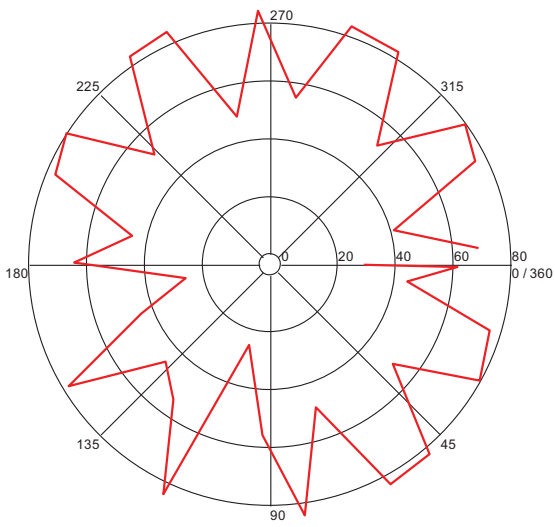
Azimuth (Degrees)

Height Plot ( 918.977354339 MHz)



Turntable Plot ( 920.987975862 MHz)

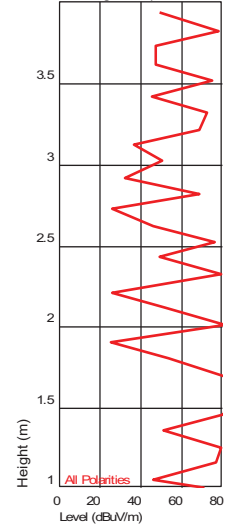
Level (dBuV/m)



All Polarities

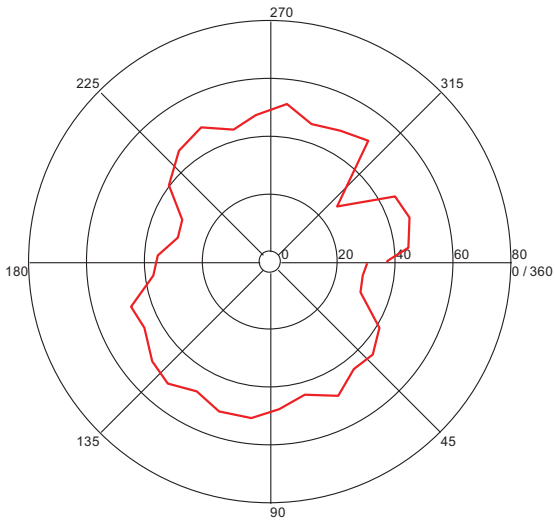
Azimuth (Degrees)

Height Plot ( 920.987975862 MHz)



Turntable Plot ( 925.492585641 MHz )

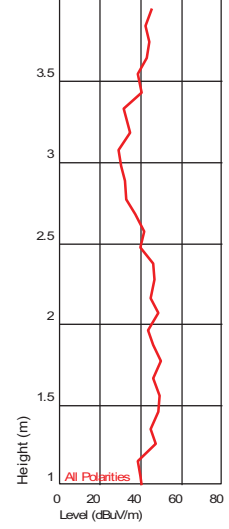
Level (dBuV/m)



All Polarities

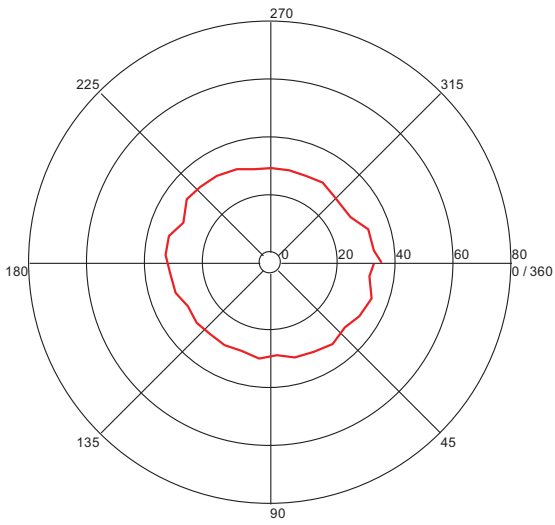
Azimuth (Degrees)

Height Plot ( 925.492585641 MHz )



Turntable Plot ( 934.614028425 MHz )

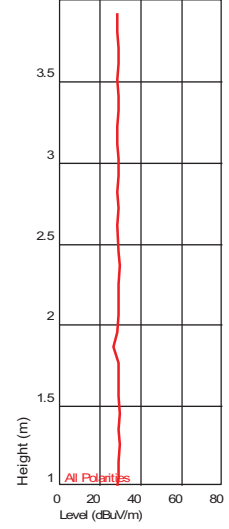
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 934.614028425 MHz )



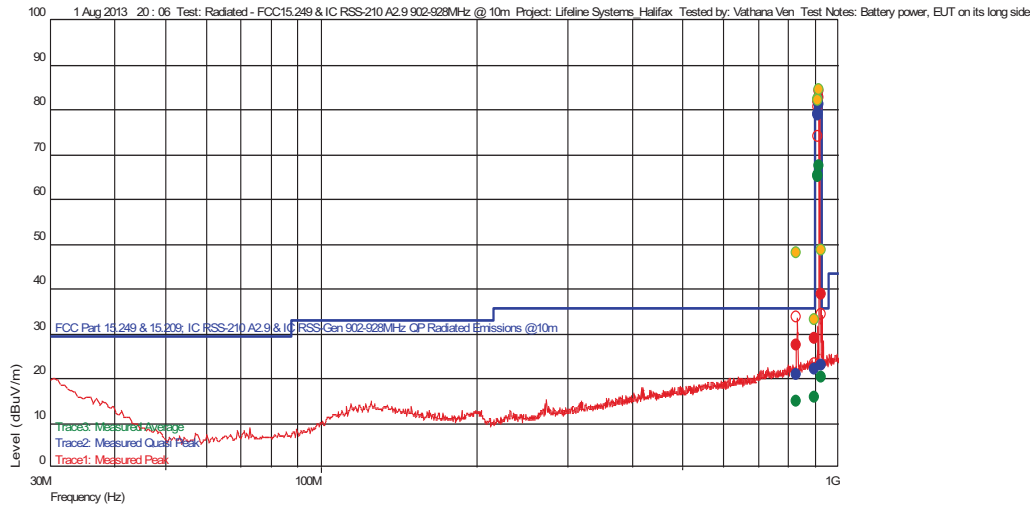
Halifax, Tx Mode, EUT sits on its long side, 30-1000MHz

Test Information

Test Details User Entry  
 Test: Radiated - FCC15.249 & IC RSS-210 A2.9 902-928MHz @ 10m  
 Project: Lifeline Systems\_Halifax  
 Test Notes: Battery power, EUT on its long side  
 Temperature: 22 deg C  
 Humidity: 55%, 1003mB  
 Tested by: Vathana Ven  
 Test Started: 1 Aug 2013 20 : 06

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
902.052705132 M	28.74	22.641	-22.845	--	--		115	1.71	120 k	Spurious
927.888777307 M	38.54	22.900	-22.910	--	--		287	1.66	120 k	Spurious
831.841883409 M	27.39	22.063	-23.404	--	--	--	0	2.15	120 k	Spurious
916.977555571 M	81.65	22.800	-22.882	--	--		115	1.81	120 k	
917.00380802 M	81.85	22.800	-22.883	--	--		116	1.76	120 k	
920.988777465 M	84.04	22.820	-22.892	--	--		118	1.76	120 k	

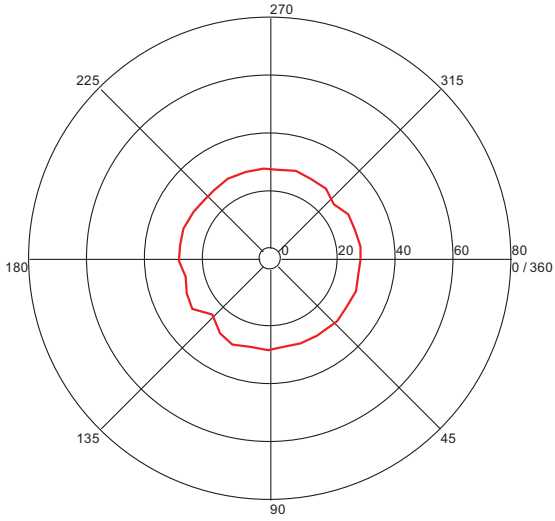
Trace2: Measured Quasi Peak

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
902.052705132 M	22.07	22.641	-22.845	83.520	-61.45		115	1.71	120 k	Spurious
927.888777307 M	22.81	22.900	-22.910	83.520	-60.71		287	1.66	120 k	Spurious
831.841883409 M	20.82	22.063	-23.404	35.540	-14.72	--	0	2.15	120 k	Spurious
916.977555571 M	78.73	22.800	-22.882	83.520	-4.79		115	1.81	120 k	
917.00380802 M	78.93	22.800	-22.883	83.520	-4.59		116	1.76	120 k	
920.988777465 M	81.17	22.820	-22.892	83.520	-2.35		118	1.76	120 k	

Azimuth Plots

Turntable Plot ( 831.841883409 MHz)

Level (dBuV/m)

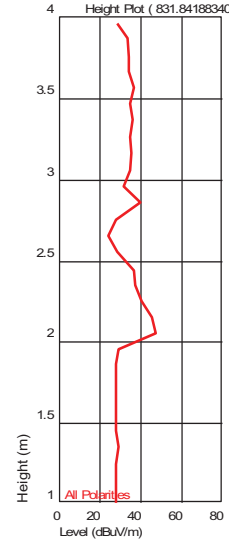


All Polarities

Azimuth (Degrees)

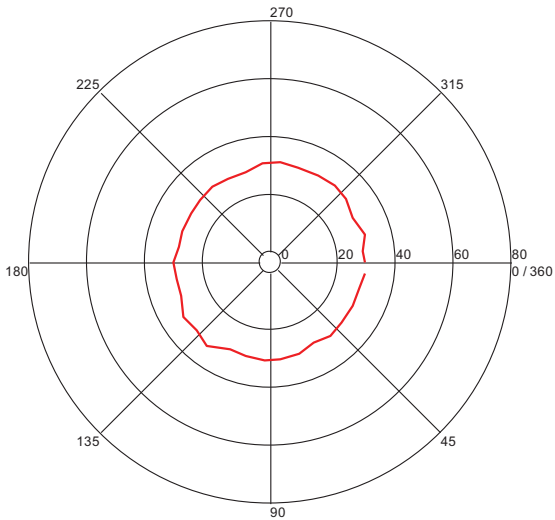
Turntable Plots

Height Plot ( 831.841883409 MHz)



Turntable Plot ( 902.052705132 MHz)

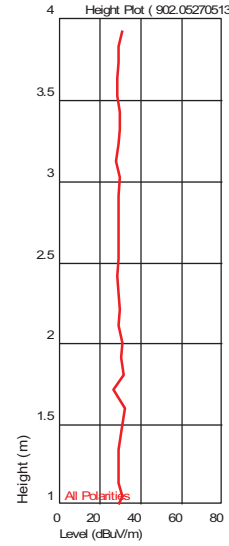
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

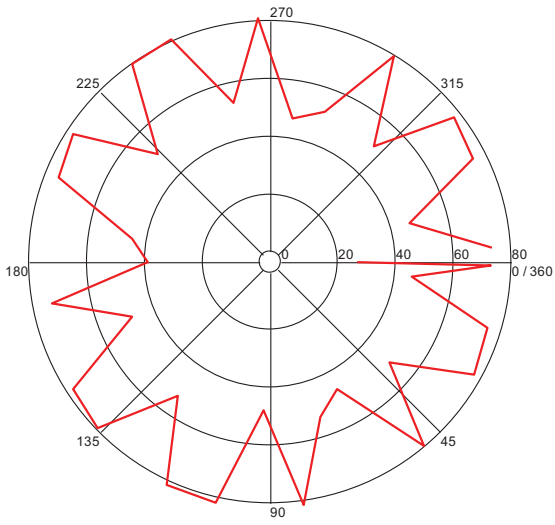
Height Plot ( 902.052705132 MHz)





Turntable Plot ( 916.97755571 MHz)

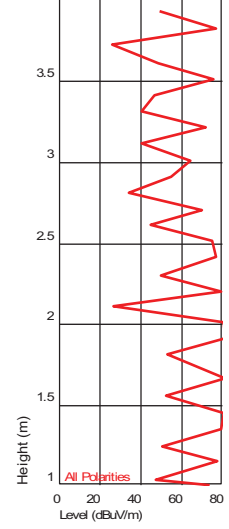
Level (dBuV/m)



All Polarities

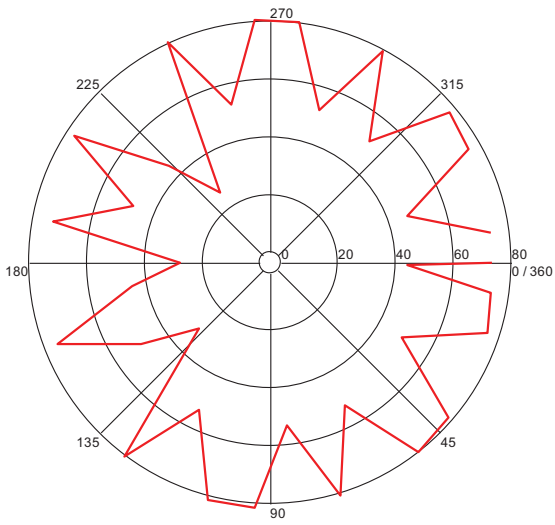
Azimuth (Degrees)

Height Plot ( 916.97755571 MHz)



Turntable Plot ( 917.00380802 MHz)

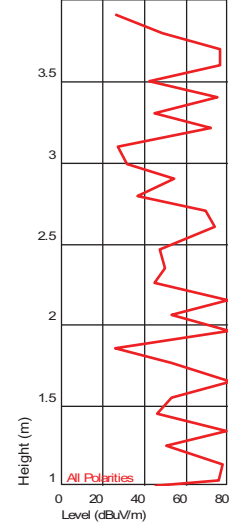
Level (dBuV/m)



All Polarities

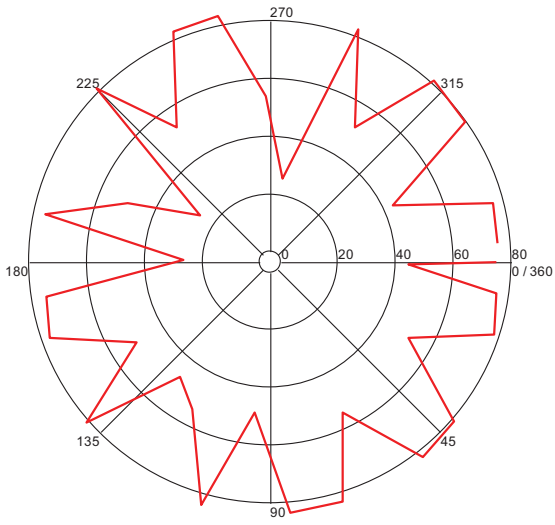
Azimuth (Degrees)

Height Plot ( 917.00380802 MHz)



Turntable Plot ( 920.988777465 MHz)

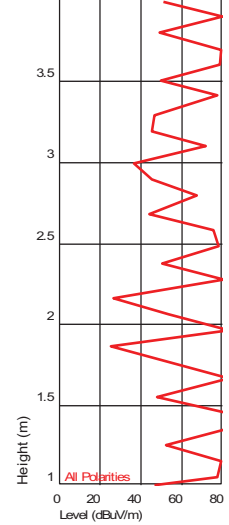
Level (dBuV/m)



All Polarities

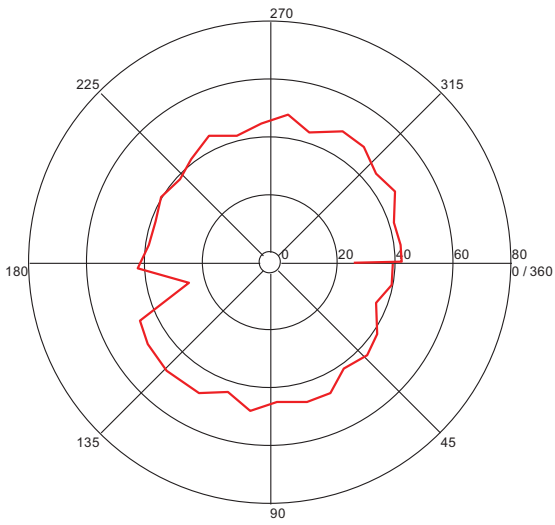
Azimuth (Degrees)

Height Plot ( 920.988777465 MHz)



Turntable Plot ( 927.888777307 MHz)

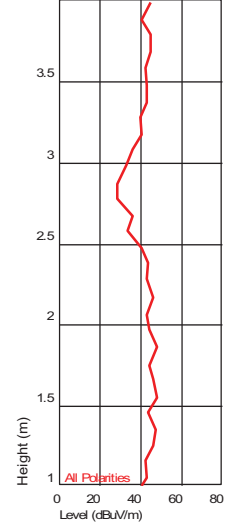
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 927.888777307 MHz)



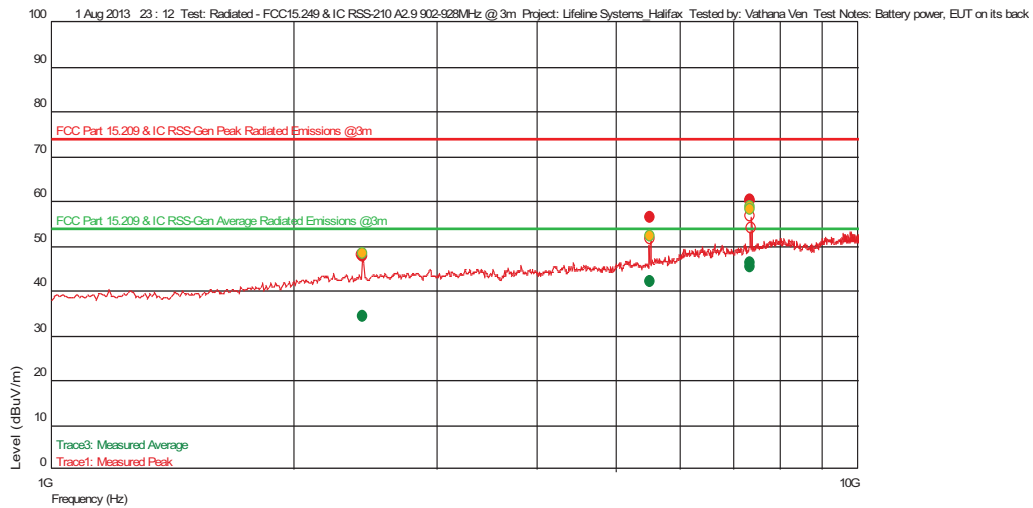
Halifax, Tx Mode, EUT sits on its back, 1-10GHz

Test Information

Test Details User Entry  
 Test: Radiated - FCC15.249 & IC RSS-210 A2.9 902-928MHz @ 3m  
 Project: Lifeline Systems\_Halifax  
 Test Notes: Battery power, EUT on its back  
 Temperature: 22 deg C  
 Humidity: 55%, 1003mB  
 Tested by: Vathana Ven  
 Test Started: 1 Aug 2013 23 : 12

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
2.434869739 G	47.73	32.396	-27.501	74.000	-26.27	--	3	4.01	1 M	Spurious
5.525891783 G	56.26	34.931	-25.166	74.000	-17.74		287	2.13	1 M	Spurious
7.367935872 G	59.80	36.047	-23.388	74.000	-14.20	--	190	1.28	1 M	Spurious
7.351997328 G	60.18	36.041	-23.418	74.000	-13.82	--	197	1.75	1 M	Spurious

Trace3: Measured Average

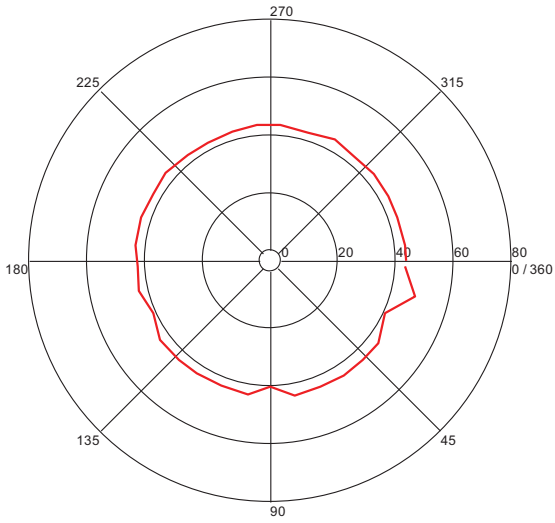
Frequency (Hz)	Level (dBuV/m)	AF	PA+CL	Limit (dBuV/m)	Margin (dBuV/m)	Hor (--), Ver ( )	Azimuth (deg) (Deg)	Mast Height (m)	RBW (Hz)	Comment
2.434869739 G	34.14	32.396	-27.501	54.000	-19.86	--	3	4.01	1 M	Spurious
5.525891783 G	42.04	34.931	-25.166	54.000	-11.96		287	2.13	1 M	Spurious
7.351997328 G	45.23	36.041	-23.418	54.000	-8.77	--	197	1.75	1 M	Spurious
7.367935872 G	46.08	36.047	-23.388	54.000	-7.92	--	190	1.28	1 M	Spurious

Azimuth Plots

Turntable Plots

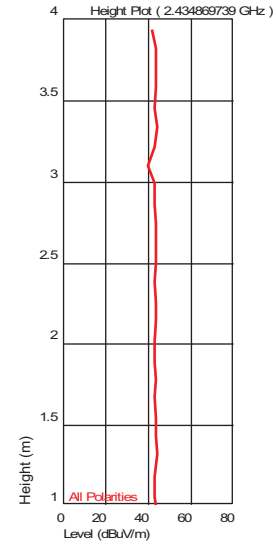
Turntable Plot ( 2.434869739 GHz )

Level (dBuV/m)



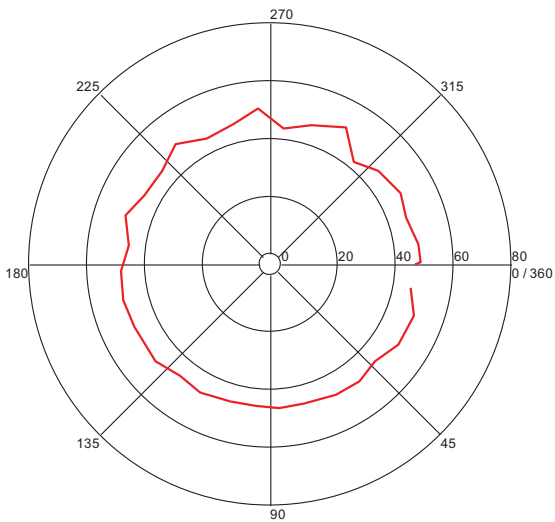
All Polarities

Azimuth (Degrees)



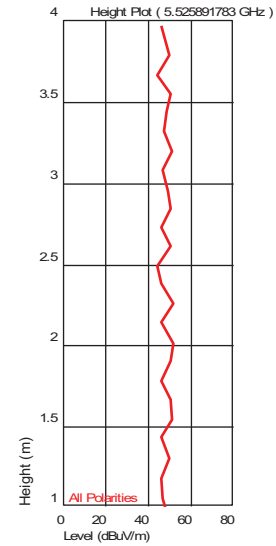
Turntable Plot ( 5.525891783 GHz )

Level (dBuV/m)



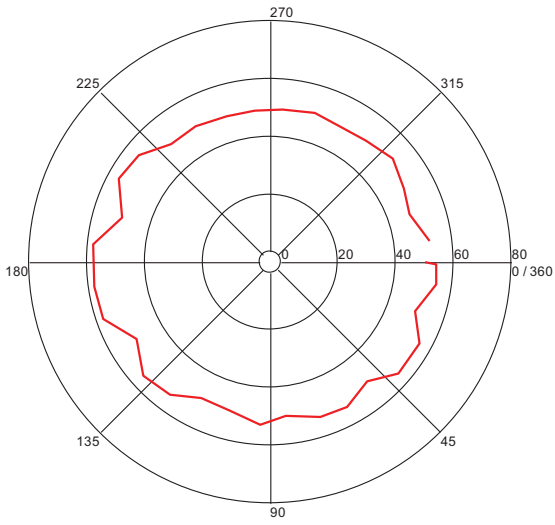
All Polarities

Azimuth (Degrees)



Turntable Plot ( 7.351997328 GHz )

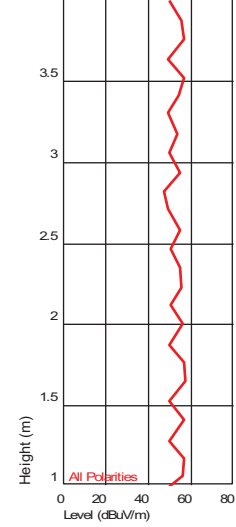
Level (dBuV/m)



All Polarities

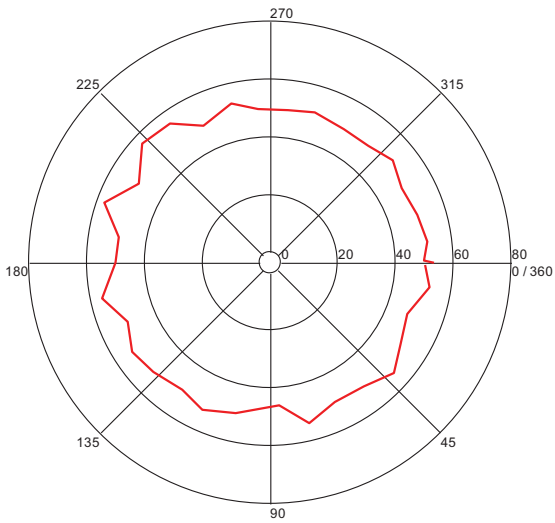
Azimuth (Degrees)

Height Plot ( 7.351997328 GHz )



Turntable Plot ( 7.367935872 GHz )

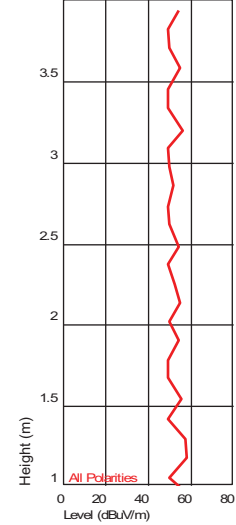
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 7.367935872 GHz )



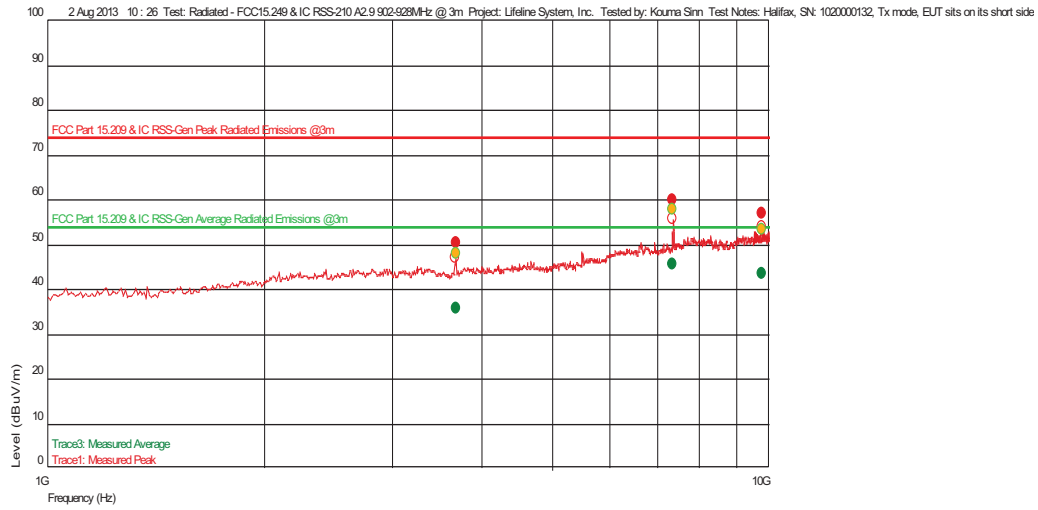
**Halifax, Tx Mode, EUT sits on its short side, 1-10GHz**

**Test Information**

Test Details	User Entry
Test:	Radiated - FCC15.249 & IC RSS-210 A2.9 902-928MHz @ 3m
Project:	Lifeline System, Inc.
Test Notes:	Halifax, SN: 1020000132, Tx mode, EUT sits on its short side
Temperature:	22C
Humidity:	59%, 1000mbar
Tested by:	Kouma Sinn
Test Started:	2 Aug 2013 10 : 26

Additional Information

**Prescan Emission Graph**



- |   |   |
|---|---|
| <span style="color: red;">●</span> Measured Peak Value                    | <span style="color: red;">—</span> Swept Peak Data        |
| <span style="color: blue;">●</span> Measured Quasi Peak Value             | <span style="color: blue;">—</span> Swept Quasi Peak Data |
| <span style="color: green;">●</span> Measured Average Value               | <span style="color: green;">—</span> Swept Average Data   |
| <span style="color: yellow;">●</span> Maximum Value of Mast and Turntable |   |

**Emissions Test Data**

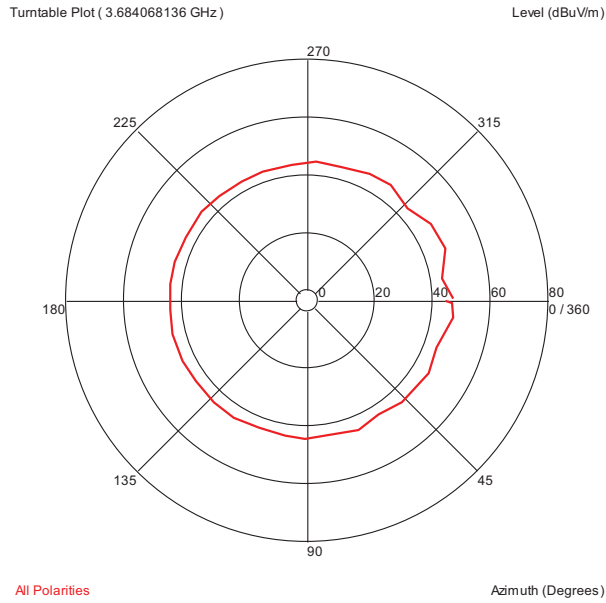
**Trace1: Measured Peak**

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
3.684068136 G	50.15	33.668	-27.019	74.000	-23.85		360	1.74	1 M	Spurious
9.792678691 G	56.86	37.651	-22.614	74.000	-17.14	--	141	2.80	1 M	Spurious
7.352017368 G	59.79	36.041	-23.418	74.000	-14.21		61	1.69	1 M	Spurious

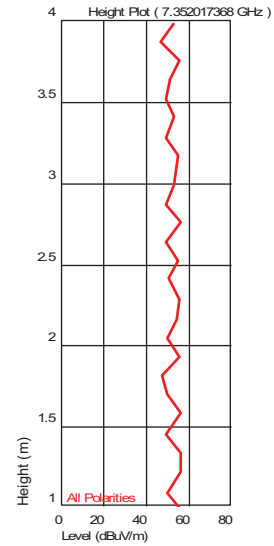
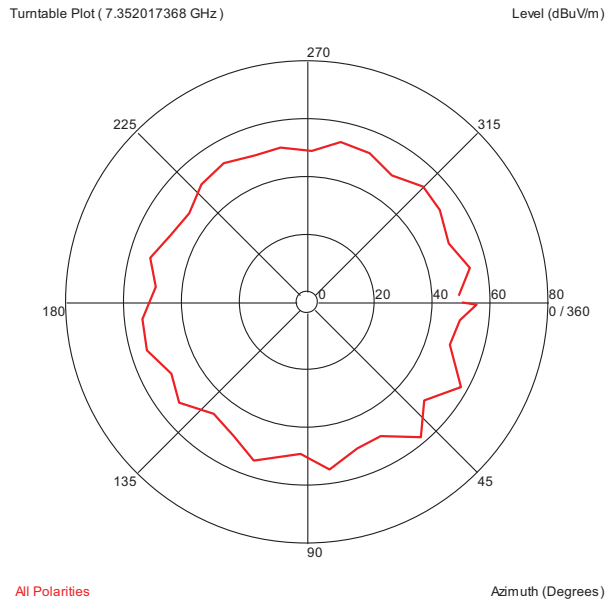
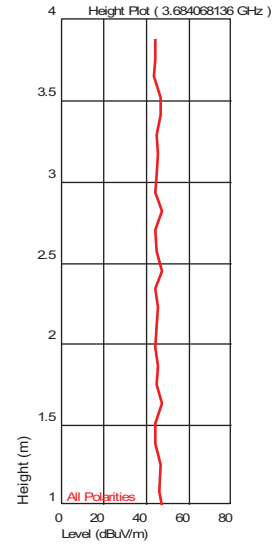
**Trace3: Measured Average**

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
3.684068136 G	35.57	33.668	-27.019	54.000	-18.43		360	1.74	1 M	Spurious
9.792678691 G	43.45	37.651	-22.614	54.000	-10.55	--	141	2.80	1 M	Spurious
7.352017368 G	45.44	36.041	-23.418	54.000	-8.56		61	1.69	1 M	Spurious

Azimuth Plots

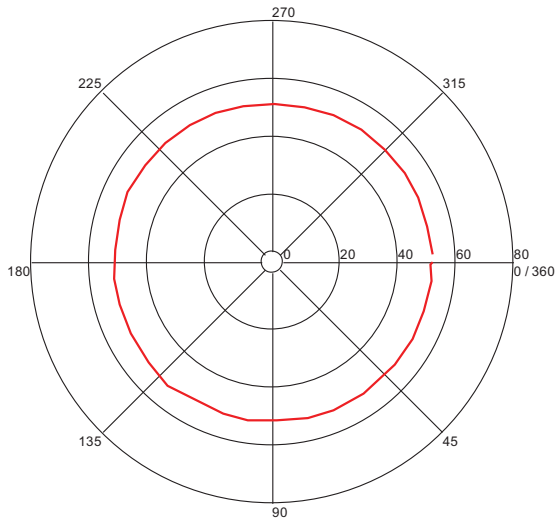


Turntable Plots



Turntable Plot ( 9.792678691 GHz )

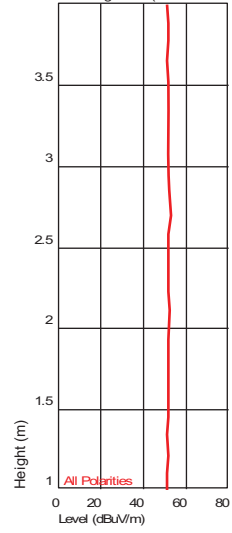
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 9.792678691 GHz )



All Polarities



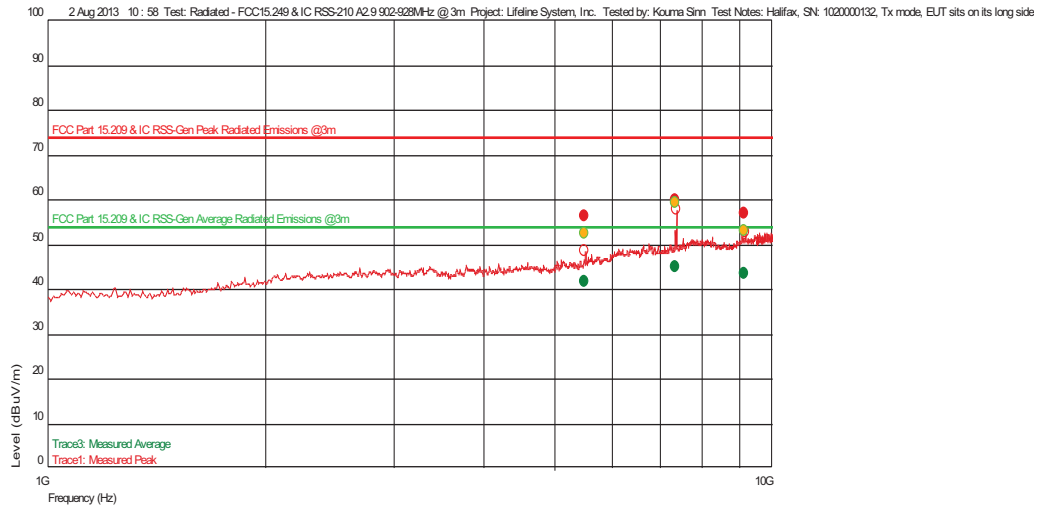
**Halifax, Tx Mode, EUT sits on its long side, 1-10 GHz**

**Test Information**

Test Details	User Entry
Test:	Radiated - FCC15.249 & IC RSS-210 A2.9 902-928MHz @ 3m
Project:	Lifeline System, Inc.
Test Notes:	Halifax, SN: 1020000132, Tx mode, EUT sits on its long side
Temperature:	22C
Humidity:	59%, 1000mbar
Tested by:	Kouma Sinn
Test Started:	2 Aug 2013 10 : 58

Additional Information

**Prescan Emission Graph**



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

**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
5.513907816 G	56.23	34.917	-25.182	74.000	-17.77	--	1	1.92	1 M	Spurious
9.171883767 G	57.01	37.038	-22.356	74.000	-16.99	--	339	1.67	1 M	Spurious
7.367929192 G	59.82	36.047	-23.388	74.000	-14.18	--	-1	1.45	1 M	Spurious

**Trace3: Measured Average**

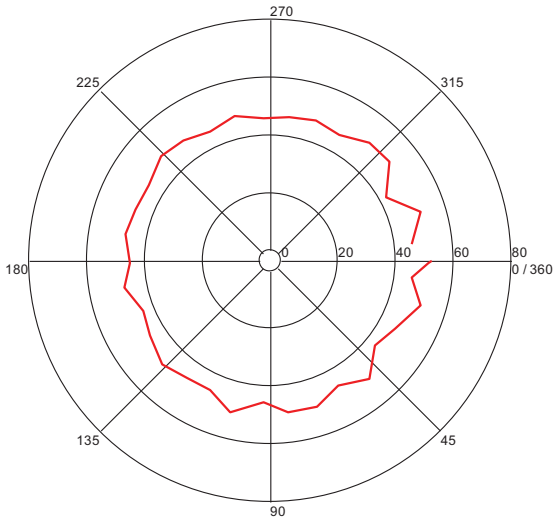
Frequency(Hz)	Level (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ( )	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
5.513907816 G	41.79	34.917	-25.182	54.000	-12.21	--	1	1.92	1 M	Spurious
9.171883767 G	43.44	37.038	-22.356	54.000	-10.56	--	339	1.67	1 M	Spurious
7.367929192 G	44.82	36.047	-23.388	54.000	-9.18	--	-1	1.45	1 M	Spurious

Azimuth Plots

Turntable Plots

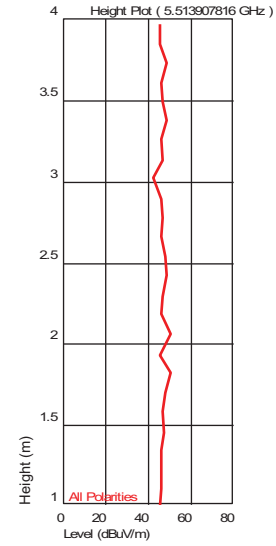
Turntable Plot ( 5.513907816 GHz )

Level (dBuV/m)



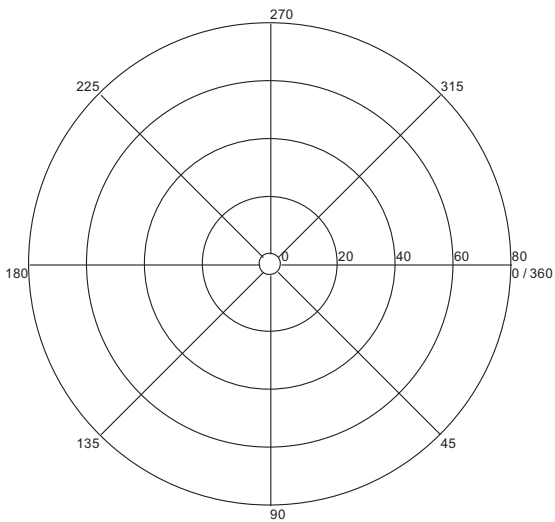
All Polarities

Azimuth (Degrees)



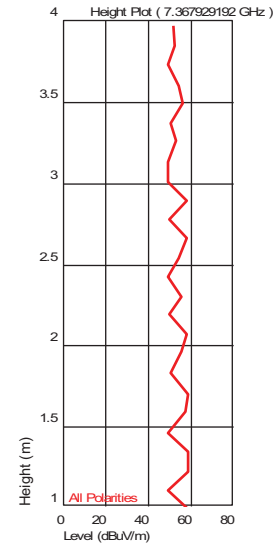
Turntable Plot ( 7.367929192 GHz )

Level (dBuV/m)



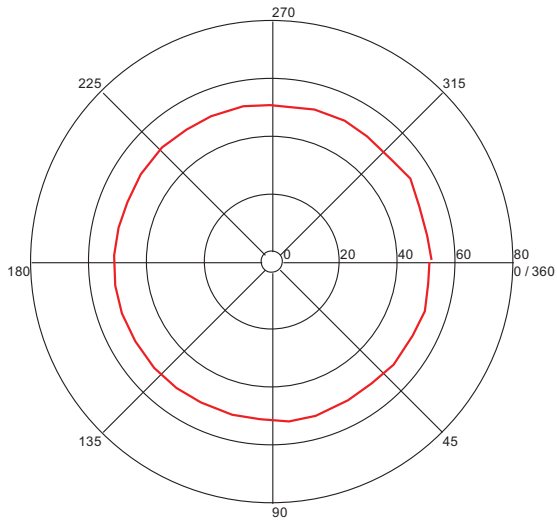
All Polarities

Azimuth (Degrees)



Turntable Plot ( 9.171883767 GHz )

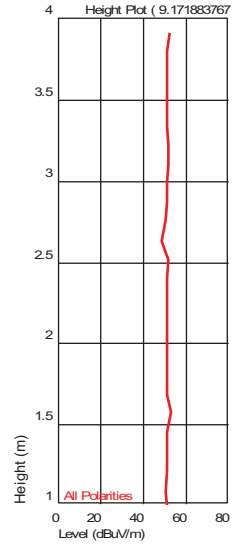
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 9.171883767 GHz )



All Polarities

Test Date: 08/02/2013

Test Personnel: Kouma Sinn *KPS*  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable) Engineer: N/A  
 Product Standard: FCC 15 Subpart B, ICES-003  
 Input Voltage: 3.3V (internal battery)  
 Pretest Verification w/ Ambient Signals or BB Source: Ambient Signals

Limit Applied: All Class B  
 Ambient Temperature: 22 °C  
 Relative Humidity: 59 %  
 Atmospheric Pressure: 1000 mbars

Deviations, Additions, or Exclusions: None

## 8 Receiver Spurious Radiated Emissions

### 8.1 Method

Tests are performed in accordance with FCC 47CFR Part 15:2013 Subpart B Class B, ICES-003 Issue 5 August 2012, and ANSI C63.4:2009.

**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

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

### Sample Calculation

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

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in 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 $\mu$ 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 $\mu$ V/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/m  
 CF = 1.6 dB  
 AG = 29.0 dB  
 FS = 32 dB $\mu$ V/m

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

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

$$NF = \text{Net Reading in dB}\mu\text{V}$$

#### Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

**8.2 Test Equipment Used:**

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61A	09/25/2012	09/25/2014
145106'	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	09/04/2012	09/04/2013
145-410'	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2012	10/04/2013
145003'	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	10/04/2012	10/04/2013
145128'	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	09/28/2012	09/28/2013
ETS001'	1-18GHz DRG Horn Antenna	ETS-Lindgren	3117	00143259	12/17/2012	12/17/2013
145-416'	Cables 145-400 145-402 145-404 145-408	Huber + Suhner	3m Track B cables	multiple	10/04/2012	10/04/2013
145014'	Preamplifier (1 GHz to 26.5 GHz)	Hewlett Packard	8449B	3008A00232	12/13/2012	12/13/2013
REA003'	1GHz High Pass Filter	Reactel, Inc	7HS-1G/10G-S11	06-1	11/30/2011	11/30/2013

**Software Utilized:**

Name	Manufacturer	Version
C5	Teseq	5.26.46.46

**8.3 Results:**

The sample tested was found to Comply.

**8.4 Setup Photographs:**

30-1000 MHz (Idle/Receiver Mode)

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**

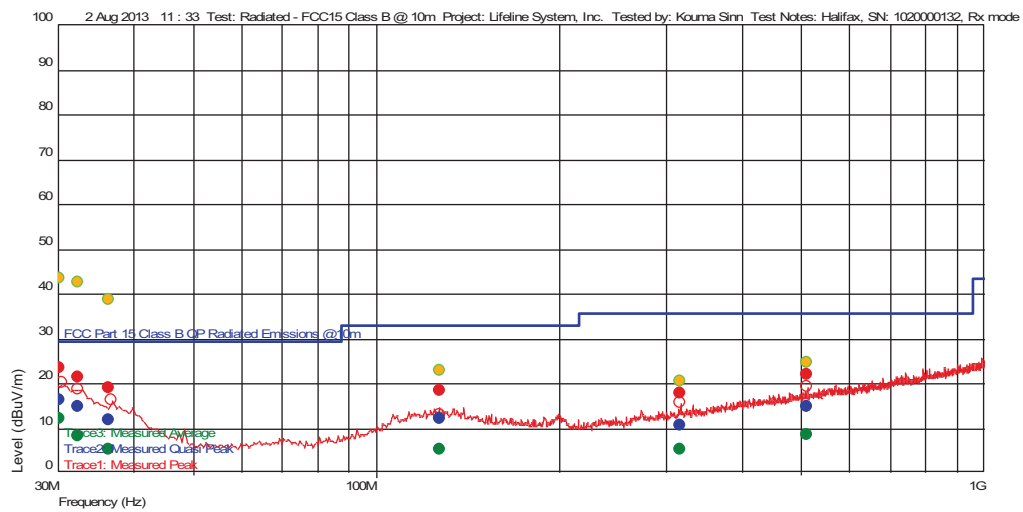
### 8.5 Plots/Data:

#### Halifax, Rx Mode, 30-1000MHz

#### Test Information

Test Details	User Entry	Additional Information
Test:	Radiated - FCC15 Class B @ 10m	
Project:	Lifeline System, Inc.	
Test Notes:	Halifax, SN: 1020000132, Rx mode	
Temperature:	22C	
Humidity:	59%, 1000mbar	
Tested by:	Kouma Sinn	
Test Started:	2 Aug 2013 11 : 33	

#### Prescan Emission Graph



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

#### Emissions Test Data

##### Trace1: Measured Peak

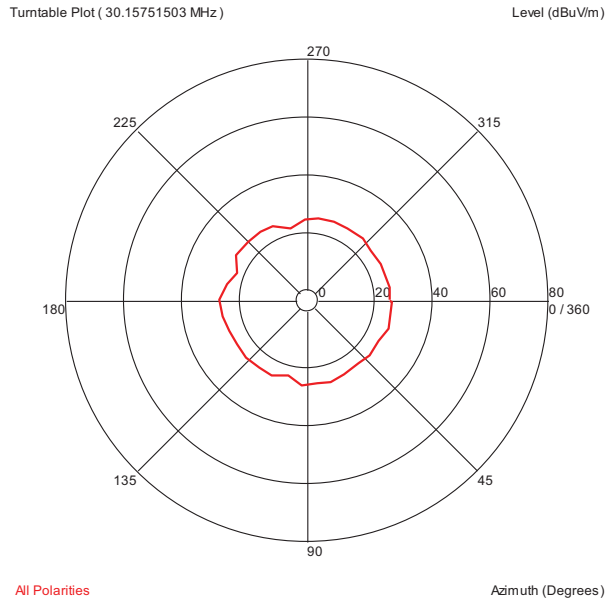
Frequency(Hz)	Level (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ( )	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
316.896392836 M	17.82	14.238	-23.958	--	--		69	1.76	120 k	
127.629058395 M	18.48	13.947	-24.660	--	--	--	360	2.45	120 k	
511.628456465 M	21.89	18.033	-24.709	--	--	--	275	3.76	120 k	
36.453306399 M	18.86	16.341	-26.369	--	--		328	1.76	120 k	
32.401803888 M	21.32	19.119	-26.427	--	--		1	2.76	120 k	
30.15751503 M	23.52	20.690	-26.467	--	--	--	192	2.97	120 k	

##### Trace2: Measured Quasi Peak

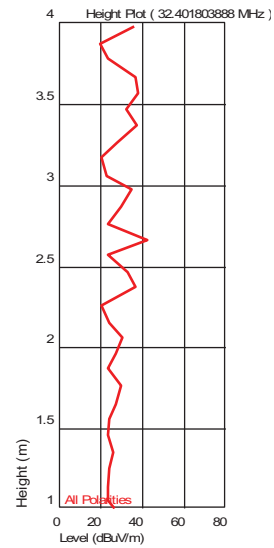
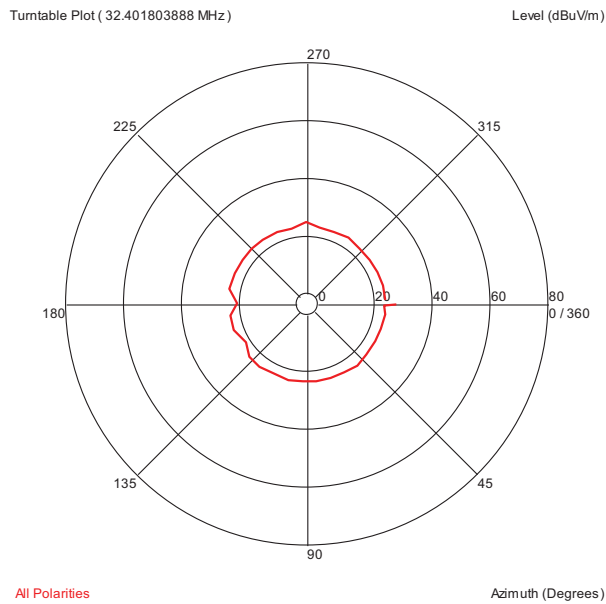
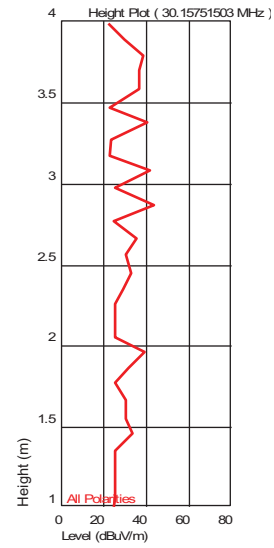
Frequency(Hz)	Level (dBuV/m)	AF	PA+CL	Limit(dBuV/m)	Margin(dBuV/m)	Hor (-), Ver ( )	Azimuth (deg)(Deg)	Mast Height(m)	RBW(Hz)	Comment
316.896392836 M	10.56	14.238	-23.958	35.540	-24.98		69	1.76	120 k	
127.629058395 M	12.00	13.947	-24.660	33.040	-21.04	--	360	2.45	120 k	
511.628456465 M	14.90	18.033	-24.709	35.540	-20.64	--	275	3.76	120 k	
36.453306399 M	11.79	16.341	-26.369	29.540	-17.75		328	1.76	120 k	
32.401803888 M	14.74	19.119	-26.427	29.540	-14.80		1	2.76	120 k	
30.15751503 M	16.39	20.690	-26.467	29.540	-13.15	--	192	2.97	120 k	



Azimuth Plots

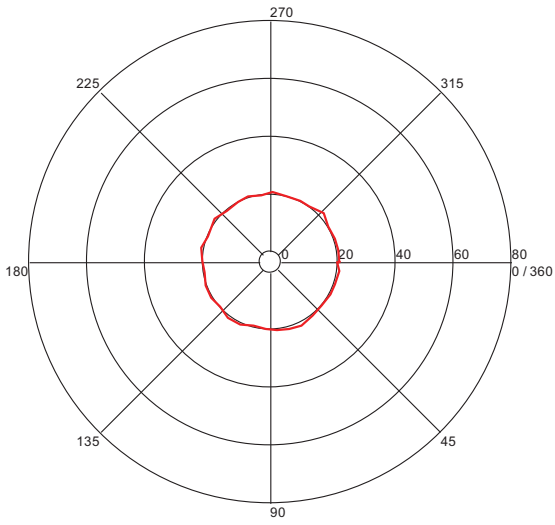


Turntable Plots



Turntable Plot ( 36.453306399 MHz )

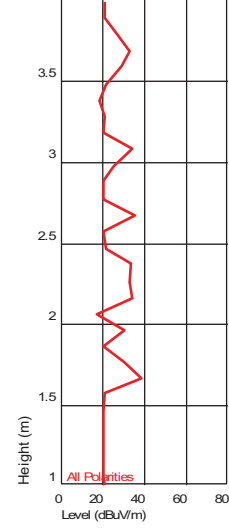
Level (dBuV/m)



All Polarities

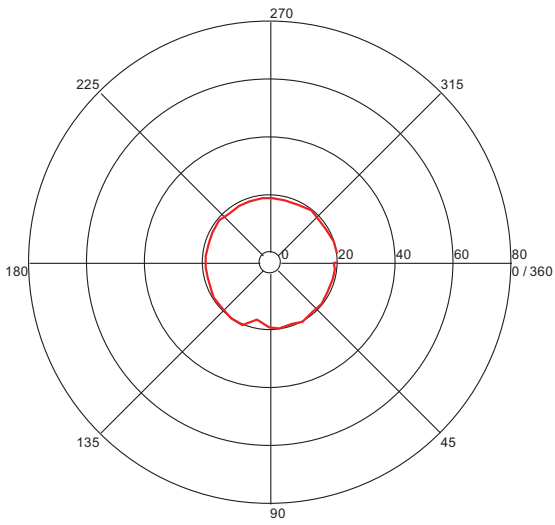
Azimuth (Degrees)

Height Plot ( 36.453306399 MHz )



Turntable Plot ( 127.629058395 MHz )

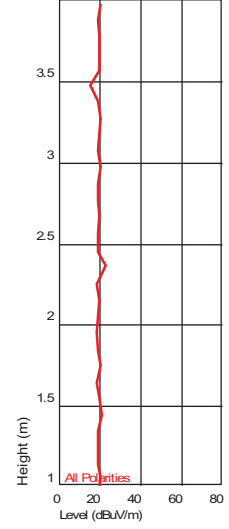
Level (dBuV/m)



All Polarities

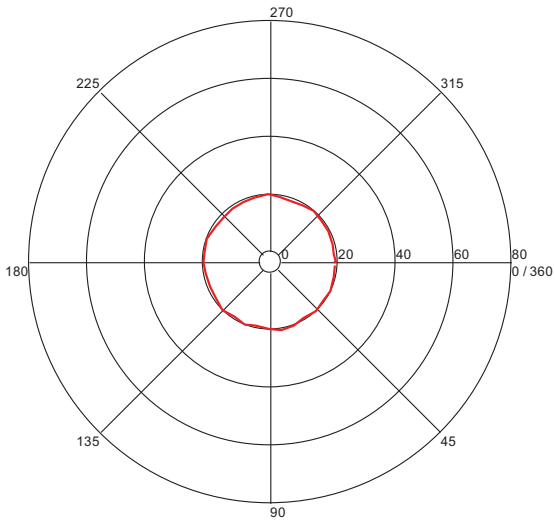
Azimuth (Degrees)

Height Plot ( 127.629058395 MHz )



Turntable Plot ( 316.896392836 MHz )

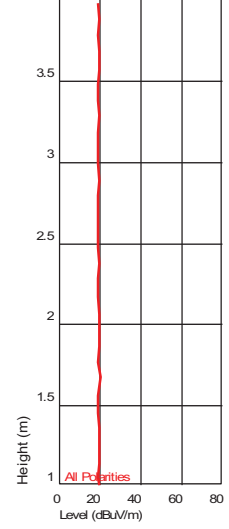
Level (dBuV/m)



All Polarities

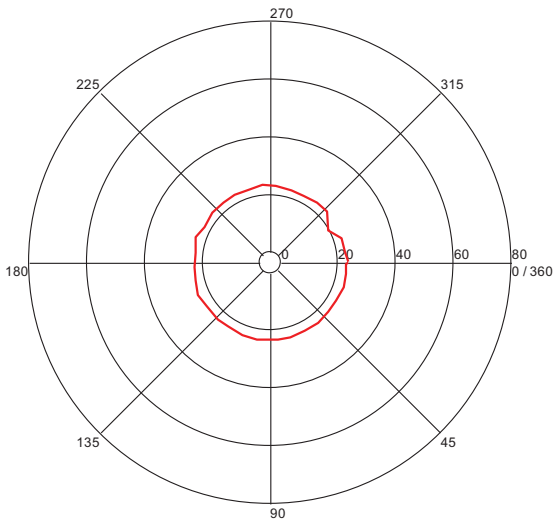
Azimuth (Degrees)

Height Plot ( 316.896392836 MHz )



Turntable Plot ( 511.628456465 MHz )

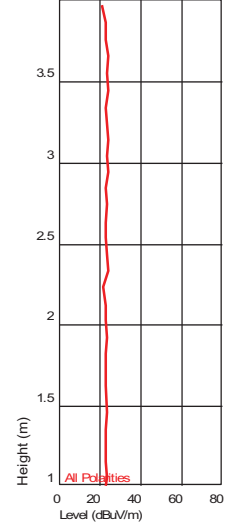
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 511.628456465 MHz )

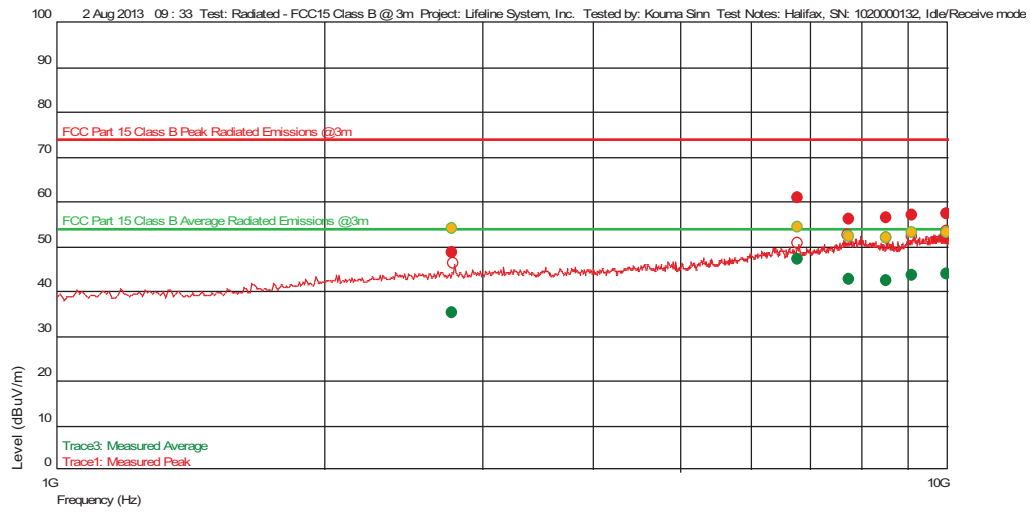


**Halifax, Idle/Receive Mode, 1-10 GHz**

**Test Information**

Test Details	User Entry	Additional Information
Test:	Radiated - FCC15 Class B @ 3m	
Project:	Lifeline System, Inc.	
Test Notes:	Halifax, SN: 1020000132, Idle/Receive mode	
Temperature:	22C	
Humidity:	59%, 1000mbar	
Tested by:	Kouma Sinn	
Test Started:	2 Aug 2013 09 : 33	

**Prescan Emission Graph**



- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><span style="color: red;">●</span> Measured Peak Value</li> <li><span style="color: blue;">●</span> Measured Quasi Peak Value</li> <li><span style="color: green;">●</span> Measured Average Value</li> <li><span style="color: yellow;">●</span> Maximum Value of Mast and Turntable</li> </ul> | <ul style="list-style-type: none"> <li><span style="color: red;">—</span> Swept Peak Data</li> <li><span style="color: blue;">—</span> Swept Quasi Peak Data</li> <li><span style="color: green;">—</span> Swept Average Data</li> </ul> |
|---|--|

**Emissions Test Data**

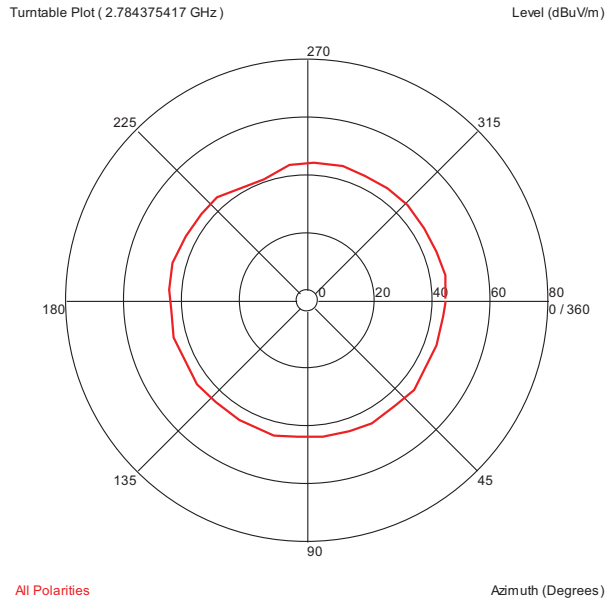
**Trace1: Measured Peak**

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
2.784375417 G	48.65	32.941	-27.389	74.000	-25.35		208	2.03	1 M	
7.748937876 G	56.03	36.299	-22.732	74.000	-17.97		353	3.36	1 M	
8.553340013 G	56.24	36.621	-22.842	74.000	-17.76	--	105	2.52	1 M	
9.119231797 G	56.99	36.995	-22.330	74.000	-17.01		360	3.99	1 M	
9.991670007 G	57.14	37.890	-22.677	74.000	-16.86		44	4.01	1 M	
6.79261857 G	60.81	35.817	-23.777	74.000	-13.19		1	1.09	1 M	

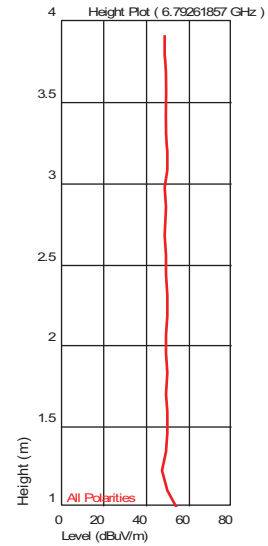
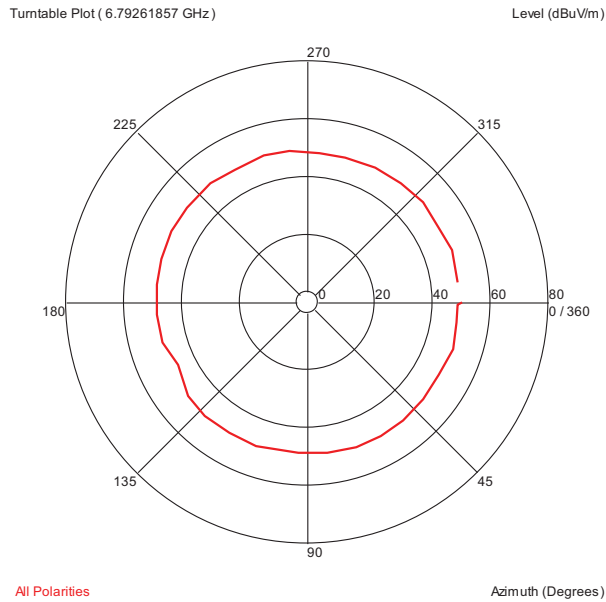
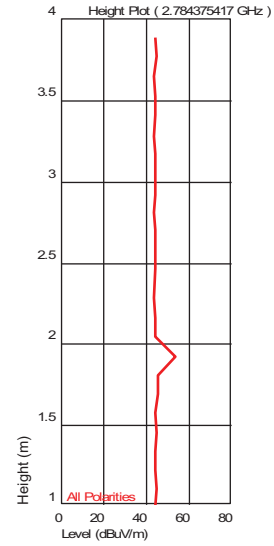
**Trace3: Measured Average**

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
2.784375417 G	35.10	32.941	-27.389	54.000	-18.90		208	2.03	1 M	
8.553340013 G	42.19	36.621	-22.842	54.000	-11.81	--	105	2.52	1 M	
7.748937876 G	42.65	36.299	-22.732	54.000	-11.35		353	3.36	1 M	
9.119231797 G	43.42	36.995	-22.330	54.000	-10.58		360	3.99	1 M	
9.991670007 G	43.80	37.890	-22.677	54.000	-10.20		44	4.01	1 M	
6.79261857 G	46.98	35.817	-23.777	54.000	-7.02		1	1.09	1 M	

Azimuth Plots

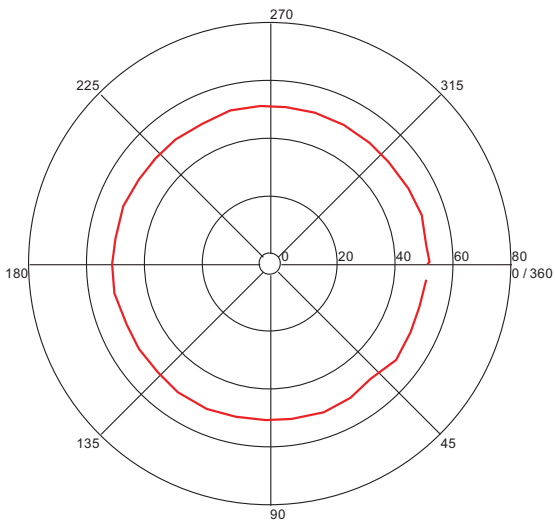


Turntable Plots



Turntable Plot ( 7.748937876 GHz )

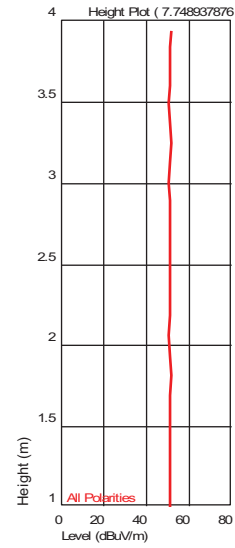
Level (dBuV/m)



All Polarities

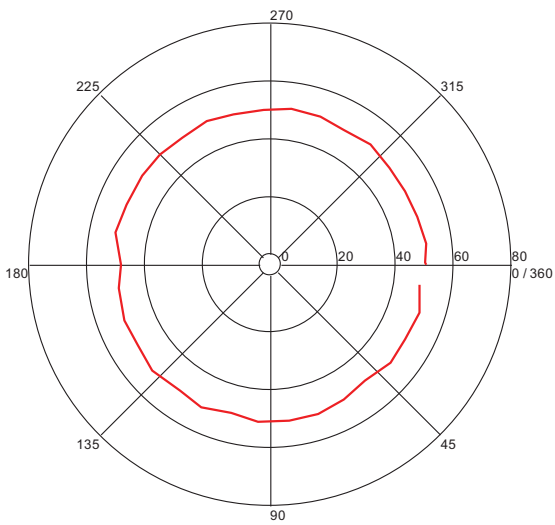
Azimuth (Degrees)

Height Plot ( 7.748937876 GHz )



Turntable Plot ( 8.553340013 GHz )

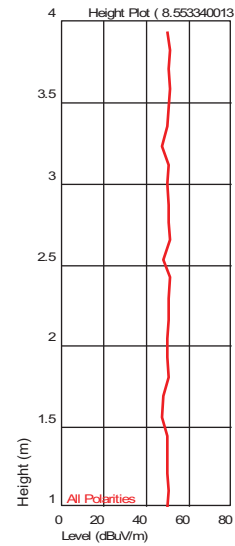
Level (dBuV/m)



All Polarities

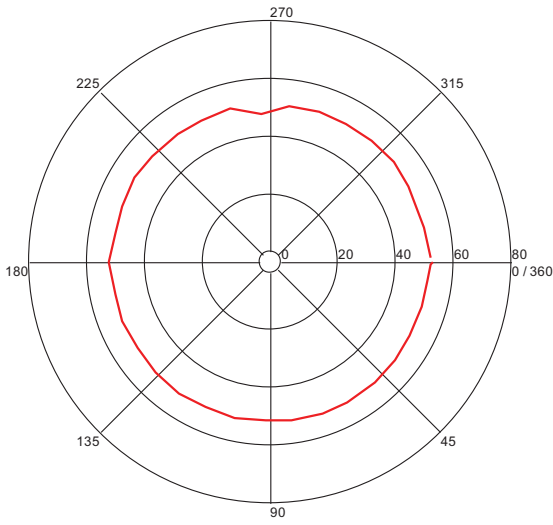
Azimuth (Degrees)

Height Plot ( 8.553340013 GHz )



Turntable Plot ( 9.119231797 GHz )

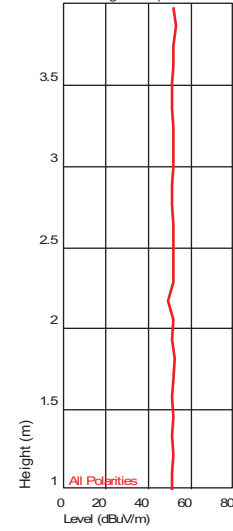
Level (dBuV/m)



All Polarities

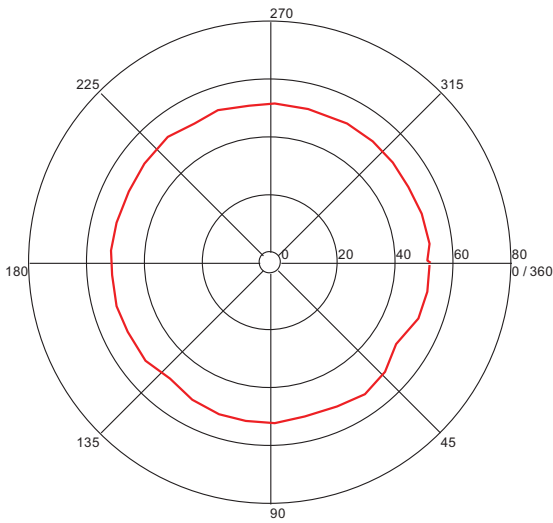
Azimuth (Degrees)

Height Plot ( 9.119231797 GHz )



Turntable Plot ( 9.991670007 GHz )

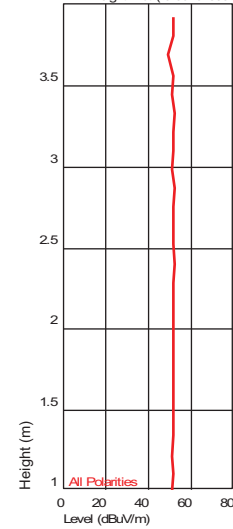
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot ( 9.991670007 GHz )



Test Personnel: Kouma Sinn *KPS*  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable) N/A  
 Product Standard: FCC 15 Subpart B, ICES-003  
 Input Voltage: 3.3V (internal battery)  
 Pretest Verification w/ Ambient Signals or BB Source: **Ambient Signals**

Test Date: 08/02/2013

Limit Applied: All Class B

Ambient Temperature: 22 °C

Relative Humidity: 59 %

Atmospheric Pressure: 1000 mbars

Deviations, Additions, or Exclusions: None

## 9 20 dB Bandwidth

### 9.1 Method

Tests are performed in accordance with FCC 47CFR Part 15:2013 Subpart C 15.249, RSS-210 Issue 8 December 2010, and ANSI C63.4:2009.

**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.

### 9.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
DAV004'	Weather Station	Davis Instruments	7400	PE80529A61A	09/25/2012	09/25/2014
145106'	Bilog Antenna (30MHz - 5GHz)	Sunol Sciences	JB5	A111003	09/04/2012	09/04/2013
145-410'	Cables 145-400 145-403 145-405 145-406 145-407	Huber + Suhner	10m Track A Cables	multiple	10/04/2012	10/04/2013
145003'	Preamplifier (150 KHz to 1.3 GHz)	Hewlett Packard	8447D	2443A04077	10/04/2012	10/04/2013
145128'	EMI Receiver 40 GHz (20 Hz - 40 Ghz)	Rohde & Schwarz	ESI	8392831001	09/28/2012	09/28/2013

#### Software Utilized:

Name	Manufacturer	Version
None		

### 9.3 Results:

The sample tested was found to Comply.

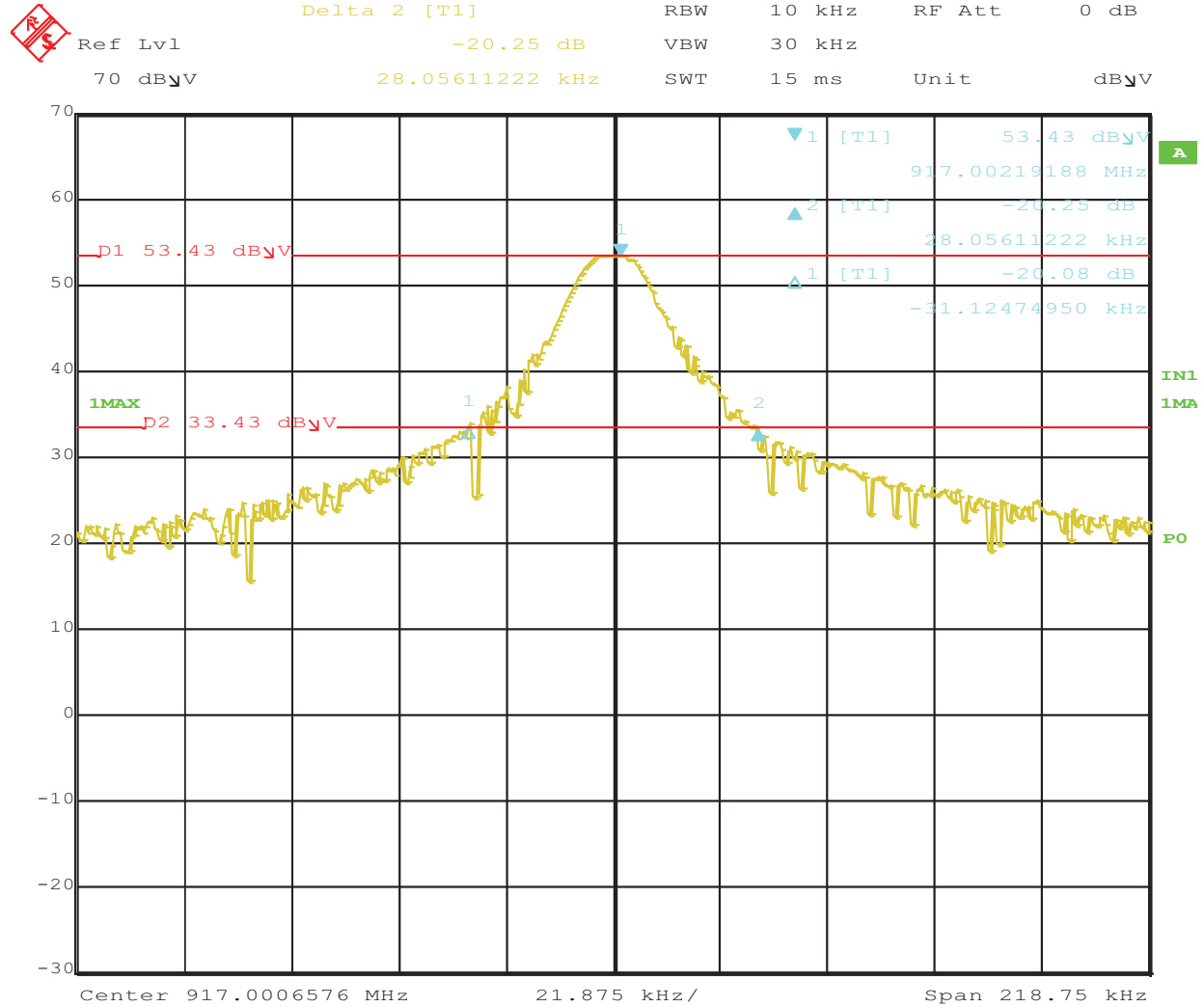


**9.4 Setup Photograph:**

**This Picture Can be found in a different Exhibit:  
Halifax- Pictures for EMC  
Test Setups (7000PHB)**

9.5 Plots/Data:

Fundamental Frequency, 917 MHz, 20 dB Bandwidth

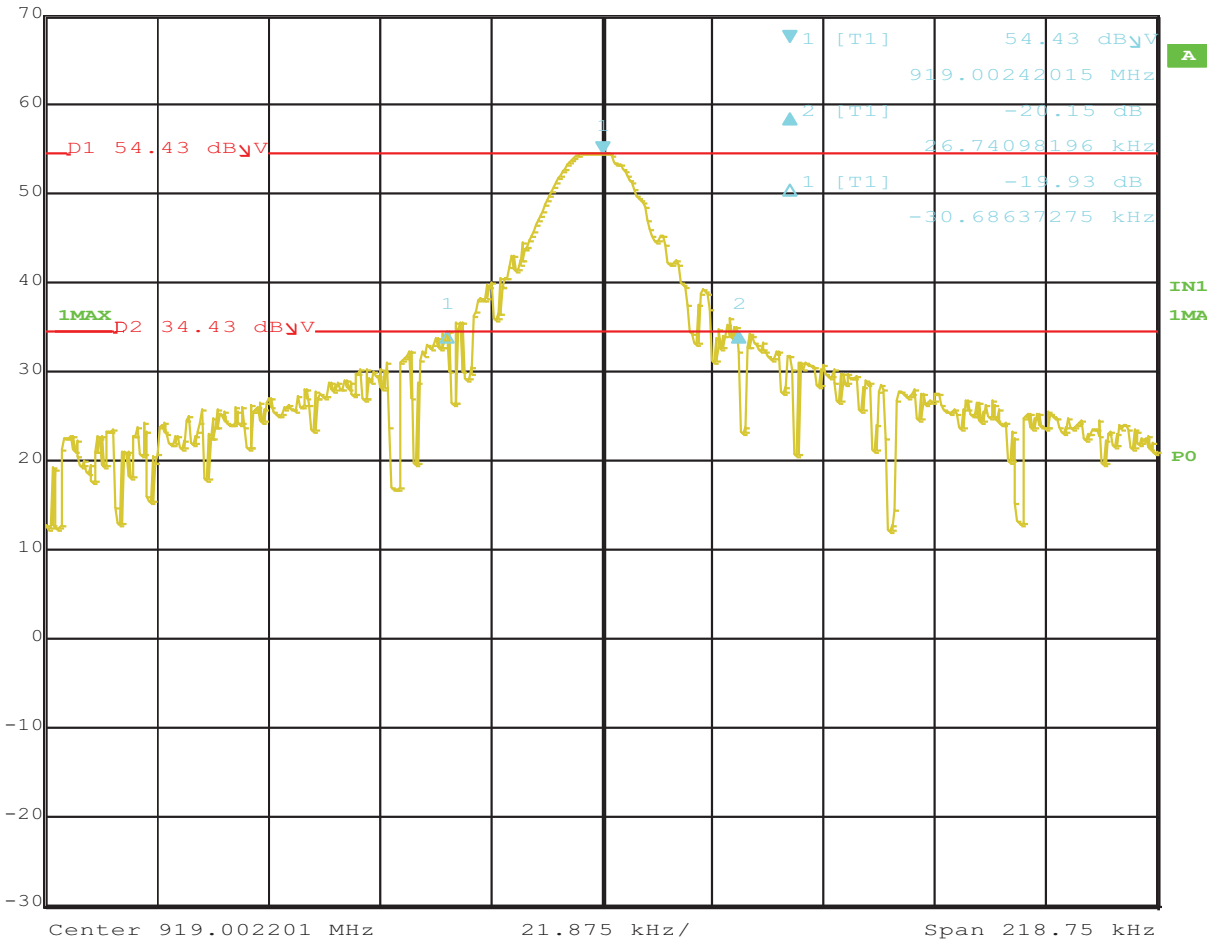


Date: 2.AUG.2013 15:13:53

Fundamental Frequency, 919 MHz, 20 dB Bandwidth

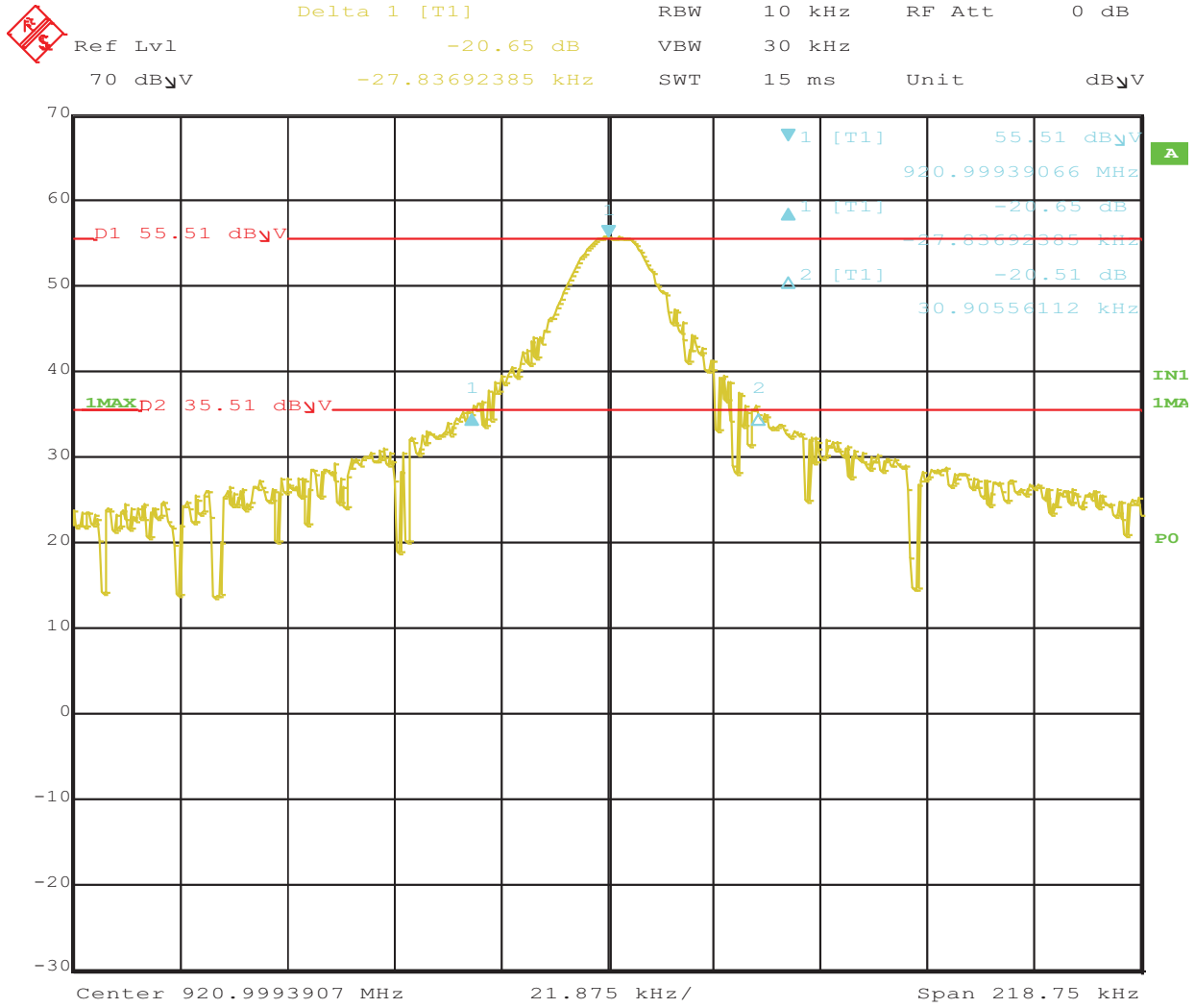


	Delta 2 [T1]	RBW	10 kHz	RF Att	0 dB
Ref Lvl	-20.15 dB	VBW	30 kHz		
70 dB $\mu$ V	26.74098196 kHz	SWT	15 ms	Unit	dB $\mu$ V



Date: 2.AUG.2013 14:26:53

**Fundamental Frequency, 921 MHz, 20 dB Bandwidth**



Date: 2.AUG.2013 14:49:11

Test Personnel: Kouma Sinn *KPS*  
 Supervising/Reviewing Engineer: \_\_\_\_\_  
 (Where Applicable) N/A  
 Product Standard: FCC15.249, RSS-210  
 Input Voltage: 3.3V (internal battery)  
 Pretest Verification w/ Ambient Signals or BB Source: Ambient Signals

Test Date: 08/02/2013  
 Limit Applied: No limit  
 Ambient Temperature: 22 °C  
 Relative Humidity: 59 %  
 Atmospheric Pressure: 1000 mbars

Deviations, Additions, or Exclusions: None

**10 Revision History**

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	08/06/2013	101276754BOX-001	<i>VSV</i>	MFM <i>MFM</i>	Original Issue