



FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

MOBILE PERSONAL EMERGENCY RESPONSE SYSTEM HANDSET

MODEL NUMBER: ANH1115

FCC ID: 2AGPI-ANH1115
IC ID: 20951-ANH1115

REPORT NUMBER: 15U21636-E1V2

ISSUE DATE: JANUARY 19, 2016

Prepared for
ANELTO
6270 MORNINGSTAR DR SUITE 100
THE COLONY
TX 75056 USA

Prepared by
UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP®

NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Issue	Revisions	Revised By
--	01/14/16		Initial Issue	H. Mustapha
V2	01/19/16		Updated EUT Description Updated antenna gain in section 5.3	H. Mustapha

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. CALIBRATION AND UNCERTAINTY	6
4.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	<i>6</i>
4.2. <i>SAMPLE CALCULATION</i>	<i>6</i>
4.3. <i>MEASUREMENT UNCERTAINTY</i>	<i>7</i>
5. EQUIPMENT UNDER TEST	8
5.1. <i>DESCRIPTION OF EUT</i>	<i>8</i>
5.2. <i>MAXIMUM OUTPUT E-FIELD STRENGTH</i>	<i>8</i>
5.3. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	<i>8</i>
5.4. <i>SOFTWARE AND FIRMWARE</i>	<i>8</i>
5.5. <i>WORST-CASE CONFIGURATION AND MODE</i>	<i>8</i>
5.6. <i>DESCRIPTION OF TEST SETUP</i>	<i>9</i>
6. TEST AND MEASUREMENT EQUIPMENT	11
7. MEASUREMENT METHODS	11
8. ANTENNA PORT TEST RESULTS	12
8.1. <i>ON TIME AND DUTY CYCLE</i>	<i>12</i>
8.2. <i>99% BANDWIDTH</i>	<i>13</i>
9. RADIATED TEST RESULTS	14
9.1. <i>FUNDAMENTAL FREQUENCY RADIATED EMISSION</i>	<i>15</i>
9.2. <i>HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz</i>	<i>16</i>
9.3. <i>WORST-CASE BELOW 1 GHz</i>	<i>17</i>
10. SETUP PHOTOS	19
10.1. <i>ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP</i>	<i>19</i>
10.2. <i>XYZ MEASUREMENT SETUP</i>	<i>20</i>
10.3. <i>RADIATED RF MEASUREMENT SETUP (BELOW 1 GHz)</i>	<i>22</i>
10.4. <i>RADIATED RF MEASUREMENT SETUP (ABOVE 1 GHz)</i>	<i>23</i>

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Anelto
6270 Morningstar Dr.
The Colony, TX 75056 USA

EUT DESCRIPTION: Mobile Personal Emergency Response System Handset

MODEL: ANH1115

SERIAL NUMBER: Handset: B8

DATE TESTED: Sept 14 – Nov 12, 2015

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Verification Services Inc. By:

Huda Mustapha

HUDA MUSTAPHA
PROJECT LEAD
UL Verification Services Inc.



FRANK IBRAHIM
PROGRAM MANAGER
UL Verification Services Inc.

Tested By:

Lionel Lara

LIONEL LARA
WISE LAB ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

47173 Benicia Street	47266 Benicia Street
<input checked="" type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D
<input checked="" type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E
<input checked="" type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F
	<input type="checkbox"/> Chamber G
	<input type="checkbox"/> Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Handset which is part of a Mobile Personal Emergency Response System.

5.2. MAXIMUM OUTPUT E-FIELD STRENGTH

The transmitter has a maximum output peak E-field as follows:

Frequency (MHz)	Mode	Output PK E-field Strength (dBuV/m)
906	2FSK	83.50

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The EUT utilizes a monopole antenna, with a maximum gain of 0 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was HW A, SW version 1.0.

5.5. WORST-CASE CONFIGURATION AND MODE

X,Y,Z investigation was performed and Z orientation was found to be worst-case, therefore, all final radiated emissions was performed using Z orientation. See setup photos section for details.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

N/A

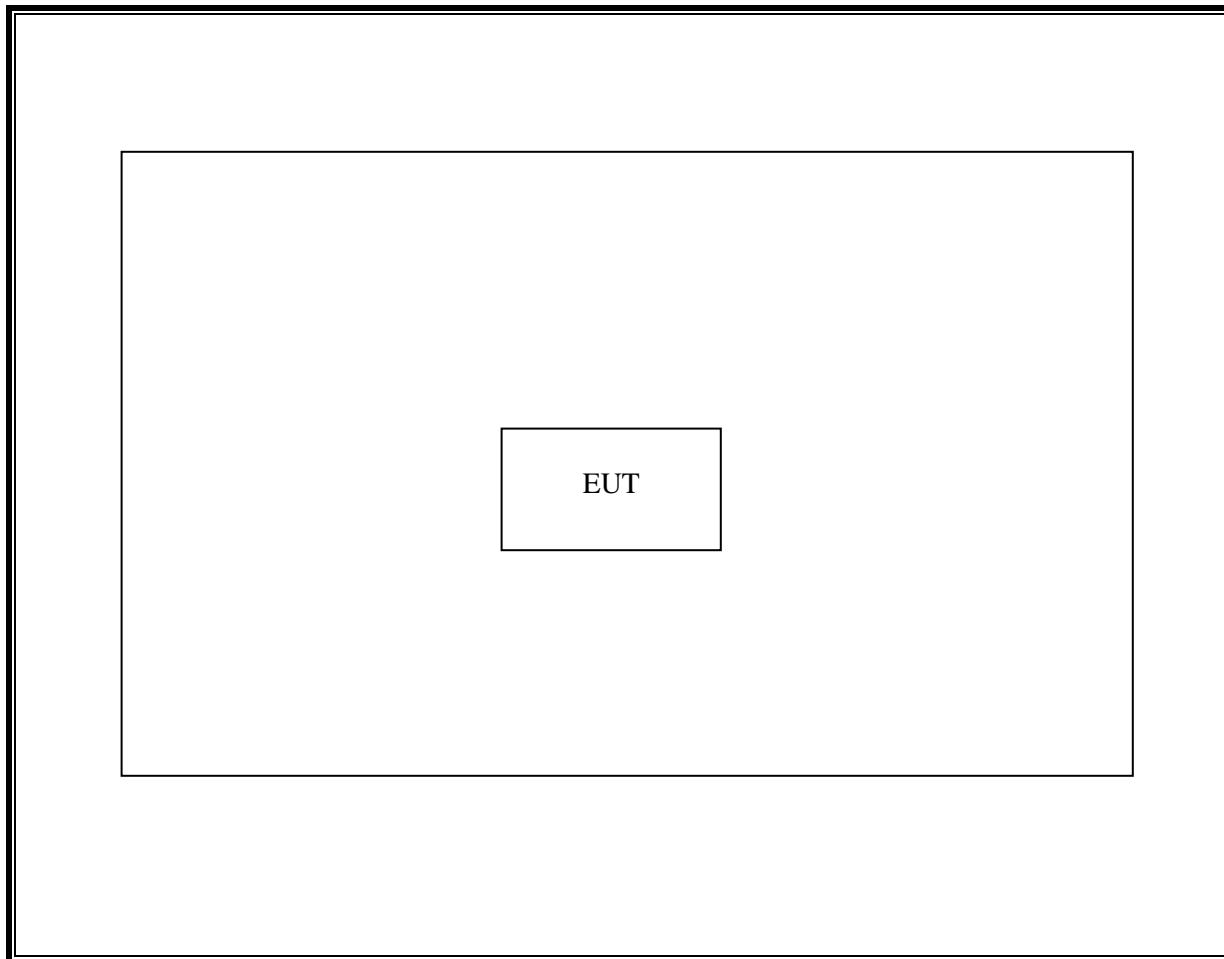
I/O CABLES

N/A

TEST SETUP

The EUT is a stand-alone unit during the tests. The EUT was set to transmit.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List						
Description	Manufacturer	Model	T No.	Cal Date	Cal Due	
Radiated Software	UL	UL EMC			Ver 9.5, July 24, 2015	
Conducted Software	UL	UL EMC			Ver 9.5, June 26, 2015	
Horn Antenna 1-18GHz	ETS	3117	136	01/15/15	01/15/16	
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB3	477	6/10/2015	6/10/2016	
Preamp 10kHz-1000MHz	HP	8447D	10	01/16/15	01/16/16	
Preamp 1-8GHz	Miteq	AMF-4D-01000800-30-29P	782	11/18/14	11/18/15	
Preamp 1-26.5GHz	Agilent	8449B	404	04/13/15	04/13/16	
Amplifier, 26-40GHz	Miteq	NSP4000-SP2	88	04/07/15	04/07/16	
Spectrum Analyzer 3kHz - 44GHz	Agilent	N9030A	907	05/15/15	05/15/16	
LISN for Conducted Emission	FCC	50/250-25-2	24	01/16/15	01/16/16	
Power Sensor	Agilent	N1921A	1223	06/07/15	02/06/16	

7. MEASUREMENT METHODS

On time and duty cycle: ANSI C63.10-2013, Section 11.6.

Radiated emissions: ANSI C63.10-2013, Sections 6.5 and 6.6.

Occupied bandwidth (99% dB): ANSI C63.10-2013, Sections 6.9.3.

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

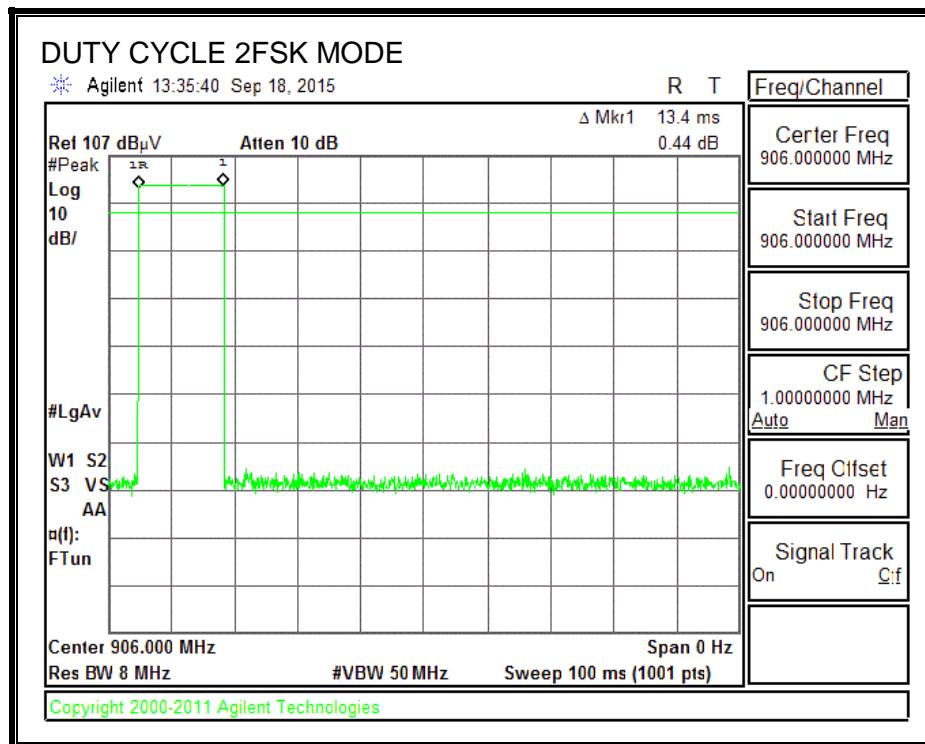
None; for reporting purposes only.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
2FSK	13.400	100.000	0.134	13.40%	17.46

DUTY CYCLE PLOT

HOPPING ON



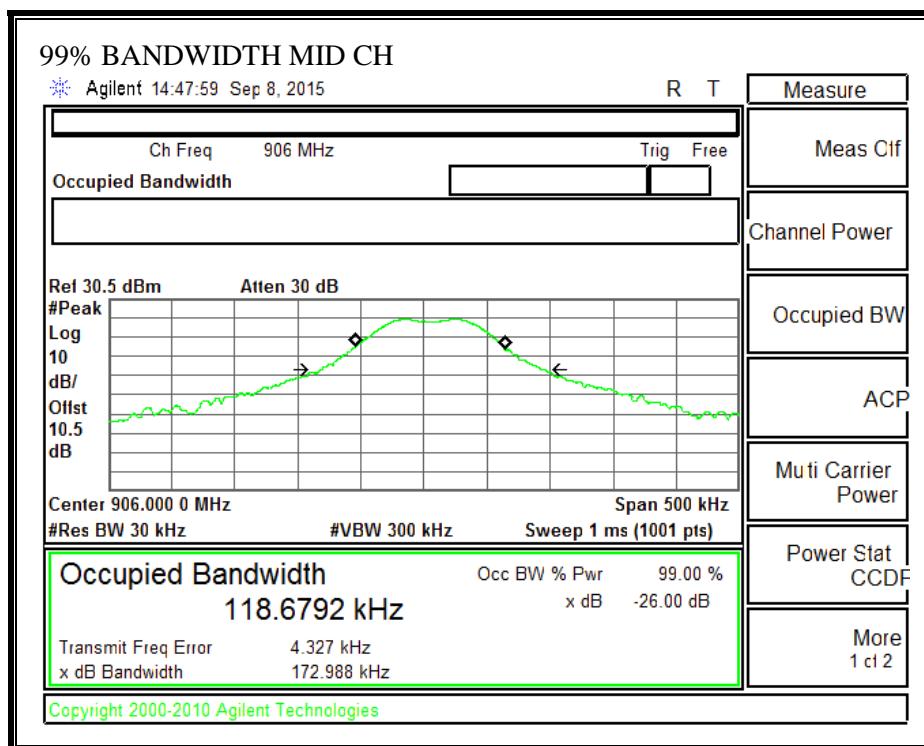
8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (kHz)
Mid	906	118.6792



9. RADIATED TEST RESULTS

LIMIT

IC RSS-210, A2.9
FCC 15.249

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHz, and 24.0–24.25 GHz.

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

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

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.

RESULTS

9.1. FUNDAMENTAL FREQUENCY RADIATED EMISSION

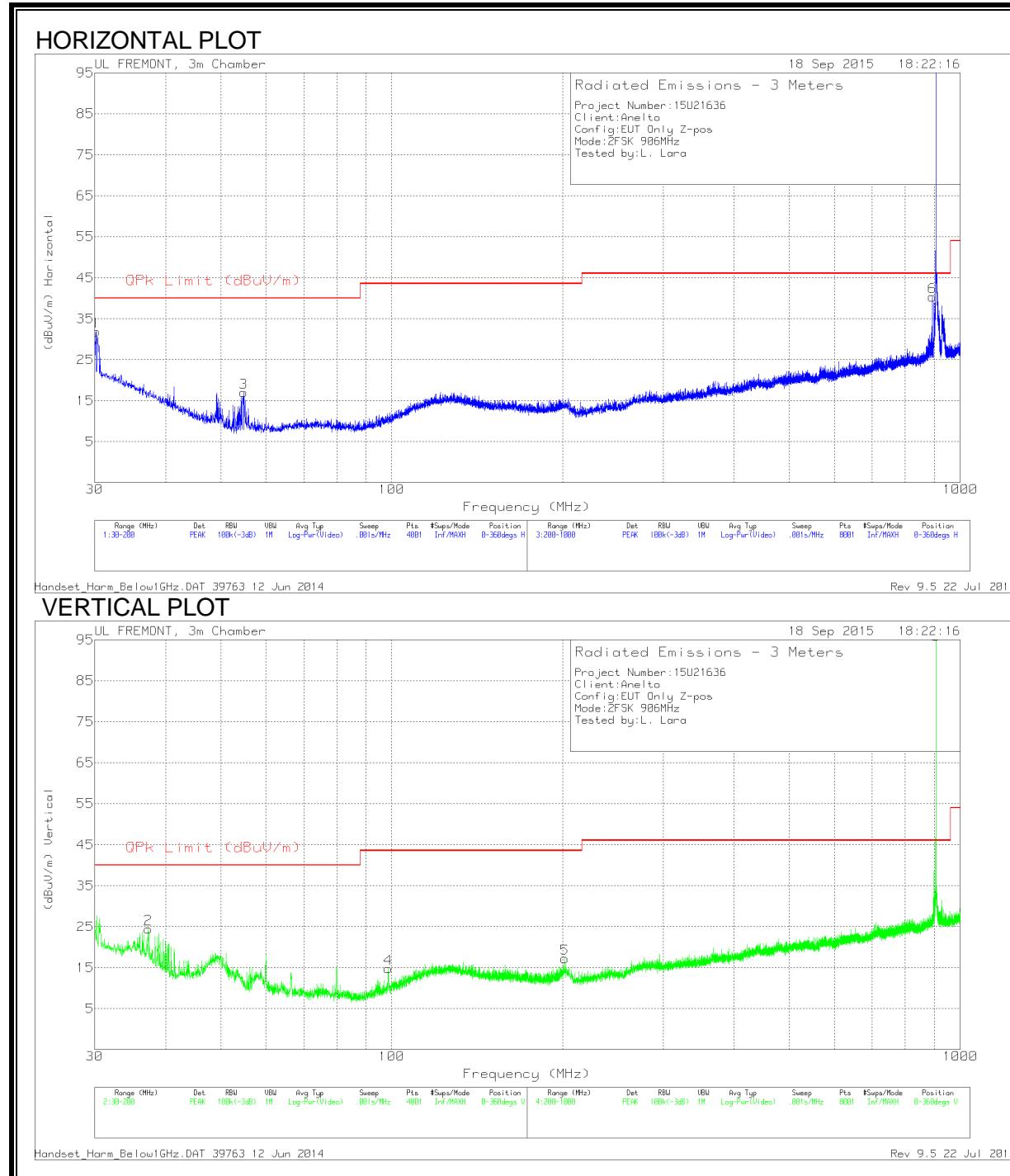
<i>Project #:</i>	15U21636									
<i>Report #:</i>	15U21636									
<i>Date & Time:</i>	11/12/2015									
<i>Test Engr:</i>	Lieu Nguyen									
	Chamber B									
<i>Company:</i>	Anellos, Inc.									
<i>EUT Description:</i>	Handset B8									
<i>Test Configuration:</i>	EUT only									
<i>Type of Test:</i>	FCC 15.249									
<i>Mode of Operation:</i>	Transmitting									
Freq. (MHz)	Pk Rdg (dBuV)	AF (dB)	Closs + Preamp (dB)	Level (dB)	Limit FCC_B (dBuV/m)	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
906.00	80.86	26.50	-23.86	0.00	83.50	94.00	-10.50	3mV	126.00	1.21
906.00	76.95	26.50	-23.86	0.00	79.59	94.00	-14.41	3mH	219.00	1.01

9.2. HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

M% = ((t1+t2+t3+...)/T)*100% =	13.40%	Av Reading = Pk Reading + 20*log(M%)	15U21636										
ON TIME(ms)	T (ms)	20*log(M%) = -17.4579	Anelto										
13.4	100		9/18/2015										
			L. Lara										
			Handset										
Frequency	PK Reading	AV Reading	AF	Gain/Loss	PK Level	AV Level	PK Limit	AV Limit	PK Margin	AV Margin	Pol	Azimuth	Height
1812	53.1	35.64	30.3	-22.7	60.7	43.24	74	54	-13.3	-10.76	V	212	394
1812	56.43	38.97	30.3	-22.7	64.03	46.57	74	54	-9.97	-7.43	H	244	373
2718	48.76	31.30	32.3	-22.1	58.96	41.50	74	54	-15.04	-12.50	V	155	110
2718	48.77	31.31	32.3	-22.1	58.97	41.51	74	54	-15.03	-12.49	H	120	106
3624	55.74	38.28	32.9	-30.8	57.84	40.38	74	54	-16.16	-13.62	V	312	384
3624	58.45	40.99	32.9	-30.8	60.55	43.09	74	54	-13.45	-10.91	H	189	362
6342	51.64	34.18	35.4	-28.2	58.84	41.38	74	54	-15.16	-12.62	V	68	105
6342	45.6	28.14	35.4	-28.2	52.8	35.34	74	54	-21.2	-18.66	H	25	100

9.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.17	37.45	PK	21.6	-27.2	31.85	40	-8.15	0-360	100	H
2	37.2675	35.25	PK	16.3	-27.1	24.45	40	-15.55	0-360	100	V
3	54.905	36.74	PK	7.2	-26.9	17.04	40	-22.96	0-360	100	H
4	98.5525	31.68	PK	9.4	-26.3	14.78	43.52	-28.74	0-360	100	V
5	201.5	30.33	PK	12	-25.1	17.23	43.52	-26.29	0-360	200	V
6	895.156	22.96	QP	22.2	-22.7	22.46	46.02	-23.56	202	274	H
7	*906	109.49	PK	22.1	-22.7	108.89	-	-	0-360	100	H
8	*906	96.42	PK	22.1	-22.7	95.82	-	-	0-360	200	V

* - fundamental frequency