

FCC Part 15B

Measurement and Test Report

For

Insane Enterprises. Inc.

22631 Pacific Coast HWY, Suite 469, Malibu, CA 90265 USA

FCC ID: 2ADMI-SMT1

Test Rule(s):	<u>FCC Part 15 Subpart B</u>
Product Description:	<u>Waterproof rugged phone</u>
Tested Model:	<u>SMT1</u>
Report No.:	<u>STR14118070I-5</u>
Tested Date:	<u>2014-11-12 to 2014-12-06</u>
Issued Date:	<u>2014-12-08</u>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

TABLE OF CONTENTS

1. GENERAL INFORMATION.....	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS.....	4
1.3 TEST METHODOLOGY	4
1.4 TEST FACILITY	4
1.5 EUT SETUP AND OPERATION MODE	5
2. SUMMARY OF TEST RESULTS	6
3. CONDUCTED EMISSIONS	7
3.1 MEASUREMENT UNCERTAINTY	7
3.2 TEST EQUIPMENT LIST AND DETAILS	7
3.3 TEST PROCEDURE.....	7
3.4 BASIC TEST SETUP BLOCK DIAGRAM.....	7
3.5 ENVIRONMENTAL CONDITIONS	8
3.6 SUMMARY OF TEST RESULTS/PLOTS	8
3.7 CONDUCTED EMISSIONS TEST DATA.....	8
4. RADIATED EMISSIONS.....	11
4.1 MEASUREMENT UNCERTAINTY	11
4.2 TEST EQUIPMENT LIST AND DETAILS	11
4.3 TEST PROCEDURE.....	11
4.4 TEST RECEIVER SETUP	12
4.5 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	12
4.6 ENVIRONMENTAL CONDITIONS	12
4.7 SUMMARY OF TEST RESULTS/PLOTS	12

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Insane Enterprises. Inc.
Address of applicant: 22631 Pacific Coast HWY, Suite 469, Malibu, CA 90265
USA

Manufacturer: Insane Enterprises. Inc.
Address of manufacturer: 22631 Pacific Coast HWY, Suite 469, Malibu, CA 90265
USA

General Description of EUT	
Product Name:	Waterproof rugged phone
Brand Name:	Sierra Mountain Technology
Model No.:	SMT1
Hardware Version:	F034_V1.3
Software Version:	F034_ENGLISH_26_V0.1_EMMC_V45_20141101
IMEI:	358903321097928/358903321080536
Rated Voltage:	DC 3.7V Battery
Battery:	Capacitance: 3000mAh
Device Category:	Portable Device
<i>The EUT is dual band GSM850/GSM900/DCS1800/PCS1900, WCDMA Band I/V, Waterproof rugged phone. The Waterproof rugged phone is intended for speech and Multimedia Message Service (MMS) transmission. It is equipped with GPRS/EDGE class 12 for GSM850/PCS1900 and Wi-Fi, Bluetooth, GPS, and camera functions. For more information see the following datasheet.</i>	
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	3.7V
Rated Current:	1.0A
Rated Power:	3.7W
Lowest Internal Frequency:	32.768KHz
Highest Internal Frequency:	4.0GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the Insane Enterprises. Inc. in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

1.4 Test Facility

- **FCC – Registration No.: 934118**

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

- **Industry Canada (IC) Registration No.: 11464A**

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Charging & Playing	Connect to Adapter
TM2	Downloading	Connect to PC
TM3	Camera	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.6	Shielded	Without Core
Earphone	1.1	Unshielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E10	LR-63C8R
Adapter	/	ETA-U90JWS	/

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

3. Conducted Emissions

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.2 Test Equipment List and Details

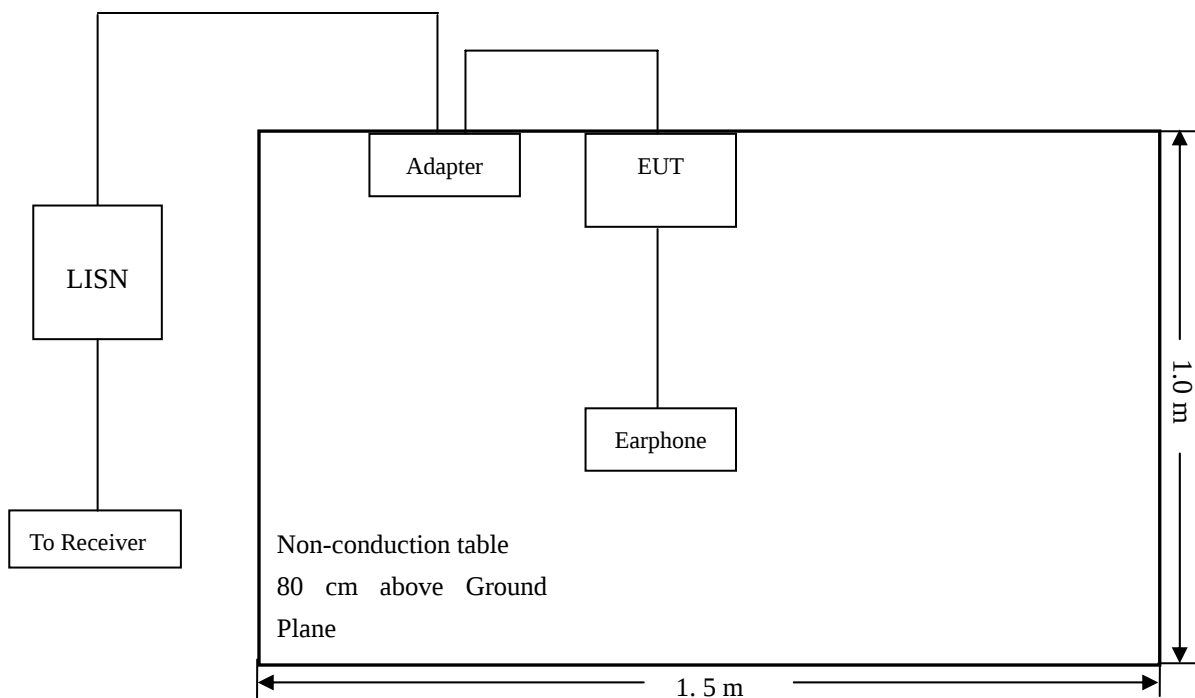
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2014-05-28	2015-05-27
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2014-05-28	2015-05-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2014-05-28	2015-05-27

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

Note: Base on the calibrated result, for the impedance characteristic and insertion loss, the effect shall be ignored from the placed multiple outlet power strip between the device and LISN.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

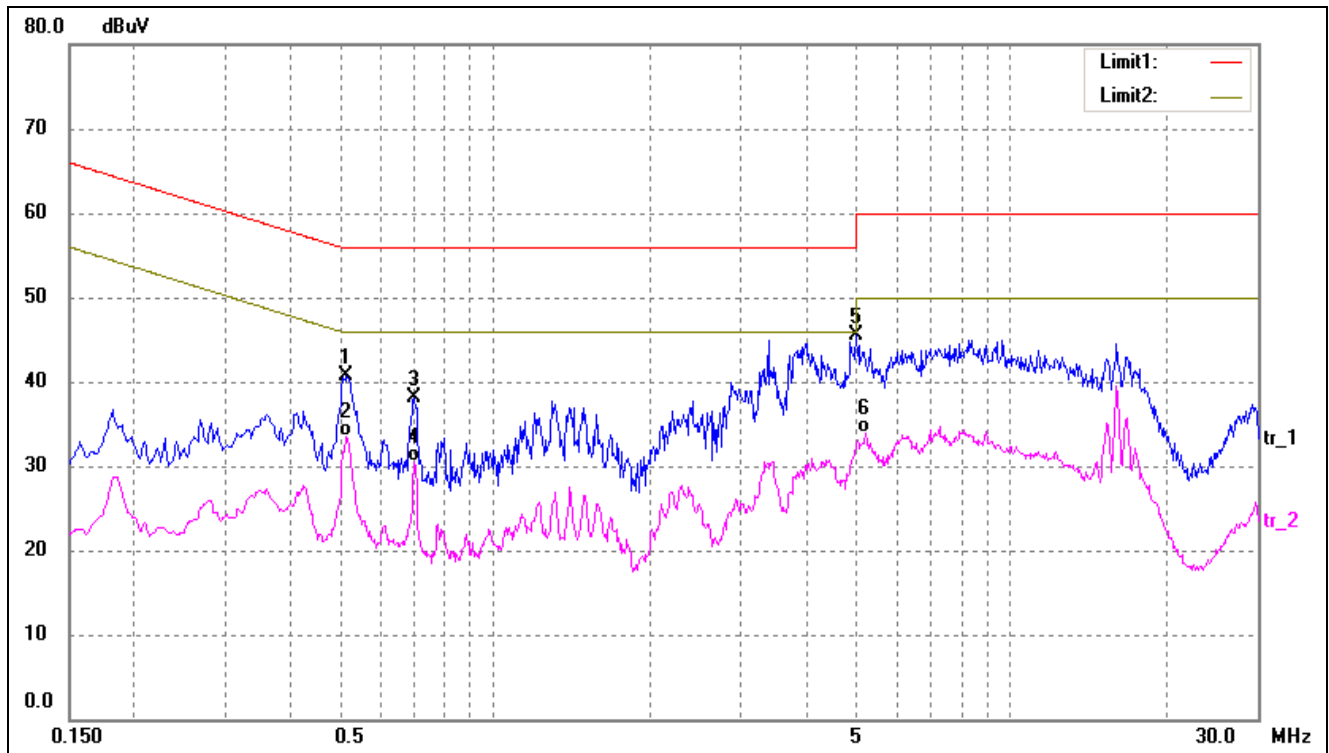
-3.42 dB at 0.5220 MHz in the **Neutral, AV** detector, 0.15-30MHz

3.7 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

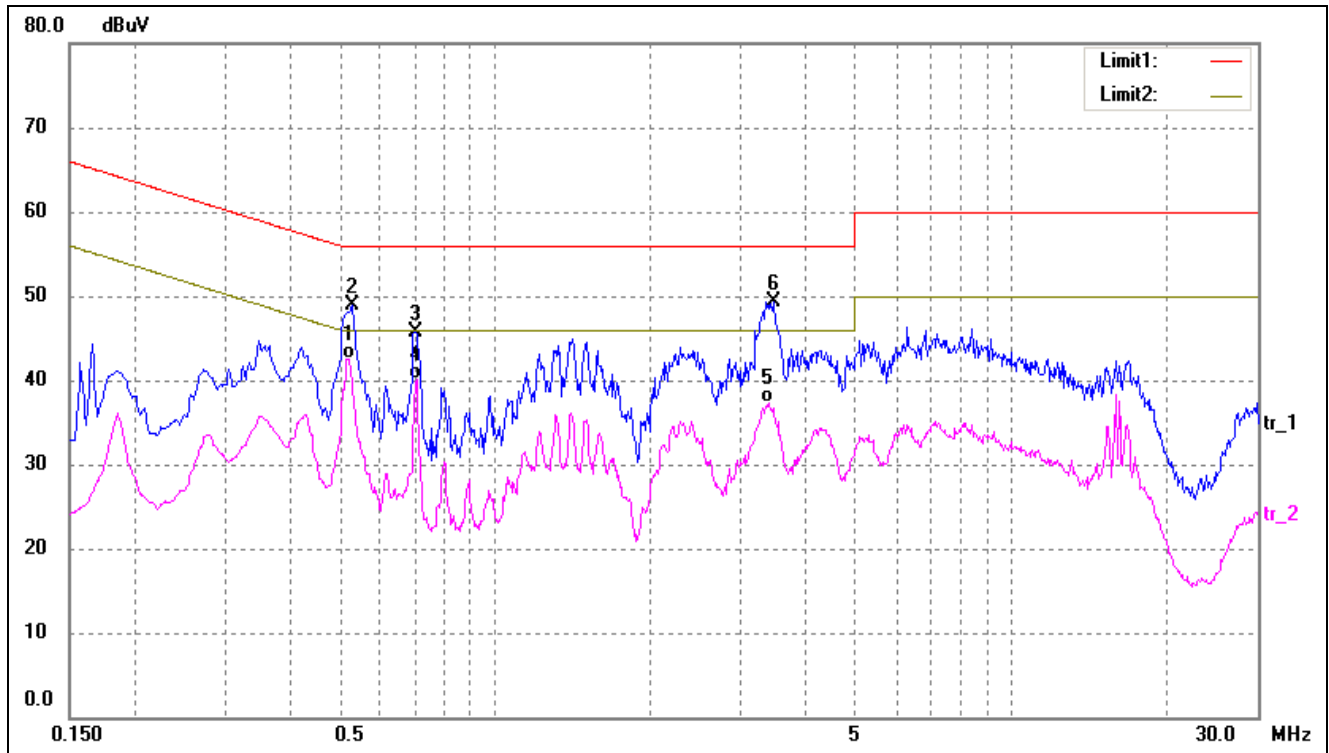
EUT: Waterproof rugged phone
 Tested Model: SMT1
 Operating Condition: TM1
 Comment: AC 120V/60Hz

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.5180	31.27	9.52	40.79	56.00	-15.21	peak
2*	0.5180	23.90	9.52	33.42	46.00	-12.58	AVG
3	0.6980	28.37	9.70	38.07	56.00	-17.93	peak
4	0.6980	20.82	9.70	30.52	46.00	-15.48	AVG
5	5.0260	35.42	10.00	45.42	60.00	-14.58	peak
6	5.2460	23.81	10.00	33.81	50.00	-16.19	AVG

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.5220	33.06	9.52	42.58	46.00	-3.42	AVG
2	0.5300	39.33	9.53	48.86	56.00	-7.14	peak
3	0.7020	36.01	9.70	45.71	56.00	-10.29	peak
4	0.7060	30.31	9.71	40.02	46.00	-5.98	AVG
5	3.3820	27.25	10.00	37.25	46.00	-8.75	AVG
6	3.4580	39.34	10.00	49.34	56.00	-6.66	peak

4. Radiated Emissions

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

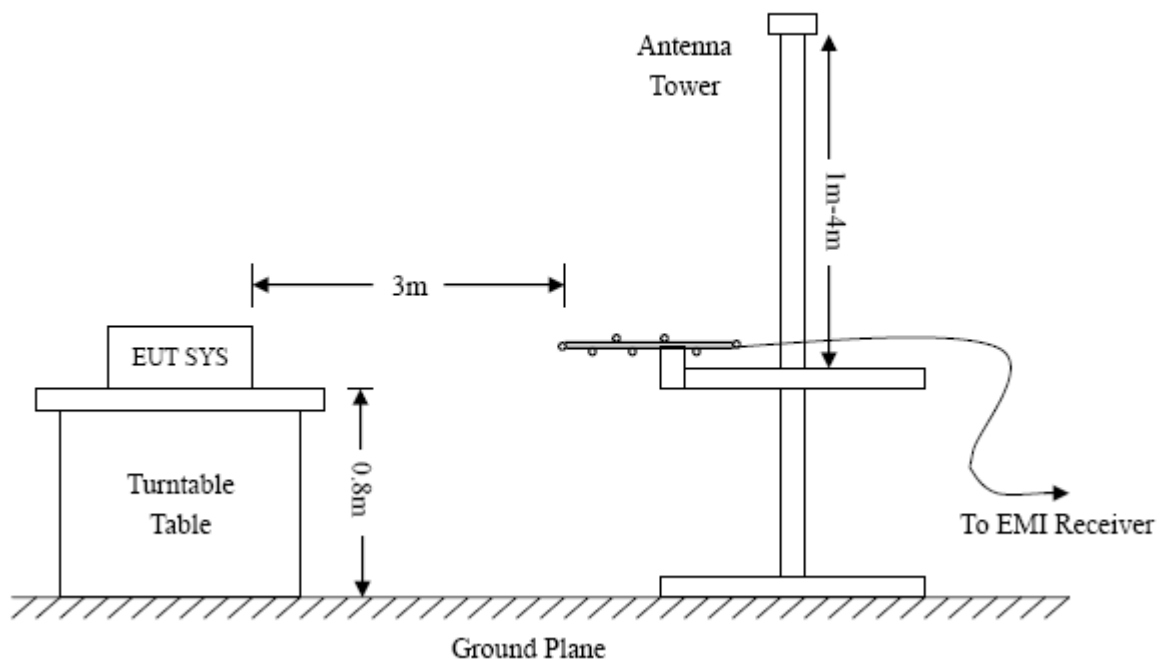
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2014-05-28	2015-05-27
EMI Test Receiver	R&S	ESVB	825471/005	2014-05-28	2015-05-27
Pre-amplifier	Agilent	8447F	3113A06717	2014-05-28	2015-05-27
Pre-amplifier	Compliance Direction	PAP-0118	24002	2014-05-28	2015-05-27
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2014-05-24	2015-05-23
Horn Antenna	ETS	3117	00086197	2014-05-24	2015-05-23
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2014-05-28	2015-05-27

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



4.4 Test Receiver Setup

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

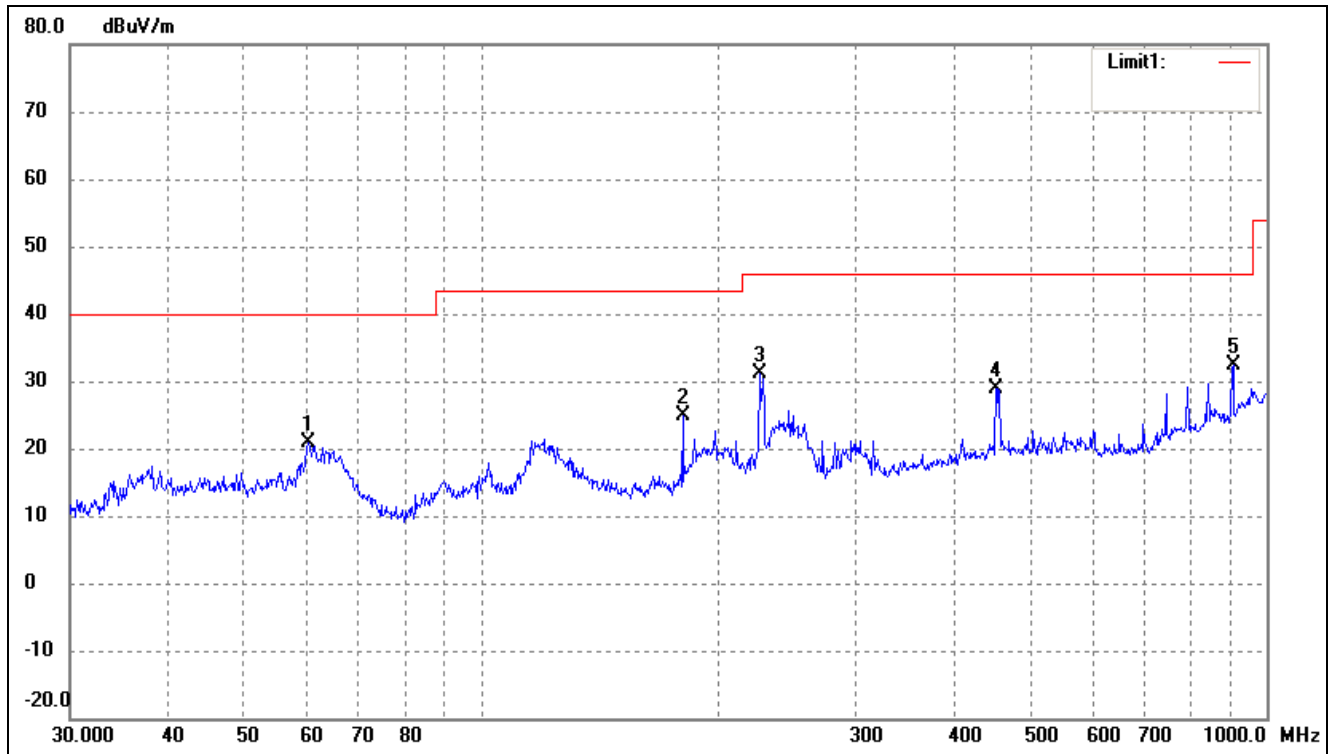
4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

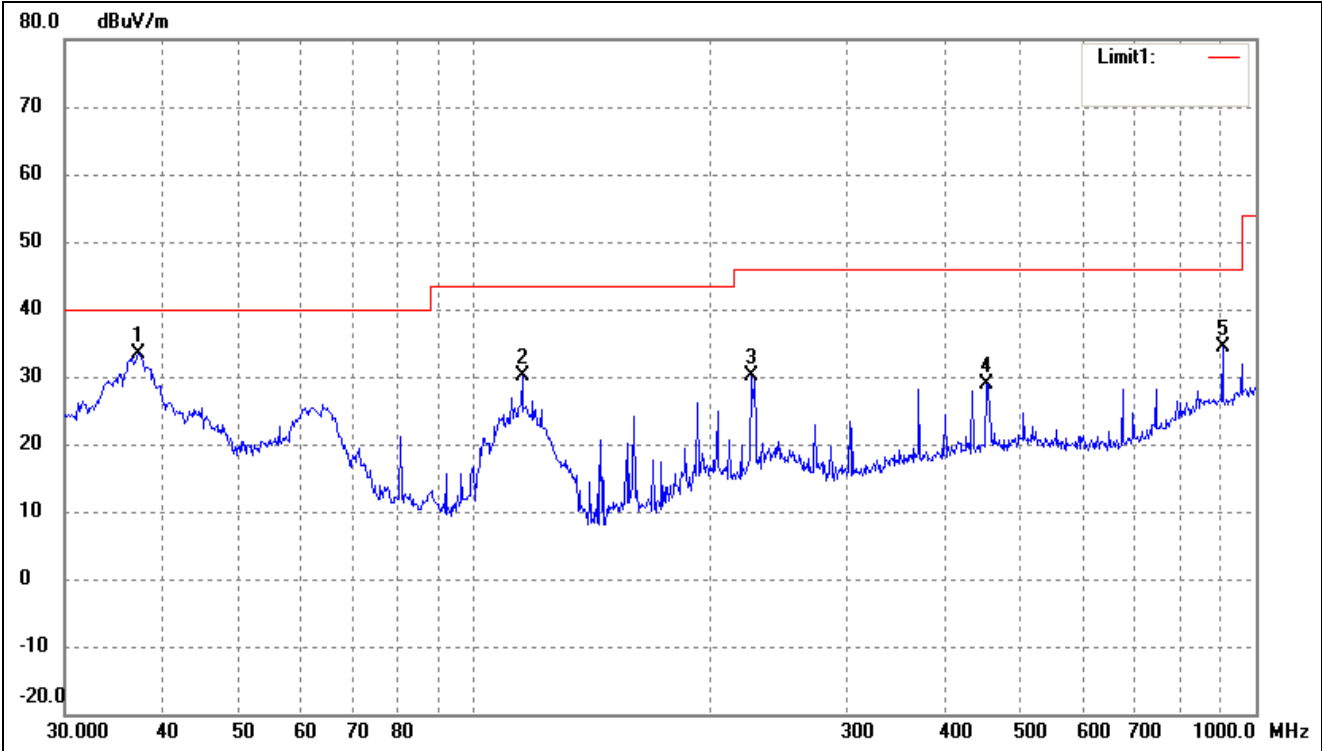
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-6.50 dB at 37.2855 MHz in the Vertical polarization, TM1 mode, 9 kHz to 20 GHz, 3Meters

Plot of Radiated Emissions Test DataEUT: *Waterproof rugged phone*Tested Model: *SMT1*Operating Condition: *TM1*Comment: *AC 120V/60Hz*Test Specification: *Horizontal*

No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	60.2801	29.96	-9.07	20.89	40.00	-19.11	105	100	peak
2	180.6488	35.97	-11.07	24.90	43.50	-18.60	105	100	peak
3	226.0994	39.74	-8.57	31.17	46.00	-14.83	105	100	peak
4	452.7197	31.01	-2.15	28.86	46.00	-17.14	105	100	peak
5*	906.4824	26.81	5.45	32.26	46.00	-13.74	105	100	peak

Test Specification: Vertical

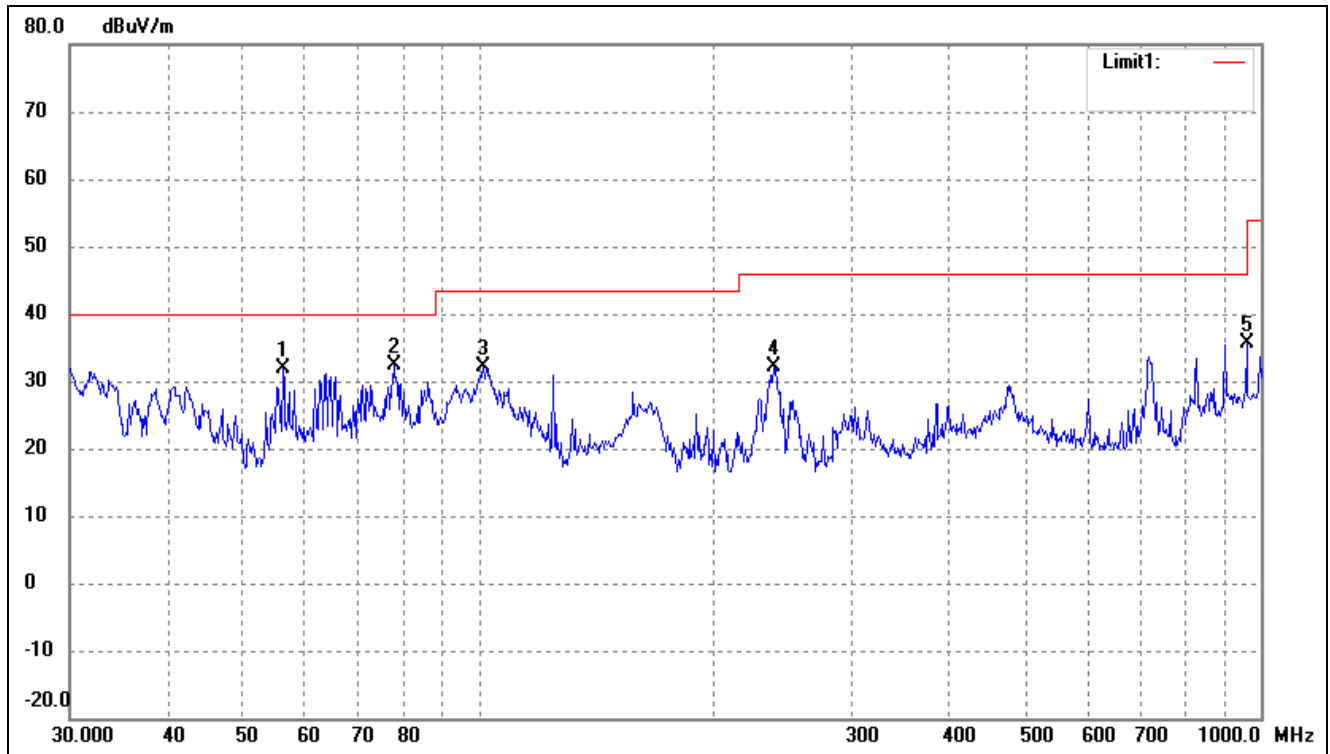


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1*	37.2855	42.61	-9.11	33.50	40.00	-6.50	15	100	peak
2	115.3205	40.72	-10.49	30.23	43.50	-13.27	15	100	peak
3	226.0994	38.77	-8.57	30.20	46.00	-15.80	15	100	peak
4	452.7197	31.08	-2.15	28.93	46.00	-17.07	15	100	peak
5	906.4824	28.83	5.45	34.28	46.00	-11.72	15	100	peak

Plot of Radiated Emissions Test Data

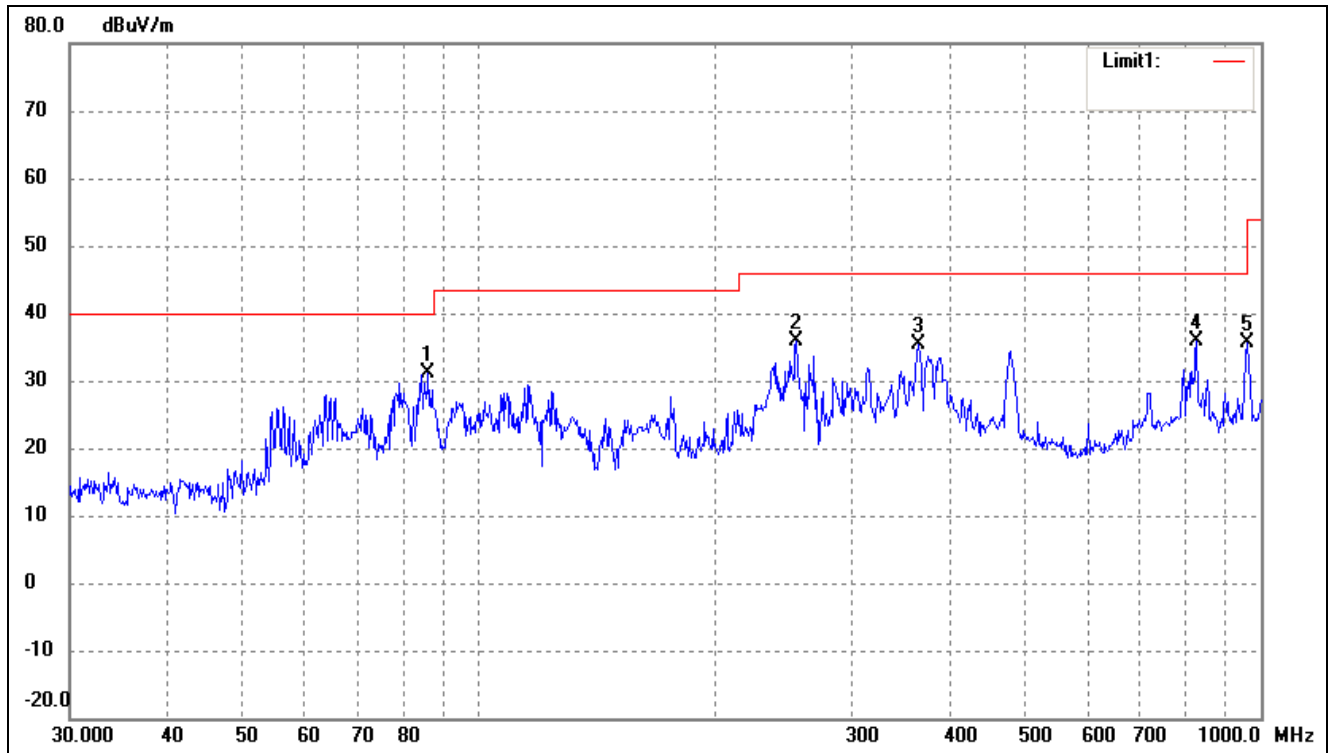
EUT: Waterproof rugged phone
 Tested Model: SMT1
 Operating Condition: TM2
 Comment: AC 120V/60Hz

Test Specification: Horizontal

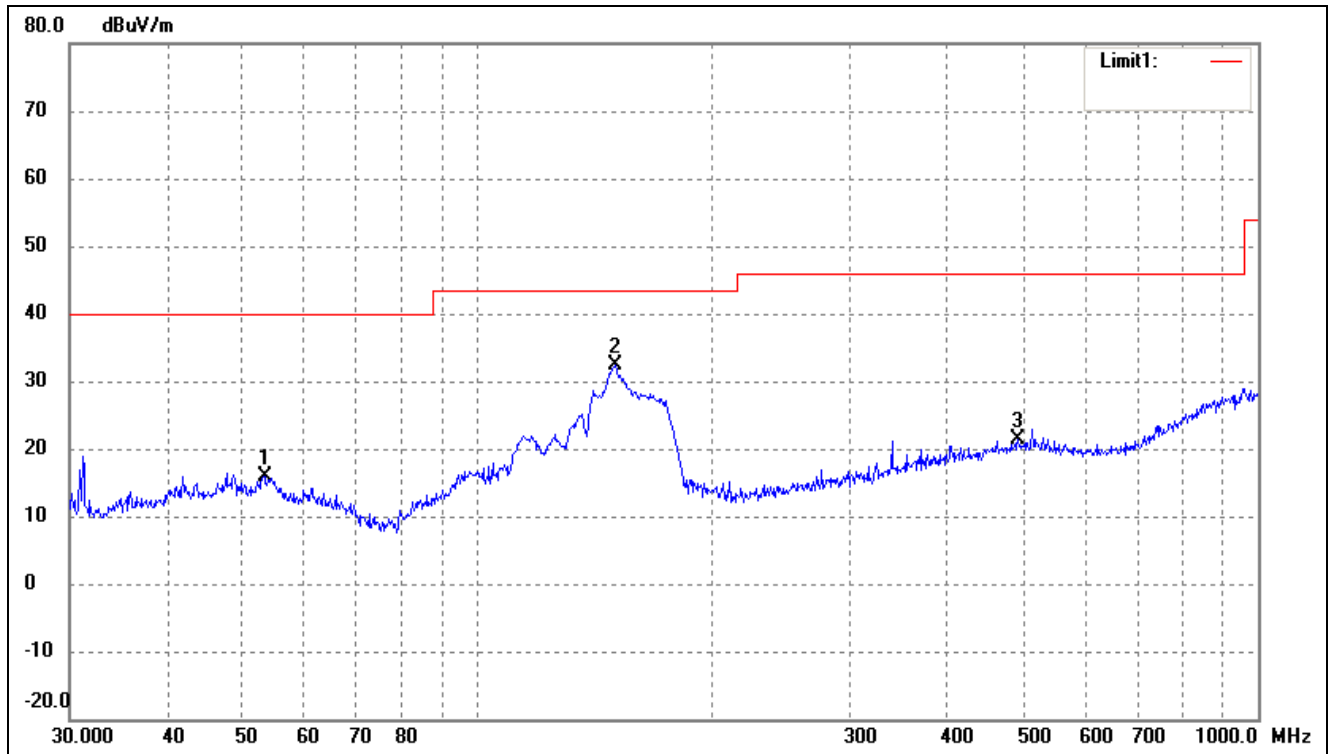


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Detector
1	56.1974	39.97	-8.12	31.85	40.00	-8.15	45	100	peak
2*	77.8654	45.98	-13.54	32.44	40.00	-7.56	45	100	peak
3	101.2885	41.65	-9.56	32.09	43.50	-11.41	45	100	peak
4	238.3102	39.93	-7.88	32.05	46.00	-13.95	45	100	peak
5	958.7943	29.56	6.06	35.62	46.00	-10.38	45	100	peak

Test Specification: Vertical

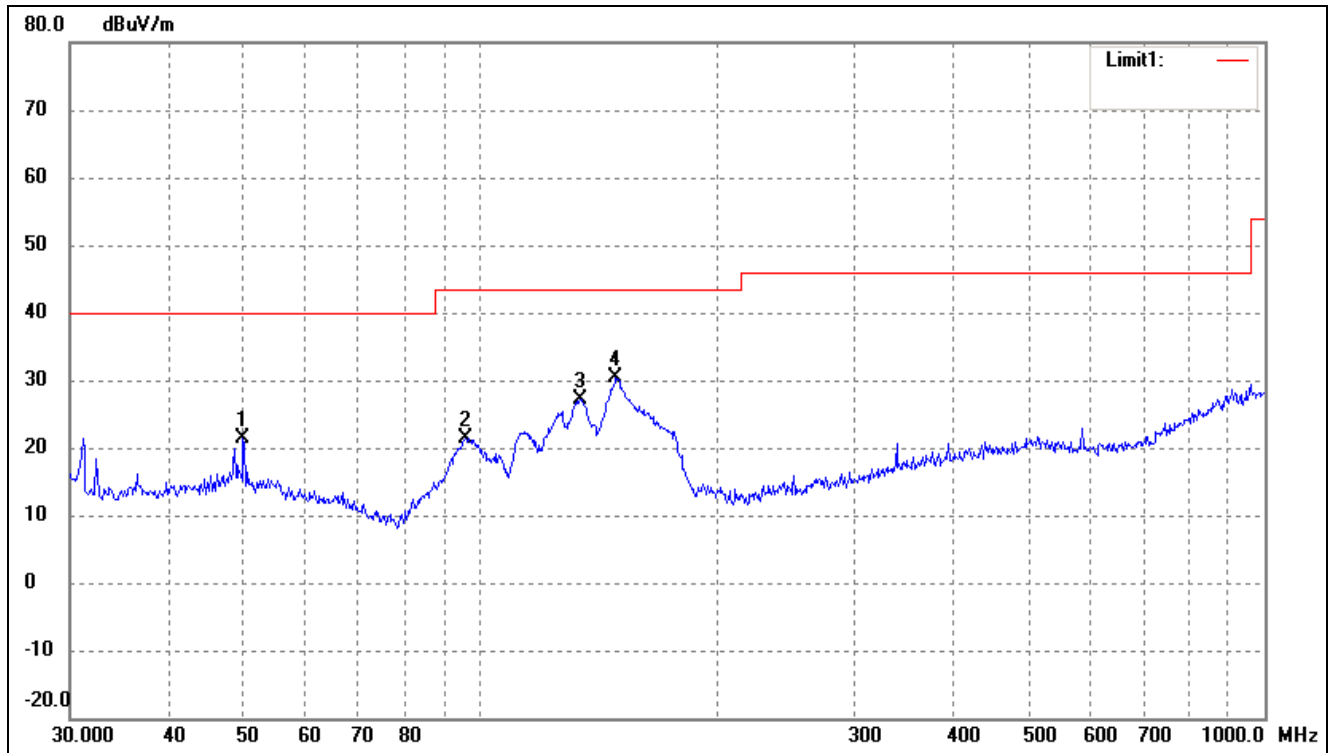


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1*	86.2001	43.32	-12.24	31.08	40.00	-8.92	45	100	peak
2	254.7284	43.34	-7.34	36.00	46.00	-10.00	45	100	peak
3	364.2595	39.45	-3.96	35.49	46.00	-10.51	45	100	peak
4	827.4934	31.67	4.09	35.76	46.00	-10.24	45	100	peak
5	958.7943	29.61	6.06	35.67	46.00	-10.33	45	100	peak

Plot of Radiated Emissions Test DataEUT: *Waterproof rugged phone*Tested Model: *SMT1*Operating Condition: *TM3*Comment: *AC 120V/60Hz*Test Specification: *Horizontal*

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Detector
1	53.3179	23.66	-7.78	15.88	40.00	-24.12	54	100	peak
2*	150.0108	45.25	-12.95	32.30	43.50	-11.20	54	100	peak
3	492.4685	22.74	-1.29	21.45	46.00	-24.55	54	100	peak

Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	()	(cm)	
1	49.8814	28.79	-7.44	21.35	40.00	-18.65	87	100	peak
2	95.7622	31.43	-10.08	21.35	43.50	-22.15	87	100	peak
3	134.0882	40.16	-12.91	27.25	43.50	-16.25	87	100	peak
4*	148.9625	43.24	-12.98	30.26	43.50	-13.24	87	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 20GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

The measurements greater than 20dB below the limit from 9kHz to 30MHz and test data are not provided.

***** END OF REPORT *****