

FCC Part 15B Measurement and Test Report

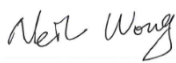


For

APRIX LATINOAMERICA S.A.

ADVANCED 099 BLDG SUITE 4 C CALLE BEATRIZ M DE CABAL

PANAMA, Panama

FCC ID: 2AHJQ-APSX402

Test Rule(s):	FCC Part 15 Subpart B
Product Description:	Smartphone
Tested Model:	Aprix_X4
Report No.:	STR17038199I-5
Tested Date:	2017-03-17 to 2017-04-06
Issued Date:	2017-04-06
Tested By:	Neil Wong / Engineer 
Reviewed By:	Silin Chen / EMC Manager 
Approved & Authorized By:	Jandy So / PSQ Manager 
Prepared By:	

Shenzhen SEM.Test Technology Co., Ltd.
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C. (518101)
Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

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.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: APRIX LATINOAMERICA S.A.
Address of applicant: ADVANCED 099 BLDG SUITE 4 C CALLE BEATRIZ
M DE CABAL PANAMA, Panama

Manufacturer: Todos industrial limited
Address of manufacturer: Room 308, Building #5, Cofoc (Fuan) Robotics
Industrial Park, No.90, Dayang Road, Fuyong Street,
Shenzhen City, P.R. China

General Description of EUT	
Product Name:	Smartphone
Trade Name:	APRIX
Model No.:	Aprix_X4
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	DC 3.7 V by battery
Rated Current:	/
Rated Power:	/
Power Adapter Model:	/
Lowest Internal Frequency:	32.768kHz
Highest Internal Frequency:	1.1GHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the APRIX LATINOAMERICA S.A. 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 C63.4-2014, 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	Downloading mode	Connect to PC
TM2	Playing mode	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E10	/
TF card	Kingston	Class 10	/
Adapter	Utok	Q55	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB cable	1.0	Unshielded	Without Core

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2016-06-04	2017-06-03
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2016-06-04	2017-06-03
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-04	2017-06-03
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2016-06-04	2017-06-03
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2016-06-04	2017-06-03
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-04	2017-06-03
SEMT-1042	Horn Antenna	ETS	3117	00086197	2016-06-04	2017-06-03
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-04	2017-06-03
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-04	2017-06-03
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2016-06-04	2017-06-03
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-04	2017-06-03

2. SUMMARY OF TEST RESULTS

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

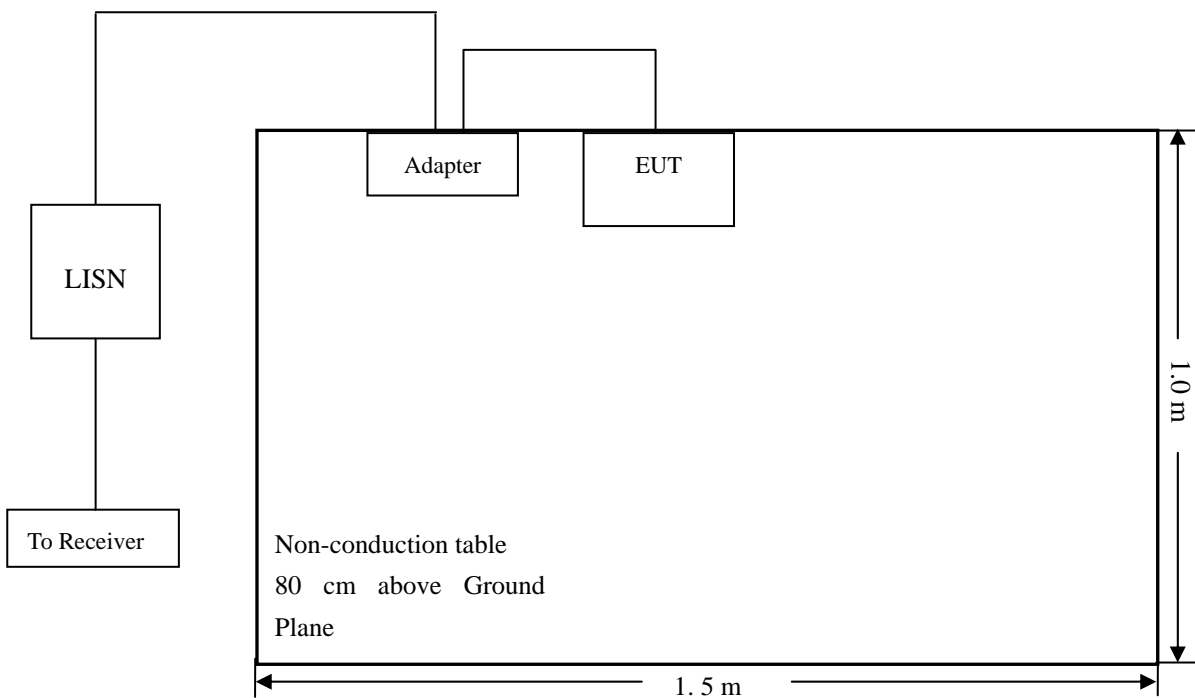
N/A: not applicable

3. Conducted Emissions

3.1 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, 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.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

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

3.4 Summary of Test Results/Plots

According to the data in section 3.6, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

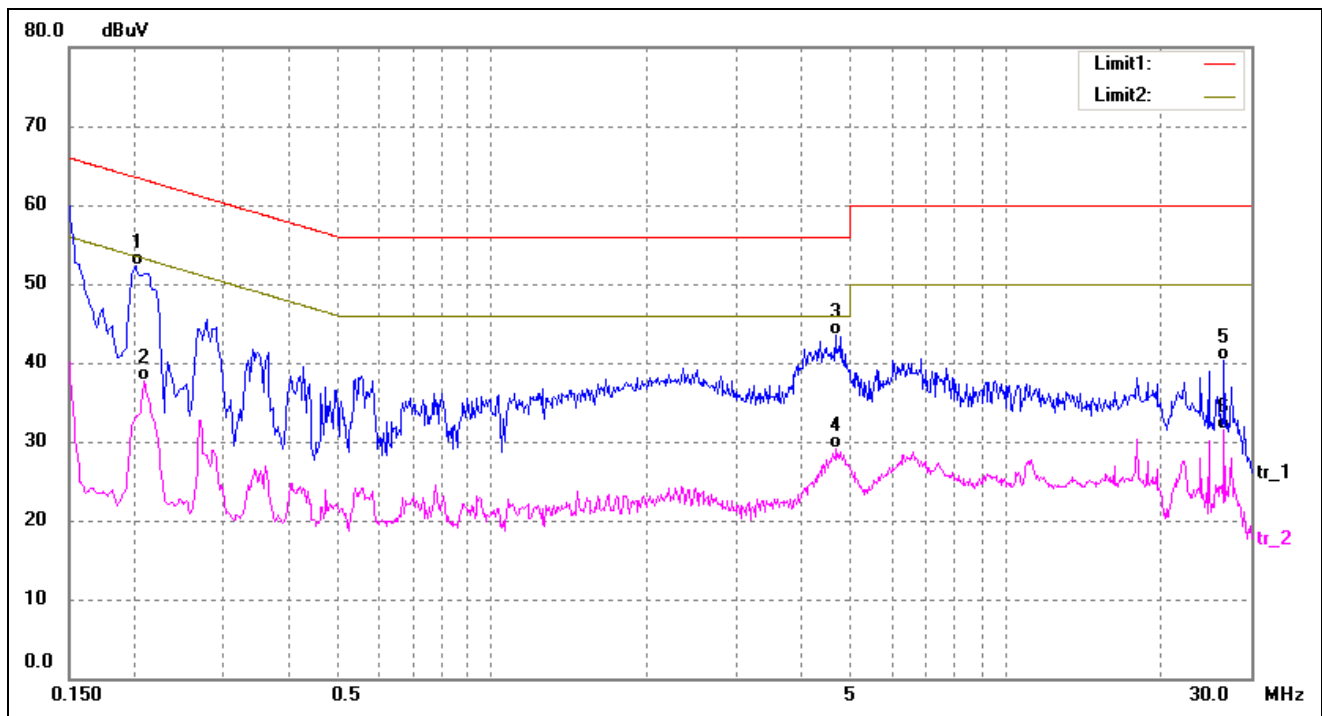
-11.29 dB at 0.2020 MHz in the **Neutral, TM1, QP** detector, 0.15-30MHz

3.5 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

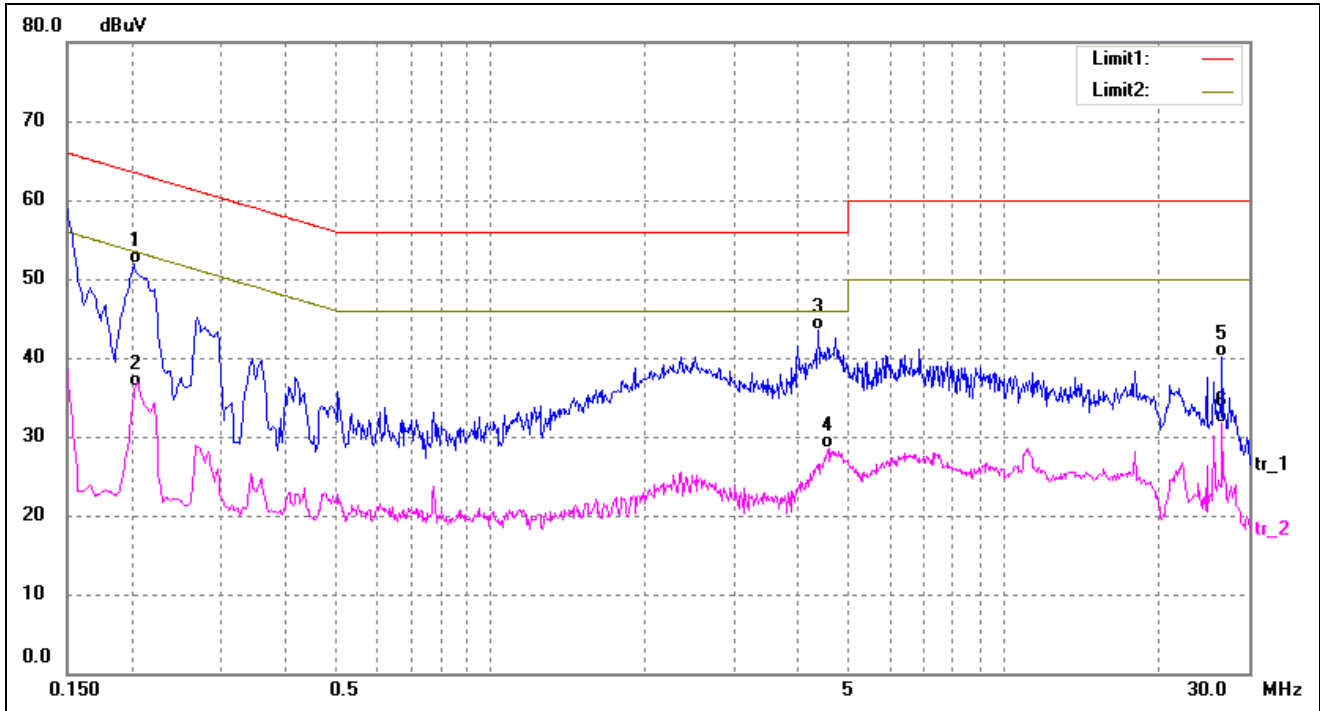
EUT: *Smartphone*
 Tested Model: *Aprix_X4*
 Operating Condition: *TM1*
 Comment: *AC 120V/60Hz; USB 5V*

Test Specification: *Neutral*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2020	42.44	9.80	52.24	63.53	-11.29	QP
2	0.2100	27.86	9.80	37.66	53.21	-15.55	AVG
3	4.6660	33.81	9.67	43.48	56.00	-12.52	QP
4	4.6860	19.40	9.67	29.07	46.00	-16.93	AVG
5	26.5740	30.56	9.69	40.25	60.00	-19.75	QP
6	26.5740	21.81	9.69	31.50	50.00	-18.50	AVG

Test Specification: Line

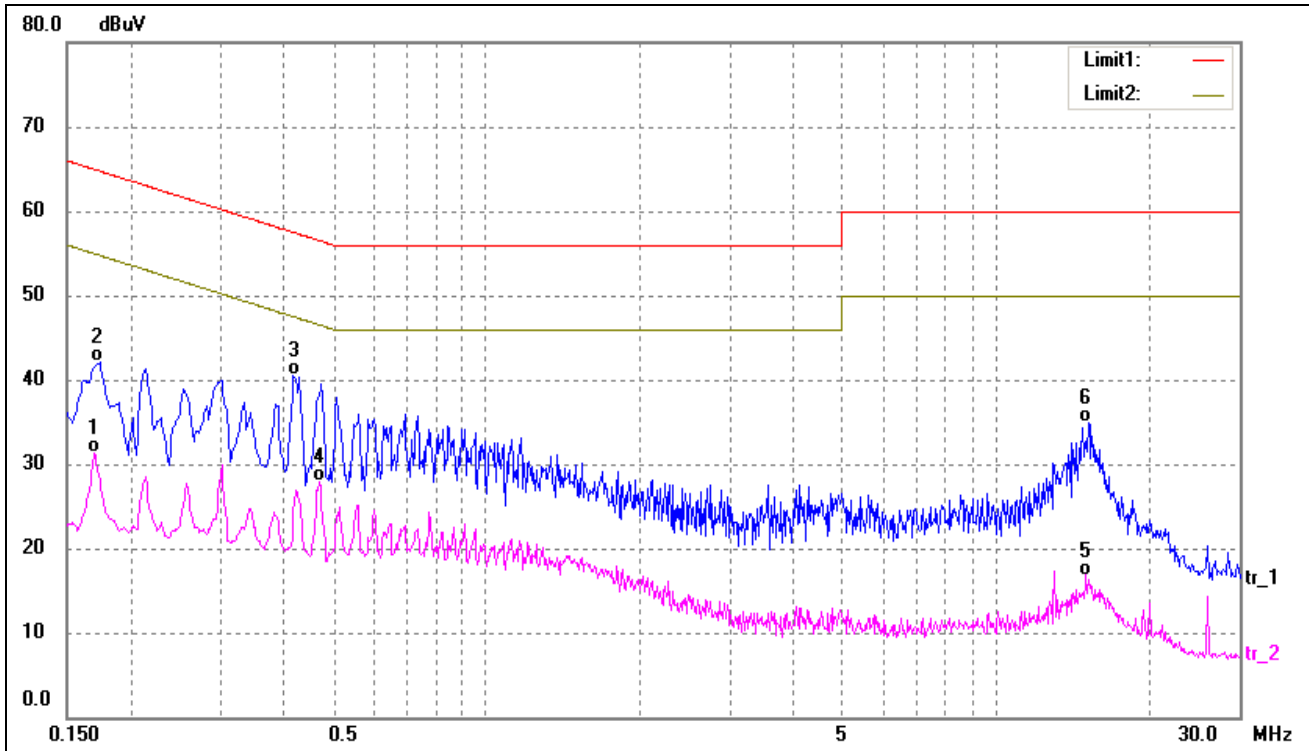


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.2020	42.08	9.80	51.88	63.53	-11.65	QP
2	0.2040	26.49	9.80	36.29	53.45	-17.16	AVG
3	4.3380	33.81	9.68	43.49	56.00	-12.51	QP
4	4.5500	18.76	9.67	28.43	46.00	-17.57	AVG
5	26.5700	30.33	9.69	40.02	60.00	-19.98	QP
6	26.5700	21.99	9.69	31.68	50.00	-18.32	AVG

Plot of Conducted Emissions Test Data

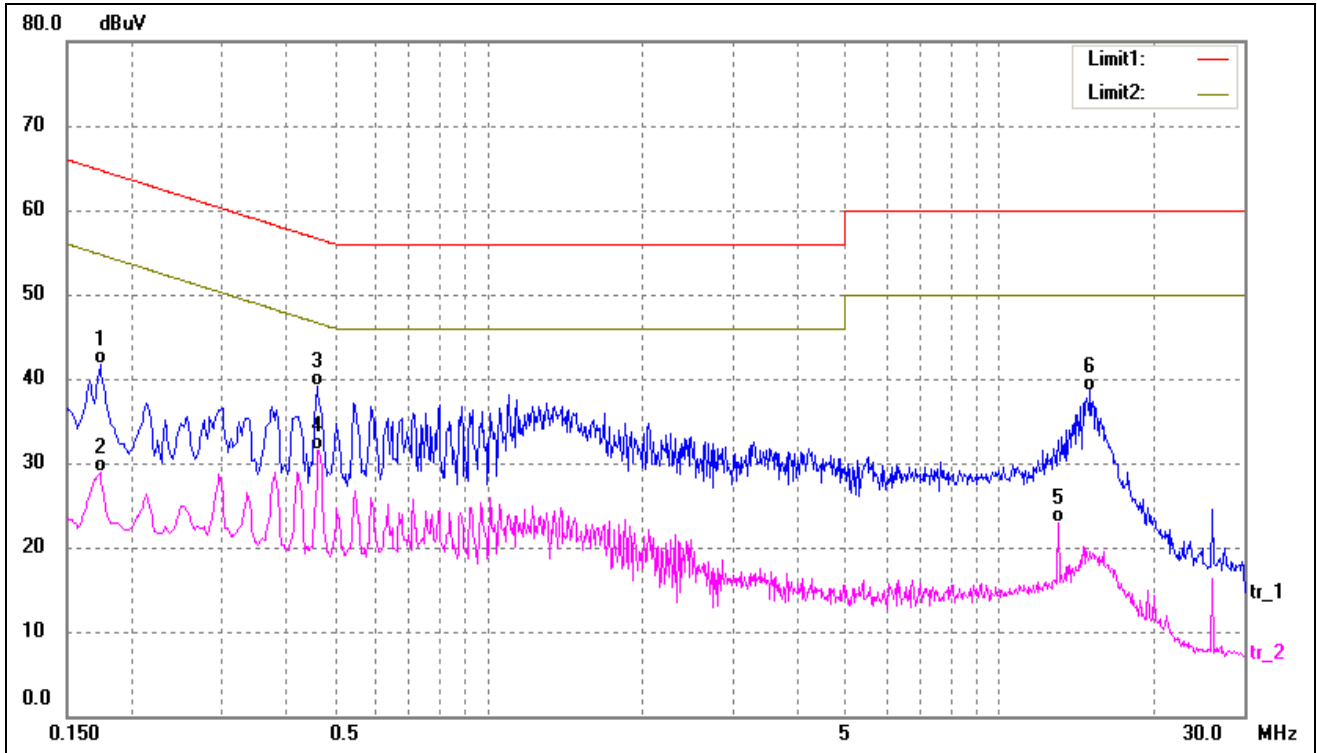
EUT: *Smartphone*
 Tested Model: *Aprix_X4*
 Operating Condition: *TM2*
 Comment: *AC 120V/60Hz; Adapter DC 5V*

Test Specification: *Neutral*



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1700	21.46	9.83	31.29	54.96	-23.67	AVG
2	0.1740	32.27	9.83	42.10	64.77	-22.67	QP
3*	0.4180	30.63	9.80	40.43	57.49	-17.06	QP
4	0.4700	18.07	9.80	27.87	46.51	-18.64	AVG
5	15.0340	7.19	9.61	16.80	50.00	-33.20	AVG
6	15.2100	25.37	9.61	34.98	60.00	-25.02	QP

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1740	31.80	9.83	41.63	64.77	-23.14	QP
2	0.1740	19.08	9.83	28.91	54.77	-25.86	AVG
3	0.4620	29.27	9.80	39.07	56.66	-17.59	QP
4*	0.4660	21.73	9.80	31.53	46.58	-15.05	AVG
5	12.9980	13.36	9.57	22.93	50.00	-27.07	AVG
6	14.9980	28.99	9.61	38.60	60.00	-21.40	QP

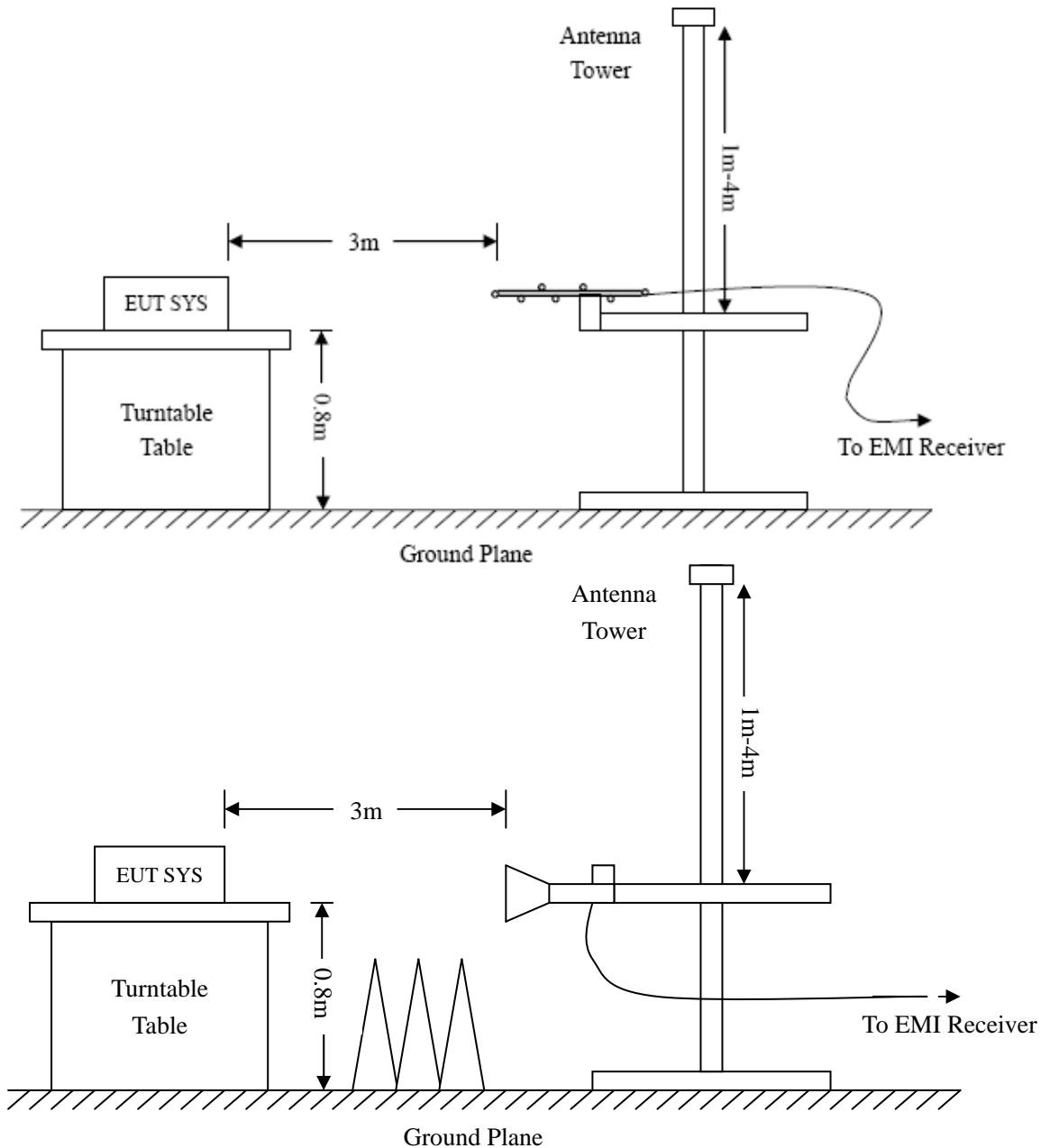
4. Radiated Emissions

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 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.



4.2 Test Receiver Setup

Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

4.3 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 -6dBµV means the emission is 6dBµV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

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

4.4 Environmental Conditions

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

4.5 Summary of Test Results/Plots

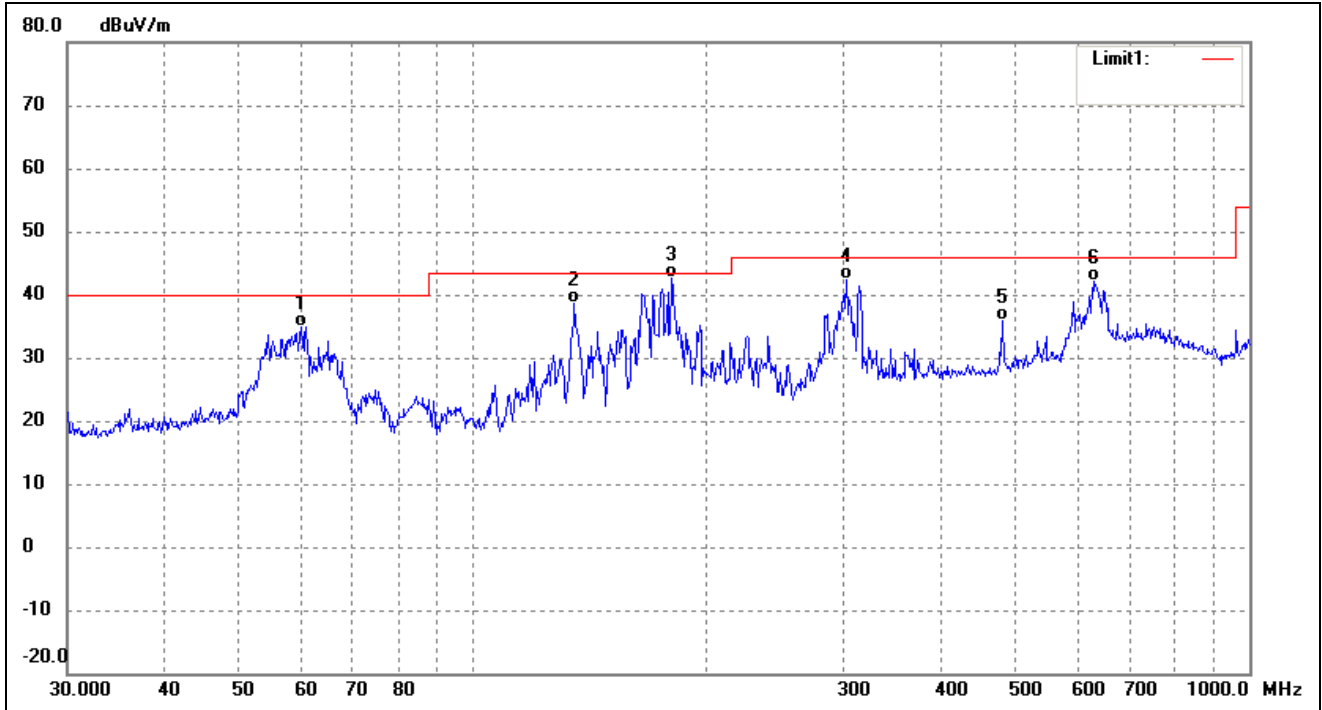
According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

-0.95 dB at 180.0165 MHz in the Horizontal polarization, TM1, 30MHz to 12.75 GHz, 3Meters

Plot of Radiated Emissions Test Data

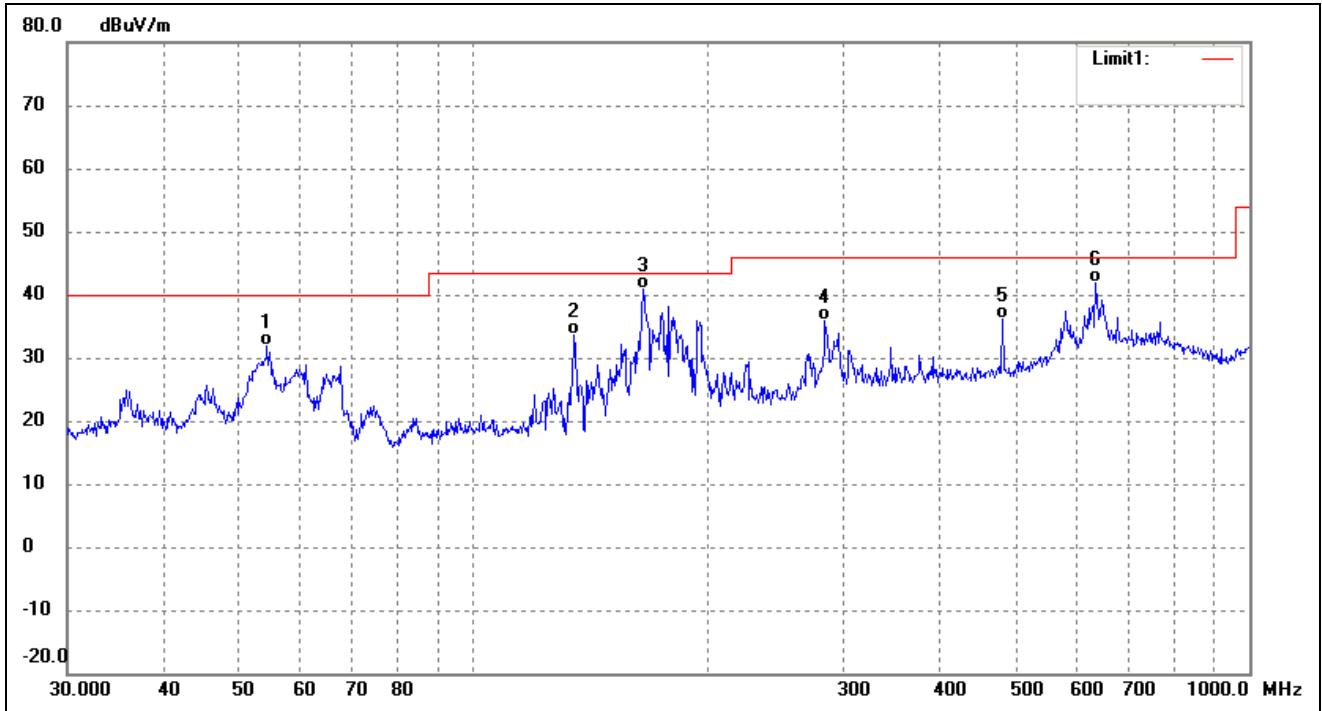
EUT: *Smartphone*
 Tested Model: *Aprix_X4*
 Operating Condition: *TM1*
 Comment: *AC 120V/60Hz; USB 5V*

Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	60.0691	29.82	5.02	34.84	40.00	-5.16	185	100	QP
2	135.0319	34.97	3.56	38.53	43.50	-4.97	191	100	QP
3	180.0165	40.09	2.46	42.55	43.50	-0.95	96	100	QP
4	302.4812	30.55	11.95	42.50	46.00	-3.50	130	100	QP
5	480.5276	23.29	12.58	35.87	46.00	-10.13	356	100	QP
6	631.6884	24.31	17.78	42.09	46.00	-3.91	177	100	QP

Test Specification: Vertical

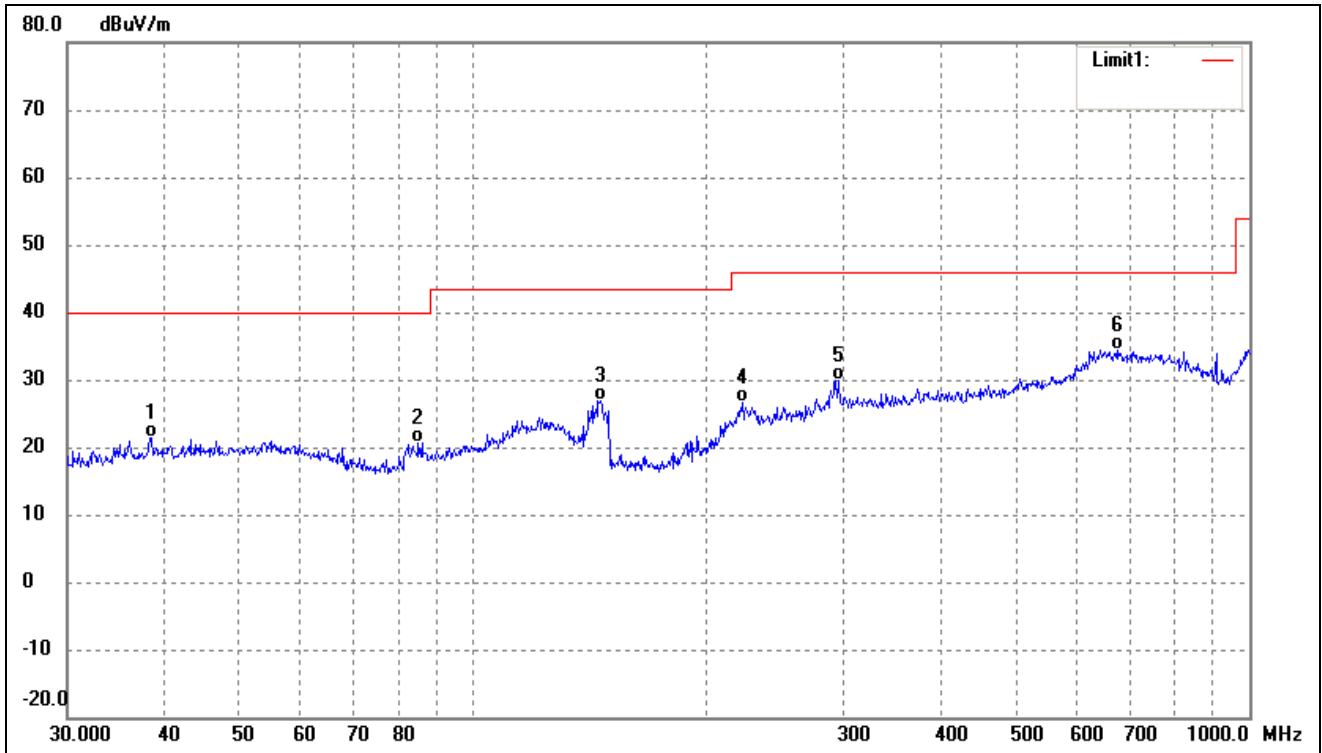


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	54.2610	26.75	5.04	31.79	40.00	-8.21	79	100	QP
2	135.0319	30.04	3.56	33.60	43.50	-9.90	198	100	QP
3	165.4867	38.43	2.45	40.88	43.50	-2.62	63	100	QP
4	283.9792	24.63	11.30	35.93	46.00	-10.07	134	100	QP
5	480.5276	23.51	12.58	36.09	46.00	-9.91	126	100	QP
6	633.9073	24.05	17.86	41.91	46.00	-4.09	198	100	QP

Plot of Radiated Emissions Test Data

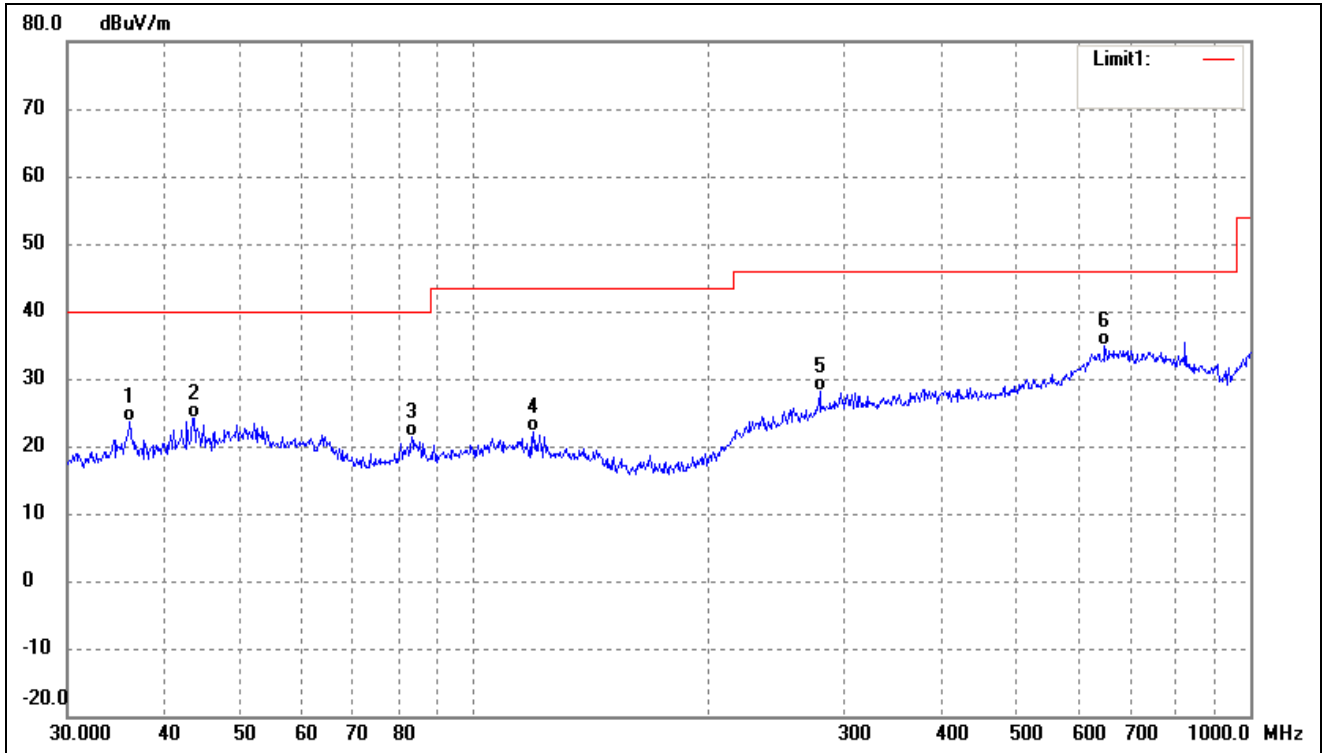
EUT: *Smartphone*
 Tested Model: *Aprix_X4*
 Operating Condition: *TM2*
 Comment: *AC 120V/60Hz; Adapter DC 5V*

Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	38.4809	16.69	4.70	21.39	40.00	-18.61	136	100	QP
2	84.9995	18.14	2.55	20.69	40.00	-19.31	47	100	QP
3	145.8611	23.90	2.92	26.82	43.50	-16.68	157	100	QP
4	222.1698	18.75	7.80	26.55	46.00	-19.45	59	100	QP
5	295.1469	18.21	11.78	29.99	46.00	-16.01	168	100	QP
6	675.2080	16.02	18.42	34.44	46.00	-11.56	54	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	36.1272	19.35	4.35	23.70	40.00	-16.30	135	100	QP
2	43.6585	19.23	4.94	24.17	40.00	-15.83	77	100	QP
3	83.2298	19.09	2.27	21.36	40.00	-18.64	44	100	QP
4	119.4361	17.28	4.82	22.10	43.50	-21.40	97	100	QP
5	279.0436	17.10	11.07	28.17	46.00	-17.83	57	100	QP
6	649.6597	17.02	17.84	34.86	46.00	-11.14	158	100	QP

Note: Testing is carried out with frequency rang 30MHz to the 12.75GHz, which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

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