TEST REPORT

Reference No.	:	WTS19S09068238W005
FCC ID	:	2AEPIELEMENT4PLUS
Applicant	:	COLOMBIANA DE COMERCIO S.A.
Address	:	Car. 43E No 8-71, Medellin, Colombia
Manufacturer	:	The same as above
Address	:	The same as above
Product	:	SMARTPHONE
Model(s)	:	ELEMENT 4 PLUS
Brand Name	:	Kalley
Standards	:	FCC PART15 SUBPART B: 2018
Date of Receipt sample	:	2019-10-30
Date of Test	:	2019-10-31 to 2019-11-11
Date of Issue	:	2019-11-12
Test Result	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
Waltek Services (Shenzhen) Co., Ltd.
Address: 1/F., Fukangtai Building, West Baima Road, Songgang Street, Baoan District, Shenzhen, Guangdong, China
Tel :+86-755-83551033
Fax:+86-755-83552400

Compiled by:

Ford Wang / Project Engineer

Approved by:

Phillo Zhong / Manager

2 Contents

Page

3 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTS19S09068238W005	2019-10-30	2019-10-31 to 2019-11-11	2019-11-12	original	-	Valid

4 General Information

4.1 General Description of E.U.T.

Product:	SMARTPHONE
Model(s):	ELEMENT 4 PLUS
Model Description:	N/A
GSM Band(s):	GSM 850/900/1800/1900MHz
GPRS Class:	12
WCDMA Band(s):	FDD Band II/V
Wi-Fi Specification:	2.4G-802.11b/g/n HT20/n HT40
Bluetooth Version:	Bluetooth v4.0 with BLE
GPS:	Support
NFC:	N/A
Hardware Version:	V00
Software Version:	ELEMENT4PLUS_V1_20191015
Highest frequency (Exclude Radio):	1.3GHz
Storage Location:	Internal Storage
Note:	This EUT has two SIM card slots, and use same one RF module. We found that RF parameters are the same, when we insert the card 1 and card 2. So we usually performed the test under main card slot 1.

4.2 Details of E.U.T.

Ratings:	Battery DC 3.8V, 1500mAh DC 5V, 550mA, charging from adapter (Adapter Input: 100-240V~50/60Hz 0.15A)
Adapter:	Manufacturer: Dongguan Aohai Power Technology Co.,Ltd Model No.: A31A-050055U-US1

4.3 Standards Applicable for Testing

The tests were performed according to following standards:

FCC PART 15, SUBPART B Electronic Code of Federal Regulations- Unintentional Radiators

4.4 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

4.5 Abnormalities from Standard Conditions

None.

5 Test Summary

Test Items	Test Requirement	Test Method	Test Result
Power Line Conducted Emission (150kHz to 30MHz)	FCC PART 15, SUBPART B	ANSI C63.4: 2014	Pass
Radiated Emission 30MHz to 1GHz)	FCC PART 15, SUBPART B	ANSI C63.4: 2014	Pass
Radiated Emission (Above 1GHz)	FCC PART 15, SUBPART B	ANSI C63.4: 2014	Pass

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object

6 Equipment Used during Test

6.1 Equipment List

Conducted Emissions Test Site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	100947	2019-09-12	2020-09-11
2.	LISN	R&S	ENV216	101215	2019-09-12	2020-09-11
3.	Cable	Top	TYPE16(3.5M)	-	2019-09-12	2020-09-11
Conducted Emissions Test Site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	101155	2019-09-12	2020-09-11
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	2019-09-12	2020-09-11
3.	Limiter	York	MTS-IMP-136	261115-001-0024	2019-09-12	2020-09-11
4.	Cable	LARGE	RF300	-	2019-09-12	2020-09-11
3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Spectrum Analyzer	R&S	FSP	100091	2019-04-29	2020-04-28
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	2019-04-09	2020-04-08
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2019-04-09	2020-04-08
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2019-09-12	2020-09-11
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2019-04-09	2020-04-08
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	2019-04-09	2020-04-08
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2019-04-13	2020-04-12
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	2019-04-13	2020-04-12
9	Universal Radio Communication Tester	R&S	CMU 200	112461	2019-09-12	2020-09-11
10	Smart Antenna	SCHWARZBECK	HA08	-	2019-04-09	2020-04-08
11	Signal Generator	R&S	SMR20	100046	2019-09-12	2020-09-11
12.	Universal Radio Communication Tester	R&S	CMW 500	127818	2019-04-13	2020-04-12
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last**	**Calibration**

					Calibration Date	Due Date
1	Test Receiver	R&S	ESCI	101296	2019-04-13	2020-04-12
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	2019-04-09	2020-04-08
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	2019-04-13	2020-04-12
4	Cable	HUBER+SUHNER	CBL2	525178	2019-04-13	2020-04-12

6.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
MacBook Air	APPLE	A1465	C17KTQDNF5N7
Power Supply	LPS DELTA ELECTRNICS UIANG CO,.LTD	ADP-45GD	-

6.3 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction Emission	150kHz~30MHz	±3.64dB	(1)
Radiation Emission	30MHz~1000MHz	±5.03dB	(1)
	1GHz~18GHz	±5.47dB	(1)
Confidence interval：95%. Confidence factor:k=2			

7 Emission Test Results

7.1 Power Line Conducted Emission, 150kHz to 30MHz

Test Requirement ..... : FCC PART 15, SUBPART B

Test Method ..... : ANSI C63.4: 2014

Test Result ..... : Pass

Frequency Range ..... : 150kHz to 30MHz

Class ..... : Class B

Limit ..... :

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak	erage
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

7.1.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity ..... : 53.6%RH

Atmospheric Pressure ..... : 101kPa

EUT Operation:

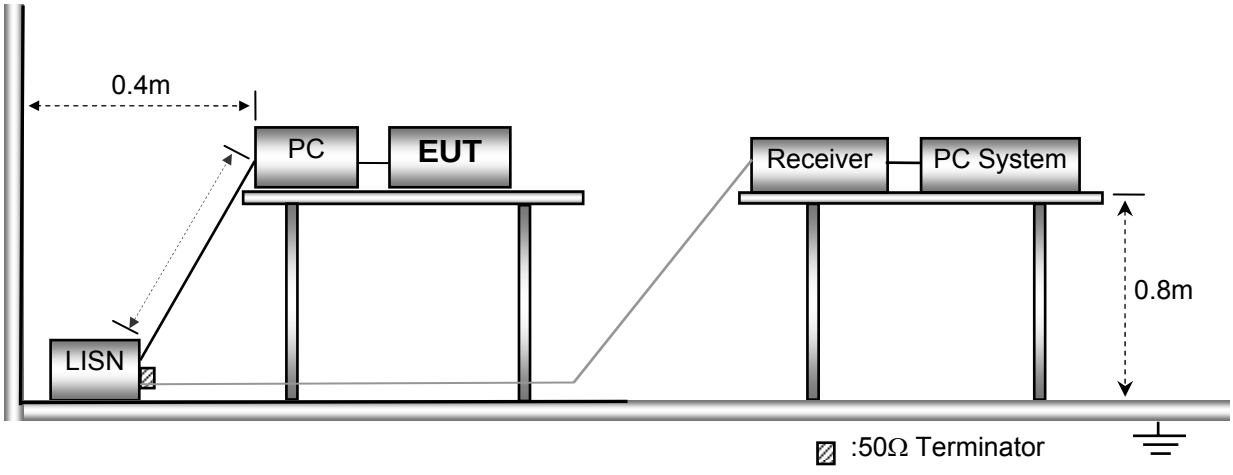
Input Voltage ..... : DC 5V by PC

Operating Mode ..... : Data transmitting mode, Earphone mode, Adapter mode

Remark ..... : The worse case Data transmitting mode is under the condition of AC 120V/60Hz adapter input and the data is shown as follow.

7.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with ANSI C63.4:2014.

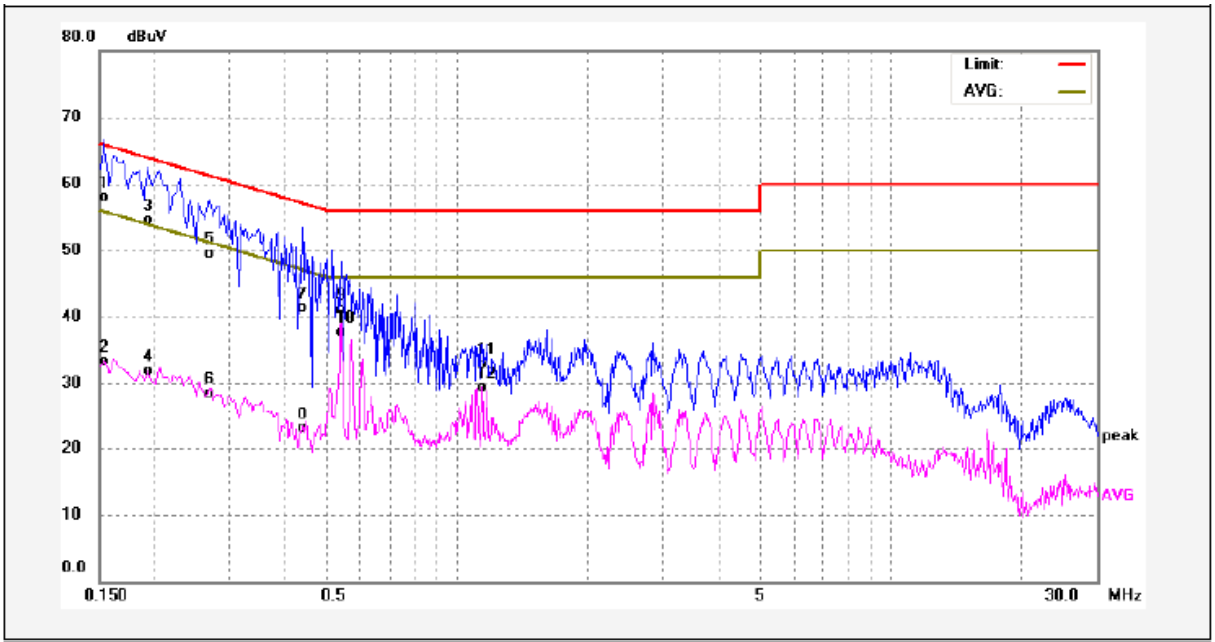


7.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line. According to the data in below section, the EUT complied with the FCC PART 15, SUBPART B standards.

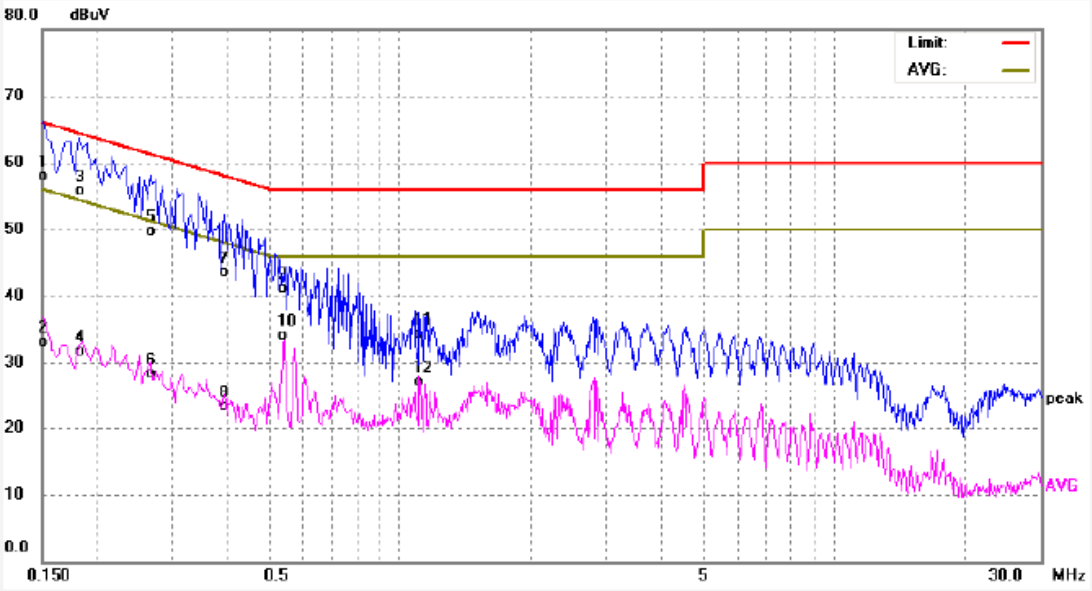
7.1.4 Power Line Conducted Emission Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1539	47.62	10.27	57.89	65.78	-7.89	QP	
2	0.1539	23.07	10.27	33.34	55.78	-22.44	AVG	
3	0.1940	44.14	10.32	54.46	63.86	-9.40	QP	
4	0.1940	21.55	10.32	31.87	53.86	-21.99	AVG	
5	0.2700	39.14	10.40	49.54	61.12	-11.58	QP	
6	0.2700	18.16	10.40	28.56	51.12	-22.56	AVG	
7	0.4420	30.87	10.42	41.29	57.02	-15.73	QP	
8	0.4420	12.60	10.42	23.02	47.02	-24.00	AVG	
9	0.5420	30.57	10.45	41.02	56.00	-14.98	QP	
10	0.5420	27.30	10.45	37.75	46.00	-8.25	AVG	
11	1.1460	22.47	10.44	32.91	56.00	-23.09	QP	
12	1.1460	18.78	10.44	29.22	46.00	-16.78	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	47.59	10.26	57.85	65.99	-8.14	QP	
2	0.1500	22.83	10.26	33.09	55.99	-22.90	AVG	
3	0.1819	45.34	10.30	55.64	64.39	-8.75	QP	
4	0.1819	21.48	10.30	31.78	54.39	-22.61	AVG	
5	0.2660	39.33	10.40	49.73	61.24	-11.51	QP	
6	0.2660	17.89	10.40	28.29	51.24	-22.95	AVG	
7	0.3940	33.06	10.42	43.48	57.98	-14.50	QP	
8	0.3940	12.80	10.42	23.22	47.98	-24.76	AVG	
9	0.5420	30.67	10.45	41.12	56.00	-14.88	QP	
10	0.5420	23.57	10.45	34.02	46.00	-11.98	AVG	
11	1.1100	23.80	10.44	34.24	56.00	-21.76	QP	
12	1.1100	16.75	10.44	27.19	46.00	-18.81	AVG	

7.2 Radiation Emission, 30MHz to 1000MHz

Test Requirement ..... : FCC PART 15, SUBPART B

Test Method ..... : ANSI C63.4: 2014

Test Result ..... : Pass

Frequency Range ..... : 30MHz to 1000MHz

Class. : Class B

Limit..... :

Frequency (MHz)	Distance (Meter)	Limit (dBμV/m)
		Quasi-peak
30 to 88	3	40
88 to 216	3	43.5
21 to 960	3	46
960 to 1000	3	54

7.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 22.5°C

Humidity ..... : 52.6%RH

Atmospheric Pressure ..... : 101.2kPa

EUT Operation:

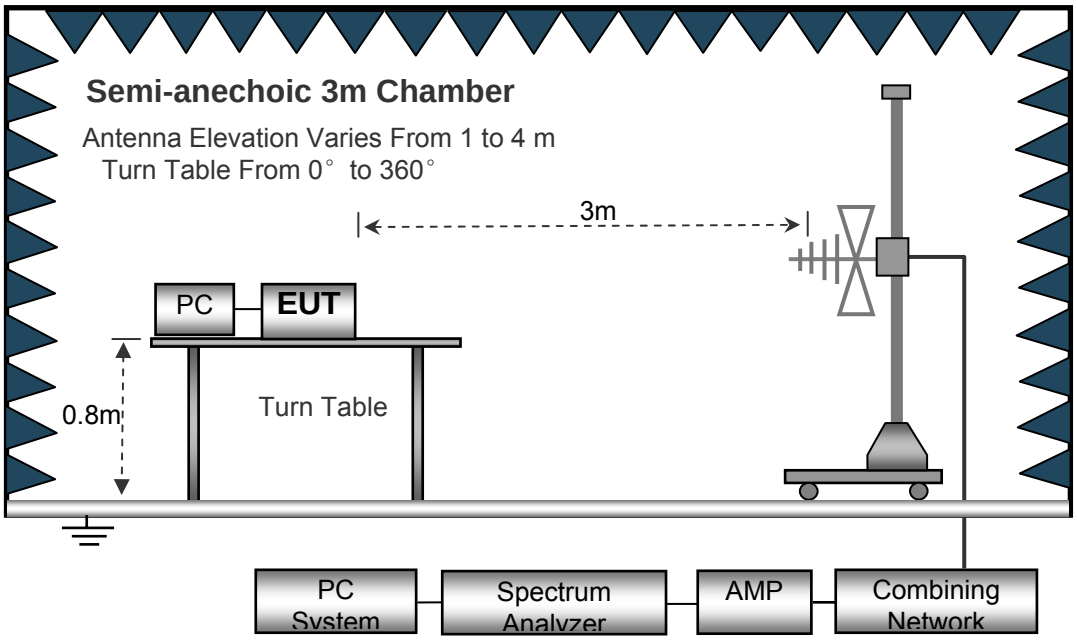
Input Voltage..... : DC 5V by PC

Operating Mode ..... : Data transmitting with PC mode, Earphone mode, Adapter mode

Remark ..... : The worse case Data transmitting with PC mode is under the condition of AC 120V/60Hz adapter input and the data is shown as follow.

7.2.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2014.

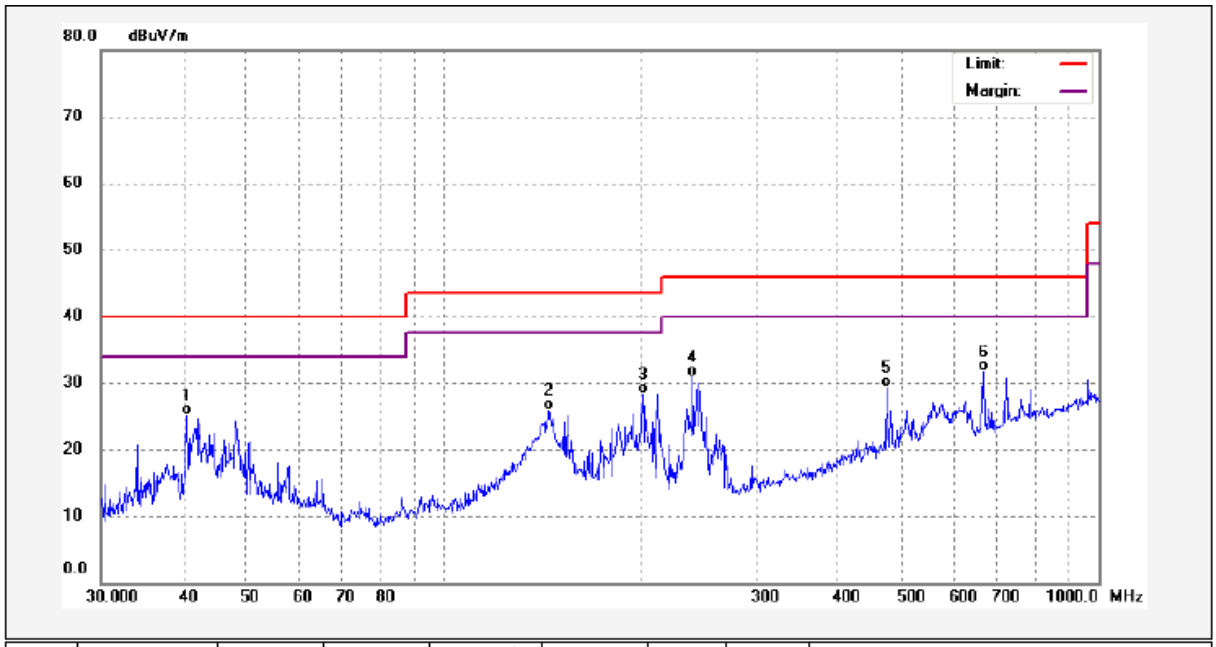


7.2.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Quasi-peak measurements were performed if peak emissions were within 6dB of the Quasi-peak limit line.

7.2.4 Radiated Emission Test Data, 30MHz to 1000MHz

Antenna Polarization: Vertical

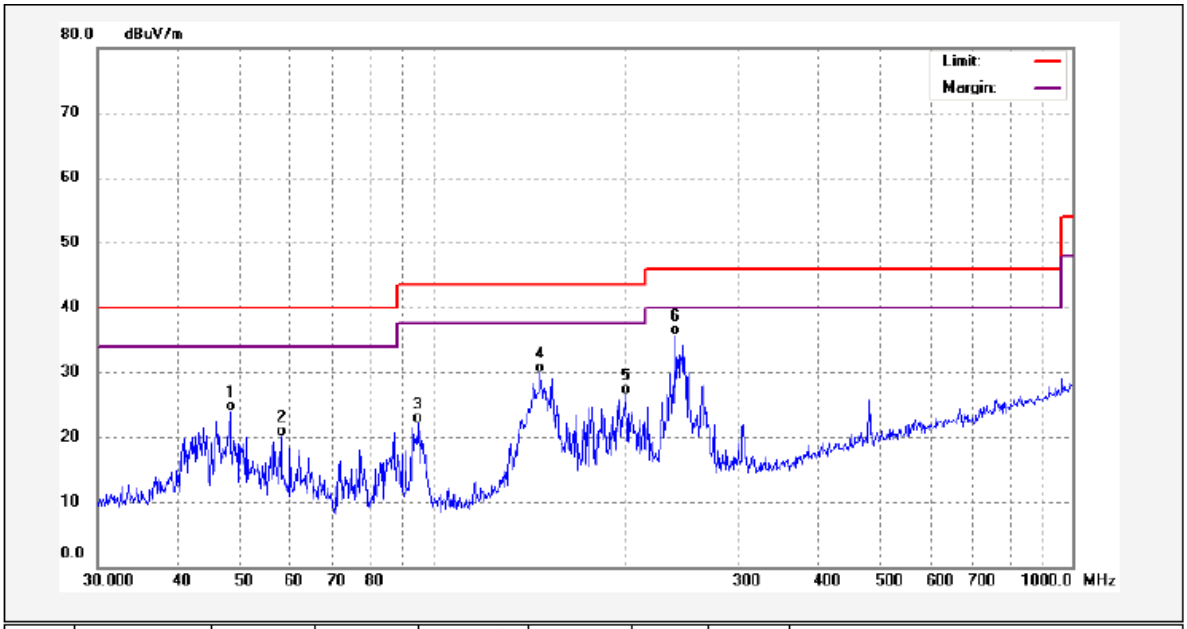


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	40.5591	41.02	-15.96	25.06	40.00	-14.94	QP	
2	144.8418	40.48	-14.60	25.88	43.50	-17.62	QP	
3	201.3930	45.85	-17.58	28.27	43.50	-15.23	QP	
4	239.9873	47.23	-16.24	30.99	46.00	-15.01	QP	
5	473.8347	39.69	-10.32	29.37	46.00	-16.63	QP	
6	665.8035	38.35	-6.57	31.78	46.00	-14.22	QP	

Factor= antenna factor + cable loss - preamplifier factor

Result = Reading + Factor

Antenna Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	48.3318	39.94	-16.03	23.91	40.00	-16.09	QP	
2	57.9993	36.33	-16.22	20.11	40.00	-19.89	QP	
3	95.0930	41.22	-19.13	22.09	43.50	-21.41	QP	
4	147.4036	44.22	-14.38	29.84	43.50	-13.66	QP	
5	200.6881	44.19	-17.61	26.58	43.50	-16.92	QP	
6	239.9873	51.94	-16.24	35.70	46.00	-10.30	QP	

Factor= antenna factor + cable loss - preamplifier factor

Result = Reading + Factor

7.3 Radiation Emission, Above 1000MHz

Test Requirement ..... : FCC PART 15, SUBPART B

Test Method ..... : ANSI C63.4: 2014

Test Result..... : Pass

Frequency Range ..... : 1GHz~18GHz

Class. : Class B

Limit. ..... :

Frequency Range (MHz)	Distance (Meter)	Average Limit dB(uV/m)	Peak Limit (dBuV/m)
Above 1GHz	3	54	74

7.3.1 E.U.T. Operation

Operating Environment:

Temperature..... : 22.4°C

Humidity ..... : 52.3%RH

Atmospheric Pressure..... : 101.3kPa

EUT Operation:

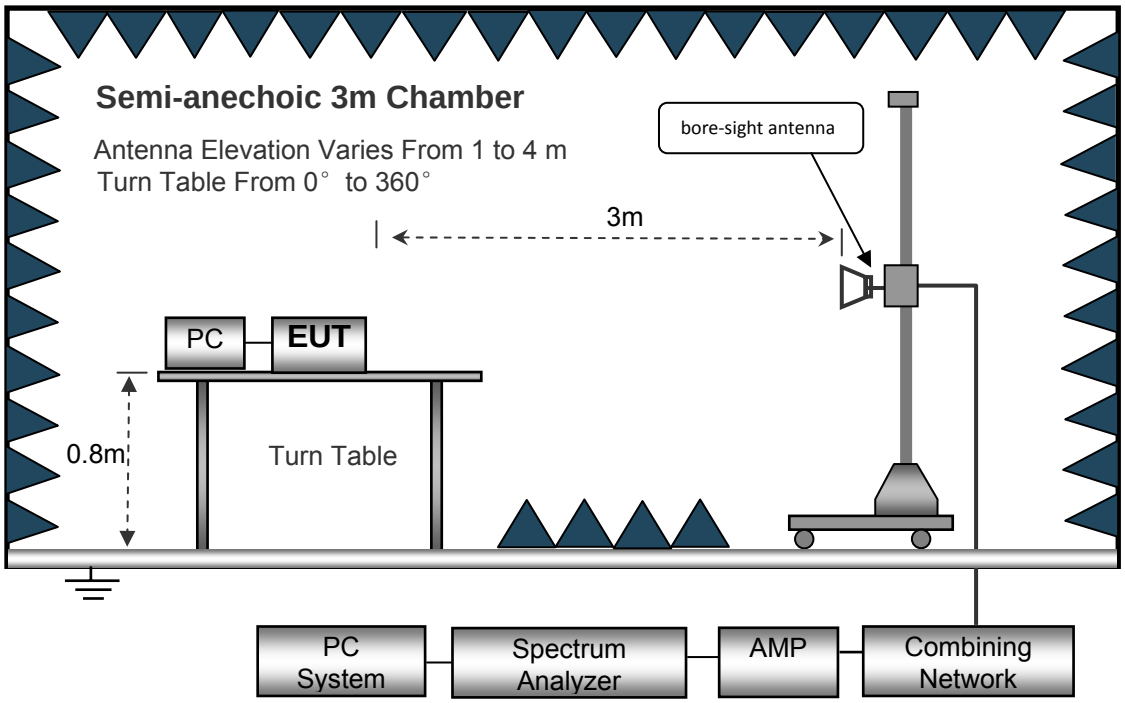
Input Voltage ..... : DC 5V by PC

Operating Mode ..... : Data transmitting with PC mode, Earphone mode, Adapter mode

Remark..... : The worse case Data transmitting mode is under the condition of AC 120V/60Hz adapter input and the data is shown as follow.

7.3.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2014.

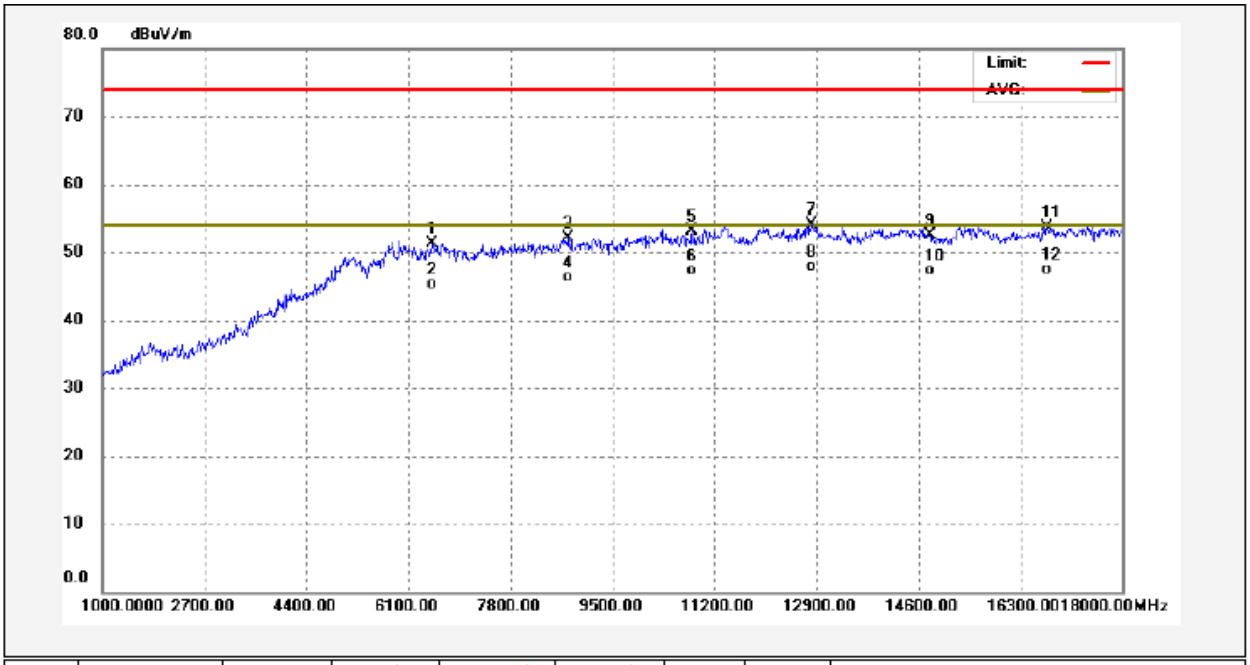


7.3.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Average measurements were performed if peak emissions were within 6dB of the average limit line.

7.3.4 Radiated Emission Test Data, Above 1000MHz

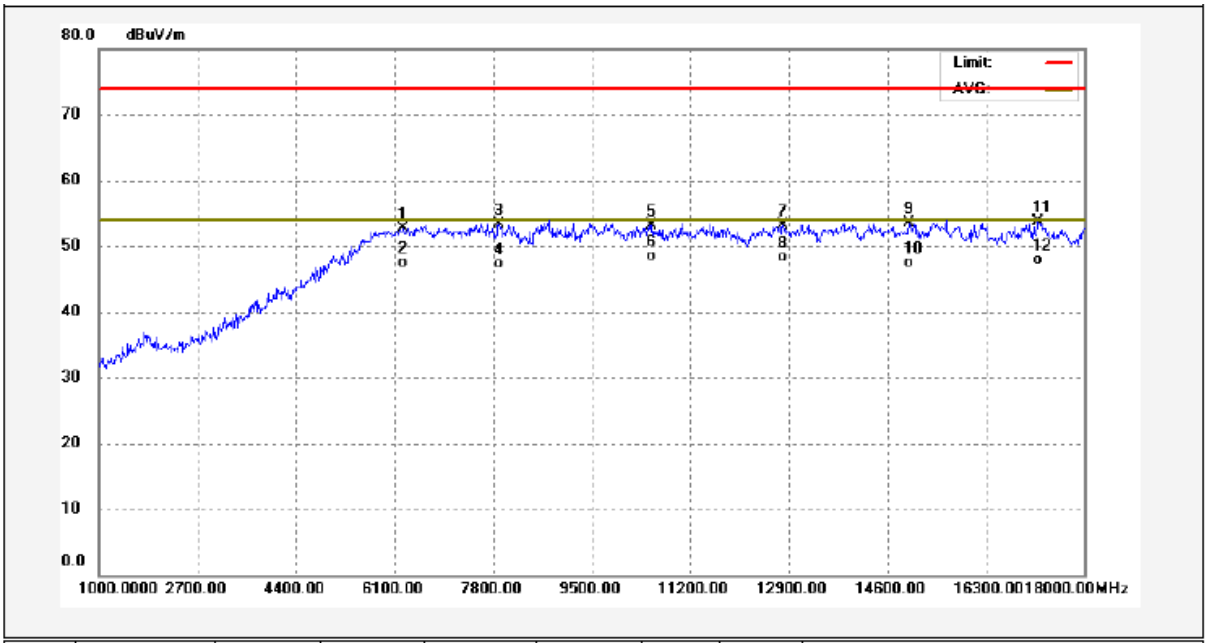
Antenna Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	6491.000	50.36	0.93	51.29	74.00	-22.71	peak	
2	6491.000	44.44	0.93	45.37	54.00	-8.63	AVG	
3	8752.000	49.55	2.57	52.12	74.00	-21.88	peak	
4	8752.000	43.71	2.57	46.28	54.00	-7.72	AVG	
5	10826.000	47.93	5.21	53.14	74.00	-20.86	peak	
6	10826.000	42.05	5.21	47.26	54.00	-6.74	AVG	
7	12815.000	46.00	8.08	54.08	74.00	-19.92	peak	
8	12815.000	39.87	8.08	47.95	54.00	-6.05	AVG	
9	14787.000	41.97	10.57	52.54	74.00	-21.46	peak	
10	14787.000	36.74	10.57	47.31	54.00	-6.69	AVG	
11	16742.000	42.11	11.56	53.67	74.00	-20.33	peak	
12	16742.000	35.96	11.56	47.52	54.00	-6.48	AVG	

Factor= antenna factor + cable loss - preamplifier factor
Result = Reading + Factor

Antenna Polarization: Horizontal



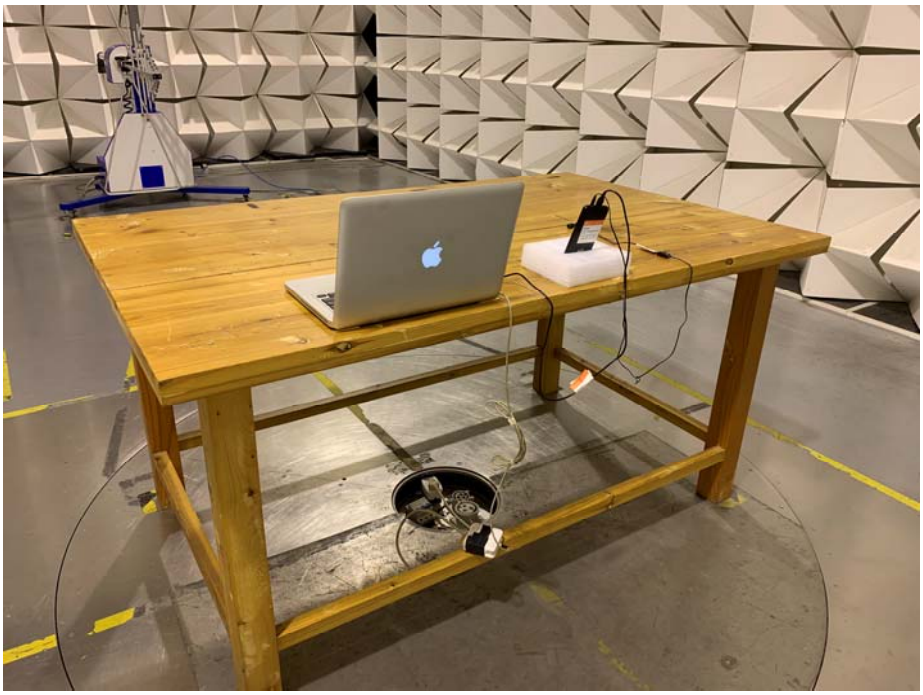
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	6253.000	53.16	-0.52	52.64	74.00	-21.36	peak	
2	6253.000	48.04	-0.52	47.52	54.00	-6.48	AVG	
3	7902.000	49.87	3.35	53.22	74.00	-20.78	peak	
4	7902.000	44.04	3.35	47.39	54.00	-6.61	AVG	
5	10537.000	47.68	5.43	53.11	74.00	-20.89	peak	
6	10537.000	42.99	5.43	48.42	54.00	-5.58	AVG	
7	12798.000	45.32	7.77	53.09	74.00	-20.91	peak	
8	12798.000	40.60	7.77	48.37	54.00	-5.63	AVG	
9	14974.000	44.49	8.92	53.41	74.00	-20.59	peak	
10	14974.000	38.67	8.92	47.59	54.00	-6.41	AVG	
11	17201.000	39.01	14.73	53.74	74.00	-20.26	peak	
12	17201.000	33.08	14.73	47.81	54.00	-6.19	AVG	

Factor= antenna factor + cable loss - preamplifier factor
Result = Reading + Factor

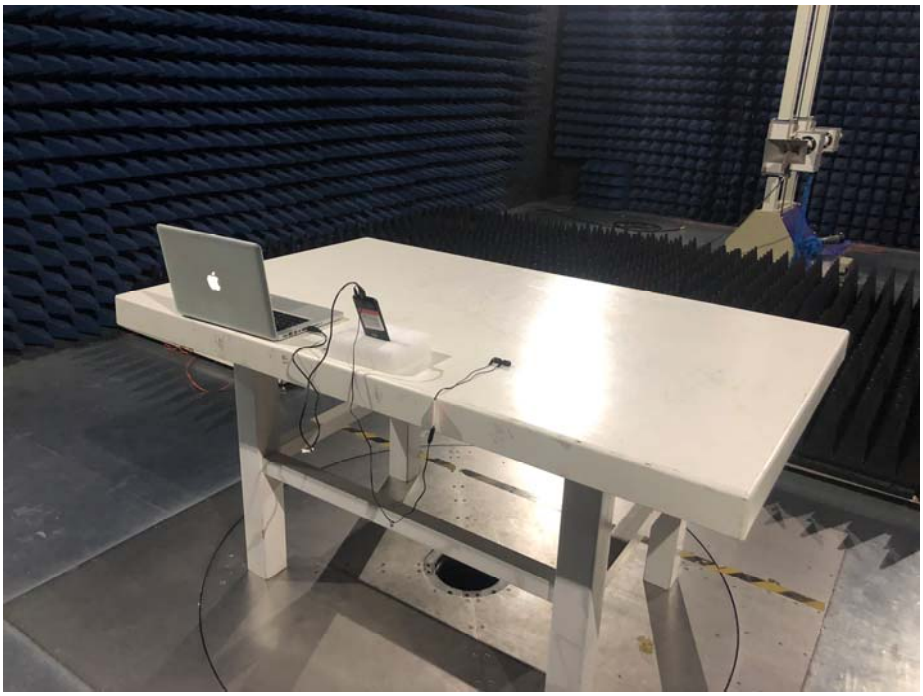
8 Photographs – Test Setup FCC ID 2AEPIELEMENT4PLUS

8.1 Photograph –Power Line Conducted Emission Test Setup at Test Site 1#

8.2 Photograph – Radiated Emission Test Setup for 30~1000MHz at Test Site 2#



8.3 Photograph – Radiated Emission Test Setup for Above 1GHz at Test Site 1#



======End of Report======