

TEST REPORT

Reference No..... : WTS15S0628455E
FCC ID : 2AEE8LAVASTARPLUS
Applicant..... : LAVA INTERNATIONAL (H.K) LIMITED
Address..... : UNIT L 1/F MAU LAM COMM BLDG 16-18 MAU LAM ST, JORDAN
KL, HK
Manufacturer : The same as above
Address..... : The same as above
Product Name..... : mobile phone
Model No..... : Star Plus
Brand..... : LAVA
Standards : FCC PART15 SUBPART B: 2014
Date of Receipt sample : Jun. 24, 2015
Date of Test : Jun. 24 – Jul. 17, 2015
Date of Issue..... : Jul.21, 2015
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:

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Compiled by:



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1 Test Summary

Test Item	Test Requirement	Class	Test Method	Test Result
Power Line Conducted Emission (150kHz to 30MHz)	FCC PART 15, SUBPART B: 2014	Class B	ANSI C63.4: 2009	Pass
Radiated Emission 30MHz to 1GHz)	FCC PART 15, SUBPART B: 2014	Class B	ANSI C63.4: 2009	Pass
Radiated Emission (Above 1GHz)	FCC PART 15, SUBPART B: 2014	Class B	ANSI C63.4: 2009	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

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3 General Information

3.1 General Description of E.U.T.

Product Name	: mobile phone
Model No.	: Star Plus
Model Description	: N/A
GSM Band(s)	: GSM 850/900/1800/1900MHz
GPRS/EGPRS Class	: 12
WCDMA Band(s)	: FDD Band I/II/V
LTE Bnad(s)	: LTE Band 2/4/7
Wi-Fi Specification	: 802.11b/g/n HT20/n HT40
Bluetooth Version	: Bluetooth v4.0 with BLE
GPS	: Support
NFC	: N/A
Hardware Version	: V2.0
Software Version	: S101

3.2 Details of E.U.T.

Technical Data	: Battery DC 3.8V, 2500mAh DC 5V,1A, Charging form adapter Adapter Input:100-300V~50/60Hz, 0.15A
Adapter	:: Manufacture: LAVA Model No.: CLV-14

3.3 Standards Applicable for Testing

The tests were performed according to following standards:

FCC PART 15, SUBPART B: Electronic Code of Federal Regulations- Unintentional Radiators 2014

3.4 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A-1**

Waltek Services (Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A-1, July 12, 2012.

- **FCC Test Site 1#– Registration No.: 880581**

Waltek Services(Shenzhen) 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. Registration 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

Waltek Services(Shenzhen) 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. Registration 328995, December 3, 2014.

3.5 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

3.6 Abnormalities from Standard Conditions

None.

4 Equipment Used during Test

4.1 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	Sep.15,2014	Sep.14,2015
2.	LISN	R&S	ENV216	101215	Sep.15,2014	Sep.14,2015
3.	Cable	Top	TYPE16(3.5M)	-	Sep.15,2014	Sep.14,2015
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	Sep.15,2014	Sep.14,2015
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.15,2014	Sep.14,2015
3.	Limiter	York	MTS-IMP-136	261115-001-0024	Sep.15,2014	Sep.14,2015
4.	Cable	LARGE	RF300	-	Sep.15,2014	Sep.14,2015
3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	EMC Analyzer	Agilent	E7405A	MY45114943	Sep.15,2014	Sep.14,2015
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Sep.15,2014	Sep.14,2015
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.19,2015	Apr.18,2016
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.15,2014	Sep.14,2015
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.19,2015	Apr.18,2016
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.19,2015	Apr.18,2016
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Mar.17,2015	Mar.16,2016
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	Apr.10,2015	Apr.09,2016
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	Equipment	Manufacturer	Model No.	Serial No	Last Calibration Date	Calibration Due Date
1	Test Receiver	R&S	ESCI	101296	Sep.15,2014	Sep.14,2015
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Sep.15,2014	Sep.14,2015
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Sep.15,2014	Sep.14,2015

4	Cable	HUBER+SUHNER	CBL2	525178	Sep.15,2014	Sep.14,2015
RF Conducted Testing						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Sep.15,2014	Sep.14,2015
2.	Spectrum Analyzer (9k~6GHz)	R&S	FSL6	100959	Sep.15,2014	Sep.14,2015
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	Sep.15,2014	Sep.14,2015

4.2 Description of Support Units

Equipment	Manufacturer	Model No.	Series No.
MacBook Air	APPLE	A1465	C17KTQDNF5N7

4.3 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±3.64dB	(1)
Radiation Emission	30MHz~1000MHz	±5.03dB	(1)
	1GHz~6GHz	±5.47dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

5 Emission Test Results

5.1 Power Line Conducted Emission, 150kHz to 30MHz

Test Requirement : FCC PART 15, SUBPART B
 Test Method : ANSI C63.4
 Test Result..... : Pass
 Frequency Range : 150kHz to 30MHz
 Class : Class B
 Limit :

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

5.1.1 E.U.T. Operation

Operating Environment:

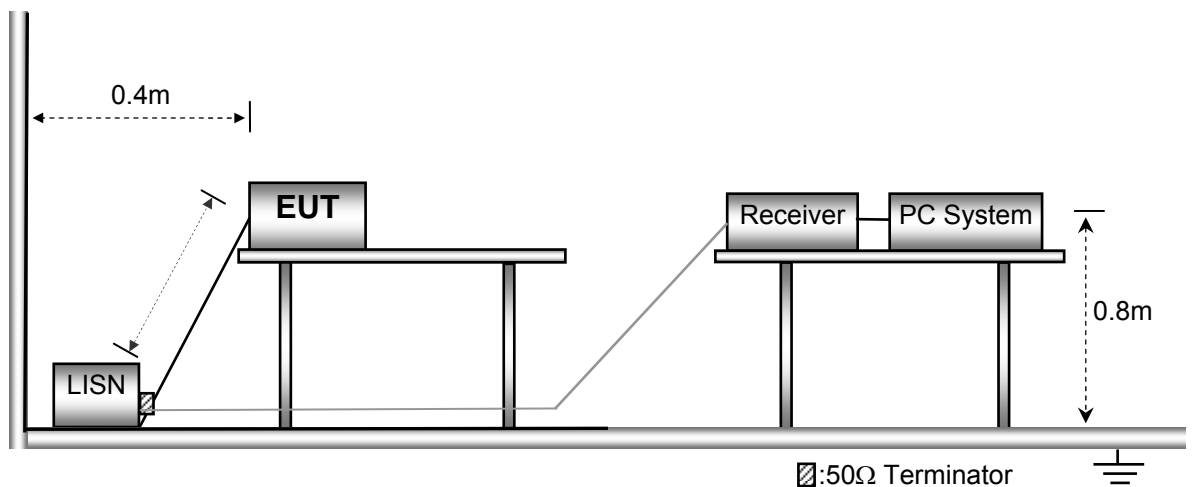
Temperature : 23°C
 Humidity : 53.6%RH
 Atmospheric Pressure..... : 101kPa

EUT Operation:

Input Voltage..... : DC 5V by Adapter Input AC 120V/60Hz
 Operating Mode : Data transmitting
 Remark : The worse case(Data transmitting mode) is under the condition of AC 120V/60Hz adapter input and the data is shown as follow.

5.1.2 Block Diagram of Test Setup

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

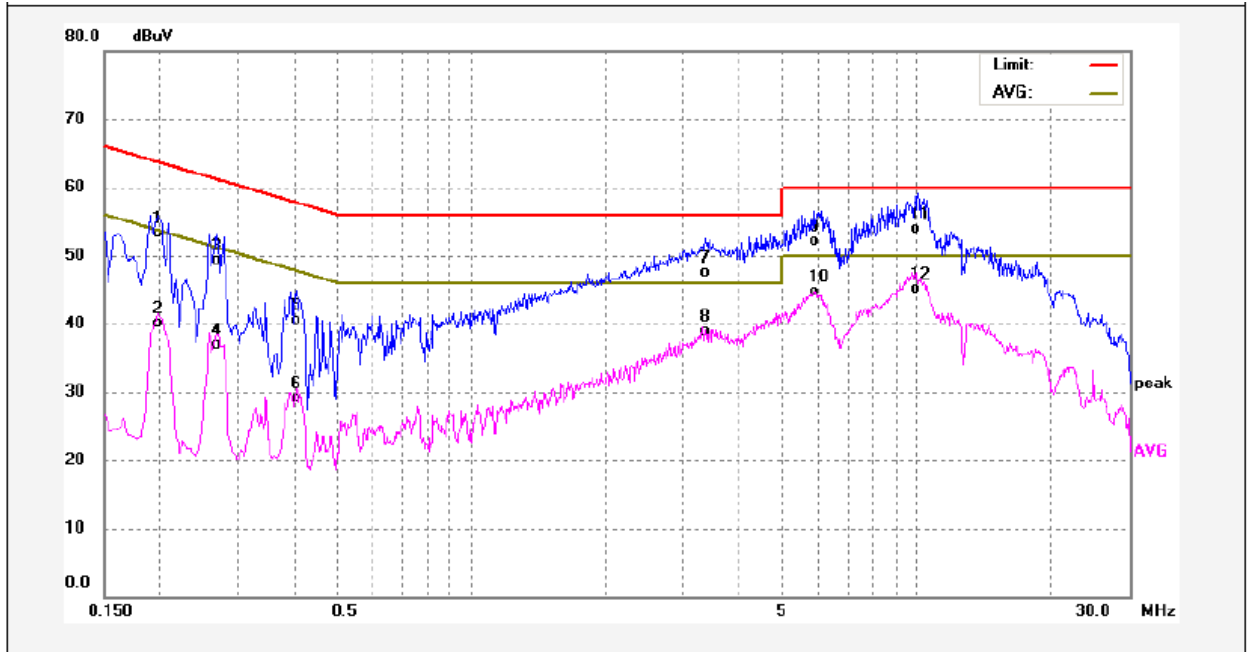


5.1.3 Measurement Data

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 section 5.1.4, the EUT complied with the FCC PART 15, SUBPART B standards.

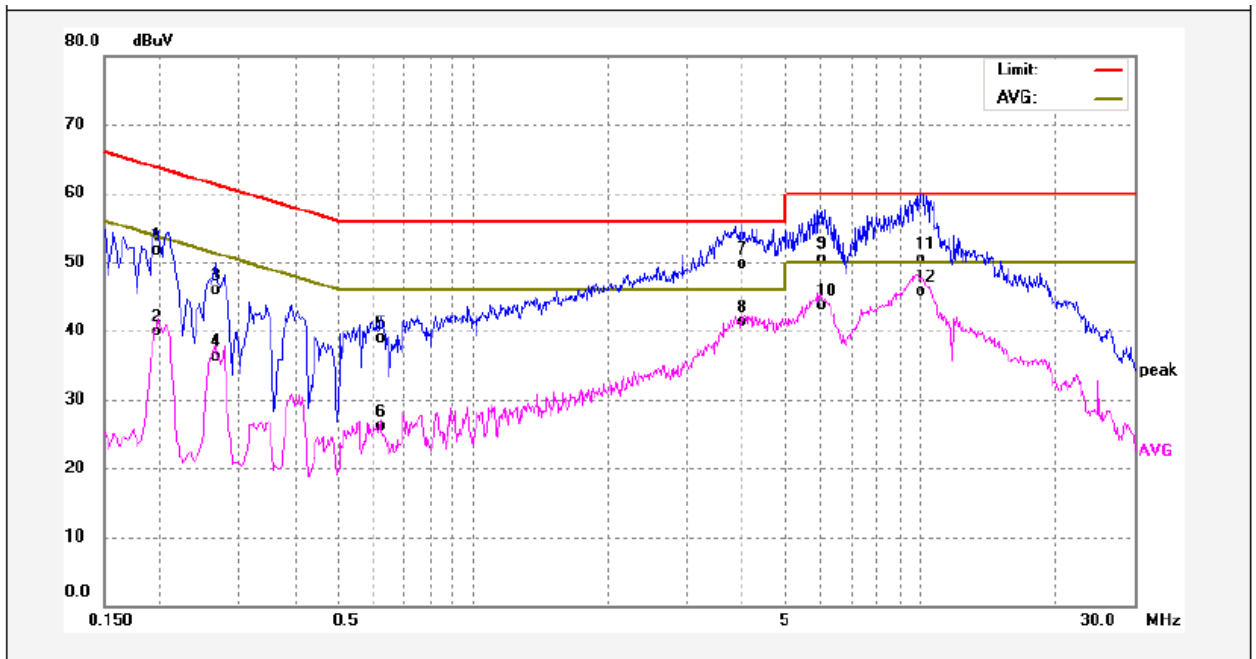
5.1.4 Power Line Conducted Emission Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1980	43.17	10.10	53.27	63.69	-10.42	QP	
2	0.1980	30.04	10.10	40.14	53.69	-13.55	AVG	
3	0.2700	39.22	10.10	49.32	61.12	-11.80	QP	
4	0.2700	26.87	10.10	36.97	51.12	-14.15	AVG	
5	0.4060	30.42	10.11	40.53	57.73	-17.20	QP	
6	0.4060	19.04	10.11	29.15	47.73	-18.58	AVG	
7	3.3580	37.28	10.22	47.50	56.00	-8.50	QP	
8	3.3580	28.63	10.22	38.85	46.00	-7.15	AVG	
9	5.8859	41.76	10.27	52.03	60.00	-7.97	QP	
10	5.8859	34.38	10.27	44.65	50.00	-5.35	AVG	
11	10.0900	43.47	10.35	53.82	60.00	-6.18	QP	
12	10.0900	34.75	10.35	45.10	50.00	-4.90	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1965	41.61	10.10	51.71	63.75	-12.04	QP	
2	0.1965	29.85	10.10	39.95	53.75	-13.80	AVG	
3	0.2660	35.89	10.10	45.99	61.24	-15.25	QP	
4	0.2660	26.14	10.10	36.24	51.24	-15.00	AVG	
5	0.6220	28.66	10.15	38.81	56.00	-17.19	QP	
6	0.6220	15.87	10.15	26.02	46.00	-19.98	AVG	
7	4.0020	39.46	10.23	49.69	56.00	-6.31	QP	
8	4.0020	31.14	10.23	41.37	46.00	-4.63	AVG	
9	6.1060	40.21	10.27	50.48	60.00	-9.52	QP	
10	6.1060	33.51	10.27	43.78	50.00	-6.22	AVG	
11	10.0700	40.17	10.35	50.52	60.00	-9.48	QP	
12	10.0700	35.45	10.35	45.80	50.00	-4.20	AVG	

5.2 Radiation Emission, 30MHz to 1000MHz

Test Requirement : FCC PART 15, SUBPART B
 Test Method : ANSI C63.4
 Test Result : Pass
 Frequency Range : 30MHz to 1000MHz
 Class. : Class B
 Limit..... :

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

5.2.1 E.U.T. Operation

Operating Environment:

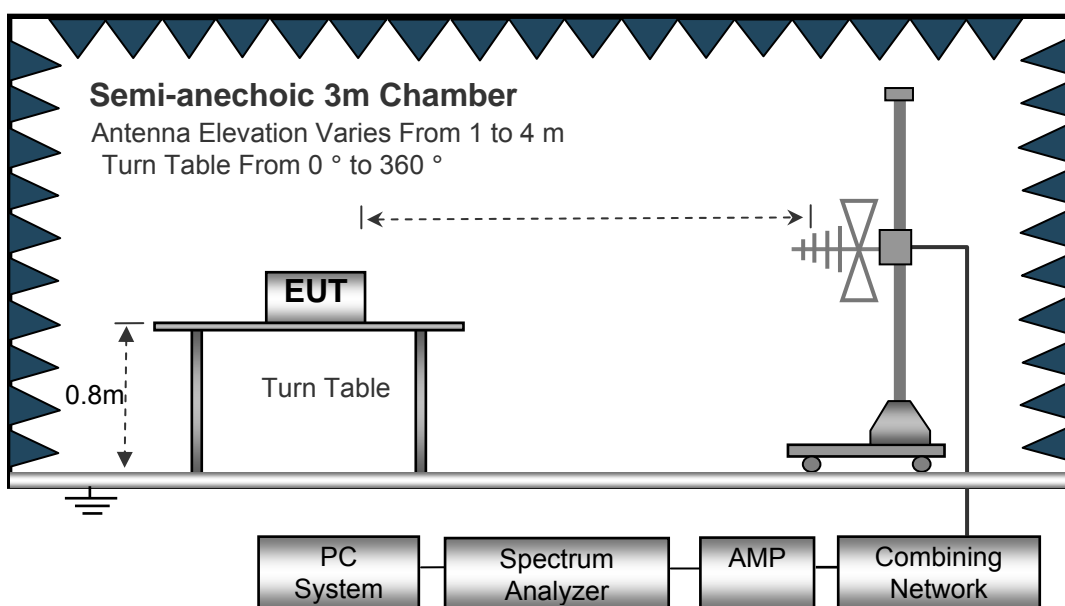
Temperature : 22.5°C
 Humidity : 52.6%RH
 Atmospheric Pressure..... : 101.2kPa

EUT Operation:

Input Voltage : DC 5V by Adapter Input AC 120V/60Hz
 Operating Mode : Data transmitting
 Remark : The worse case(Data transmitting) is under the condition of AC 120V/60Hz adapter input and the data is shown as follow.

5.2.2 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.

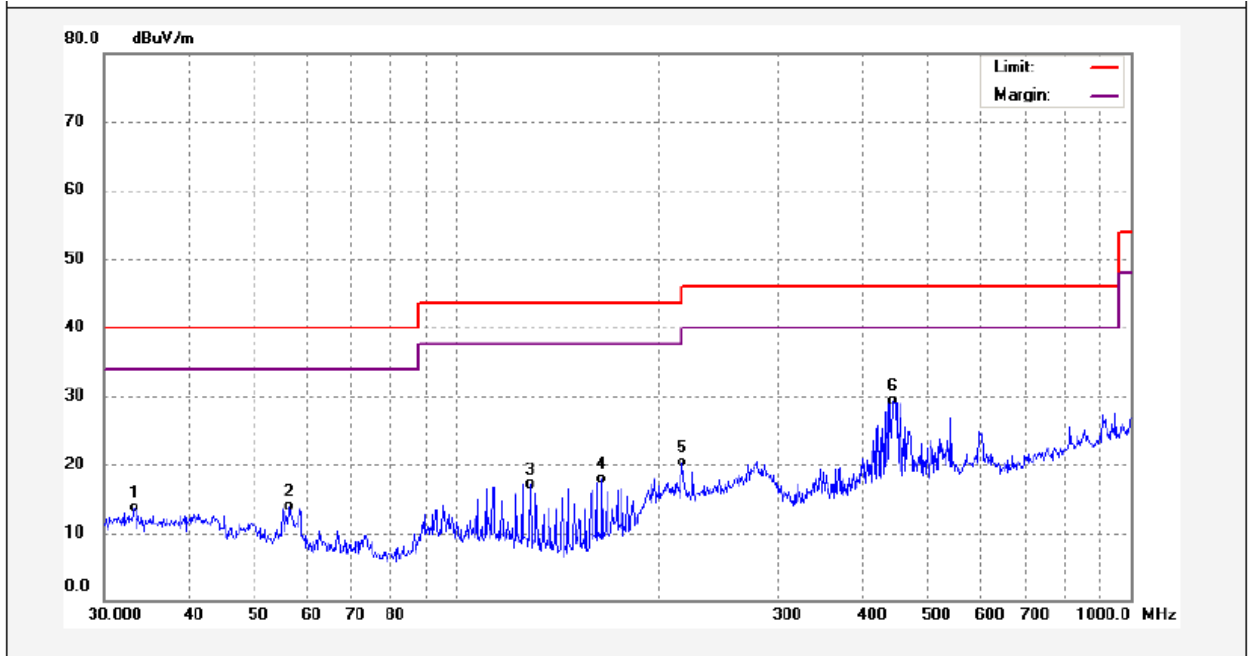


5.2.3 Measurement Data

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.

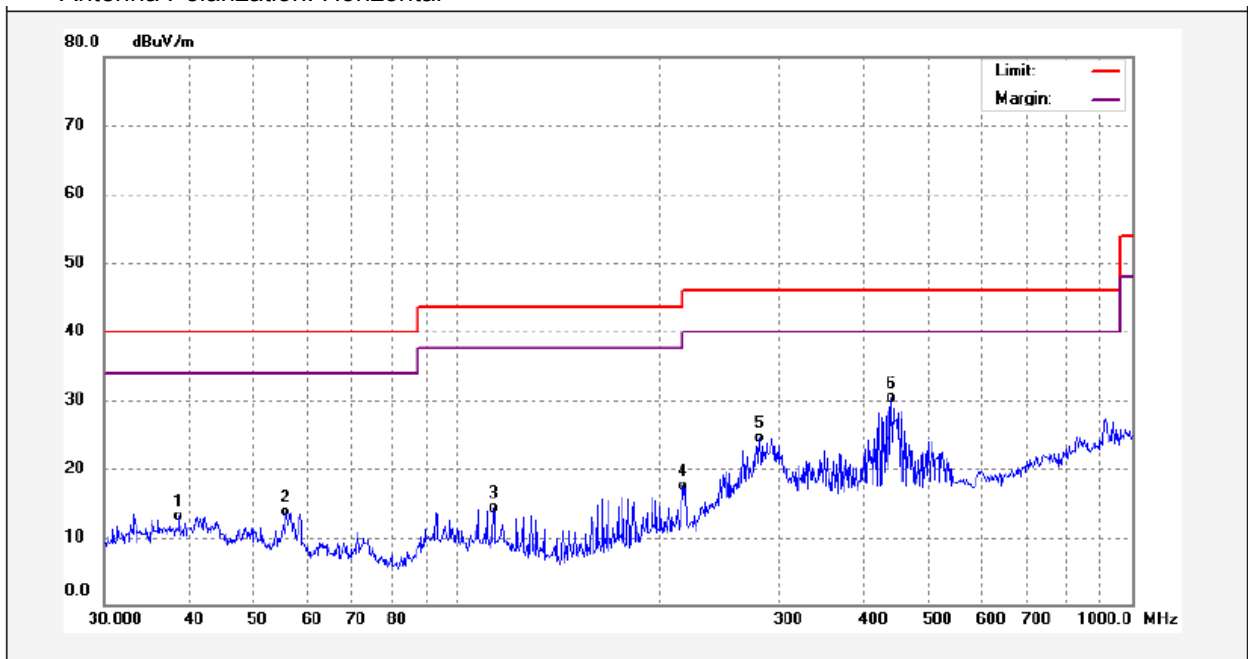
5.2.4 Radiated Emission Test Data, 30MHz to 1000MHz

Antenna Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	33.3279	30.00	-16.33	13.67	40.00	-26.33	QP	
2	56.5929	31.99	-18.07	13.92	40.00	-26.08	QP	
3	128.5630	35.31	-18.13	17.18	43.50	-26.32	QP	
4	164.3301	36.72	-18.75	17.97	43.50	-25.53	QP	
5	216.0240	37.29	-17.05	20.24	46.00	-25.76	QP	
6	443.2943	40.79	-11.52	29.27	46.00	-16.73	QP	

Antenna Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	38.7518	28.29	-15.09	13.20	40.00	-26.80	QP	
2	55.8047	31.54	-17.79	13.75	40.00	-26.25	QP	
3	113.3163	31.30	-16.92	14.38	43.50	-29.12	QP	
4	216.0240	34.60	-17.05	17.55	46.00	-28.45	QP	
5	281.0075	40.18	-15.58	24.60	46.00	-21.40	QP	
6	440.1963	42.07	-11.80	30.27	46.00	-15.73	QP	

5.3 Radiation Emission, Above 1000MHz

Test Requirement : FCC PART 15, SUBPART B
 Test Method : ANSI C63.4
 Test Result : Pass
 Frequency Range : 1GHz~6GHz
 Class. : Class B
 Limit. :

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

5.3.1 E.U.T. Operation

Operating Environment:

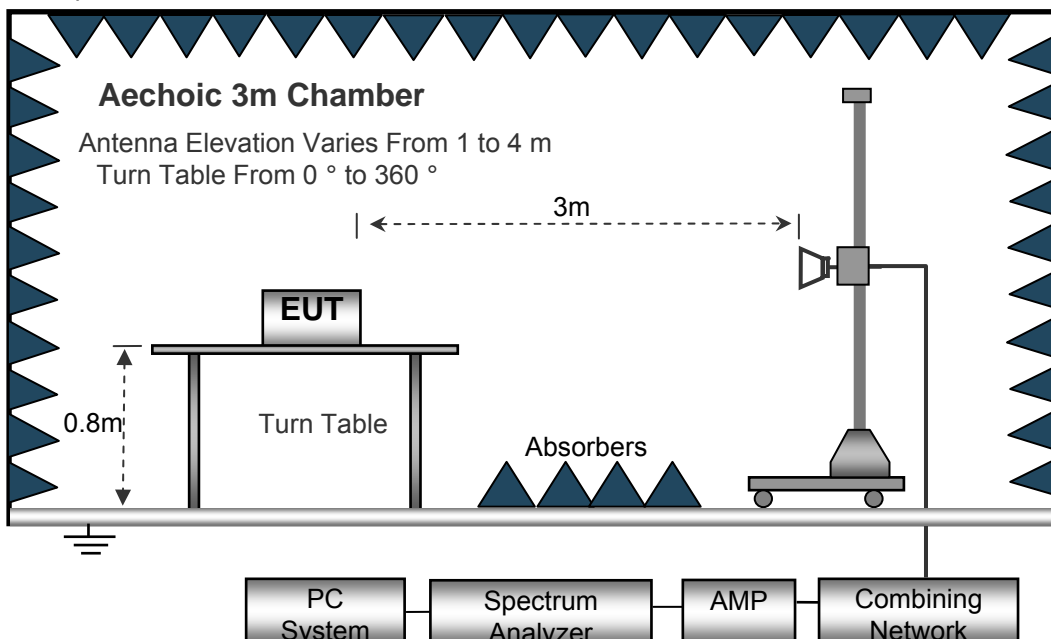
Temperature : 22.4°C
 Humidity : 52.3%RH
 Atmospheric Pressure : 101.3kPa

EUT Operation:

Input Voltage : DC 5V by Adapter Input AC 120V/60Hz
 Operating Mode : Data transmitting
 Remark : The worse case(Data transmitting mode) is under the condition of AC 120V/60Hz adapter input and the data is shown as follow.

5.3.2 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.

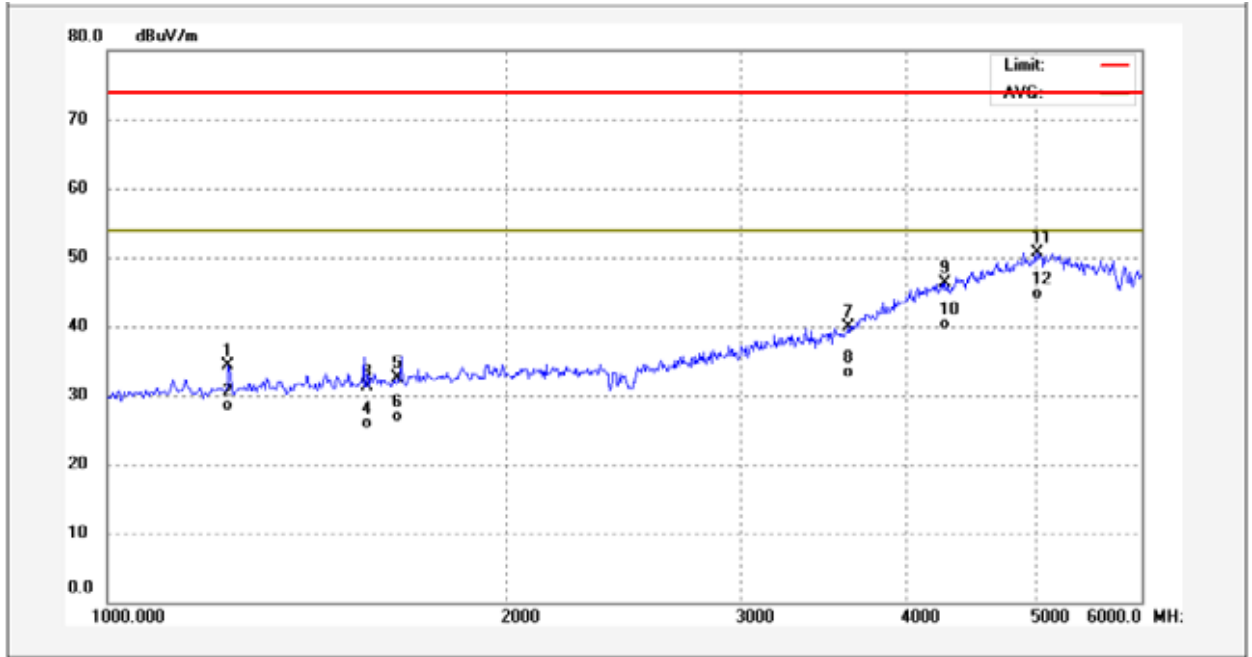


5.3.3 Measurement Data

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

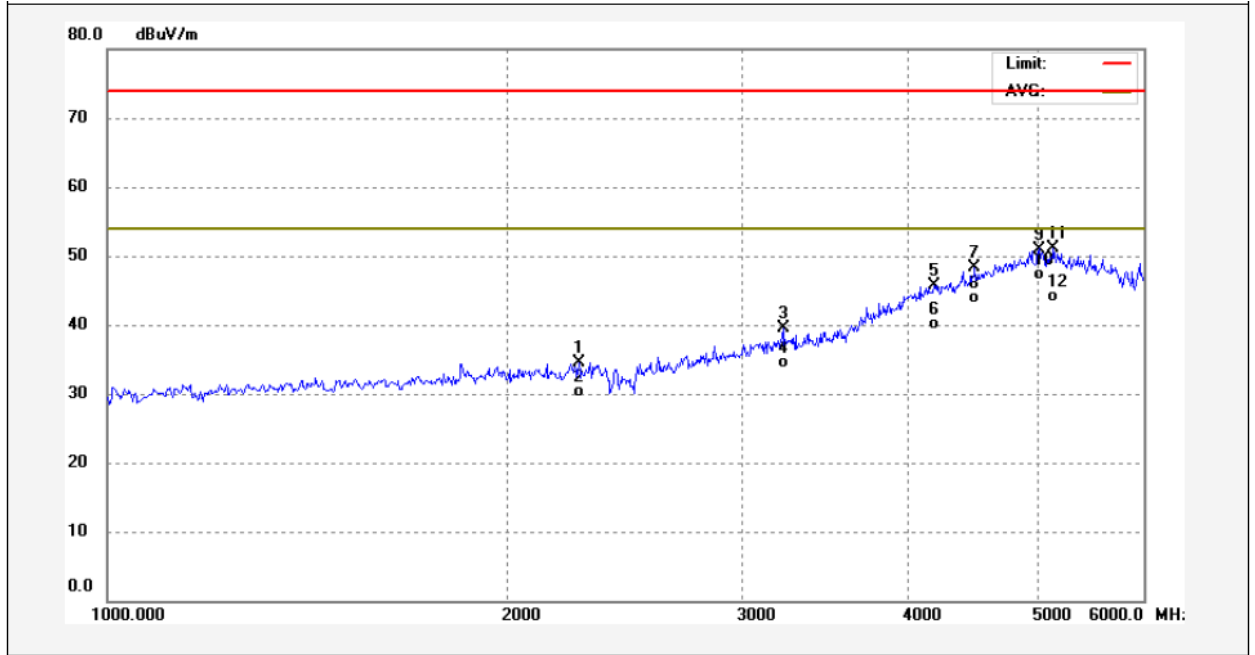
5.3.4 Radiated Emission Test Data, Above 1000MHz

Antenna Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1235.000	53.14	-18.77	34.37	74.00	-39.63	peak	
2	1235.000	47.19	-18.77	28.42	54.00	-25.58	AVG	
3	1565.085	48.93	-17.67	31.26	74.00	-42.74	peak	
4	1565.085	43.63	-17.67	25.96	54.00	-28.04	AVG	
5	1655.000	49.97	-17.40	32.57	74.00	-41.43	peak	
6	1660.000	44.24	-17.39	26.85	54.00	-27.15	AVG	
7	3620.000	50.13	-10.22	39.91	74.00	-34.09	peak	
8	3620.000	43.46	-10.22	33.24	54.00	-20.76	AVG	
9	4275.000	50.81	-4.48	46.33	74.00	-27.67	peak	
10	4275.000	44.69	-4.48	40.21	54.00	-13.79	AVG	
11	5010.000	51.05	-0.28	50.77	74.00	-23.23	peak	
12	5010.000	44.97	-0.28	44.69	54.00	-9.31	AVG	

Antenna Polarization: Horizontal



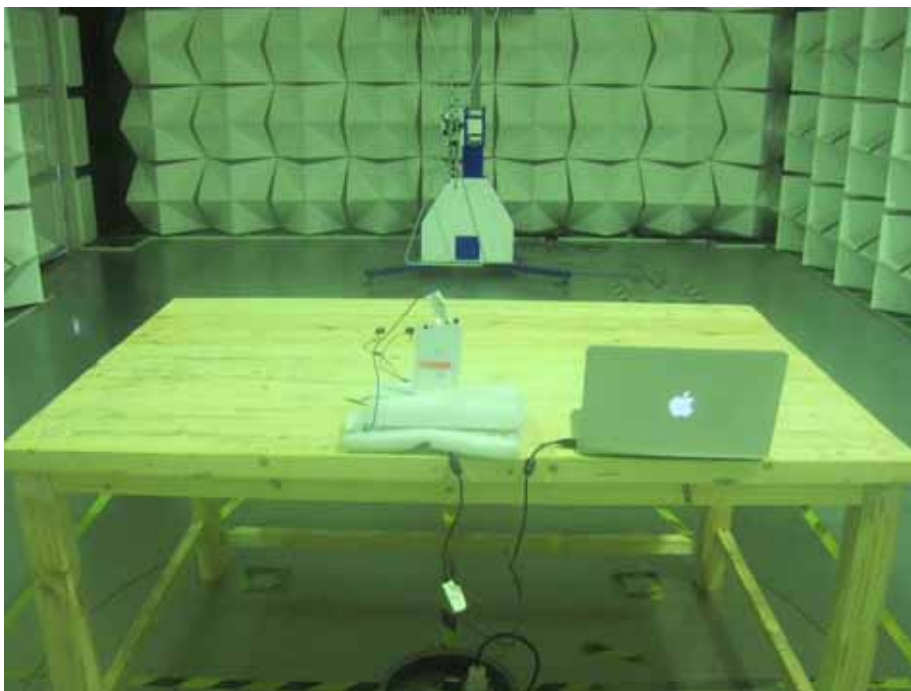
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2260.000	50.66	-16.11	34.55	74.00	-39.45	peak	
2	2260.000	46.51	-16.11	30.40	54.00	-23.60	AVG	
3	3220.000	52.04	-12.58	39.46	74.00	-34.54	peak	
4	3220.000	47.08	-12.58	34.50	54.00	-19.50	AVG	
5	4185.000	50.63	-5.02	45.61	74.00	-28.39	peak	
6	4185.000	45.22	-5.02	40.20	54.00	-13.80	AVG	
7	4485.000	51.49	-3.22	48.27	74.00	-25.73	peak	
8	4485.000	47.12	-3.22	43.90	54.00	-10.10	AVG	
9	5015.000	51.28	-0.28	51.00	74.00	-23.00	peak	
10	5015.000	47.58	-0.28	47.30	54.00	-6.70	AVG	
11	5135.000	51.81	-0.65	51.16	74.00	-22.84	peak	
12	5135.000	44.85	-0.65	44.20	54.00	-9.80	AVG	

6 Photographs – Test Setup

6.1 Photograph –Power Line Conducted Emission Test Setup at Test Site 2#



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



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



====End of Report====