EMC TEST REPORT

Report No.:	SET2014-00241
Product Name:	LYNX
FCC ID:	2ABMA-888-700-205
Model No. :	888-700-205
Applicant:	LYNX INNOVATION LTD
Address:	UNIT 8A 331 ROSEDALE ROAD ALBANY AUCKLAND New Zealand

Issued by:	CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd.
Lab Location:	Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055, P. R. China
	Tel: 86 755 26627338 **Fax:** 86 755 26627238

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Test Report

Product Name ..... :	LYNX
Model No. ..... :	888-700-205
Applicant ..... :	LYNX INNOVATION LTD
Applicant Address ..... :	UNIT 8A 331 ROSEDALE ROAD ALBANY AUCKLAND New Zealand
Manufacturer ..... :	JIAXING LYNX DISPLAYS LIMITED
Manufacturer Address ..... :	FL.1 BLDG. 7#3288 ZHONGSHAN RD(W) XIUZHOU INDUSTRIAL PARK JIAXING ZHEJIANG 314000 CHINA
Test Standards ..... :	47 CFR Part 15 Subpart B: Radio Frequency Devices
Test Result ..... :	PASS
Tested by ..... :	Xiaolong Zhang 2014.01.10 Xiaolong Zhang, Test Engineer
Reviewed by ..... :	Shuangwen Zhang 2014.01.10 Shuangwen Zhang, Senior Engineer
Approved by ..... :	Wu Lian 2014.01.10 Wu Li'an, Manager

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Change History		
Issue	Date	Reason for change
1.0	Jan.10,2014	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type ..... :	888-700-205	
Serial No..... :	(n.a, marked #1 by test site)	
FCC ID ..... :	2ABMA-888-700-205	
Hardware Version..... :	1.3	
Software Version ..... :	1.0.0	
Power Supply ..... :	Battery	
	Model No.:	XDC-1S1P1000
	Serial No.:	(n.a. marked #1 by test site)
	Capacitance:	1000mAh
	Rated Voltage:	3.7V
	Charge Limit:	4.2V
Ancillary Equipment 1 ..... :	PC	
	Brand Name:ThinkPad	
	Model Name:E420	
	Serial No.:1141AH6	

Note 1: The EUT is a LYNX, it supports the following operating mode and frequency band: 802.11b,802.11g 802.11n/20M,802n/40M and Bluetooth 2.1+EDR

Note 2:The EUT is equipped with a T-Flash card slot; equipped with a USB port ,LAN Port ,mini HDMI Port ,DC Port and LYNX Port which can be connected to the ancillary equipments.

Note 3: The EUT can be powered by DC 12V and PC by USB.

Note 4:For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15 Subpart B 2012	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	15.107	Conducted Emission	PASS
2	15.109	Radiated Emission	PASS

NOTE: The EUT has been tested according to 47 CFR Part 15 Subpart B，Class B.The test procedure is according to ANSI C63.4:2009 and CISPR 22:2008.The test results are as following：

1.3 Facilities and Accreditations

1.3.1 Facilities

CNAS-Lab Code: L1659
CCIC-SET Southern Electronic Product Testing (Shenzhen) Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659. A 12.8*6.8*6.4 (m) fully anechoic chamber was used for the radiated spurious emissions test.
FCC-Registration No.: 406086
CCIC-SET Southern Electronic Product Testing (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 406086, Renewal date Nov. 19, 2011, valid time is until Nov. 18, 2014.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15℃- 35℃
Relative Hu7” MIDity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

1.3.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission:	Uc = 3.6 dB (k=2)
Uncertainty of Radiated Emission:	Uc = 4.5 dB (k=2)

2. TEST CONDITIONS SETTING

2.1 Test Mode

(1) The test mode

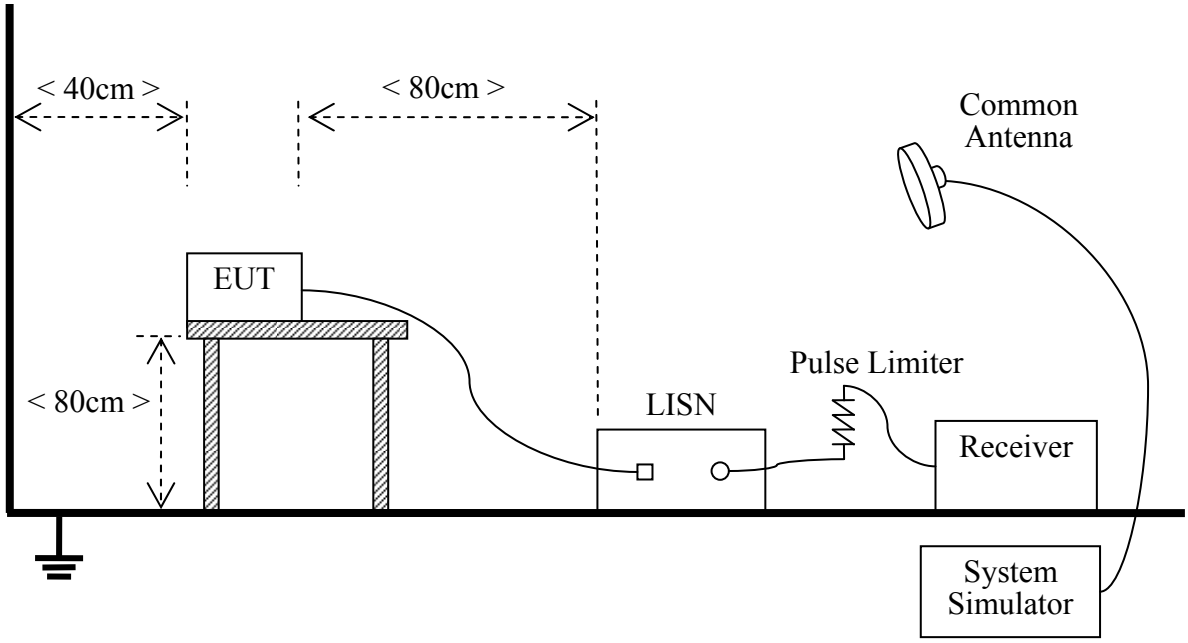
The EUT configuration of the emission tests was PC1 + EUT + Router+ PC2

In this test mode, the EUT was connected to PC1 via a USB cable with two magnet rings supplied by applicant, and established a network by router and PC2. During the measurement, a data link was established between the EUT and PC1, at the same time, another communication link was established between the EUT and PC2 via router.

2.2 Test Setup and Equipments List

2.2.1 Conducted Emission

A. Test Setup:



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. The Common Antenna is used for the call between the EUT and the System Simulator (SS). A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

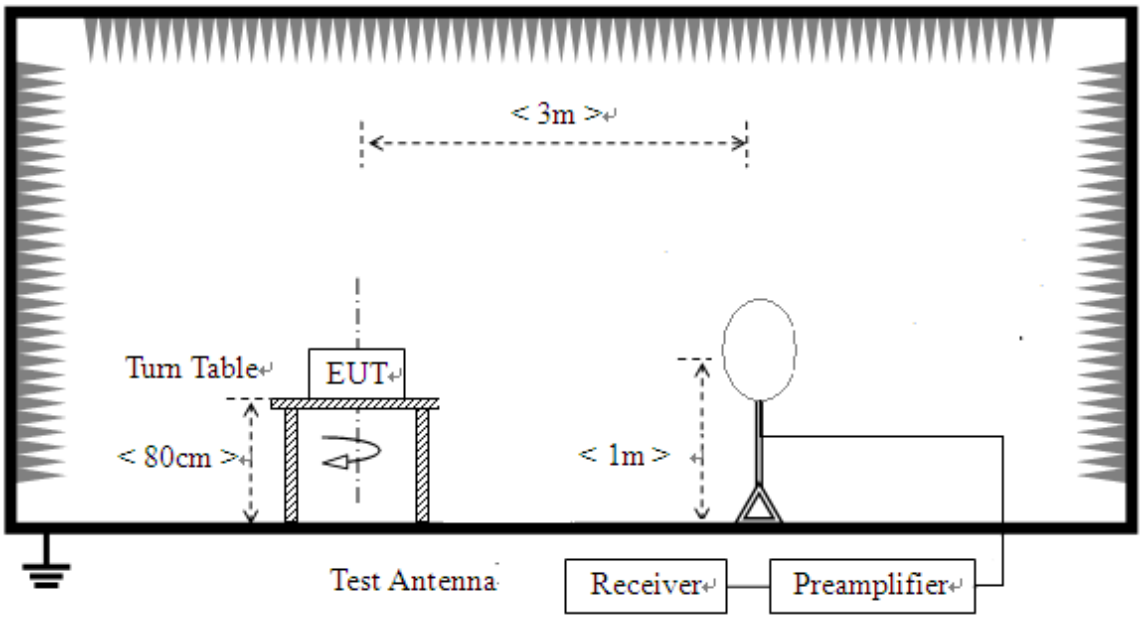
B. Equipments List:

Description	Manufacturer	Model	Serial No.	Calibration Due. Date
Test Receiver	ROHDE&SCHWARZ	ESCS30	A0304260	2014.06.10
System Simulator	ROHDE&SCHWARZ	CMU200	A0304212	2014.06.10

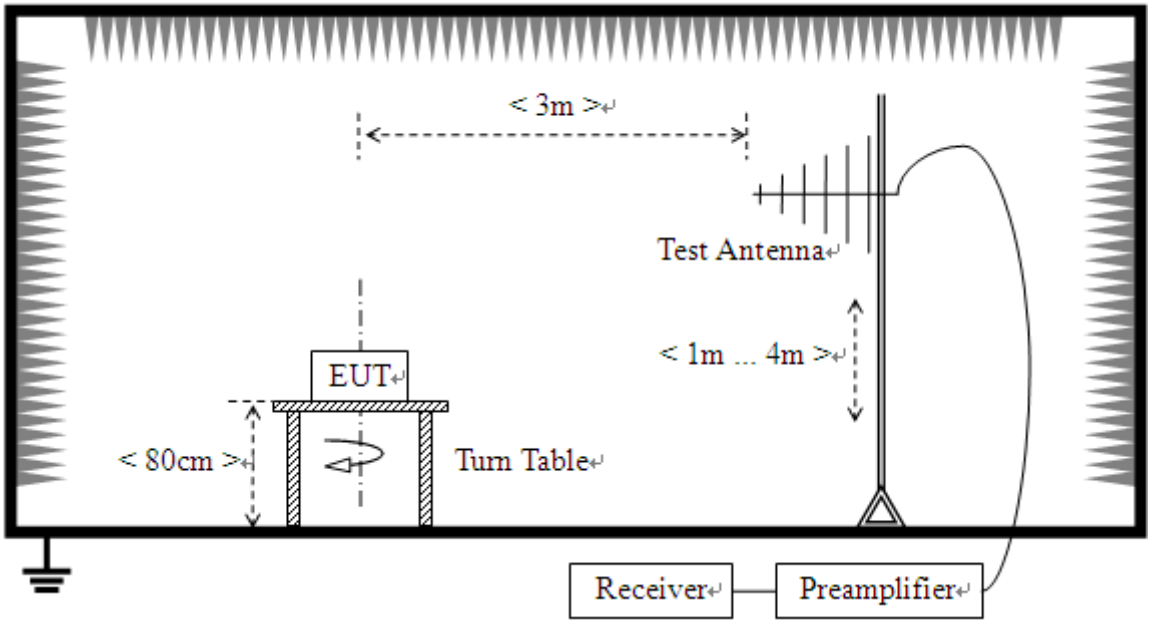
2.2.2 Radiated Emission

A. Test Setup:

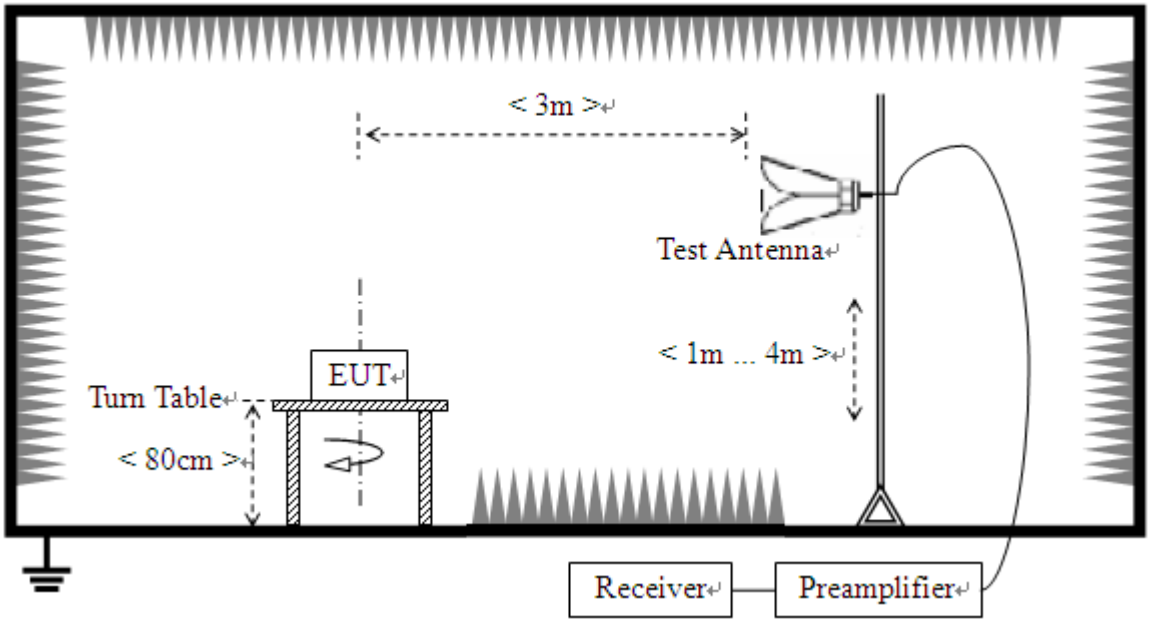
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



B. Test Procedure

The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

1) In the frequency range of 9KHz to 30MHz, magnetic field is measured with Loop Test Antenna.

   The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

2) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

C. Equipments List:

Description	Manufacturer	Model	Serial No.	Calibration Due. Date
Test Receiver	ROHDE&SCHWARZ	ESIB7	A0501375	2014.06.10
Test Receiver	ROHDE&SCHWARZ	ESIB26	A0304218	2014.06.10
Semi-Anechoic Chamber	Albatross	9m*6m*6m	A0412372	2014.01.04
Test Antenna - Bi-Log	HP	CBL6111A	A9704202	2014.06.10
Test Antenna - Horn	ROHDE&SCHWARZ	HF906	A0304225	2014.06.10
System Simulator	ROHDE&SCHWARZ	CMU200	A0304212	2014.06.10
Anechoic Chamber	Albatross	SAC-5MAC 12.8x6.8x6.4 m	A0304210	2014.03.09
Amplifier 1G~18GHz	ROHDE&SCHWARZ	MITEQ AFS42-0010 1800	A0509366	2014.06.10
amplifier 20M~3GHz	Compliance Direction System	PAP-0203H	A0509377	2014.06.10
loop antenna	HFH2-Z2	R&S	A0304220	2016.06.28
Anechoic Chamber	Albatross	SAC-5MAC 19.6x11.8x8. 5m	A0304210	2014.03.09
EMI Test Receiver	R&S	ESCI	A0902601	20140.09.09

3. 47 CFR PART 15B REQUIREMENTS

3.1 Conducted Emission

3.1.1 Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

a) The limit subjects to the Class B digital device.

b) The lower limit shall apply at the band edges.

c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.1.2 Test Description

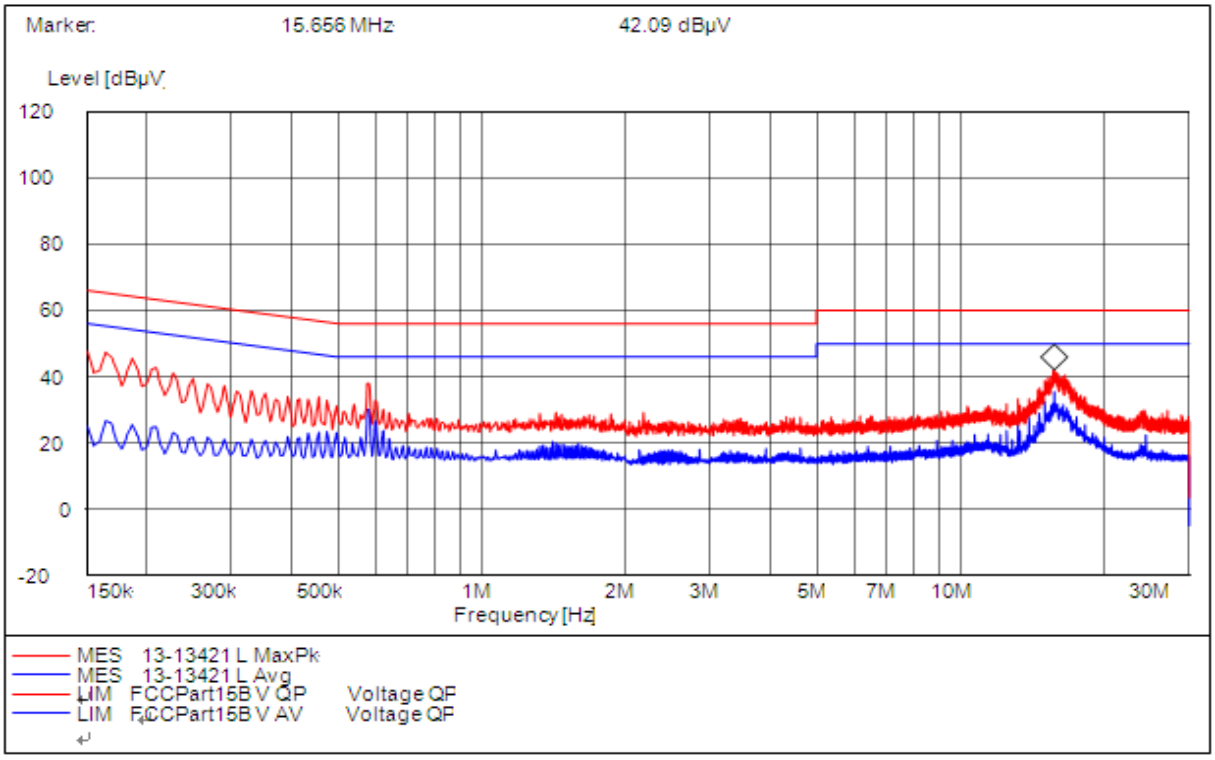
See section 2.2.1 of this report.

3.1.3 Test Result

The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

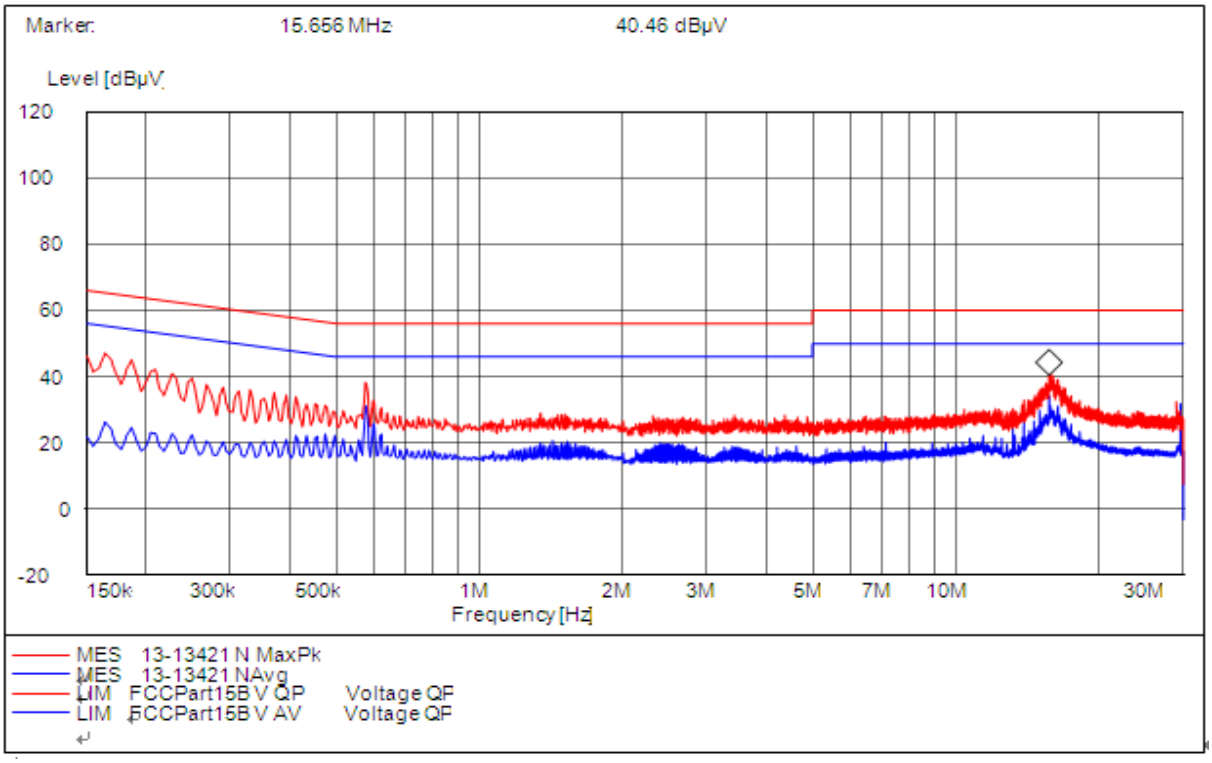
3.1.3.1 Test Mode

A. Test Plot and Suspicious Points:



Conducted Disturbance at Mains Terminals							
L Test Data							
QP				AV			
Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)	Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)
0.1500	66	47.66	18.34	0.1500	56	25.09	30.92
0.5810	56	38.00	18.00	0.5810	46	30.06	15.94
15.6560	60	42.09	17.91	15.6560	50	35.34	14.66
L Test Curve							

(Plot A: L Phase)



Conducted Disturbance at Mains Terminals							
N Test Data							
QP				AV			
Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)	Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Margin (dB)
0.1500	66	46.29	19.71	0.1500	56	21.89	34.11
0.5675	56	38.26	17.74	0.5675	46	31.32	14.68
15.6560	60	40.46	19.54	15.6560	50	34.26	15.74
N Test Curve							

(Plot B: N Phase)

Test Result: PASS

3.2 Radiated Emission

3.2.1 Requirement

According to FCC section 15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength		Field Strength Limitation at 3m Measurement Dist	
	μV/m	Dist	(uV/m)	(dBuV/m)
0.009 - 0.490	2400/F(KHz)	300m	10000* 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 - 1.705	2400/F(KHz)	30m	100* 2400/F(KHz)	20log 2400/F(KHz) + 40
1.705 - 30.00	30	30m	100*30	20log 30 + 40
30.0 - 88.0	100	3m	100	20log 100
88.0 - 216.0	150	3m	150	20log 150
216.0 - 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

a) As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

b) Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

c) For below 1G :QP detector RBW 120KHz ,VBW 300KHz.

d) For Above 1G: PK detector RBW 1MHz,VBW 3MHz for PK value ;PK detector RBW 1MHz, VBW 10Hz for AV value.

Note:

1) The tighter limit shall apply at the boundary between two frequency range.
2) Limitation expressed in dBuV/m is calculated by 20log Emission Level(uV/m).
3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $Ld1 = Ld2 * (d2/d1)^{2.}$
   Example:
   F.S Limit at 30m distance is 30uV/m, then F.S Limitation at 3m distance is adjusted as
   $Ld1 = L1 = 30uV/m * (10)^2 = 100 * 30uV/m.$

3.2.2 Test Description

See section 2.2.2of this report.

3.2.3 Test Result

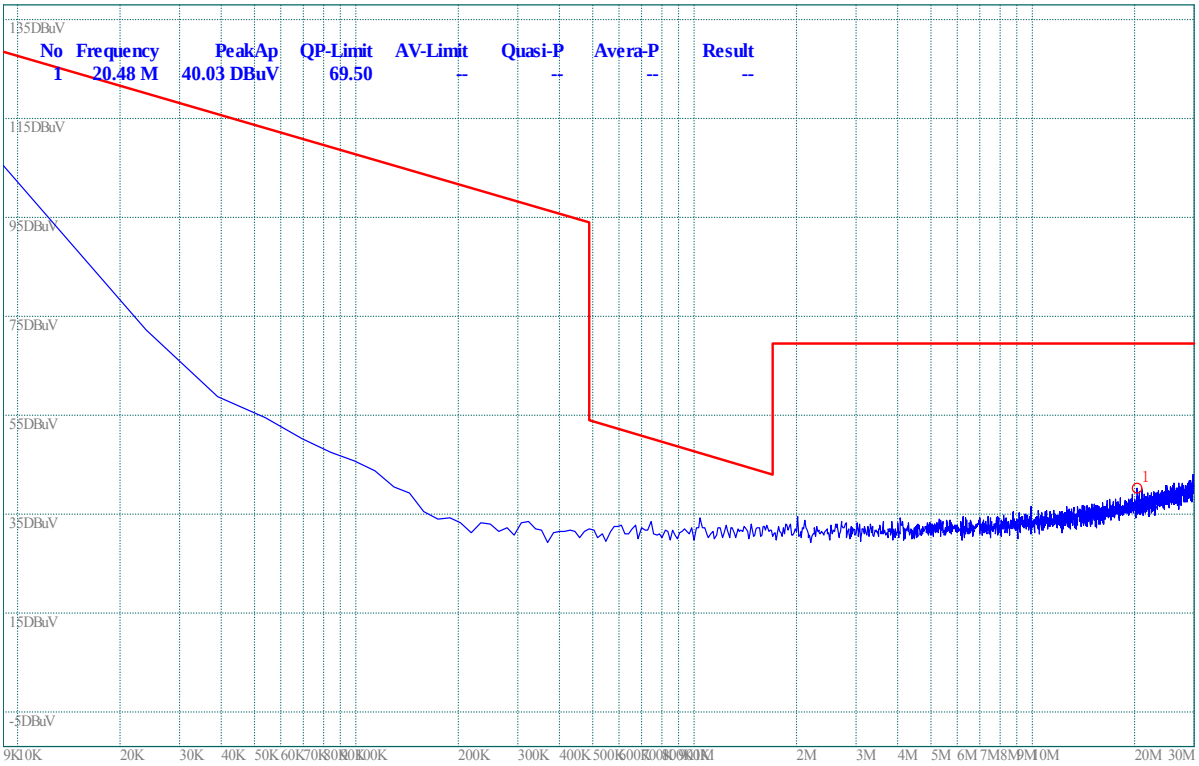
The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

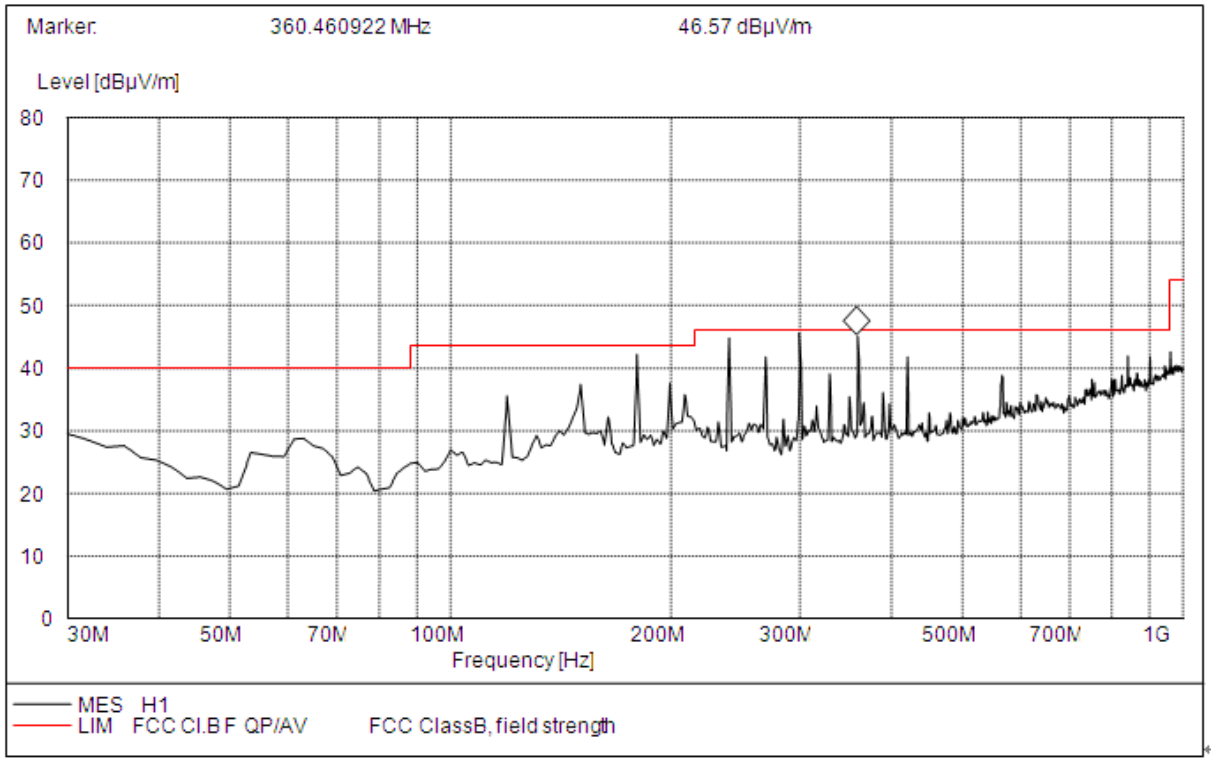
Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.

A. Test Plots and Suspicious Points:

NOTE: The emissions are too small to be measured and are at least 6 dB below the limit, So all the data of marked are pass.

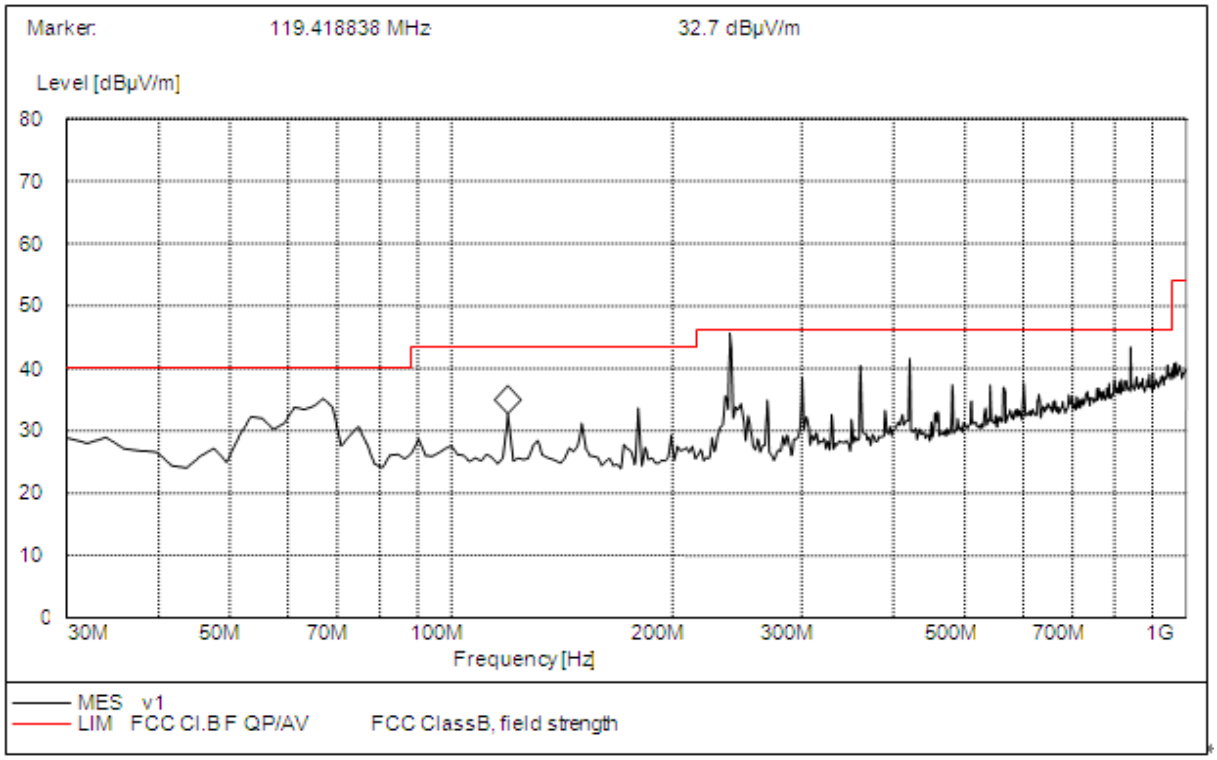


(Plot A: 9K – 30M)



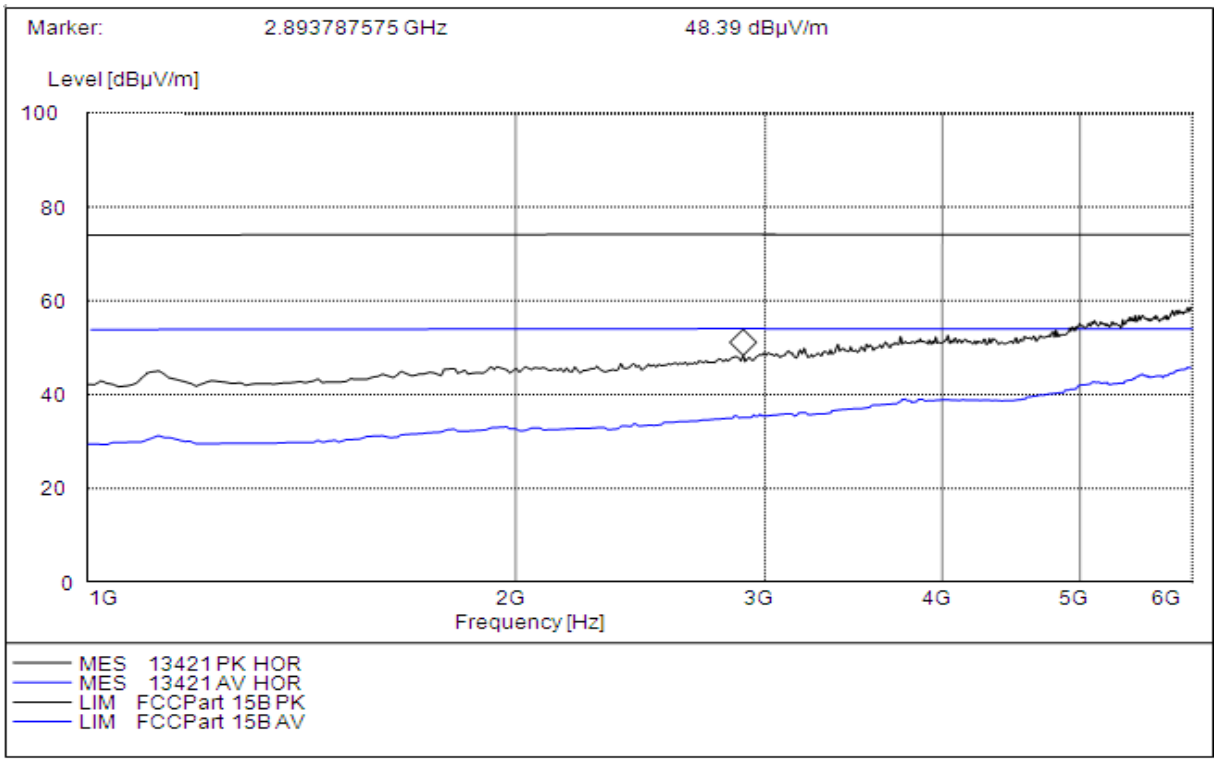
(Plot A: Test Antenna Vertical 30M - 1G)

Frequency (MHz)	QuasiPeak (dB µ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB µ V/m)	Margin (dB)	Antenna	Verdict
30.000000	**29.38**	**120.000**	**100.0**	**40.00**	**10.62**	**Vertical**	**Pass**
119.418800	**35.05**	**120.000**	**100.0**	**43.50**	**8.45**	**Vertical**	**Pass**
360.460000	**45.45**	**120.000**	**100.0**	**46.00**	**0.55**	**Vertical**	**Pass**



(Plot B: Test Antenna Horizontal 30M - 1G)

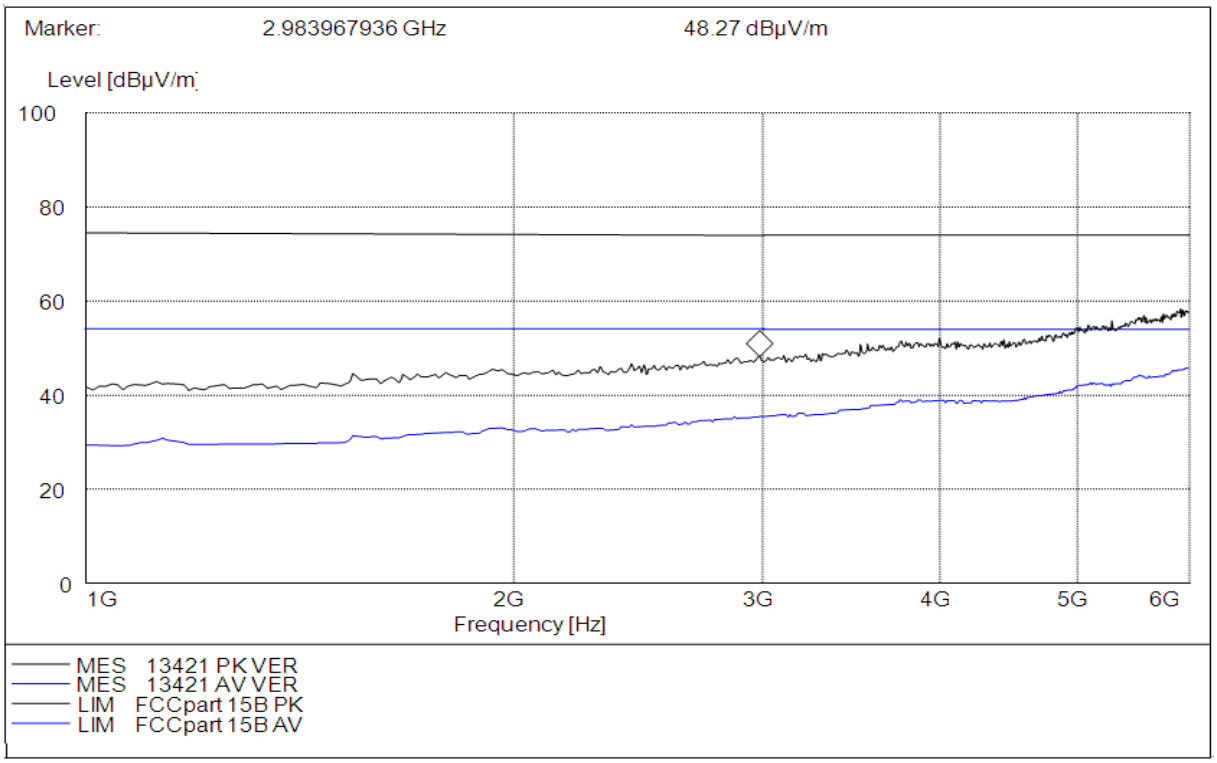
Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)	Antenna	Verdict
66.933860	35.13	120.000	100.0	40.00	4.87	Horizontal	Pass
119.418800	32.97	120.000	100.0	43.50	10.53	Horizontal	Pass
239.939800	45.69	120.000	100.0	46.00	0.31	Horizontal	Pass



(Plot C: Test Antenna Horizontal 1G – 6G)

Frequency (MHz)	AV (dBµV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµV/m)	Margin (dB)	Antenna	Verdict
1181.18136	30.87	1000.000	100.0	54.00	23.13	Horizontal	Pass
1593.51100	30.70	1000.000	150.0	54.00	23.30	Horizontal	Pass
1865.64100	33.59	1000.000	150.0	54.00	20.61	Horizontal	Pass
2412.22441	34.48	1000.000	100.0	54.00	19.52	Horizontal	Pass
5047.52547	41.35	1000.000	150.0	54.00	12.65	Horizontal	Pass
5975.93799	43.67	1000.000	100.0	54.00	10.33	Horizontal	Pass

Frequency (MHz)	PK (dBμV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBμV/m)	Margin (dB)	Antenna	Verdict
1181.18136	43.57	1000.000	100.0	74.00	30.43	Horizontal	Pass
1593.51100	40.69	1000.000	150.0	74.00	33.31	Horizontal	Pass
1865.64100	44.60	1000.000	150.0	74.00	29.40	Horizontal	Pass
2412.22441	45.49	1000.000	100.0	74.00	28.51	Horizontal	Pass
5047.52547	54.37	1000.000	150.0	74.00	19.63	Horizontal	Pass
5975.93799	58.55	1000.000	100.0	74.00	15.45	Horizontal	Pass



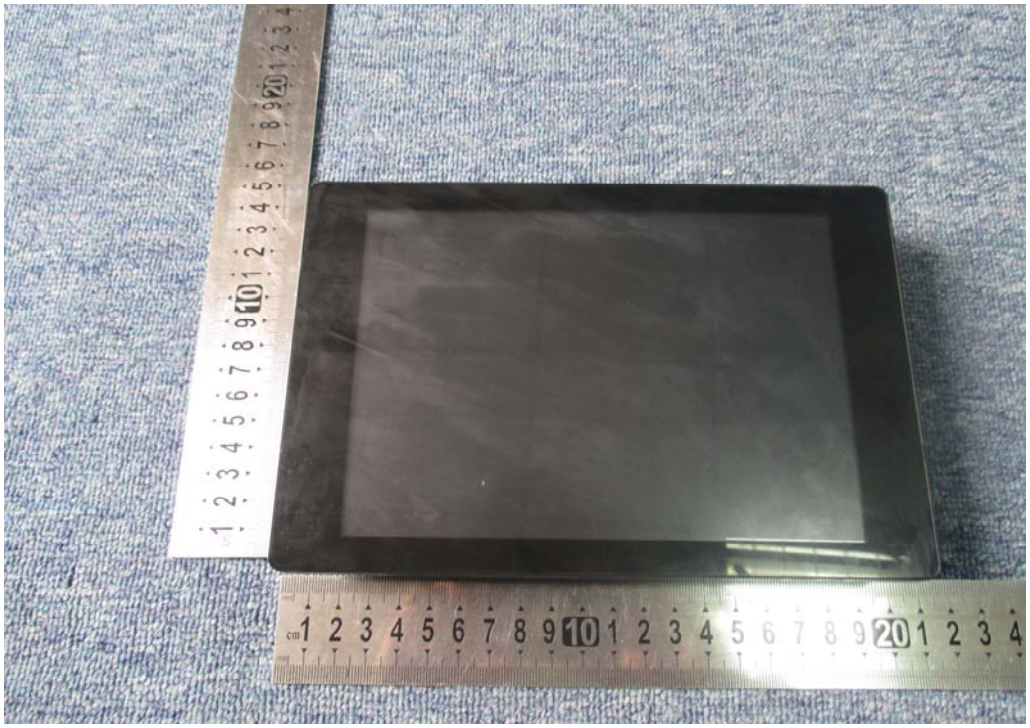
(Plot D: Test Antenna Vertical 1G – 6G)

Frequency (MHz)	AV (dBμV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBμV/m)	Margin (dB)	Antenna	Verdict
1130.26100	31.88	1000.000	100.0	54.00	22.12	Horizontal	Pass
1821.64200	32.15	1000.000	150.0	54.00	21.95	Horizontal	Pass
2242.84120	33.25	1000.000	150.0	54.00	20.75	Horizontal	Pass
2983.96793	35.01	1000.000	100.0	54.00	18.99	Horizontal	Pass
3785.57120	39.16	1000.000	150.0	54.00	14.84	Horizontal	Pass
5529.15800	43.42	1000.000	100.0	54.00	10.58	Horizontal	Pass

Frequency (MHz)	PK (dBμV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBμV/m)	Margin (dB)	Antenna	Verdict
1130.26100	41.89	1000.000	100.0	74.00	32.11	Horizontal	Pass
1821.64200	43.39	1000.000	150.0	74.00	30.61	Horizontal	Pass
2242.84120	46.24	1000.000	150.0	74.00	27.76	Horizontal	Pass
2983.96793	48.27	1000.000	100.0	74.00	25.73	Horizontal	Pass
3785.57120	49.57	1000.000	150.0	74.00	24.43	Horizontal	Pass
5529.15800	55.79	1000.000	100.0	74.00	19.21	Horizontal	Pass

Test Result: PASS

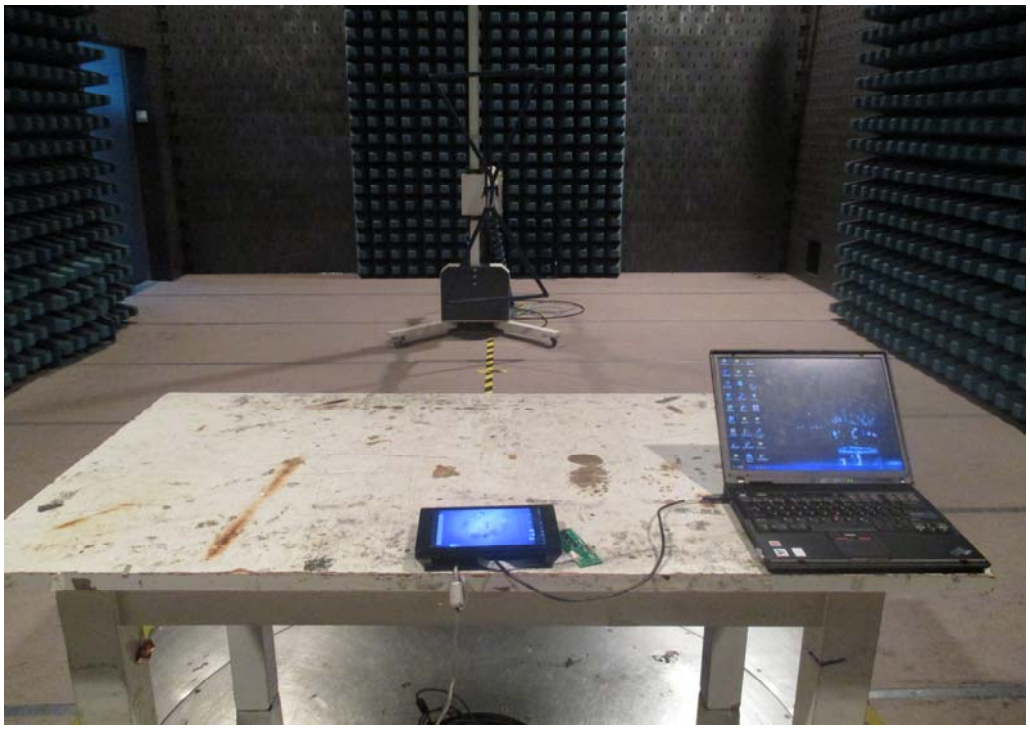
4. PHOTOGRAPHS OF THE EUT



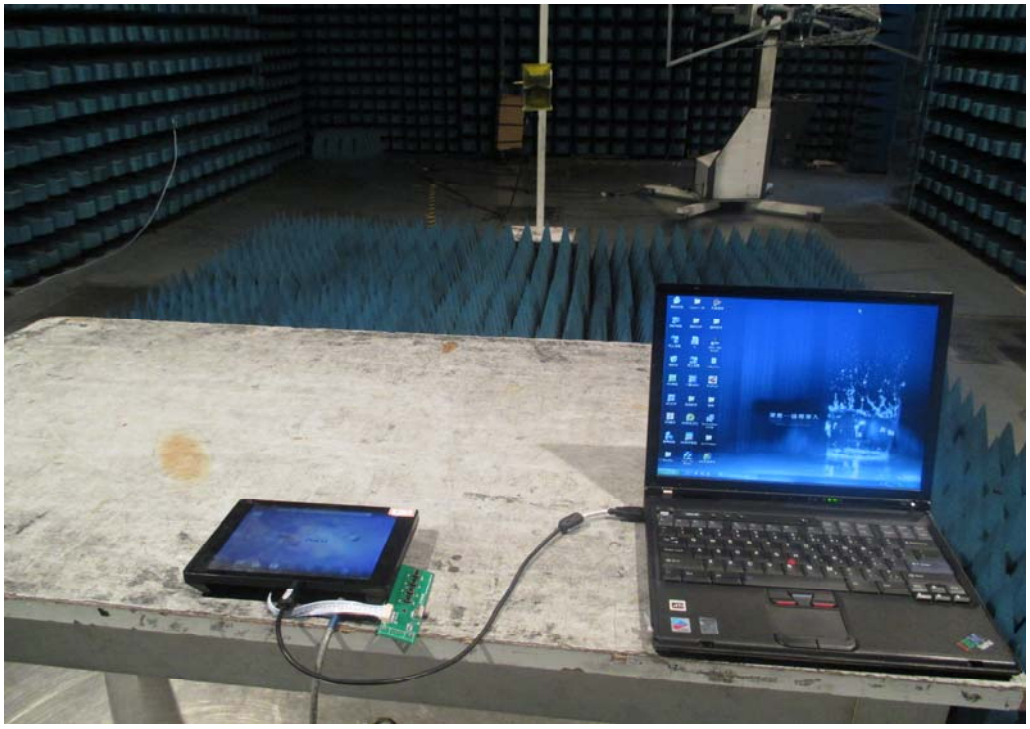
5. PHOTOGRAPHS OF THE TEST SET-UP

Conducted Emission

Radiated Emission of 9k-30M



Radiated Emission of 30M-1G



Radiated Emission of 1-6G

** END OF REPORT **