



TEST REPORT

APPLICANT : BLU Products, Inc.
PRODUCT NAME : Smart Phone
MODEL NAME : Studio X9 HD
BRAND NAME : BLU
FCC ID : YHLBLUSTX9HD
STANDARD(S) : 47 CFR Part 15 Subpart B
RECEIPT DATE : 2019-11-28
TEST DATE : 2019-11-30 to 2019-12-06
ISSUE DATE : 2019-12-24

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Change History		
Issue	Date	Reason for change
1.0	2019-12-24	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	BLU Products, Inc.
Applicant Address:	10814 NW 33rd St # 100 Doral, FL 33172,USA
Manufacturer:	BLU Products, Inc.
Manufacturer Address:	10814 NW 33rd St # 100 Doral, FL 33172,USA

1.2. Equipment Under Test (EUT) Description

Product Name:	Smart Phone	
Serial No:	(N/A, marked #1 by test site)	
Hardware Version:	S2609D_MAIN_PCB_V1.0	
Software Version:	S2609D_BLU_S7_80_GO_V0.3.2_S191112	
Tx Frequency:	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band V: 824 MHz ~ 849 MHz Bluetooth 4.2: 2402 MHz ~ 2480 MHz 802.11b/g/n-20: 2412 MHz ~ 2472 MHz	
Rx Frequency:	GSM850: 869 MHz ~ 894 MHz GSM1900: 1930 MHz ~ 1990 MHz WCDMA Band II: 1930 MHz ~ 1990 MHz WCDMA Band V: 869 MHz ~ 894 MHz Bluetooth 4.2: 2402 MHz ~ 2480 MHz 802.11b/g/n-20: 2412 MHz ~ 2472 MHz GPS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz	
Ancillary Equipment:	Battery	
	Brand Name:	UTILITY
	Model No.:	C795344200L
	Serial No.:	(N/A, marked #1 by test site)
	Capacity:	2000mAh
	Rated Voltage:	3.8V
	Charge Limit:	4.35V



	Manufacturer:	SHENZHEN UTILITY POWER SOURCE CO.,LTD
	AC Adapter	
	Brand Name:	TIANYIN
	Model No.:	US-WT-1000
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V ~ 50/60Hz 0.2A
	Rated Output:	5V=1A
	Manufacturer:	SHEN ZHEN TIANYIN ELECTRONICS CO.,LTD.

Note:

1. The Smart Phone supports GSM850MHz, 1900MHz, GPRS, EDGE, WCDMA Band II, Band V, HSDPA, HSUPA, HSPA+, Bluetooth, WIFI, GPS and FM function.
2. For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.

2. Test Results

2.1. Applied Reference Documents

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	Radio Frequency Devices

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

No.	Section	Description	Test Date	Test Engineer	Result	Method determination Remark
1	15.107	Conducted Emission	2019.12.06	Ling Jiayong	PASS	No deviation
2	15.109	Radiated Emission	2019.11.30	Peng Xuwei	PASS	No deviation

NOTE 1: The tests were performed according to the method of measurements prescribed in ANSI C63.4-2014.

NOTE 2: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

2.2. EUT Setup and Operating Conditions

Test Mode	
Mode 1	: GSM850 Idle + Bluetooth Idle + WLAN Idle + Battery + Earphone + USB Cable (Charging from Adapter) + Adapter + SIM Card + GPS
Mode 2	: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Battery + Earphone + USB Cable(Charging from Adapter) + Adapter + SIM Card
Mode 3	: WCDMA Band 2 Idle + Bluetooth Idle + WLAN Idle + Battery+ Earphone + USB Cable(Charging from Adapter) + Adapter + SIM Card
Mode 4	: WCDMA Band 5 Idle + Bluetooth Idle + WLAN Idle + Battery + Earphone + USB Cable(Charging from Adapter) + Adapter + SIM Card
Mode 5	: GSM/WCDMA/LTE Band Idle + Bluetooth Idle + WLAN Idle + Camera + Battery + Earphone + USB Cable(Charging from Adapter) + Adapter + SIM Card
Mode 6	: GSM/WCDMA/LTE Band Idle + Bluetooth Idle + WLAN Idle + MP4 + Battery + Earphone + USB Cable(Charging from Adapter) + Adapter + SIM Card
Mode 7	: GSM/WCDMA/LTE Band Idle + Bluetooth Idle + WLAN Idle + PC + Battery + Earphone + USB Cable + SIM Card + FM
Remark: The above test modes in boldface (Mode 5) were the worst cases of radiated emission conducted emission tests; only the test data of these modes was reported.	

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

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106

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).

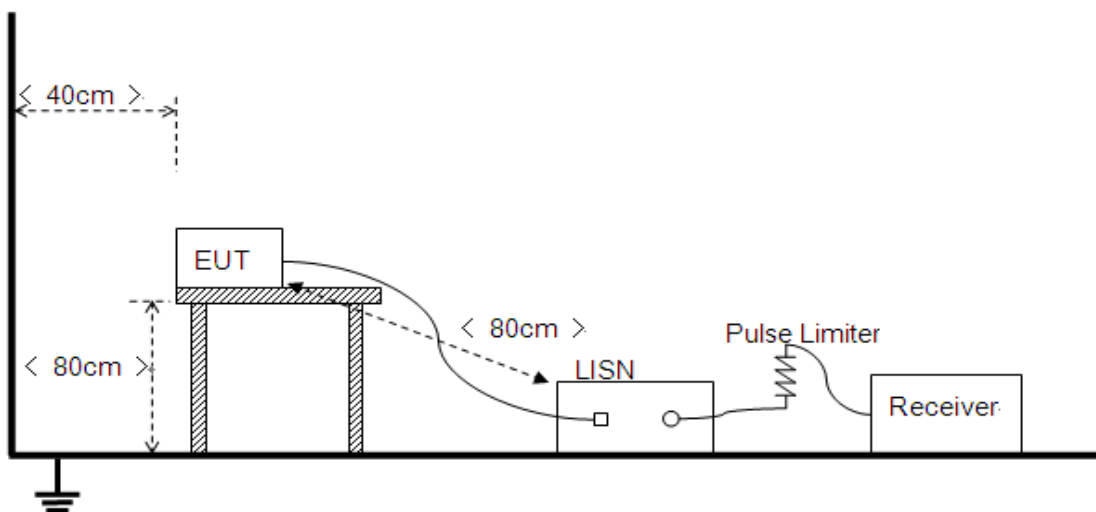
Frequency range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

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 Setup

Please refer to Annex A for the photographs of the Test Configuration.





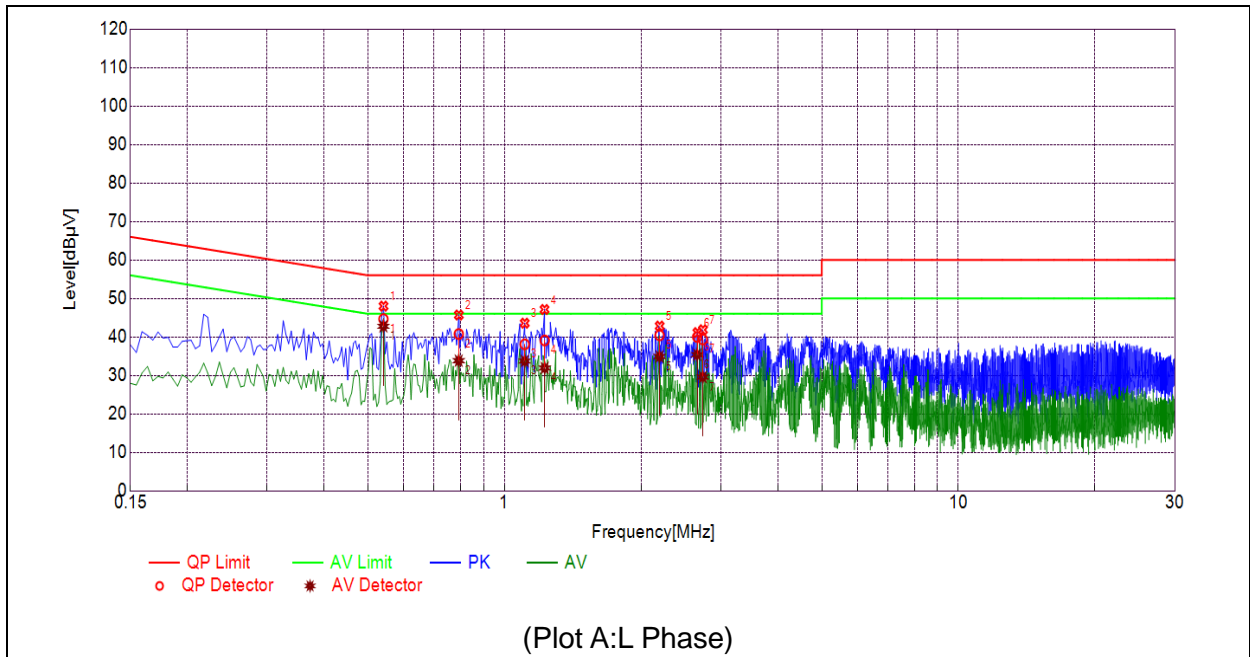
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides $50\Omega/50\mu\text{H}$ of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

The power strip or extension cord has been investigated to make sure that the LISN integrity is maintained with respect to the impedance characteristics as prescribed in ANSI C63.4-2014 at Clause 4.3.

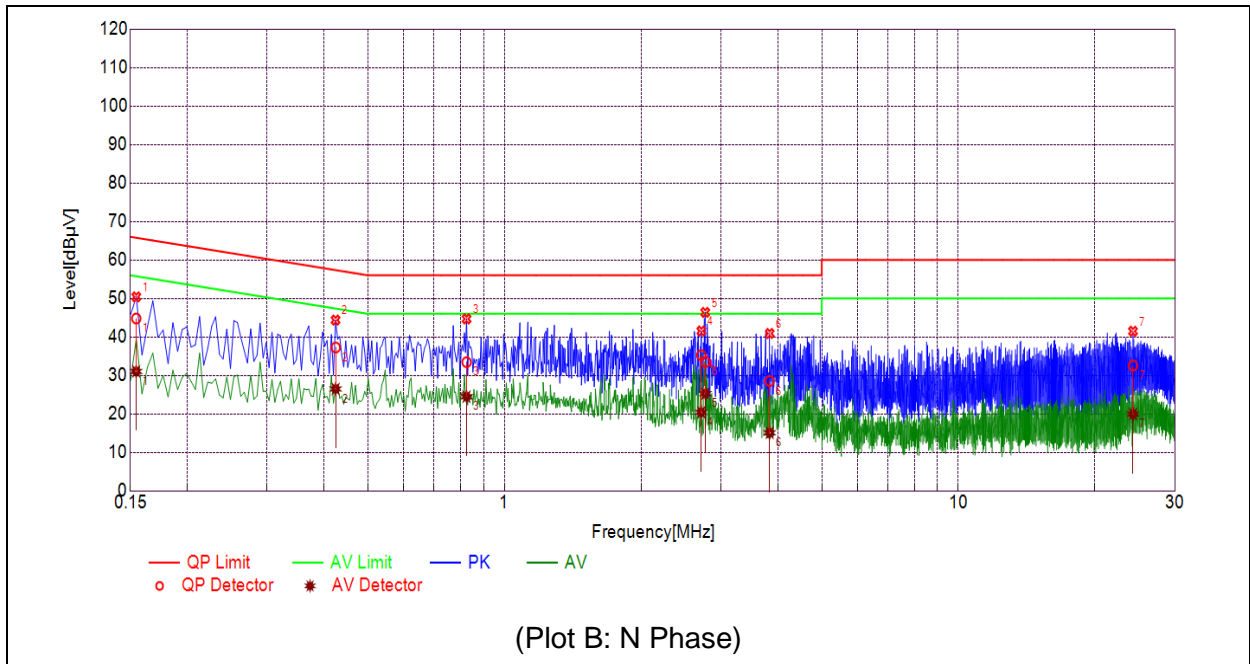
3.1.3. Test Result

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.

A. Test Plot and Suspicious Points:



NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.5411	44.63	42.76	56.00	46.00	Line	PASS
2	0.7929	40.76	33.82	56.00	46.00		PASS
3	1.1081	38.07	33.72	56.00	46.00		PASS
4	1.2262	39.09	31.91	56.00	46.00		PASS
5	2.1956	40.41	34.90	56.00	46.00		PASS
6	2.6583	39.98	35.38	56.00	46.00		PASS
7	2.7351	39.33	29.57	56.00	46.00		PASS



NO.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1544	44.79	31.03	65.76	55.76	Neutral	PASS
2	0.4247	37.25	26.48	57.35	47.35		PASS
3	0.8250	33.43	24.46	56.00	46.00		PASS
4	2.7134	35.28	20.40	56.00	46.00		PASS
5	2.7715	33.53	25.27	56.00	46.00		PASS
6	3.8388	28.55	15.08	56.00	46.00		PASS
7	24.2550	32.57	19.95	60.00	50.00		PASS



3.2. Radiated Emission

3.2.1. Requirement

According to FCC section 15.109 (a), 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 Limitation at 3m Measurement Dist	
	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)
30.0 - 88.0	100	20log 100
88.0 - 216.0	150	20log 150
216.0 - 960.0	200	20log 200
Above 960.0	500	20log 500

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.

Note:

- 1) The tighter limit shall apply at the boundary between two frequency range.
- 2) Limitation expressed in $\text{dB}\mu\text{V/m}$ is calculated by $20\log$ Emission Level($\mu\text{V/m}$).

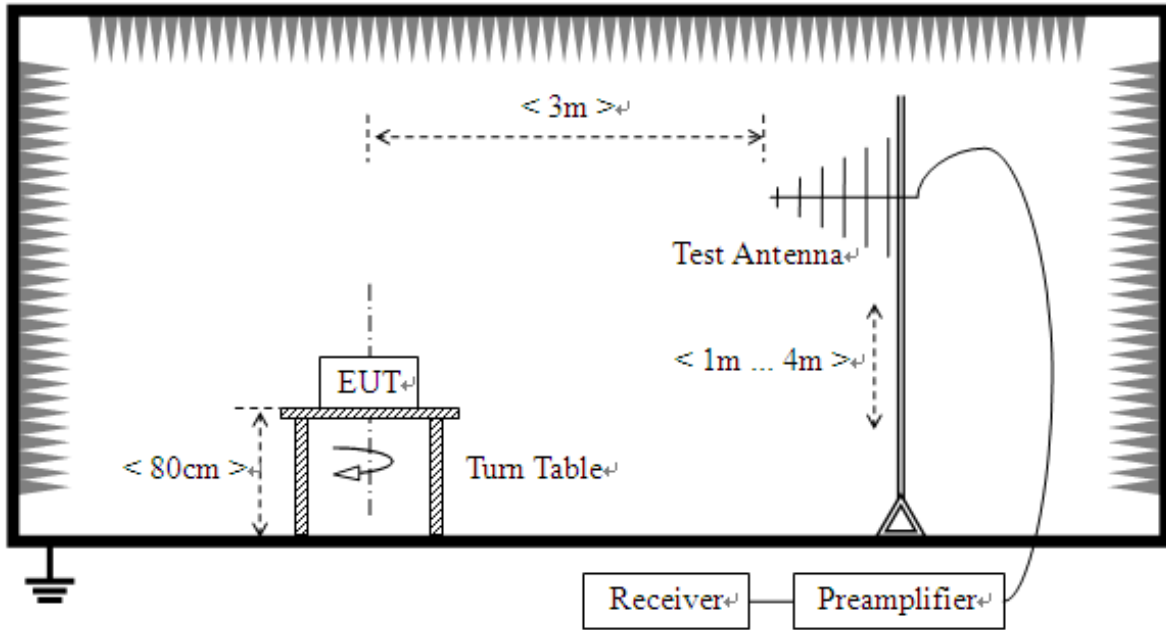
3.2.2. Frequency range of measurement

According to 15.33(b)(1), the frequency range of radiated measurement for the EUT is listed in the following table:

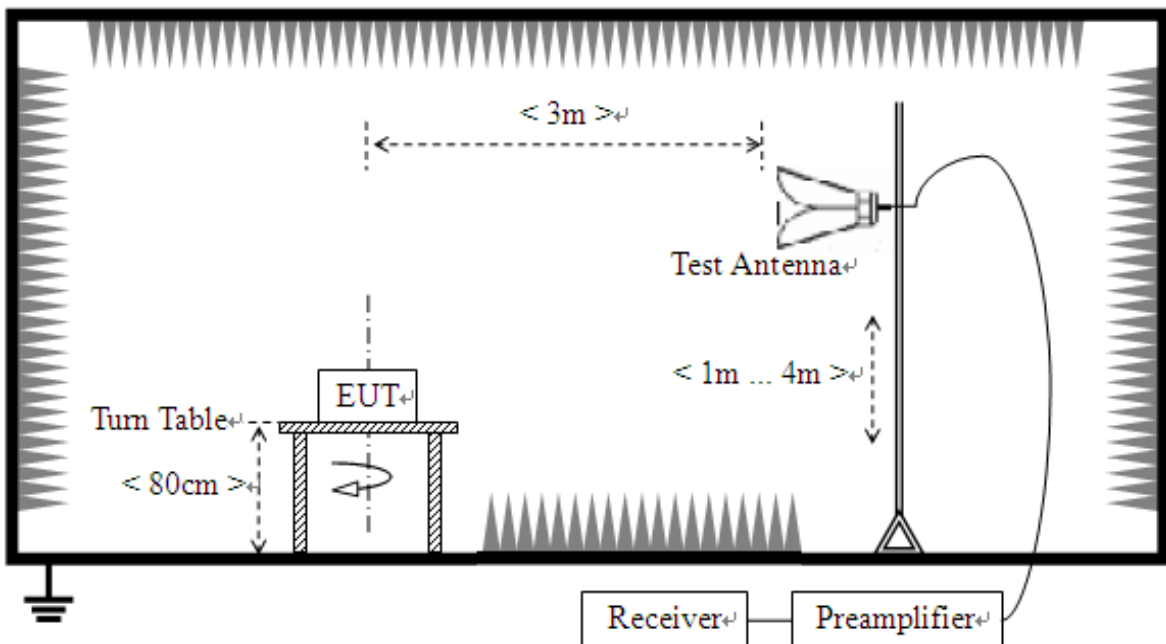
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705-108	1000.
108-500	2000.
500-1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

3.2.3. Test Setup

- 1) For radiated emissions from 30MHz to1GHz



- 2) For radiated emissions above 1GHz





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:

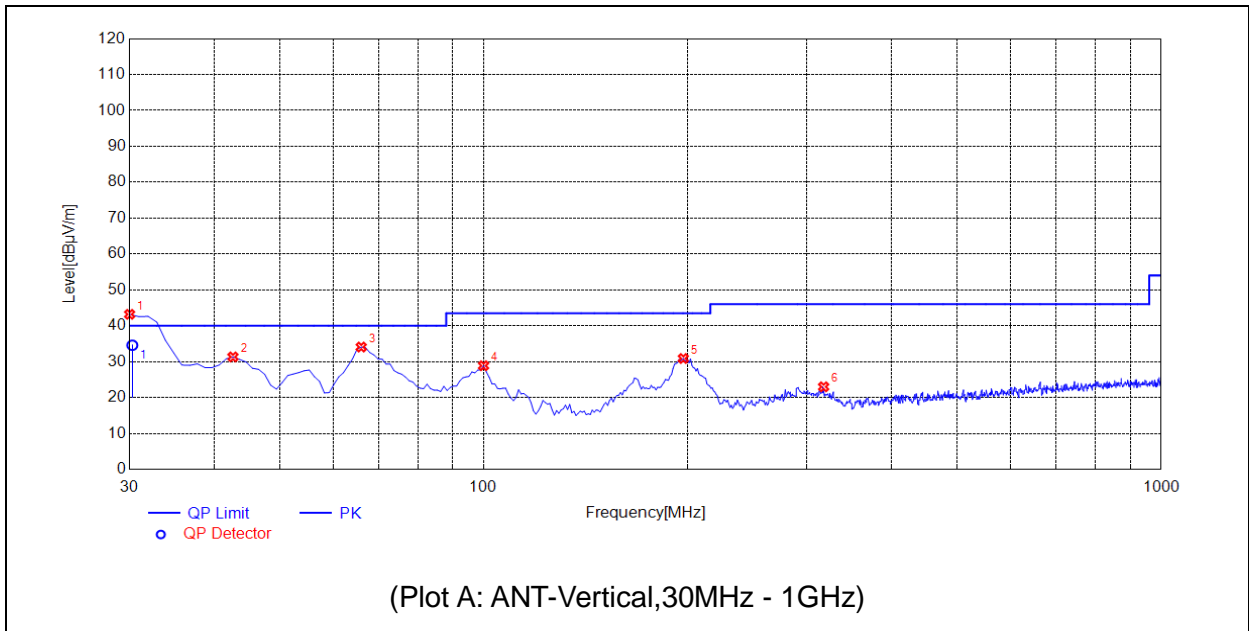
In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal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

3.2.4. Test Result

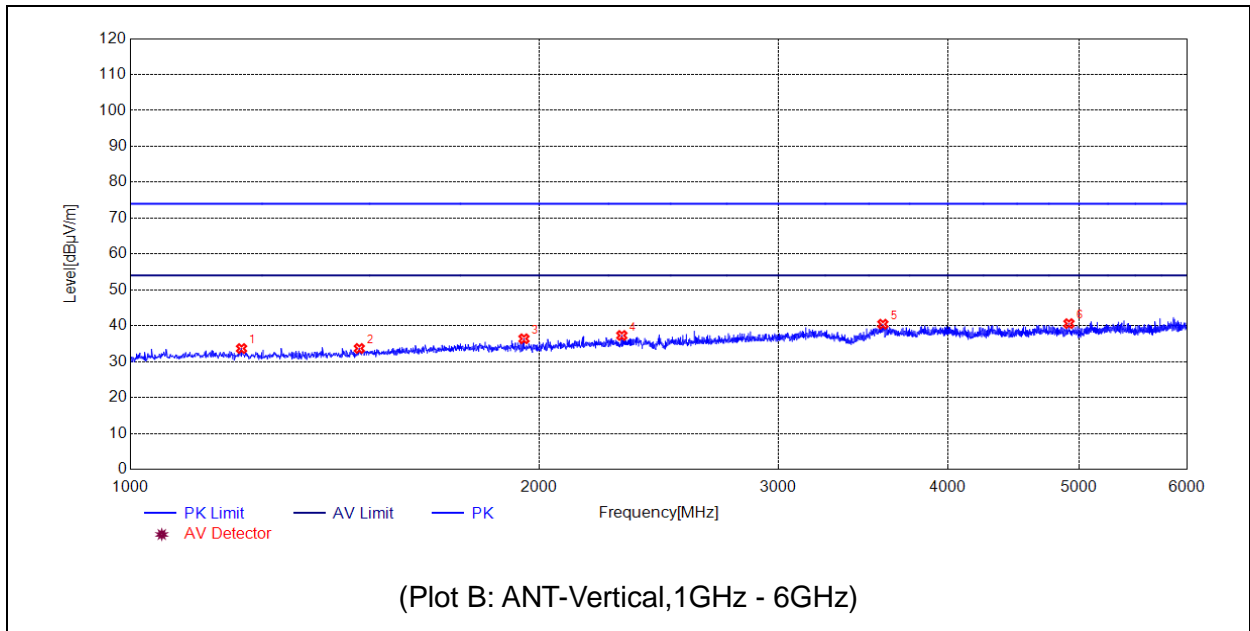
The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform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

The amplitude of emissions (6GHz-12.5GHz) which are attenuated more than 20 dB below the permissible value need not be reported.

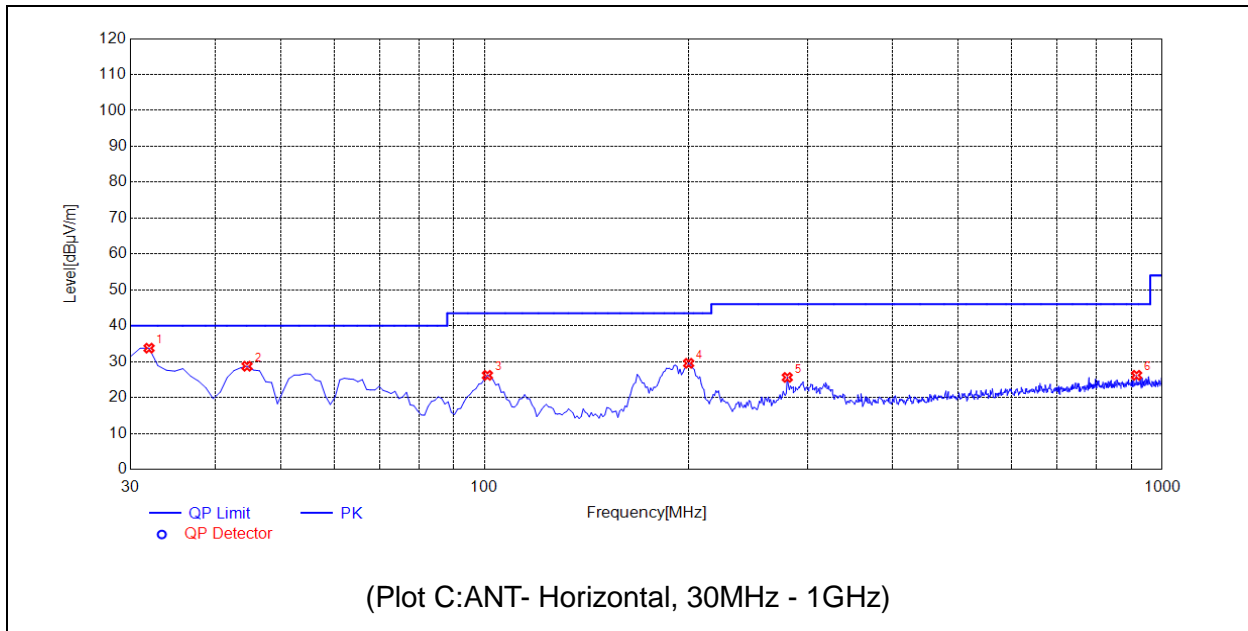
Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.



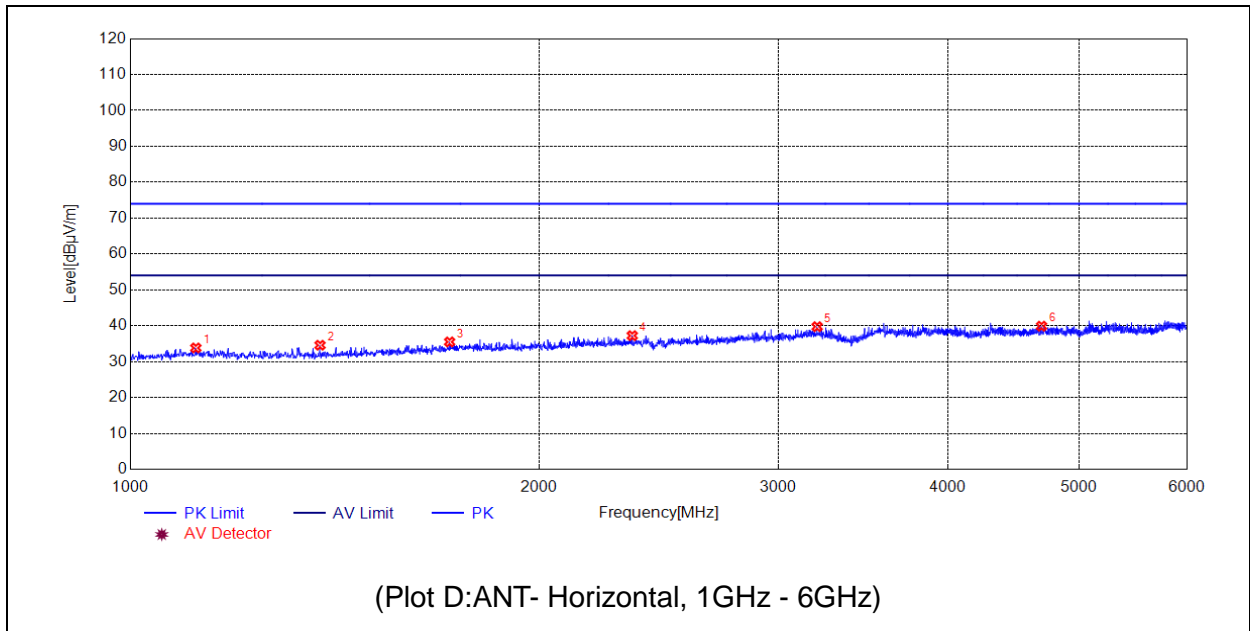
No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	30.2715	43.19	34.58	N.A	N.A	40.00	N.A	V	PASS
2	42.6226	31.32	N.A	N.A	N.A	40.00	N.A	V	PASS
3	65.9259	34.07	N.A	N.A	N.A	40.00	N.A	V	PASS
4	99.9099	28.86	N.A	N.A	N.A	43.50	N.A	V	PASS
5	197.0070	30.88	N.A	N.A	N.A	43.50	N.A	V	PASS
6	317.4074	22.99	N.A	N.A	N.A	46.00	N.A	V	PASS



No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1207.0414	33.65	N.A	N.A	74.00	N.A	54.00	V	PASS
2	1474.0948	33.68	N.A	N.A	74.00	N.A	54.00	V	PASS
3	1949.1898	36.38	N.A	N.A	74.00	N.A	54.00	V	PASS
4	2301.2603	37.29	N.A	N.A	74.00	N.A	54.00	V	PASS
5	3583.5167	40.44	N.A	N.A	74.00	N.A	54.00	V	PASS
6	4913.7828	40.60	N.A	N.A	74.00	N.A	54.00	V	PASS



No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	31.9419	33.76	N.A	N.A	N.A	40.00	N.A	H	PASS
2	44.5646	28.73	N.A	N.A	N.A	40.00	N.A	H	PASS
3	100.8809	26.18	N.A	N.A	N.A	43.50	N.A	H	PASS
4	199.9199	29.54	N.A	N.A	N.A	43.50	N.A	H	PASS
5	279.5395	25.60	N.A	N.A	N.A	46.00	N.A	H	PASS
6	916.4965	26.20	N.A	N.A	N.A	46.00	N.A	H	PASS



No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1117.0234	33.82	N.A	N.A	74.00	N.A	54.00	H	PASS
2	1379.0758	34.58	N.A	N.A	74.00	N.A	54.00	H	PASS
3	1718.1436	35.50	N.A	N.A	74.00	N.A	54.00	H	PASS
4	2342.2685	37.24	N.A	N.A	74.00	N.A	54.00	H	PASS
5	3205.4411	39.75	N.A	N.A	74.00	N.A	54.00	H	PASS
6	4690.7381	39.89	N.A	N.A	74.00	N.A	54.00	H	PASS



Annex A Test 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 Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	9kHz-150kHz	±4.1dB
	150kHz-30MHz	±3.7dB

Uncertainty of Radiated Emission Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	30MHz-200MHz	±5.06dB
	200MHz-1000MHz	±5.24dB
	1GHz-6GHz	±5.18dB
	6GHz-18GHz	±5.48dB



Annex B Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Accreditation Certificate

Accredited Testing Laboratory:	The FCC designation number is CN1192. Test firm registration number is 226174. (Shenzhen Morlab Communications Technology Co., Ltd.)
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4. Test Software Utilized

Model	Version Number	Producer
JS32-RE	Version 2.0.2.0	Tonscend
TS+ -[JS32-CE]	Version2.5.0.0	Tonscend

**5. Test Equipments Utilized**

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
MXE EMI Receiver	Agilent	N9038A	MY54130016	2019.08.04	2020.08.03
Test Receiver	R&S	ESPI	101052	2019.08.04	2020.08.03
LISN	Schwarzbeck	NSLK 8127	812744	2019.05.08	2020.05.07
Pulse Limiter (20dB)	VTSD	9561D	9537	2019.05.08	2020.05.07
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-519	2019.05.08	2020.05.07
Test Antenna - Horn	Schwarzbeck	BBHA 9120D	1774	2019.05.08	2020.05.07
Radiated Disturbance Preamplifier	rflight	S020180L320 3	61171/61172	2019.07.12	2020.07.11
Radiated Disturbance Preamplifier	rflight	S10M100L38 02	46732	2019.07.12	2020.07.11
Semi-Anechoic Chamber	CRT	9m*6m*6m	N/A	2017.01.12	2020.01.11
PC	Apple	A1466	C2QJJ1X1DR VD	N/A	N/A

————— END OF REPORT —————