



REPORT No.: SZ20030044E01

TEST REPORT

APPLICANT : BLU Products, Inc.

PRODUCT NAME : Smart Phone

MODEL NAME : STUDIO X10

BRAND NAME : BLU

FCC ID : YHLBLUSTX10

STANDARD(S) : 47 CFR Part 15 Subpart B

RECEIPT DATE : 2020-03-09

TEST DATE : 2020-03-19 to 2020-03-20

ISSUE DATE : 2020-05-11

Edited by: Zhong Jinji
Zhong Jinji(Rapporteur)

Checked by: Xiao Xiong
Xiao Xiong(Reviewer)

Approved by: David Tang
David Tang(Supervisor)

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MORLAB

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555
Http://www.morlab.cn

Fax: 86-755-36698525
E-mail: service@morlab.cn





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Change History		
Issue	Date	Reason for change
1.0	2020-05-11	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:	K130AG V0.10	
Software Version:	BLU_S970EQ_V10.0.G.02.00_GENERIC	
SIM Cards Description:	SIM 1 and SIM 2 is a chipset unit and tested separately. The SIM 1 is the worst case.	
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 Bluetooth4.2: 2402 MHz ~ 2480 MHz 802.11b/g/n-20: 2412 MHz ~ 2462 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 Bluetooth4.2: 2402 MHz ~ 2480 MHz 802.11b/g/n-20: 2412 MHz ~ 2462 MHz GPS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz	
Ancillary Equipment:	Battery	
	Brand Name:	BLU
	Model No.:	C775044200L
	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:	BLU
	Model No.:	US-BM-1005
	Serial No.:	(N/A, marked #1 by test site)
	Rated Input:	100-240V ~ 50/60Hz, 0.15A
	Rated Output:	5V=1000mA
	Manufacturer:	Shenzhen BMT Electronics Co., Ltd.

Note:

1. The Smart Phone supports GSM850MHz, 1900MHz, GPRS, EDGE(RX only), WCDMA Band II, Band V, HSDPA, HSUPA, Bluetooth, WIFI, GPS and FM function.
2. The EUT is equipped with a T-Flash card slot, dual SIM card slots and a Micro USB port which can be connected to ancillary equipments.
3. 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	2020.03.20	Huang Zhiye	PASS	No deviation
2	15.109	Radiated Emission	2020.03.19	Yang Jie	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 :	GSM/WCDMA Band Idle + Bluetooth Idle + WLAN Idle + Camera + Battery + USB Cable + Earphone + Adapter + SIM Card
Mode 2 :	GSM/WCDMA Band Idle + Bluetooth Idle + WLAN Idle + MP4 + Battery + USB Cable + Earphone + Adapter + SIM Card
Mode 3 :	GSM/WCDMA Band Idle + Bluetooth Idle + WLAN Idle + GPS + Battery + USB Cable + Earphone + Adapter + SIM Card
Mode 4 :	GSM/WCDMA Band Idle + Bluetooth Idle + WLAN Idle + FM + Battery + Earphone + USB Cable + SIM Card + T-Flash card
Mode 5 :	GSM/WCDMA Band Idle + Bluetooth Idle + WLAN Idle + PC + Battery + Earphone + USB Cable + SIM Card + T-Flash card
Remark: The above test modes in boldface (Mode 1) 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 50 μ H/50 Ω line impedance stabilization network (LISN).

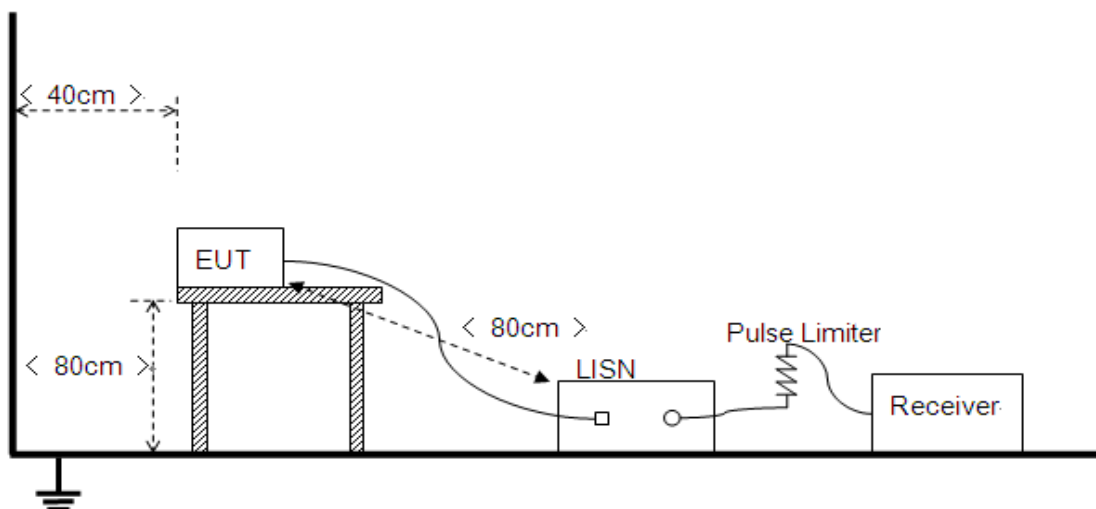
Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- The limit subjects to the Class B digital device.
- The lower limit shall apply at the band edges.
- 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.





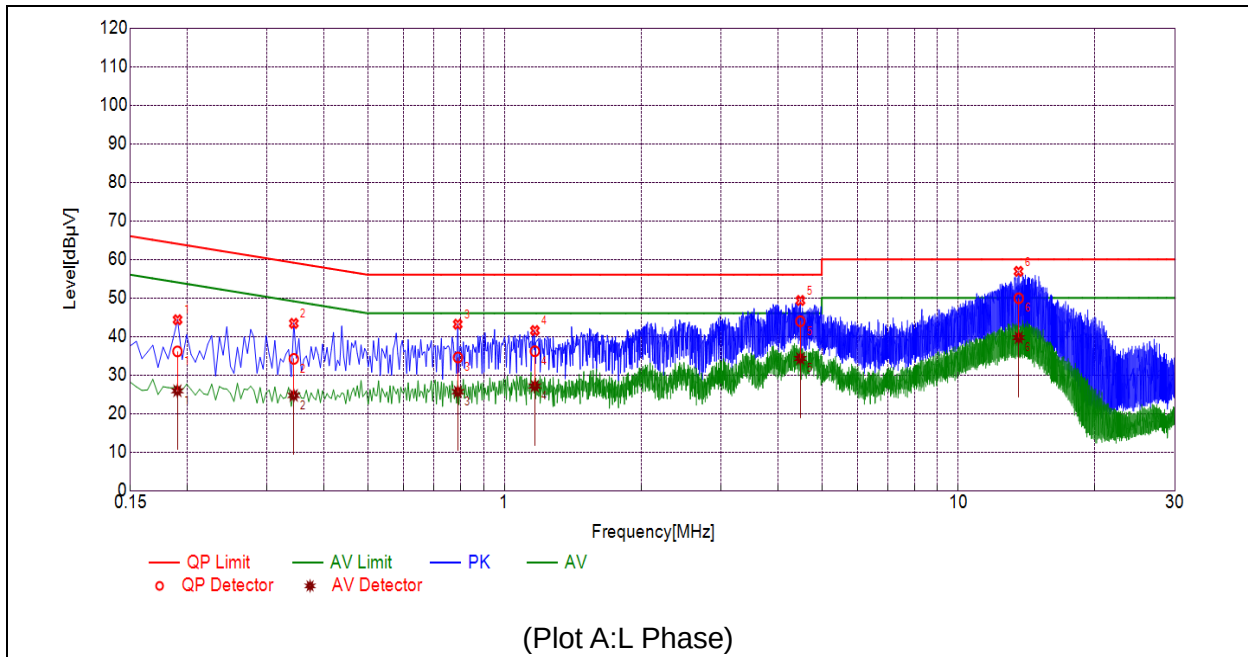
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides $50\Omega/50\mu\text{H}$ of coupling impedance for the measuring instrument. A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

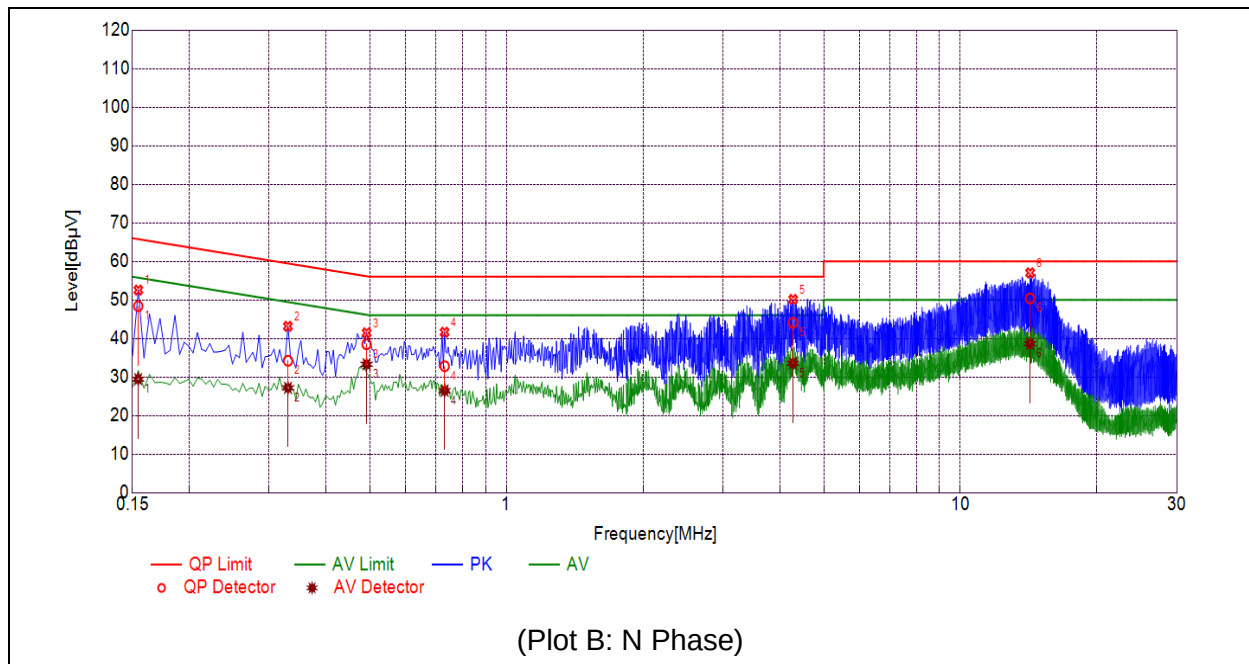
3.1.3. Test Result

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	0.1903	36.12	25.91	64.02	54.02	Line	PASS
2	0.3434	34.18	24.70	59.12	49.12		PASS
3	0.7896	34.55	25.66	56.00	46.00		PASS
4	1.1662	36.17	27.13	56.00	46.00		PASS
5	4.4849	43.94	34.28	56.00	46.00		PASS
6	13.5769	49.91	39.68	60.00	50.00		PASS



NO.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1544	48.38	29.44	65.76	55.76	Neutral	PASS
2	0.3301	34.21	27.19	59.45	49.45		PASS
3	0.4918	38.49	33.30	56.14	46.14		PASS
4	0.7307	32.81	26.44	56.00	46.00		PASS
5	4.2778	44.05	33.57	56.00	46.00		PASS
6	14.2353	50.38	38.62	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	
	($\mu\text{V/m}$)	(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 dB $\mu\text{V/m}$ is calculated by 20log Emission Level($\mu\text{V/m}$).

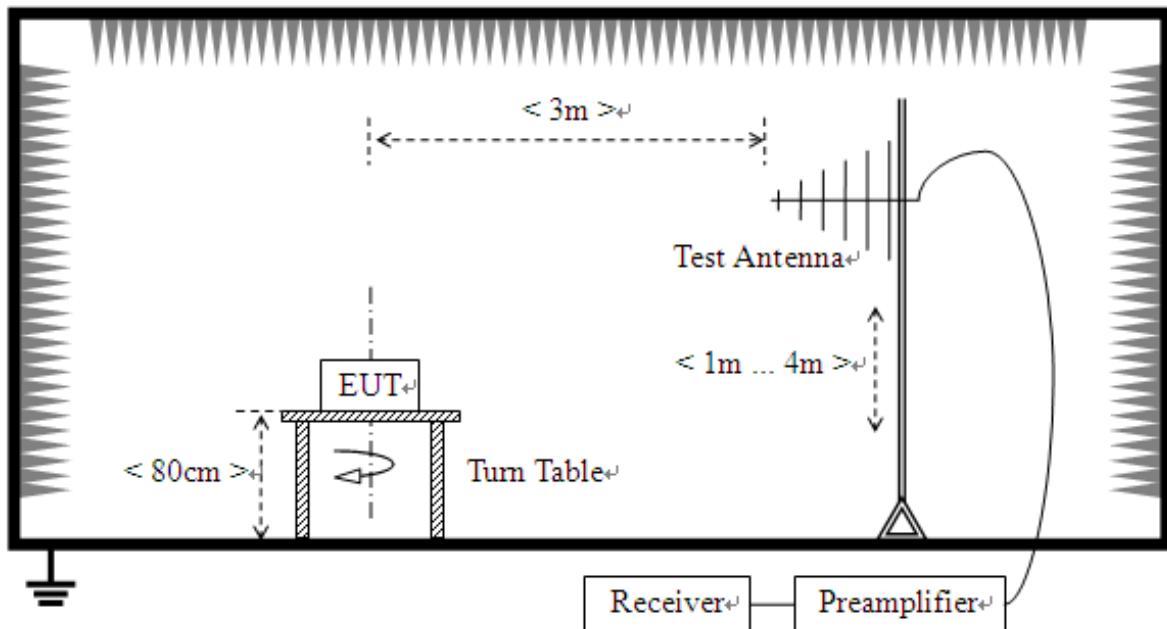
3.2.2. Frequency range of measurement

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

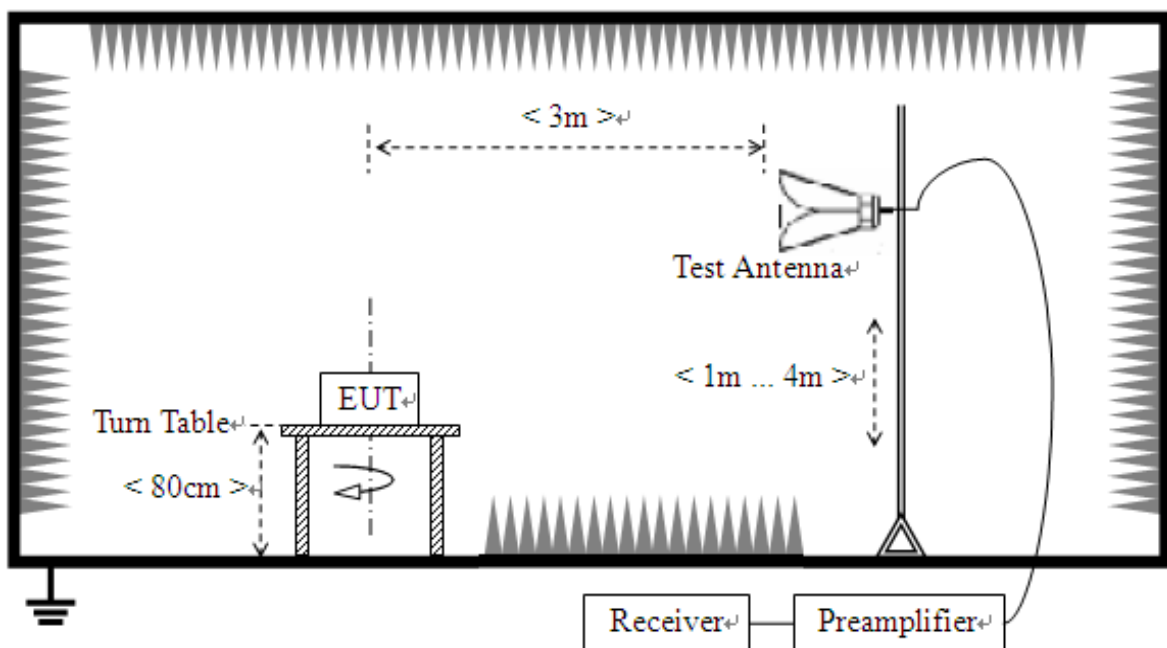
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705-108	1000.
108-500	2000.
500-1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

3.2.3. Test Setup

- 1) For radiated emissions from 30MHz to 1GHz



- 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:

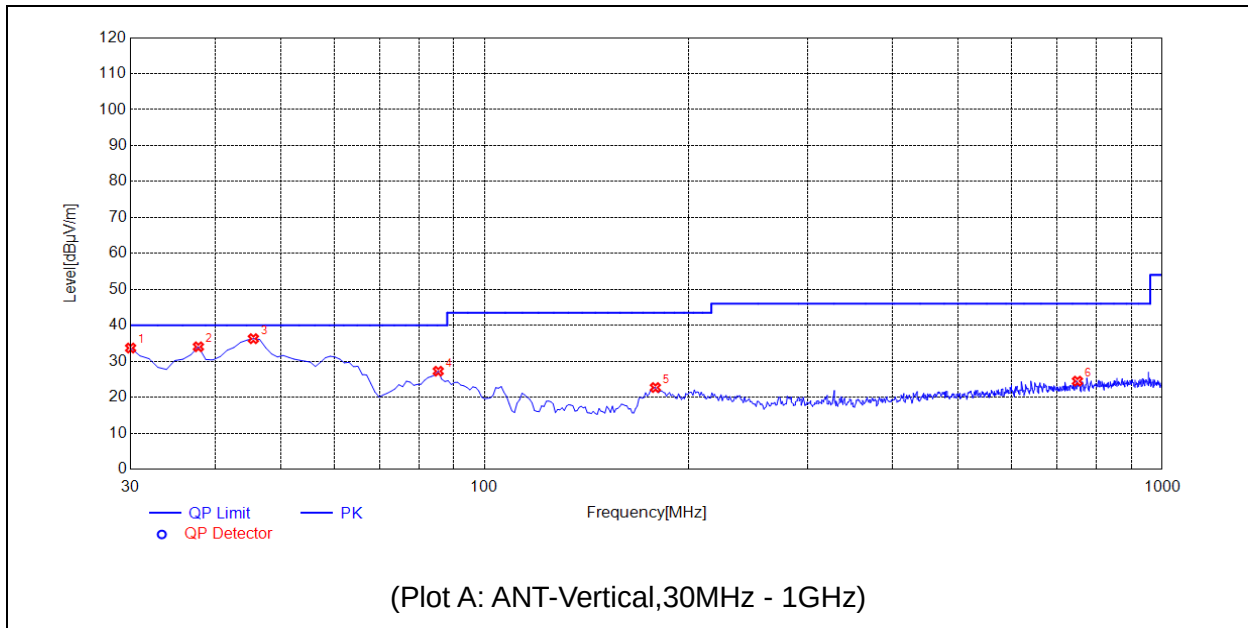
In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal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

3.2.4. Test Result

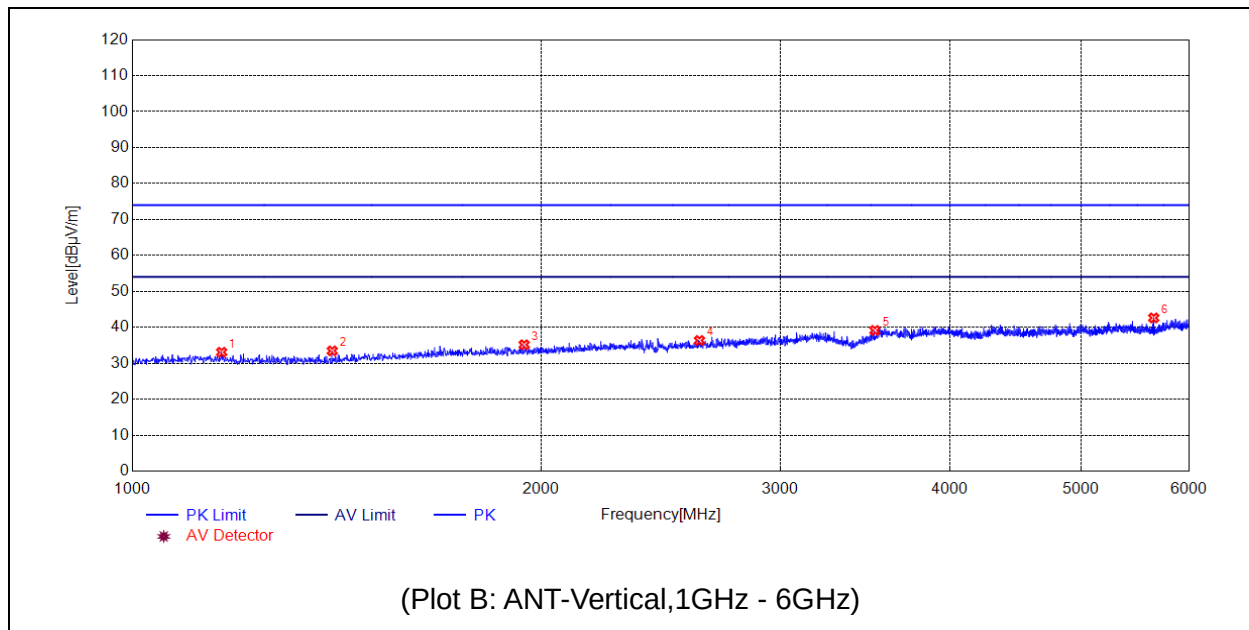
The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform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

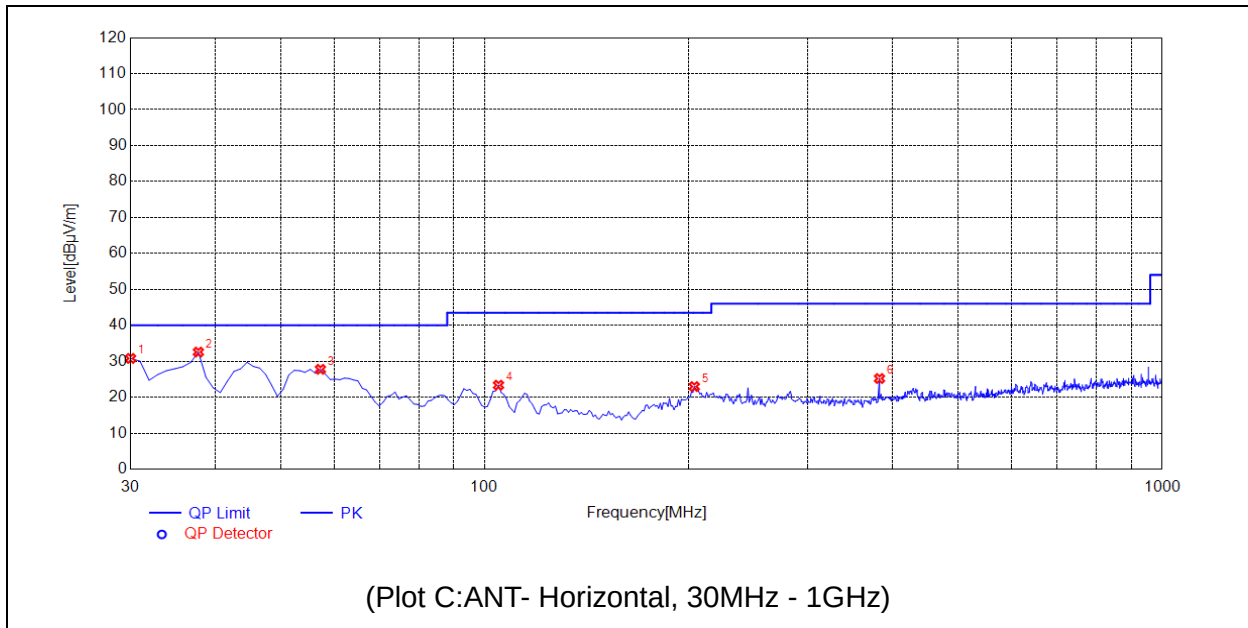
Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.



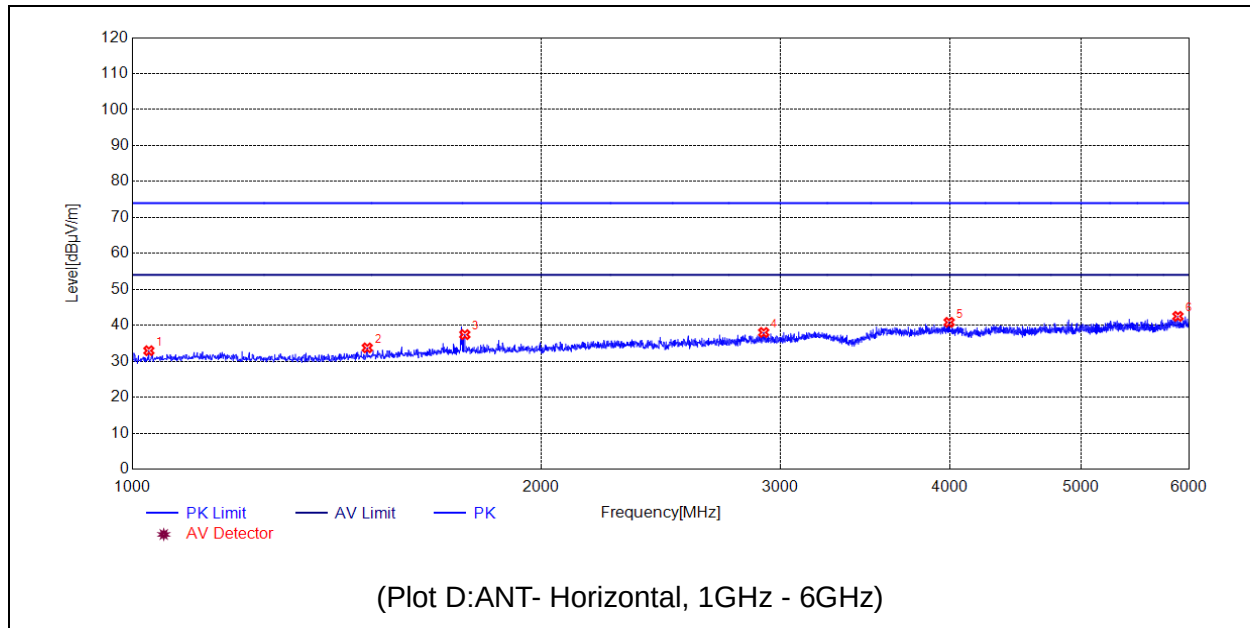
No.	Fre. MHz	Pk dBμV/m	QP dBμV/m	AV dBμV/m	Limit-PK dBμV/m	Limit-QP dBμV/m	Limit-AV dBμV/m	ANT	Verdict
1	30.0000	33.69	N.A	N.A	N.A	40.00	N.A	V	PASS
2	37.7678	34.03	N.A	N.A	N.A	40.00	N.A	V	PASS
3	45.5355	36.29	N.A	N.A	N.A	40.00	N.A	V	PASS
4	85.3453	27.24	N.A	N.A	N.A	40.00	N.A	V	PASS
5	178.5586	22.70	N.A	N.A	N.A	43.50	N.A	V	PASS
6	749.4895	24.48	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	1163.0326	33.08	N.A	N.A	74.00	N.A	54.00	V	PASS
2	1403.0806	33.46	N.A	N.A	74.00	N.A	54.00	V	PASS
3	1943.1886	35.16	N.A	N.A	74.00	N.A	54.00	V	PASS
4	2616.3233	36.34	N.A	N.A	74.00	N.A	54.00	V	PASS
5	3523.5047	39.14	N.A	N.A	74.00	N.A	54.00	V	PASS
6	5654.9310	42.62	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	30.0000	30.80	N.A	N.A	N.A	40.00	N.A	H	PASS
2	37.7678	32.57	N.A	N.A	N.A	40.00	N.A	H	PASS
3	57.1872	27.77	N.A	N.A	N.A	40.00	N.A	H	PASS
4	104.7648	23.36	N.A	N.A	N.A	43.50	N.A	H	PASS
5	203.8038	22.97	N.A	N.A	N.A	43.50	N.A	H	PASS
6	382.4625	25.21	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	1028.0056	32.95	N.A	N.A	74.00	N.A	54.00	H	PASS
2	1489.0978	33.73	N.A	N.A	74.00	N.A	54.00	H	PASS
3	1757.1514	37.42	N.A	N.A	74.00	N.A	54.00	H	PASS
4	2917.3835	38.01	N.A	N.A	74.00	N.A	54.00	H	PASS
5	3996.5993	40.84	N.A	N.A	74.00	N.A	54.00	H	PASS
6	5891.9784	42.50	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	2019.07.29	2020.07.28
Test Receiver	R&S	ESPI	101052	2019.07.29	2020.07.28
LISN	Schwarzbeck	NSLK 8127	812744	2019.03.27	2020.03.26
Pulse Limiter (20dB)	Schwarzbeck	9561D	9537	2019.08.13	2020.08.12
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-519	2019.05.24	2022.05.23
Test Antenna - Horn	Schwarzbeck	BBHA 9120D	1774	2019.07.26	2022.07.25
Radiated Disturbance Preamplifier	rflight	S020180L3203	61171/61172	2019.07.29	2020.07.28
Radiated Disturbance Preamplifier	rflight	S10M100L3802	46732	2019.07.29	2020.07.28
Semi-Anechoic Chamber	CRT	9m*6m*6m	N/A	2019.07.13	2022.07.12
PC	Apple	N/A	C3QJJ2X2DR VD	N/A	N/A
PC Adapter	DELTA	A1436	N/A	N/A	N/A
Earphone	N/A	N/A	EMC-04	N/A	N/A

————— END OF REPORT —————