

TEST REPORT

APPLICANT : BLU Products, Inc.

PRODUCT NAME: Smart Phone

MODEL NAME : G53

BRAND NAME : BLU

FCC ID : YHLBLUG53W851

STANDARD(S) : 47 CFR Part 15 Subpart B

RECEIPT DATE : 2023-10-20

TEST DATE : 2023-10-21 to 2023-11-27

ISSUE DATE : 2023-12-04

Edited by:

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Approved by:

Xiao Xiong(Supervisor)

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	Change	History
Version	Date	Reason for Change
1.0	2023-12-04	First edition



1. Technical Information

Note: Provide by applicant

1.1. Applicant and Manufacturer Information

Applicant:	BLU Products, Inc.
Applicant Address:	8600 NW 36th Street, Suite #200 Doral, FL 33166, USA
Manufacturer:	BLU Products, Inc.
Manufacturer Address:	8600 NW 36th Street, Suite #200 Doral, FL 33166, USA

1.2. Equipment Under Test (EUT) Description

Product Name:	Smart Phone
EUT No.:	7#
Hardware Version:	YK310-MB-V0.1
Software Version:	BLU_G0851_V13.0.04.04_GENERIC_22-11-2023_2030_DEBU G
Tx Frequency:	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz
	802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz
Rx Frequency:	GSM850: 869 MHz ~ 894 MHz
	GSM1900: 1930 MHz ~ 1990 MHz





WCDMA Band II: 1930 MHz ~ 1990 MHz WCDMA Band IV: 2110 MHz ~ 2155 MHz WCDMA Band V: 869 MHz ~ 894 MHz LTE Band 2: 1930 MHz ~ 1990 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 12: 729 MHz ~ 746 MHz LTE Band 17: 734 MHz ~ 746 MHz LTE Band 25: 1930 MHz ~ 1995 MHz LTE Band 26: 859 MHz ~ 894 MHz LTE Band 26: 859 MHz ~ 894 MHz LTE Band 66: 2110 MHz ~ 2690 MHz LTE Band 66: 2110 MHz ~ 2690 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz ACCessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: Brand Name: BLU Battery Brand Name: BLU Battery Brand Name: BLU						
WCDMA Band V: 869 MHz ~ 894 MHz LTE Band 2: 1930 MHz ~ 1990 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 12: 729 MHz ~ 746 MHz LTE Band 17: 734 MHz ~ 746 MHz LTE Band 25: 1930 MHz ~ 1995 MHz LTE Band 26: 859 MHz ~ 894 MHz LTE Band 26: 859 MHz ~ 894 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 61: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz Accessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD.		WCDMA Band II:	1930 MHz ~ 1990 MHz			
LTE Band 2: 1930 MHz ~ 1990 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 12: 729 MHz ~ 746 MHz LTE Band 17: 734 MHz ~ 746 MHz LTE Band 25: 1930 MHz ~ 1995 MHz LTE Band 26: 859 MHz ~ 894 MHz LTE Band 26: 859 MHz ~ 894 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD.		WCDMA Band IV	/: 2110 MHz ~ 2155 MHz			
LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 12: 729 MHz ~ 746 MHz LTE Band 17: 734 MHz ~ 746 MHz LTE Band 25: 1930 MHz ~ 1995 MHz LTE Band 26: 859 MHz ~894 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz ACCessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		WCDMA Band V	: 869 MHz ~ 894 MHz			
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LTE Band 12: 729 MHz ~ 746 MHz LTE Band 17: 734 MHz ~ 746 MHz LTE Band 25: 1930 MHz ~ 1995 MHz LTE Band 26: 859 MHz ~894 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 55240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz Accessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		LTE Band 4: 211	0 MHz ~ 2155 MHz			
LTE Band 17: 734 MHz ~ 746 MHz LTE Band 25: 1930 MHz ~ 1995 MHz LTE Band 26: 859 MHz ~ 894 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz Accessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		LTE Band 5: 869	MHz ~ 894 MHz			
LTE Band 25: 1930 MHz ~ 1995 MHz LTE Band 26: 859 MHz ~894 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz Accessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		LTE Band 12: 72	9 MHz ~ 746 MHz			
LTE Band 26: 859 MHz ~894 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz Accessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		LTE Band 17: 73	4 MHz ~ 746 MHz			
LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz Accessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		LTE Band 25: 19	30 MHz ~ 1995 MHz			
LTE Band 66: 2110 MHz ~ 2200 MHz LTE Band 71: 617 MHz ~ 652 MHz Bluetooth: 2402 MHz ~ 2480 MHz 802.11b/g/n: 2412 MHz ~ 2472 MHz 802.11a/ac/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5720 MHz; 5745 MHz ~ 5825 MHz GPS/Galileo/GLONASS/BDS: 1559 MHz ~ 1610 MHz FM: 87.5 MHz ~ 108 MHz Accessory: AC Adapter Brand Name: BLU Model No.: US-TY-2001 Serial No.: (N/A, marked #1 by test site) Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery						
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FM: 87.5 MHz ~ 108 MHz		·				
Accessory: Brand Name: BLU						
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Rated Input: 100-240V~50/60Hz, 0.3A Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		Model No.:	US-TY-2001			
Rated Output: 5V=2000mA Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		Serial No.:	(N/A, marked #1 by test site)			
Manufacturer: SHENZHEN TIANYIN ELECTRONICS CO., LTD. Battery		Rated Input:	100-240V~50/60Hz, 0.3A			
LTD. Battery		Rated Output:	5V=2000mA			
		Manufacturer:	,			
Brand Name: BLU		Battery				
1 1		Brand Name:	BLU			
Model No.: C966548500P		Model No.:	C966548500P			
Serial No.: (N/A, marked #1 by test site)		Serial No.:	(N/A, marked #1 by test site)			
Capacity: 5000mAh		Capacity:	5000mAh			
Rated Voltage: 3.85V		Rated Voltage:	3.85V			
Charge Limit: 4.4V						
Manufacturer: Shenzhen Jiuliyuan Electronic Technology Co. Ltd.		i -				





Note:

 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	2023.10.25	Wang Deyong	PASS	No deviation
2	15.109	Radiated Emission	2023.10.25	Zhang Bangyi	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.

Note 3: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

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2.2. EUT Setup and Operating Conditions

Note: All of the following test modes are tested in all the test items.

Test Item	1	
Radiated	Е	mission
Mode 1	:	EUT + GSM850 Idle + Bluetooth Idle + 2.4G WLAN Idle + AC Adapter + Battery +
		USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 2	:	EUT + GSM1900 Idle + Bluetooth Idle + 5G WLAN Idle + AC Adapter + Battery + USB
		Cable(Charging from Adapter) + Earphone + SIM Card
Mode 3	:	EUT + WCDMA Band II Idle + Bluetooth Idle + 2.4G WLAN Idle + AC Adapter +
		Battery + USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 4	:	EUT + WCDMA Band IV Idle + Bluetooth Idle + 5G WLAN Idle + AC Adapter + Battery
		+ USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 5	:	EUT + WCDMA Band V Idle + Bluetooth Idle + 2.4G WLAN Idle + AC Adapter +
		Battery + USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 6	:	EUT + LTE Band 2 Idle + Bluetooth Idle + 5G WLAN Idle + AC Adapter + Battery +
		USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 7	:	EUT + LTE Band 4 Idle + Bluetooth Idle + 2.4G WLAN Idle + AC Adapter + Battery +
		USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 8	:	EUT + LTE Band 5 Idle + Bluetooth Idle + 5G WLAN Idle + AC Adapter + Battery +
		USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 9	:	EUT + LTE Band 12 Idle + Bluetooth Idle + 2.4G WLAN Idle + AC Adapter + Battery +
		USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 10	:	EUT + LTE Band 17 Idle + Bluetooth Idle + 5G WLAN Idle + AC Adapter + Battery +
		USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 11	:	EUT + LTE Band 25 Idle + Bluetooth Idle + 2.4G WLAN Idle + GPS Rx + AC Adapter
		+ Battery + USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 12	:	EUT + LTE Band 26 Idle + Bluetooth Idle + 5G WLAN Idle + Galileo Rx + AC Adapter
		+ Battery + USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 13	:	EUT + LTE Band 41 Idle + Bluetooth Idle + 2.4G WLAN Idle + GLONASS Rx + AC
		Adapter + Battery + USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 14	:	EUT + LTE Band 66 Idle + Bluetooth Idle + 5G WLAN Idle + BDS Rx + AC Adapter +
		Battery + USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 15	:	EUT + LTE Band 71 Idle + Bluetooth Idle + 2.4G WLAN Idle + FM Rx + AC Adapter +
		Battery + USB Cable(Charging from Adapter) + Earphone + SIM Card
Mode 16	:	EUT + LTE Band 2 Idle + Bluetooth Idle + 5G WLAN Idle + AC Adapter + Battery
		+ USB Cable(Charging from Adapter) + Earphone + SIM Card + Rear Camera
		Mode





Mode 17: EUT + LTE Band 17 Idle + Bluetooth Idle + 5G WLAN Idle + Battery + USB Cable + Earphone + SIM Card + PC + PC Adapter + Data Transmission Mode

Remark:

The above test mode in boldface (Mode 16) was the worst case of conducted emission test, only the test data of these modes were reported. The above test mode in boldface (Mode 16) was the worst case of radiated emission test, only the test data of these modes were 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 $50\mu H/50\Omega$ line impedance stabilization network (LISN).

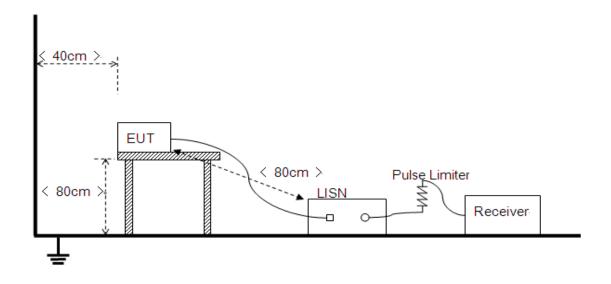
Frequency Range	Conducted	Limit (dBµV)
(MHz)	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

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 $50\Omega/50\mu H$ 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 inma intained with respect to the impedance characteristics as prescribed in ANSI C63.4-2014 at Clause 4.3.

3.1.3. Test Result

Set RBW=9 kHz, VBW=30 kHz. 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.

The measurement results are obtained as below:

 $\label{eq:energy} E\left[dB\mu V\right] = U_R[dB\mu V] + L_{Cable\;loss}\left[dB\right] + A_{Factor}\left[dB\right]$

U_R: Receiver Reading

A_{Factor}: Voltage Division Factor of LISN

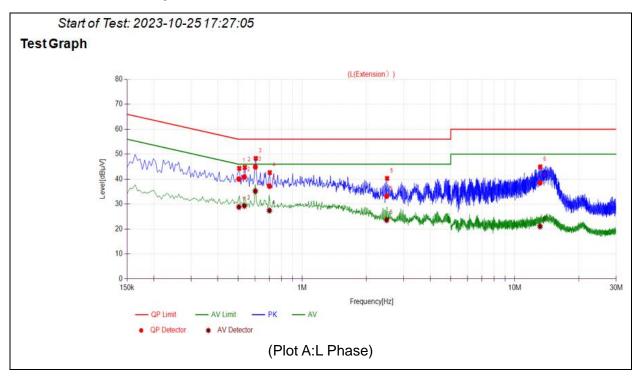
L_{Cable loss}: Correction Factor Contains Pulse Limiter and Cable

During the test, the total correction Factor L_{Cable loss} and A_{Factor} were built in test software.





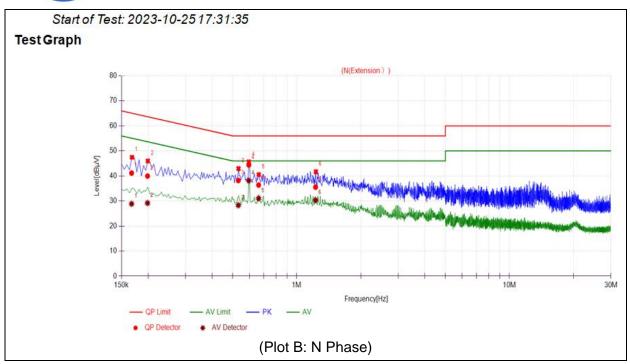
A. Test Plot and Suspicious Points:



Na	Fre.	Emission Le	evel (dBµV)	Limit (c	dΒμV)	Dower line	\/oud!ot
No.	(MHz)	Quasi-peak	Average	Quasi-peak	Average	Power-line	Verdict
1	0.5036	40.00	28.84	56.00	46.00		PASS
2	0.5343	40.85	29.29	56.00	46.00	Line	PASS
3	0.6015	44.87	35.20	56.00	46.00		PASS
4	0.7005	37.15	27.41	56.00	46.00		PASS
5	2.4957	33.13	23.59	56.00	46.00		PASS
6	13.1467	38.50	21.02	60.00	50.00		PASS

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No.	Fre.	Emission Le	evel (dBµV)	Limit (d	dΒμV)	Power-line	Verdict
NO.	(MHz)	Quasi-peak	Average	Quasi-peak	Average	Power-line	verdict
1	0.1673	41.15	28.86	65.10	55.10		PASS
2	0.1988	39.96	29.18	63.66	53.66		PASS
3	0.5312	38.19	28.29	56.00	46.00	Nicutual	PASS
4	0.5950	44.39	38.14	56.00	46.00	Neutral	PASS
5	0.6617	36.37	31.00	56.00	46.00		PASS
6	1.2259	35.53	30.32	56.00	46.00		PASS

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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	Field Strength Limitation at 3m Measurement Dist		
Range (MHz)	(μV/m)	(dBµV/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 indBμV/m is calculated by 20log Emission Level(μV/m).

3.2.2. Frequency Range of Measurement

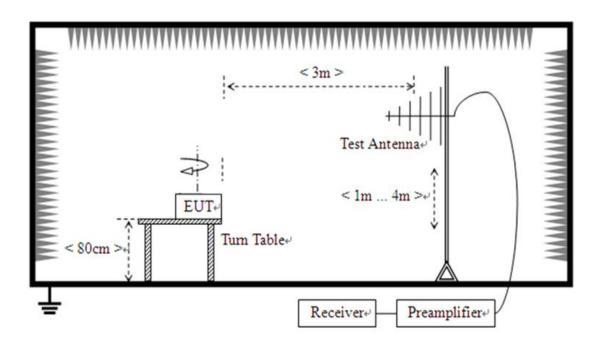
According to 15.33(b)(1), the frequency range of radiated measurement for the EUT is listed in the following table:

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

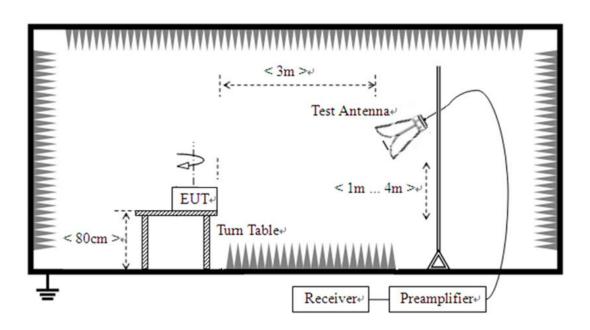


3.2.3. Test Setup

1) For radiated emissions from 30MHz to1GHz



2) For radiated emissions above 1GHz



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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 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. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

For measurements below 1GHz the resolution bandwidth is set to 120 kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video bandwidth is set to 3MHz for peak measurements and as applicable for average measurements.

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 which (6GHz-30GHz) are attenuated more than 20 dB below the permissible value need not be reported.

The measurement results are obtained as below:

 $E \left[dB\mu V/m \right] = U_R \left[dB\mu V \right] + A_T [dB] + A_{Factor} \left[dB \right]; A_T = L_{Cable \ loss} \left[dB \right] - G_{preamp} \left[dB \right]$

A_T: Total correction Factor except Antenna

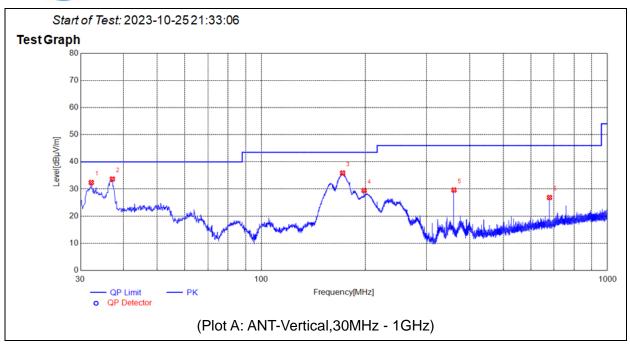
U_R: Receiver Reading G_{preamp}: Preamplifier Gain A_{Factor}: Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

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.





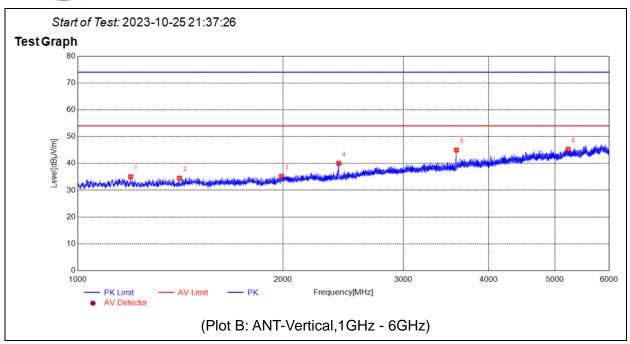


Na	Fre.	PK	QP	AV	Limit-PK	Limit-QP	Limit-AV	ANIT	Verdict
No.	MHz	dBµV/m	dBµV/m	dBµV/m	dBµV/m	dBµV/m	dBµV/m	ANT	verdict
1	32.2312	32.37	N.A	N.A	N.A	40.00	N.A	V	PASS
2	37.0817	33.64	N.A	N.A	N.A	40.00	N.A	>	PASS
3	171.6342	35.88	N.A	N.A	N.A	43.50	N.A	>	PASS
4	198.0208	29.46	N.A	N.A	N.A	43.50	N.A	V	PASS
5	360.0270	29.61	N.A	N.A	N.A	46.00	N.A	V	PASS
6	679.9650	26.87	N.A	N.A	N.A	46.00	N.A	V	PASS

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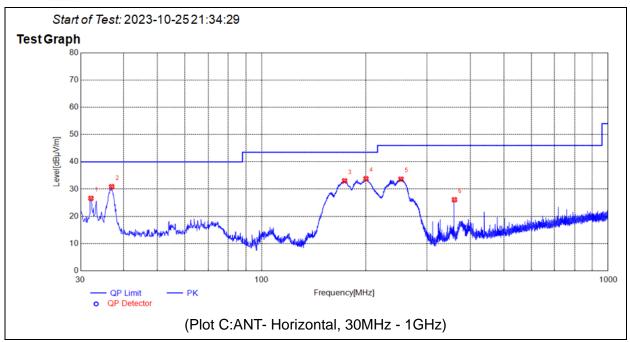


No	Fre.	PK	QP	AV	Limit-PK	Limit-QP	Limit-AV	ANT	Verdict
No.	MHz	dBµV/m	dΒμV/m	dBµV/m	dΒμV/m	dBµV/m	dBµV/m	ANT	verdict
1	1196.0196	35.06	N.A	N.A	74.00	N.A	54.00	V	PASS
2	1410.0410	34.52	N.A	N.A	74.00	N.A	54.00	V	PASS
3	1989.0989	35.19	N.A	N.A	74.00	N.A	54.00	V	PASS
4	2413.1413	40.04	N.A	N.A	74.00	N.A	54.00	V	PASS
5	3588.2588	45.00	N.A	N.A	74.00	N.A	54.00	V	PASS
6	5229.4229	45.24	N.A	N.A	74.00	N.A	54.00	V	PASS

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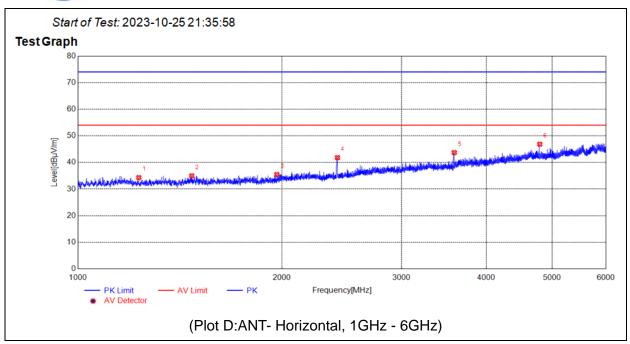


No	Fre.	PK	QP	AV	Limit-PK	Limit-QP	Limit-AV	ANT	Verdict
No.	MHz	dBµV/m	dBµV/m	dBµV/m	dBµV/m	dBµV/m	dBµV/m	ANT	verdict
1	32.1342	26.60	N.A	N.A	N.A	40.00	N.A	Н	PASS
2	36.8877	30.88	N.A	N.A	N.A	40.00	N.A	Н	PASS
3	173.4773	33.01	N.A	N.A	N.A	43.50	N.A	Н	PASS
4	199.9610	33.78	N.A	N.A	N.A	43.50	N.A	Н	PASS
5	252.3462	33.63	N.A	N.A	N.A	46.00	N.A	Н	PASS
6	360.0270	26.07	N.A	N.A	N.A	46.00	N.A	Н	PASS

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Na	Fre.	PK	QP	AV	Limit-PK	Limit-QP	Limit-AV	ANT	Verdict
No.	MHz	dBµV/m	dΒμV/m	dBµV/m	dBµV/m	dBµV/m	dBµV/m	ANI	verdict
1	1230.0230	34.30	N.A	N.A	74.00	N.A	54.00	Н	PASS
2	1472.0472	34.97	N.A	N.A	74.00	N.A	54.00	Н	PASS
3	1965.0965	35.46	N.A	N.A	74.00	N.A	54.00	Н	PASS
4	2413.6414	41.82	N.A	N.A	74.00	N.A	54.00	Н	PASS
5	3588.2588	43.71	N.A	N.A	74.00	N.A	54.00	Н	PASS
6	4796.3796	46.86	N.A	N.A	74.00	N.A	54.00	Н	PASS

Tel: 86-755-36698555

Http://www.morlab.cn



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	9kHz-150kHz	±3.3dB
a Level of Confidence of	150kHz-30MHz	±2.8dB
95%(U=2Uc(y))		

Uncertainty of Radiated Emission Measurement

Measuring Uncertainty for	30MHz-200MHz	±5.06dB
a Level of Confidence of	200MHz-1000MHz	±5.04dB
95%(U=2Uc(y))	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.
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.
	FL.3, Building A, FeiYang Science Park, No.8 LongChang
Address:	Road, Block 67, BaoAn District, ShenZhen, GuangDong
	Province, P. R. China

3. Accreditation Certificate

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

4. Test Software Utilized

Model	Version Number	Producer
TS+ -[JS32-RE]	Version 2.5.0.6	Tonscend
TS+ -[JS32-CE]	Version 2.5.0.0	Tonscend





5. Test Equipments Utilized

Description	Model	Serial No.	Manufacturer	Cal. Date	Due. Date
Bi-Log Antenna	VULB 9163	9163-274	SCHWARZBECK	2023/6/27	2024/6/26
Bi-Log Antenna	VULB 9163	9163-519	SCHWARZBECK	2023/7/1	2024/6/30
Horn Antenna	BBHA 9120D	9120D-963	SCHWARZBECK	2023/6/27	2024/6/26
Horn Antenna	BBHA 9120D	01774	SCHWARZBECK	2023/7/1	2024/6/30
Horn Antenna	BBHA9170	BBHA9170 #773	SCHWARZBECK	2023/7/1	2024/6/30
Receiver	N9038A	MY541300 16	Agilent	2023/6/21	2024/6/20
Receiver	N9038A	MY564000 93	KEYSIGHT	2023/2/9	2024/2/8
6db Attenuator	BW-N6W5+	E191001	Mini-circuits	2023/9/19	2024/9/18
Preamplifier	S020180L3203	61171/611 72	LUCIX CORP.	2023/6/27	2024/6/26
Preamplifier	S10M100L3802	46732	LUCIX CORP.	2023/6/27	2024/6/26
Preamplifier	DCLNA0118-40 C-S	DS77209	Decentest	2023/7/4	2024/7/3
RF Coaxial Cable	PE330	MRE001	Pasternack	N/A	N/A
RF Coaxial Cable	CLU18	MRE002	Pasternack	N/A	N/A
RF Coaxial Cable	CLU18	MRE003	Pasternack	N/A	N/A
RF Coaxial Cable	QA360-40-KK- 0.5	22290045	Qualwave	N/A	N/A
RF Coaxial Cable	QA360-40-KKF -2	22290046	Qualwave	N/A	N/A
RF Coaxial Cable	QA500-18-NN- 5	22120181	Qualwave	N/A	N/A
RF Coaxial Cable	BNC	MRE04	Qualwave	N/A	N/A
Receiver	ESPI	101052	R&S	2023/6/21	2024/6/20
LISN	NSLK 8127	8127449	Schwarzbeck	2023/2/21	2024/2/20
10dB Pulse Limiter	VTSD 9561-F	VTSD 9561 F-B #206	SCHWARZBECK	2023/6/27	2024/6/26
System Simulator	CMW500	152038	R&S	2023/9/19	2024/9/18



6. Ancillary Equipment Utilized

Description	Manufacturer	Model	Serial No.
earphone	Орро	N/A	N/A
PC	APPLE	A1370	N/A
PC Adapter	APPLE	A1374	N/A

END OF REPORT	