



FCC PART 15B, CLASS B TEST REPORT

For

BLU Products, Inc.

10814 NW 33rd St # 100 Doral, FL 33172, Doral, Florida, United States

FCC ID: YHLBLUG51LITE

Report Type: Original Report		Product Type: Smart Phone	
Test Engineer:	Haiguo Li Kilroy Deng Alan He		
	<i>Haiguo Li Kilroy Deng Alan He</i>		
Report Number:	SZ1210208-04467E-00A		
Report Date:	2021-03-23		
Reviewed By:	Jacob Kong	<i>Jacob Kong</i>	
	RF Engineer		
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn		

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Smart Phone
Tested Model	G51 LITE
Multiple Model	M6 2021
Model Differences	Refer to the DoS letter
Voltage Range	Powered: DC 3.8V by internal rechargeable Li-ion battery Recharged: DC 5.0V by adapter
Highest operating frequency	2690MHz
Date of Test	2021-02-24 to 2021-03-13
Sample number	SZ1210208-04467E-EM-S1(Assigned by BACL, Shenzhen)
Received date	2021-02-08
Sample/EUT Status	Good condition
Adapter information	Model: US-AR-1000 Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5.0V, 1000mA

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A, B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15 B.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will be taken into consideration for the test data recorded in the report

Parameter		uncertainty
Conducted Emissions		$\pm 1.95\text{dB}$
Radiated Emissions	Below 1GHz	$\pm 4.75\text{dB}$
	Above 1GHz	$\pm 4.88\text{dB}$

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a manufacturer testing fashion.

EUT operation mode 1: Charging & Playing

EUT operation mode 2: Downloading (data transfer with computer)

EUT Exercise Software

“BurnInTest.exe” exercise software was used.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

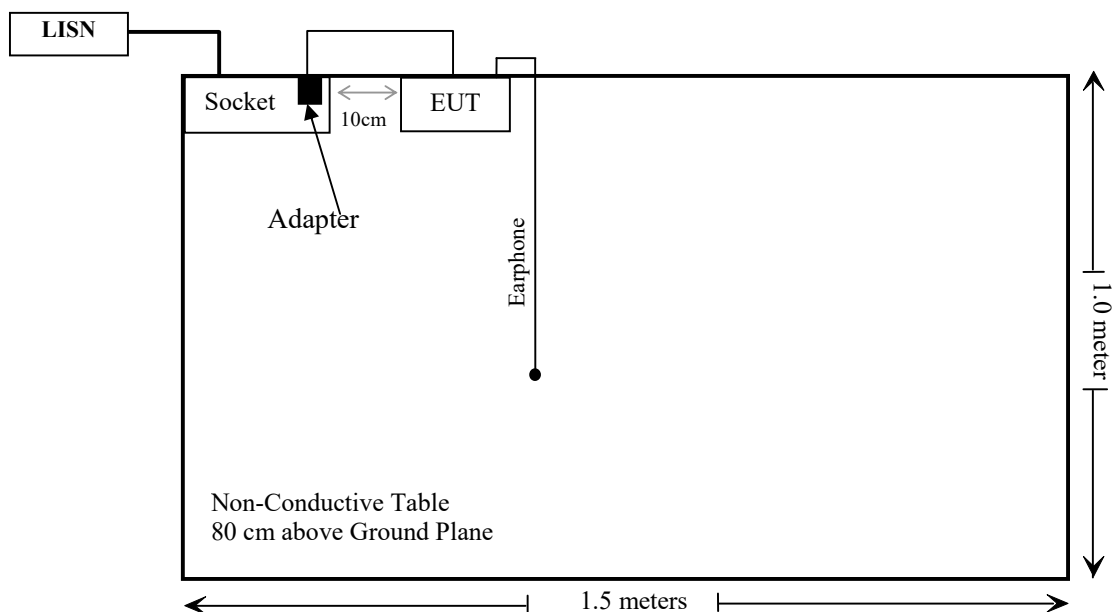
Manufacturer	Description	Model	Serial Number
BULL	Socket	GN-415K	5503290068073
DELL	PC	Latitude E5430	JG3NLV1
DELL	Adapter	PA-10	PA-10
DELL	PC 2	Latitude E5570	Latitude E5570
DELL	Adapter 2	LA90PM111	LA90PM111
sandisk	Tf-card	Unknown	Tf-card
Unknown	earphone	Unknown	earphone

External I/O Cable

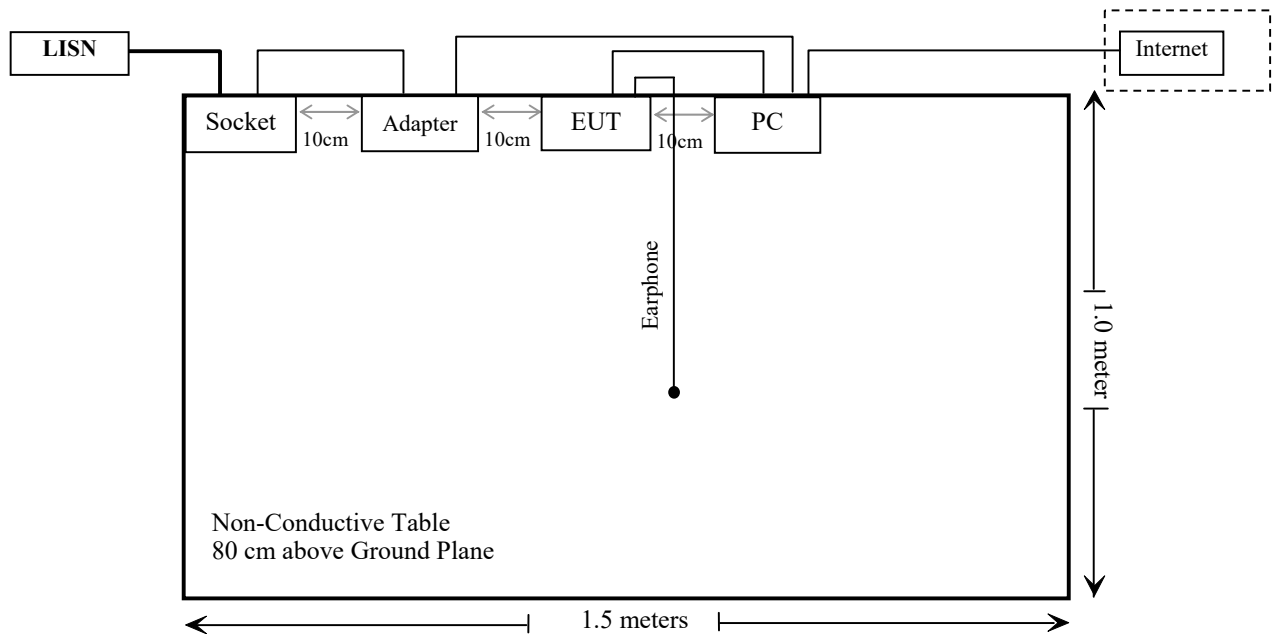
Cable Description	Length (m)	From/Port	To
Unshielded un-detachable Audio cable	1.2	earphone	EUT
Unshielded un-detachable AC cable	1.0	Socket	LISN
Shielded detachable USB cable	1.0	Adapter	EUT
Shielded detachable USB cable	1.0	PC	EUT
Unshielded detachable RJ45 cable	10.0	PC	Network
Unshielded un-detachable DC cable	1.2	Adapter	PC
Unshielded detachable AC cable	1.0	Adapter	LISN

Block Diagram of Test Setup

EUT Operation Mode: Charging & Playing



EUT Operation Mode: Downloading



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance

EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2020/08/04	2021/08/03
Rohde & Schwarz	LISN	ENV216	101613	2020/08/04	2021/08/03
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2020/11/29	2021/11/28
Unknown	CE Cable	CE Cable	UF A210B-1-0720-504504	2020/11/29	2021/11/28
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/08/04	2021/08/03
Sonoma instrument	Pre-amplifier	310 N	186238	2020/08/04	2021/08/03
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2020/12/22	2023/12/21
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Sunol Sciences	Horn Antenna	3115	9107-3694	2021/01/15	2024/01/14
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2020/11/29	2021/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2020/11/29	2021/11/28

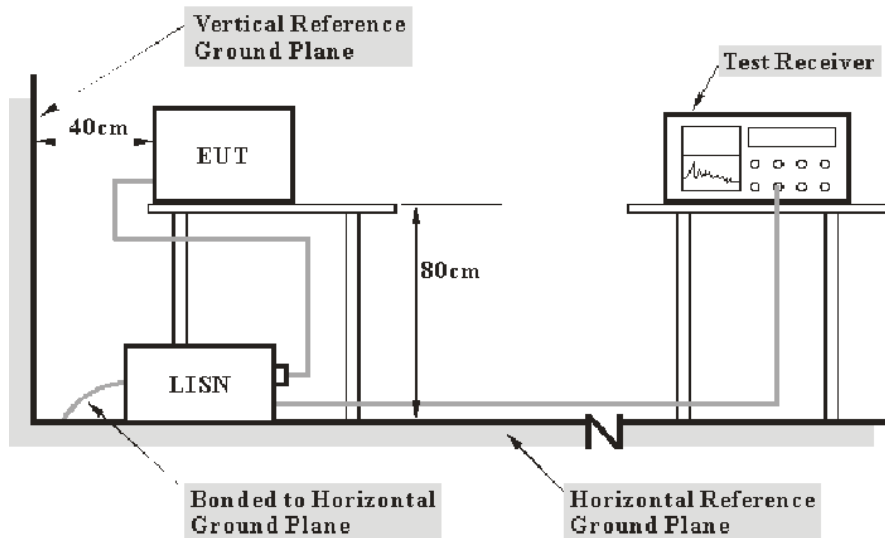
* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC §15.107

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with per ANSI C63.4-2014. The related limit was specified in FCC Part 15.107.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the device was connected to the first LISN and the other relevant equipments were connected to the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

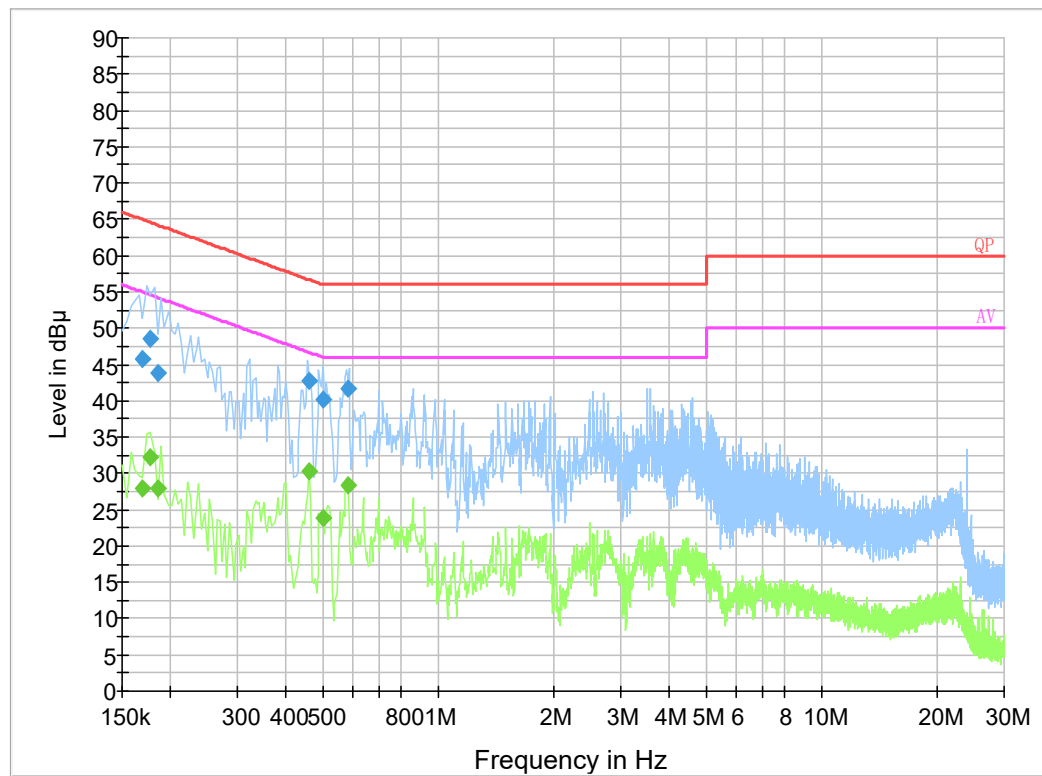
$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	65 %
ATM Pressure:	101.0 kPa

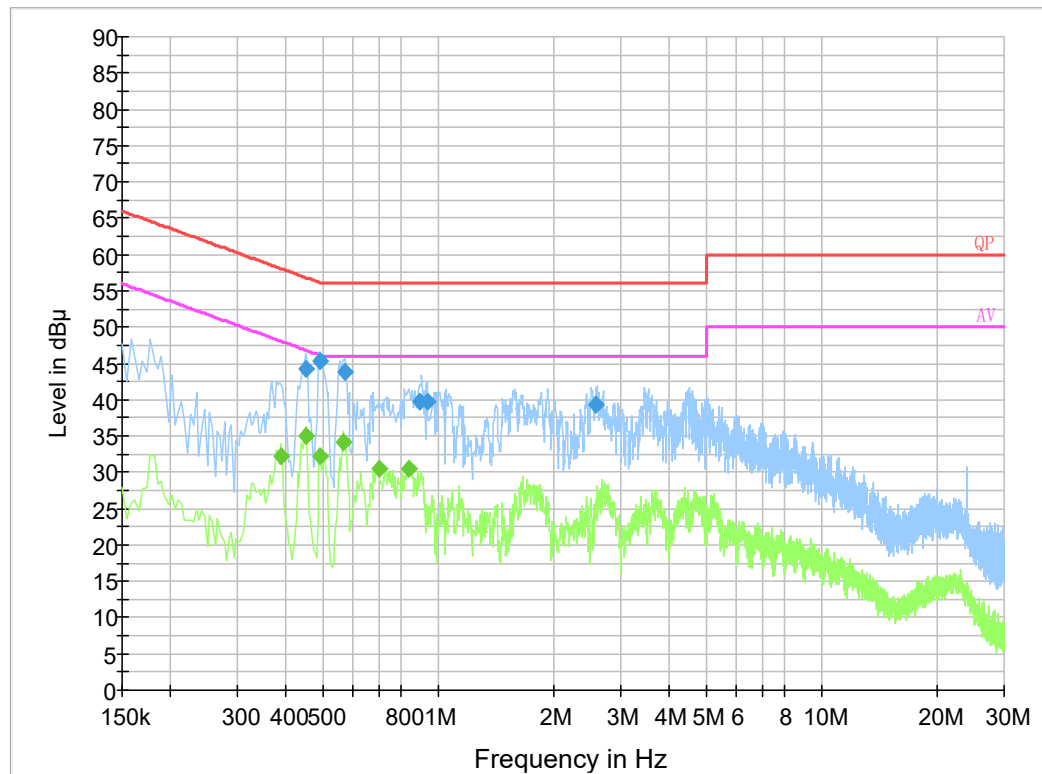
The testing was performed by Haiguo Li on 2021-02-24.

*EUT Operation Mode: Charging & Playing***AC 120V/60 Hz, Line****Final Result 1**

Frequency (MHz)	QuasiPeak (dB μV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μV)
0.169500	45.8	9.000	L1	19.9	19.2	65.0
0.177500	48.5	9.000	L1	19.9	16.1	64.6
0.185500	43.8	9.000	L1	19.8	20.4	64.2
0.459130	42.8	9.000	L1	19.8	13.9	56.7
0.502470	40.2	9.000	L1	19.8	15.8	56.0
0.581210	41.8	9.000	L1	19.8	14.2	56.0

Final Result 2

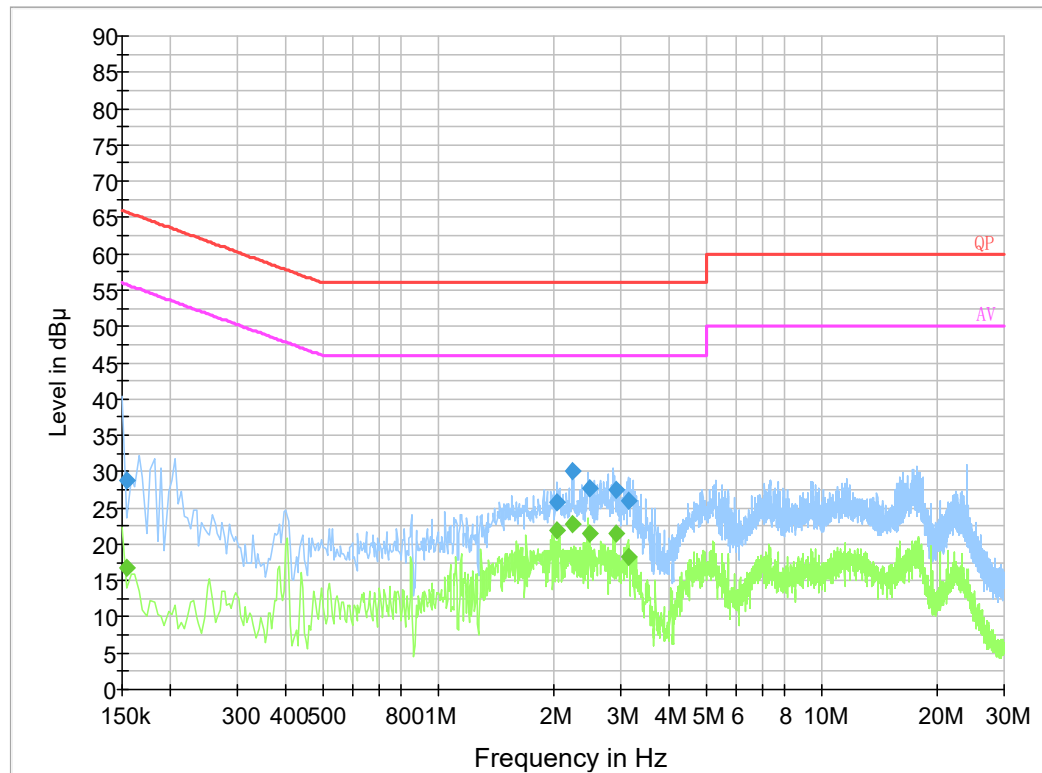
Frequency (MHz)	Average (dB μV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μV)
0.169500	28.0	9.000	L1	19.9	27.0	55.0
0.177500	32.3	9.000	L1	19.9	22.3	54.6
0.185500	27.8	9.000	L1	19.8	26.4	54.2
0.459130	30.2	9.000	L1	19.8	16.5	46.7
0.502470	23.8	9.000	L1	19.8	22.2	46.0
0.581210	28.4	9.000	L1	19.8	17.6	46.0

AC 120V/60 Hz, Neutral:**Final Result 1**

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.451190	44.3	9.000	N	19.8	12.6	56.9
0.490590	45.3	9.000	N	19.8	10.9	56.2
0.573390	43.7	9.000	N	19.8	12.3	56.0
0.896410	39.6	9.000	N	19.7	16.4	56.0
0.935930	39.7	9.000	N	19.8	16.3	56.0
2.590850	39.2	9.000	N	19.8	16.8	56.0

Final Result 2

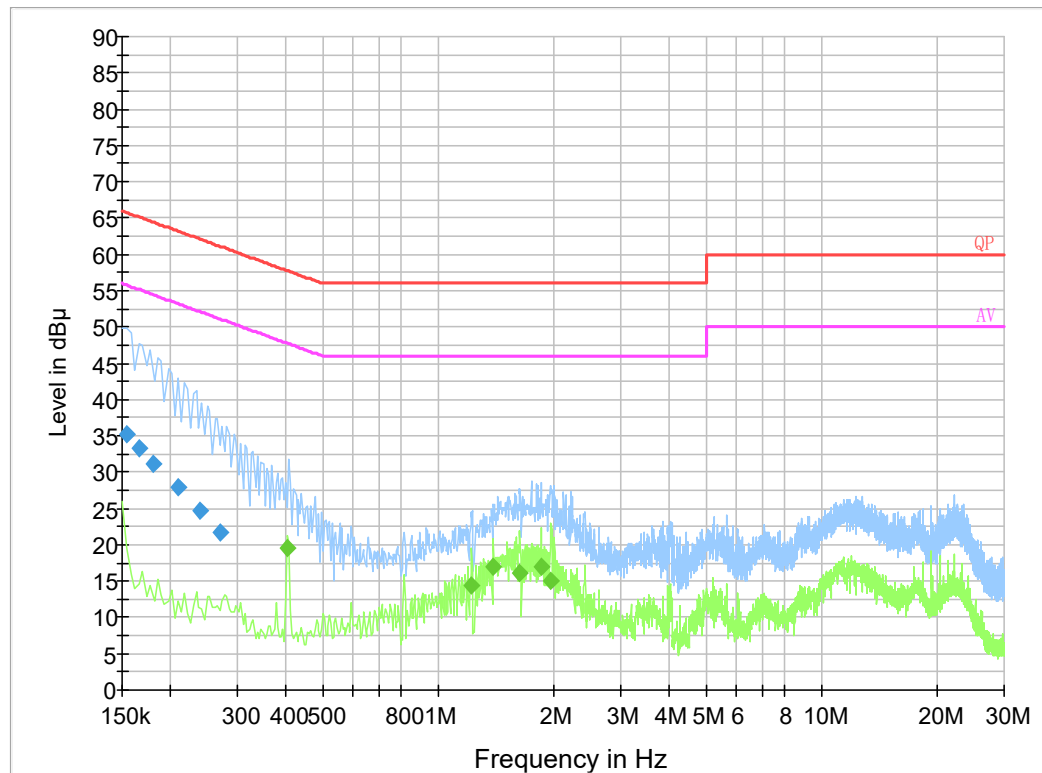
Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.390000	32.2	9.000	N	19.8	15.9	48.1
0.454000	35.0	9.000	N	19.8	11.8	46.8
0.494000	32.1	9.000	N	19.8	14.0	46.1
0.566000	34.3	9.000	N	19.8	11.7	46.0
0.702000	30.5	9.000	N	19.8	15.5	46.0
0.838000	30.4	9.000	N	19.8	15.6	46.0

*EUT Operation Mode: Downloading***AC 120V/60 Hz, Line****Final Result 1**

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154000	28.8	9.000	L1	19.8	37.0	65.8
2.047250	25.8	9.000	L1	19.9	30.2	56.0
2.236190	30.1	9.000	L1	19.9	25.9	56.0
2.481130	27.7	9.000	L1	19.8	28.3	56.0
2.914890	27.5	9.000	L1	19.9	28.5	56.0
3.147050	25.9	9.000	L1	19.9	30.1	56.0

Final Result 2

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154000	16.7	9.000	L1	19.8	39.1	55.8
2.047250	21.9	9.000	L1	19.9	24.1	46.0
2.236190	22.7	9.000	L1	19.9	23.3	46.0
2.481130	21.5	9.000	L1	19.8	24.5	46.0
2.914890	21.4	9.000	L1	19.9	24.6	46.0
3.147050	18.3	9.000	L1	19.9	27.7	46.0

AC 120V/60 Hz, Neutral:**Final Result 1**

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154000	35.2	9.000	N	19.8	30.6	65.8
0.165500	33.4	9.000	N	19.8	31.8	65.2
0.181500	31.2	9.000	N	19.8	33.2	64.4
0.209500	27.9	9.000	N	19.8	35.3	63.2
0.238500	24.8	9.000	N	19.8	37.3	62.1
0.269500	21.7	9.000	N	19.7	39.4	61.1

Final Result 2

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.406000	19.6	9.000	N	19.8	28.1	47.7
1.226000	14.4	9.000	N	19.8	31.6	46.0
1.398000	16.9	9.000	N	19.8	29.1	46.0
1.634000	16.1	9.000	N	19.8	29.9	46.0
1.858000	16.9	9.000	N	19.9	29.1	46.0
1.974000	15.1	9.000	N	19.9	30.9	46.0

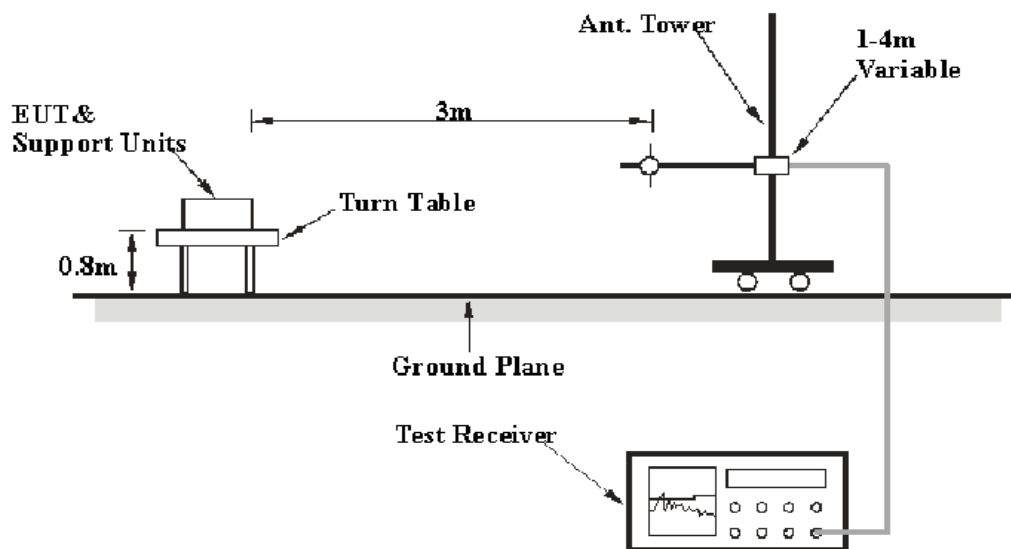
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

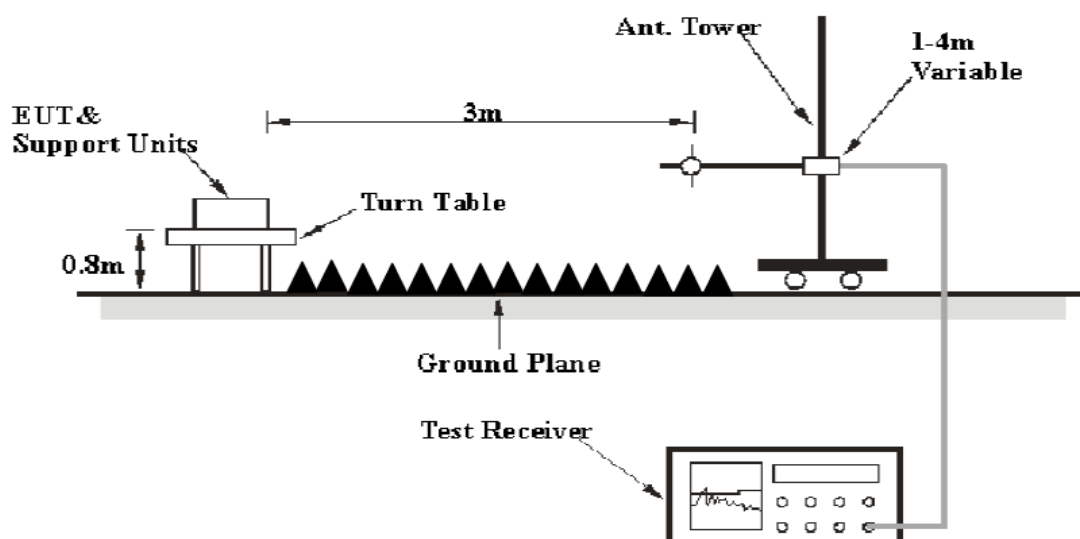
FCC §15.109

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurment
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data

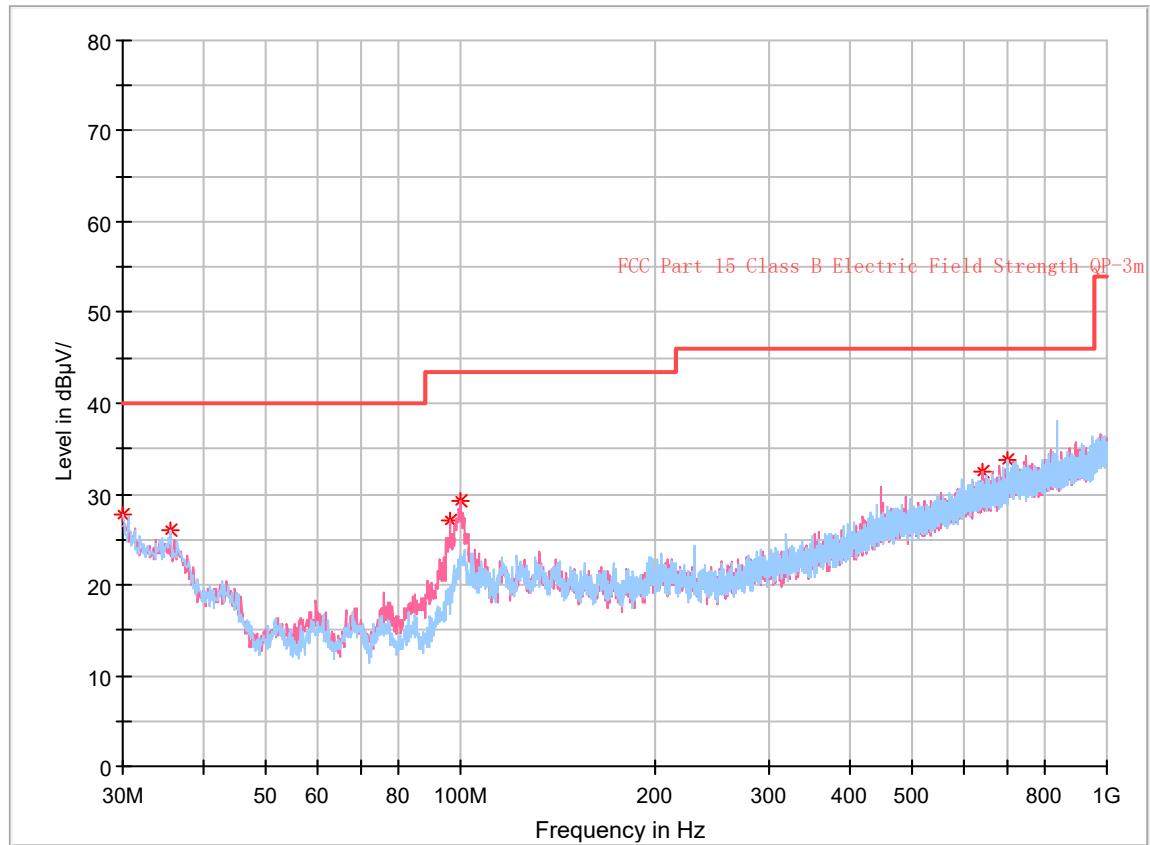
Environmental Conditions

Temperature:	24~25.4 °C
Relative Humidity:	55~56 %
ATM Pressure:	101.2~101.3 kPa

The testing was performed by Kilroy Deng on 2021-03-12 for below 1GHz and Alan He on 2021-03-13 for above 1GHz.

EUT Operation Mode: Charging & Playing

30 MHz~1 GHz:



Critical_Freqs

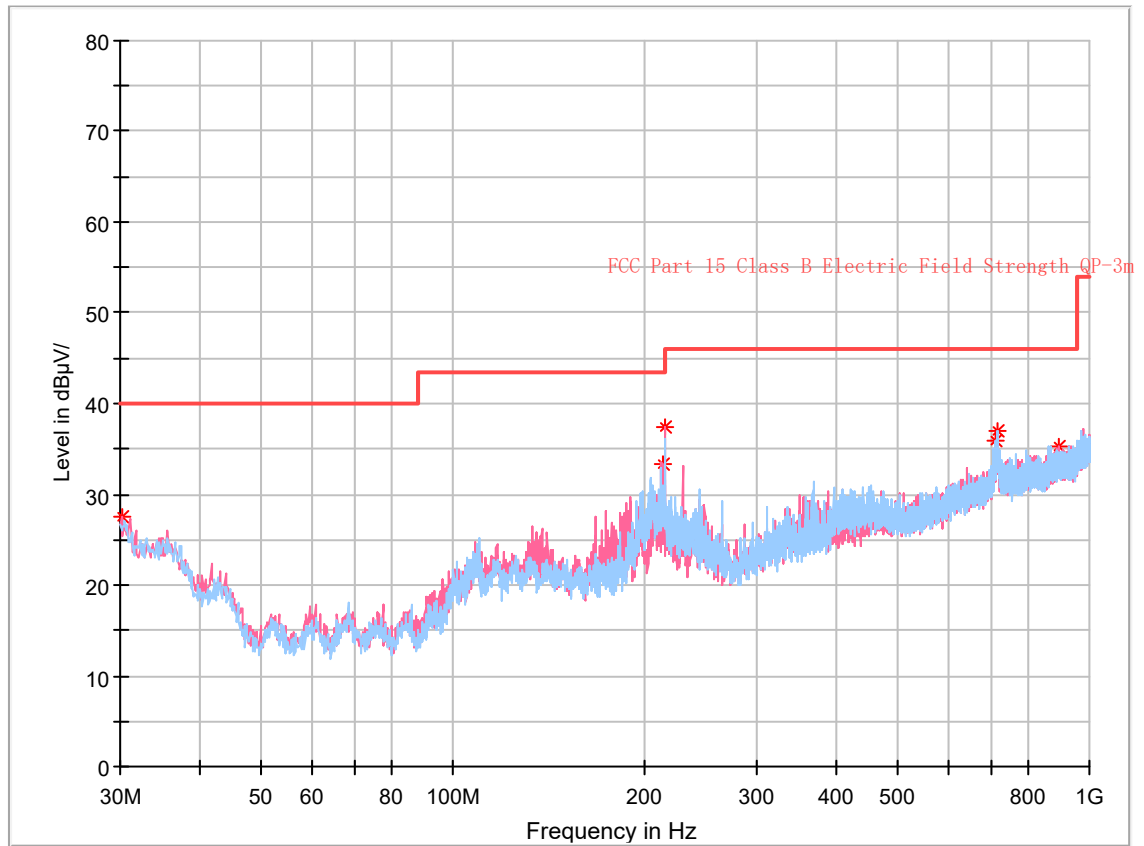
Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.000000	27.82	40.00	12.18	300.0	H	0.0	2.5
35.577500	25.95	40.00	14.05	100.0	H	349.0	-1.7
96.445000	27.12	43.50	16.38	100.0	V	252.0	-8.7
100.082500	29.25	43.50	14.25	100.0	V	252.0	-7.7
640.615000	32.55	46.00	13.45	300.0	V	312.0	3.4
700.876250	33.72	46.00	12.28	200.0	H	179.0	4.5

1-13.5 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC Part 15B	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
1326.54	43.92	PK	157	2.1	H	-4.21	39.71	74	34.29
1326.54	28.87	Ave.	157	2.1	H	-4.21	24.66	54	29.34
1326.54	44.12	PK	31	2.2	V	-4.21	39.91	74	34.09
1326.54	29.07	Ave.	31	2.2	V	-4.21	24.86	54	29.14
2116.65	44.18	PK	133	1.8	H	-0.81	43.37	74	30.63
2116.65	28.95	Ave.	133	1.8	H	-0.81	28.14	54	25.86
2116.65	44.29	PK	308	1.6	V	-0.81	43.48	74	30.52
2116.65	29.06	Ave.	308	1.6	V	-0.81	28.25	54	25.75

EUT Operation Mode: Downloading

30 MHz~1 GHz:



Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.121250	27.56	40.00	12.44	100.0	V	192.0	2.4
213.087500	33.44	43.50	10.06	100.0	V	343.0	-5.3
215.997500	37.33	43.50	6.17	100.0	V	0.0	-5.3
713.971250	35.91	46.00	10.09	200.0	H	49.0	4.8
717.972500	37.03	46.00	8.97	100.0	V	109.0	4.8
892.087500	35.32	46.00	10.68	200.0	V	16.0	6.9

1-13.5GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC Part 15B	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
1232.04	43.86	PK	199	2.5	H	-4.68	39.18	74	34.82
1232.04	28.76	Ave.	199	2.5	H	-4.68	24.08	54	29.92
1232.04	43.95	PK	241	2.4	V	-4.68	39.27	74	34.73
1232.04	28.84	Ave.	241	2.4	V	-4.68	24.16	54	29.84
2513.31	44.06	PK	55	1.7	H	-0.15	43.91	74	30.09
2513.31	28.91	Ave.	55	1.7	H	-0.15	28.76	54	25.24
2513.31	44.25	PK	185	1.8	V	-0.15	44.10	74	29.90
2513.31	29.03	Ave.	185	1.8	V	-0.15	28.88	54	25.12

***** END OF REPORT *****