FCC PART 15B, CLASS B

TEST REPORT

For

Evolve 3 Holdings Pty Ltd

PO BOX 6222, NARRAWEENA NSW, Australia, 2099

FCC ID: 2AWLG-MEB11V5

Report Type:	**Product Type:**
Original Report	Maestro EBook

Test Engineer:	Haiguo Li Holland Yang Leven Gan	Haiguo Li Holland Yang Leven Gan
Report Number:	RSZ201221003-00A	
Report Date:	2021-02-02	
Reviewed By:	Jacob Kong RF Engineer	Jacob Kong
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn	

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Maestro EBook
Tested Model	Maestro-EBook11V2
Voltage Range	Powered: DC 7.6V by internal rechargeable Li-ion battery Recharged: DC 12V by adapter
Highest operating frequency	2480 MHz
Date of Test	2020-12-28 to 2020-12-31
Sample number	RSZ201221003-RF-S1(Assigned by BACL, Shenzhen)
Received date	2020-12-21
Sample/EUT Status	Good condition
Adapter information	Model: JHD-AP024U-120200BA-A Input: AC 100-240V, 50/60Hz, 0.55A Output: DC 12V, 2000mA

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		±1.95dB
Radiated Emissions	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB

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 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, 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: Working (data transfer with U-disk and SD card, playing and HDMI out)

EUT Exercise Software

“Burn in test” software was used.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

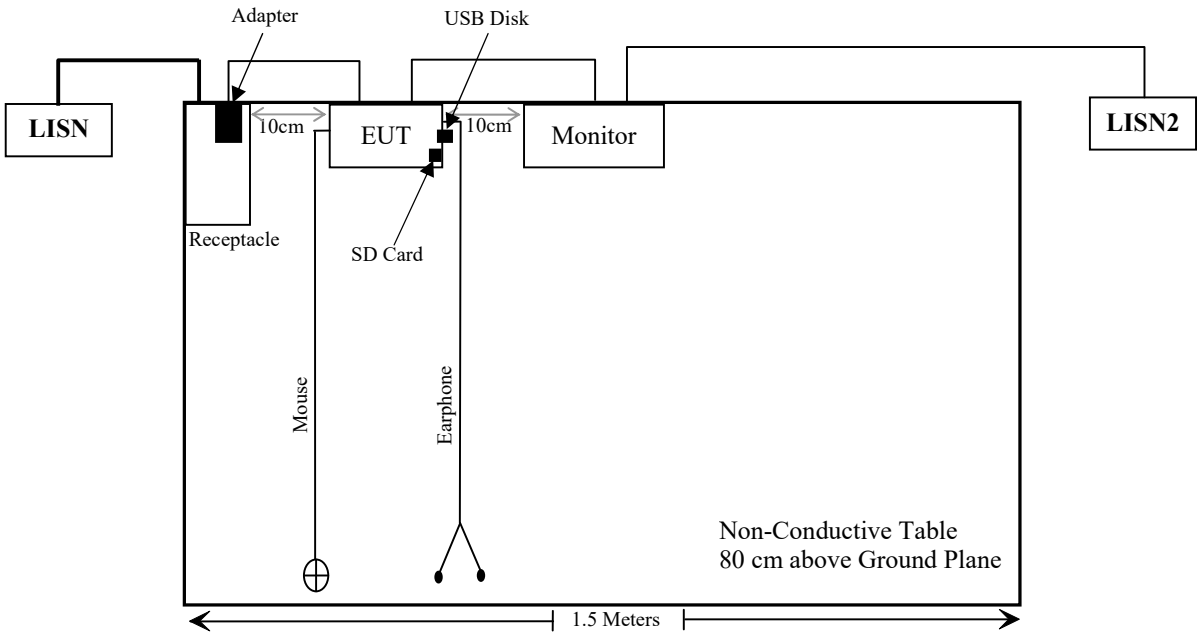
Manufacturer	Description	Model	Serial Number
SAMSUNG	Monitor	S24E390HL	ZZFRH4ZN303357K
Sandisk	SD Card	SDSDUNG-128G-ZN61N	SD012463
Kingston	USB Disk	DTSE9G2 64G	DTSE9G2
DELL	Mouse	M-U0026	DZL-M-U0026(B)
Unknown	Earphone	Unknown	211426

External I/O Cable

Cable Description	Length (m)	From/Port	To
Un-shielding Un-Detachable AC Cable	1.2	LISN	Receptacle
Un-shielding Un-Detachable DC Cable	1.5	Adapter	EUT
Un-shielding Detachable HDMI Cable	1.2	EUT	Monitor
Un-shielding Un-Detachable Audio Cable	1.2	EUT	Earphone
Un-shielding Un-Detachable USB Cable	1.2	EUT	Mouse
Un-shielding Un-Detachable AC Cable	1.5	Monitor	LISN2

Block Diagram of Test Setup

For conducted emission:



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 Limitor	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	A040904-1	2020/12/22	2023/12/21
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	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	DRH-118	A052604	2020/12/22	2023/12/21
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

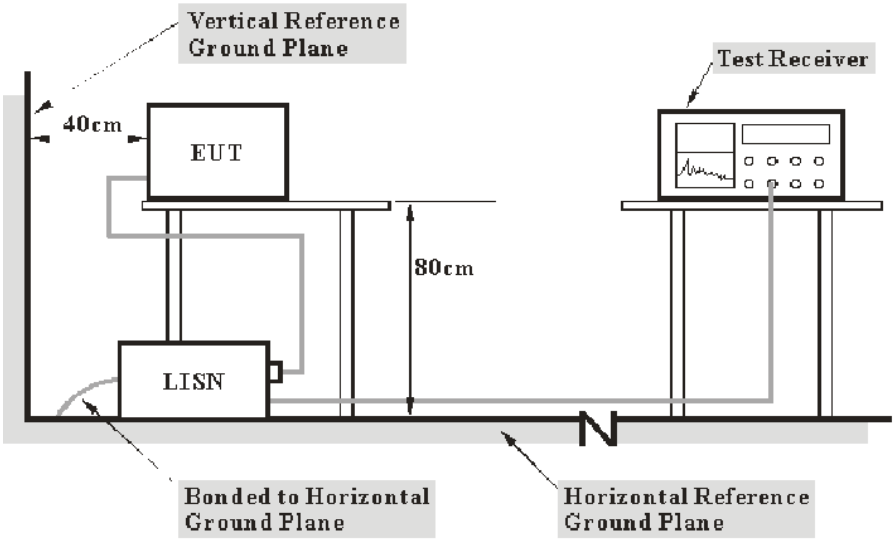
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

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 conncected 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:

Correction Factor = LISN VDF + Cable Loss + 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:

Margin = Limit – Corrected Amplitude

Test Data

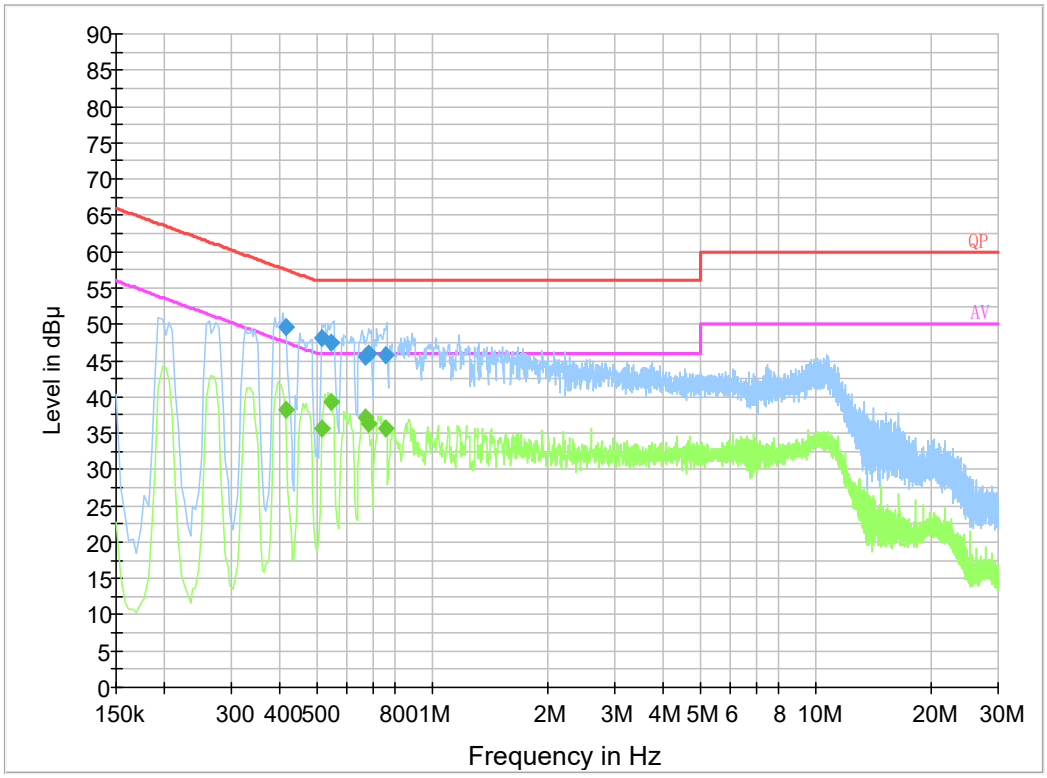
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	65 %
ATM Pressure:	101.0 kPa

The testing was performed by Haiguo Li on 2020-12-31.

EUT Operation Mode: Working

AC 120V/60 Hz, Line



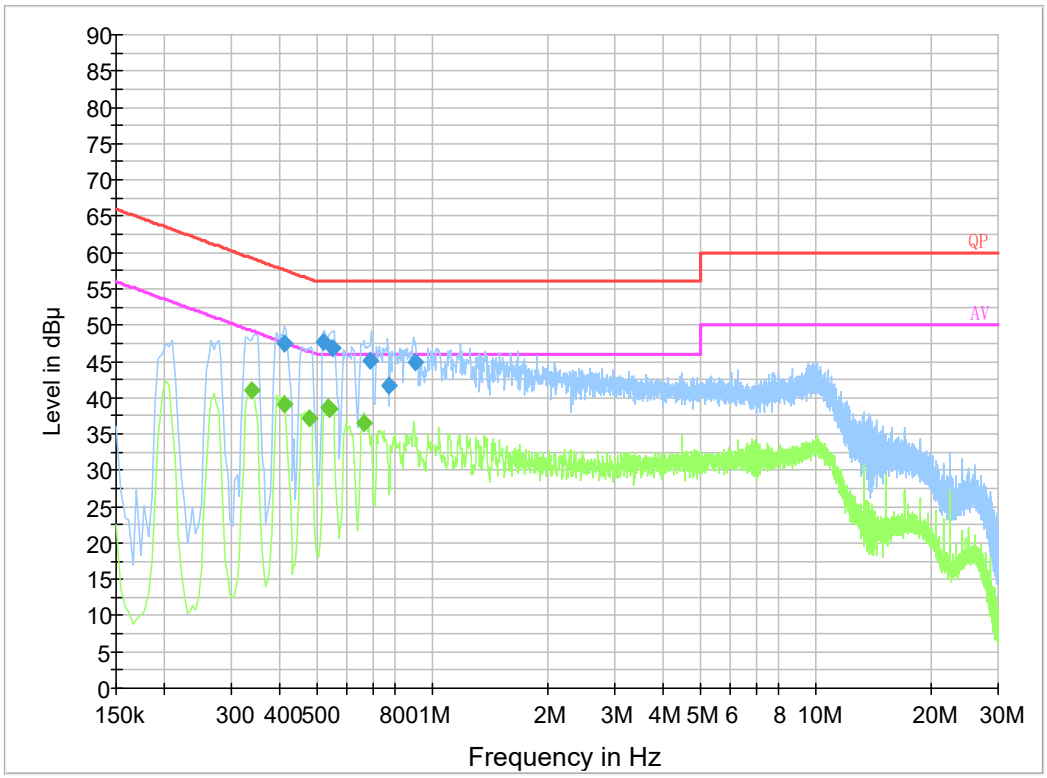
Final Result 1

Frequency (MHz)	QuasiPeak (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.416150	49.6	9.000	L1	19.9	7.9	57.5
0.518110	48.2	9.000	L1	19.8	7.8	56.0
0.545690	47.5	9.000	L1	19.8	8.5	56.0
0.667870	45.6	9.000	L1	19.8	10.4	56.0
0.683710	46.0	9.000	L1	19.8	10.0	56.0
0.754570	45.8	9.000	L1	19.8	10.2	56.0

Final Result 2

Frequency (MHz)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.416150	38.3	9.000	L1	19.9	9.2	47.5
0.518110	35.7	9.000	L1	19.8	10.3	46.0
0.545690	39.4	9.000	L1	19.8	6.6	46.0
0.667870	37.1	9.000	L1	19.8	8.9	46.0
0.683710	36.4	9.000	L1	19.8	9.6	46.0
0.754570	35.6	9.000	L1	19.8	10.4	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)
0.411790	47.6	9.000	N	19.8	10.0	57.6
0.522110	47.7	9.000	N	19.8	8.3	56.0
0.549750	46.8	9.000	N	19.8	9.2	56.0
0.687590	45.2	9.000	N	19.8	10.8	56.0
0.770510	41.7	9.000	N	19.8	14.3	56.0
0.907410	44.9	9.000	N	19.7	11.1	56.0

Final Result 2

Frequency (MHz)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.338000	41.0	9.000	N	19.8	8.3	49.3
0.414000	39.2	9.000	N	19.8	8.4	47.6
0.478000	37.2	9.000	N	19.8	9.2	46.4
0.534000	38.6	9.000	N	19.8	7.4	46.0
0.542000	38.4	9.000	N	19.8	7.6	46.0
0.662000	36.4	9.000	N	19.8	9.6	46.0

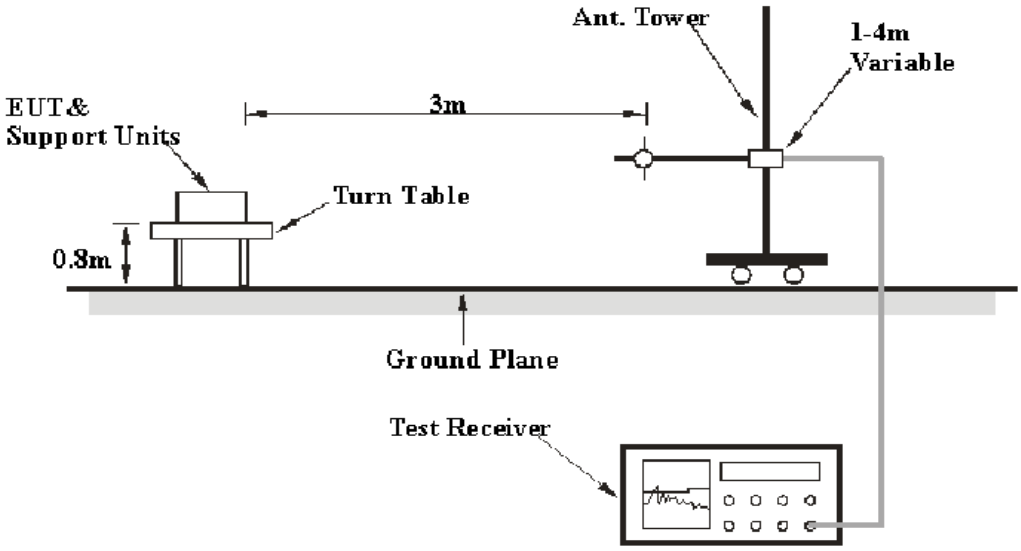
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

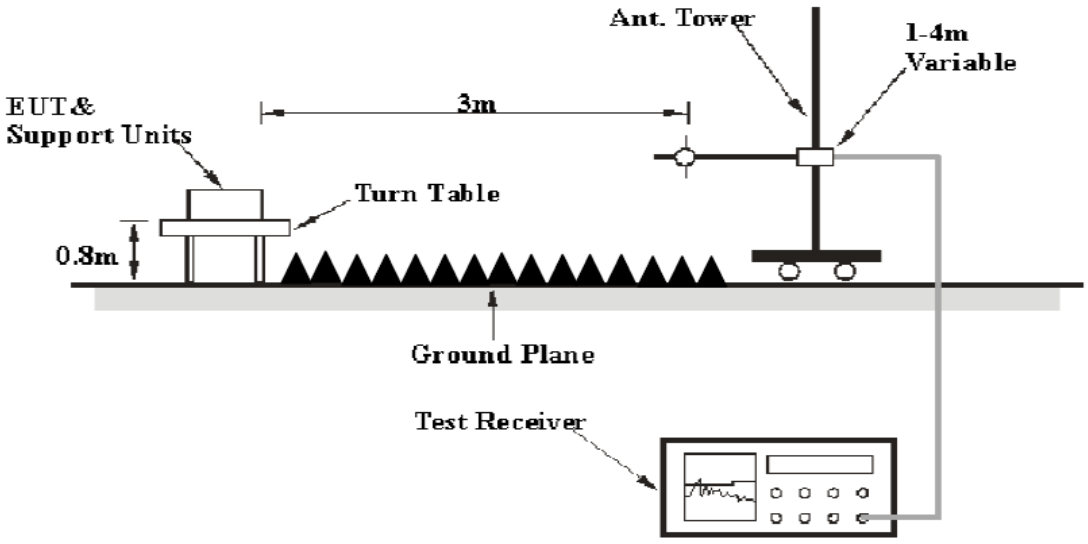
FCC §15.109

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:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - 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:

Margin = Limit – Corrected Amplitude

Test Data

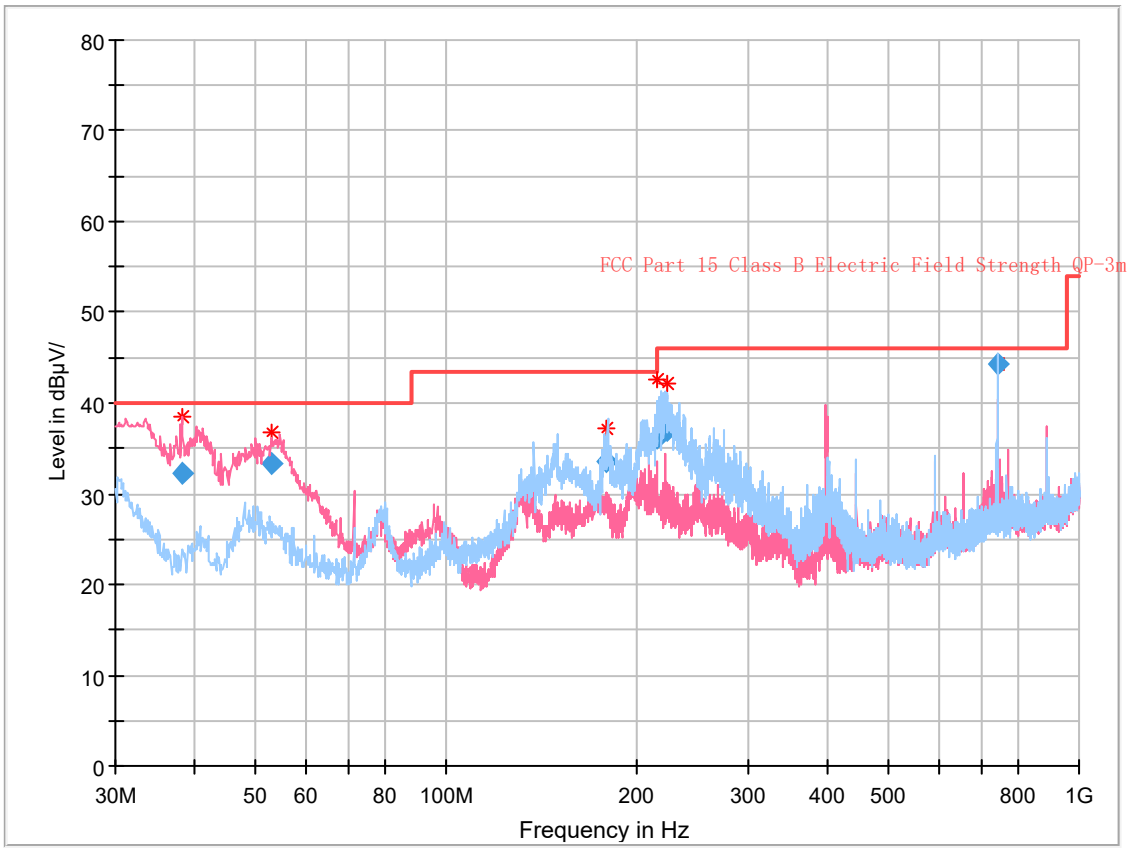
Environmental Conditions

Temperature:	22.4~25 ℃
Relative Humidity:	45~51 %
ATM Pressure:	101.0 kPa

The testing was performed by Holland Yang on 2020-12-30 for below 1GHz and Leven Gan on 2020-12-28 for above 1GHz.

EUT Operation Mode: Working

30 MHz~1 GHz:



Final_Result

Frequency (MHz)	QuasiPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
38.317125	32.36	40.00	7.64	112.0	V	71.0	-9.5
52.889250	33.27	40.00	6.73	103.0	V	15.0	-16.7
179.530125	33.65	43.50	9.85	235.0	H	129.0	-12.0
215.990000	36.17	43.50	7.33	150.0	H	85.0	-10.7
222.930375	36.92	46.00	9.08	103.0	H	75.0	-10.7
741.720000	44.33	46.00	1.67	186.0	H	346.0	-0.3

1-12.5 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)
1448.24	51.54	PK	53	1.5	H	-3.12	48.42	74	25.58
1448.24	47.21	Ave.	53	1.5	H	-3.12	44.09	54	9.91
1448.24	50.39	PK	55	1.7	V	-3.12	47.27	74	26.73
1448.24	46.82	Ave.	55	1.7	V	-3.12	43.70	54	10.30
1925.67	43.54	PK	234	1.9	H	-1.50	42.04	74	31.96
1925.67	28.71	Ave.	234	1.9	H	-1.50	27.21	54	26.79
1925.67	44.19	PK	310	2.2	V	-1.50	42.69	74	31.31
1925.67	28.75	Ave.	310	2.2	V	-1.50	27.25	54	26.75

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