

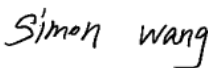

FCC PART 15B, CLASS B
MEASUREMENT AND TEST REPORT

For

Gajah International (HK) Co., Ltd.

18/F Bel Trade Commercial Building, 1-3, Burrows Street, Wan Chai, Hong Kong

FCC ID: UFKGD90BT00

Report Type: Original Report	Product Type: Speaker
Test Engineer: <u>Simon Wang</u> 	
Report Number: <u>RSZ130311003-00A</u>	
Report Date: <u>2013-03-26</u>	
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Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Gajah International (HK) Co., Ltd.*'s product, model number: *GD90BT (FCC ID: UFKGD90BT00)* or the "EUT" in this report was a *Speaker*, which was measured approximately: 18.5 cm (L) x 7.8 cm (W) x 10.0 cm (H), rated with input voltage: DC 3.7 V Li-ion battery or DC5V charging from USB port. The highest operating frequency is 24 MHz.

**All measurement and test data in this report was gathered from production sample serial number: 1303021 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-03-11.*

Objective

This report is prepared on behalf of *Gajah International (HK) Co., Ltd.* in accordance with Part 2-Subpart J, Part 15- Subparts A and B of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS submission with FCC ID: UFKGD90BT00.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical mode which is provided by manufacture.

EUT operation mode 1: Playing (Audio in)

EUT operation mode 2: Playing (USB Disk)

EUT operation mode 3: Playing (SD Card)

EUT Exercise Software

No exercise software was used

Equipment Modifications

No modification was made to the EUT

Support Equipment List and Details

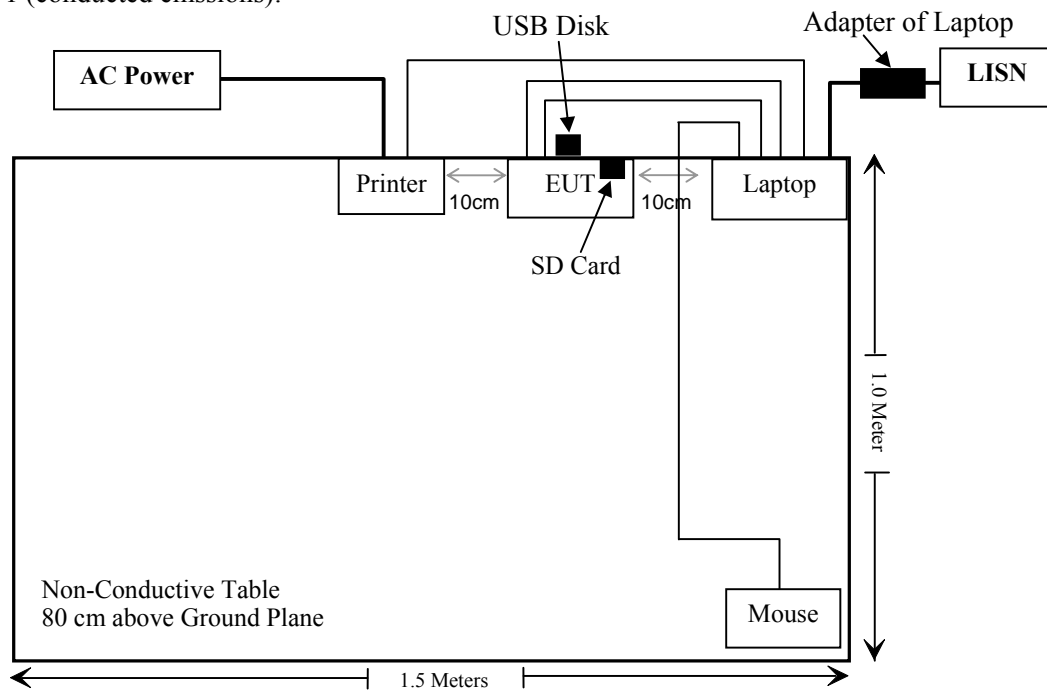
Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	00045-452-921-345
HP	Laser Jet5L	C3941A	JPTVOB2337
Kingston	USB Disk	G3	/
Kingston	SD Card	2GB	/

External I/O Cable

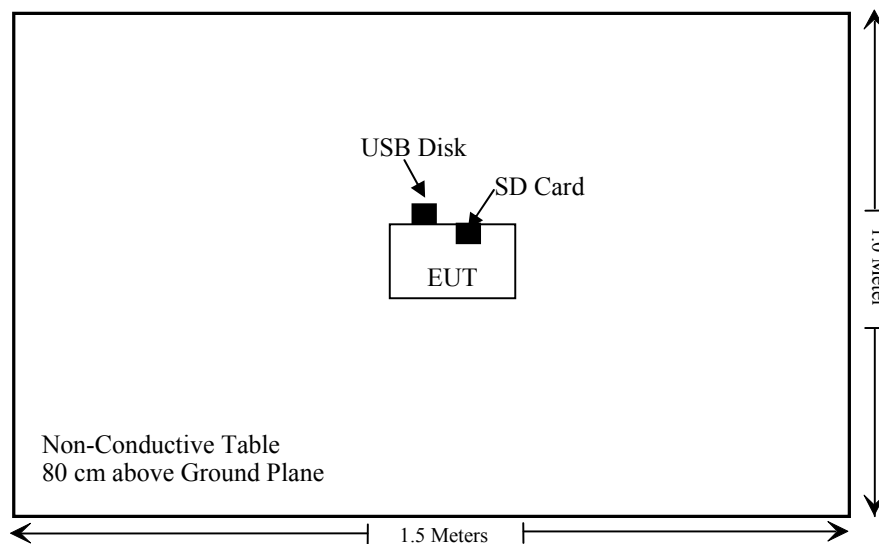
Cable Description	Length (m)	From/Port	To
Shielded Detachable Mouse Cable	1.5	Mouse Port / Host	Mouse
Shielded Detachable Printer Cable	1.2	Parallel Port / Host	Printer
Unshielded Detachable Line-in Cable	0.8	Laptop	EUT
Unshielded Detachable USB Cable	0.8	Laptop	EUT
Unshielded Detachable AC Cable	1.5	Laptop Adapter	LISN

Block Diagram of Test Setup

Test mode 1 (conducted emissions):



Test mode 2 & Test mode 3 (radiated emissions):



SUMMARY OF TEST RESULTS

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

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Applicable Standard

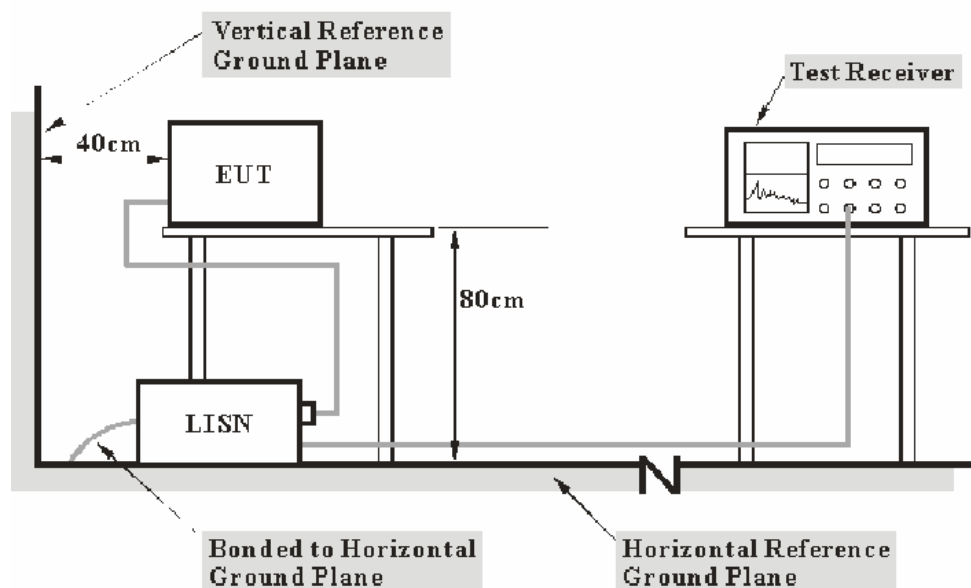
FCC §15.107

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 2.4 dB.(k=2, 95% level of confidence), and the uncertainty will not be taken into consideration for the test data recorded in the report.

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 setup of EUT is according with ANSI C63.4-2003 measurement procedure. The related limit was specified in FCC Part 15.107.

The spacing between the peripherals was 10 cm.

The laptop adapter was connected to a 120 VAC/60 Hz power source.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2012-11-24	2013-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2012-08-22	2013-08-21
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2012-08-09	2013-08-08
BACL	CE Test software	BACL-CE	V1.0	-	-

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

Test Procedure

During the conducted emission test, the laptop adapter was connected to the outlet of the first 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.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107, with the worst margin reading of:

11.28 dB at 8.825 MHz in the **Line** conducted mode

Test Data

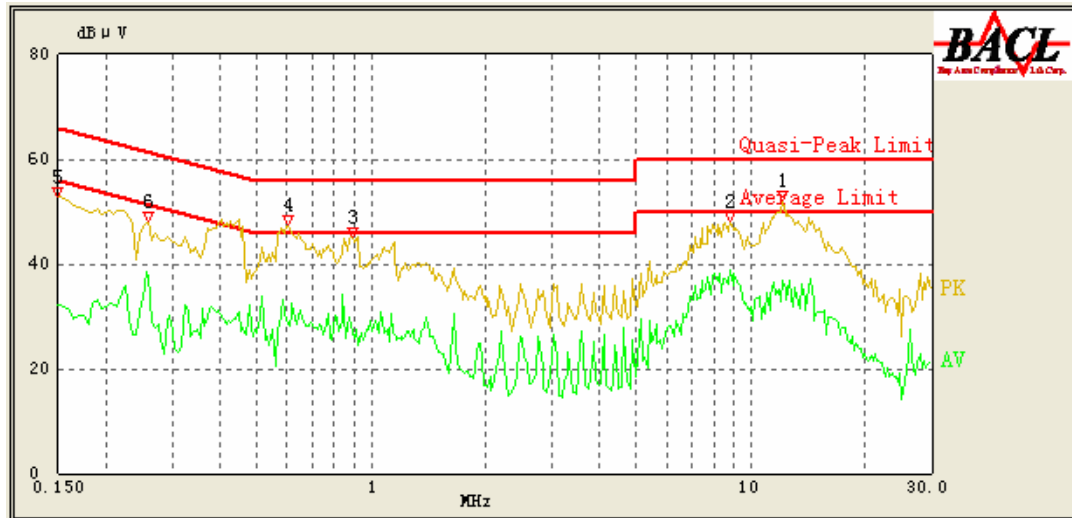
Environmental Conditions

Temperature:	25°C
Relative Humidity:	55 %
ATM Pressure:	100.1 kPa

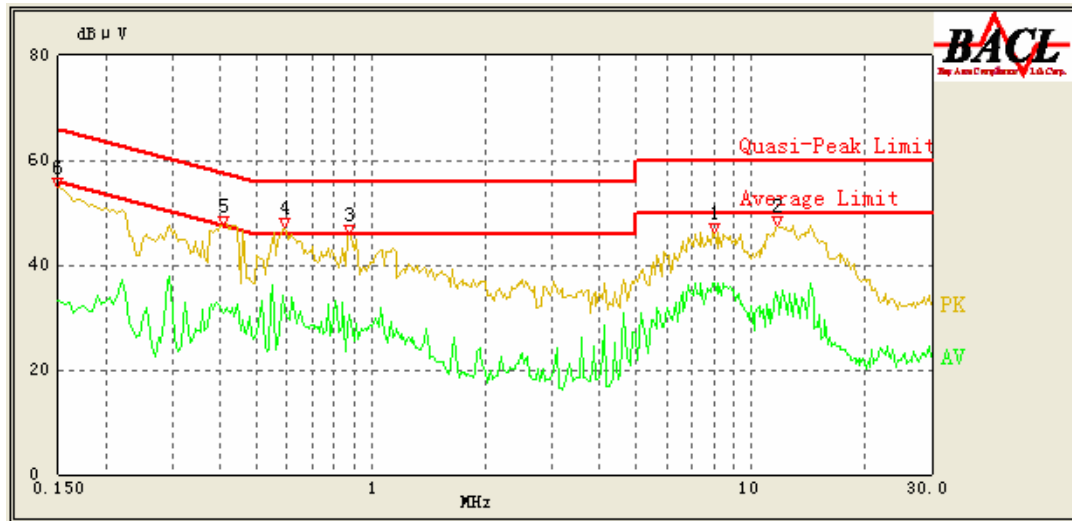
The testing was performed by Simon Wang on 2013-03-18.

EUT operation mode 1: Playing (Audio in)

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
8.825	38.72	10.30	50.00	11.28	Ave.
12.070	36.87	10.42	50.00	13.13	Ave.
0.605	41.31	10.20	56.00	14.69	QP
0.260	38.00	10.10	52.86	14.86	Ave.
0.895	40.16	10.20	56.00	15.84	QP
0.610	28.09	10.20	46.00	17.91	Ave.
0.150	48.07	10.10	66.00	17.93	QP
0.890	27.24	10.20	46.00	18.76	Ave.
0.260	43.99	10.10	62.86	18.87	QP
12.065	40.70	10.42	60.00	19.30	QP
8.840	40.03	10.30	60.00	19.97	QP
0.150	32.13	10.10	56.00	23.87	Ave.

AC 120V/60 Hz, Neutral

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
7.980	36.59	10.30	50.00	13.41	Ave.
0.590	31.14	10.20	46.00	14.86	Ave.
0.590	41.06	10.20	56.00	14.94	QP
0.875	30.66	10.20	46.00	15.34	Ave.
0.150	49.84	10.10	66.00	16.16	QP
0.875	39.11	10.20	56.00	16.89	QP
0.410	41.63	10.11	58.57	16.94	QP
11.820	32.58	10.41	50.00	17.42	Ave.
0.410	30.69	10.11	48.57	17.88	Ave.
7.980	40.93	10.30	60.00	19.07	QP
0.150	33.21	10.10	56.00	22.79	Ave.
11.755	37.14	10.41	60.00	22.86	QP

FCC §15.109 - RADIATED EMISSIONS

Applicable Standard

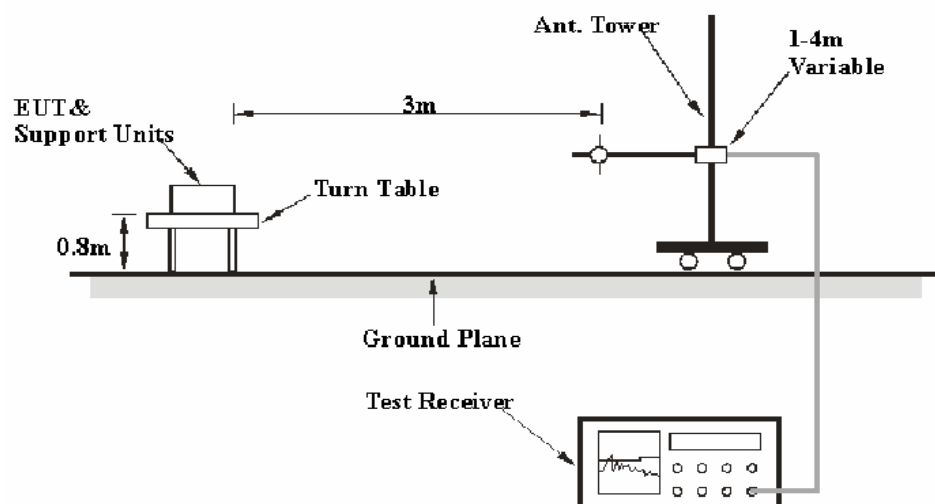
FCC §15.109

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, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB. ($k=2$, 95% level of confidence), and the uncertainty will not be taken into consideration for the test data recorded in the report.

EUT Setup



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.4-2003. The related limit was specified in FCC Part 15.109.

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.

The laptop adapter was connected to a 120V/60Hz AC power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1 GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP

Test Procedure

During the radiated emissions test, the laptop adapter was connected to AC floor outlet.

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 detection mode from 30 MHz to 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2012-11-24	2013-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2012-08-08	2013-08-07
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
BACL	CE Test software	BACL-CE	V1.0	-	-

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

Corrected Amplitude & Margin Calculation

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

$$\text{Correction Factor} = \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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

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

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B, with the worst margin reading of:

0.9 dB at 390.059550 MHz in the Horizontal polarization

Test Data**Environmental Conditions**

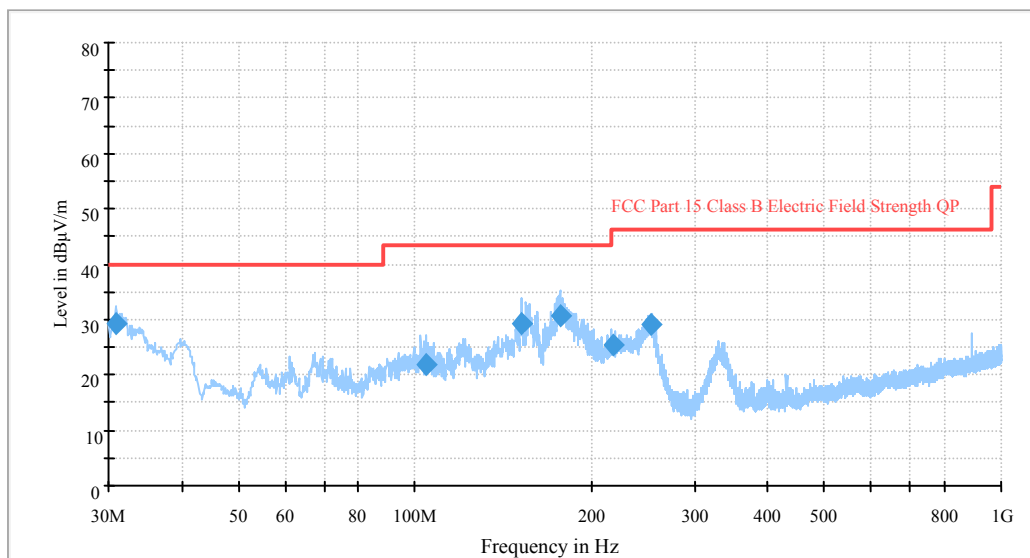
Temperature:	25 °C
Relative Humidity:	55 %
ATM Pressure:	100.1 kPa

The testing was performed by Simon Wang on 2013-03-17.

EUT operation mode 1: Playing (Audio in)

30~1000 MHz

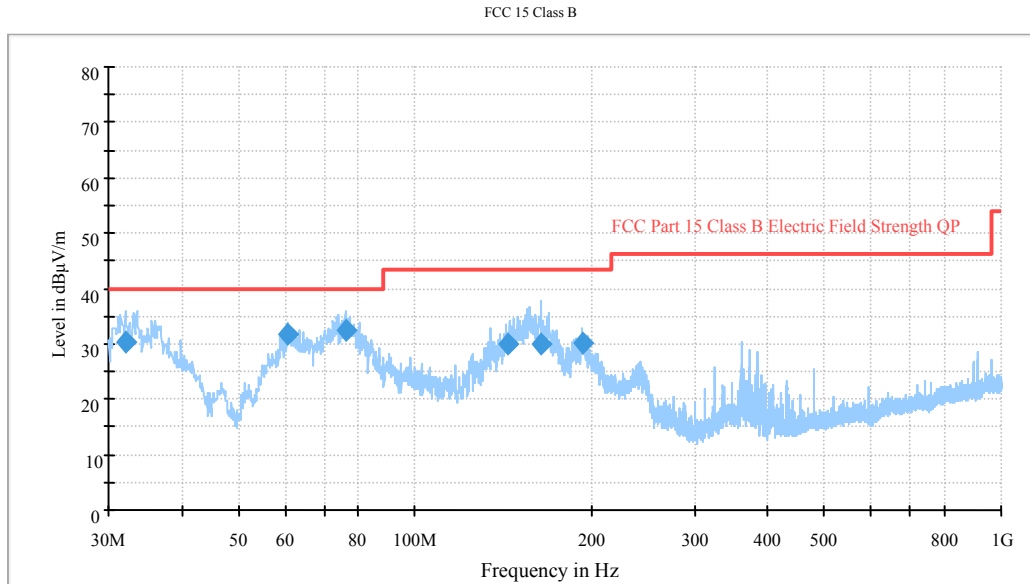
FCC 15 Class B



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (deg)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
30.908825	29.4	157.0	V	132.0	-7.5	40.0	10.6
176.735025	30.6	192.0	H	147.0	-16.0	43.5	12.9
152.294250	29.2	118.0	V	57.0	-15.0	43.5	14.3
259.768750	29.1	118.0	H	0.0	-11.4	46.0	16.9
217.169775	25.3	106.0	V	86.0	-16.4	46.0	20.7
104.675975	22.0	103.0	V	278.0	-16.0	43.5	21.5

EUT operation mode 2: Playing (USB Disk)

30~1000 MHz

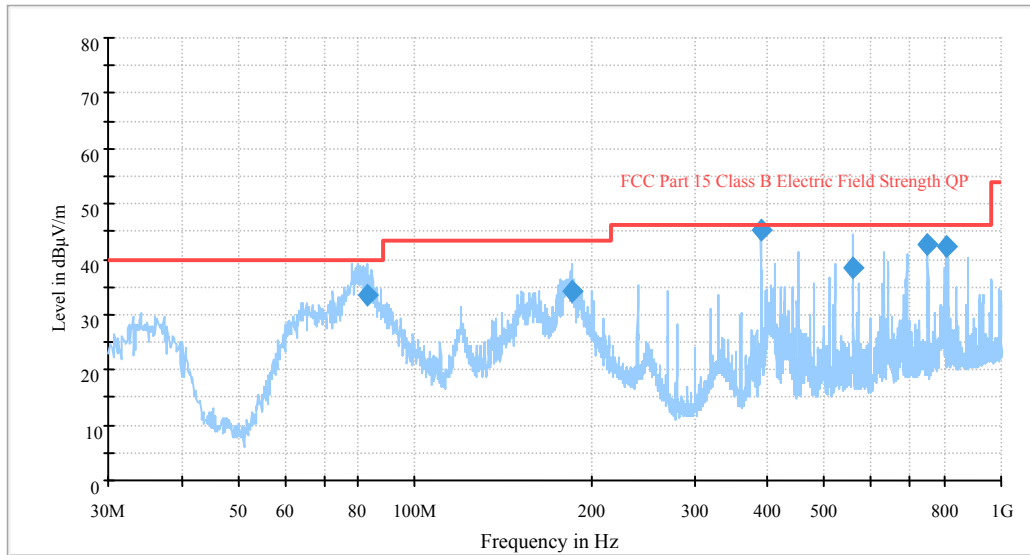


Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (deg)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
76.257250	32.5	137.0	V	0.0	-20.2	40.0	7.5
60.797500	31.7	107.0	V	263.0	-20.7	40.0	8.3
32.150425	30.2	112.0	V	199.0	-8.5	40.0	9.8
193.081250	30.1	223.0	H	123.0	-15.7	43.5	13.4
144.645975	30.0	125.0	V	143.0	-14.6	43.5	13.5
164.146300	29.9	223.0	H	0.0	-15.3	43.5	13.6

EUT operation mode 3: Playing (SD Card)

30~1000 MHz

FCC 15 Class B



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (deg)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
390.059550	45.1	100.0	H	1.0	-12.3	46.0	0.9
750.049375	42.5	100.0	H	174.0	-6.6	46.0	3.5
809.841775	42.4	100.0	H	174.0	-5.0	46.0	3.6
83.141600	33.4	167.0	V	0.0	-20.1	40.0	6.6
560.018375	38.4	205.0	V	162.0	-9.1	46.0	7.6
185.020250	34.2	182.0	H	174.0	-16.2	43.5	9.3

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