



FCC PART 15 B TEST REPORT

For

XIAMEN RONGTA TECHNOLOGY CO.,LTD.

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FCC ID: 2AD6G-RP410

Report Type: Original Report	Product Name: Label Printer
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Report Number: <u>RXM160819050</u>	
Report Date: <u>2016-11-14</u>	
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The **XIAMEN RONGTA TECHNOLOGY CO.,LTD.**'s product, model number: **RP410 (FCC ID: 2AD6G-RP410)** (the "EUT") in this report was a **Label Printer**, which was measured approximately: 22 cm (L) x 18 cm (W) x 17 cm (H), rated input voltage: DC24V from adapter. The highest operating frequency is 100MHz.

Adapter information:
Model: DJ-240250-SA
Input: 100-240VAC 50-60Hz 1.5A MAX
Output: +24VDC, 2.5A MAX

**All measurement and test data in this report was gathered from final production sample, serial number: 160819050 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-08-19, and EUT conformed to test requirement.*

Objective

This test report is prepared on behalf of **XIAMEN RONGTA TECHNOLOGY CO.,LTD.** in accordance with Part 2, Subpart J, and Part 15-Subparts A and B of the Federal Communications Commission's rules.

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

Related Submittal(s)/Grant(s)

N/A.

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 and Bay Area Compliance Laboratories Corp. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ± 3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ± 4.7 dB;
200M~1GHz: ± 6.0 dB;
1G-6GHz: ± 5.13 dB;
6G~25GHz: ± 5.47 dB;

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China

Test site at BACL 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 April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. 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 fashion (as normally used by a typical user).

EUT Exercise Software

The test software is "SendFlie V2.1RT".

Equipment Modifications

No modification was made to the EUT tested.

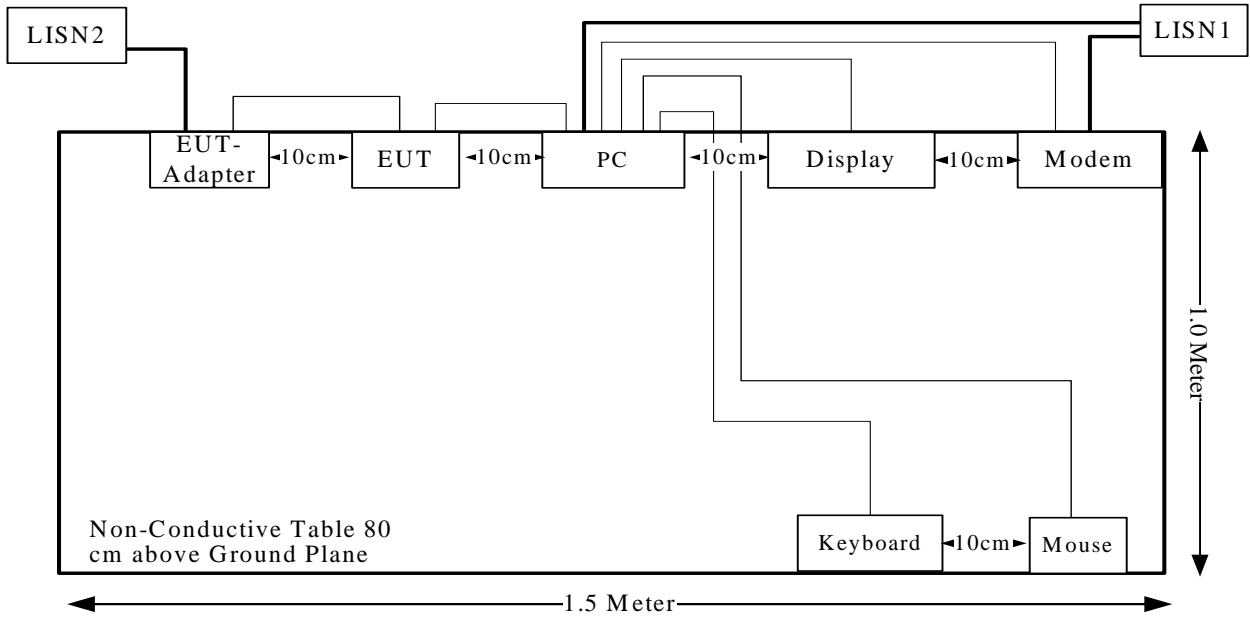
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
IBM	PC	8176	99Y7315
DELL	Display	E157FPC	060229-11
ANTER	Modem	EGW802	0508350054-1B
Lenovo	Keyboard	KB-US19EB	IMHYX011071016460
Lenovo	Mouse	MO-5013U	IMJS011041409259

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Serial Cable	yes	No	1.6	Serial Port of PC	Modem
Mouse Cable	yes	No	1.4	Parallel Port of PC	Mouse
Keyboard Cable	yes	No	1.3	USB Port of PC	Keyboard
D-SUB Cable	yes	yes	1.8	D-SUB Port of PC	Display
USB Cable	yes	yes	1.4	USB Port of PC	EUT
DC Power Cable	yes	yes	1.4	DC Port of EUT	EUT-Adapter

Configuration of Test Setup



SUMMARY OF TEST RESULTS

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

FCC§15.107 - CONDUCTED EMISSIONS

Measurement Uncertainty

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

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

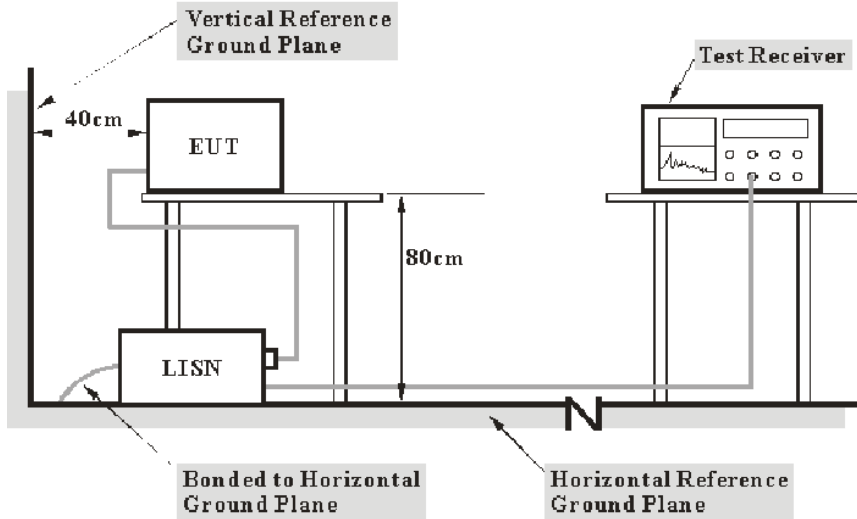
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2:2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Chengdu) is ± 3.17 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

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 per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B 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 adapter was connected to a 120V/60Hz AC 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	ESCS 30	836858/0016	2015-12-02	2016-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.06	2015-12-02	2016-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	357.8810.52	2015-10-31	2016-10-30
N/A	Conducted Cable	NO.5	N/A	2015-11-10	2016-11-09

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of 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 Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

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

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B.

Test Data

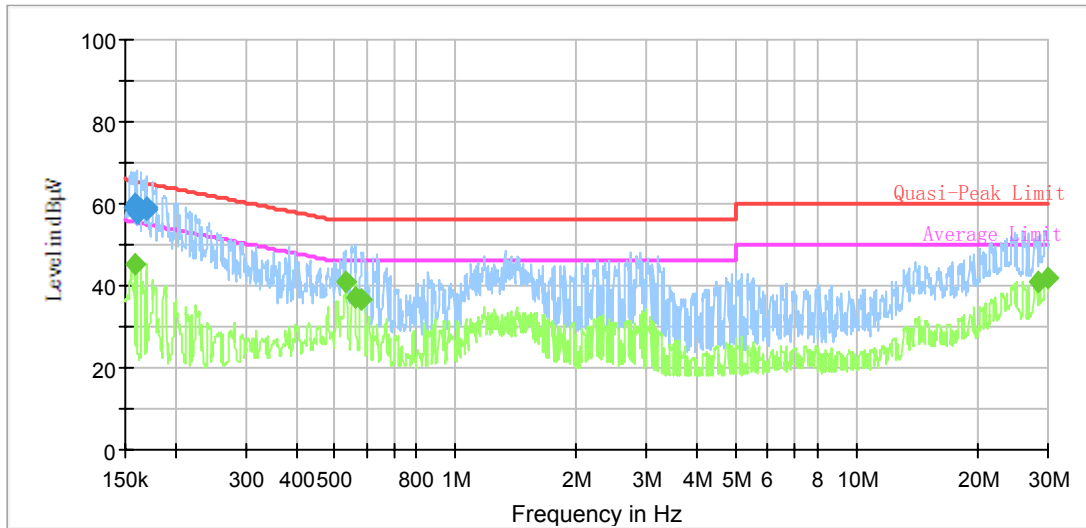
Environmental Conditions

Temperature:	24.1 °C
Relative Humidity:	43 %
ATM Pressure:	101.3 kPa

The testing was performed by Lorin Bian on 2016-10-29.

Test Mode: Operating

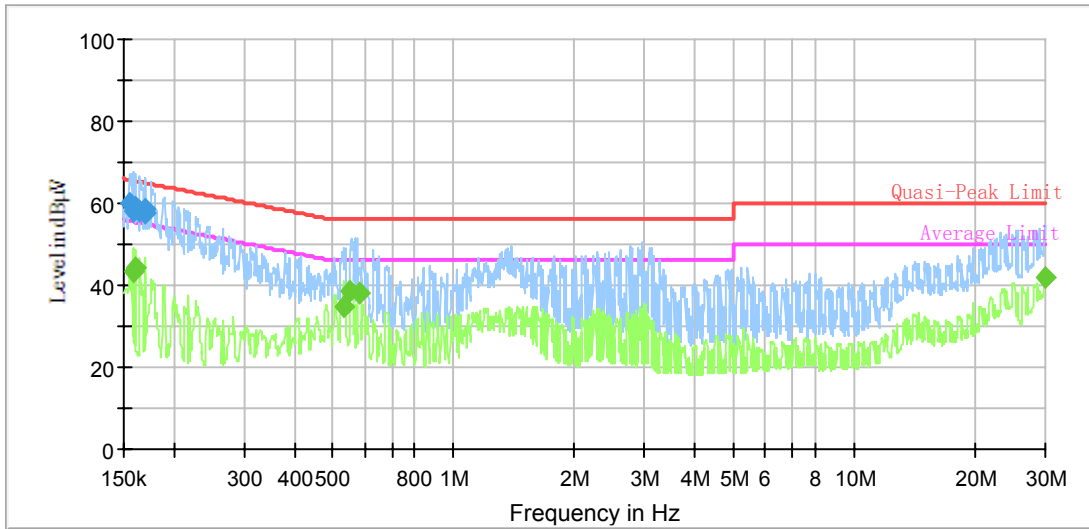
AC120V, 60Hz, Line:



Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.157368	58.9	9.000	L1	18.8	6.7	65.6	Compliance
0.158948	60.0	9.000	L1	18.8	5.5	65.5	Compliance
0.159904	57.7	9.000	L1	18.8	7.8	65.5	Compliance
0.164112	58.6	9.000	L1	18.8	6.7	65.3	Compliance
0.169104	59.0	9.000	L1	18.8	6.0	65.0	Compliance
0.170121	58.6	9.000	L1	18.8	6.4	65.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.158948	45.4	9.000	L1	18.8	10.1	55.5	Compliance
0.531324	40.8	9.000	L1	20.0	5.2	46.0	Compliance
0.559655	37.4	9.000	L1	20.0	8.6	46.0	Compliance
0.581309	36.8	9.000	L1	20.0	9.2	46.0	Compliance
28.378723	40.7	9.000	L1	20.7	9.3	50.0	Compliance
29.891906	41.7	9.000	L1	20.7	8.3	50.0	Compliance

AC120V, 60Hz, Neutral:



Frequency (MHz)	Quasi Peak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.155804	59.9	9.000	N	18.8	5.8	65.7	Compliance
0.158948	58.3	9.000	N	18.8	7.2	65.5	Compliance
0.159904	59.1	9.000	N	18.8	6.4	65.5	Compliance
0.164769	58.1	9.000	N	18.8	7.1	65.2	Compliance
0.169104	57.5	9.000	N	18.8	7.5	65.0	Compliance
0.170121	58.4	9.000	N	18.8	6.6	65.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.158948	43.3	9.000	N	18.8	12.2	55.5	Compliance
0.160224	44.2	9.000	N	18.8	11.3	55.5	Compliance
0.531324	34.9	9.000	N	19.9	11.1	46.0	Compliance
0.552985	38.4	9.000	N	19.9	7.6	46.0	Compliance
0.582471	38.2	9.000	N	19.9	7.8	46.0	Compliance
29.891906	41.8	9.000	N	20.8	8.2	50.0	Compliance

FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

–compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
–non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Chengdu) is:

30M~200MHz: ±4.7 dB ;

200M~1GHz: ±6.0 dB ;

1G-6GHz: ±5.13dB;

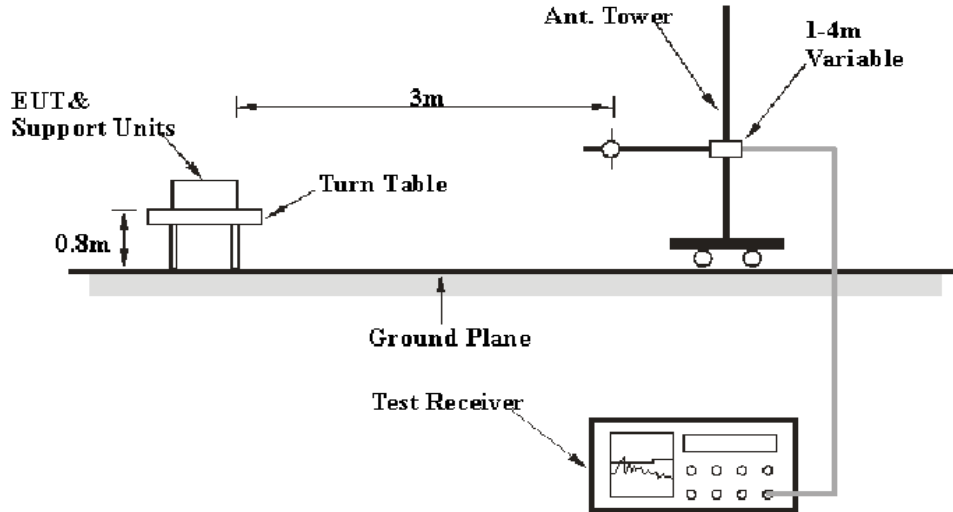
6G~25GHz: ±5.47 dB;

Table 1 – Values of U_{cispr}

Measurement		U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC)	(30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR)	(1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR)	(6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



The radiated emission below 1GHz 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 Class B limits.

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
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP

Test Procedure

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

The data was recorded in the Quasi-peak detection mode for below 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2015-12-02	2016-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2015-12-02	2016-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2015-11-10	2016-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2015-11-10	2016-11-09
WEINSCHEL ENGINEERING	Attenuator	1A10dB	AA4135	2015-11-10	2016-11-09

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, 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:

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

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 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 Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15 B Class B.

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	36 %
ATM Pressure:	101k Pa

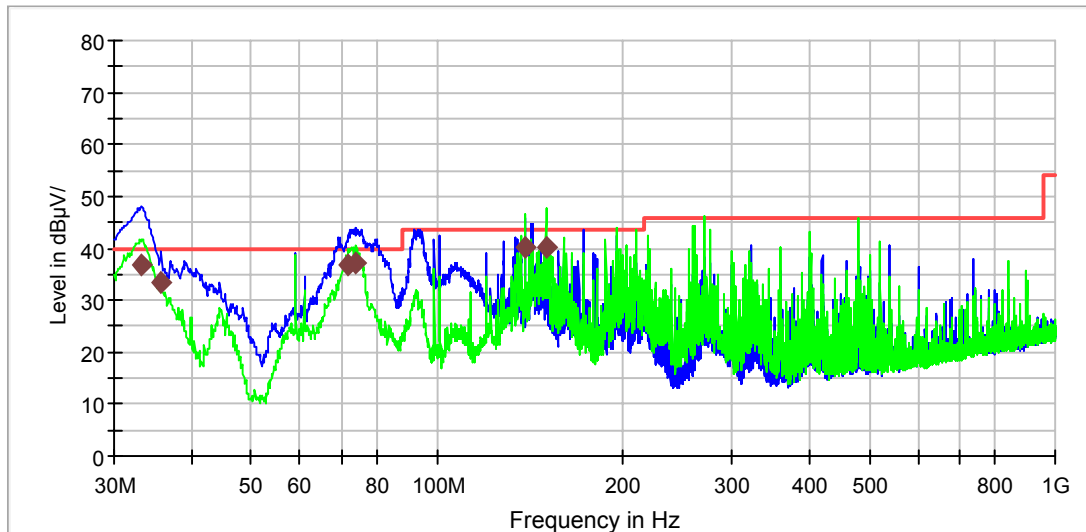
The testing was performed by Lorin Bian on 2016-11-05.

Test Result: Compliance

Below 1GHz:

Test Mode: Operating

Horizontal



Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.152500	36.9	100.0	V	188.0	-7.5	3.1	40.0
35.820000	33.4	100.0	V	359.0	-9.5	6.6	40.0
71.952500	36.8	100.0	V	206.0	-20.2	3.2	40.0
73.771250	37.0	100.0	V	206.0	-20.2	3.0	40.0
139.003750	40.2	200.0	H	163.0	-14.2	3.3	43.5
150.037500	40.3	200.0	H	338.0	-14.5	3.2	43.5

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