

FCC PART 15 B TEST REPORT

For

CLC HONG KONG LIMITED

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FCC ID: 2AG4WZ623

Report Type: Original Report	Product Type: Phantom
Report Number:	RDG170717006-00A
Report Date:	2017-08-14
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.(Dongguan).

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	3
MEASUREMENT UNCERTAINTY.....	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
EQUIPMENT MODIFICATIONS	5
LOCAL SUPPORT EQUIPMENT LIST AND DETAILS	5
SUPPORT CABLE LIST AND DETAILS	5
CONFIGURATION OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
FCC§15.107 - CONDUCTED EMISSIONS.....	8
EUT SETUP.....	8
EMI TEST RECEIVER SETUP.....	8
TEST EQUIPMENT LIST AND DETAILS.....	9
TEST PROCEDURE	9
CORRECTED AMPLITUDE & MARGIN CALCULATION	9
TEST RESULTS SUMMARY	10
TEST DATA	10
FCC §15.109 - RADIATED SPURIOUS EMISSIONS	13
EUT SETUP.....	13
EMI TEST RECEIVER SETUP.....	14
TEST PROCEDURE	14
TEST EQUIPMENT LIST AND DETAILS.....	14
CORRECTED AMPLITUDE & MARGIN CALCULATION	15
TEST DATA	15

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The **CLC HONG KONG LIMITED**'s product, model number: **Z623(FCC ID: 2AG4WZ623)** (the "EUT") in this report was a **Phantom**, which was measured approximately: 16.6 cm (L) x 8.5 cm (W) x 0.9 cm (H), DC3.7V from Battery or DC 5V from adapter. The highest operation frequency is 2480MHz.

Adapter Information:

Model: PMC43

Input: 100-240V~50/60Hz 0.2A

Output: DC5.0V, 1.0A

**All measurement and test data in this report was gathered from production sample serial number: 170717006 (Assigned by BACL,Dongguan). The EUT was received on 2017-07-17.*

Objective

This test report is prepared on behalf of **CLC HONG KONG LIMITED** 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)

FCC Part 15C DSS submissions with FCC ID: 2AG4WZ623.

FCC Part 15C DTS submissions with FCC ID: 2AG4WZ623.

FCC Part 22H, 24E PCE submissions with FCC ID: 2AG4WZ623.

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 radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB
Temperature	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO 17025 by CNAS(Lab code: L5662). And accredited to ISO 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

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 software “winthrax.exe” was used during test.

Equipment Modifications

No modification was made to the EUT tested.

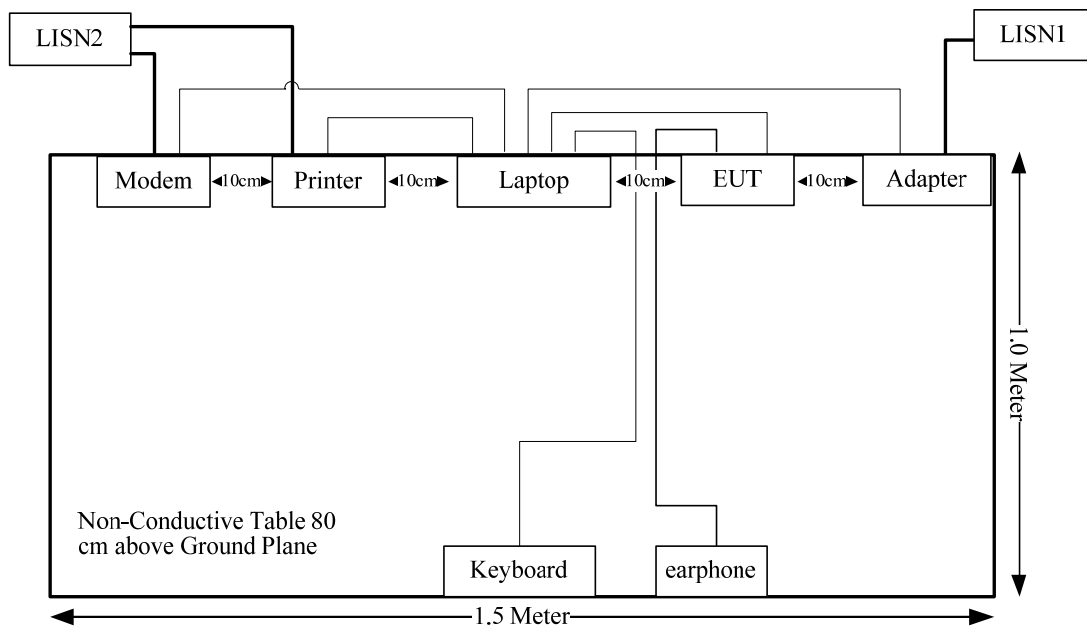
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Serial Cable	yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	yes	No	1.8	USB Port of Laptop	Keyboard
USB Cable	Yes	No	1.2	EUT	Laptop
Earphone Cable	No	No	1.2	EUT	Earphone

Configuration of Test Setup

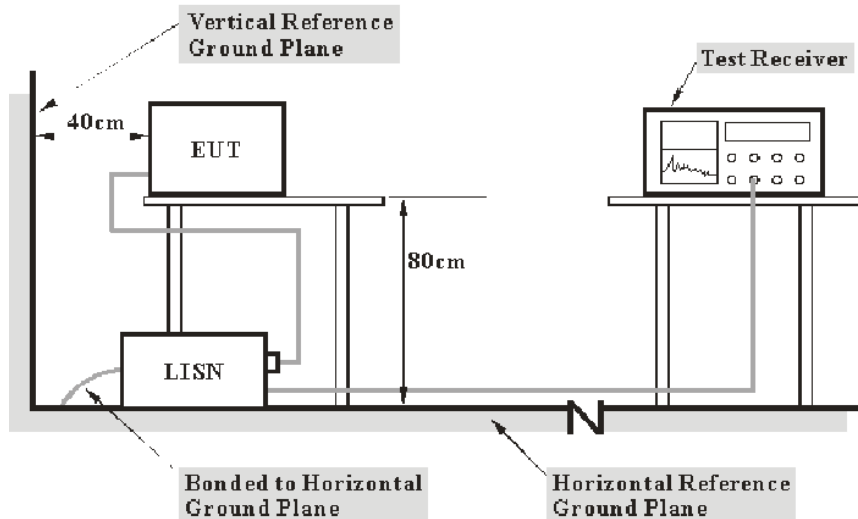


SUMMARY OF TEST RESULTS

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

FCC§15.107 - CONDUCTED EMISSIONS

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 the Main LISN with 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
R&S	L.I.S.N	ESH2-Z5	892107/021	2016-09-01	2017-09-01
R&S	Two-line V-network	ENV 216	3560.6550.12	2016-12-08	2017-12-08
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
Unknown	Coaxial Cable	2m	Con-1	2016-09-01	2017-09-01
R&S	EMI Test Receiver	ESCS 30	830245/006	2016-12-08	2017-12-08

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests 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 of laptop 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

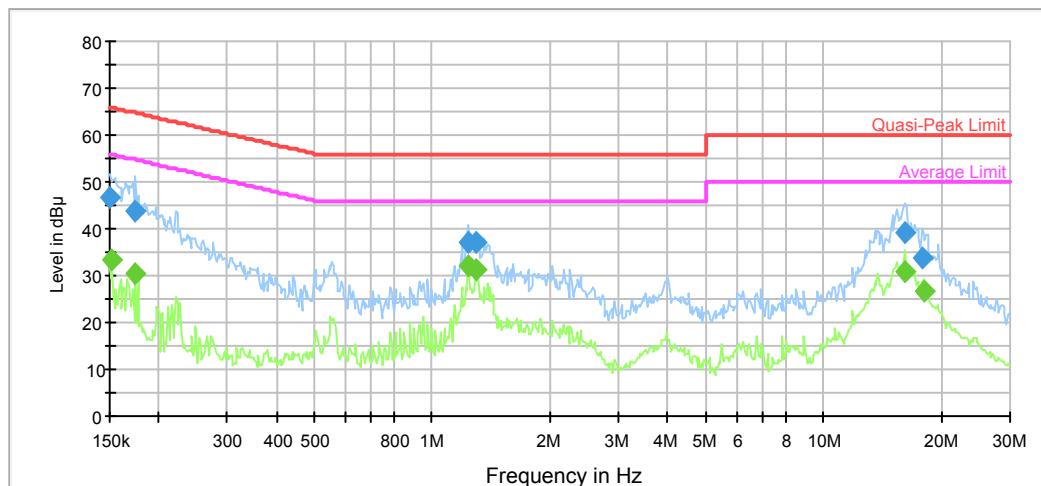
Environmental Conditions

Temperature:	25.4 °C
Relative Humidity:	50%
ATM Pressure:	100.2 kPa

The testing was performed by Gaochao Gong on 2017-07-23.

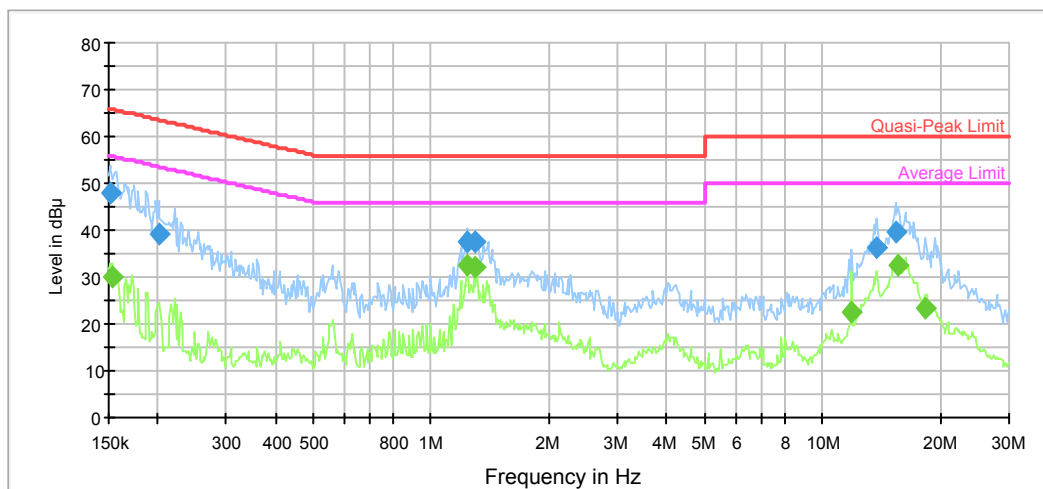
Test Mode: Downloading

AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	46.5	9.000	L1	11.2	19.5	66.0	Compliance
0.174519	43.9	9.000	L1	10.9	20.8	64.7	Compliance
1.239175	37.0	9.000	L1	9.7	19.0	56.0	Compliance
1.289541	37.2	9.000	L1	9.7	18.8	56.0	Compliance
16.122185	39.2	9.000	L1	10.0	20.8	60.0	Compliance
17.881783	33.9	9.000	L1	10.0	26.1	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.152410	33.3	9.000	L1	11.1	22.6	55.9	Compliance
0.174519	30.6	9.000	L1	10.9	24.1	54.7	Compliance
1.239175	32.1	9.000	L1	9.7	13.9	46.0	Compliance
1.289541	31.4	9.000	L1	9.7	14.6	46.0	Compliance
16.122185	30.8	9.000	L1	10.0	19.2	50.0	Compliance
18.024837	26.5	9.000	L1	10.0	23.5	50.0	Compliance

AC120V, 60Hz, Neutral:

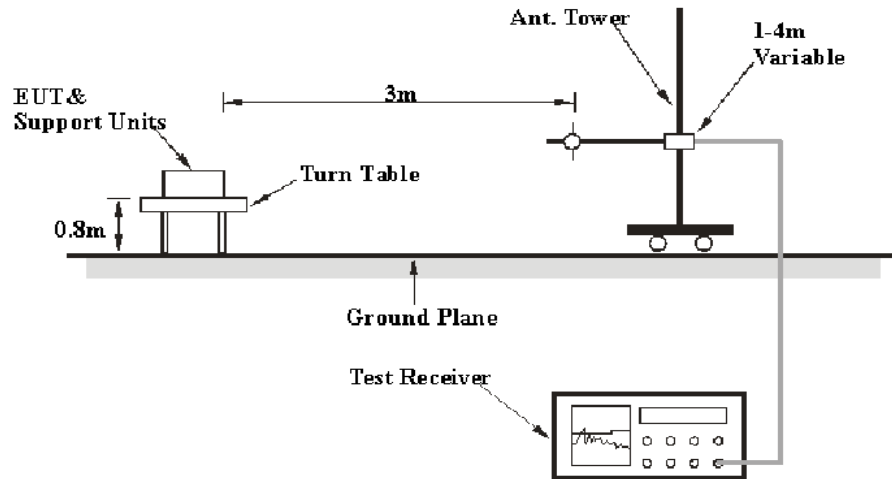
Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.151200	47.9	9.000	N	11.1	18.0	65.9	Compliance
0.201433	39.2	9.000	N	10.6	24.4	63.6	Compliance
1.239175	37.5	9.000	N	9.7	18.5	56.0	Compliance
1.289541	37.5	9.000	N	9.7	18.5	56.0	Compliance
13.747168	36.0	9.000	N	9.9	24.0	60.0	Compliance
15.369534	39.4	9.000	N	9.9	20.6	60.0	Compliance

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.153629	30.1	9.000	N	11.1	25.7	55.8	Compliance
1.239175	32.6	9.000	N	9.7	13.4	46.0	Compliance
1.289541	31.9	9.000	N	9.7	14.1	46.0	Compliance
11.910327	22.5	9.000	N	9.9	27.5	50.0	Compliance
15.616430	32.5	9.000	N	9.9	17.5	50.0	Compliance
18.314388	23.5	9.000	N	10.0	26.5	50.0	Compliance

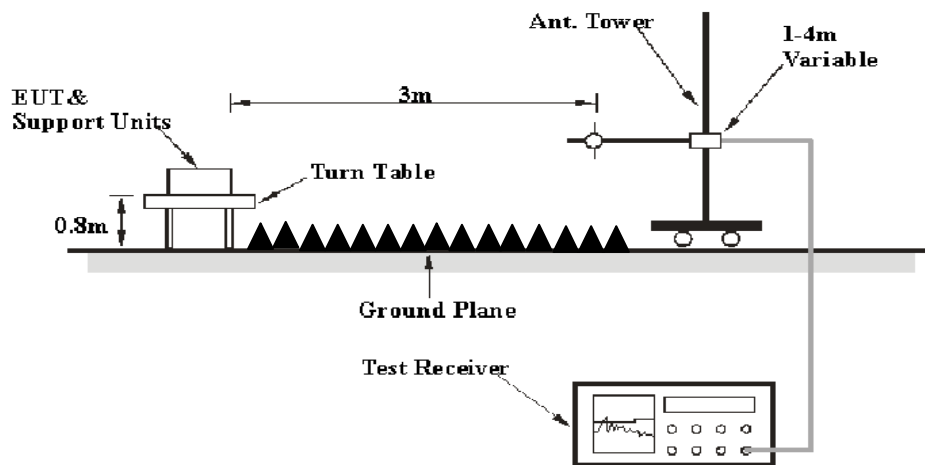
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission Below 1GHz tests were performed in the 3 meters chamber test site, above 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 12.5 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
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10 Hz	/	AVG

Test Procedure

During the radiated emissions, the adapter of laptop was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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, peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2016-09-01	2017-08-31
Sunol Sciences	Antenna	JB3	A060611-1	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2016-09-01	2017-09-01
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-08	2017-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
Mini-Circuit	Amplifier	ZVA-213-S+	SN054201245	2017-02-19	2018-02-19
Unknown	Coaxial Cable	Chamber A-1	4m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber B-1	0.75m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber A-2	10m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber B-2	8m	2016-09-01	2017-09-01
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests 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 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:	25.6 °C
Relative Humidity:	64 %
ATM Pressure:	100.2 kPa

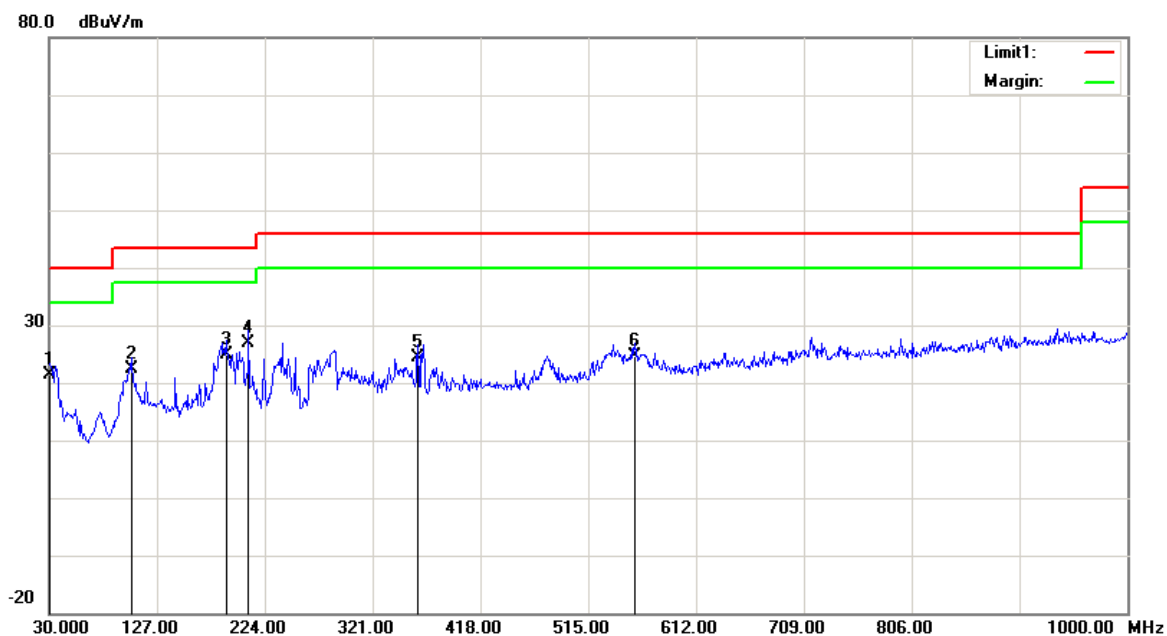
** The testing was performed by Sunny Chen on 2017-07-25.*

Test Result: Compliance

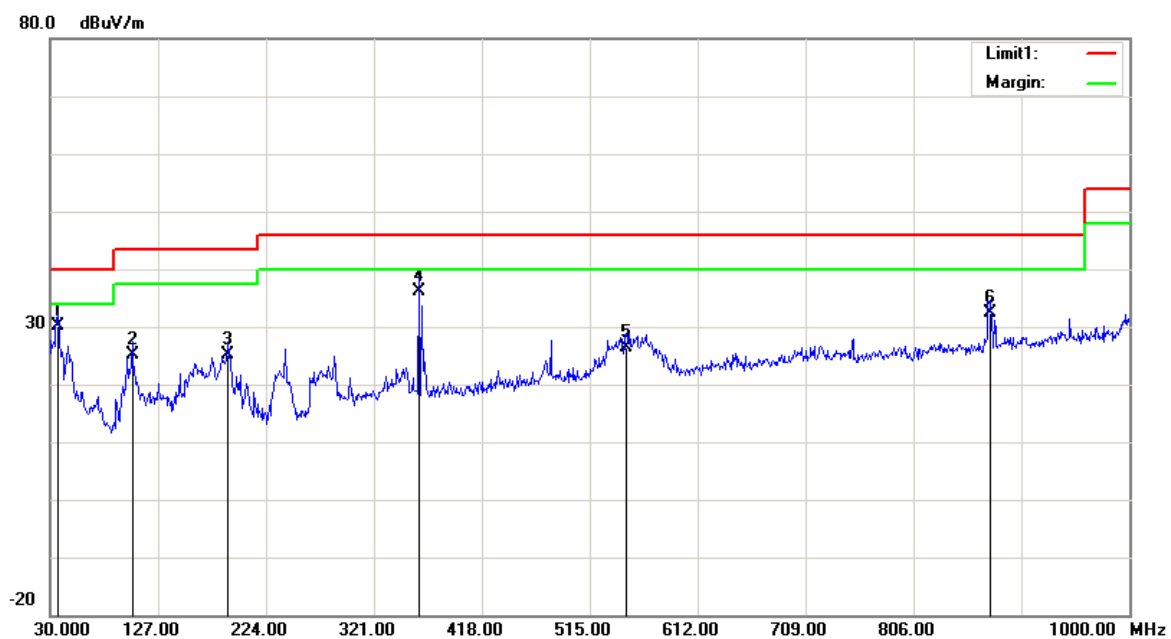
Test Mode: Downloading

1) Below 1GHz:

Horizontal



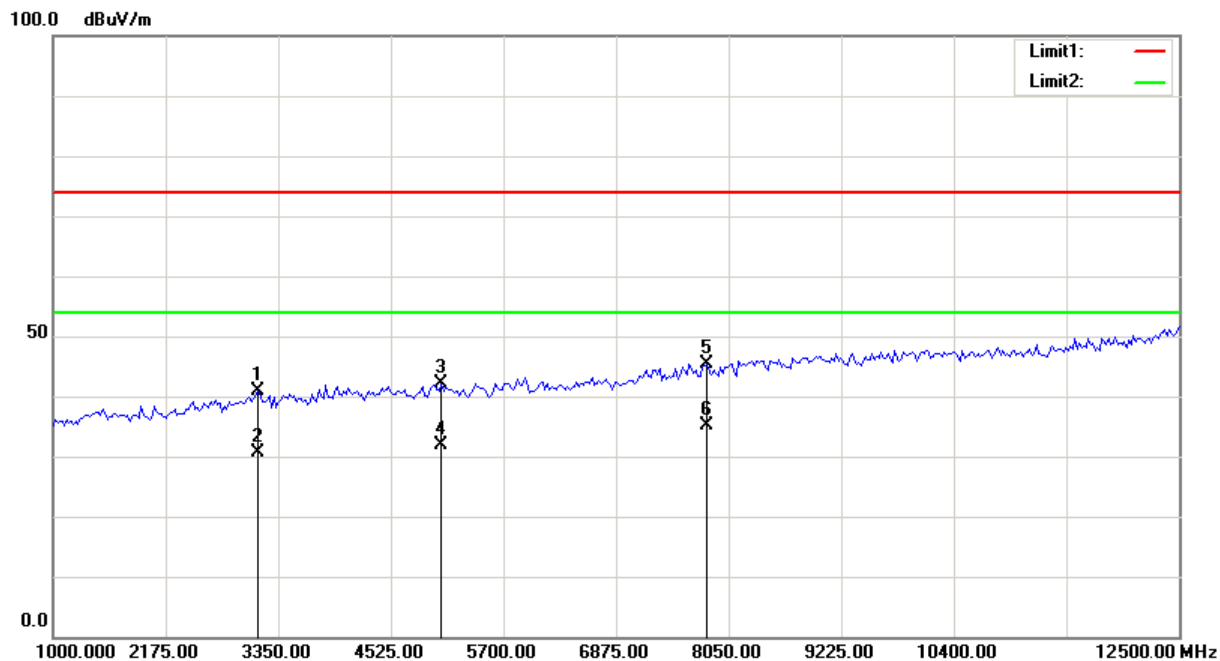
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.0000	19.70	QP	1.60	21.30	40.00	18.70
103.7200	29.94	QP	-7.64	22.30	43.50	21.20
189.0800	32.54	QP	-7.54	25.00	43.50	18.50
209.4500	35.25	QP	-8.45	26.80	43.50	16.70
361.7400	28.37	QP	-3.87	24.50	46.00	21.50
556.7100	24.81	QP	-0.11	24.70	46.00	21.30

Vertical

Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
36.7900	33.61	QP	-3.41	30.20	40.00	9.80
103.7200	32.84	QP	-7.64	25.20	43.50	18.30
190.0500	32.57	QP	-7.47	25.10	43.50	18.40
361.7400	40.07	QP	-3.87	36.20	46.00	9.80
547.9800	26.81	QP	-0.31	26.50	46.00	19.50
874.8700	27.80	QP	4.60	32.40	46.00	13.60

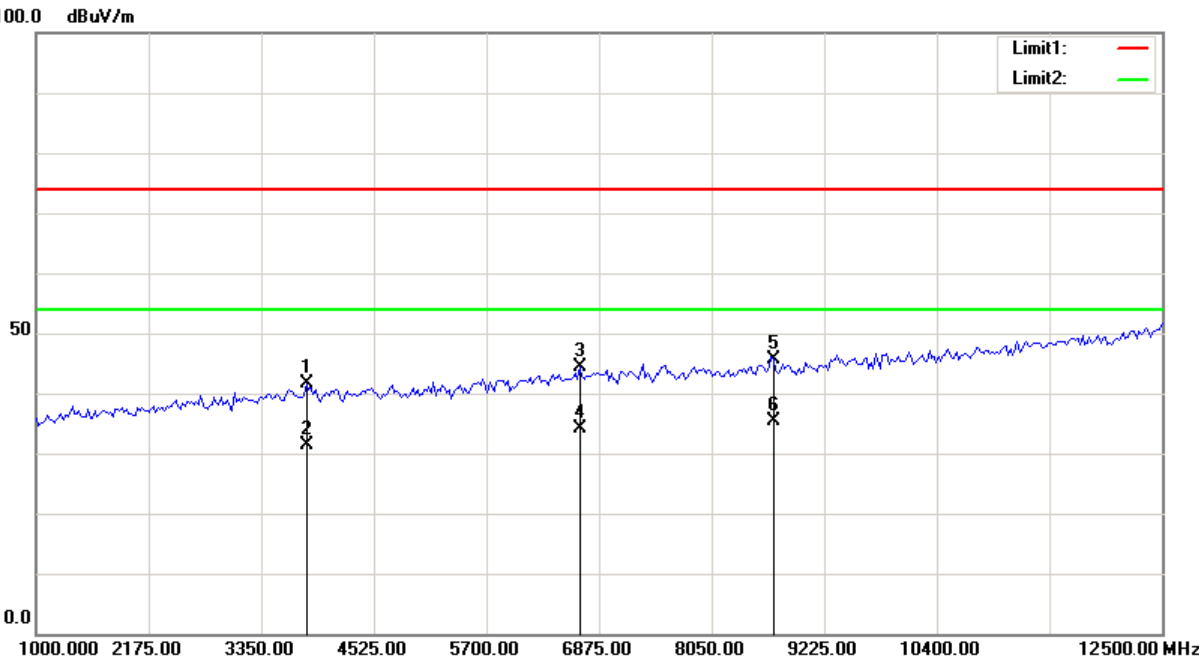
2) Above 1GHz:

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
3142.786	35.12	peak	5.80	40.92	74.00	33.08
3142.786	24.88	AVG	5.80	30.68	54.00	23.32
5050.100	33.86	peak	8.20	42.06	74.00	31.94
5050.100	23.65	AVG	8.20	31.85	54.00	22.15
7828.657	31.03	peak	14.45	45.48	74.00	28.52
7828.657	20.74	AVG	14.45	35.19	54.00	18.81

Vertical



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
3825.651	36.02	peak	5.54	41.56	74.00	32.44
3825.651	25.72	AVG	5.54	31.26	54.00	22.74
6674.850	31.65	peak	12.67	44.32	74.00	29.68
6674.850	21.44	AVG	12.67	34.11	54.00	19.89
8699.900	30.11	peak	15.51	45.62	74.00	28.38
8699.900	19.86	AVG	15.51	35.37	54.00	18.63

****END OF REPORT****