

FCC PART 15 B

TEST REPORT

For

CHUNGHSIN INTERNATIONAL ELECTRONICS CO.,LTD

618 GONGREN WEST ROAD,JIAOJIANG AREA TAIZHOU ZHEJIANG 318000 China

FCC ID: 2AI5MN1481Q

Report Type: Original Report	Product Type: Notebook
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Report Number: RDG160622801-00B	
Report Date: 2016-07-25	
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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).

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *CHUNGHSIN INTERNATIONAL ELECTRONICS CO.,LTD*'s product, model number: *M11401 (FCC ID: 2AI5MN1481Q)* (the "EUT") in this report was a *Notebook*, which was measured approximately: 35 cm (L) x 23.5 cm (W) x 2 cm (H), rated input voltage: DC 3.7V rechargeable Li-ion battery or DC5V charging from adapter. The highest operation frequency is 2480 MHz.

Adapter #1 Information:

MODEL: BSYB050250U U

INPUT: 100-240V~, 50/60Hz, 0.4A

OUTPUT: DC 5.0V, 2.5A

Adapter#2 Information:

MODEL: JK050250-S04US

INPUT: 100-240V~, 50/60Hz, 0.5A

OUTPUT: DC 5.0V, 2500mA

All measurement and test data in this report was gathered from production sample serial number: 160622801 (Assigned by BACL, Dongguan). The EUT was received on 2016-06-28.

Objective

This test report is prepared on behalf of *CHUNGHSIN INTERNATIONAL ELECTRONICS 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)

FCC Part 15C DSS submissions with FCC ID: 2AI5MN1481Q.

FCC Part 15C DTS submissions with FCC ID: 2AI5MN1481Q.

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).

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 Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications 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 February 06, 2015.

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.

FINAL

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.

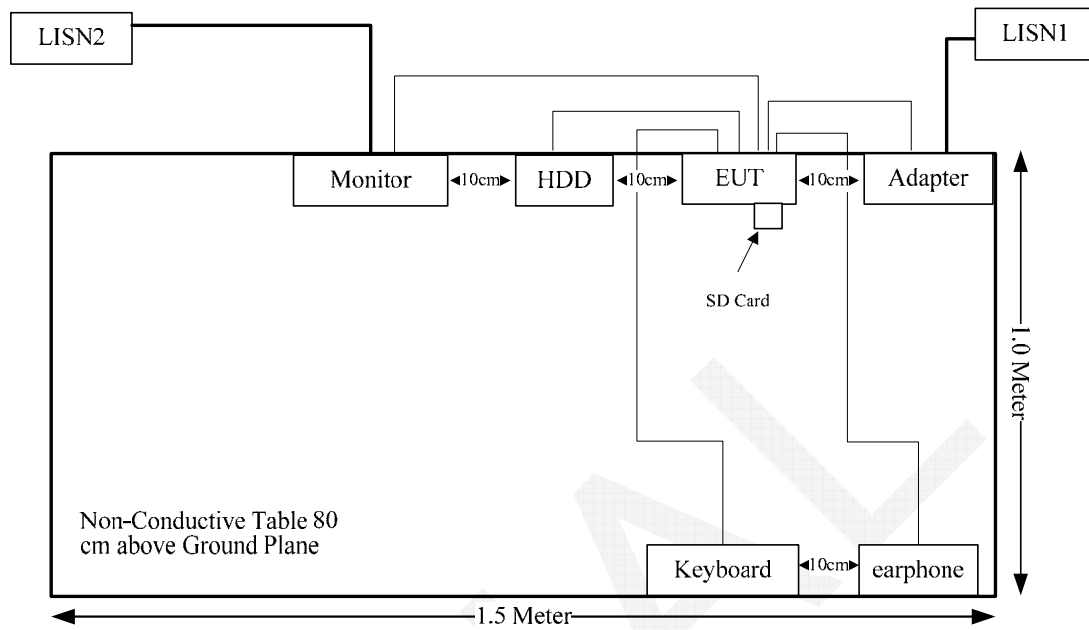
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
TOSHIBA	Hard Disk	v63700-A	7271TGZ1TSJ2
DELL	Keyboard	SK-8115	CN-0J4628-71616-52H-0RT6
SAMSUNG	Monitor	S22C330H	ZXDCHTHD101491K
VIWA	Earphone	N/A	N/A
SAMSUNG	SD Card	8G	N/A

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Keyboard Cable	Yes	No	2.0	USB Port of EUT	Keyboard
HDMI Cable	Yes	Yes	0.8	HDMI Port of EUT	Monitor
USB Cable	Yes	No	0.4	USB Port of EUT	HDD
Earphone	No	No	1.1	Audio Port of EUT	Earphone

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_{cisp} 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_{cisp} of Table 1, then:

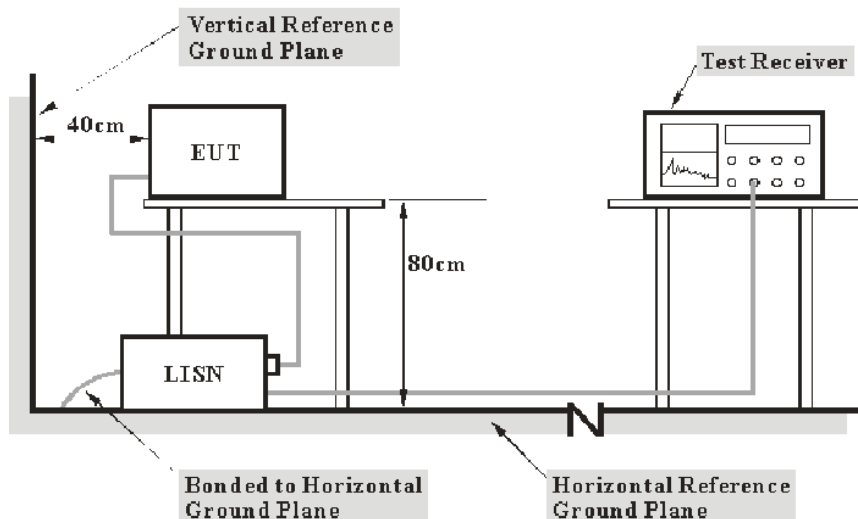
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.12 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
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
R&S	EMI Test Receiver	ESCS 30	830245/006	2015-10-20	2016-10-20
R&S	L.I.S.N	ESH2-Z5	892107/021	2016-07-16	2017-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2015-11-26	2016-11-25
N/A	Coaxial Cable	1.8m	N/A	2016-05-06	2017-05-06
R&S	Test Software	EMC32	Version8.53.0	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).

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

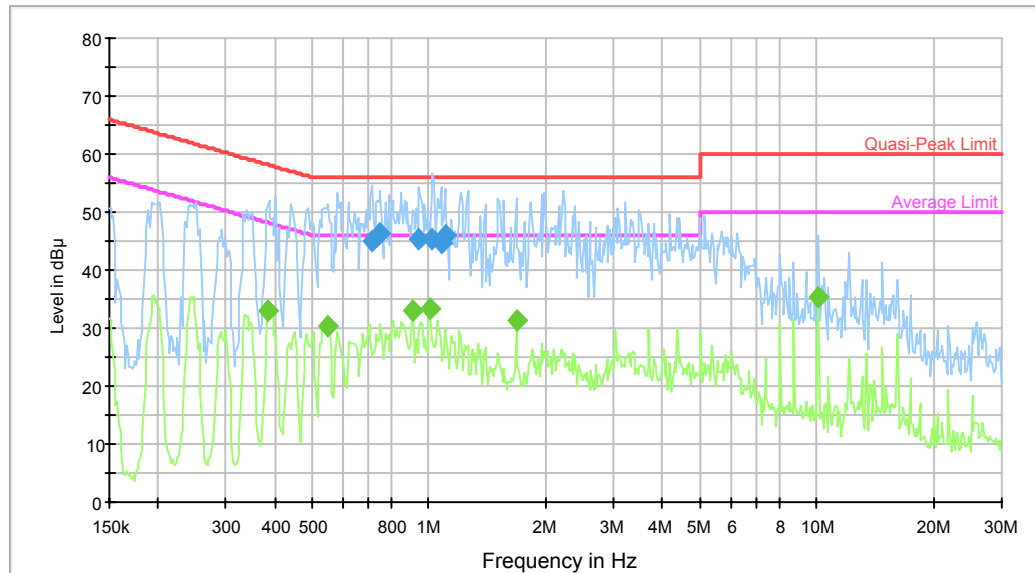
Temperature:	29.7 °C
Relative Humidity:	57 %
ATM Pressure:	100.5 kPa

The testing was performed by Rocky Xiao on 2016-07-21.

Test Mode: Charging&playing

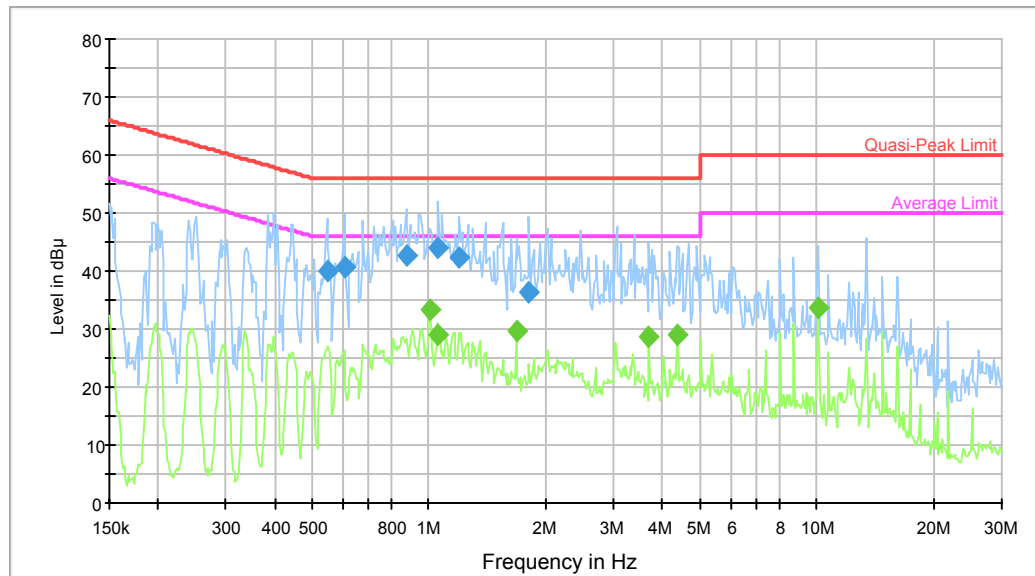
Adapter #1

AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.715082	44.9	9.000	L1	10.4	11.1	56.0	Compliance
0.750100	46.3	9.000	L1	10.4	9.7	56.0	Compliance
0.945093	45.4	9.000	L1	10.4	10.6	56.0	Compliance
1.023481	45.5	9.000	L1	10.4	10.5	56.0	Compliance
1.073601	44.6	9.000	L1	10.4	11.4	56.0	Compliance
1.099574	46.0	9.000	L1	10.4	10.0	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.384091	33.1	9.000	L1	10.2	15.1	48.2	Compliance
0.549741	30.3	9.000	L1	10.1	15.7	46.0	Compliance
0.908180	33.2	9.000	L1	10.4	12.8	46.0	Compliance
1.007300	33.3	9.000	L1	10.4	12.7	46.0	Compliance
1.677385	31.4	9.000	L1	10.4	14.6	46.0	Compliance
10.075173	35.4	9.000	L1	10.6	14.6	50.0	Compliance

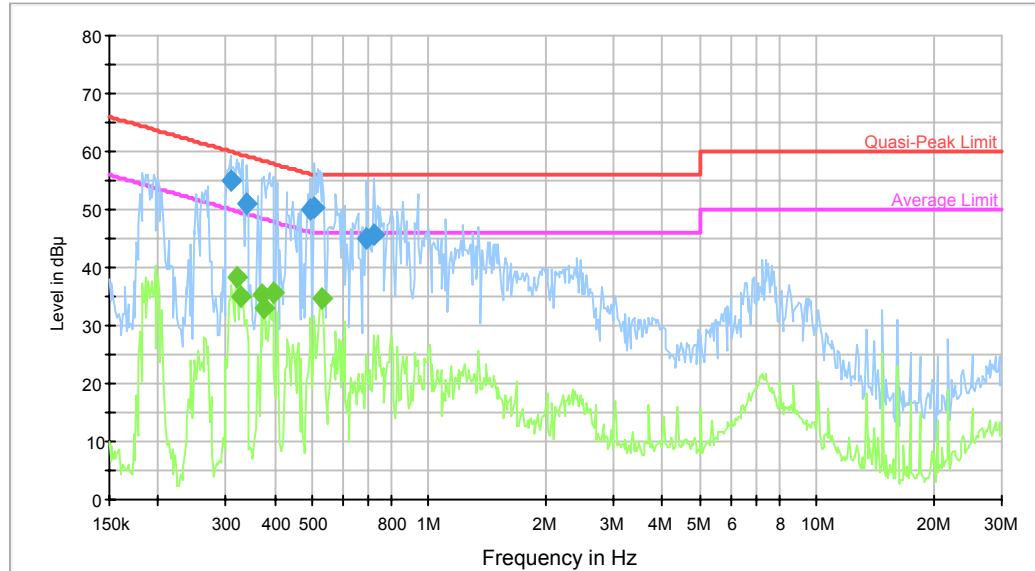
AC120V, 60Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.545378	40.0	9.000	N	10.1	16.0	56.0	Compliance
0.604902	40.6	9.000	N	10.2	15.4	56.0	Compliance
0.872708	42.5	9.000	N	10.4	13.5	56.0	Compliance
1.056628	43.9	9.000	N	10.4	12.1	56.0	Compliance
1.200302	42.4	9.000	N	10.4	13.6	56.0	Compliance
1.816511	36.4	9.000	N	10.4	19.6	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
1.007300	33.3	9.000	N	10.4	12.7	46.0	Compliance
1.056628	29.1	9.000	N	10.4	16.9	46.0	Compliance
1.677385	29.6	9.000	N	10.4	16.4	46.0	Compliance
3.691692	28.6	9.000	N	10.6	17.4	46.0	Compliance
4.364119	28.9	9.000	N	10.7	17.1	46.0	Compliance
10.075173	33.8	9.000	N	10.5	16.2	50.0	Compliance

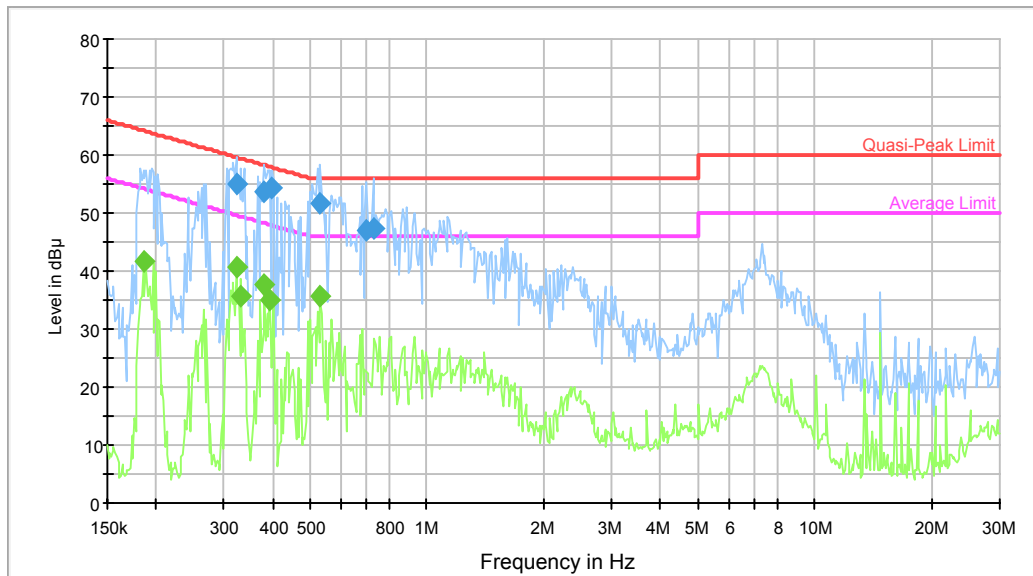
Adapter #2

AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.307284	54.9	9.000	L1	10.3	5.1	60.0	Compliance
0.338116	51.1	9.000	L1	10.3	8.1	59.2	Compliance
0.495646	50.0	9.000	L1	10.1	6.1	56.1	Compliance
0.507637	50.2	9.000	L1	10.1	5.8	56.0	Compliance
0.692650	45.1	9.000	L1	10.4	10.9	56.0	Compliance
0.720803	45.5	9.000	L1	10.4	10.5	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.319773	38.3	9.000	L1	10.3	11.4	49.7	Compliance
0.327509	35.0	9.000	L1	10.3	14.5	49.5	Compliance
0.369089	35.2	9.000	L1	10.3	13.3	48.5	Compliance
0.375019	33.1	9.000	L1	10.3	15.3	48.4	Compliance
0.396530	35.8	9.000	L1	10.2	12.1	47.9	Compliance
0.532496	34.5	9.000	L1	10.1	11.5	46.0	Compliance

AC120V, 60Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.322331	55.1	9.000	N	10.3	4.5	59.6	Compliance
0.381043	53.5	9.000	N	10.2	4.8	58.3	Compliance
0.399703	54.2	9.000	N	10.2	3.7	57.9	Compliance
0.532496	51.7	9.000	N	10.1	4.3	56.0	Compliance
0.698191	46.9	9.000	N	10.4	9.1	56.0	Compliance
0.726569	47.5	9.000	N	10.4	8.5	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.186006	41.6	9.000	N	10.2	12.6	54.2	Compliance
0.322331	40.5	9.000	N	10.3	9.1	49.6	Compliance
0.332770	35.8	9.000	N	10.3	13.6	49.4	Compliance
0.381043	37.7	9.000	N	10.2	10.6	48.3	Compliance
0.393383	35.2	9.000	N	10.2	12.8	48.0	Compliance
0.532496	35.7	9.000	N	10.1	10.3	46.0	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_{cisp} 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_{cisp} of Table 1, then:

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

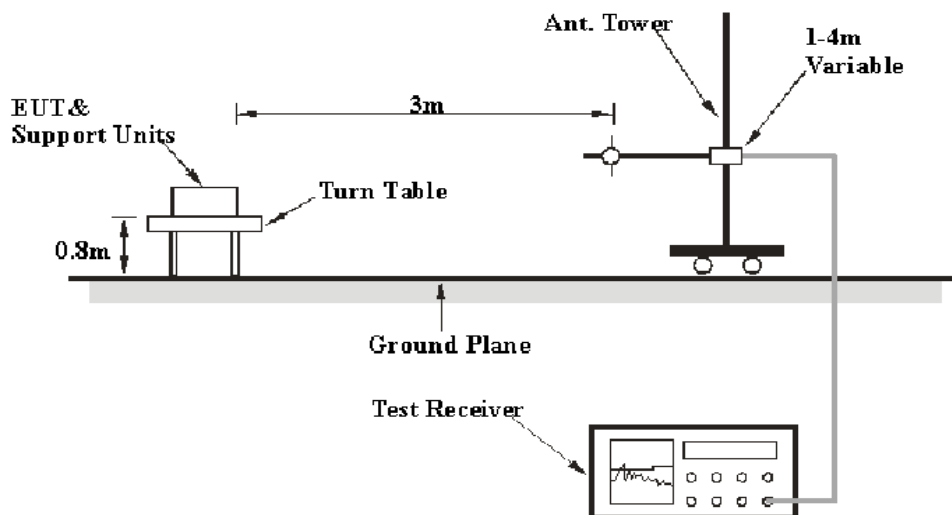
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is: 30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical; 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical; 1G~6GHz: 4.45 dB, 6G~18GHz: 5.23 dB

Table 1 – Values of U_{cisp}

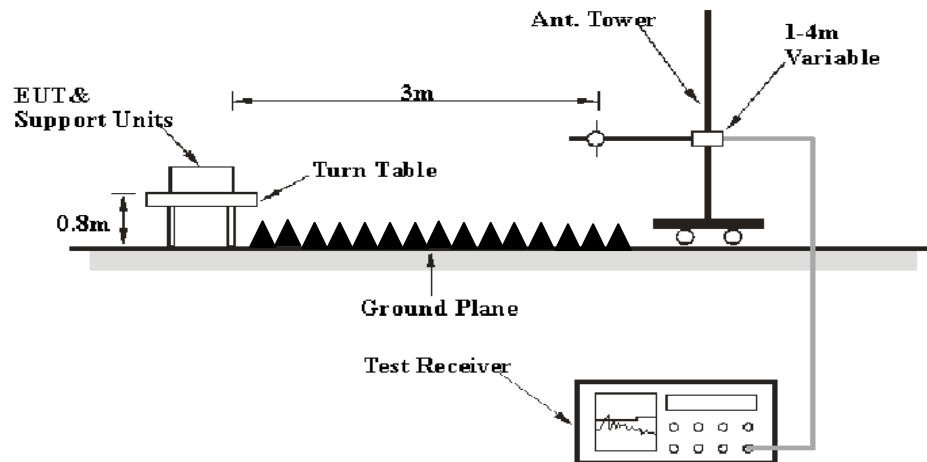
Measurement		U_{cisp}
Radiated disturbance (electric field strength at an OATS or in a SAC)	(30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR)	(1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR)	(6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



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 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 13 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 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	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2016-02-19	2017-02-19
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
N/A	Coaxial Cable	14m	N/A	2016-05-06	2017-05-06
N/A	Coaxial Cable	8m	N/A	2016-05-06	2017-05-06

* **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 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 Data**Environmental Conditions**

Temperature:	27.1 °C
Relative Humidity:	53 %
ATM Pressure:	100.3 kPa

* The testing was performed by Rocky Xiao on 2016-07-20.

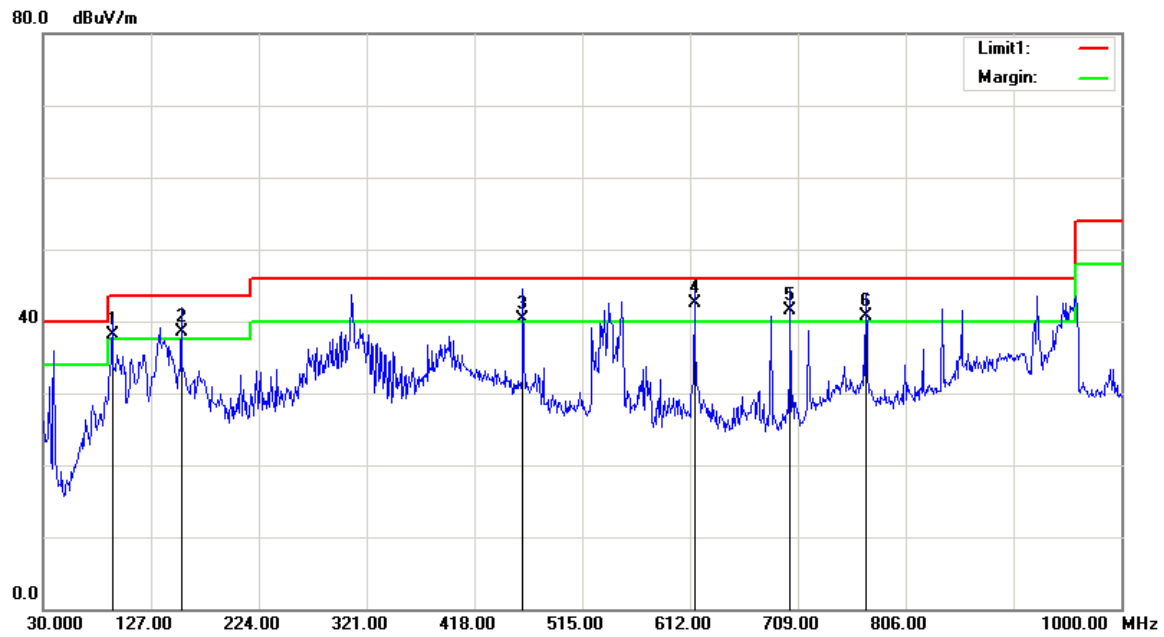
Test Result: Compliance

Test Mode: Charging&playing

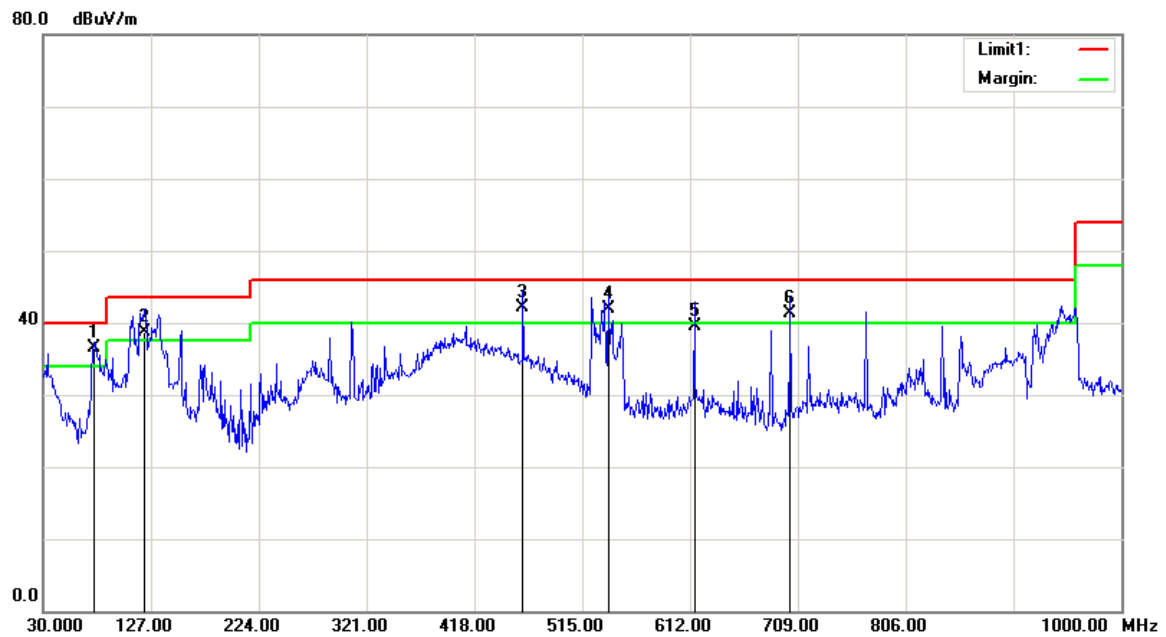
1) Below 1GHz:

Adapter #1

Horizontal



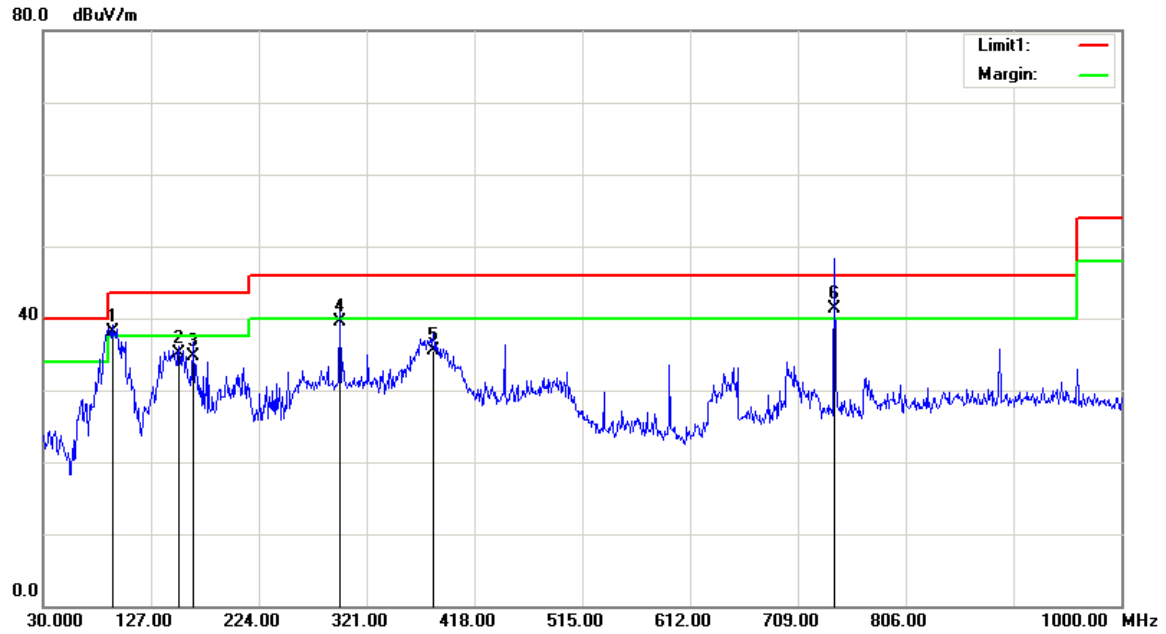
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
92.0800	49.85	QP	-11.65	38.20	43.50	5.30
154.1600	45.73	QP	-7.13	38.60	43.50	4.90
461.6500	42.33	QP	-2.03	40.30	46.00	5.70
615.8800	43.11	QP	-0.51	42.60	46.00	3.40
702.2100	40.06	QP	1.54	41.60	46.00	4.40
770.1100	38.19	QP	2.51	40.70	46.00	5.30

Vertical

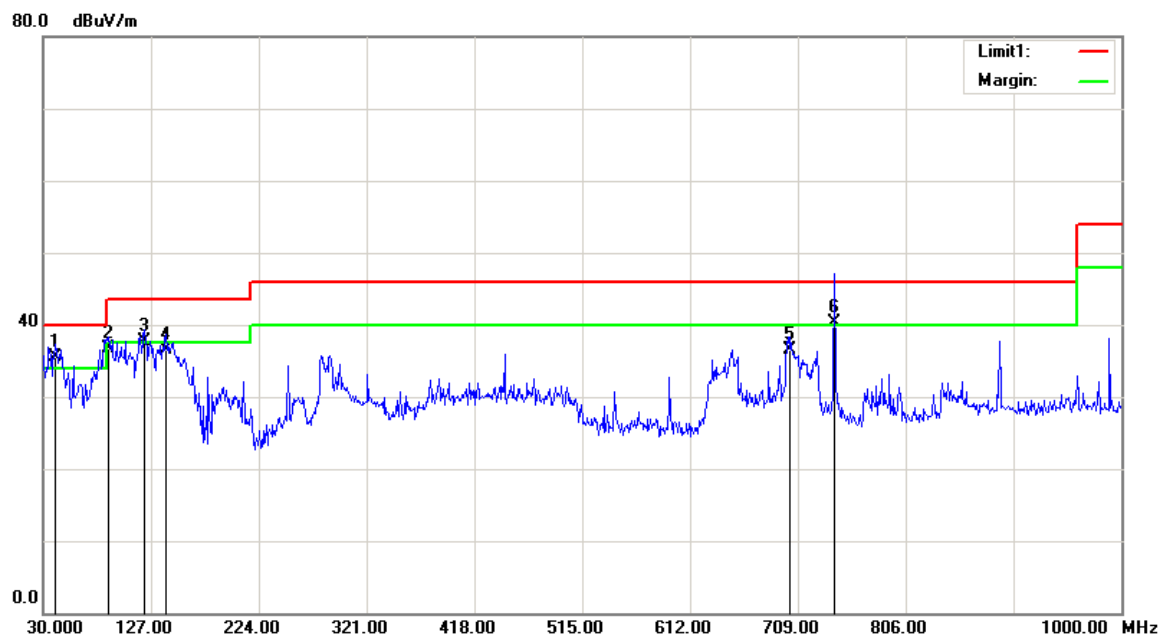
Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
75.5900	48.41	QP	-11.91	36.50	40.00	3.50
121.1800	44.30	QP	-5.60	38.70	43.50	4.80
461.6500	44.23	QP	-2.03	42.20	46.00	3.80
538.2800	43.23	QP	-1.33	41.90	46.00	4.10
615.8800	40.11	QP	-0.51	39.60	46.00	6.40
702.2100	39.76	QP	1.54	41.30	46.00	4.70

Adapter #2

Horizontal



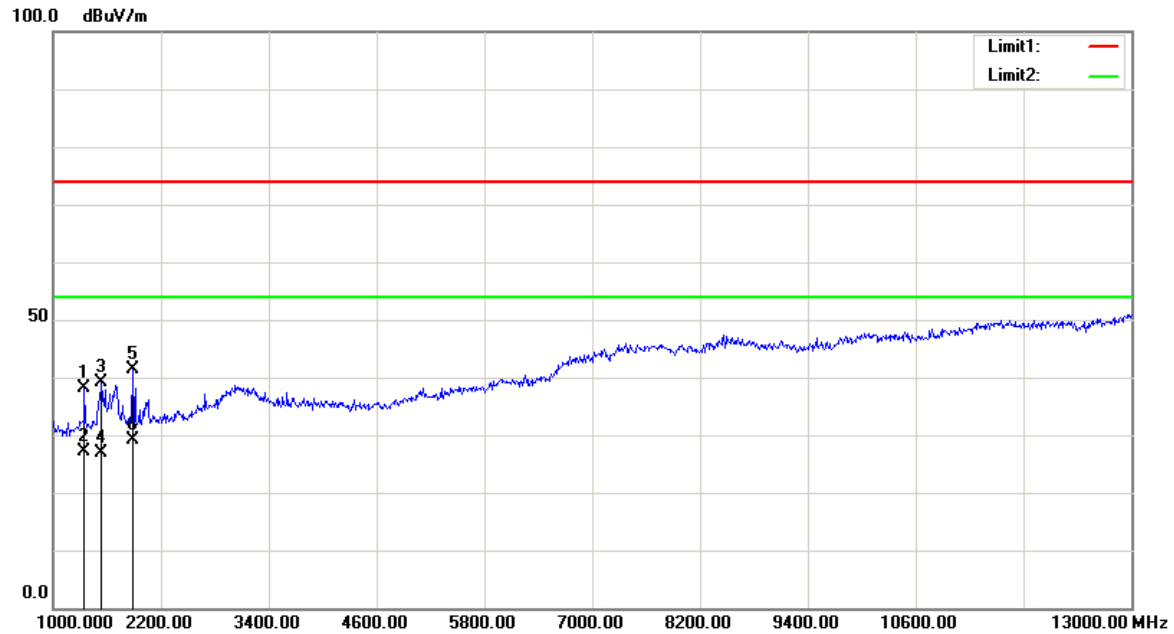
Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
92.0800	49.85	QP	-11.65	38.20	43.50	5.30
152.2200	42.22	QP	-7.12	35.10	43.50	8.40
164.8300	42.22	QP	-7.52	34.70	43.50	8.80
296.7500	45.42	QP	-5.82	39.60	46.00	6.40
381.1400	39.66	QP	-4.16	35.50	46.00	10.50
741.9800	39.17	QP	2.23	41.40	46.00	4.60

Vertical

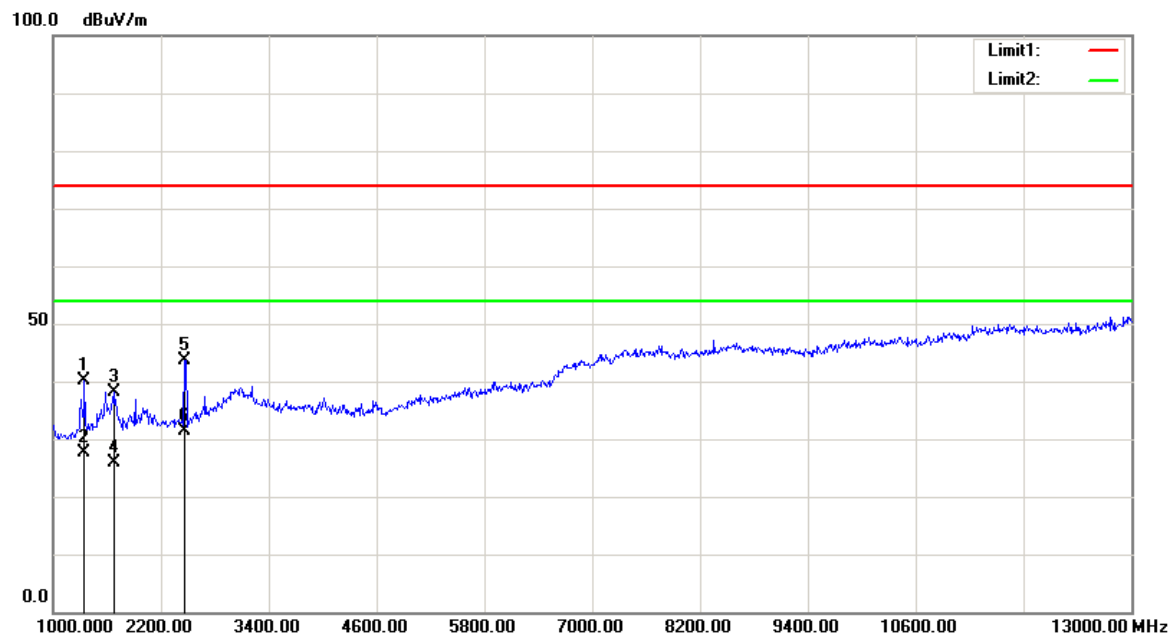
Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
40.6700	42.58	QP	-6.98	35.60	40.00	4.40
89.1700	48.72	QP	-12.02	36.70	43.50	6.80
121.1800	43.40	QP	-5.60	37.80	43.50	5.70
140.5800	43.19	QP	-6.69	36.50	43.50	7.00
702.2100	35.06	QP	1.54	36.60	46.00	9.40
741.9800	38.07	QP	2.23	40.30	46.00	5.70

2) Above 1GHz(Adapter #1 was used for testing):

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1348.000	38.96	peak	-0.81	38.15	74.00	35.85
1348.000	27.84	AVG	-0.81	27.03	54.00	26.97
1540.000	40.01	peak	-0.85	39.16	74.00	34.84
1540.000	27.73	AVG	-0.85	26.88	54.00	27.12
1888.000	41.32	peak	0.04	41.36	74.00	32.64
1888.000	29.10	AVG	0.04	29.14	54.00	24.86

Vertical

Frequency (MHz)	Receiver Reading (dB μ V)	Detector	Correction Factor (dB/m)	Cord. Amp. (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1348.000	40.83	peak	-0.81	40.02	74.00	33.98
1348.000	28.45	AVG	-0.81	27.64	54.00	26.36
1672.000	38.40	peak	-0.27	38.13	74.00	35.87
1672.000	26.14	AVG	-0.27	25.87	54.00	28.13
2470.000	41.45	peak	2.08	43.53	74.00	30.47
2470.000	29.19	AVG	2.08	31.27	54.00	22.73

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