

# TEST REPORT

For

**Moor Technology Co., Ltd.**

RM602, Block 2, Jianxinglou, Chaguang Industrial Zoon,  
Nanshan District, Shenzhen, Guangdong, China

**FCC PART 15B**

**FCC ID: ZECSZMOORCN999**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Wireless Inspection Camera (Monitor)
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<b>Report Number:</b> RDG11031703	
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\* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION.....</b>	<b>3</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	3
OBJECTIVE .....	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY .....	3
TEST FACILITY .....	3
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>5</b>
JUSTIFICATION .....	5
EUT EXERCISE SOFTWARE .....	5
EQUIPMENT MODIFICATIONS .....	5
LOCAL SUPPORT EQUIPMENT LIST AND DETAILS .....	5
EXTERNAL I/O CABLE.....	5
CONFIGURATION OF TEST SETUP .....	6
BLOCK DIAGRAM OF TEST SETUP .....	7
<b>SUMMARY OF TEST RESULTS .....</b>	<b>8</b>
<b>FCC §15.107 – AC LINE CONDUCTED EMISSIONS.....</b>	<b>9</b>
MEASUREMENT UNCERTAINTY .....	9
EUT SETUP.....	9
EMI TEST RECEIVER SETUP.....	9
TEST PROCEDURE .....	10
TEST EQUIPMENT LIST AND DETAILS.....	10
TEST RESULTS SUMMARY .....	10
TEST DATA .....	10
<b>FCC §15.109 - RADIATED SPURIOUS EMISSIONS .....</b>	<b>19</b>
MEASUREMENT UNCERTAINTY .....	19
EUT SETUP.....	19
EMI TEST RECEIVER SETUP.....	19
TEST PROCEDURE .....	20
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	20
TEST EQUIPMENT LIST AND DETAILS.....	20
TEST RESULTS SUMMARY .....	20
TEST DATA .....	20

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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *Moor Technology Co., Ltd.*'s product, model number: *MG-5818 (FCC ID: ZECSZMOORCN999)* (the "EUT") in this report is a *Wireless inspection camera*, which was measured approximately: 9.9 cm (L) x 3.9 cm (W) x 8.1 cm (H), rated input voltage: DC 3.7 V battery or DC 6 V adapter for charging.

#### Adapter 1 information

Model: PSEA060100U W

Input: 100-240V-50/60Hz 0.25A

Output: DC 6.0V 1A

#### Adapter 2 information

Model: KSAS7R506000100HU

Input: 100-240V-50/60Hz 0.25A

Output: DC 6.0V 1A

*All measurement and test data in this report was gathered from production sample serial number: 1103012 (Assigned by BACL, Shenzhen). The EUT was received on 2011-03-17.*

### Objective

This test report is prepared on behalf of *Moor Technology 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 the EUT with FCC Part 15B, Class B.

### Related Submittal(s)/Grant(s)

No related submittal(s).

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009. 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. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

### 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 C63.4-2009.

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.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

## SYSTEM TEST CONFIGURATION

### Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

### EUT Exercise Software

N/A

### Equipment Modifications

No modification was made to the unit tested.

### Local Support Equipment List and Details

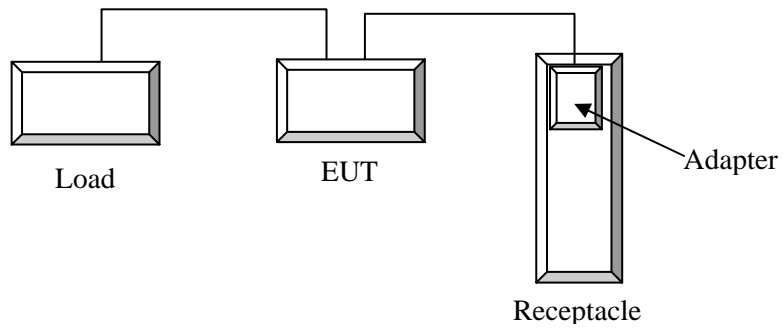
Manufacturer	Description	Model	Serial Number
Moor	Wireless inspection camera (Transmitter)	MG-6808	MG-6808T03
IBM	Laptop	T40	N/A

### External I/O Cable

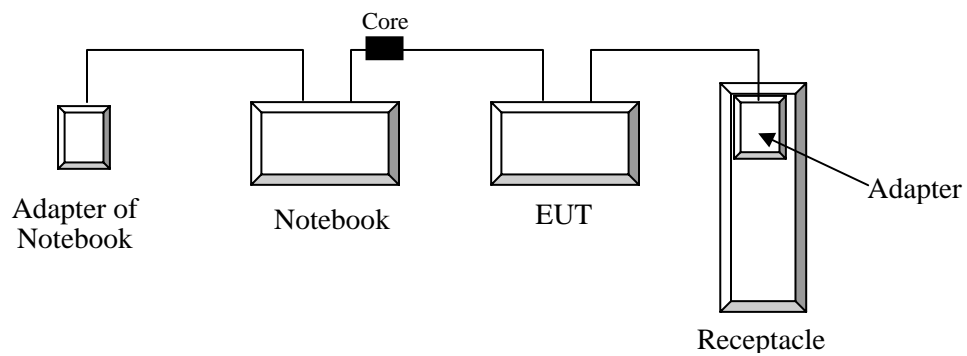
Cable Description	Length (M)	From/Port	To
Unshielded Undetachable Power Cable	1.5	EUT	Adapter
Unshielded Undetachable USB Cable (with a core)	1.0	EUT	PC

## Configuration of Test Setup

For Charging & Receiving mode:

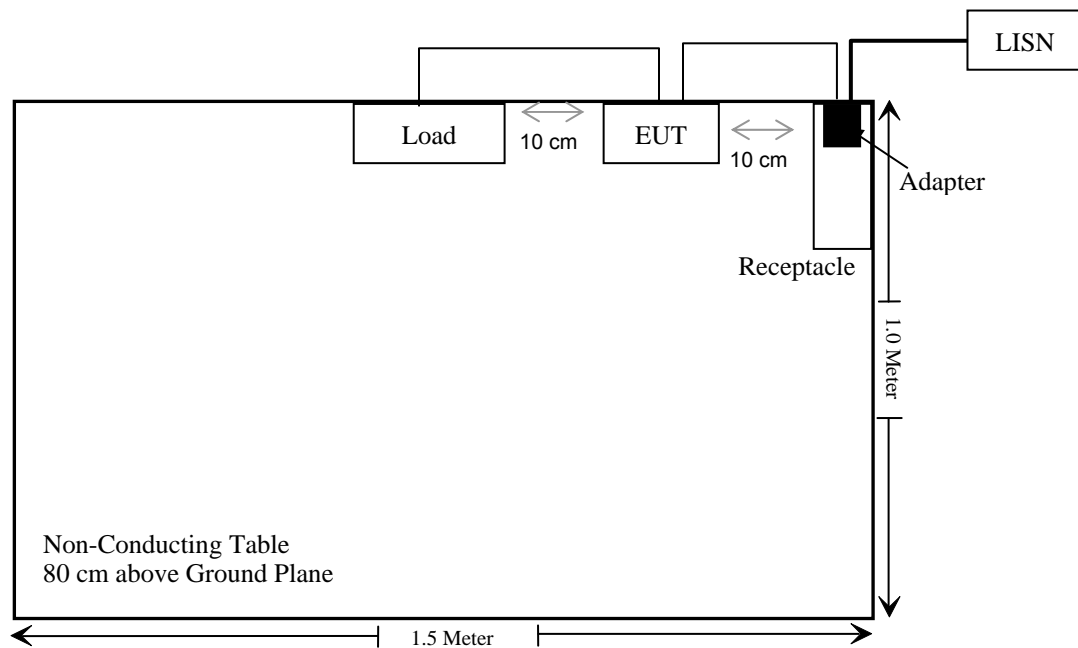


For Charging & Downloading mode:

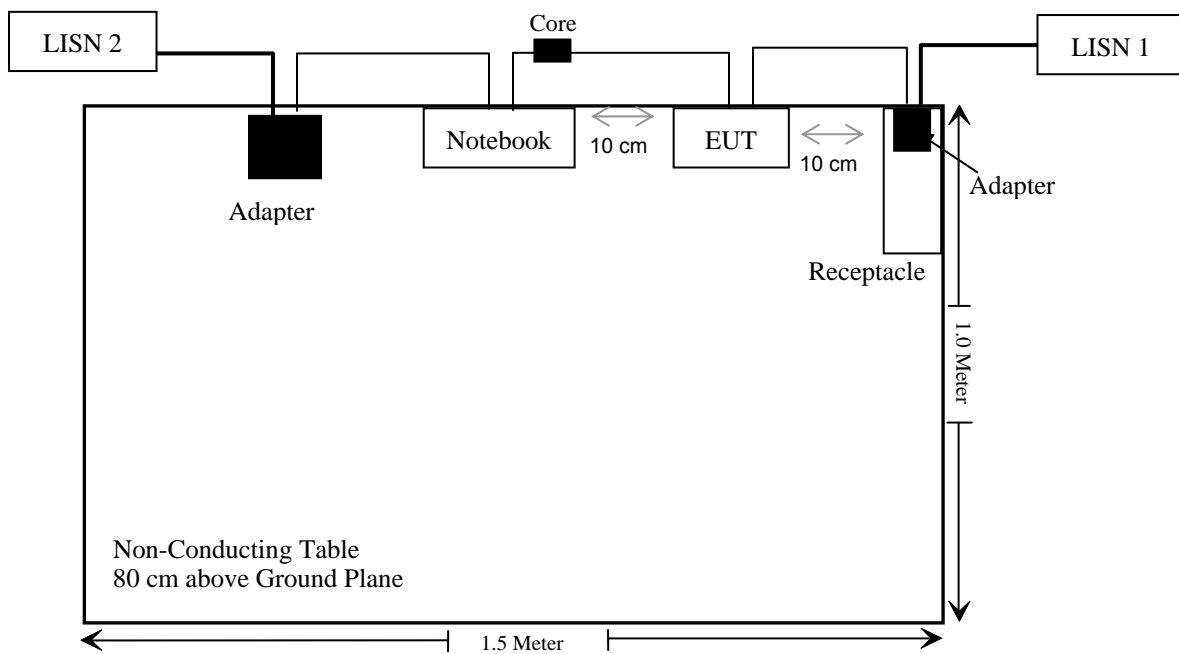


**Block Diagram of Test Setup**

For Charging &amp; Receiving mode:



For Charging &amp; Downloading mode:



## SUMMARY OF TEST RESULTS

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



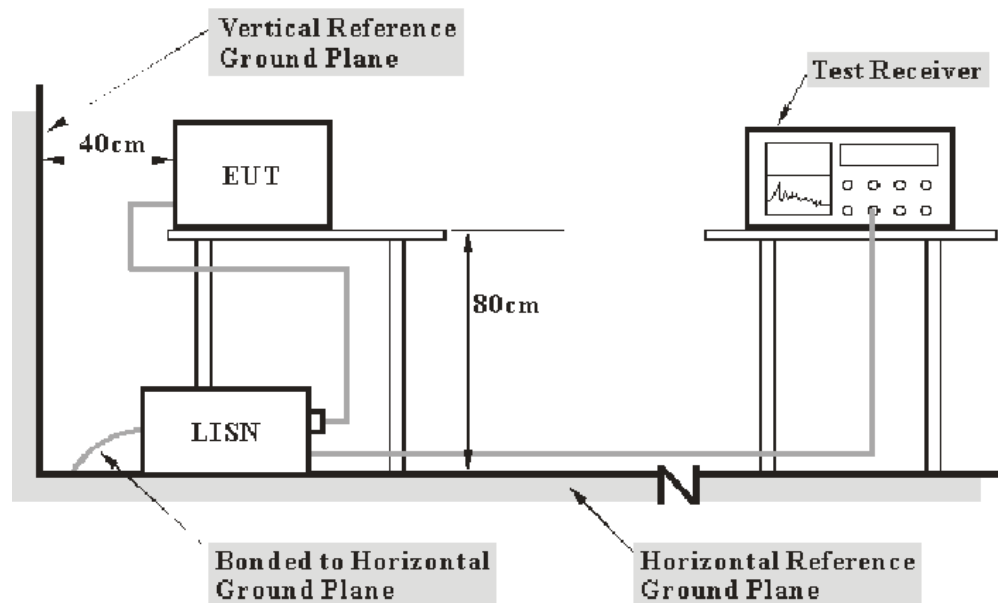
## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### 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 NIS 81, 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  $\pm 2.4$  dB. ( $k=2$ , 95% level of confidence)

### 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 C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.107, Class B limits.

The spacing between the peripherals was 10 cm.

The 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:

<u>Frequency Range</u>	<u>IF B/W</u>
150 kHz – 30 MHz	9 kHz

## Test Procedure

During the conducted emission test, the 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2011-03-03	2012-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-03-09	2012-03-08

\* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Results Summary

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

**Charging & Receiving mode: 13.70 dB at 26.995 MHz in the Neutral conductor mode for adapter 1**

**Charging & Downloading mode: 3.4 dB at 0.425 MHz in the Line conductor mode for adapter 1**

**Charging & Receiving mode: 17.96 dB at 3.565 MHz in the Line conductor mode for adapter 2**

**Charging & Downloading mode: 5.67 dB at 0.320 MHz in the Neutral conductor mode for adapter 2**

## Test Data

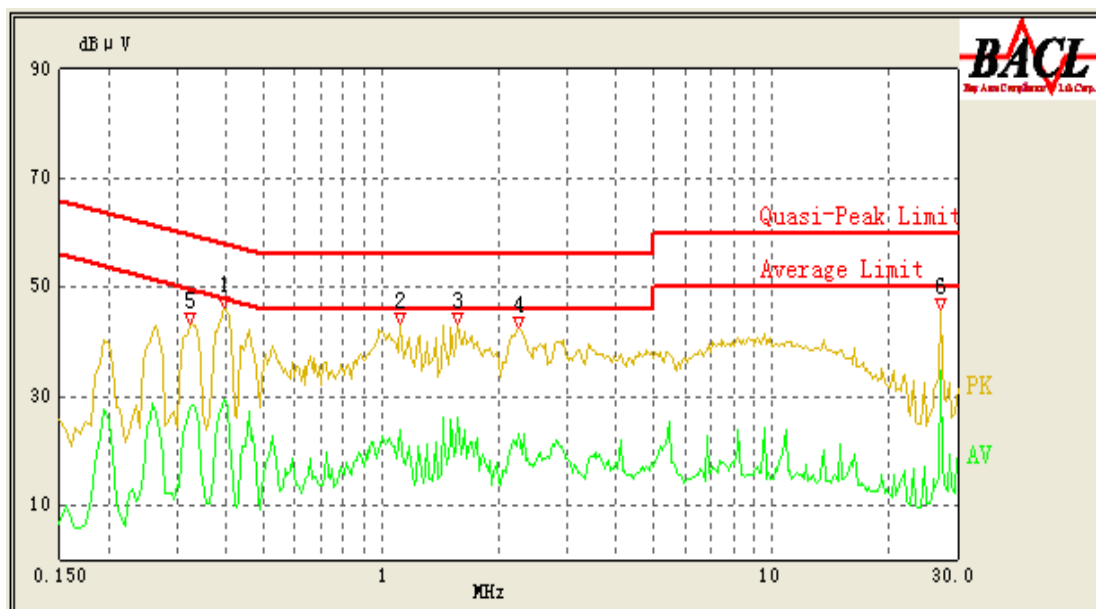
### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

*The testing was performed by Jim Huang on 2011-06-07 and 2011-06-19.*

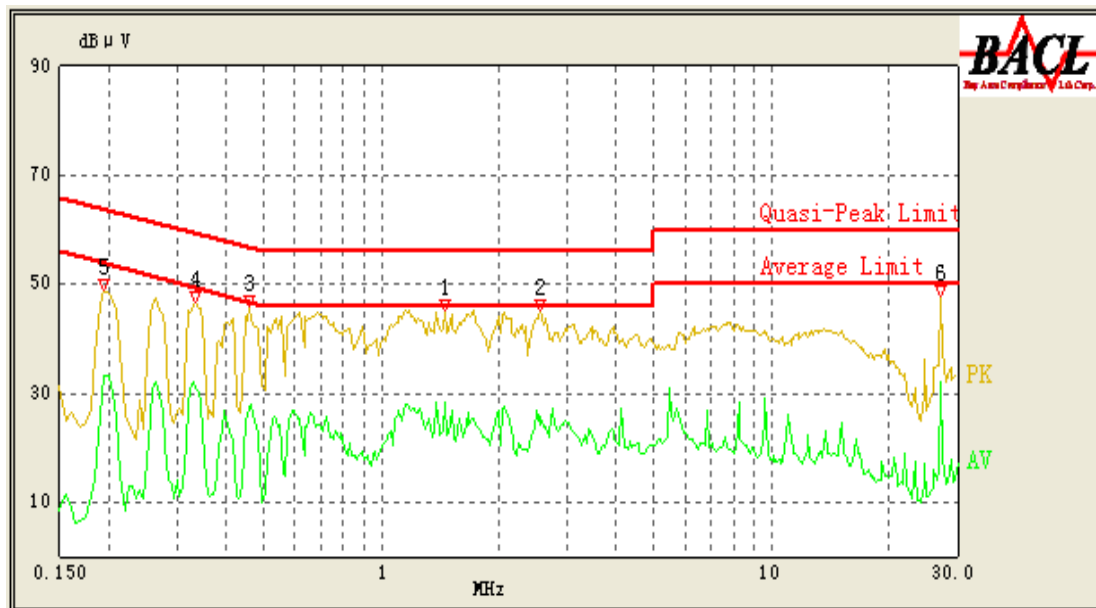
Test Mode: Charging & Receiving (Adapter 1)

AC 120V/60Hz, Line



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Correction Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
26.995	10.13	45.05	60.00	14.95	QP
0.395	10.10	29.28	49.00	19.72	Ave.
1.115	10.11	36.16	56.00	19.84	QP
1.570	10.16	26.02	46.00	19.98	Ave.
0.325	10.02	28.02	51.00	22.98	Ave.
26.995	10.13	34.54	50.00	15.46	Ave.
0.395	10.10	41.93	59.00	17.07	QP
1.575	10.16	37.88	56.00	18.12	QP
2.245	10.19	36.54	56.00	19.46	QP
1.115	10.11	23.86	46.00	22.14	Ave.
0.325	10.02	38.66	61.00	22.34	QP
2.250	10.19	22.99	46.00	23.01	Ave.

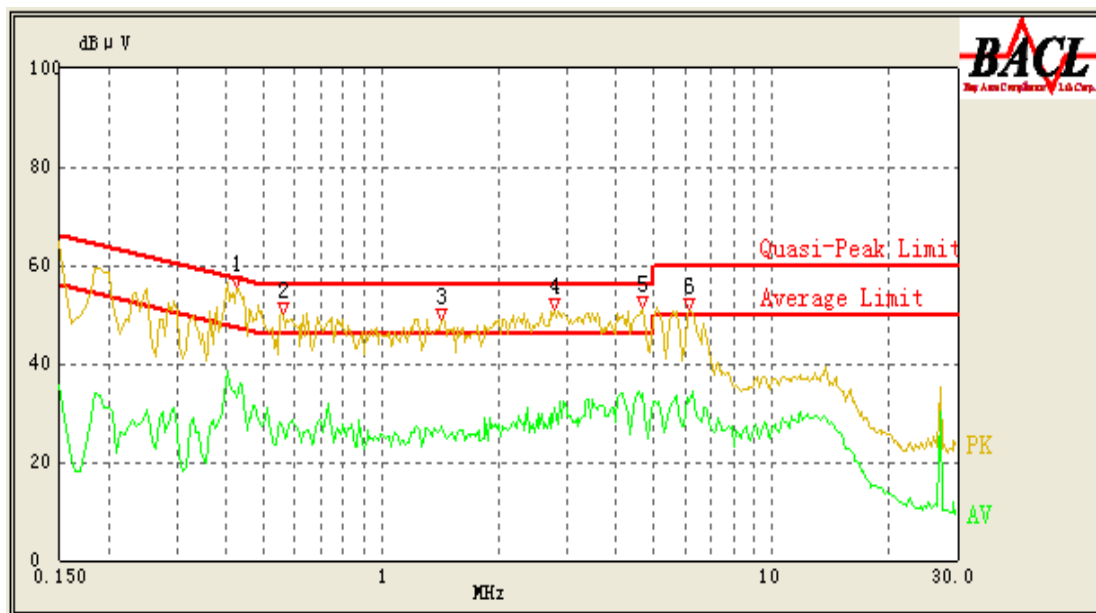
## AC 120V/60Hz, Neutral



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Correction Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
26.995	10.13	46.30	60.00	13.70	QP
1.450	10.15	42.23	56.00	13.77	QP
0.460	10.16	41.37	57.14	15.77	QP
0.335	10.03	44.16	60.71	16.55	QP
1.450	10.15	28.40	46.00	17.60	Ave.
26.995	10.13	32.01	50.00	17.99	Ave.
0.335	10.03	31.04	50.71	19.67	Ave.
0.460	10.16	27.34	47.14	19.80	Ave.
2.555	10.17	25.78	46.00	20.22	Ave.
0.195	10.07	33.04	54.71	21.67	Ave.
0.195	10.07	42.73	64.71	21.98	QP
2.560	10.17	29.31	56.00	26.69	QP

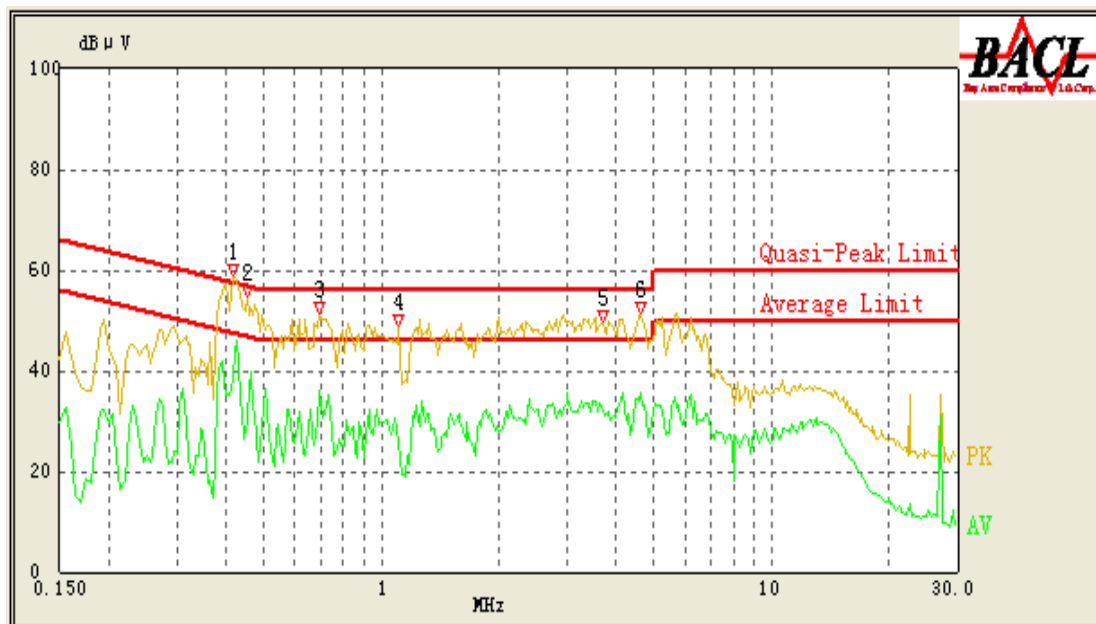
Test Mode: Charging & Downloading (Adapter 1)

AC 120V/60Hz, Line



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Correction Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
0.425	10.10	54.74	58.14	3.40	QP
4.690	10.10	34.00	46.00	12.00	Ave.
2.785	10.10	31.15	46.00	14.85	Ave.
0.425	10.10	32.97	48.14	15.17	Ave.
2.775	10.10	40.67	56.00	15.33	QP
0.560	10.10	40.18	56.00	15.82	QP
4.690	10.10	38.62	56.00	17.38	QP
6.185	10.10	32.19	50.00	17.81	Ave.
1.430	10.10	37.73	56.00	18.27	QP
1.430	10.10	27.49	46.00	18.51	Ave.
0.560	10.10	26.73	46.00	19.27	Ave.
6.185	10.10	31.48	60.00	28.52	QP

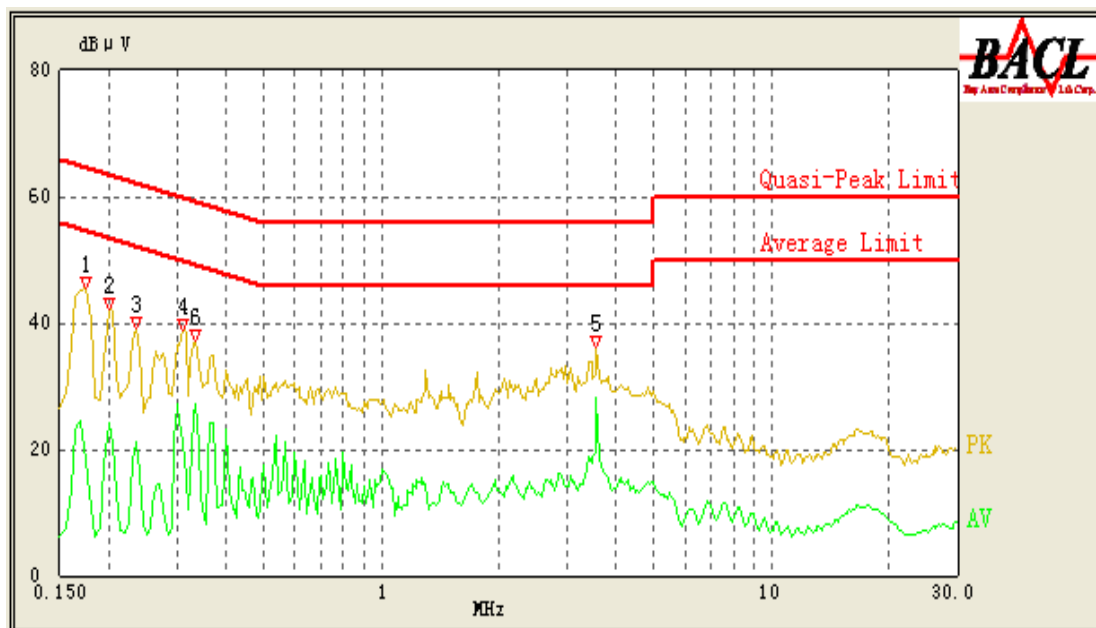
## AC 120V/60Hz, Neutral



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Correction Factor (dB)	Corrected Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Remark (PK/QP/Ave.)
0.415	10.10	52.00	58.43	6.43	QP
0.690	10.10	46.56	56.00	9.44	QP
4.630	10.10	46.21	56.00	9.79	QP
0.695	10.10	36.10	46.00	9.90	Ave.
0.415	10.10	38.01	48.43	10.42	Ave.
0.455	10.10	46.86	57.29	10.43	QP
4.630	10.10	35.42	46.00	10.58	Ave.
3.675	10.10	32.98	46.00	13.02	Ave.
3.685	10.10	40.08	56.00	15.92	QP
0.455	10.10	30.21	47.29	17.08	Ave.
1.110	10.10	36.93	56.00	19.07	QP
1.110	10.10	25.79	46.00	20.21	Ave.

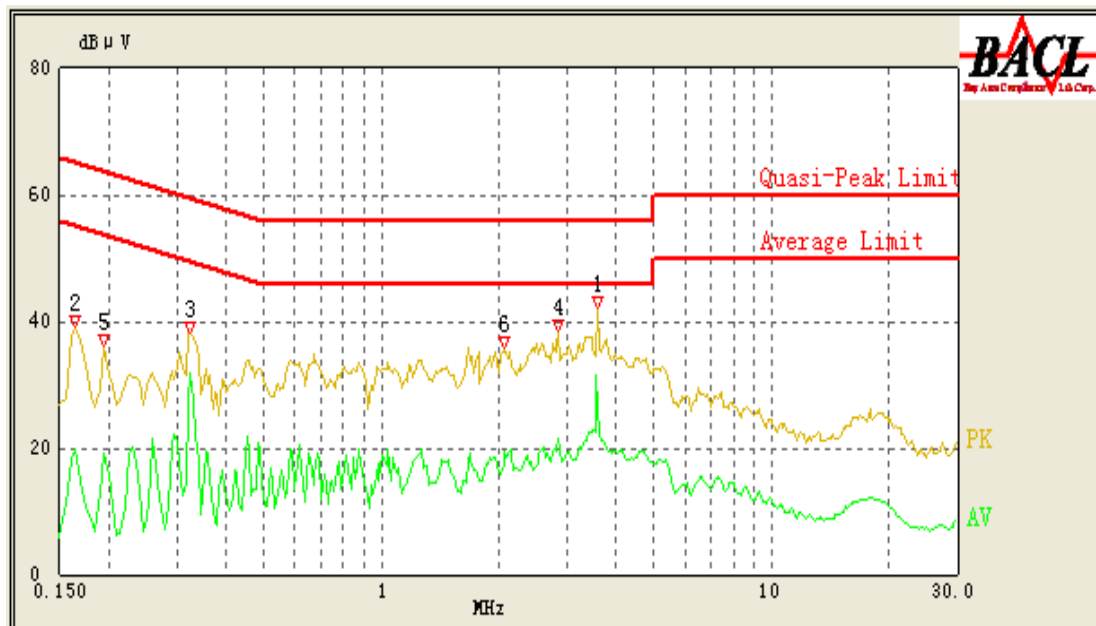
Test Mode: Charging & Receiving (Adapter 2)

AC 120V/60Hz, Line



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Correction Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
3.565	10.17	28.04	46.00	17.96	Ave.
3.565	10.17	32.89	56.00	23.11	QP
0.335	10.10	27.05	50.71	23.66	Ave.
0.310	10.10	33.18	61.43	28.25	QP
0.310	10.10	21.24	51.43	30.19	Ave.
0.200	10.10	24.09	54.57	30.48	Ave.
0.335	10.10	29.18	60.71	31.53	QP
0.235	10.10	21.33	53.57	32.24	Ave.
0.200	10.10	31.55	64.57	33.02	QP
0.235	10.10	27.88	63.57	35.69	QP
0.175	10.10	18.09	55.29	37.20	Ave.
0.175	10.10	27.68	65.29	37.61	QP

## AC 120V/60Hz, Neutral

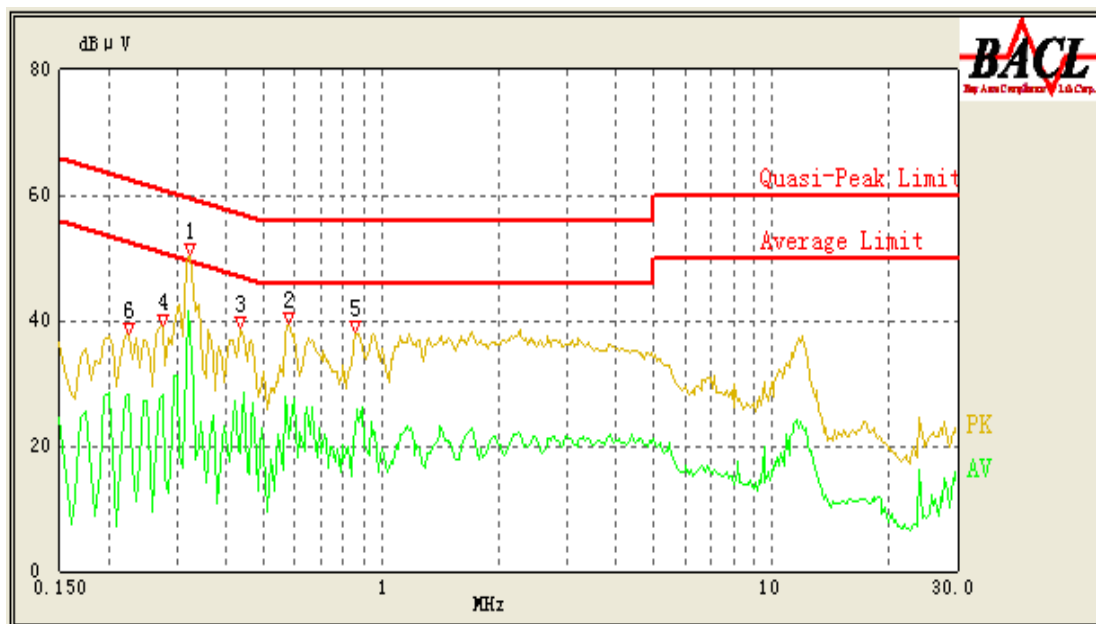


Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Correction Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
3.595	10.17	36.39	56.00	19.61	QP
0.165	10.10	29.13	65.57	36.44	QP
0.165	10.10	19.97	55.57	35.60	Ave.
0.325	10.10	35.43	61.00	25.57	QP
2.845	10.15	27.86	56.00	28.14	QP
2.845	10.15	21.50	46.00	24.50	Ave.
0.195	10.10	25.84	64.71	38.87	QP
0.195	10.10	19.26	54.71	35.45	Ave.
2.075	10.14	29.35	56.00	26.65	QP
2.075	10.14	19.34	46.00	26.66	Ave.
3.565	10.17	31.50	46.00	14.50	Ave.
0.325	10.10	31.96	51.00	19.04	Ave.



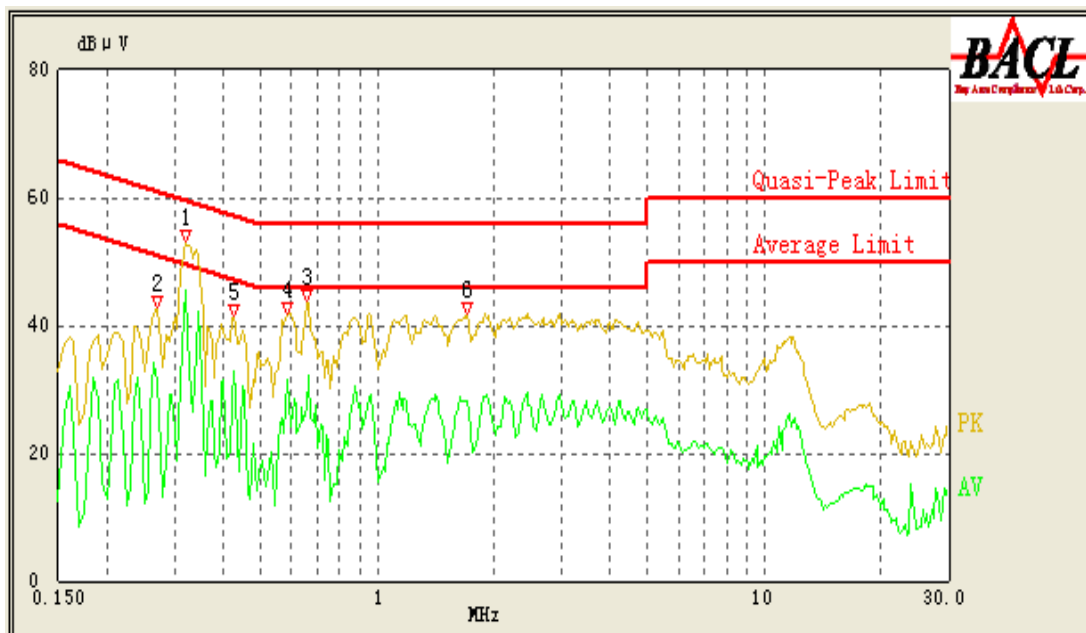
Test Mode: Charging & Downloading (Adapter 2)

AC 120V/60Hz, Line



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Correction Factor (dB)	Corrected Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Remark (PK/QP/Ave.)
0.325	10.10	38.63	51.00	12.37	Ave.
0.325	10.10	48.07	61.00	12.93	QP
0.580	10.10	34.25	56.00	21.75	QP
0.860	10.11	32.56	56.00	23.44	QP
0.275	10.10	28.33	52.43	24.10	Ave.
0.860	10.11	21.74	46.00	24.26	Ave.
0.275	10.10	37.67	62.43	24.76	QP
0.580	10.10	21.10	46.00	24.90	Ave.
0.225	10.10	28.20	53.86	25.66	Ave.
0.435	10.10	31.40	57.86	26.46	QP
0.225	10.10	35.78	63.86	28.08	QP
0.435	10.10	18.86	47.86	29.00	Ave.

## AC 120V/60Hz, Neutral



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Correction Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
0.320	10.10	45.47	51.14	5.67	Ave.
0.320	10.10	52.40	61.14	8.74	QP
0.585	10.10	31.54	46.00	14.46	Ave.
0.425	10.10	32.87	48.14	15.27	Ave.
1.700	10.13	28.28	46.00	17.72	Ave.
1.700	10.13	37.81	56.00	18.19	QP
0.585	10.10	37.73	56.00	18.27	QP
0.660	10.10	27.29	46.00	18.71	Ave.
0.660	10.10	36.69	56.00	19.31	QP
0.270	10.10	42.33	62.57	20.24	QP
0.270	10.10	31.59	52.57	20.98	Ave.
0.425	10.10	35.43	58.14	22.71	QP

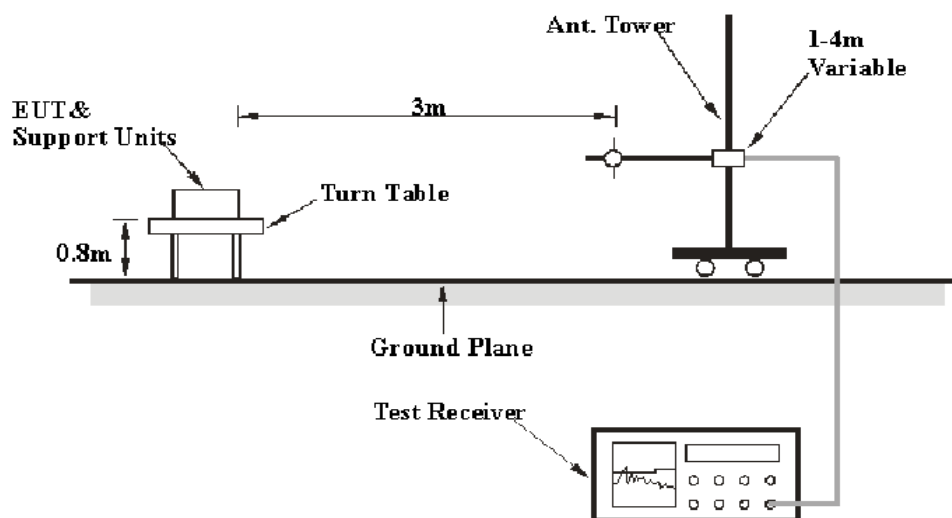
## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### 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 NIS 81, 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  $\pm 4.0$  dB. ( $k=2$ , 95% level of confidence)

### EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2009. 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.

The adapter was connected to a 120 VAC/60 Hz 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:

<u>Frequency Range</u>	<u>RBW</u>	<u>Video B/W</u>	<u>Detector</u>
30 MHz – 1000 MHz	100 kHz	300 kHz	QP

## Test Procedure

For the radiated emissions test, the adapter was connected to AC Power.

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

The data was recorded in Quasi-peak detection mode 30 MHz to 1 GHz.

## 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 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Pre-Amplifier	HP8447E	1937A01046	2010-08-02	2011-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-11	2011-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-03-11	2012-03-10

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Results Summary

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

**Charging & Receiving mode: 6.8 dB at 809.916750 MHz in the Vertical polarization**

**Charging & Downloading mode: 0.6 dB at 769.541000 MHz in the Horizontal polarization**

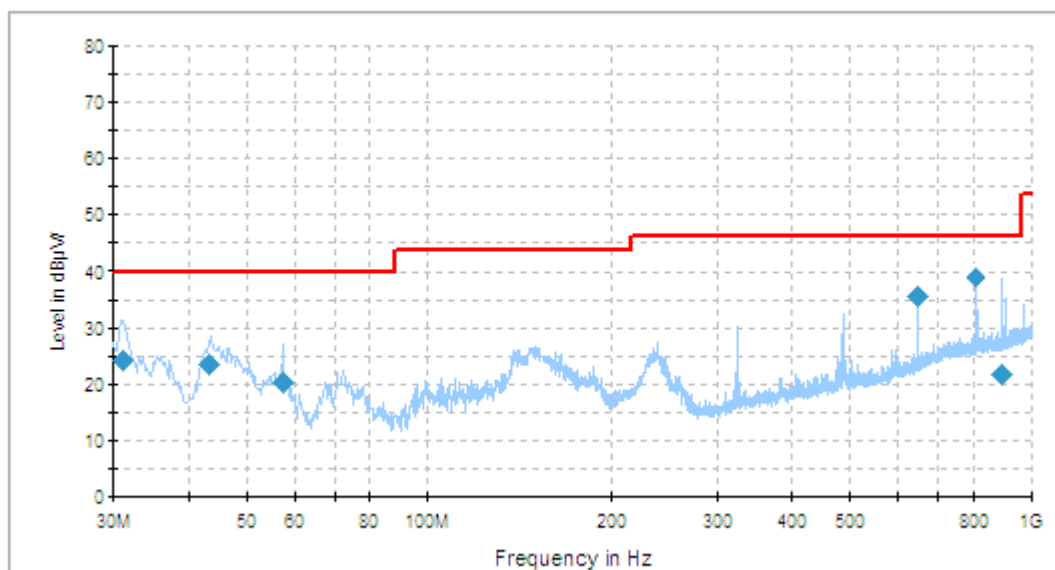
## Test Data

### Environmental Conditions

Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

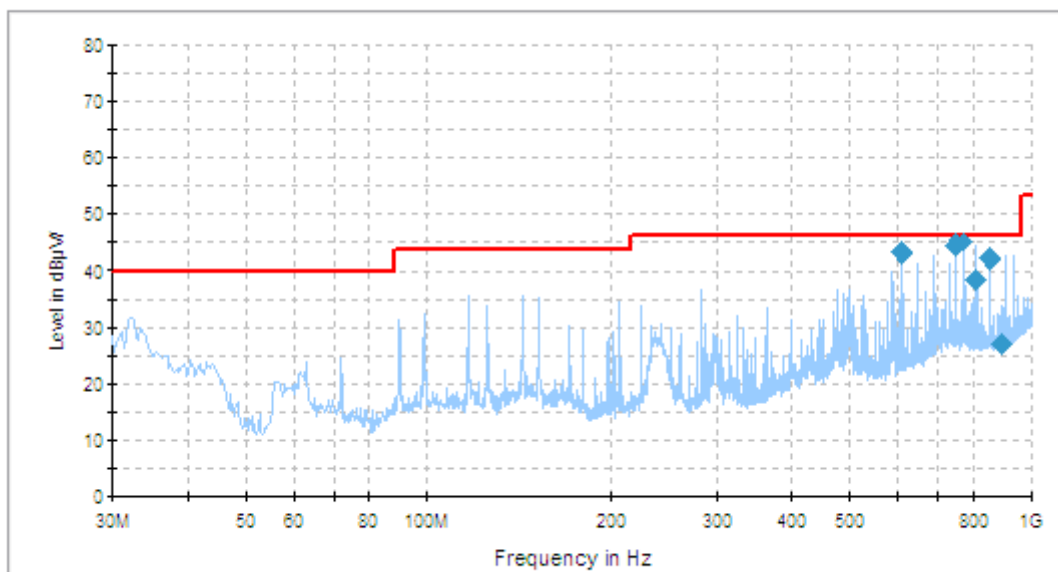
*The testing was performed by Jim Huang on 2011-06-03.*

*Test Mode: Charging & Receiving (Adapter 1)*



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity (H/V)	Turntable position (degree)	Limit (dBμV/m)	Margin (dB)
809.916750	39.2	104.0	V	207.0	46.0	6.8
647.965000	35.6	104.0	V	16.0	46.0	10.4
31.204250	24.4	103.0	V	224.0	40.0	15.6
43.488000	23.5	102.0	V	148.0	40.0	16.5
57.620250	20.4	214.0	V	134.0	40.0	19.6
89.0595000	21.7	375.0	H	185.0	46.0	24.3

Test Mode: Charging & Downloading (Adapter 1)

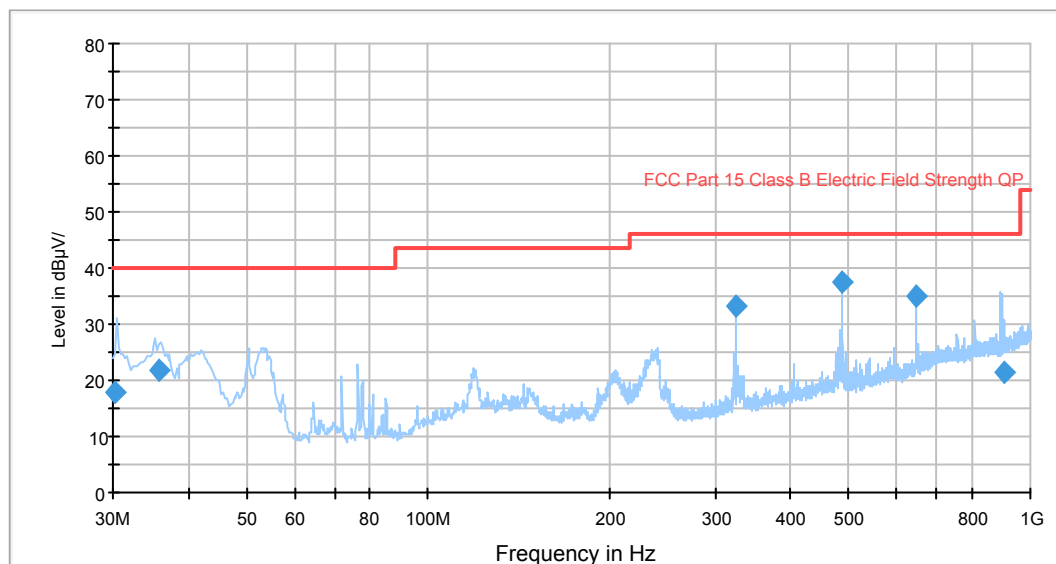


Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity (H/V)	Turntable position (degree)	Limit (dBμV/m)	Margin (dB)
769.541000	45.4	100.0	H	1.0	46.0	0.6*
749.363500	44.3	287.0	H	174.0	46.0	1.7*
607.515000	43.1	100.0	V	9.0	46.0	2.9*
850.550750	42.2	100.0	H	18.0	46.0	3.8*
810.046500	38.7	199.0	H	37.0	46.0	7.3
893.558250	27.1	227.0	H	21.0	46.0	18.9

\*within measurement uncertainty

*Test Mode: Charging & Receiving (Adapter 2)*

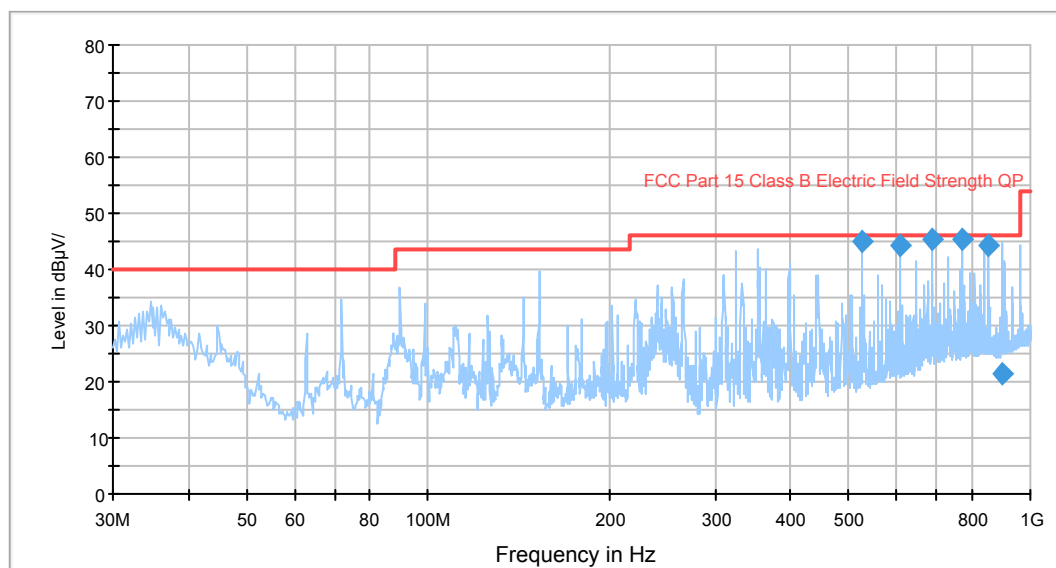
Auto Test(FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity (H/V)	Turntable position (degree)	Limit (dBμV/m)	Margin (dB)
485.952000	37.7	102.0	V	187.0	46.0	8.3
647.935000	35.0	101.0	V	0.0	46.0	11.0
323.963750	33.2	102.0	H	317.0	46.0	12.8
35.897250	21.8	102.0	V	171.0	40.0	18.2
30.317909	17.9	256.0	V	252.0	40.0	22.1
901.956250	21.5	172.0	V	0.0	46.0	24.5

*Test Mode: Charging & Downloading (Adapter 2)*

Auto Test(FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity (H/V)	Turntable position (degree)	Limit (dBμV/m)	Margin (dB)
688.435500	45.3	100.0	V	338.0	46.0	0.7*
769.433500	45.2	120.0	H	180.0	46.0	0.8*
526.461250	45.1	202.0	V	42.0	46.0	0.9*
607.444750	44.4	100.0	V	217.0	46.0	1.6*
850.441750	44.1	100.0	H	177.0	46.0	1.9*
895.147250	21.4	236.0	H	0.0	46.0	24.6

\*within measurement uncertainty

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