

**FCC PART 15B**  
**MEASUREMENT AND TEST REPORT**  
For  
**WITTIS COMMUNICATION TECHNOLOGY LIMITED**

FLAT A-B, 11/F, WAH LIK IND CTR, 459-469 CASTLE PEAK RD.,  
TSUEN WAN, N.T., HONG KONG

**FCC ID: ZEW599**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Mobile Phone
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<b>Report Number:</b> RSZ110519009-00	
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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. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, or any agency of the Federal Government.

\* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

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## GENERAL INFORMATION

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

The WITTIS COMMUNICATION TECHNOLOGY LIMITED's product, model number: 599 (FCC ID: ZEW599) or the "EUT" as referred to in this report is a *Mobile Phone*, which measures approximately: 11.0 cm (L) x 5.9 cm (W) x 1.9 cm (H), rated input voltage: DC 3.7 V battery and DC 5.0 V adapter

*\* All measurement and test data in this report was gathered from production sample serial number: 1105114 (Assigned by BACL, Shenzhen). The EUT was received on 2011-05-19.*

### Objective

This Type approval report is prepared on behalf of WITTIS COMMUNICATION TECHNOLOGY LIMITED 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 compliance with FCC Part 15 B.

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

FCC Part 22H/24E submission with FCC ID: ZEW599

### Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in 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

### Description of Test Configuration

The system was configured for testing in a manufacturer testing fashion.

### EUT Exercise Software

N/A

### Equipment Modifications

No modification was made to the unit tested.

### Local Support Equipment List and Details

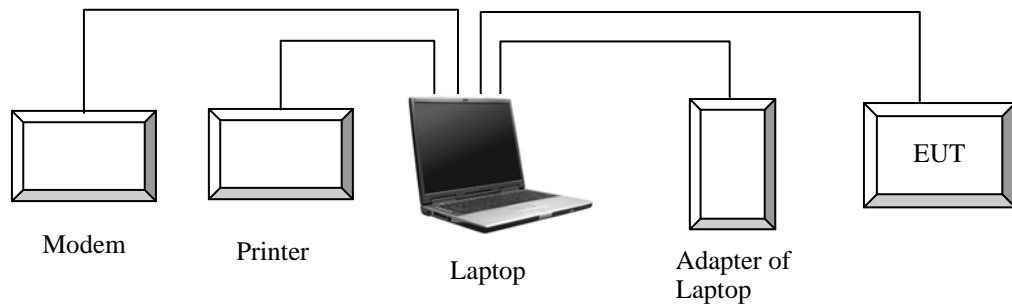
Manufacturer	Description	Model	Serial Number
DELL	Laptop	D610	N/A
HP	Printer	C3941A	JPTVOB2337
SAST	Modem	AEM-2100	0293

### External I/O Cable

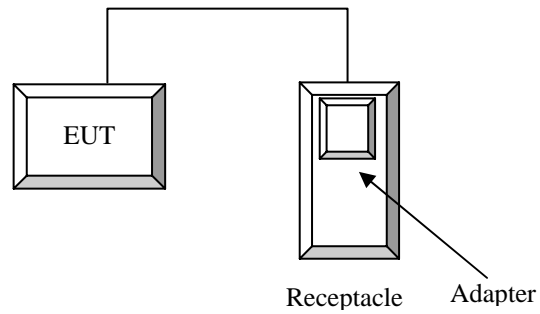
Cable Description	Length (m)	From/Port	To
Unshielded Detachable USB Cable	0.7	Laptop/Adapter	EUT
Shielded Detachable Printer Cable	1.2	Laptop	Printer
Shielded Detachable Serial Cable	1.2	S Laptop	Modem

## Configuration of Test Setup

For PC charging& downloading

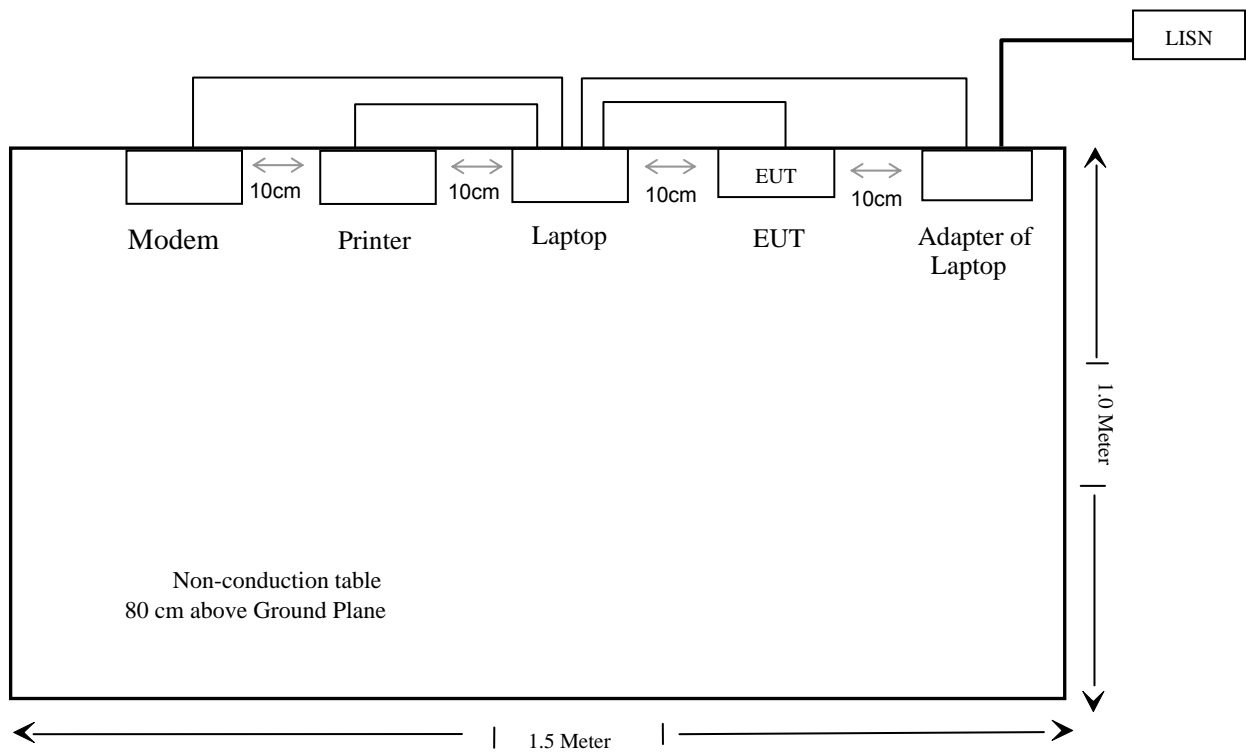


For adapter charging

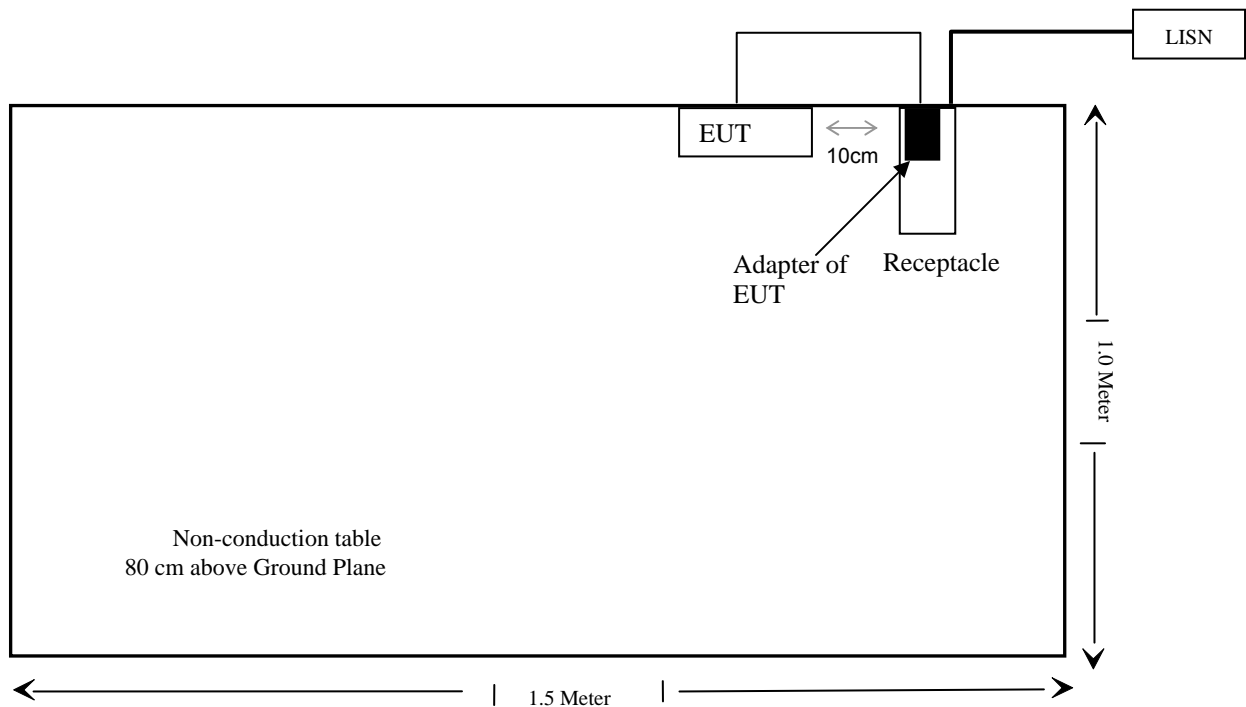


**Block Diagram of Test Setup**

For PC charging &amp; downloading



For adapter charging



## SUMMARY OF TEST RESULTS

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

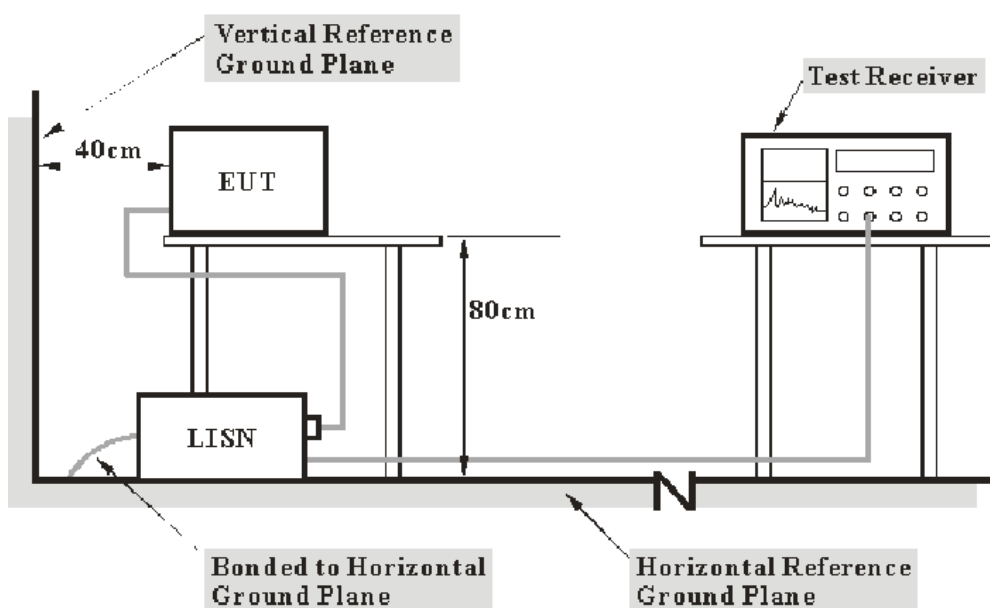
## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### 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 of laptop was connected to a 120 VAC/60 Hz power source for PC charging & downloading mode.

The adapter of EUT was connected to a 120 VAC/60 Hz power source for adapter charging mode.

## 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 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 Procedure

During the conducted emission test, the adapter of laptop was connected to the outlet of the LISN for PC charging & downloading mode; and the adapter of EUT was connected to the outlet of the LISN for adapter charging mode.

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:

**11.90 dB at 1.100 MHz in the Line conducted mode for adapter charging mode**

## Test Data

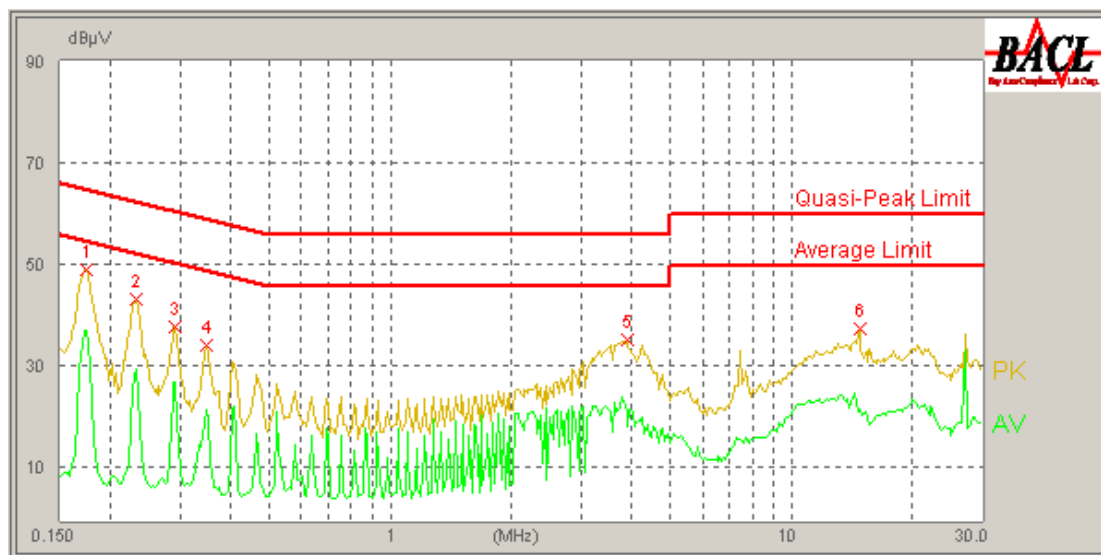
### Environmental Conditions

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

*The testing was performed by Leon Chen on 2011-06-09.*

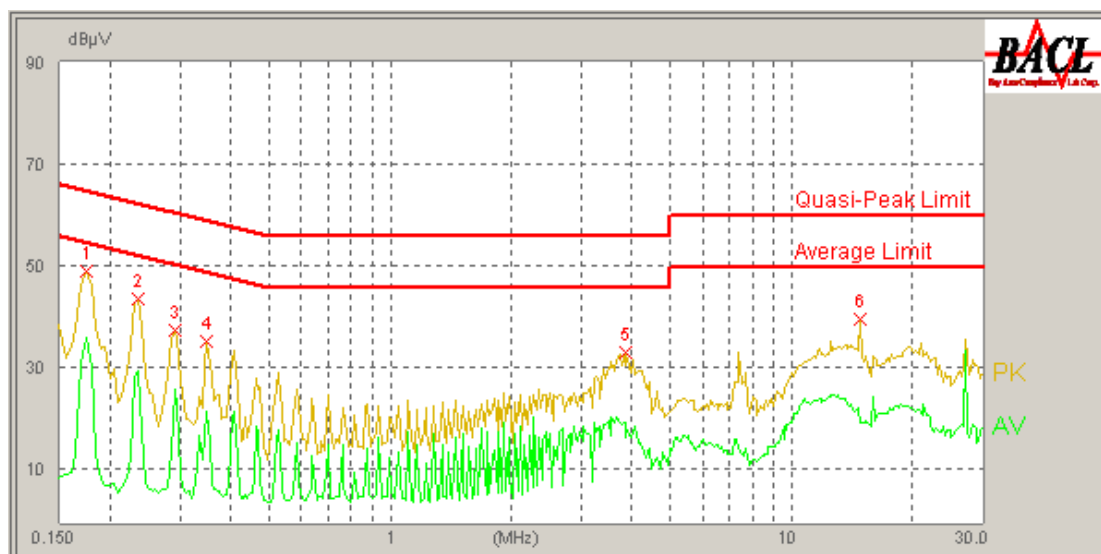
Test Mode: PC charging & Downloading

AC 120V/60 Hz, Line



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/ QP/Ave.)
0.174	10.10	37.27	55.31	18.04	Ave.
0.174	10.10	45.92	65.30	19.38	QP
0.233	10.10	29.80	53.63	23.83	Ave.
3.898	10.20	21.27	46.00	24.73	Ave.
0.291	10.10	27.14	51.96	24.82	Ave.
0.233	10.10	37.09	63.63	26.54	QP
0.349	10.00	32.73	60.31	27.58	QP
14.772	10.10	21.72	50.00	28.28	Ave.
0.347	10.00	21.85	50.36	28.51	Ave.
3.898	10.20	24.24	56.00	31.76	QP
14.817	10.10	25.92	60.00	34.08	QP
0.291	10.10	36.90	61.97	45.07	QP

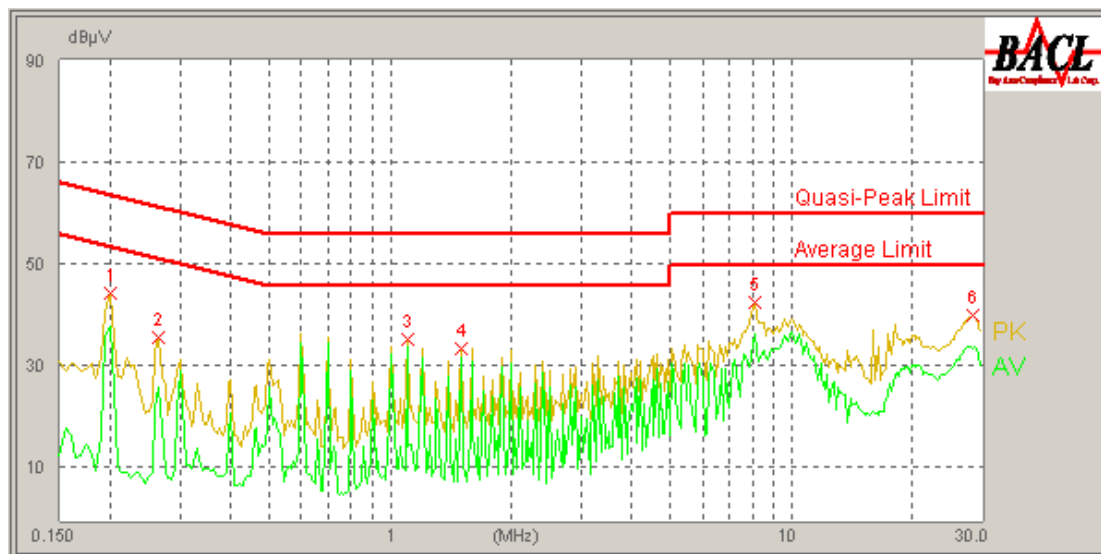
## AC 120V/60 Hz, Neutral



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/ QP/Ave.)
0.175	10.10	47.76	65.29	17.53	QP
0.175	10.10	36.35	55.29	18.94	Ave.
0.235	10.10	40.81	63.57	22.76	QP
0.235	10.10	29.57	53.57	24.00	Ave.
0.290	10.10	36.34	62.00	25.66	QP
0.290	10.10	25.96	52.00	26.04	Ave.
3.850	10.20	19.62	46.00	26.38	Ave.
14.710	10.10	22.35	50.00	27.65	Ave.
0.350	10.00	21.81	50.29	28.48	Ave.
0.350	10.00	31.73	60.29	28.56	QP
3.850	10.20	24.89	56.00	31.11	QP
14.805	10.10	25.19	60.00	34.81	QP

Test Mode: Adapter Charging

AC 120V/60 Hz, Line



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/ QP/Ave.)
1.100	10.10	34.1	46.00	11.90	Ave.
8.115	10.10	36.68	50.00	13.32	Ave.
1.505	10.10	32.13	46.00	13.87	Ave.
28.255	10.20	33.73	50.00	16.27	Ave.
0.200	10.10	38.22	54.57	16.35	Ave.
8.115	10.10	41.08	60.00	18.92	QP
1.100	10.10	34.36	56.00	21.64	QP
28.355	10.20	37.66	60.00	22.34	QP
0.200	10.10	41.05	64.57	23.52	QP
1.505	10.10	32.19	56.00	23.81	QP
0.265	10.10	26.34	52.71	26.37	Ave.
0.265	10.10	34.08	62.71	28.63	QP

## AC 120V/60 Hz, Neutral



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/ QP/Ave.)
0.600	10.20	33.03	46.00	12.97	Ave.
0.200	10.10	40.9	54.57	13.67	Ave.
1.100	10.10	32.03	46.00	13.97	Ave.
8.020	10.10	32.51	50.00	17.49	Ave.
0.200	10.10	44.51	64.57	20.06	QP
0.600	10.20	34.12	56.00	21.88	QP
1.100	10.10	32.85	56.00	23.15	QP
8.015	10.10	36.67	60.00	23.33	QP
19.215	10.10	25.34	50.00	24.66	Ave.
0.265	10.10	27.01	52.71	25.70	Ave.
0.265	10.10	34.46	62.71	28.25	QP
19.175	10.10	17.17	60.00	42.83	QP

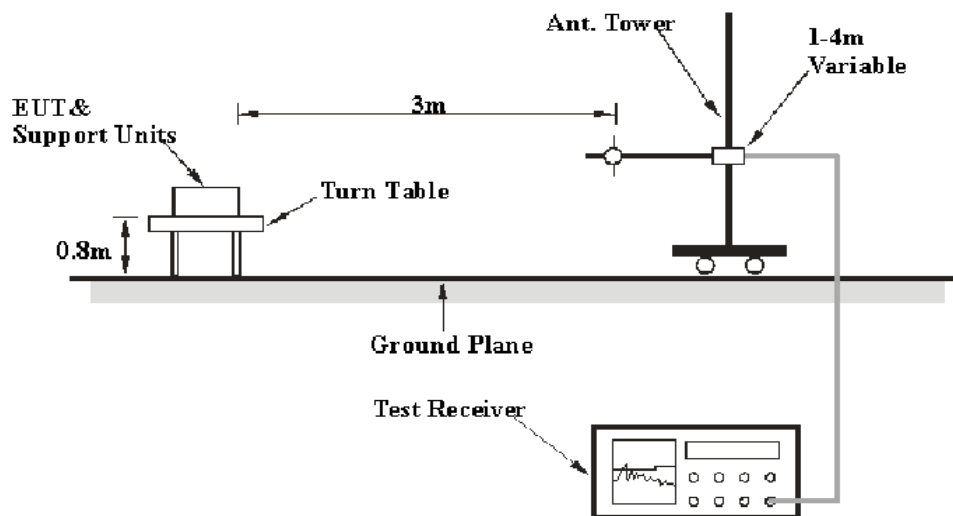
## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### 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 estimation of the uncertainty of 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 B test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109 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 spacing between the peripherals was 10 cm.

The adapter of laptop was connected to a 120 VAC/60 Hz power source for PC charging & downloading mode.

The adapter of EUT was connected to a 120 VAC/60 Hz power source for adapter charging mode.

## EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

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

<i><b>Frequency</b></i>	<i><b>RB/W</b></i>	<i><b>VB/W</b></i>	<i><b>IF B/W</b></i>	<i><b>Detection</b></i>
30 MHz-1 GHz	100 kHz	300 kHz	120 kHz	Quasi-peak

## Test Equipment List and Details

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
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	2010-07-05	2011-07-04

\* **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 Procedure

For the radiated emissions test, the adapter of laptop was connected to AC floor outlet for PC charging & downloading mode, and the adapter of EUT was connected to AC floor outlet for adapter charging mode.

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

All the data was recorded in the Quasi-peak detection mode from 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 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 §15.109 Class B, with the worst margin reading of:

**2.9 dB at 34.449000 MHz** in the **Vertical** polarization for adapter charging mode

## Test Data

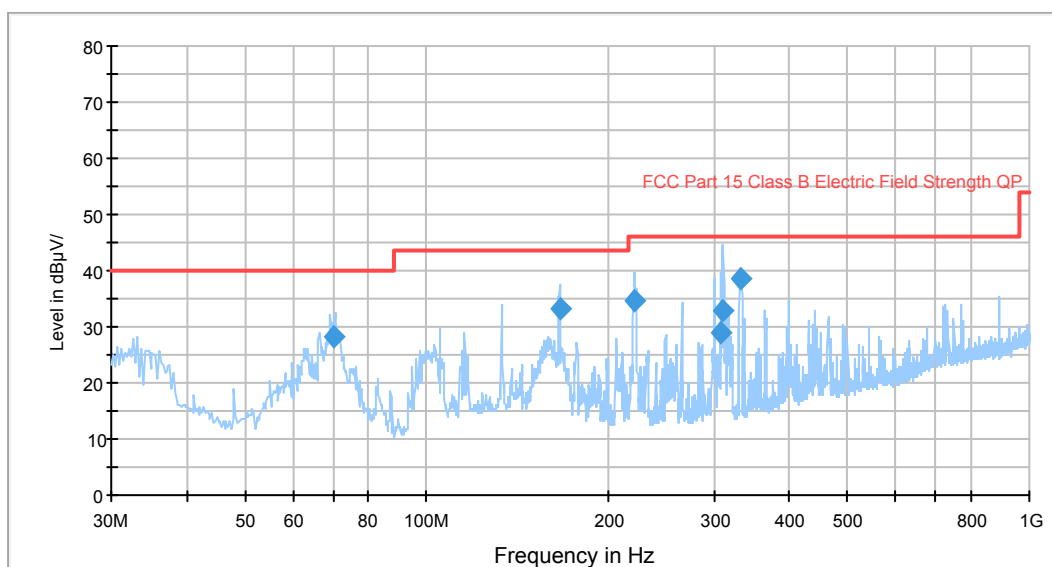
### Environmental Conditions

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100.0 kPa

The testing was performed by Leon Chen on 2011-06-10.

Test Mode: PC charging & downloading

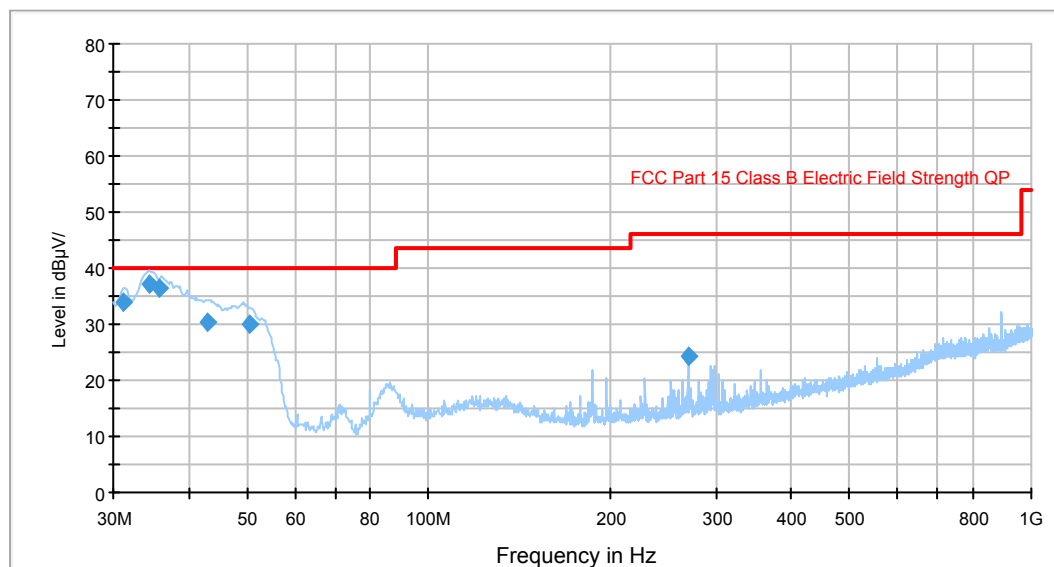
Auto Test(FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna		Turntable Position (degree)	Correction Factor (dB)	Limit (dBμV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)				
333.166500	38.5	100.0	H	99.0	-11.5	46.0	7.5
166.618250	33.3	135.0	H	128.0	-14.7	43.5	10.2
221.370000	34.8	100.0	H	346.0	-14.0	46.0	11.2
70.044250	28.3	199.0	V	140.0	-18.3	40.0	11.8
310.629750	32.7	100.0	H	109.0	-12.1	46.0	13.3
308.708750	28.9	100.0	H	109.0	-12.2	46.0	17.1

Test Mode: Adapter charging

Auto Test(FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna		Turntable Position (degree)	Correction Factor (dB)	Limit (dBμV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)				
34.449000	37.1	103.0	V	232.0	-8.4	40.0	2.9*
35.678250	36.4	104.0	V	18.0	-9.3	40.0	3.6*
31.212500	34.2	204.0	V	354.0	-0.8	40.0	5.8
42.851250	30.3	102.0	V	71.0	-13.9	40.0	9.7
50.648000	30.1	104.0	V	77.0	-17.4	40.0	9.9
270.317500	24.2	204.0	V	18.0	-0.5	46.0	21.8

\*Within measurement uncertainty!

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