



## 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: ZEW851**

<b>Report Type:</b> Original Report	<b>Product Type:</b> GSM Mobile Phone
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<b>Report Number:</b> <u>RSZ110519010-00</u>	
<b>Report Date:</b> <u>2011-06-15</u>	
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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

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

The *WITTIS COMMUNICATION TECHNOLOGY LIMITED*'s product, model number: 851 (FCC ID: ZEW851) or the "EUT" as referred to in this report is a *Mobile Phone*, which measures approximately: 11.1 cm (L) x 6.2 cm (W) x 1.2 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: 1105116 (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 15B.

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

FCC Part 22H/24E submission with FCC ID: ZEW851

### 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 C63.4-2003.

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

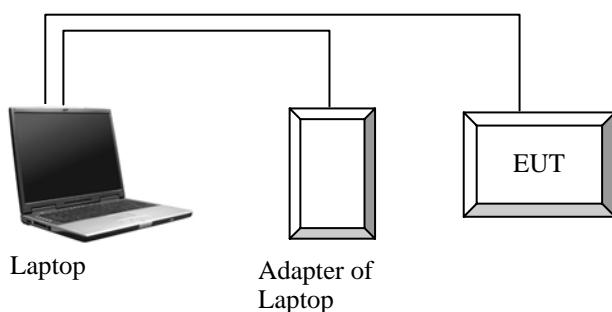
Manufacturer	Description	Model	Serial Number
DELL	Laptop	D610	N/A

### External I/O Cable

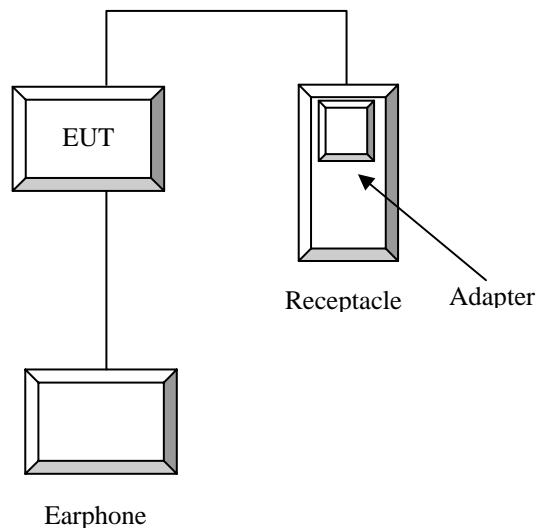
Cable Description	Length (m)	From/Port	To
Shielded Detachable Power/USB Cable	1.2	Adapter/PC	EUT

### Configuration of Test Setup

For PC charging & downloading

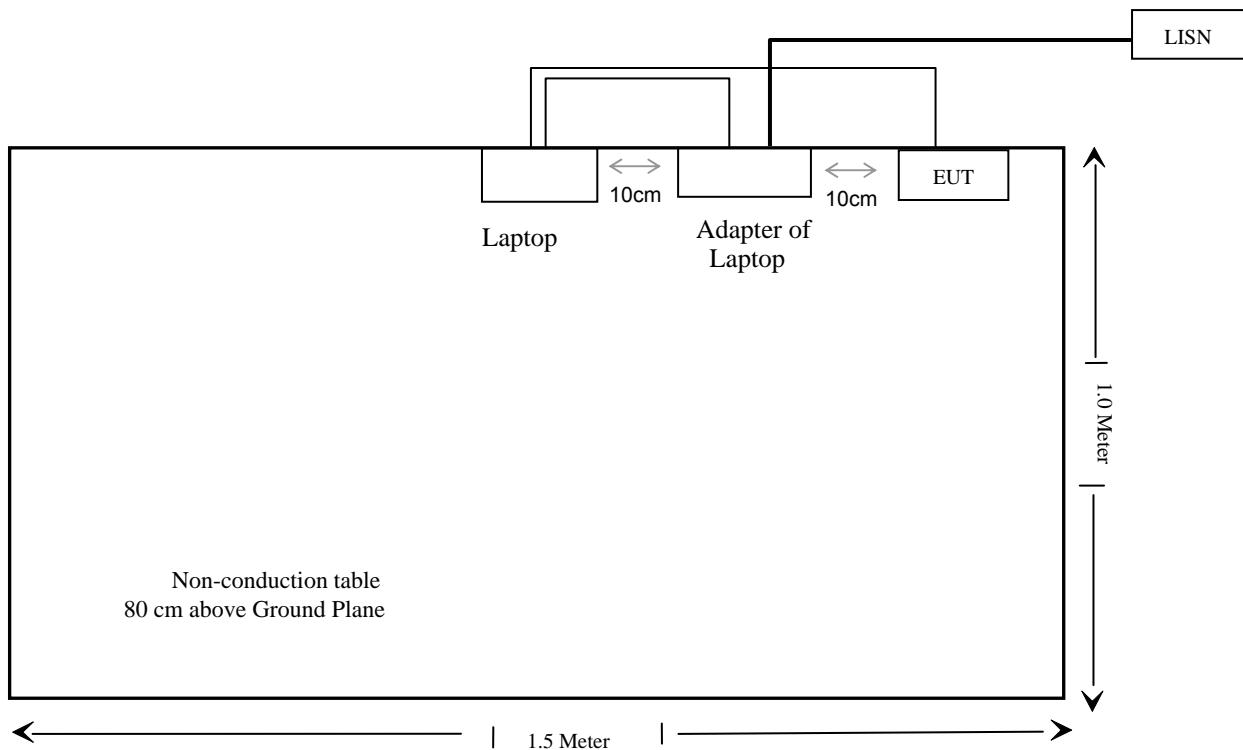


For adapter charging & media playing

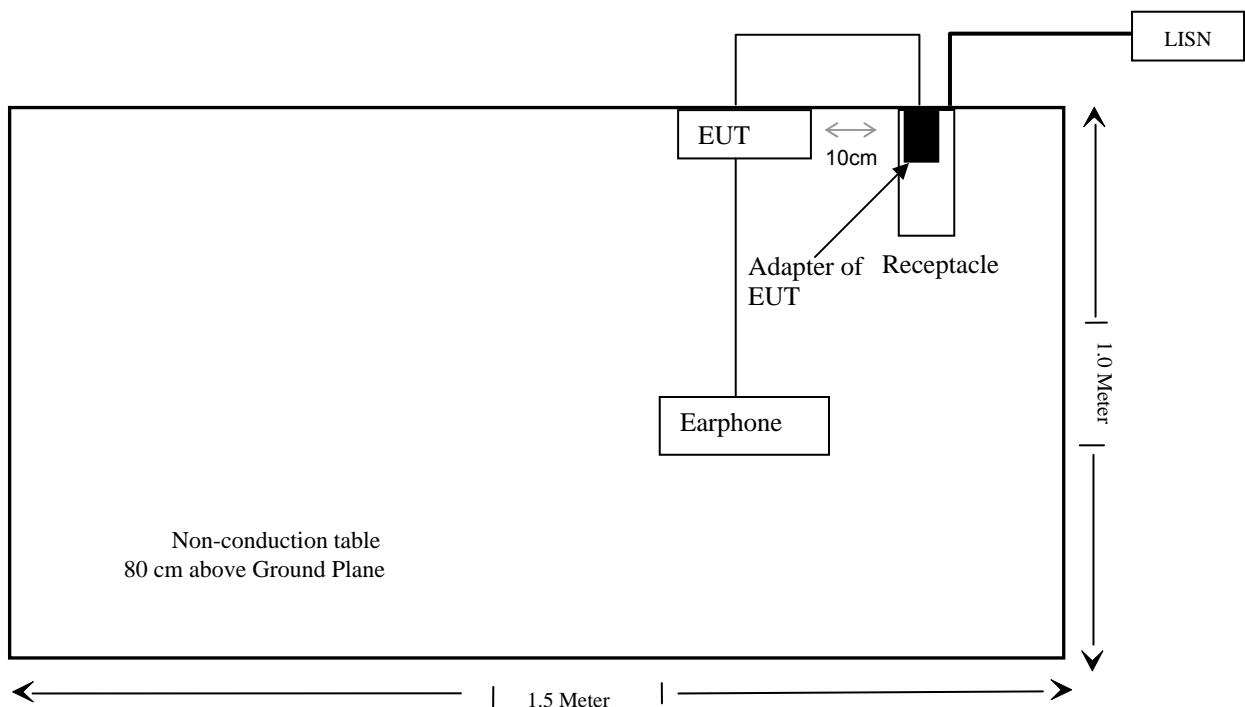


### Block Diagram of Test Setup

For PC charging & downloading



For adapter charging & media playing



**SUMMARY OF TEST RESULTS**

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

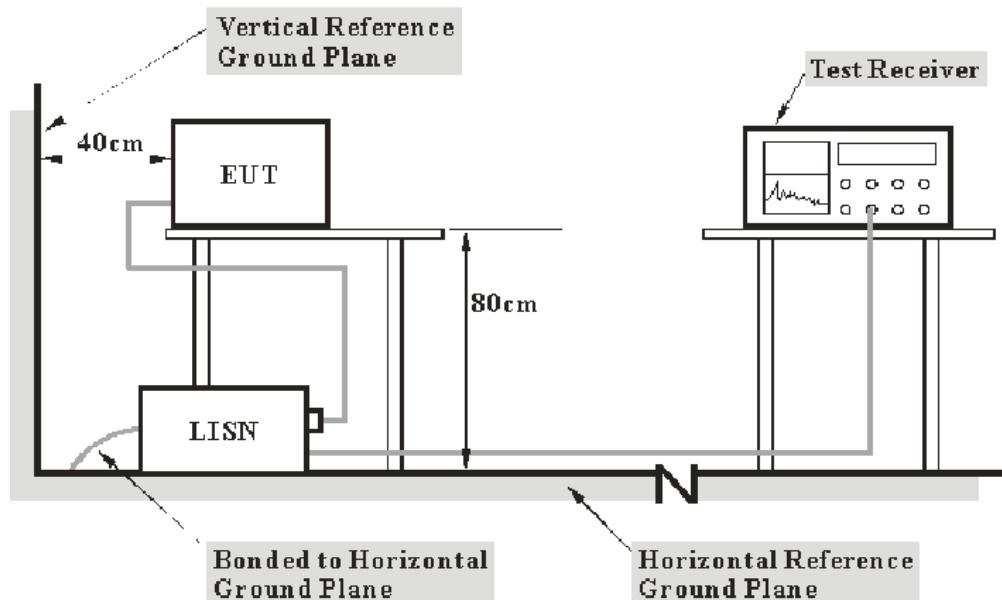
## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### 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 C63.4-2003 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& media playing 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:

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

## 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>
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; adapter of EUT was connected to the outlet of the LISN for adapter charging & media playing 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:

**12.07 dB at 0.420 MHz in the Line conducted mode for PC charging & Downloading mode**

## Test Data

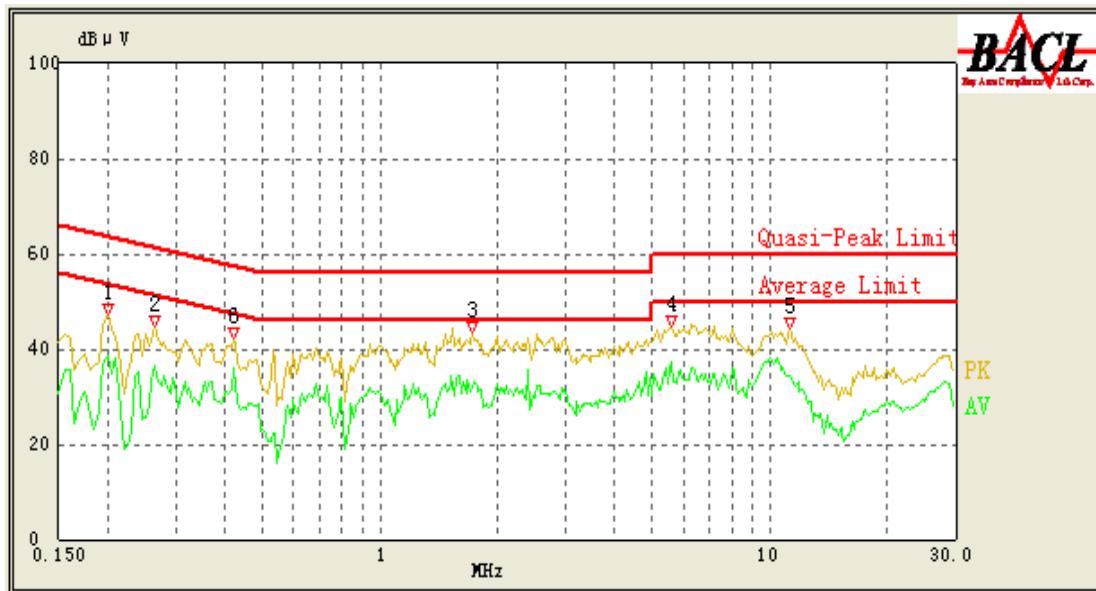
### Environmental Conditions

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

*The testing was performed by Jim Huang on 2011-06-10.*

*Test Mode: PC Charging & Downloading*

**AC 120V/60 Hz, Line**



Conducted Emissions			FCC Part 15.107, Class B		
Frequency (MHz)	Corrected Result (dB $\mu$ V)	Correction Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Remark (PK/ QP/Ave.)
0.420	36.22	10.10	48.29	12.07	Ave.
1.735	33.32	10.10	46.00	12.68	Ave.
5.610	37.31	10.10	50.00	12.69	Ave.
1.730	41.54	10.10	56.00	14.46	QP
11.220	34.19	10.10	50.00	15.81	Ave.
0.200	38.44	10.10	54.57	16.13	Ave.
0.265	36.33	10.10	52.71	16.38	Ave.
0.420	40.72	10.10	58.29	17.57	QP
5.610	41.48	10.10	60.00	18.52	QP
11.235	39.69	10.10	60.00	20.31	QP
0.200	42.66	10.10	64.57	21.91	QP
0.265	40.19	10.10	62.71	22.52	QP

## AC 120V/60 Hz, Neutral



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Result (dB $\mu$ V)	Correction Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Remark (PK/ QP/Ave.)
0.200	38.61	10.10	54.57	15.96	Ave.
0.315	33.25	10.10	51.29	18.04	Ave.
11.225	31.54	10.10	50.00	18.46	Ave.
2.660	27.22	10.10	46.00	18.78	Ave.
0.200	43.86	10.10	64.57	20.71	QP
5.120	27.84	10.10	50.00	22.16	Ave.
5.365	27.44	10.10	50.00	22.56	Ave.
0.315	38.70	10.10	61.29	22.59	QP
2.690	32.11	10.10	56.00	23.89	QP
5.110	36.08	10.10	60.00	23.92	QP
5.425	35.88	10.10	60.00	24.12	QP
11.180	34.16	10.10	60.00	25.84	QP

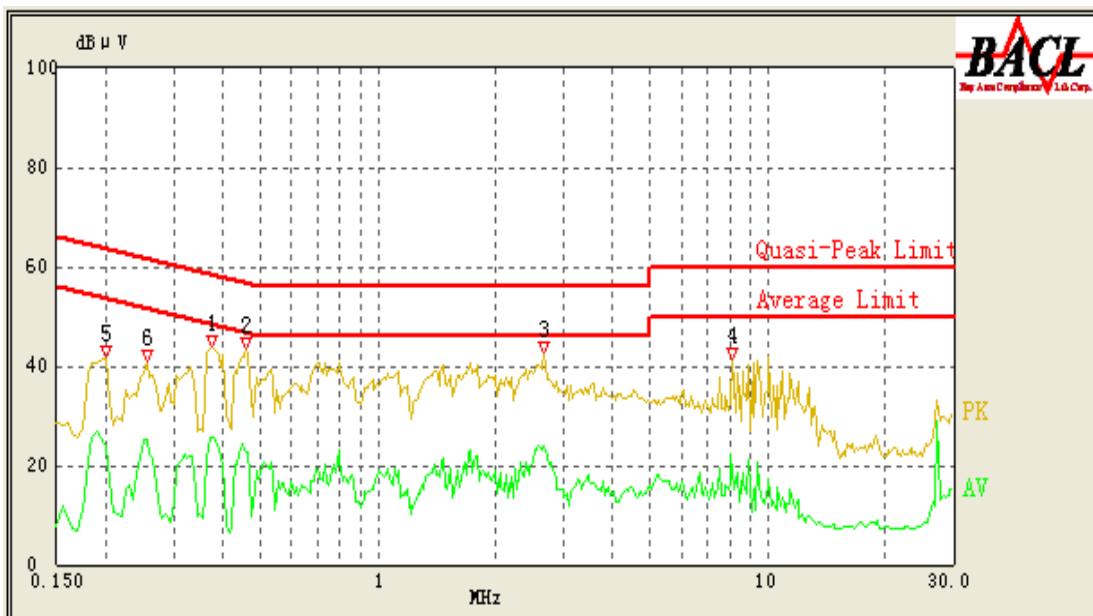
*Test Mode: Adapter Charging & Media Playing*

**AC 120V/60 Hz, Line**



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Result (dB $\mu$ V)	Correction Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Remark (PK/ QP/Ave.)
27.120	29.79	10.10	50.00	20.21	Ave.
27.120	38.32	10.10	60.00	21.68	QP
0.370	31.81	10.10	59.71	27.90	QP
0.470	26.73	10.10	56.86	30.13	QP
0.470	15.89	10.10	46.86	30.97	Ave.
0.185	33.85	10.10	65.00	31.15	QP
0.255	30.88	10.10	63.00	32.12	QP
0.370	17.16	10.10	49.71	32.55	Ave.
0.255	19.81	10.10	53.00	33.19	Ave.
0.185	19.85	10.10	55.00	35.15	Ave.
9.480	13.43	10.10	50.00	36.57	Ave.
9.480	21.31	10.10	60.00	38.69	QP

## AC 120V/60 Hz, Neutral



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Result (dB $\mu$ V)	Correction Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Remark (PK/ QP/Ave.)
0.460	35.90	10.10	57.14	21.24	QP
0.375	38.02	10.10	59.57	21.55	QP
2.660	23.85	10.10	46.00	22.15	Ave.
2.660	32.68	10.10	56.00	23.32	QP
0.375	25.47	10.10	49.57	24.10	Ave.
0.460	22.53	10.10	47.14	24.61	Ave.
0.255	35.96	10.10	63.00	27.04	QP
0.200	37.30	10.10	64.57	27.27	QP
8.050	22.29	10.10	50.00	27.71	Ave.
0.255	25.12	10.10	53.00	27.88	Ave.
8.065	31.41	10.10	60.00	28.59	QP
0.200	24.02	10.10	54.57	30.55	Ave.

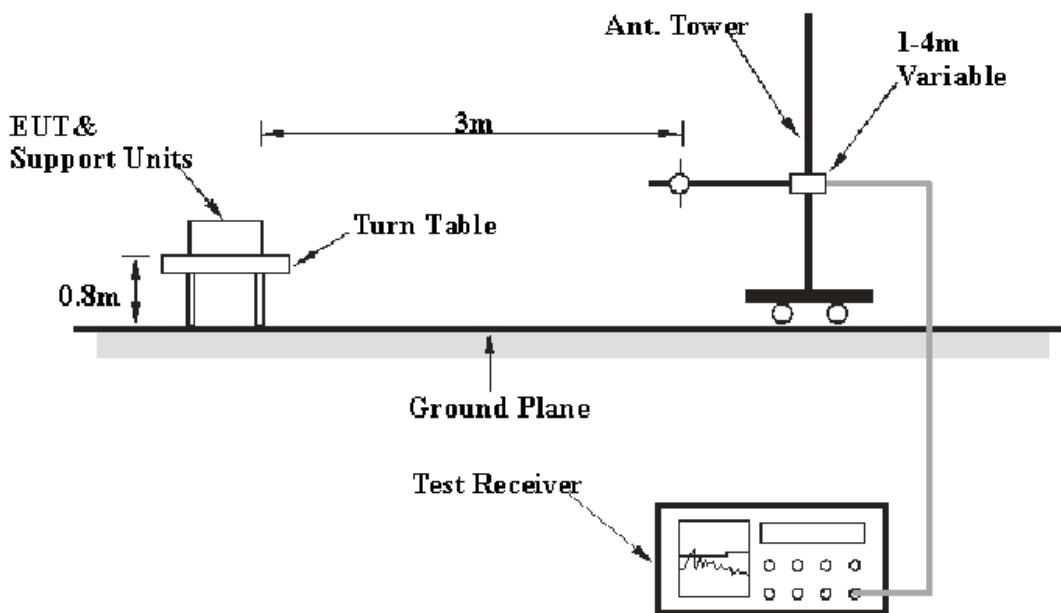
## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### 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 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& media playing 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:

<b><i>Frequency</i></b>	<b><i>RB/W</i></b>	<b><i>VB/W</i></b>	<b><i>IF B/W</i></b>	<b><i>Detection</i></b>
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	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; the adapter of EUT was connected to AC floor outlet for adapter charging &media playing mode.

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

All 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:

**4.1 dB at 331.104500 MHz in the Horizontal polarization**

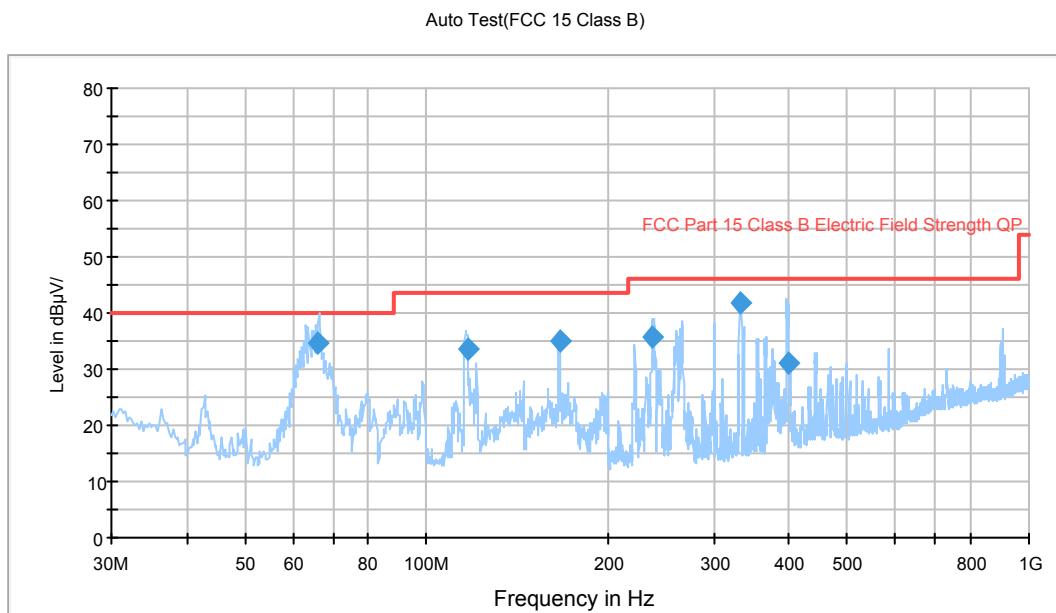
## Test Data

### Environmental Conditions

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

The testing was performed by Jim Huang on 2011-06-10.

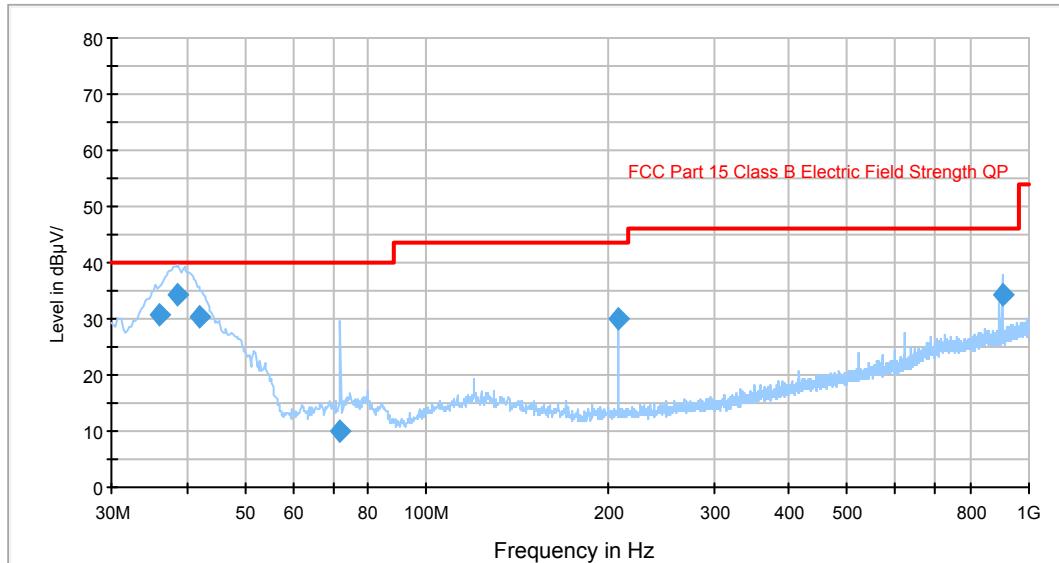
Test Mode: PC Charging & Downloading



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Test Antenna		Turntable Position (degree)	Limit (dBµV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)			
331.104500	41.9	100.0	H	251.0	46.0	4.1
66.249250	34.7	119.0	V	0.0	40.0	5.3
237.337500	35.6	298.0	V	164.0	46.0	10.4
166.527500	35.0	368.0	V	229.0	46.0	11.0
116.815000	33.7	215.0	V	43.0	46.0	12.3
397.569500	31.2	100.0	H	212.0	46.0	14.8

*Test Mode: Adapter Charging & Media Playing*

Auto Test(FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dB $\mu$ V/m)	Test Antenna		Turntable Position (degree)	Limit (dB $\mu$ V/m)	Margin (dB)
		Height (cm)	Polarity (H/V)			
38.747250	34.3	120.0	V	92.0	40.0	5.7
35.917000	30.8	100.0	V	208.0	40.0	9.2
42.154000	30.3	100.0	V	97.0	40.0	9.7
902.074500	34.3	154.0	H	320.0	46.0	11.7
208.019000	29.9	121.0	H	147.0	43.5	13.6
71.901500	9.8	100.0	V	203.0	40.0	30.2

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