

FCC PART 15 CLASS B TEST REPORT

For

b mobile HK Limited

G/F., 144 UN CHAU STREET, SHAM SHUI PO, KOWLOON, HONG KONG

FCC ID: ZSW-QS810

Report Type: Original Report	Product Type: GSM Mobile Phone
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Report Number: RSZ120621001-00A	
Report Date: 2012-07-16	
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* 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 *b mobile HK Limited*'s product, model number: *QS810 (FCC ID: ZSW-QS810)* or the "EUT" in this report was a *GSM Mobile Phone*, which was measured approximately: 11.1 cm (L) x 5.7 cm (W) x 1.5 cm (H), rated input voltage: DC 3.7 V Li-ion battery or DC 5.0 V charging from adapter. The highest operating frequency is 104 MHz.

Adapter information:

Input: AC 110-240V, 50-60Hz, 150mA

Output: DC 5.0V, 500mA

** All measurement and test data in this report was gathered from production sample serial number: 00493 (Assigned by applicant). The EUT was received on 2012-06-21.*

Objective

This test report is prepared on behalf of *b mobile HK 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 the compliance of the EUT with FCC Part 15 B.

Related Submittal(s)/Grant(s)

Part 22H/24E PCE and 15.247 DSS/DTS submissions with FCC ID: ZSW-QS810

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

Description of Test Configuration

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

EUT Exercise Software

“winthrax” exercise software was used for downloading test mode.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

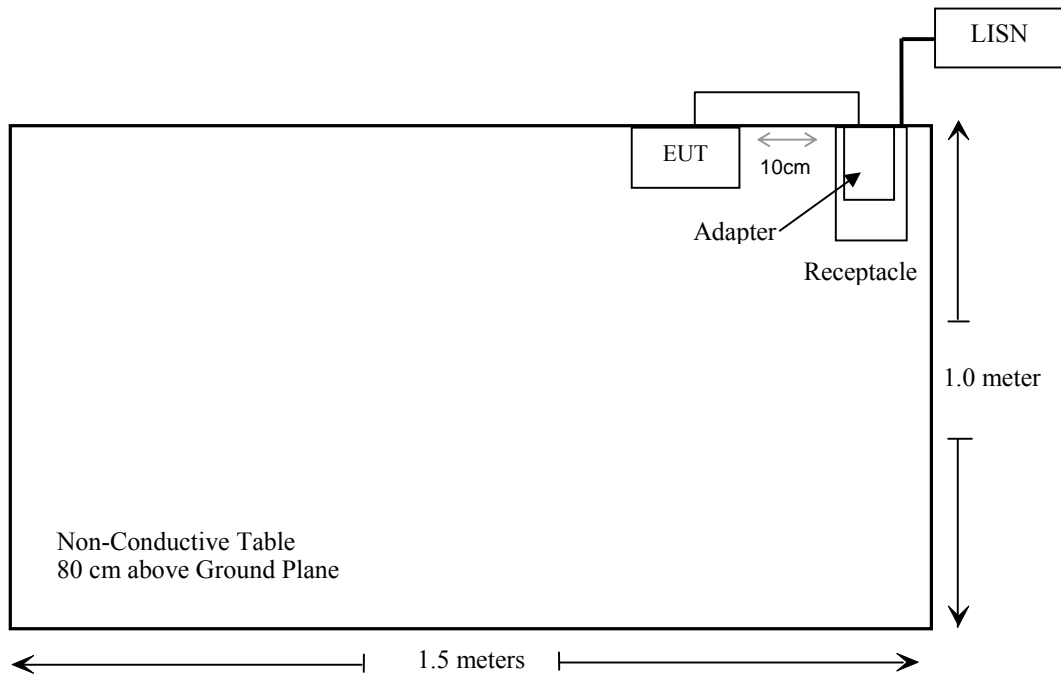
Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Mouse	MOC5UO	G1900NKD
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
SAST	Modem	AEM-2100	0293

External I/O Cable

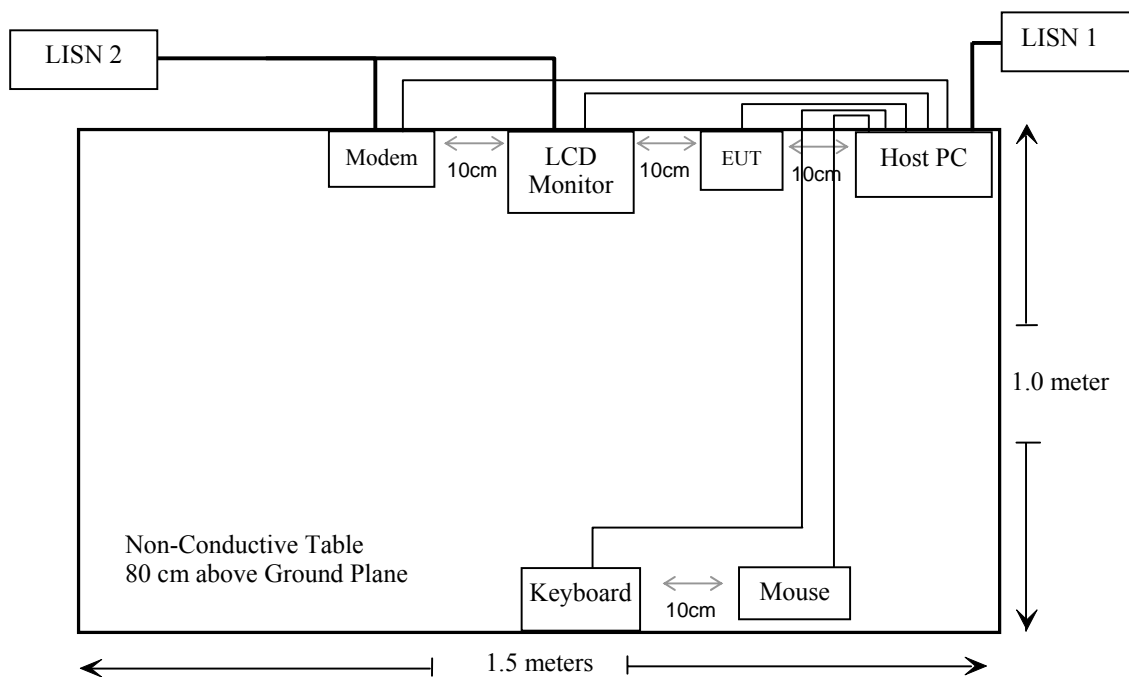
Cable Description	Length (m)	From/Port	To
Shielded Detachable USB Cable	1.5	Host PC	Mouse
Shielded Detachable Serial Cable	1.5	Host PC	Modem
Shielded Detachable K/B Cable	1.5	Host PC	Keyboard
Shielded Detachable VGA Cable	1.8	Host PC	LCD Monitor
Unshielded Detachable USB Cable	1.0	EUT	Host PC

Block Diagram of Test Setup

For charging mode:



For 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

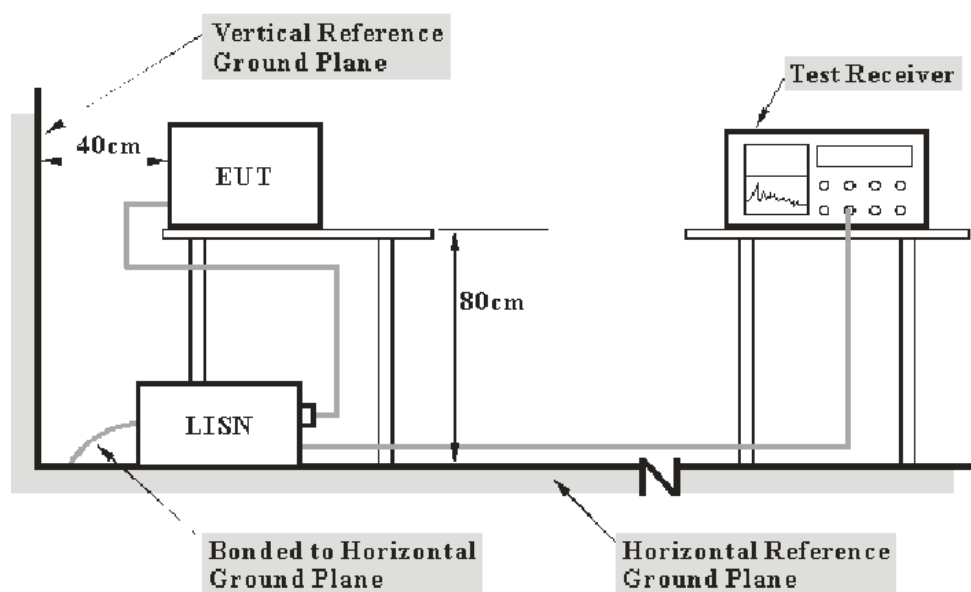
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

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 CISPR 16-4-2, 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 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 host PC 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 host PC was connected to the outlet of the first LISN, and the other relevant equipments were connected to 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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-11-17	2012-11-16
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A
Rohde & Schwarz	Attenuator	ESH3Z2	DE25985	2011-07-08	2012-07-07
BACL	CE Test software	BACL-CE	V1.0	N/A	N/A

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

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Pulse Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Pulse Limiter Attenuation}$$

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 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 recorded data in following table, the worst margin reading of:

9.08 dB at 9.250 MHz in the Line conducted mode (downloading mode)

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m \pm U_{(L_m)} \leq L_{lim} \pm U_{cispr}$$

$$\text{or } U_{(L_m)} \leq \text{Margin} \pm U_{cispr}$$

The measurement result of EUT is below the limit level by a margin 9.08 dB and $U_{(L_m)}(2.4\text{dB}) \leq \text{Margin}(9.08\text{ dB}) + U_{cispr}(3.4\text{ dB})$, so the EUT complies with the limit of the FCC Part 15.107 Class B.

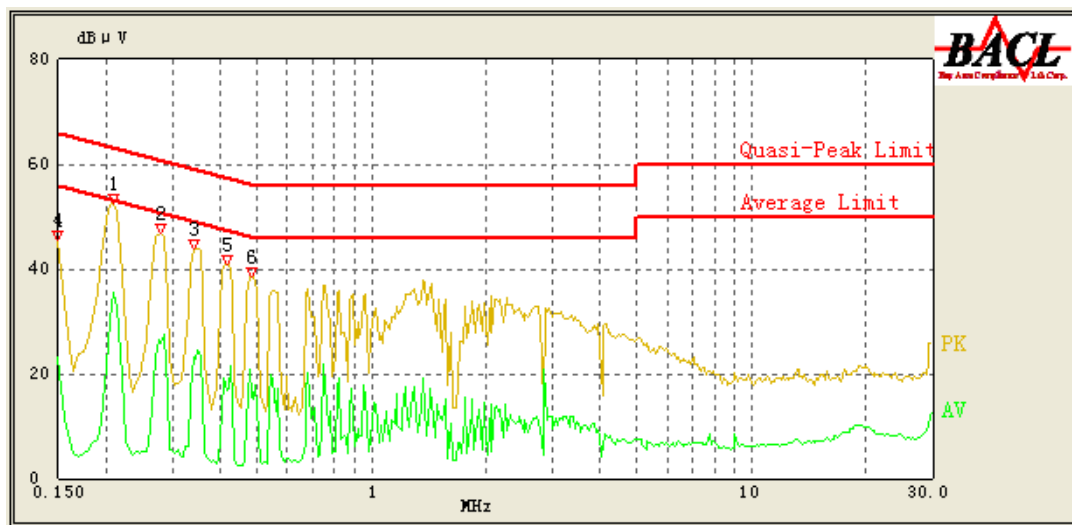
Test Data**Environmental Conditions**

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

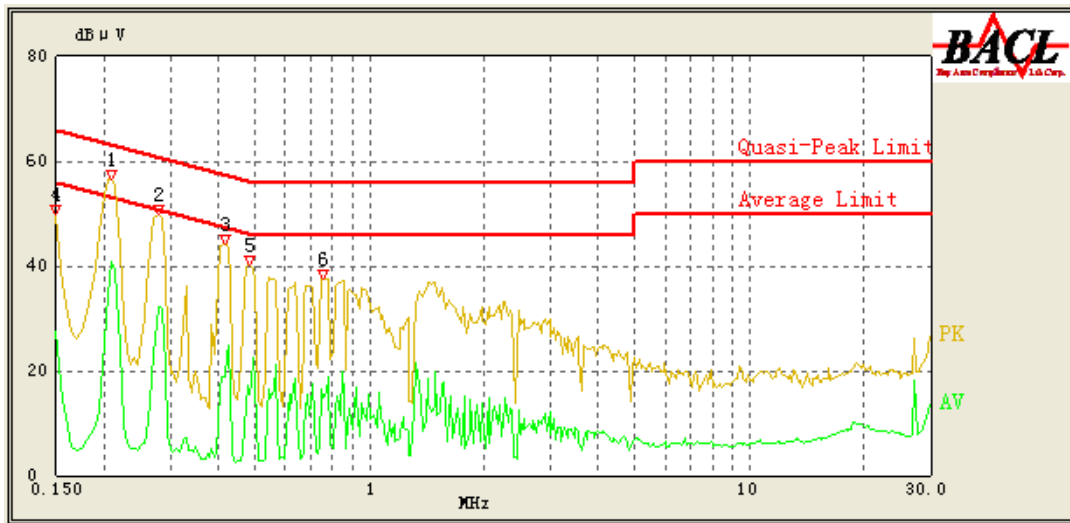
The testing was performed by Jimmy Xiao on 2012-07-03.

EUT Operation Mode: Charging

AC 120V/60 Hz, Line



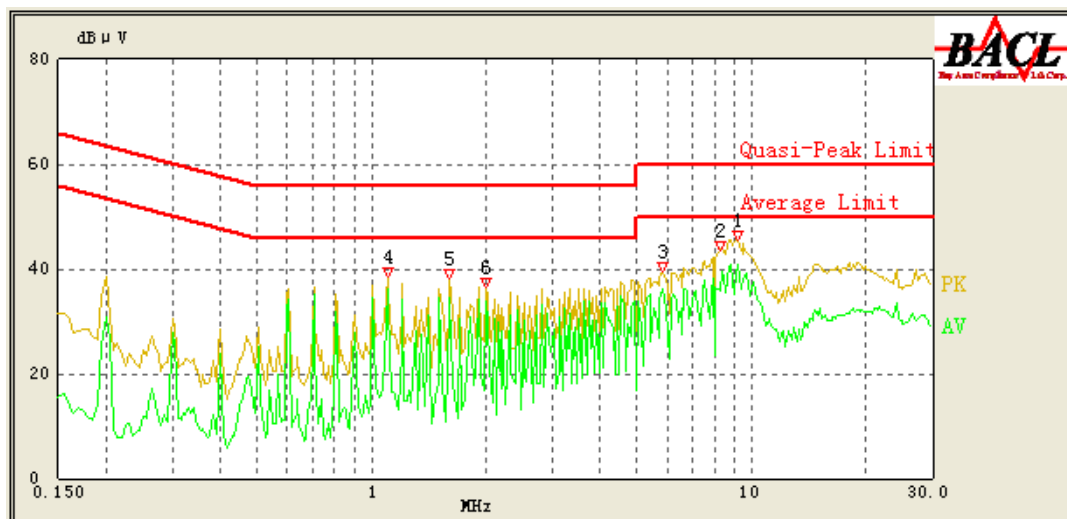
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.210	48.81	9.67	64.29	15.48	QP
0.210	35.56	9.67	54.29	18.73	Ave.
0.280	43.24	9.66	62.29	19.05	QP
0.340	39.86	9.66	60.57	20.71	QP
0.415	36.04	9.67	58.43	22.39	QP
0.485	33.22	9.68	56.43	23.21	QP
0.150	40.68	9.67	66.00	25.32	QP
0.280	25.86	9.66	52.29	26.43	Ave.
0.340	23.28	9.66	50.57	27.29	Ave.
0.485	15.82	9.68	46.43	30.61	Ave.
0.415	16.68	9.67	48.43	31.75	Ave.
0.150	23.15	9.67	56.00	32.85	Ave.

AC 120V/60 Hz, Neutral

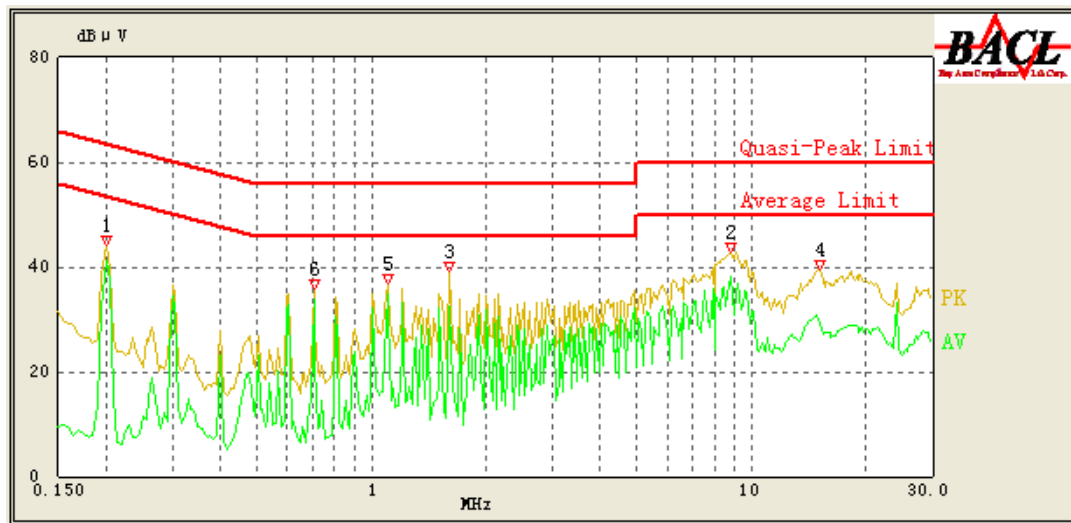
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.210	41.00	9.64	54.29	13.29	Ave.
0.210	50.57	9.64	64.29	13.72	QP
0.280	43.57	9.65	62.29	18.72	QP
0.415	38.90	9.67	58.43	19.53	QP
0.280	32.13	9.65	52.29	20.16	Ave.
0.485	34.70	9.68	56.43	21.73	QP
0.755	31.80	9.78	56.00	24.20	QP
0.150	40.44	9.64	66.00	25.56	QP
0.150	27.47	9.64	56.00	28.53	Ave.
0.415	18.95	9.67	48.43	29.48	Ave.
0.485	15.38	9.68	46.43	31.05	Ave.
0.755	14.80	9.78	46.00	31.20	Ave.

EUT Operation Mode: Downloading (data transmits with Computer)

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
9.250	40.92	10.25	50.00	9.08	Ave.
1.105	36.20	9.87	46.00	9.80	Ave.
1.610	34.43	9.89	46.00	11.57	Ave.
2.010	33.99	9.90	46.00	12.01	Ave.
5.830	36.18	10.05	50.00	13.82	Ave.
8.245	35.90	10.19	50.00	14.10	Ave.
9.250	42.33	10.25	60.00	17.67	QP
1.105	36.59	9.87	56.00	19.41	QP
8.240	39.98	10.19	60.00	20.02	QP
1.610	35.17	9.89	56.00	20.83	QP
2.010	34.44	9.90	56.00	21.56	QP
5.830	36.82	10.05	60.00	23.18	QP

AC 120V/60 Hz, Neutral

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
1.105	34.73	9.87	46.00	11.27	Ave.
8.845	38.17	10.22	50.00	11.83	Ave.
0.705	33.74	9.76	46.00	12.26	Ave.
1.610	32.61	9.89	46.00	13.39	Ave.
0.200	41.08	9.64	54.57	13.49	Ave.
8.845	40.69	10.22	60.00	19.31	QP
15.110	29.30	11.07	50.00	20.70	Ave.
1.105	35.18	9.87	56.00	20.82	QP
0.705	34.10	9.76	56.00	21.90	QP
1.610	33.82	9.89	56.00	22.18	QP
0.200	41.81	9.64	64.57	22.76	QP
15.170	33.42	11.09	60.00	26.58	QP

Note:

- 1) Corrected Amplitude = Reading + Correction Factor
- 2) Correction Factor = LISN/ISN VDF (Voltage Division Factor) + Cable Loss + Pulse Limiter Attenuation
The corrected factor has been input into the transducer of the test software.
- 3) Margin = Limit – Corrected Amplitude

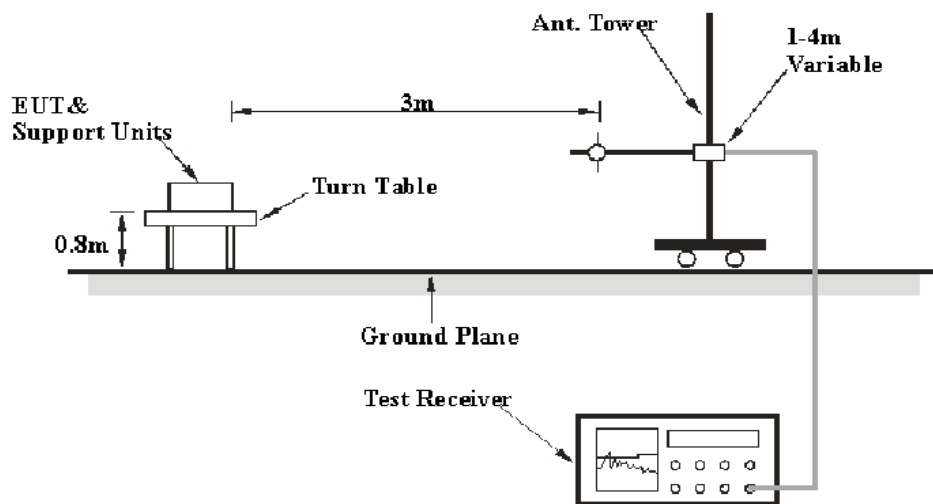
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

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 CISPR 16-4-2, the Treatment of Uncertainty in EMC Measurements, the estimation of the uncertainty of radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 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 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 host PC was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

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

Test Procedure

For the radiated emissions test, the host PC and relevant equipments were connected to AC floor outlet for downloading 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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
R&S	Auto test Software	Auto test Software	V6.30	N/A	N/A

* **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.

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 Results Summary

According to the data in the following table, the worst margin reading is below:

1.6 dB at 246.371500 MHz in the Horizontal polarization

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(L_m)} \leq L_{lim} + U_{cispr}$$
$$\text{or } U_{(L_m)} \leq Margin + U_{cispr}$$

The measurement result of EUT is below the limit level by a margin 1.6 dB and $U_{(L_m)}(4\text{dB}) \leq Margin(1.6\text{ dB}) + U_{cispr}(6.3\text{dB})$,
so the EUT complies with the limit of the FCC Part 15.109 Class B.

Test Data

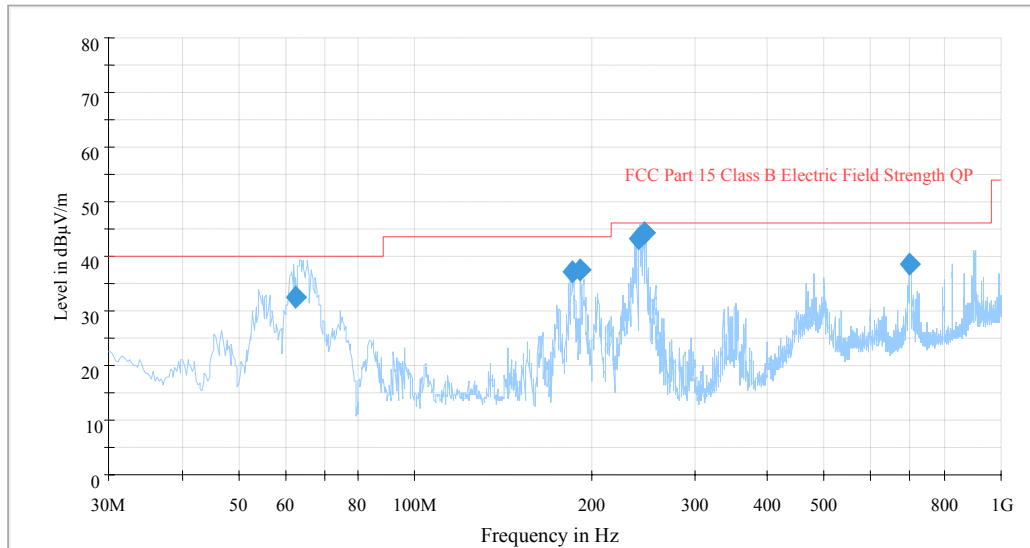
Environmental Conditions

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

The testing was performed by Jimmy Xiao on 2012-07-04.

EUT Operation Mode: 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)				
246.371500	44.4	144.0	H	130.0	-13.6	46.0	1.6*
239.958250	43.4	122.0	H	116.0	-13.7	46.0	2.6*
192.000250	37.5	138.0	H	232.0	-14.7	43.5	6.0
185.311500	37.2	129.0	H	256.0	-15.0	43.5	6.3
697.845000	38.6	105.2	V	68.0	-3.1	46.0	7.4
62.630000	32.5	122.0	V	314.0	-18.6	40.0	7.5

*within measurement uncertainty!

Note:

- 1) Corrected Amplitude = Meter Reading + Correction Factor
- 2) Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain
The corrected factor has been input into the transducer of the test software.
- 3) Margin = Limit – Corrected Amplitude

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