FCC PART 15B, CLASS B

TEST REPORT

For

RTX Hong Kong Ltd.

8/F Corporation Square, 8 Lam Lok Street, Kowloon Bay, Hong Kong

FCC ID: T7HCT8131

Report Type:	**Product Type:**
Original Report	8252 Smart DECT Handset

Test Engineer:	Rocky Kang
Report Number:	RSZ130427005-00C
Report Date:	2013-06-28
Reviewed By:	Alvin Huang RF Leader
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *RTX Hong Kong Ltd.*'s product, model number: *8252 Smart DECT Handset (FCC ID: T7HCT8131)* or the "EUT" in this report was a *8252 Smart DECT Handset,* which was measured approximately: 14.1 cm (L) x 5.1 cm (W) x 2.5 cm (H), rated with input voltage: DC 3.7V rechargeable Li-ion battery or DC 5.0 V charging from adapter. The highest operating frequency is 800 MHz.

Adapter Information:
Model: FW7713
Input: 100-240V~50/60Hz, 0.15A
Output: DC 5.0V, 1.0A

** All measurement and test data in this report was gathered from production sample serial number: RTXYYWWXXXXX (Assigned by the applicant). The EUT supplied by the applicant was received on 2013-04-27.*

Objective

This test report is prepared on behalf of *RTX Hong Kong 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 15 B.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS, FCC Part 15.247 DTS and FCC Part15D PUE submission with FCC ID: T7HCT8131.

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.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

EUT Operation mode 1: Downloading (data transforms with Computer)

EUT Operation mode 2: Charging

EUT Exercise Software

"winthrax" exercise software was used.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

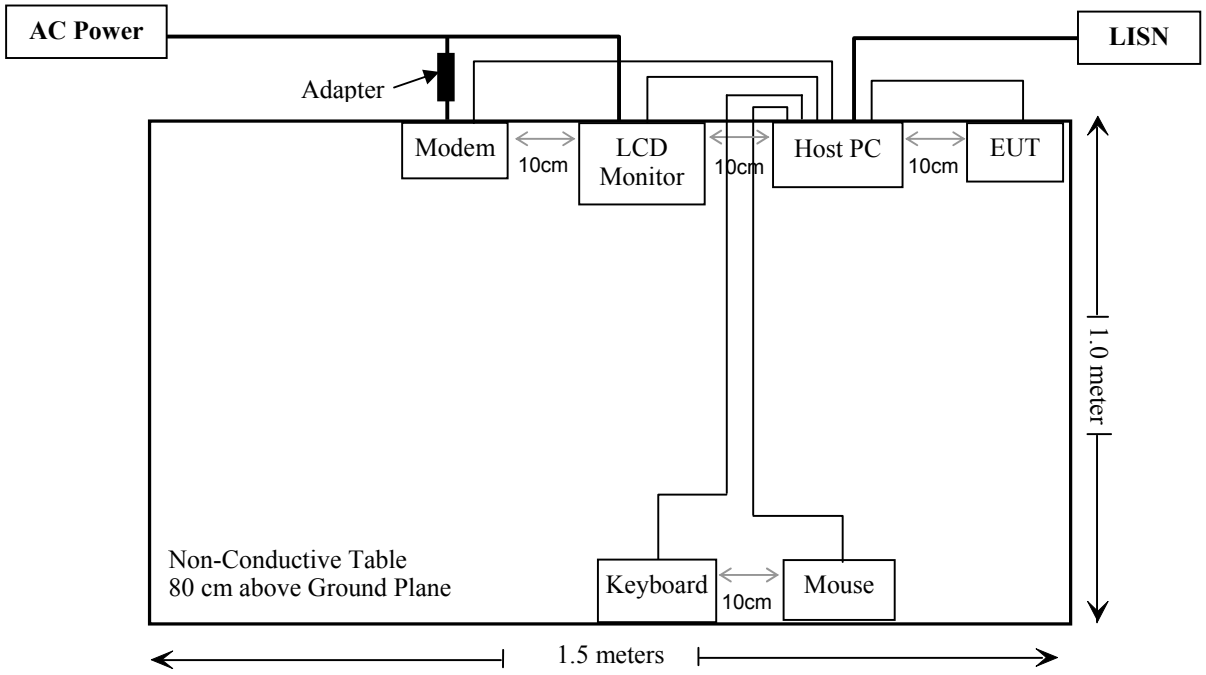
Manufacturer	Description	Model	Serial Number
DELL	Host PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Mouse	MOC5UO	G1900NKD
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
SAST	Modem	AEM-2100	0293
Kingston	Micro SD card	4 GB	/

External I/O Cable

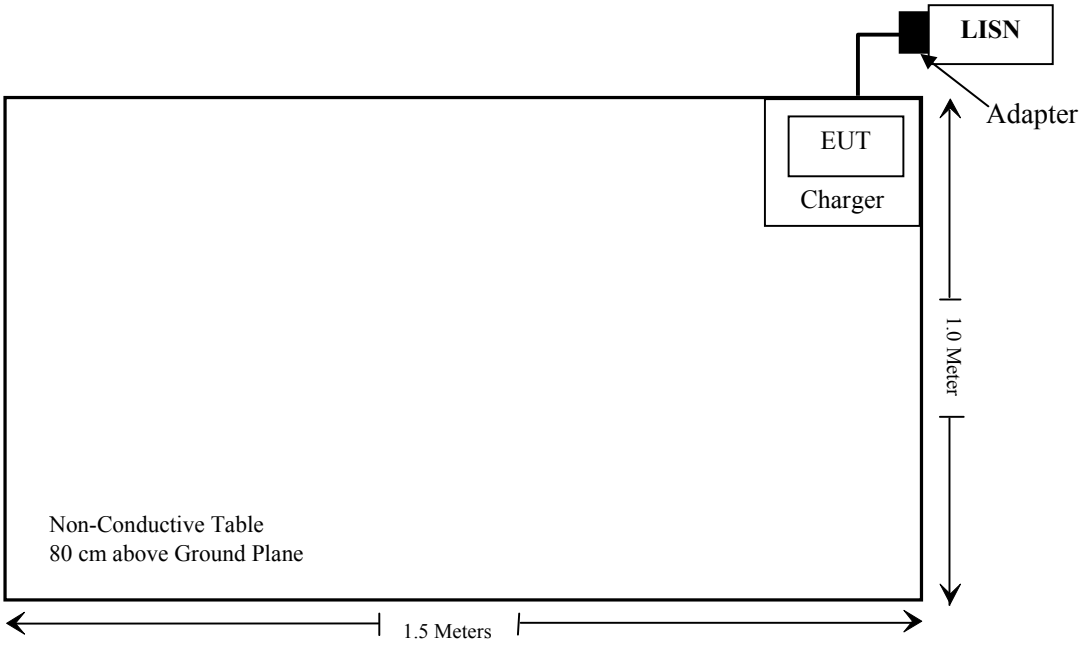
Cable Description	Length (m)	From/Port	To
Unshielded Detachable AC Cable	1.2	Host PC	LISN
Unshielded Detachable AC Cable	1.2	Host PC	Monitor
Unshielded Detachable AC Cable	1.0	Adapter	Modem
Shielded Undetachable K/B Cable	1.5	Host PC	Keyboard
Shielded Undetachable Mouse Cable	1.5	Host PC	Mouse
Shielded Detachable RS232 Cable	1.2	Host PC	Modem
Shielded Detachable VGA Cable	1.5	Host PC	LCD Monitor
Shielded Undetachable USB Cable	0.6	Host PC	EUT
Unshielded Detachable Adapter Cable	2.0	Charger	Adapter

Block Diagram of Test Setup

EUT Operation mode 1:



EUT Operation mode 2:



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

Applicable Standard

According to FCC §15.107

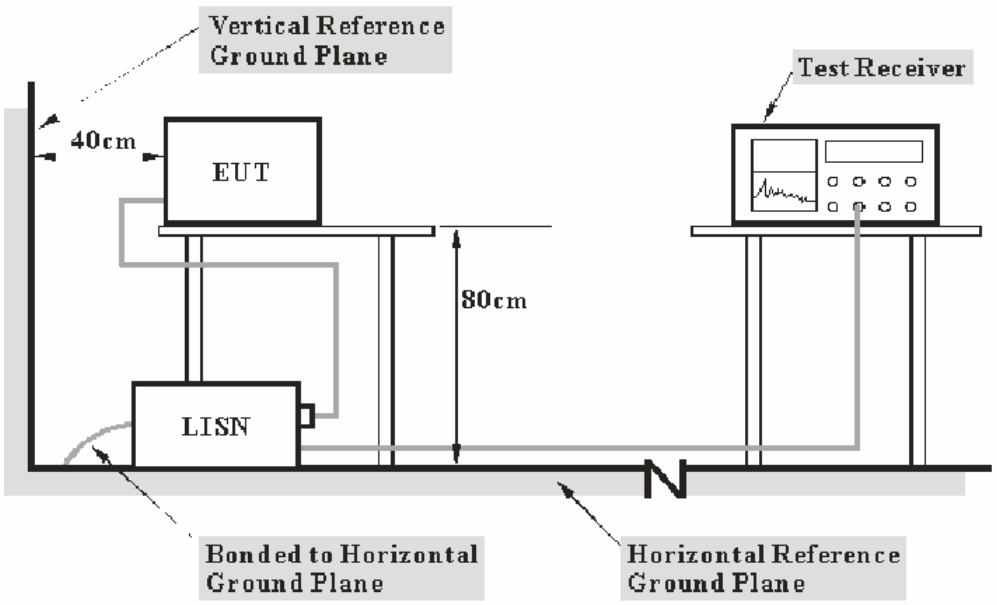
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between AMN/ISN and receiver, AMN/ISN voltage division factor, AMN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Measurement uncertainty
AC Mains	3.26 dB (k=2, 95% level of confidence)
CAT 3	3.70 dB (k=2, 95% level of confidence)
CAT 5	3.86 dB (k=2, 95% level of confidence)
CAT 6	4.64 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 measurement procedure of EUT setup is according with per ANSI C63.4-2009. The related limit was specified in FCC Part 15.107 Class B.

The spacing between the peripherals was 10 cm.

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 Procedure

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	ESCI	101122	2013-05-09	2014-05-09
Rohde & Schwarz	LISN	ESH2-Z5	892107/021	2012-08-22	2013-08-22
Rohde & Schwarz	Transient limiter	ESH3Z2	DE25985	2012-08-09	2013-08-09
BACL	CE Test software	BACL-CE	V1.0	-	-

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Corrected Factor & Margin Calculation

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

Correction Factor = LISN VDF + Cable Loss + Transient 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

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

7.4 dB at **8.947432 MHz** in the **Line** conducted mode

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

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

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

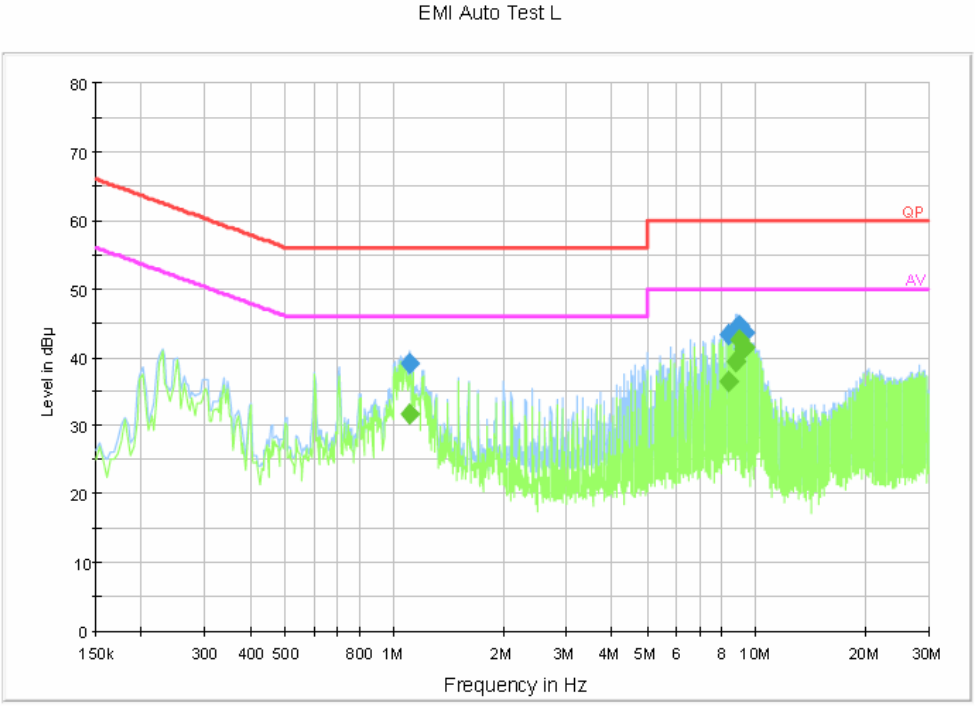
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Rocky Kang on 2013-06-27.

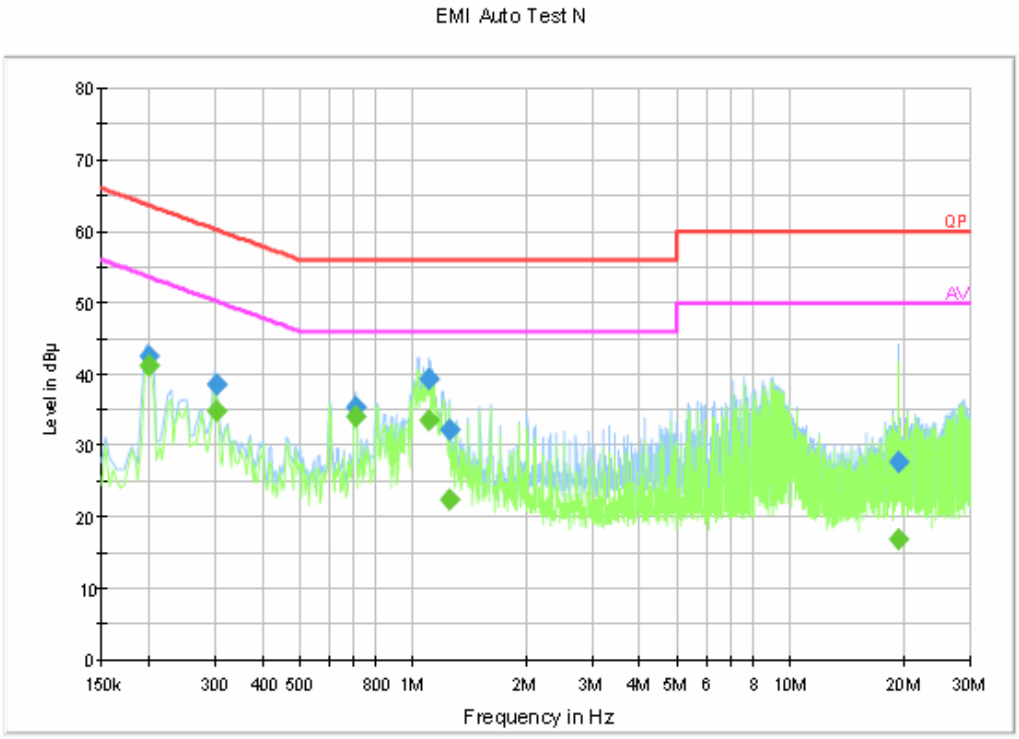
EUT Operation mode 1:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
8.947432	42.6	0.6	50.0	7.4	Ave.
9.353621	41.4	0.6	50.0	8.6	Ave.
9.248725	41.3	0.6	50.0	8.7	Ave.
8.843927	39.4	0.6	50.0	10.6	Ave.
8.440335	36.4	0.5	50.0	13.6	Ave.
1.099790	31.6	0.4	46.0	14.4	Ave.
8.947456	44.6	0.6	60.0	15.4	QP
8.843927	44.1	0.6	60.0	15.9	QP
9.348923	43.7	0.6	60.0	16.3	QP
9.248725	43.5	0.6	60.0	16.5	QP
8.440335	43.3	0.5	60.0	16.7	QP
1.099790	39.0	0.4	56.0	17.0	QP

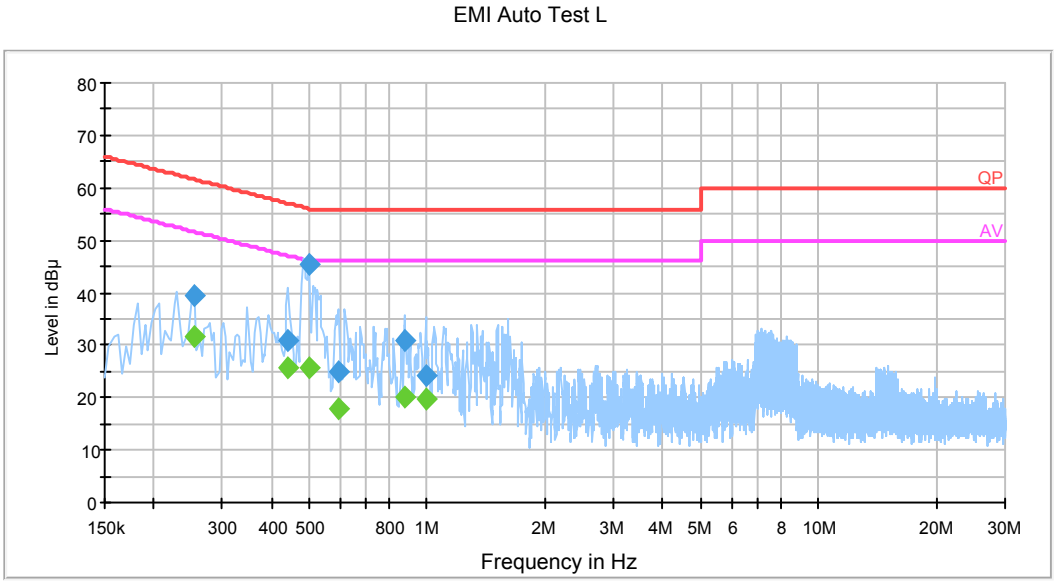
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.703732	34.2	0.4	46.0	11.8	Ave.
0.200374	41.2	0.3	53.6	12.4	Ave.
1.103336	33.6	0.4	46.0	12.5	Ave.
0.303109	35.0	0.3	50.2	15.2	Ave.
1.103336	39.4	0.4	56.0	16.6	QP
0.703732	35.3	0.4	56.0	20.7	QP
0.200374	42.4	0.3	63.6	21.1	QP
0.303109	38.5	0.30	60.2	21.7	QP
1.255783	22.5	0.4	46.0	23.5	Ave.
1.255783	32.3	0.4	56.0	23.7	QP
19.322899	27.9	0.7	60.0	32.1	QP
19.322899	16.9	0.7	50.0	33.1	Ave.

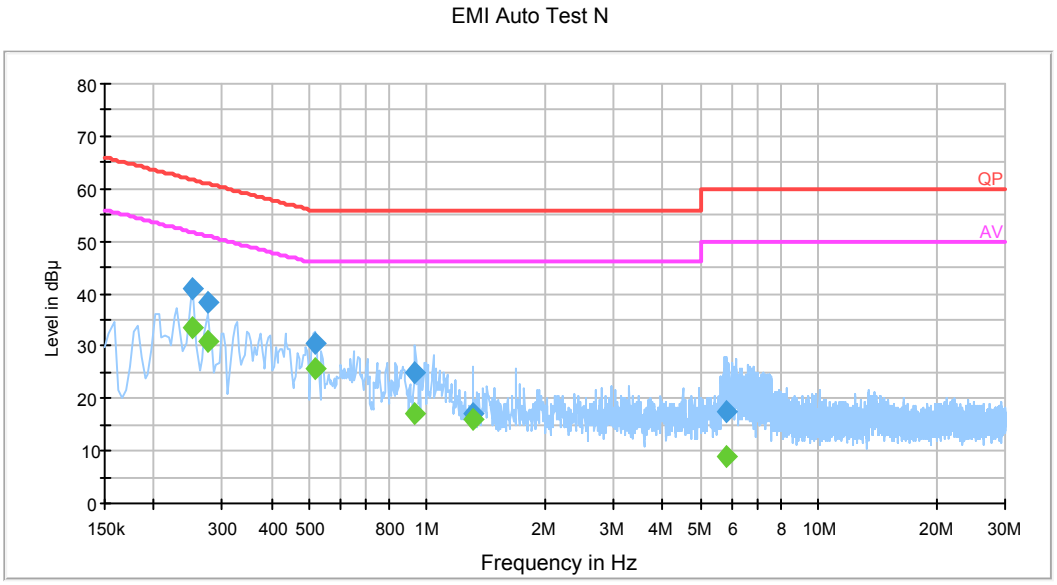
EUT Operation mode 2:

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.498000	45.5	19.5	56.0	10.5	QP
0.254000	31.6	19.5	51.6	20.0	Ave.
0.498000	25.6	19.5	46.0	20.4	Ave.
0.442000	25.6	19.5	47.0	21.4	Ave.
0.254000	39.4	19.5	61.6	22.2	QP
0.874000	30.8	19.5	56.0	25.2	QP
0.442000	31.0	19.5	57.0	26.0	QP
0.874000	20.0	19.5	46.0	26.0	Ave.
0.990000	19.7	19.5	46.0	26.3	Ave.
0.594000	17.8	19.5	46.0	28.2	Ave.
0.594000	25.1	19.5	56.0	30.9	QP
0.990000	24.1	19.5	56.0	31.9	QP

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.250000	33.5	19.5	51.8	18.3	Ave.
0.274000	30.8	19.5	51.0	20.2	Ave.
0.518000	25.7	19.5	46.0	20.3	Ave.
0.250000	40.8	19.5	61.8	21.0	QP
0.274000	38.4	19.5	61.0	22.6	QP
0.518000	30.4	19.5	56.0	25.6	QP
0.934000	17.1	19.5	46.0	28.9	Ave.
1.310000	15.9	19.5	46.0	30.1	Ave.
0.934000	24.8	19.5	56.0	31.2	QP
1.310000	17.2	19.5	56.0	38.8	QP
5.842000	9.0	19.7	50.0	41.0	Ave.
5.842000	17.5	19.7	60.0	42.5	QP

Note:
1. Corrected Amplitude = Reading + Correction Factor
2. Correction Factor =LISN/ISN VDF (Voltage Division Factor) + Cable Loss + Transient 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

Applicable Standard

FCC §15.109

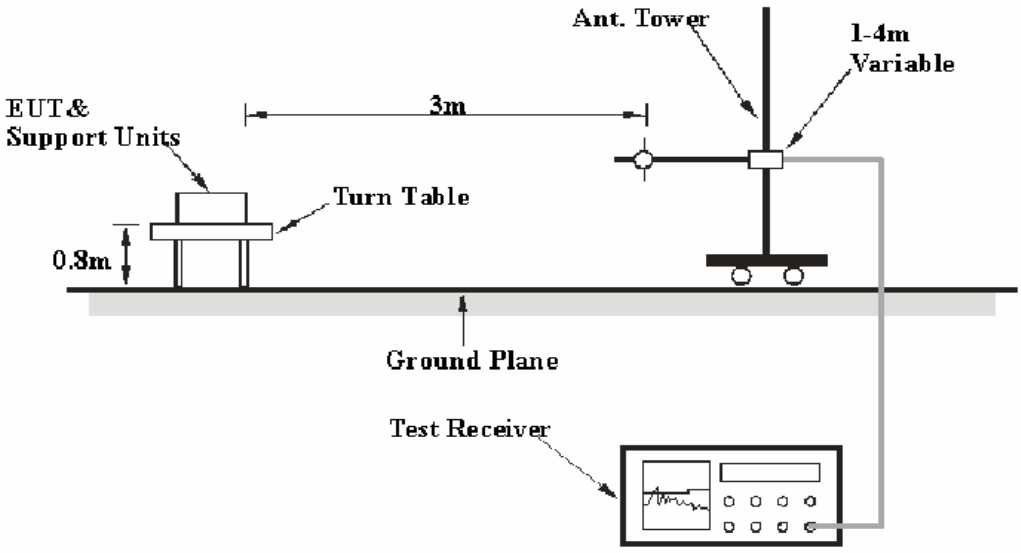
Measurement Uncertainty

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 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report

Frequency	Polarity	Measurement uncertainty
30MHz~200MHz	Horizontal	4.62 dB (k=2, 95% level of confidence)
	Vertical	4.54 dB (k=2, 95% level of confidence)
200MHz~1GHz	Horizontal	4.84 dB (k=2, 95% level of confidence)
	Vertical	5.91 dB (k=2, 95% level of confidence)
1 GHz~6 GHz	Horizontal/Vertical	4.68 dB (k=2, 95% level of confidence)
Above 6 GHz	Horizontal/Vertical	4.92 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.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 6 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	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

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, Peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2012-08-09	2013-08-09
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2013-05-09	2014-05-09
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
SUPER ULTRA	Amplifier	ZVA-213+	N/A	2012-11-24	2013-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2014-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
R&S	Auto test Software	EMC32	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 requirements that traceable to National Primary Standards and International System of Units (SI).

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:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, with the worst margin reading of:

7.3 dB at **314.006600 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

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

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

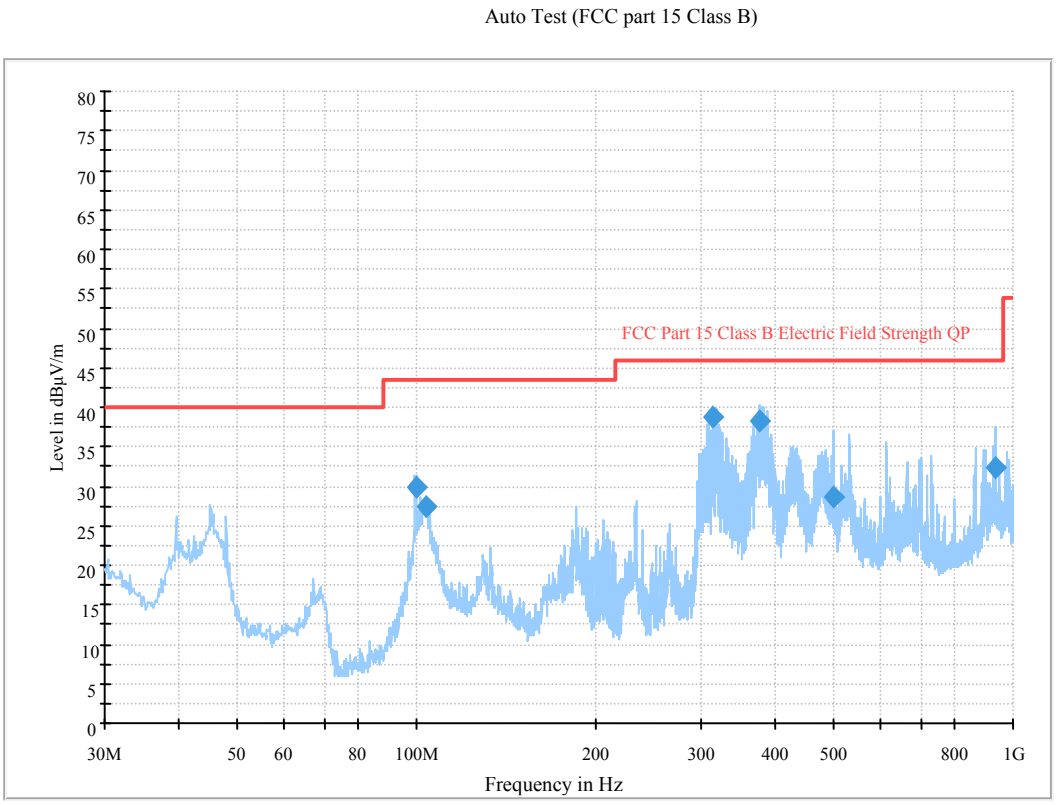
Environmental Conditions

Temperature:	25℃
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Rocky Kang on 2013-06-27.

EUT Operation mode 1:

1) 30 MHz~1 GHz



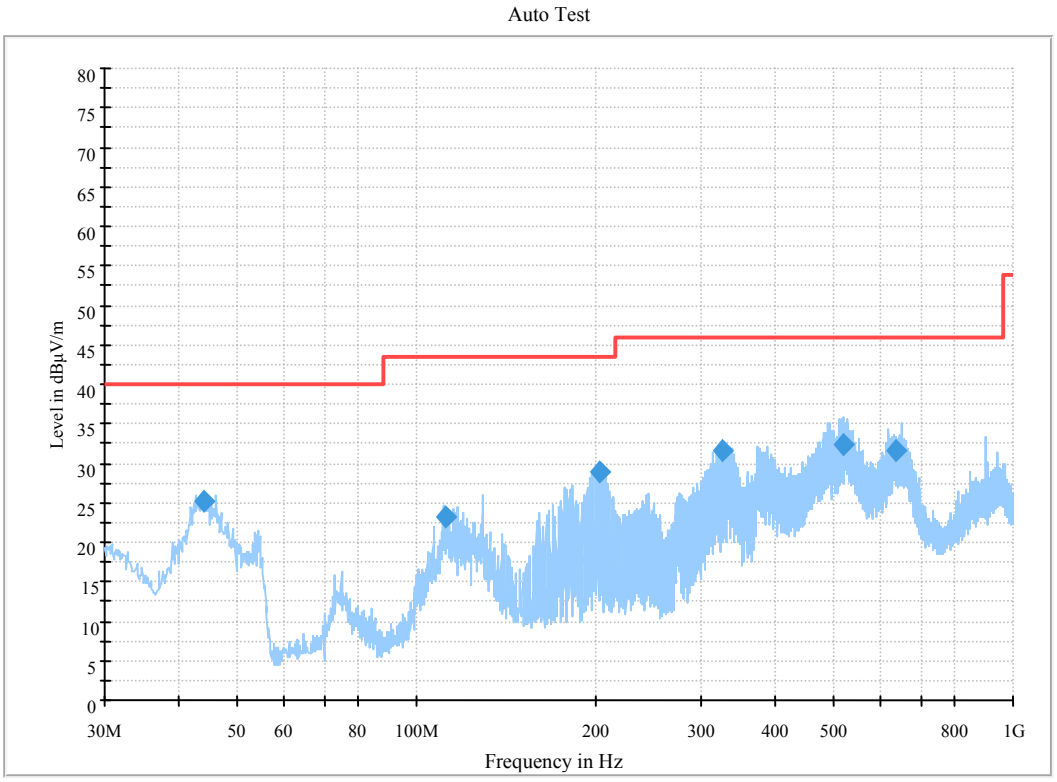
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity	Turntable Position (Degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
314.006600	38.7	100.0	H	0.0	-13.8	46.0	7.3
376.170300	38.2	100.0	H	0.0	-12.9	46.0	7.8
99.696000	29.9	185.0	H	253.0	-17.5	43.5	13.6
932.914450	32.4	100.0	H	312.0	-3.5	46.0	13.6
103.556300	27.3	175.0	H	257.0	-16.3	43.5	16.2
499.636600	28.6	161.0	V	275.0	-10.1	46.0	17.4

2) Above 1 GHz

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor （dB）	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H / V)				
2392.8	38.76	Ave.	116	1.2	H	6.13	44.89	54	9.11
2392.8	35.52	Ave.	156	1.5	V	6.13	41.65	54	12.35
1991.6	37.24	Ave.	78	1.4	H	3.23	40.47	54	13.53
1991.6	35.51	Ave.	89	1.3	V	3.23	38.74	54	15.26
2392.8	50.12	PK	116	1.2	H	6.13	56.25	74	17.75
2392.8	46.79	PK	156	1.5	V	6.13	52.92	74	21.08
1991.6	48.78	PK	78	1.4	H	3.23	52.01	74	21.99
1991.6	46.90	PK	89	1.3	V	3.23	50.13	74	23.87

EUT Operation mode 2:

30 MHz~1 GHz



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity	Turntable Position (Degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
203.319000	32.4	100.0	V	259.0	-16.0	43.5	11.1
519.292450	32.4	100.0	V	147.0	-10.0	46.0	13.6
635.886250	31.7	119.0	V	229.0	-7.7	46.0	14.3
326.092500	31.6	105.0	H	205.0	-13.5	46.0	14.4
43.943750	25.2	147.0	V	168.0	-16.8	40.0	14.8
112.328750	26.6	124.0	H	148.0	-14.5	43.5	16.9

Note:
1. Corrected Factor=Antenna factor (RX) +cable loss – amplifier factor
2. Corrected Amplitude = Corrected Factor + Receiver Reading
3. Margin = Limit- Corrected Amplitude

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