

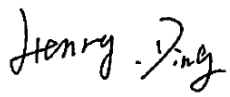

# FCC PART 15 B CLASS B TEST REPORT

For

**invoxia**

87 rue du Gouverneur General Eboue, Issy-Les-Moulineaux, France

**FCC ID: ZVS-NVX-DTP2**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Desktop phone (Bluetooth device)
<b>Test Engineer:</b> Henry Ding	
<b>Report Number:</b> RSZ130311002-00A	
<b>Report Date:</b> 2013-03-25	
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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.

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## GENERAL INFORMATION

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

The *invoxia*'s product, model number: NVX 620 (FCC ID: ZVS-NVX-DTP2) or the "EUT" in this report was a Desktop phone (Bluetooth device), *named as NVX2 by applicant*, which was measured approximately: 29.0 cm (L) x 14.0 cm (W) x 6.0 cm (H), rated input voltage: DC 12 V from adapter, the highest operating frequency is 800 MHz.

#### Adapter Information:

Model: KSAP0361200300D5

Input: 100-240V~50/60Hz, 0.8A

Output: DC 12V, 3.0A

*\* All measurement and test data in this report was gathered from production sample serial number: 0231330010006DE (Assigned by the applicant). The EUT supplied by the applicant was received on 2013-03-11.*

### Objective

This test report is prepared on behalf of *invoxia* 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 submittal with FCC ID: ZVS-NVX-DTP2

### 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 C63.4-2003.

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.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

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

EUT operation mode: Playing music (with PC & Audio & iPhone)

### EUT Exercise Software

No exercise software was used.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

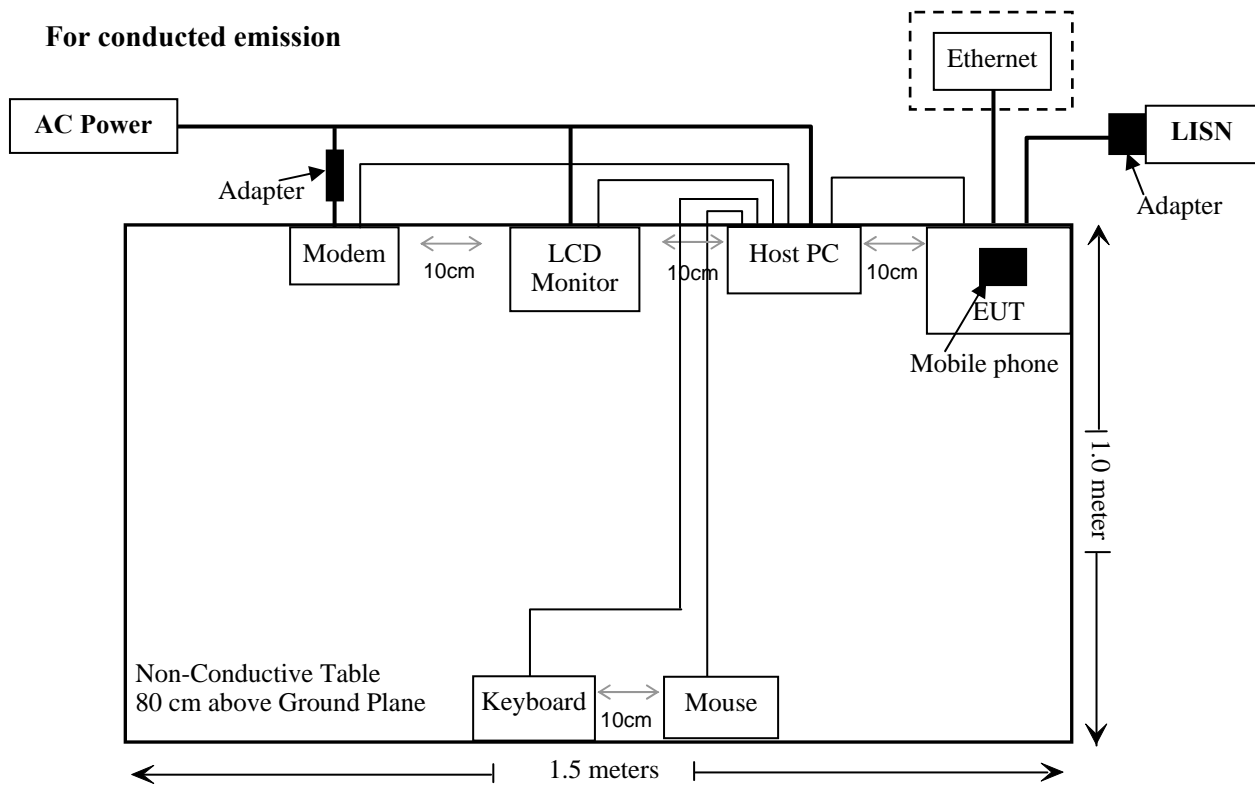
Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Mouse	MOC5UO	G1900NKD
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
SAST	Modem	AEM-2100	0293
Apple	Mobile phone	iPhone 4	C3KHH0QKDP0N

### External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielding Detachable USB Cable	1.5	Host PC	Mouse
Shielding Detachable Serial Cable	1.2	Host PC	Modem
Shielding Detachable K/B Cable	1.5	Host PC	Keyboard
Shielding Detachable VGA Cable	1.5	Host PC	LCD Monitor
Unshielding Detachable USB Cable	1.0	EUT	Host PC
Unshielding Detachable Power Cable	1.5	EUT	Adapter
Unshielding Detachable RJ45 Cable	2.0	EUT	Ethernet

## Block Diagram of Test Setup

### For conducted emission



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**SUMMARY OF TEST RESULTS**

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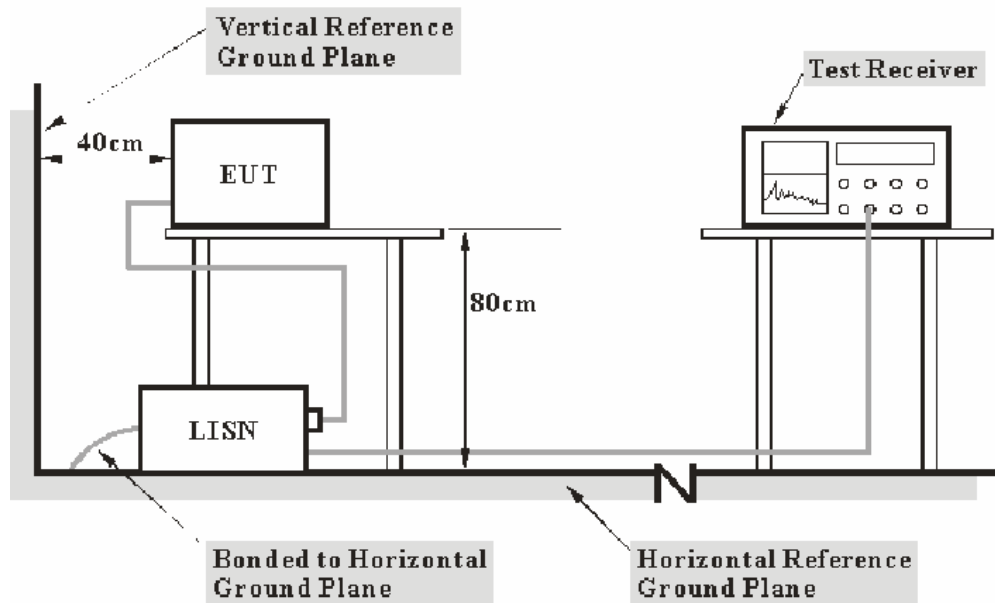
FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance

## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

According to FCC §15.107

### 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 C63.4-2003. The related limit was specified in FCC Part 15.107 Class B.

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:

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

## Test Procedure

During the conducted emission test, the adapter was connected to the outlet of 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	2012-11-24	2013-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2012-08-22	2013-08-21
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2012-07-08	2013-07-07
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, 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 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 EUT complied with the FCC §15.107 Class B, with the worst margin reading of:

**9.56 dB at 6.010 MHz in the Line conducted mode**



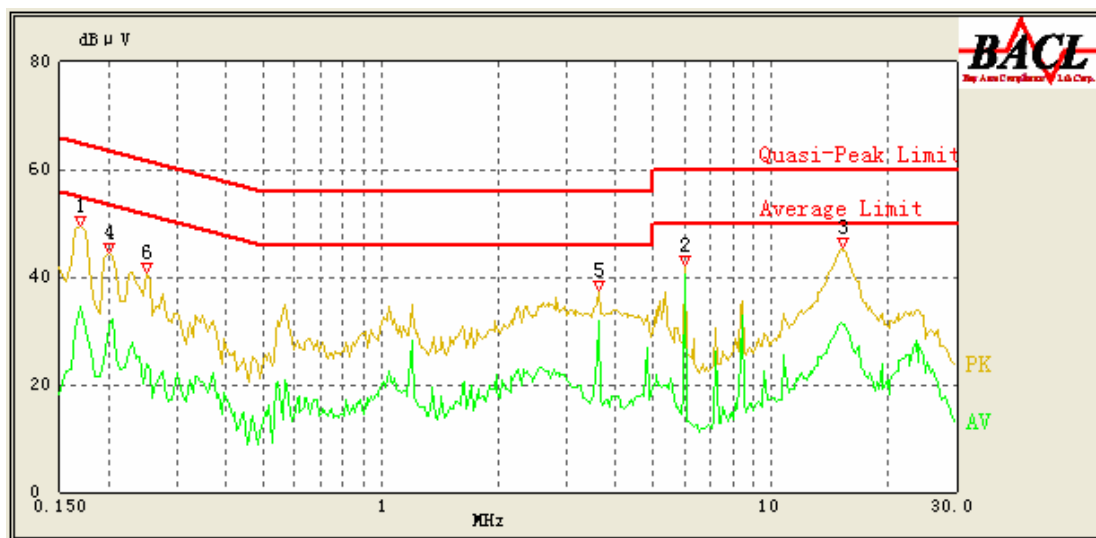
**Test Data****Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.0 kPa

The testing was performed by Henry Ding on 2013-03-08.

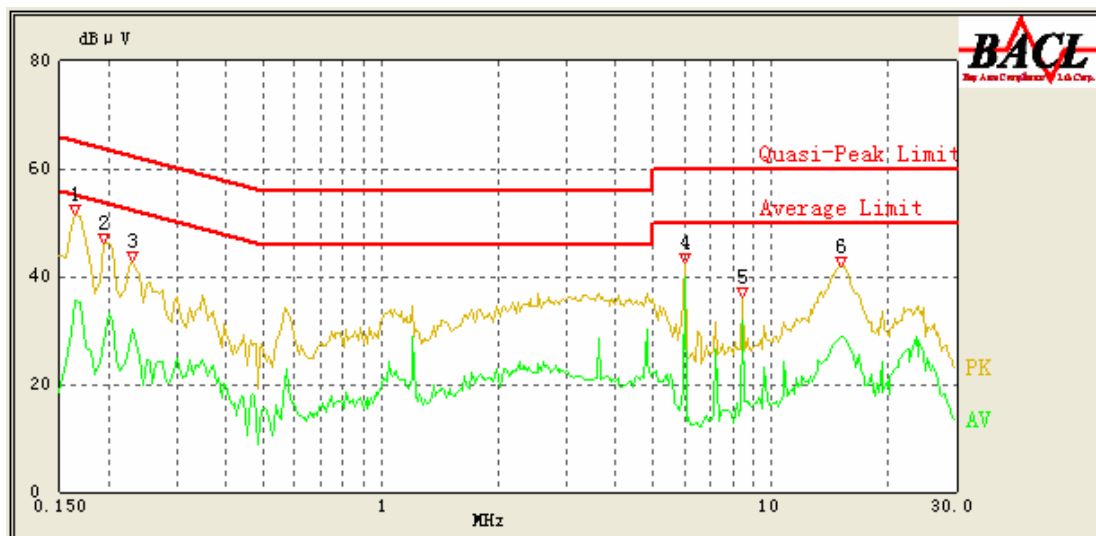
EUT Operation Mode: Playing music with PC (worst case)

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
6.010	40.44	10.25	50.00	9.56	Ave.
3.605	31.72	10.20	46.00	14.28	Ave.
6.010	41.46	10.25	60.00	18.54	QP
15.180	31.45	10.60	50.00	18.55	Ave.
0.170	45.31	10.10	65.43	20.12	QP
0.170	34.62	10.10	55.43	20.81	Ave.
3.605	34.35	10.20	56.00	21.65	QP
15.245	38.20	10.60	60.00	21.80	QP
0.250	40.03	10.10	63.14	23.11	QP
0.200	40.93	10.10	64.57	23.64	QP
0.200	30.90	10.10	54.57	23.67	Ave.
0.250	23.98	10.10	53.14	29.16	Ave.

## AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
6.020	39.78	10.25	50.00	10.22	Ave.
0.165	47.96	10.10	65.57	17.61	QP
8.430	31.74	10.30	50.00	18.26	Ave.
0.165	35.45	10.10	55.57	20.12	Ave.
15.090	28.72	10.60	50.00	21.28	Ave.
15.145	36.65	10.60	60.00	23.35	QP
0.230	30.22	10.10	53.71	23.49	Ave.
0.230	39.15	10.10	63.71	24.56	QP
8.430	35.29	10.30	60.00	24.71	QP
0.195	38.65	10.10	64.71	26.06	QP
6.025	43.73	10.25	60.00	26.27	QP
0.195	27.98	10.10	54.71	26.73	Ave.

**Note:**

1) 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.

2) Corrected Amplitude = Reading + Correction Factor

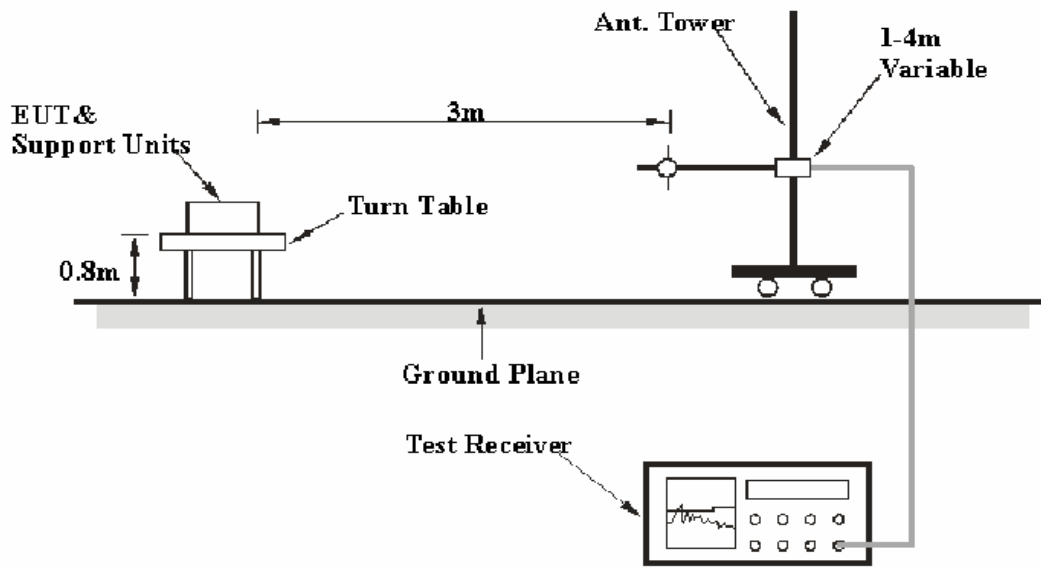
3) Margin = Limit – Corrected Amplitude

## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### Applicable Standard

FCC §15.109

### EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2003. 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 was connected to a 120 VAC/60 Hz power source.

### EMI Test Receiver Setup

The system was investigated from 30 MHz to 5 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

For the radiated emissions test, the adapter and other relevant equipments were connected to AC floor outlet.

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 detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2012-11-24	2013-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2012-08-08	2013-08-07
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, 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:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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 EUT complied with the FCC §15.109 Class B, with the worst margin reading of:

**2.7 dB at 720.023300 MHz in the Vertical polarization**

## Test Data

### Environmental Conditions

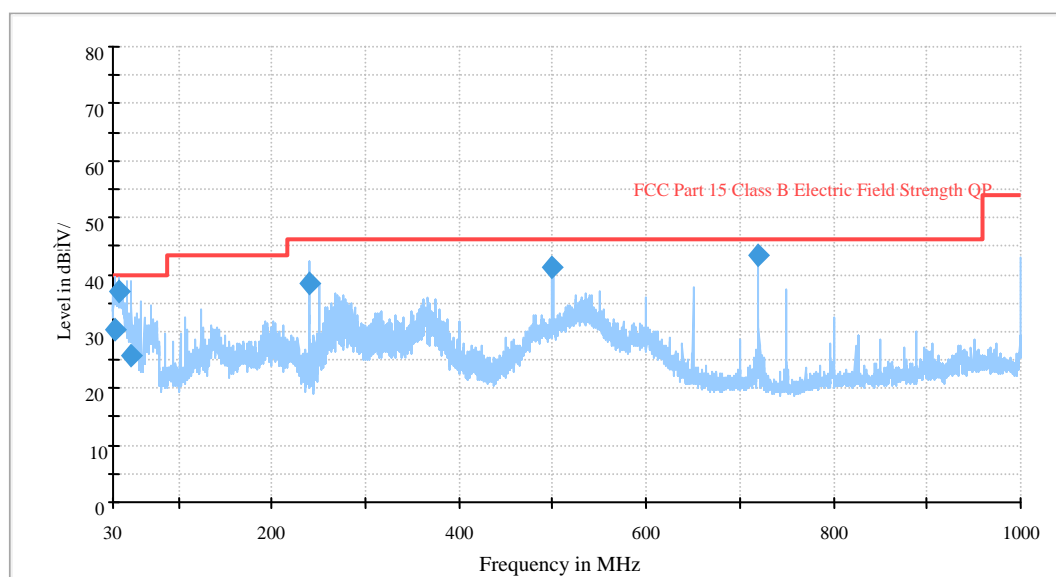
<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.0 kPa

The testing was performed by Henry Ding on 2013-03-08.

EUT Operation Mode: Playing music with PC (worst case)

1) 30 MHz-1 GHz

Auto Test (FCC part 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (deg)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
720.023300	43.3	105.0	V	164.0	-6.6	46.0	2.7
36.073450	37.1	145.0	V	293.0	-11.6	40.0	2.9
500.006900	41.3	206.0	V	16.0	-10.1	46.0	4.7
239.966900	38.4	140.0	H	15.0	-15.9	46.0	7.6
32.950850	30.5	104.0	V	62.0	-9.1	40.0	9.5
49.958700	25.8	146.0	V	259.0	-20.1	40.0	14.2

2) 1 GHz-5 GHz

Frequency	Receiver		Turntable	Rx Antenna		Corrected	Corrected	FCC Part 15B	
(MHz)	Reading (dBμV)	Detector (PK/QP/Ave.)	Degree	Height (m)	Polar (H / V)	Factor (dB)	Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2392.8	46.98	PK	97	1.2	H	6.13	53.11	74	20.89
2392.8	26.71	Ave.	97	1.2	H	6.13	32.84	54	21.16
2793.6	44.16	PK	115	1.1	H	8.62	52.78	74	21.22
2793.6	23.25	Ave.	115	1.1	H	8.62	31.87	54	22.13
1492.9	30.08	Ave.	74	1.2	V	0.74	30.82	54	23.18
1450.9	48.65	PK	74	1.2	V	0.74	49.39	74	24.61
1080.2	48.41	PK	32	1.3	V	-0.66	47.75	74	26.25
1080.2	28.32	Ave.	32	1.3	V	-0.66	27.66	54	26.34

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 \*\*\*\*\*