

FCC PART 15B, CLASS B  
TEST REPORT

For

**Johnson Health Tech. (Shanghai) Co., Ltd.**

NO.535 Xiwang Road, Malu, Jiading, Shanghai, China

**FCC ID: ZV7T0107109**

<b>Report Type:</b> Original Report	<b>Product Name:</b> Audio/Video Player with 2.4 GHz Low Power Transceiver
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<b>Report Number:</b> RSH110818002-00B	
<b>Report Date:</b> 2012-02-07	
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**Note:** This test report is prepared for the customer shown above and for the equipment 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 *Johnson Health Tech.(Shanghai)Co., Ltd*'s product, model *JIS STB T0107109* (FCC ID: *ZV7T0107109*) (the "EUT") in this report was a Audio/Video player with 2.4 GHz low poer transeiver, which was measured approximately: 145 mm (L) x 107 mm (W) x 35 mm (H), rated input voltage: DC 12V from adapter, the highest operating frequency is 533 MHz.

#### Adapter information

Model: RD1201000-C55-2MG

Input: 100-240V~50/60 Hz 0.6A MAX.

Output: 12V DC 1.0A

P/N: PU120110-5RD

*All measurement and test data in this report was gathered from production sample serial number: 1108008 (Assigned by BACL, Shenzhen). The EUT was received on 2011-08-18.*

### Objective

This Type approval report is prepared on behalf of *Johnson Health Tech. (Shanghai) Co., 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 EUT with FCC Part 15 Class B.

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

FCC Part 15.249 submission with FCC ID: ZV7T0107109

### 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

No exercise software.

### Equipment Modifications

No modification was made to the EUT tested.

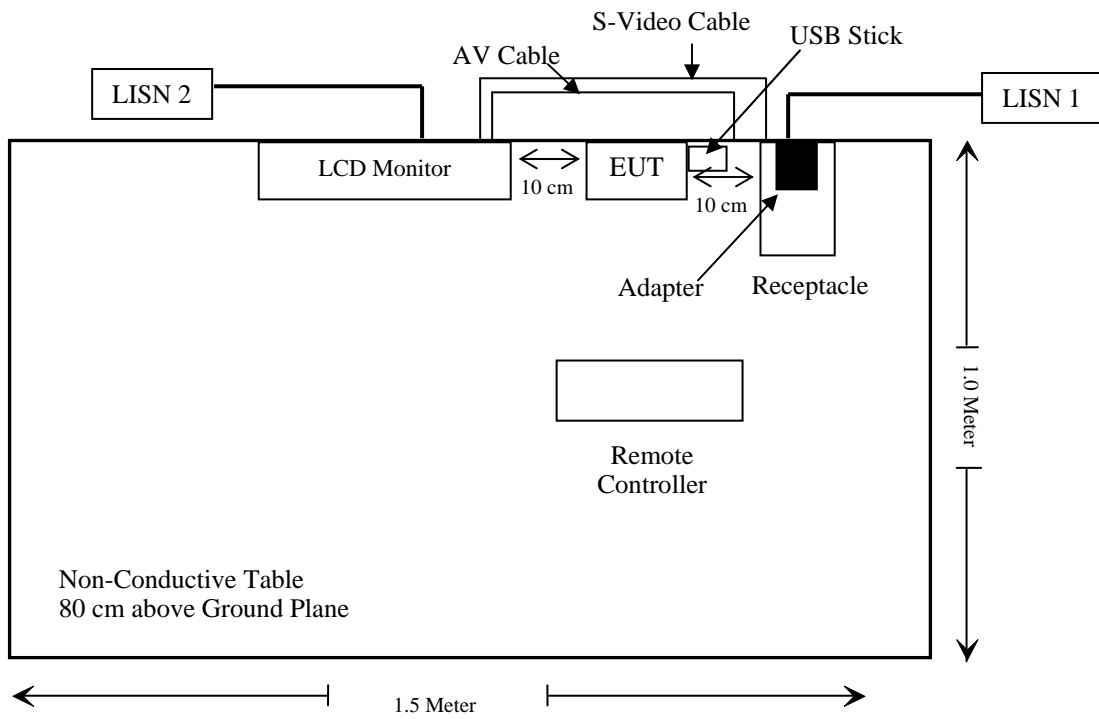
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
SAMSUNG	LCD MONITOR	225MS	CR22HVIP401073M
SanDisk	USB Stick	2GB	N/A

### External I/O Cable

Cable Description	Length (m)	From/Port	To
AV Cable	1.5	EUT	TV
S-Video Cable	1..5	EUT	TV
Unshielded DC Power Cord	1..5	EUT	Adapter

### Block Diagram of Test Setup



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## SUMMARY OF TEST RESULTS

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

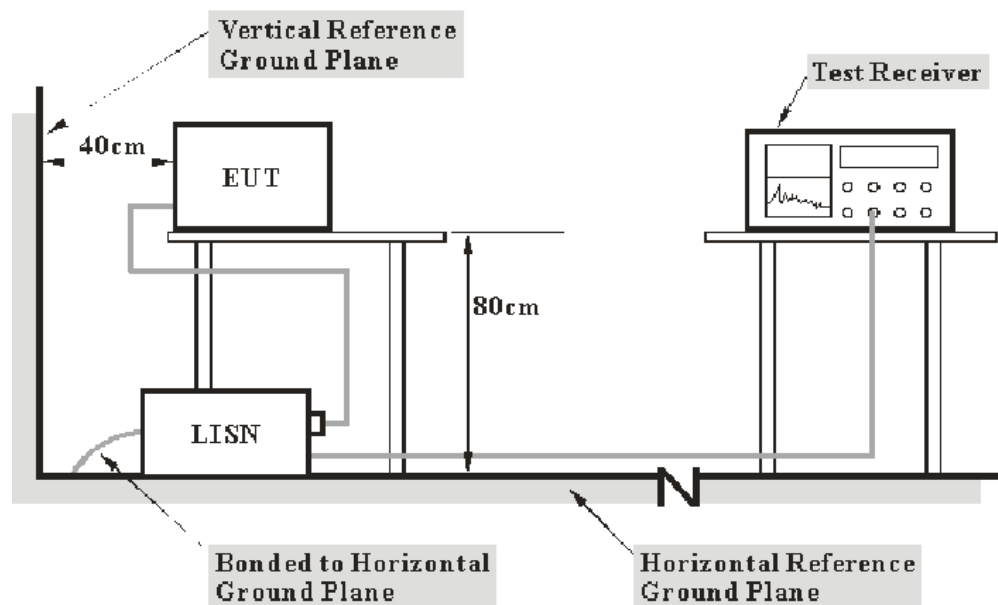
## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### 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  $\pm 2.4$  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 EUT was connected to a 120VAC/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:

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



## Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN; the LCD Monitor was connected to the outlet of 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	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 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:

**14.63 dB at 0.450 MHz** in the **Line** conducted mode.

## Test Data

### Environmental Conditions

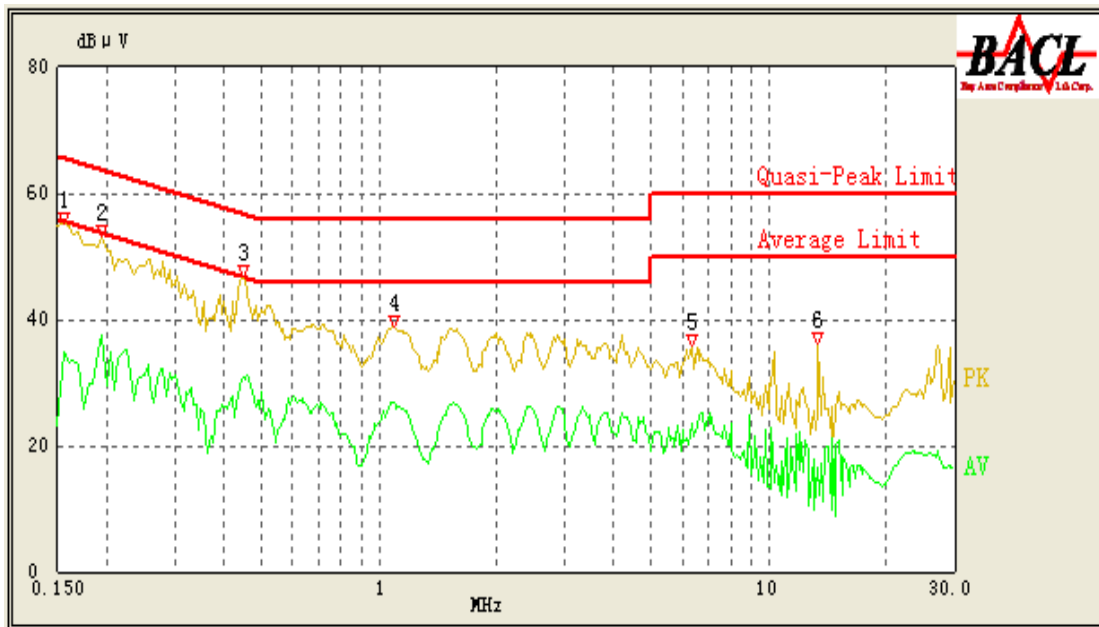
<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	100.0 kPa

*The testing was performed by Jimmy Xiao on 2011-11-24.*

*Test Result: Compliance*

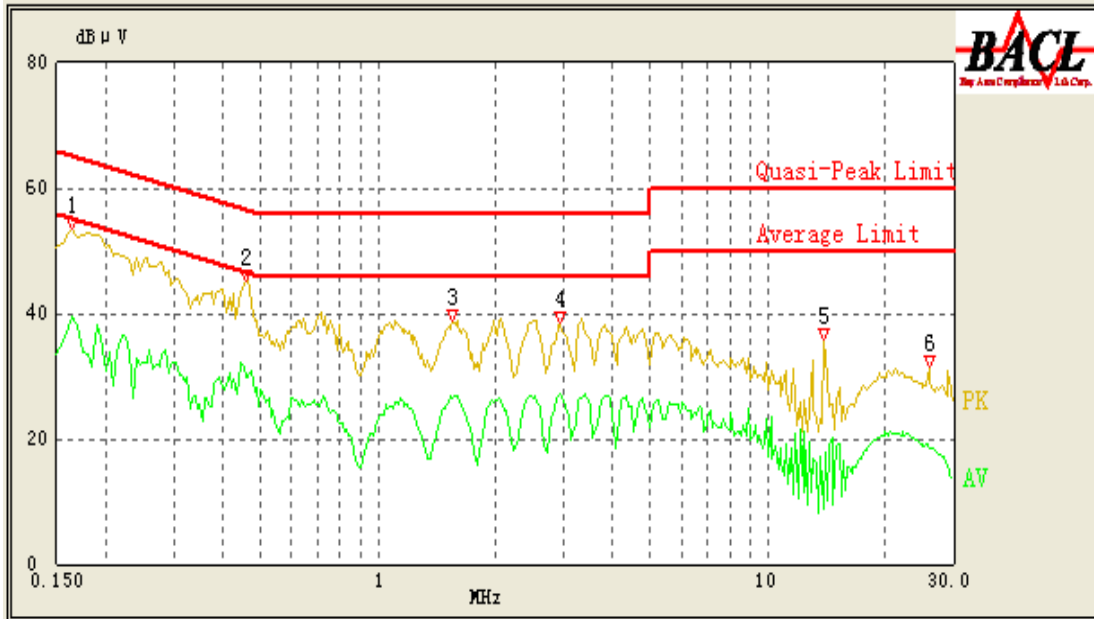
1) Test Mode: Operating (S-Video out)

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.450	42.80	10.23	57.43	14.63	QP
0.155	50.59	10.23	65.86	15.27	QP
0.195	49.38	10.23	64.71	15.33	QP
0.450	30.95	10.23	47.43	16.48	Ave.
0.195	37.36	10.23	54.71	17.35	Ave.
1.080	26.88	10.25	46.00	19.12	Ave.
0.155	34.88	10.23	55.86	20.98	Ave.
1.090	34.67	10.25	56.00	21.33	QP
6.345	23.59	10.70	50.00	26.41	Ave.
6.345	25.20	10.70	60.00	34.80	QP
13.545	12.07	11.30	50.00	37.93	Ave.
13.390	14.91	11.29	60.00	45.09	QP

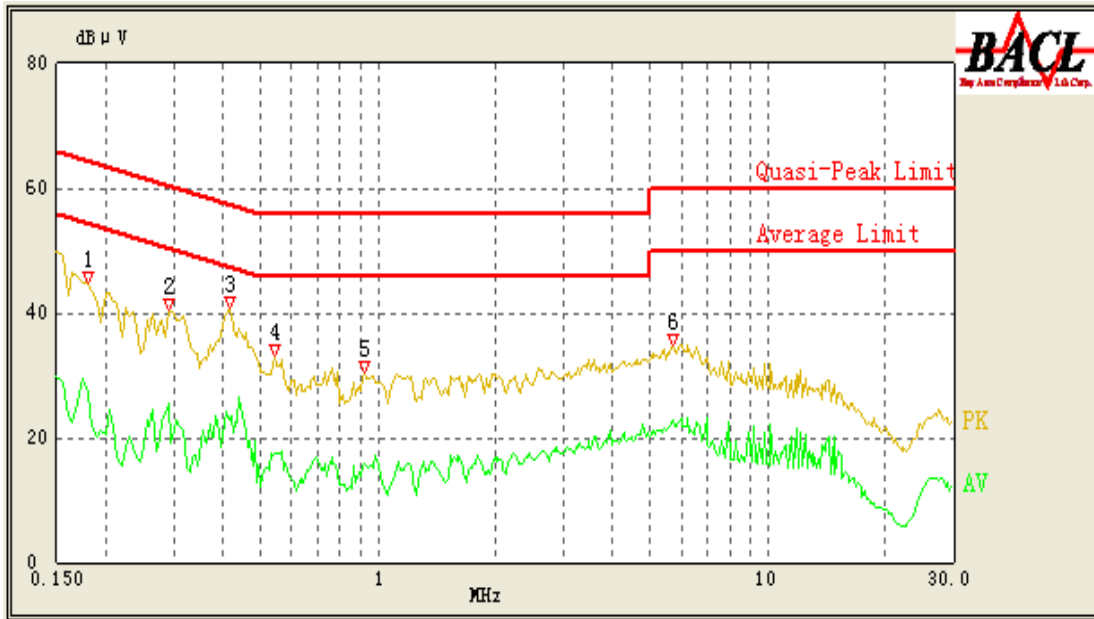
AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.165	50.39	10.23	65.57	15.18	QP
0.165	39.65	10.23	55.57	15.92	Ave.
0.460	41.02	10.23	57.14	16.12	QP
0.460	29.92	10.23	47.14	17.22	Ave.
2.925	27.20	10.41	46.00	18.80	Ave.
1.545	26.39	10.29	46.00	19.61	Ave.
1.555	33.23	10.29	56.00	22.77	QP
2.925	32.41	10.41	56.00	23.59	QP
25.715	19.08	12.38	50.00	30.92	Ave.
13.990	17.91	11.34	50.00	32.09	Ave.
13.925	23.32	11.34	60.00	36.68	QP
25.880	22.04	12.42	60.00	37.96	QP

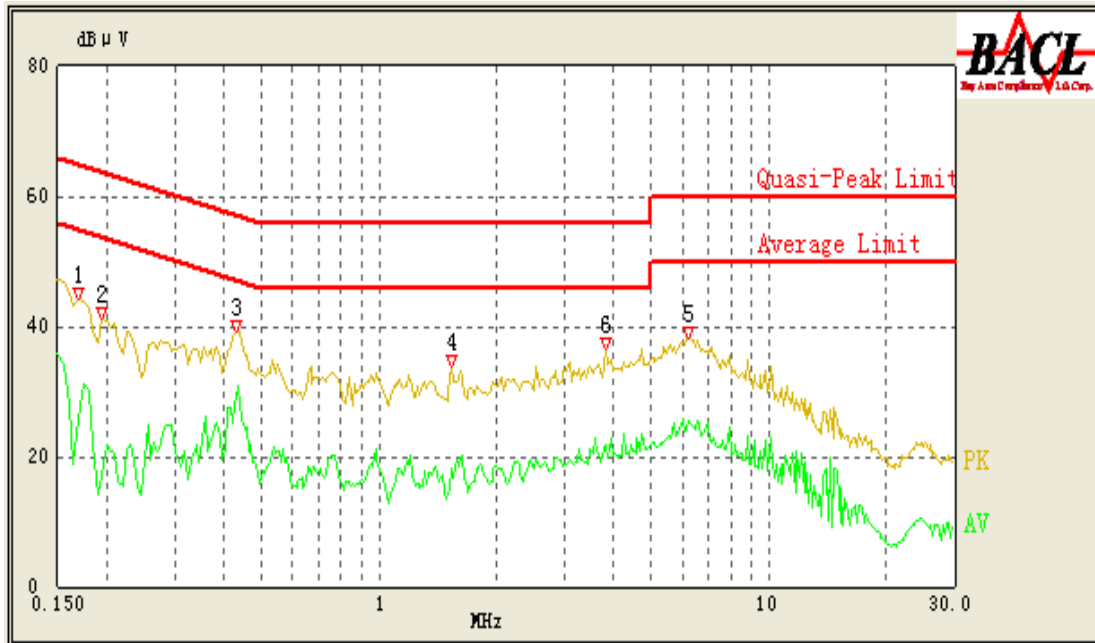
2) Test Mode: Operating (AV out)

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.415	35.98	10.10	58.43	22.45	QP
0.180	40.16	10.10	65.14	24.98	QP
0.415	22.95	10.10	48.43	25.48	Ave.
0.290	25.38	10.10	52.00	26.62	Ave.
5.710	22.89	10.10	50.00	27.11	Ave.
0.290	34.43	10.10	62.00	27.57	QP
0.180	27.23	10.10	55.14	27.91	Ave.
0.545	27.84	10.10	56.00	28.16	QP
0.545	17.45	10.10	46.00	28.55	Ave.
0.925	26.02	10.10	56.00	29.98	QP
0.925	15.82	10.10	46.00	30.18	Ave.
5.710	28.39	10.10	60.00	31.61	QP

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.430	28.86	10.10	48.00	19.14	Ave.
0.430	37.38	10.10	58.00	20.62	QP
3.800	21.82	10.10	46.00	24.18	Ave.
6.215	25.54	10.10	50.00	24.46	Ave.
0.170	39.53	10.10	65.43	25.90	QP
6.215	33.20	10.10	60.00	26.80	QP
0.195	37.64	10.10	64.71	27.07	QP
1.535	28.10	10.10	56.00	27.90	QP
1.535	18.09	10.10	46.00	27.91	Ave.
3.800	27.77	10.10	56.00	28.23	QP
0.170	25.73	10.10	55.43	29.70	Ave.
0.195	17.15	10.10	54.71	37.56	Ave.

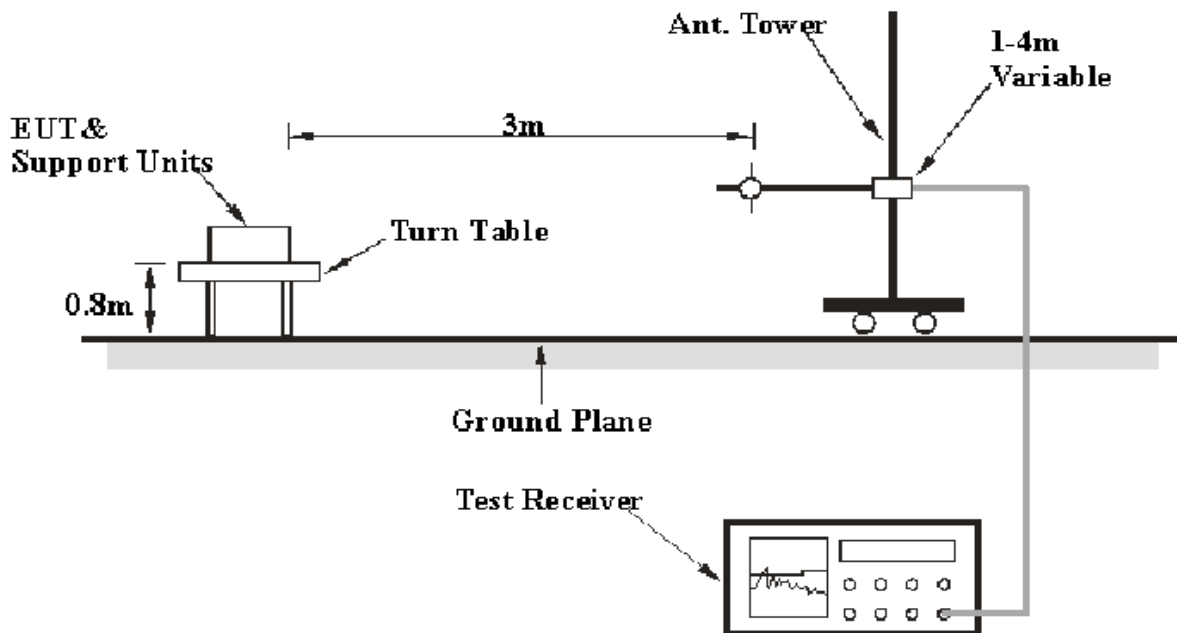
## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### 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 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  $\pm 4.0$  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 EUT was connected to a 120 VAC/60 Hz power source.

## EMI Test Receiver Setup

The system was investigated from 30 MHz to 5000 MHz.

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

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>Detector</i>
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 5 GHz	1 MHz	3 MHz	PK
1000 MHz – 5 GHz	1 MHz	10 Hz	Ave

## Test Procedure

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

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

The data was recorded in the Quasi-peak detection mode for frequency from 30-1000 MHz, peak and average for frequency above 1 GHz.

## Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2011-08-02	2012-08-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100224	2011-11-11	2012-11-10
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2011-07-05	2012-07-04
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2011-03-08	2012-03-07
Sunol Sciences	Horn Antenna	DRH-118	A052604	2011-05-05	2012-05-04
Rohde & Schwarz	Signal Analyzer	FSIQ 26	609358	2011-07-08	2012-07-07

\* **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 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:

**2.6 dB at 526.546000 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

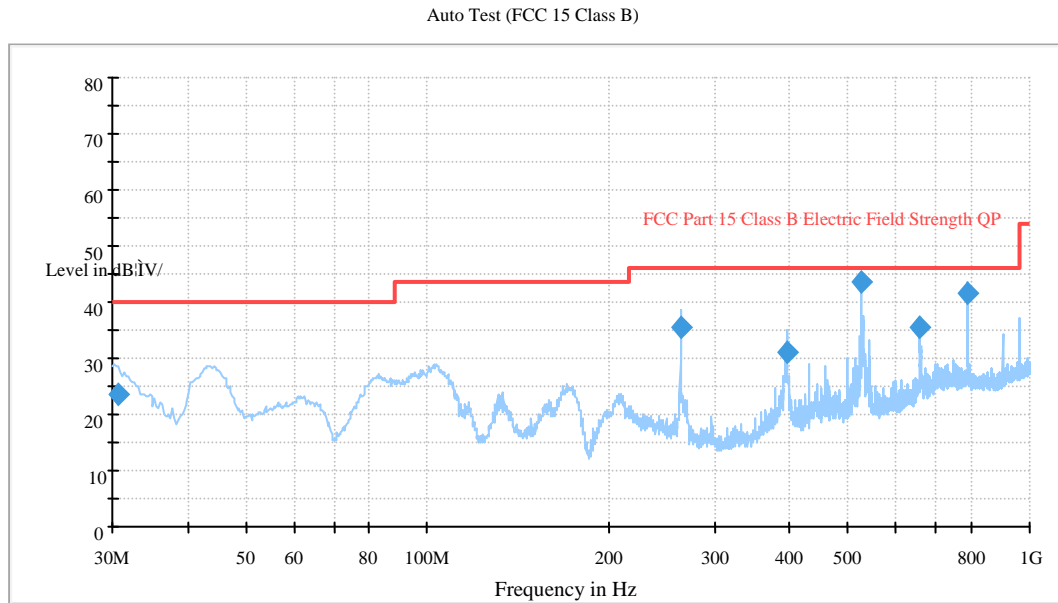
*The testing was performed by Jimmy Xiao on 2011-11-24.*

*Test Result: Compliance*



**30-1000 MHz:**

1) Test Mode: Operating (S-Video out)

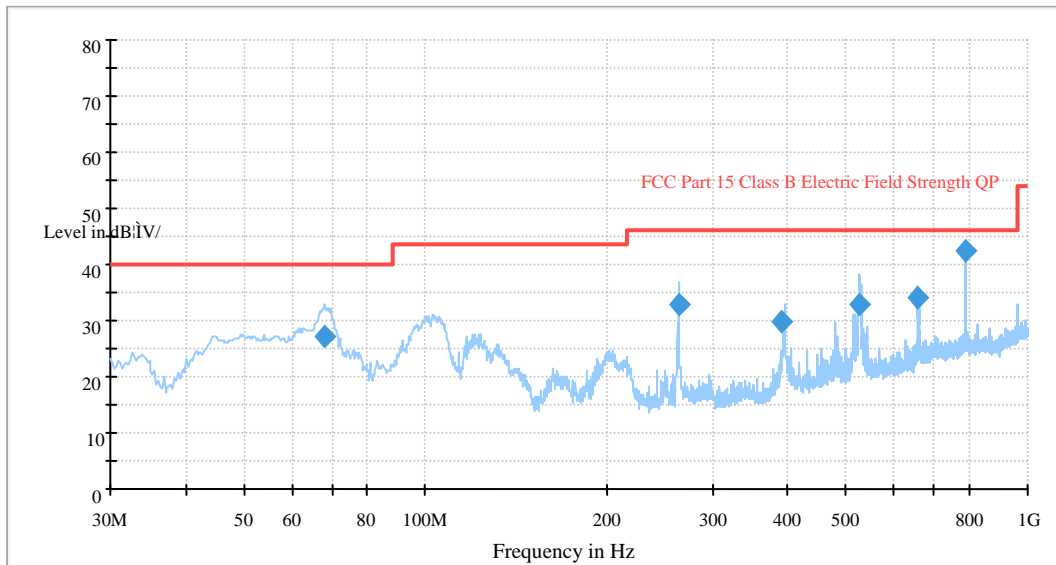


Frequency (MHz)	Corrected Amplitude (dBµV/m)	Test Antenna		Turntable Position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)				
526.546000	43.4	203.0	V	297.0	-7.9	46.0	2.6*
789.833250	40.0	205.0	H	0.0	-2.0	46.0	6.0
657.589250	33.8	139.0	V	59.0	-4.6	46.0	12.2
394.769000	31.2	103.0	H	41.0	-10.1	46.0	14.8
30.705004	23.5	139.0	V	169.0	-5.9	40.0	16.5
263.419500	33.6	102.0	H	93.0	-13.2	46.0	12.4

\*Within measurement uncertainty!

2) Test Mode: Operating (AV out)

Auto Test (FCC 15 Class B)



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Test Antenna		Turntable Position (degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
		Height (cm)	Polarity (H/V)				
789.802000	41.2	122.0	H	154.0	-2.0	46.0	4.8
657.653000	32.8	105.0	H	333.0	-4.5	46.0	13.2
263.224000	32.1	109.0	V	255.0	-13.2	46.0	13.9
526.469500	32.0	192.0	H	180.0	-7.9	46.0	14.0
68.177000	25.2	107.0	H	128.0	-18.3	40.0	14.8
394.769000	27.4	193.0	H	42.0	-10.1	46.0	18.6

**Above 1 GHz:**

The spurious emissions were below 20 dB of the limit and not recorded.

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