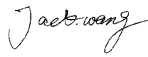
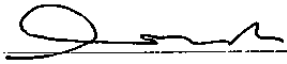


FCC PART 15B  
MEASUREMENT AND TEST REPORT

For  
**Grandstream Networks, Inc.**

5F, Bldg. #1, No.2 Kefa Road, Science & Technology Park,  
Shenzhen, Guangdong, China

**FCC ID: YZZGXV3140H**

<b>Report Type:</b> Original Report	<b>Product Type:</b> IP Multimedia Phone
<b>Test Engineer:</b> Jack Wang	
<b>Report Number:</b> RSZ10111503	
<b>Report Date:</b> 2010-12-22	
<b>Reviewed By:</b> Lisa Zhu	
<b>Prepared By:</b>	EMC Engineer
<b>Prepared By:</b> Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008	

**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\*, NIST, 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 *Grandstream Networks, Inc.*'s product, model number: *GXV3140H (FCC ID: YZZGXV3140H)* or the "EUT" as referred to in this report is an *IP Multimedia Phone*, which measures approximately 19.0 cm (L) x 20.0 cm (W) x 12.0 cm (H). Input voltage: DC 12V adapter. The highest operating frequency is 163 MHz.

Adapter information:

Model: CPS012A120100U;

Input: AC 100-240V 50/60 Hz 0.4A;

Output: DC 12V 1.0A

*\* All measurement and test data in this report was gathered from production sample serial number: 1011069 (Assigned by BAEL, Shenzhen). The EUT was received on 2010-11-15.*

### Objective

This Type approval report is prepared on behalf of *Grandstream Networks, Inc.* 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 15 Class B.

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

N/A

### 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 C63.4-2009.

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 a National Institute of Standards and Technology (NIST) accredited laboratory, under the 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

### Justification

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.

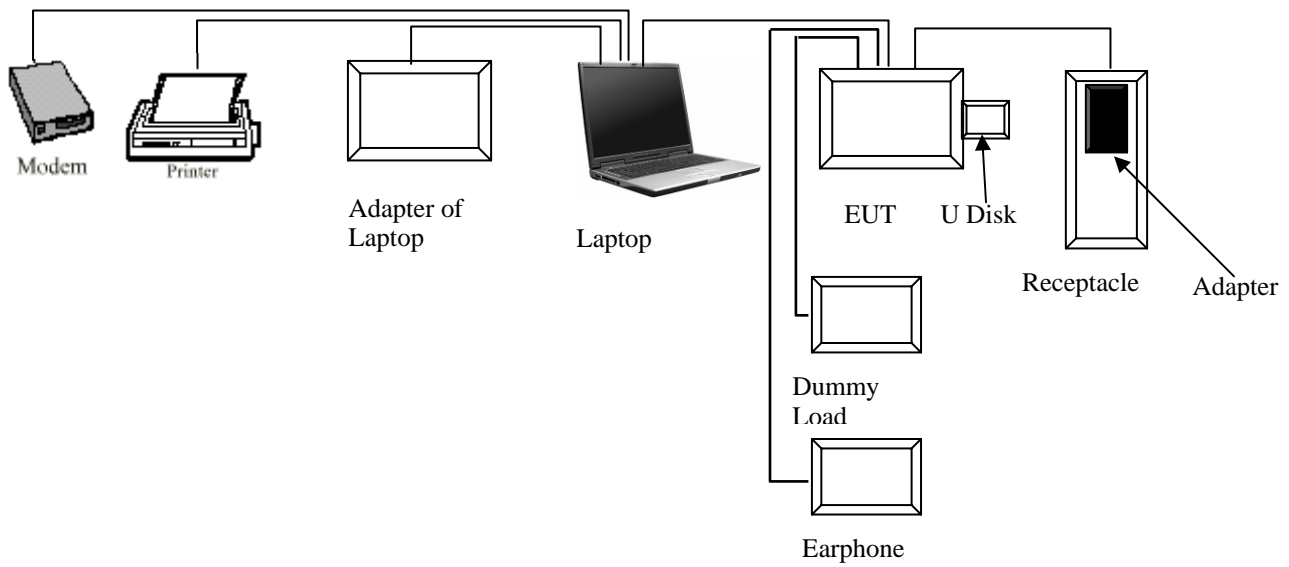
### Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	Laptop	PP01L	59804A00	DOC
Grandstream	IP Phone	GXV3140	N/A	DOC
N/A	Dummy Load	N/A	N/A	DOC
U-zone	U Disk	2GB	N/A	DOC
Cretive	SD Card	N/A	N/A	DOC
Touch	Earphone	N/A	N/A	N/A
HP	Laser Jet5L	C3941A	JPTVOB2337	DOC
SAST	Modem	AEM-2100	0293	DOC

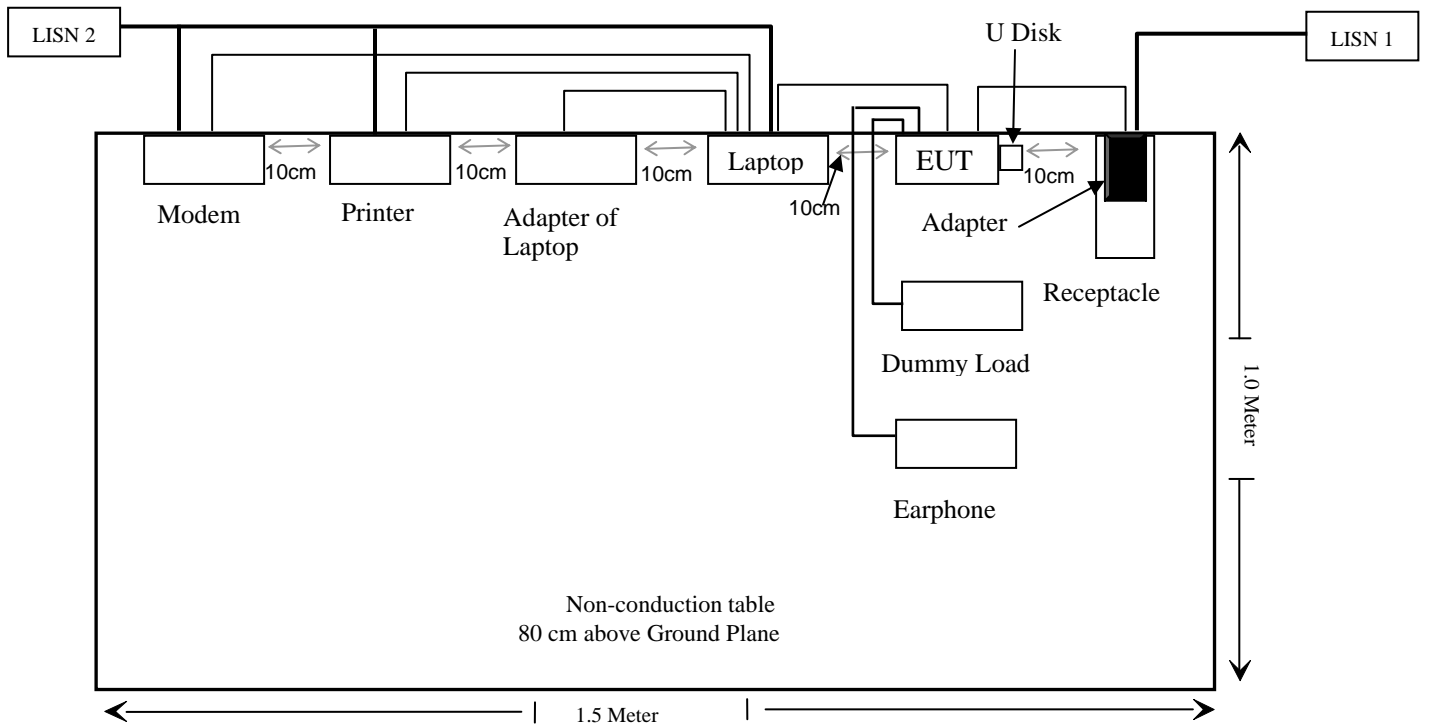
### External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Detachable RJ45 Cable	2.0	EUT/PC Ethernet Port	Laptop
Unshielded Undetachable DC Cable	1.8	EUT/Power Port	Adapter
Unshielded Detachable AV Cable	1.8	EUT/RCA Video/Audio Port	Dummy Load
Shielded Detachable Printer Cable	1.2	Host /Parallel Port	Printer
Shielded Detachable Serial Cable	1.2	Host /Serial Port	Modem

### Configuration of Test Setup



### Block Diagram of Test Setup



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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

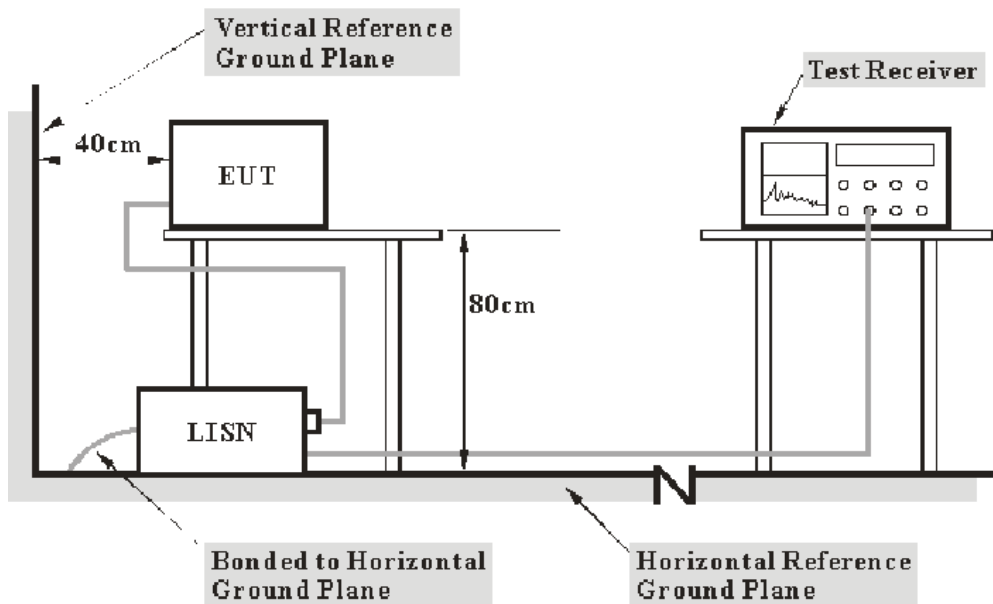
## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### 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 C63.4-2009 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 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:

<b><i>Frequency Range</i></b>	<b><i>IF B/W</i></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	2010-03-03	2011-03-02
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2010-03-09	2011-03-08

\* **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 was connected to the outlet of the first LISN; the laptop, modem and printer 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 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:

**5.65 dB at 2.640 MHz in the Line conductor mode**

## Test Data

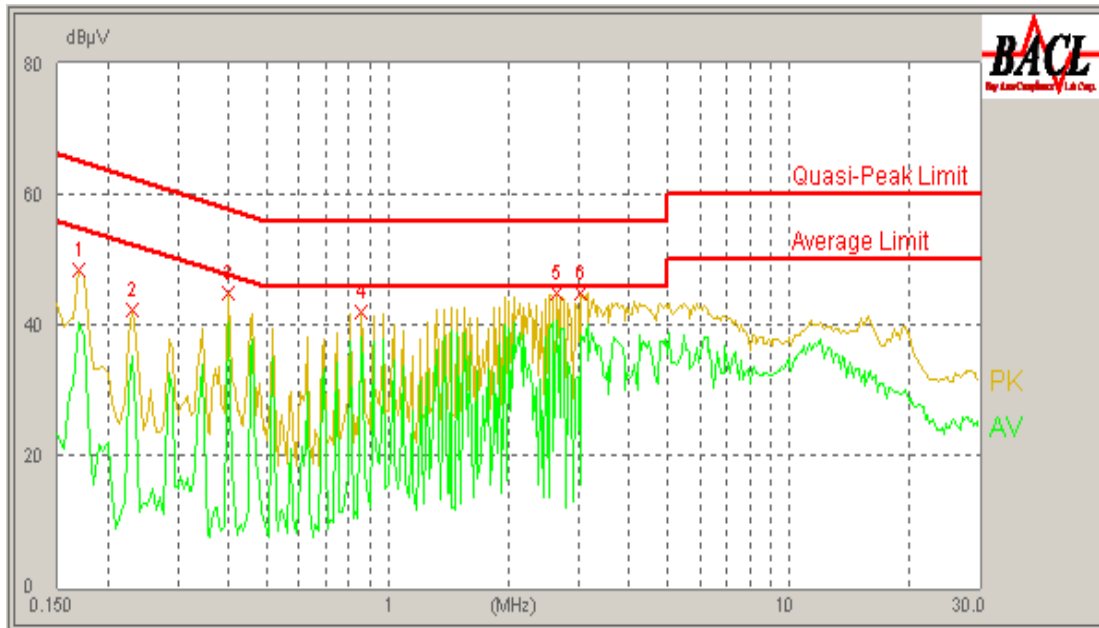
### Environmental Conditions

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

*The testing was performed by Jack Wang on 2010-12-06.*

Test Mode: Talking and Running with laptop

### 120V/60 Hz, Line



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Factor (dB)	Corrected Result (dBμV)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave)
2.640	10.20	40.35	46.00	5.65	Ave
3.040	10.20	38.79	46.00	7.21	Ave
0.860	10.20	38.41	46.00	7.59	Ave
0.400	10.00	40.55	48.86	8.31	Ave
3.040	10.20	44.40	56.00	11.6	QP
2.640	10.20	43.82	56.00	12.18	QP
0.400	10.00	45.40	58.86	13.46	QP
0.860	10.20	41.72	56.00	14.28	QP
0.170	10.10	40.29	55.43	15.14	Ave
0.170	10.10	49.03	65.43	16.4	QP
0.230	10.10	35.41	53.71	18.3	Ave
0.230	10.10	41.44	63.71	22.27	QP

**120V/60 Hz, Neutral**



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Factor (dB)	Corrected Result (dBµV)	Limit (dBµV)	Margin (dB)	Remark (PK/QP/Ave)
2.065	10.20	40.24	46.00	5.76	Ave
2.525	10.20	38.66	46.00	7.34	Ave
0.860	10.20	38.37	46.00	7.63	Ave
0.400	10.00	40.45	48.86	8.41	Ave
2.525	10.20	43.85	56.00	12.15	QP
2.065	10.20	43.56	56.00	12.44	QP
0.400	10.00	45.26	58.86	13.6	QP
0.230	10.10	40.06	53.71	13.65	Ave
0.170	10.10	51.66	65.43	13.77	QP
0.170	10.10	41.48	55.43	13.95	Ave
0.860	10.20	41.67	56.00	14.33	QP
0.230	10.10	44.76	63.71	18.95	QP

## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

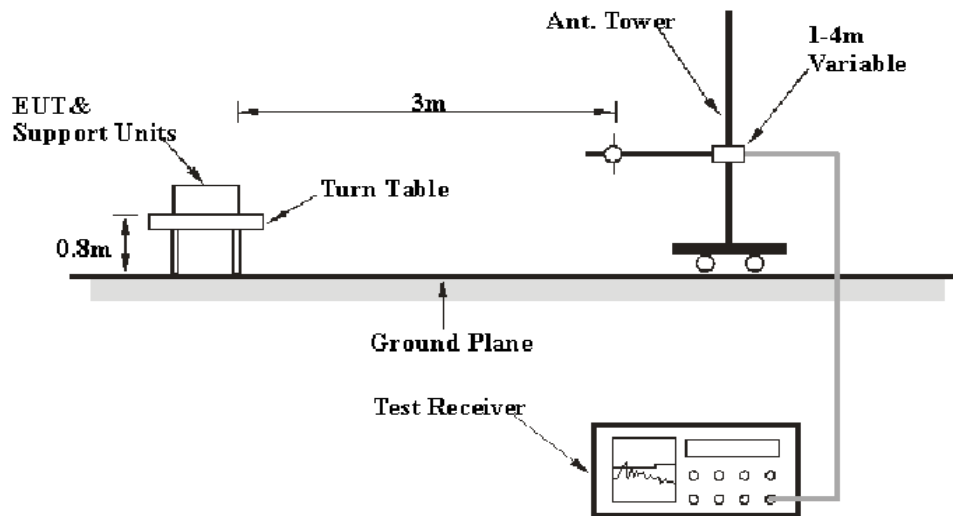
### Measurement Uncertainty

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.

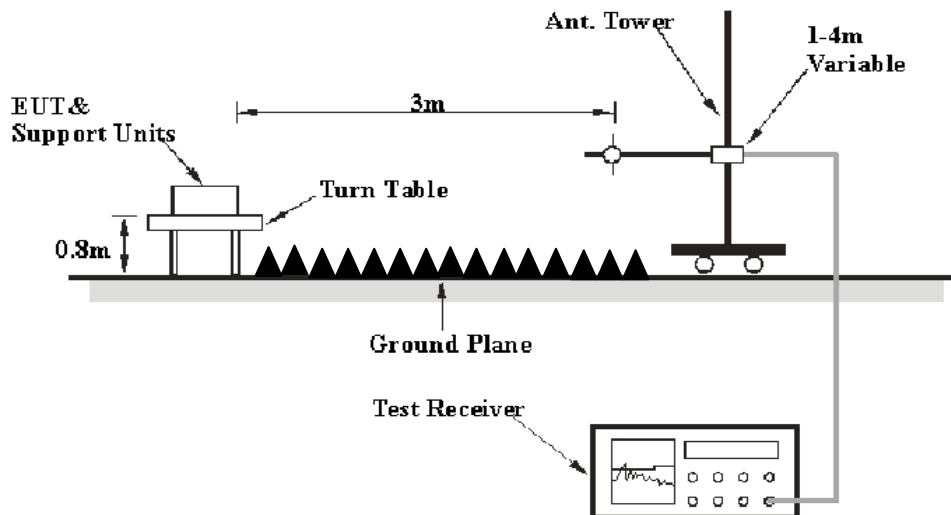
Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is  $\pm 4.0$  dB. ( $k=2$ , 95% level of confidence)

### EUT Setup

Below 1GHz:



Above 1GHz:



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 was connected to a 120 VAC/60 Hz power source.

### EMI Test Receiver Setup

The system was investigated from 30 MHz to 2000 MHz.

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

<u>Frequency</u>	<u>RB/W</u>	<u>VB/W</u>	<u>IF B/W</u>	<u>Detection</u>
30 MHz-1 GHz	100 kHz	300 kHz	120 kHz	Quasi-peak
Above 1 GHz	1MHz	3 MHz		Peak
Above 1 GHz	1MHz	10 Hz		Average

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2010-08-02	2011-08-02
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2010-11-24	2011-11-24
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2010-07-05	2011-07-04
Rohde&Schwarz	Spectrum Analyzer	FSEM30	849720/019	2010-07-08	2011-07-08
Super Ultra	Pre-amplifier	ZVA-213+	N/A	2010-09-12	2011-09-11
Sunol Sciences	Horn Antenna	DRH-118	A052604	2010-05-05	2011-05-04

\* **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

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

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.

## 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 7dB means the emission is 7dB 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:

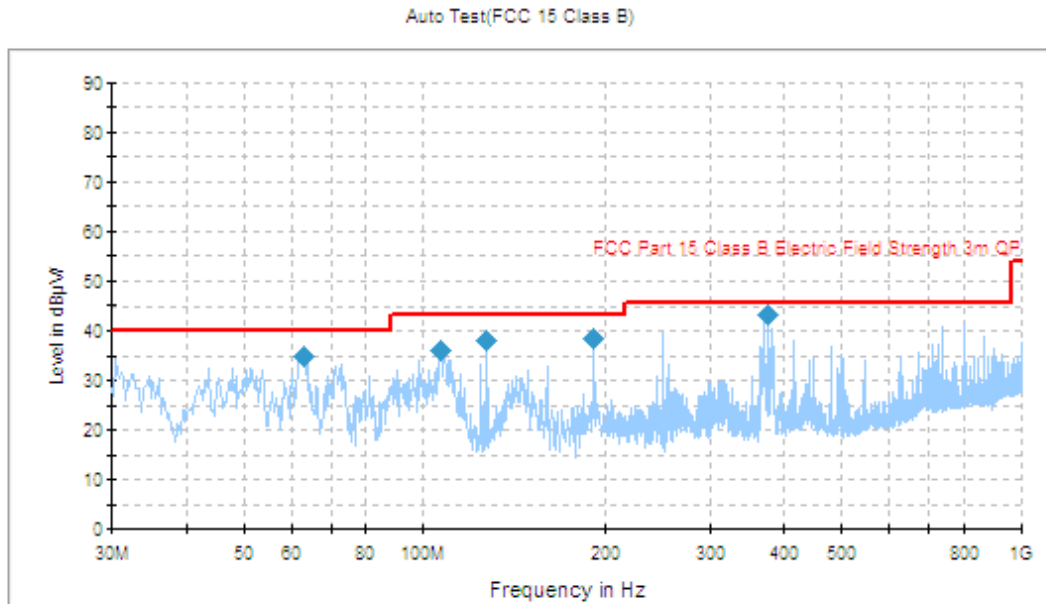
**1.5 dB at 375.077500 MHz in the Horizontal polarization**

## 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 Jack Wang on 2010-12-06.*

**30-1000 MHz:**

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (Degree)	Correction Factor (dB)	Limit (dBµV/m)	Margin (dB)
375.077500	44.5	102.0	H	284.0	-13.5	46.0	1.5*
191.992500	38.5	181.0	V	346.0	-14.7	43.5	5.0
62.981250	34.9	100.0	H	191.0	-18.5	40.0	5.1
128.000500	38.2	311.0	V	206.0	-12.5	43.5	5.3
106.707250	36.3	100.0	H	132.0	-13.8	43.5	7.2

\*With measurement uncertainty

**Above 1 GHz:**

Frequency (MHz)	S.A. Reading (dBuV)	Detector PK/QP/Ave	Direction Degree	Test Antenna			Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	FCC §15.109 Class B	
				Height (m)	Polar (H/V)	Factor (dB/m)				Limit (dBμV/m)	Margin (dB)
1458.0	26.80	Ave	360	1.0	H	26.7	2.18	26.83	28.85	54	25.15
1134.0	27.10	Ave	359	1.1	H	25.9	2.04	26.83	28.21	54	25.79
1458.0	26.30	Ave	360	1.2	V	25.8	2.18	26.83	27.45	54	26.55
1250.0	25.50	Ave	0	1.0	H	25.9	2.04	26.83	26.61	54	27.39
1134.0	45.40	PK	358	1.1	H	25.9	2.04	26.83	46.51	74	27.49
1134.0	26.00	Ave	360	1.0	V	24.8	2.04	26.83	26.01	54	27.99
1250.0	25.20	Ave	0	1.0	V	24.8	2.04	26.83	25.21	54	28.79
1458.0	41.33	PK	360	1.0	H	26.7	2.18	26.83	43.38	74	30.62
1458.0	39.59	PK	0	1.2	V	25.8	2.18	26.83	40.74	74	33.26
1250.0	39.56	PK	360	1.0	H	25.9	2.04	26.83	40.67	74	33.33
1134.0	39.54	PK	360	1.0	V	24.8	2.04	26.83	39.55	74	34.45
1250.0	39.33	PK	0	1.0	V	24.8	2.04	26.83	39.34	74	34.66

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