



## FCC PART 15, CLASS B

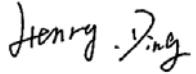
## TEST REPORT

For

### Advance Tech Communications Sdn Bhd

Persoft Tower, Level 6, 6B, Persiaran Tropicana, Tropicana Golf and Country Resort, Petaling Jaya, Selangor DE, Malaysia

**FCC ID: QTTATCMAGICW3**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Microcomputer with integrated Telephony
<b>Test Engineer:</b> <u>Henry Ding</u> 	
<b>Report Number:</b> <u>RSZ121120005-00A</u>	
<b>Report Date:</b> <u>2012-12-31</u>	
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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.

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## GENERAL INFORMATION

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

The *Advance Tech Communications Sdn Bhd*'s product, model number: *W3 (FCC ID: QTTATCMAGICW3)* or the "EUT" in this report was a *Microcomputer with integrated Telephony*, which was measured approximately: 14.0 cm (L) x 8.0 cm (W) x 2.5 cm (H), rated input voltage: DC 3.7 V Li-ion battery or DC 5V charging from adapter. The highest Operating Frequency is 1.6 GHz (CPU).

Adapter Information: AC/DC ADAPTER

Model: EN15-050-3000

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

Output: DC 5.0V/3A

*\* All measurement and test data in this report was gathered from production sample serial number: 1211115 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2012-11-20.*

### Objective

This test report is prepared on behalf of *Advance Tech Communications Sdn Bhd* 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 DTS and Part 22H/24E PCE submissions with FCC ID: QTTATCMAGICW3

### 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: Charging&Playing&HDMI

EUT operation mode 2: Running & Data transmitting with USB disk

### EUT Exercise Software

“winthrax” exercise software was used.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

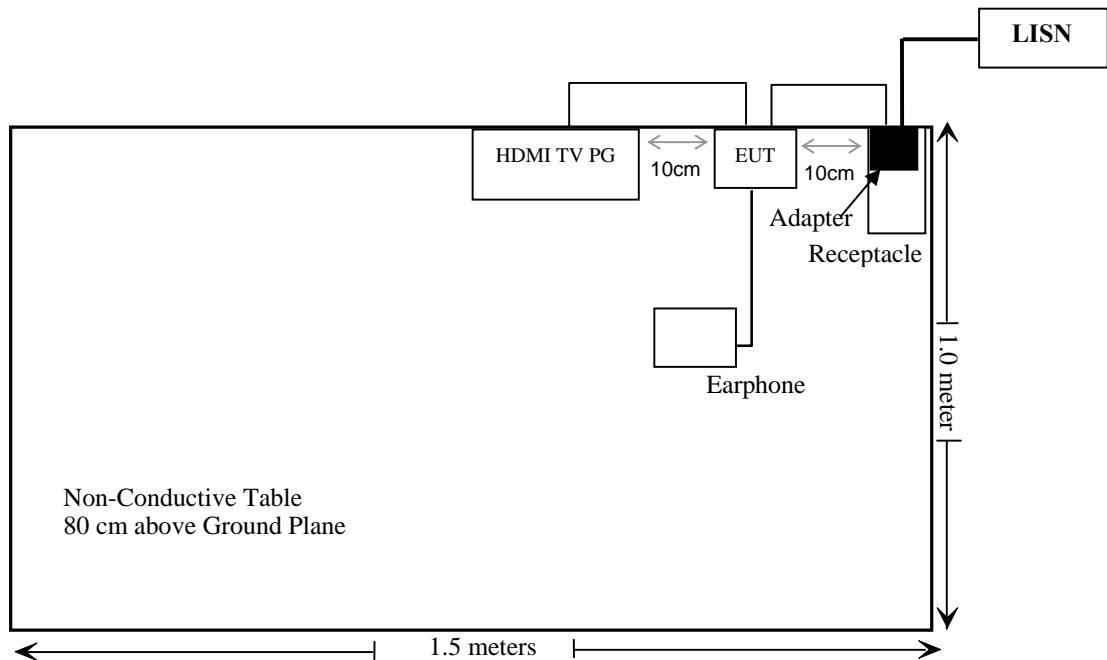
Manufacturer	Description	Model	Serial Number
kingston	USB DISK	G3	N/A
SAMSUNG	HDMI TV	225MS	LS22CRWSB/XSF
PHILIPS	Earphone	SBCHP250	N/A

### External I/O Cable

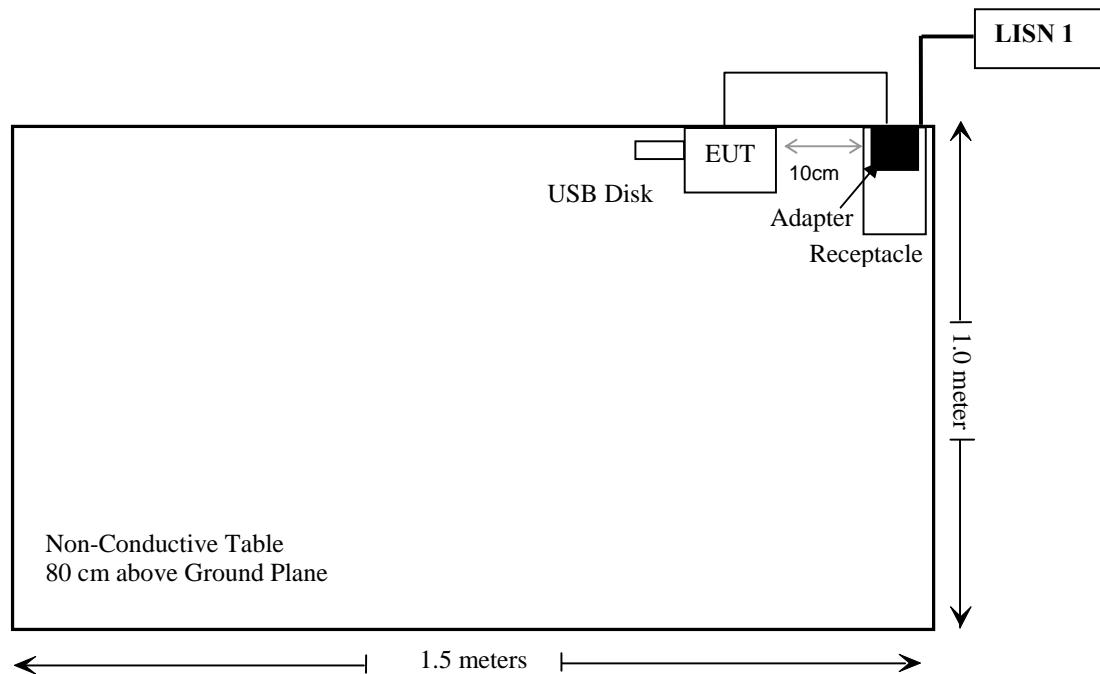
Cable Description	Length (m)	From/Port	To
Shielding Detachable USB Cable	0.5	USB DISK	EUT
Shielding Detachable HDMI Cable	0.6	EUT	HDMI TV

**Block Diagram of Test Setup**

EUT operation mode 1 (conducted emission)



EUT operation mode 2 (conducted emission)



## **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

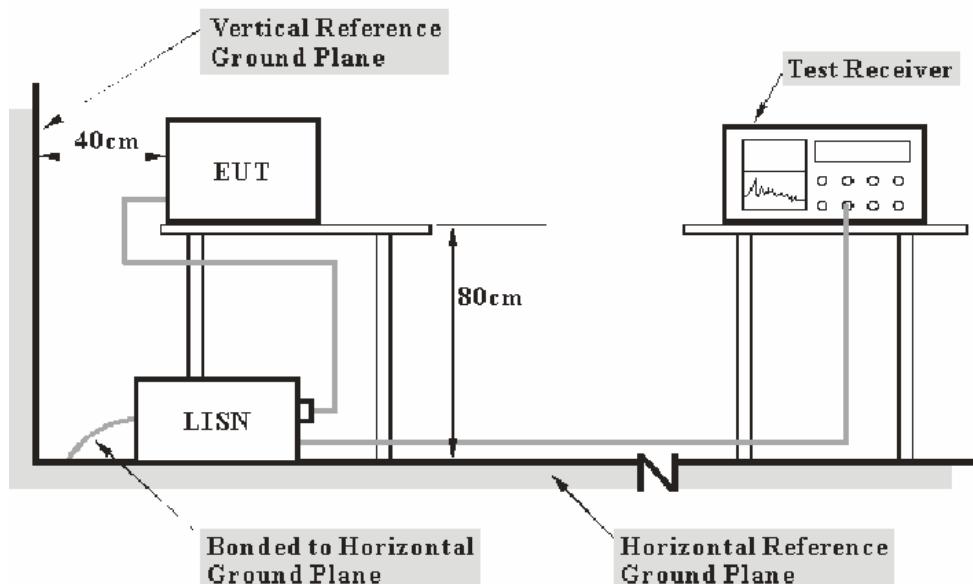
According to FCC §15.107

### Measurement Uncertainty

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), and the uncertainty will not be taken into consideration for the test data recorded in the report.

### 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	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	12208	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 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 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 Part 15.107, with the worst margin reading of:

**5.06 dB at 0.165 MHz in the Line conducted mode for Charging&Playing&HDMI**

## Test Data

### Environmental Conditions

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

The testing was performed by Henry Ding on 2012-12-14.

EUT Operation Mode 1: Charging&Playing&HDMI

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dB $\mu$ V)	Correction Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Detector (QP/Ave./QP)
0.165	60.51	10.27	65.57	5.06	QP
0.165	50.13	10.27	55.57	5.44	Ave.
0.155	59.13	10.27	65.86	6.73	QP
0.155	47.64	10.27	55.86	8.22	Ave.
3.420	47.35	10.25	56.00	8.65	QP
0.440	46.31	10.26	57.71	11.40	QP
0.515	44.41	10.25	56.00	11.59	QP
3.425	33.97	10.25	46.00	12.03	Ave.
0.515	32.82	10.25	46.00	13.18	Ave.
0.440	33.28	10.26	47.71	14.43	Ave.
0.195	45.45	10.27	64.71	19.26	QP
0.195	34.32	10.27	54.71	20.39	Ave.

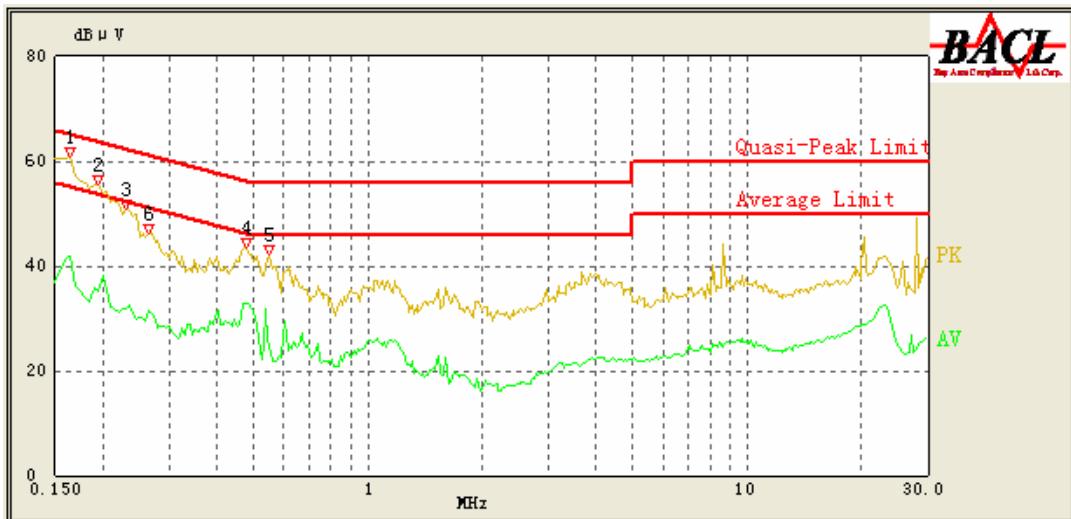
## AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dB $\mu$ V)	Correction Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Detector (QP/Ave./QP)
0.160	59.08	10.24	65.71	6.63	QP
3.525	45.96	10.25	56.00	10.04	QP
3.520	35.55	10.25	46.00	10.45	Ave.
0.160	44.90	10.24	55.71	10.81	Ave.
0.500	44.32	10.24	56.00	11.68	QP
0.450	34.52	10.25	47.43	12.91	Ave.
0.445	44.37	10.25	57.57	13.20	QP
0.220	50.79	10.24	64.00	13.21	QP
0.220	40.35	10.24	54.00	13.65	Ave.
0.505	31.31	10.24	46.00	14.69	Ave.
0.200	49.34	10.24	64.57	15.23	QP
0.200	28.88	10.24	54.57	25.69	Ave.

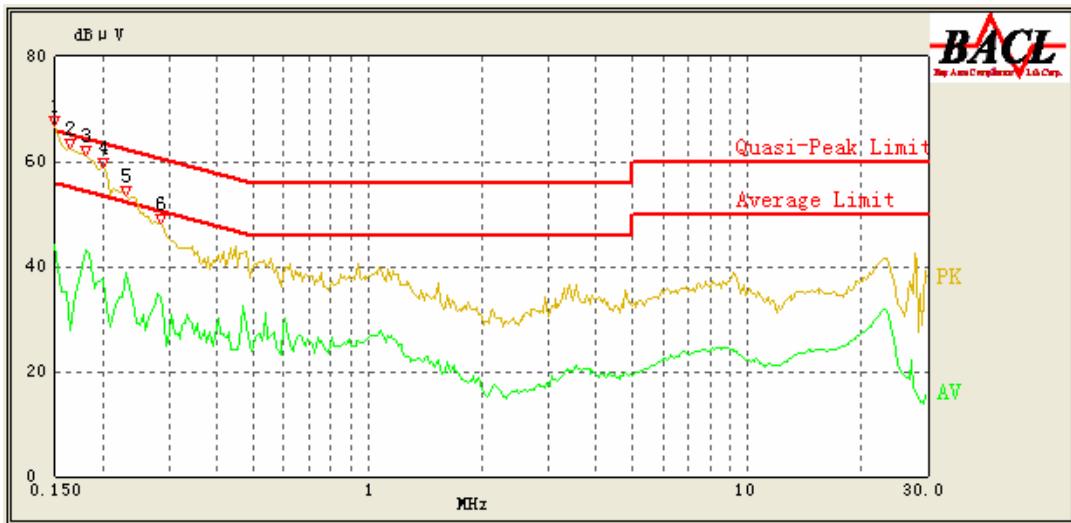
*EUT operation mode 2: Running & Data transmitting with USB disk*

**AC 120V/60 Hz, Line**



Frequency (MHz)	Corrected Amplitude (dB $\mu$ V)	Correction Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Detector (PK/Ave./QP)
0.195	53.80	10.27	64.71	10.91	QP
0.165	52.52	10.27	65.57	13.05	QP
0.480	32.85	10.26	46.57	13.72	Ave.
0.165	41.81	10.27	55.57	13.76	Ave.
0.230	48.32	10.26	63.71	15.39	QP
0.480	40.54	10.26	56.57	16.03	QP
0.550	38.67	10.24	56.00	17.33	QP
0.195	35.14	10.27	54.71	19.57	Ave.
0.550	24.92	10.24	46.00	21.08	Ave.
0.265	31.39	10.26	52.71	21.32	Ave.
0.230	31.91	10.26	53.71	21.80	Ave.
0.265	40.59	10.26	62.71	22.12	QP

## AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dB $\mu$ V)	Correction Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Detector (QP/Ave./QP)
0.180	56.87	10.24	65.14	8.27	QP
0.165	56.50	10.24	65.57	9.07	QP
0.150	55.28	10.24	66.00	10.72	QP
0.150	44.10	10.24	56.00	11.90	Ave.
0.180	43.12	10.24	55.14	12.02	Ave.
0.230	49.02	10.25	63.71	14.69	QP
0.230	38.99	10.25	53.71	14.72	Ave.
0.200	47.72	10.24	64.57	16.85	QP
0.200	37.37	10.24	54.57	17.20	Ave.
0.285	34.24	10.25	52.14	17.90	Ave.
0.285	42.65	10.25	62.14	19.49	QP
0.165	27.70	10.24	55.57	27.87	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

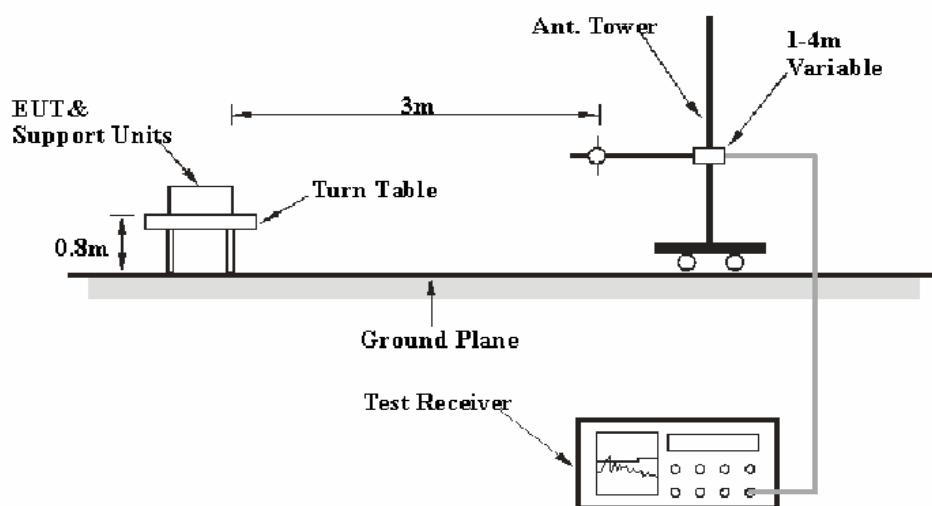
According to FCC §15.109

### 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, 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), and the uncertainty will not be taken into consideration for all the test data recorded in the report.

### 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 1000 MHz.

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
30MHz – 1000 MHz	100 kHz	300 kHz	120kHz	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 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	HP8447E	1937A01046	2012-11-24	2013-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2012-11-17	2013-11-16
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2012-11-24	2013-11-23
Mini-circuits	Pre-Amplifier	ZVA-213+	N/A	2012-11-24	2013-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2014-11-30
R&S	Auto test Software	EMC32	V6.30	-	-

\* **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:

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

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:

**6.9 dB at 33.820500 MHz in the Vertical polarization**

## Test Data

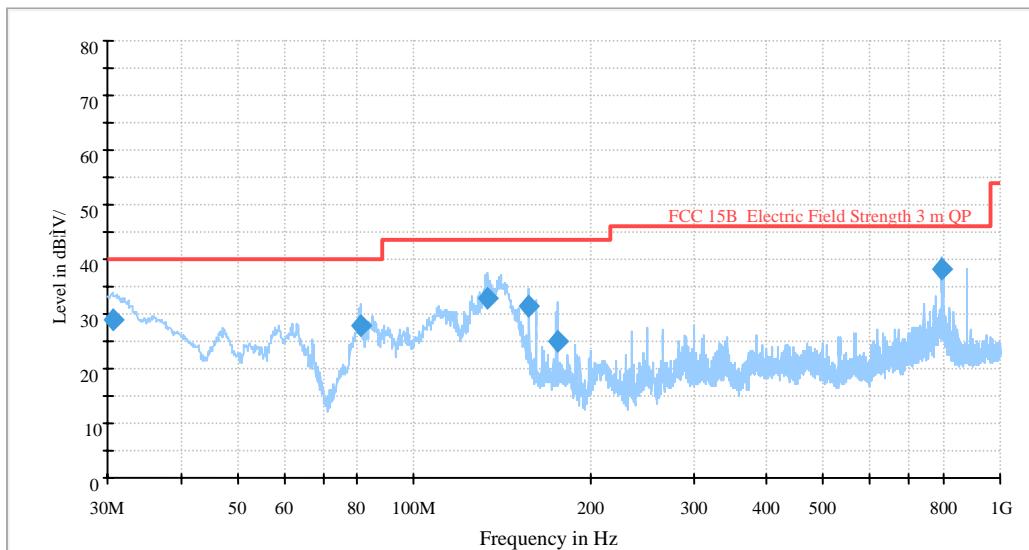
### Environmental Conditions

<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 2012-12-14.

EUT Operation Mode 1: Charging & multimedia playing & HDMI

30-1000 MHz



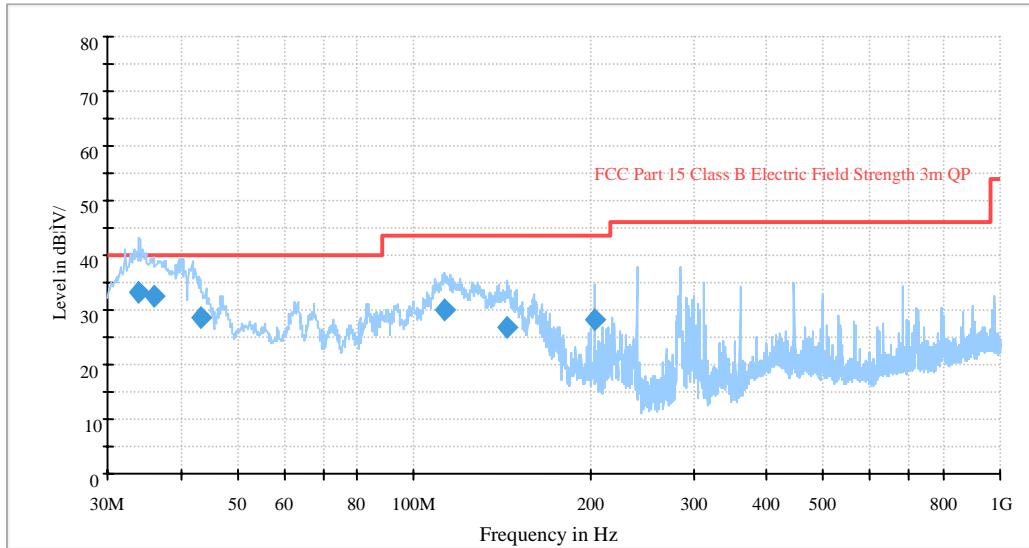
Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity	Turntable Position (Degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
796.594350	38.3	100.0	H	199.0	-5.4	46.0	7.7
133.751525	33.0	100.0	V	262.0	-13.7	43.5	10.5
30.809425	29.0	100.0	V	120.0	-7.4	40.0	11.0
80.869175	28.0	118.0	V	141.0	-20.2	40.0	12.0
157.032275	31.4	170.0	V	0.0	-15.0	43.5	12.1
175.570625	25.0	100.0	V	193.0	-16.0	43.5	18.5

Above 1 GHz

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dB $\mu$ V/m)	FCC Part 15.109	
	Reading (dB $\mu$ V)	Detector (PK/QP/Ave.)		Height (m)	Polar (H / V)			Limit (dB $\mu$ V/m)	Margin (dB)
2663.3	34.96	Ave.	155	1.1	H	7.98	42.94	54	11.06
2663.2	34.85	Ave.	12	1.2	V	7.98	42.83	54	11.17
1861.5	40.04	Ave.	52	1.2	H	2.63	42.67	54	11.33
1861.4	39.66	Ave.	32	1.0	V	2.63	42.29	54	11.71
3194.5	31.02	Ave.	144	1.2	V	9.43	40.45	54	13.55
3194.3	30.89	Ave.	36	1.2	H	9.43	40.32	54	13.68
1861.5	50.38	PK	52	1.2	H	2.63	53.01	74	20.99
2663.3	44.52	PK	155	1.1	H	7.98	52.50	74	21.50
2663.2	44.25	PK	12	1.2	V	7.98	52.23	74	21.77
1861.4	49.58	PK	32	1.0	V	2.63	52.21	74	21.79
3194.5	41.15	PK	144	1.2	V	9.43	50.58	74	23.42
3194.3	40.62	PK	36	1.2	H	9.43	50.05	74	23.95

EUT operation mode 2: Running & Data transmitting with USB disk

30-1000 MHz



Frequency (MHz)	Corrected Amplitude (dB $\mu$ V/m)	Antenna Height (cm)	Antenna Polarity	Turntable Position (Degree)	Correction Factor (dB/m)	Limit (dB $\mu$ V/m)	Margin (dB)
33.820500	33.1	100.0	V	0.0	-9.8	40.0	6.9
36.022925	32.5	124.0	V	350.0	-11.5	40.0	7.5
43.315875	28.5	118.0	V	89.0	-16.7	40.0	11.5
112.472525	30.2	100.0	V	267.0	-14.4	43.5	13.2
203.698775	28.2	206.0	H	65.0	-16.1	43.5	15.3
143.989925	26.8	154.0	V	0.0	-14.5	43.5	16.7

Above 1 GHz

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dB $\mu$ V/m)	FCC Part 15.109	
	Reading (dB $\mu$ V)	Detector (PK/QP/Ave.)		Height (m)	Polar (H / V)			Limit (dB $\mu$ V/m)	Margin (dB)
2663.3	34.96	Ave.	155	1.1	H	7.98	42.94	54	11.06
2663.2	34.85	Ave.	12	1.2	V	7.98	42.83	54	11.17
1861.5	40.04	Ave.	52	1.2	H	2.63	42.67	54	11.33
1861.4	39.66	Ave.	32	1.0	V	2.63	42.29	54	11.71
3194.5	31.02	Ave.	144	1.2	V	9.43	40.45	54	13.55
3194.3	30.89	Ave.	36	1.2	H	9.43	40.32	54	13.68
1861.5	50.38	PK	52	1.2	H	2.63	53.01	74	20.99
2663.3	44.52	PK	155	1.1	H	7.98	52.50	74	21.50
2663.2	44.25	PK	12	1.2	V	7.98	52.23	74	21.77
1861.4	49.58	PK	32	1.0	V	2.63	52.21	74	21.79
3194.5	41.15	PK	144	1.2	V	9.43	50.58	74	23.42
3194.3	40.62	PK	36	1.2	H	9.43	50.05	74	23.95

Note:

Corrected Amplitude = Corrected Factor + Reading

Corrected Factor=Antenna factor (RX)+cable loss – amplifier factor

Margin = Limit- Corr. Amplitude

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