



FCC PART 15 B, CLASS B
TEST REPORT

For

DQ Technology, Inc.

5111 Johnson Drive. Pleasanton, CA 94588, USA

FCC ID: QMPM405R3

Report Type: Original Report	Product Type: ADSL2+ Broadband Gateway
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Report Number: RSZ130426004-00	
Report Date: 2013-05-15	
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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

Product Description for Equipment under Test (EUT)

The *DQ Technology, Inc.*'s product, model number: *M405 (FCC ID: QMPM405R3)* or the "EUT" in this report was an *ADSL2+ Broadband Gateway*, which was measured approximately: 10.6 cm (L) x 9.0 cm (W) x 3.9 cm (H), rated input voltage: DC 5.0V from adapter, the highest operating frequency is 240 MHz.

Adapter 1 Information:

Model: TPA-010510U01
Input: 100-240V~50/60Hz, 0.3A
Output: DC 5.0V, 1000mA

Adapter 2 Information:

Model: ADS006B-W050100
Input: 100-240V~50/60Hz, 0.2A
Output: DC 5.0V, 1.0A

** All measurement and test data in this report was gathered from production sample serial number: 1304138 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-04-26.*

Objective

This test report is prepared on behalf of *DQ Technology, 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 the compliance of the EUT with FCC Part 15 B.

Related Submittal(s)/Grant(s)

No related submittal(s)

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 Exercise Software

“winthrax” exercise software was used.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

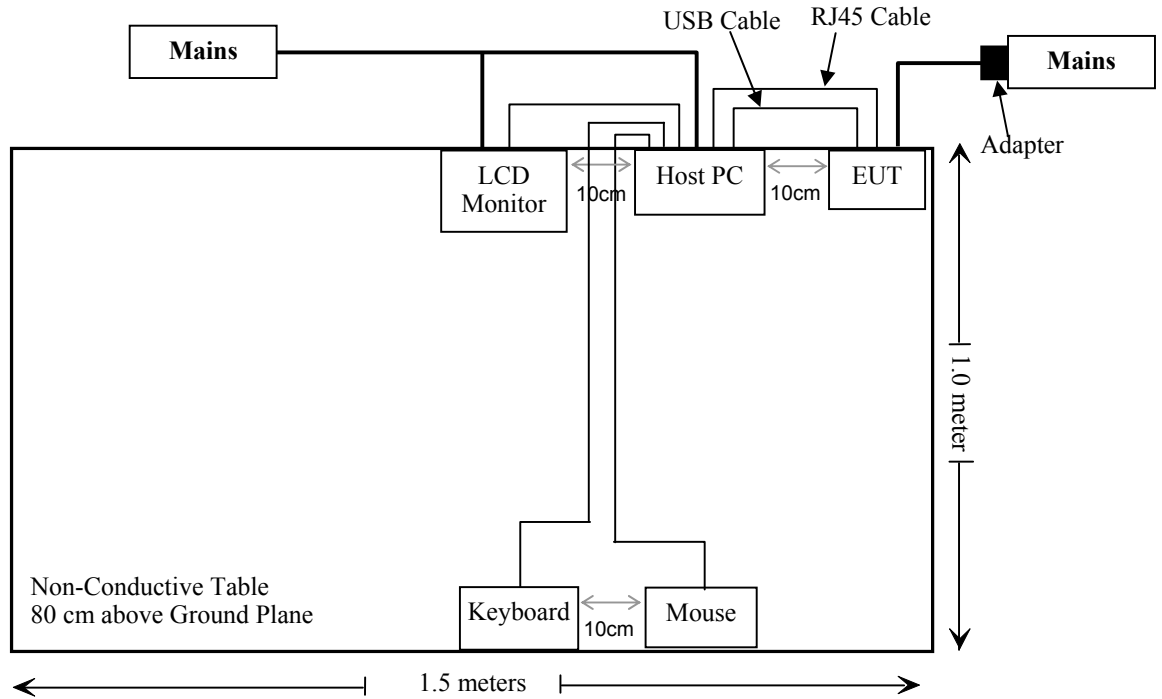
Manufacturer	Description	Model	Serial Number
DELL	Host PC	127BP2X	N/A
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
DELL	Keyboard	L100	CNORH656658907BL04TY
DELL	Mouse	MOC5UO	G1B0096D

External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Detachable AC Cable	1.2	LCD Monitor	Mains
Unshielded Detachable AC Cable	1.2	Host PC	Mains
Shielded Detachable VGA Cable	1.5	Host PC	LCD Monitor
Shielded Undetachable K/B Cable	1.5	Host PC	Keyboard
Shielded Undetachable Mouse Cable	1.5	Host PC	Mouse
Shielded Detachable USB Cable	1.0	Host PC	EUT
Unshielded Detachable RJ45 Cable	1.6	Host PC	EUT
Unshielded Undetachable DC Cable	2.0	Adapter	EUT

Block Diagram of Test Setup

For Conducted Emission:



SUMMARY OF TEST RESULTS

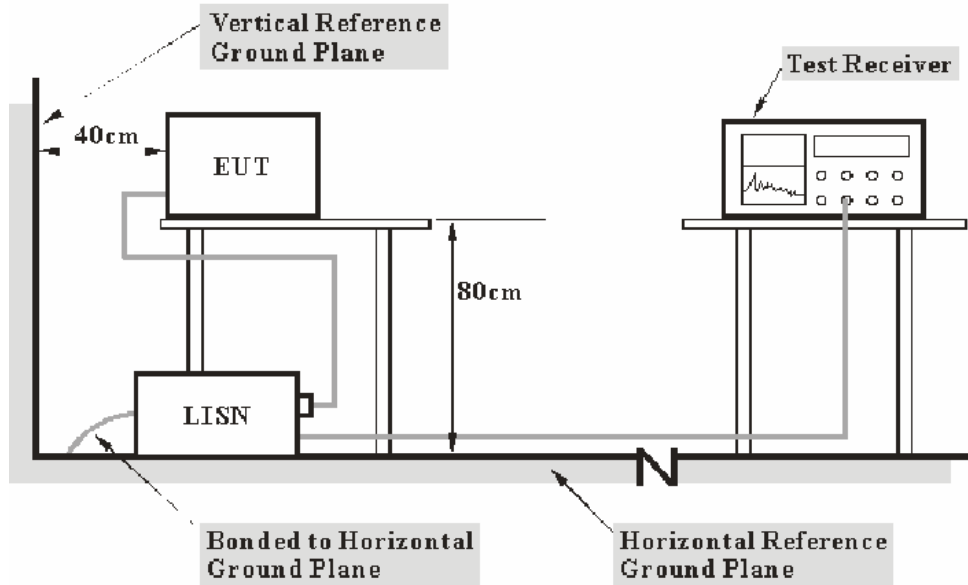
FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC §15.107

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.

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	RBW	VBW
150 kHz – 30 MHz	9 kHz	30 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	2012-08-08	2013-08-08
Rohde & Schwarz	1st LISN	ESH2-Z5	892107/021	2012-08-22	2013-08-22
COM-POWER	2nd LISN	LI-200	12208	NCR	NCR
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) and Cable Loss. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss}$$

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:

4.1 dB at 21.781422 MHz in the **Neutral** conducted mode with adapter 1

Test Data

Environmental Conditions

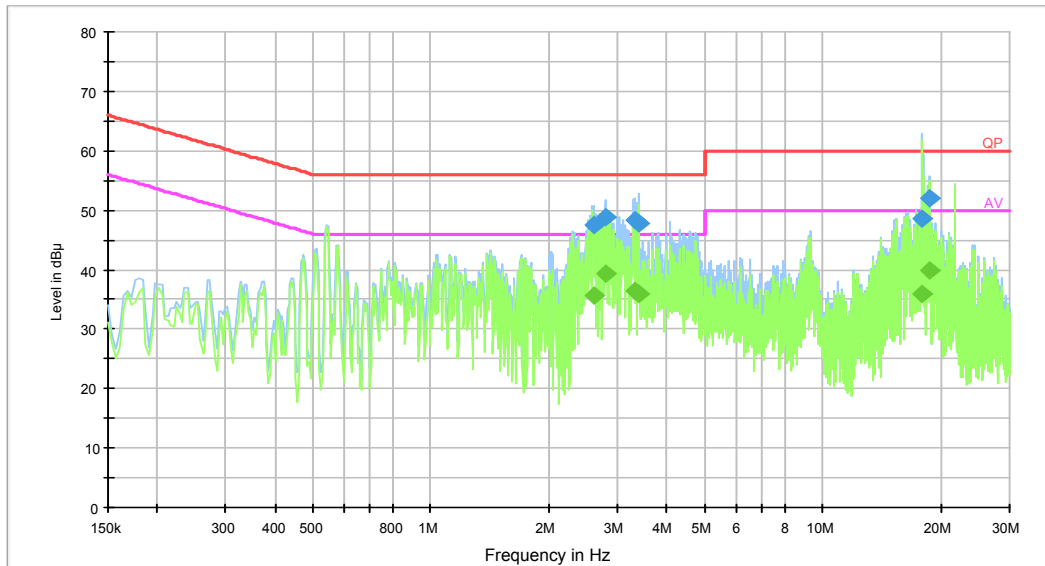
Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Andrew Shu on 2013-05-14.

Test Mode: Running with adapter 1

AC 120V/60 Hz, Line

EMI Auto Test L



Quasi-peak detection mode

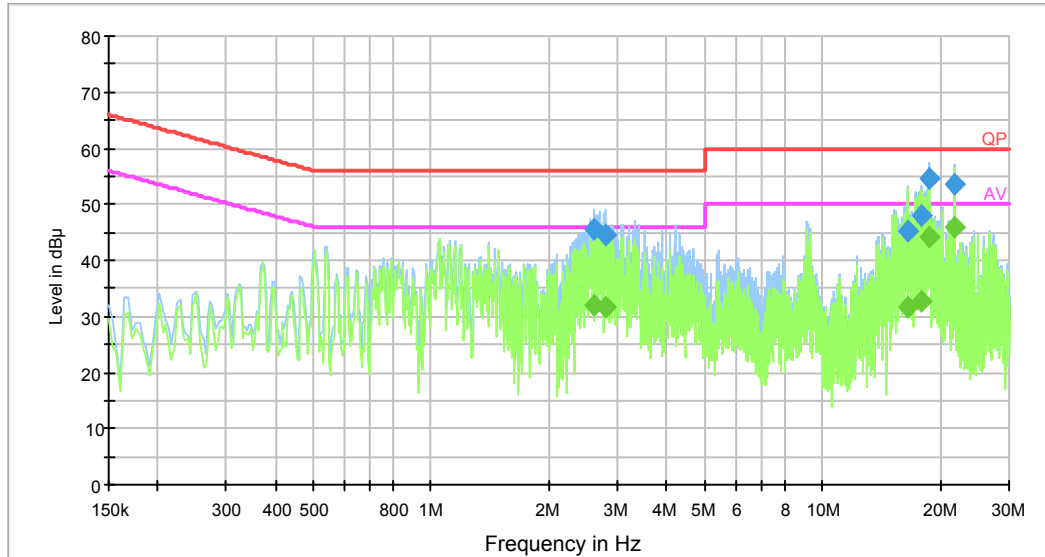
Frequency (MHz)	Corrected Amplitude (dBµV)	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Remark (PK/ QP/Ave.)
2.778838	48.8	0.5	56.0	7.2	QP
3.298989	48.4	0.5	56.0	7.6	QP
18.654747	52.0	1.0	60.0	8.0	QP
3.398783	47.7	0.5	56.0	8.3	QP
2.611551	47.5	0.5	56.0	8.5	QP
18.000757	48.5	1.0	60.0	11.5	QP

Average detection mode

Frequency (MHz)	Corrected Amplitude (dBµV)	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Remark (PK/ QP/Ave.)
2.778838	39.2	0.5	46.0	6.8	Ave.
3.298989	36.3	0.5	46.0	9.7	Ave.
3.398783	36.0	0.5	46.0	10.0	Ave.
18.654747	39.9	1.0	50.0	10.1	Ave.
2.611551	35.6	0.5	46.0	10.4	Ave.
18.000757	36.0	1.0	50.0	14.0	Ave.

AC 120V/60 Hz, Neutral

EMI Auto Test N



Quasi-peak detection mode

Frequency (MHz)	Corrected Amplitude (dBµV)	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Remark (PK/ QP/Ave.)
18.661195	54.6	0.9	60.0	5.4	QP
21.781422	53.5	1.0	60.0	6.5	QP
2.600428	45.6	0.5	56.0	10.4	QP
2.801614	44.6	0.5	56.0	11.4	QP
17.951794	48.1	0.9	60.0	11.9	QP
16.557255	45.1	0.9	60.0	14.9	QP

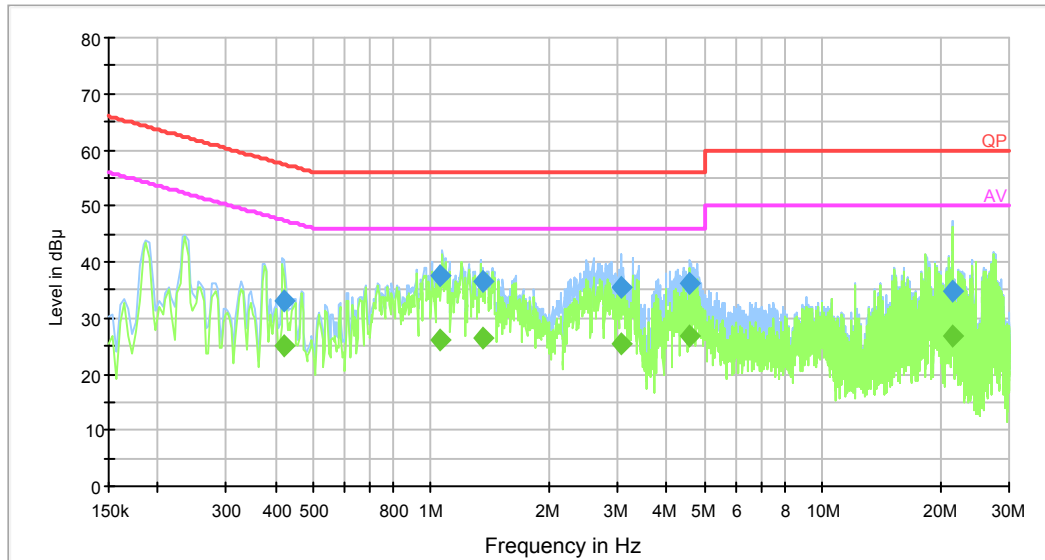
Average detection mode

Frequency (MHz)	Corrected Amplitude (dBµV)	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Remark (PK/ QP/Ave.)
21.781422	45.9	1.0	50.0	4.1	Ave.
18.661195	44.1	0.9	50.0	5.9	Ave.
2.600428	32.0	0.5	46.0	14.0	Ave.
2.801614	31.5	0.5	46.0	14.5	Ave.
17.951794	32.6	0.9	50.0	17.4	Ave.
16.557255	31.7	0.9	50.0	18.3	Ave.

Test Mode: Running with adapter 2

AC 120V/60 Hz, Line

EMI Auto Test L



Quasi-peak detection mode

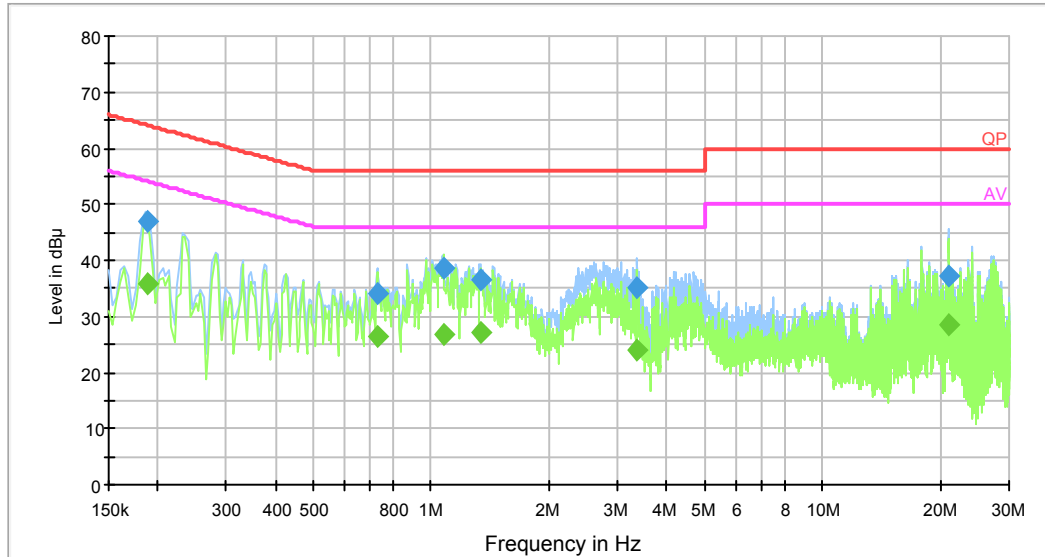
Frequency (MHz)	Corrected Amplitude (dBµV)	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Remark (PK/ QP/Ave.)
1.051099	37.5	0.5	56.0	18.5	QP
1.352666	36.4	0.5	56.0	19.6	QP
4.599990	36.3	0.5	56.0	19.7	QP
3.073637	35.3	0.5	56.0	20.7	QP
0.419049	33.1	0.5	57.5	24.4	QP
21.498134	34.9	1.1	60.0	25.1	QP

Average detection mode

Frequency (MHz)	Corrected Amplitude (dBµV)	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Remark (PK/ QP/Ave.)
4.599990	26.7	0.5	46.0	19.3	Ave.
1.352666	26.3	0.5	46.0	19.7	Ave.
1.051099	26.2	0.5	46.0	19.8	Ave.
3.073637	25.2	0.5	46.0	20.8	Ave.
0.419049	24.9	0.5	47.5	22.5	Ave.
21.498134	26.9	1.1	50.0	23.1	Ave.

AC 120V/60 Hz, Neutral

EMI Auto Test N



Quasi-peak detection mode

Frequency (MHz)	Corrected Amplitude (dBµV)	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Remark (PK/ QP/Ave.)
0.189568	47.0	0.4	64.1	17.0	QP
1.074742	38.6	0.5	56.0	17.4	QP
1.338417	36.6	0.5	56.0	19.4	QP
3.373225	35.2	0.5	56.0	20.8	QP
0.730988	34.1	0.5	56.0	21.9	QP
21.000296	37.3	0.9	60.0	22.7	QP

Average detection mode

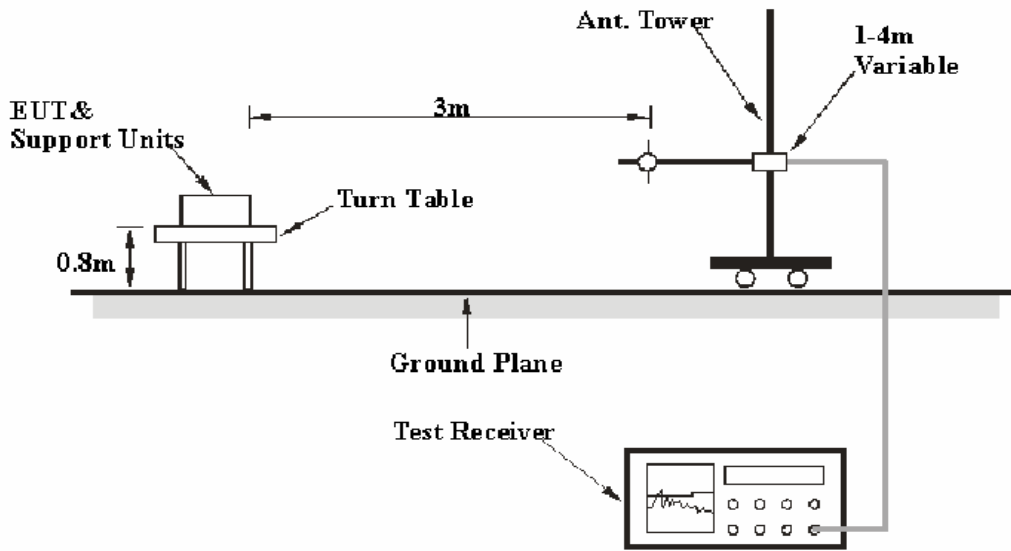
Frequency (MHz)	Corrected Amplitude (dBµV)	Corrected Factor (dB)	Limit (dBµV)	Margin (dB)	Remark (PK/ QP/Ave.)
0.189568	36.0	0.4	54.1	18.1	Ave.
1.338417	27.3	0.5	46.0	18.7	Ave.
1.074742	26.8	0.5	46.0	19.2	Ave.
0.730988	26.6	0.5	46.0	19.4	Ave.
21.000296	28.5	0.9	50.0	21.6	Ave.
3.373225	24.1	0.5	46.0	21.9	Ave.

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 C63.4-2009. 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 6.0 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
30MHz – 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 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

* **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:

2.1 dB at 33.224350 MHz in the Horizontal polarization with adapter 2

Test Data

Environmental Conditions

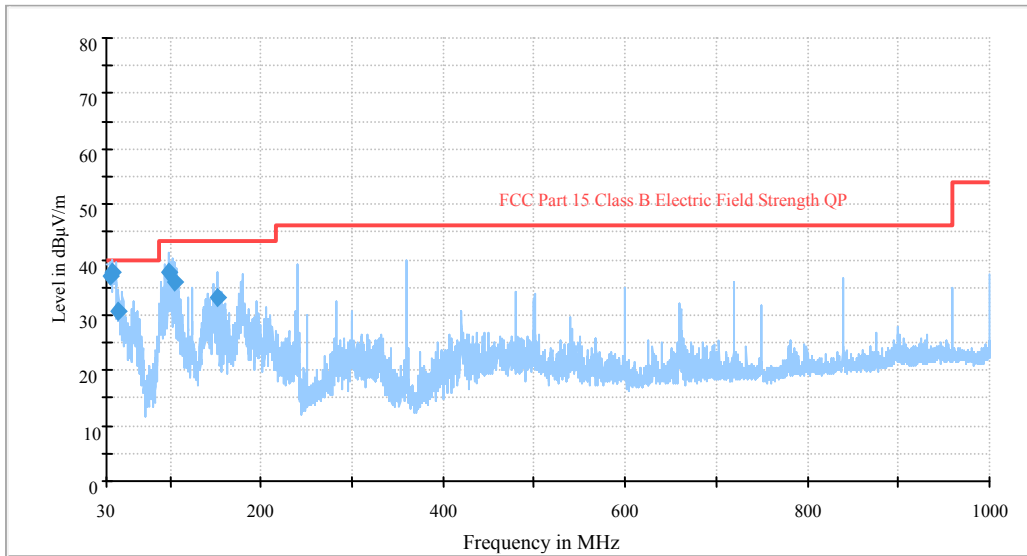
Temperature:	25°C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

The testing was performed by Andrew Shu on 2013-05-14.

Test Mode: Running with adapter 1

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 (Degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
36.122600	37.7	106.0	V	152.0	-11.6	40.0	2.3
33.239700	37.1	105.0	V	85.0	-9.3	40.0	2.9
98.475800	37.6	107.0	V	214.0	-17.8	43.5	5.9
104.750000	36.1	105.0	V	198.0	-16.0	43.5	7.4
42.945200	30.6	104.0	V	112.0	-16.4	40.0	9.4
151.558200	33.3	106.0	V	282.0	-14.9	43.5	10.2

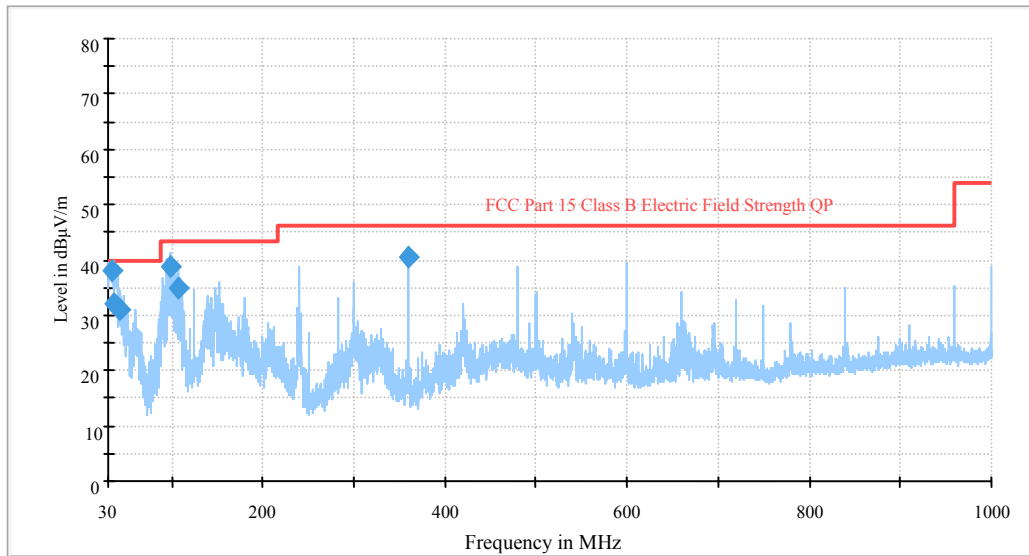
2) Above 1 GHz

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC 15B	
	Reading (dBμ)	Detector (PK/QP/Ave.)		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
2381.4	44.27	Ave.	124	1.4	H	6.13	50.40	54	3.60
2381.4	35.53	Ave.	85	1.3	V	6.13	41.66	54	12.34
1990.2	38.41	Ave.	203	1.3	H	3.23	41.64	54	12.36
1824.0	36.69	Ave.	163	1.6	H	2.63	39.32	54	14.68
1990.2	35.89	Ave.	58	1.8	V	3.23	39.12	54	14.88
1824.0	33.90	Ave.	140	1.4	V	2.63	36.53	54	17.47
2381.4	47.66	PK	124	1.4	H	6.13	53.79	74	20.21
1824.0	48.68	PK	140	1.4	V	2.63	51.31	74	22.69
1990.2	47.96	PK	203	1.3	H	3.23	51.19	74	22.81
1990.2	47.95	PK	58	1.8	V	3.23	51.18	74	22.82
1824.0	48.26	PK	163	1.6	H	2.63	50.89	74	23.11
2381.4	44.27	PK	85	1.3	V	6.13	50.40	74	23.60

Test Mode: Running with adapter 2

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 (Degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
33.224350	37.9	135.0	H	176.0	-9.3	40.0	2.1
98.434800	38.7	106.0	V	223.0	-17.8	43.5	4.8
359.995850	40.4	104.0	V	288.0	-13.3	46.0	5.6
36.063250	32.2	256.0	H	51.0	-11.5	40.0	7.8
106.701550	35.1	105.0	H	223.0	-15.6	43.5	8.4
43.815750	31.0	135.0	H	43.0	-17.0	40.0	9.0

2) Above 1 GHz

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBuV/m)	FCC 15B	
	Reading (dBμ)	Detector (PK/QP/Ave.)		Height (m)	Polar (H / V)			Limit (dBuV/m)	Margin (dB)
2394.2	43.32	Ave.	215	1.7	H	6.13	49.45	54	4.55
1993.5	37.96	Ave.	203	1.3	H	3.23	41.19	54	12.81
2394.2	35.06	Ave.	52	1.0	V	6.13	41.19	54	12.81
1820.3	35.92	Ave.	47	1.6	H	2.63	38.55	54	15.45
1993.5	35.24	Ave.	125	1.8	V	3.23	38.47	54	15.53
1820.3	33.69	Ave.	147	1.4	V	2.63	36.32	54	17.68
2394.2	46.87	PK	215	1.7	H	6.13	53.00	74	21.00
1820.3	48.36	PK	147	1.4	V	2.63	50.99	74	23.01
1993.5	47.65	PK	125	1.8	V	3.23	50.88	74	23.12
1820.3	48.00	PK	47	1.6	H	2.63	50.63	74	23.37
1993.5	46.96	PK	203	1.3	H	3.23	50.19	74	23.81
2394.2	43.30	PK	52	1.0	V	6.13	49.43	74	24.57

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 *******