

FCC PART 15B, CLASS B
MEASUREMENT AND TEST REPORT

For

Power7 Technology (Dong Guan) Co., Ltd.

No. 28Binjiang Blvd Shishuikou Village, Qiao tou Town, Dongguan, China

FCC ID: QT7W9M3R6-PNY

Report Type: Original Report	Product Type: WiFi Card Reader
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Report Number: RSZ140403006-00A	
Report Date: 2014-05-06	
Reviewed By: RF Engineer	<i>Jimmy xiao</i>
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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 *Power7 Technology (Dong Guan) Co., Ltd.*'s product, model number: *P-R2000-1AMKK01-RB* (FCC ID: *QT7W9M3R6-PNY*) or the "EUT" as referred to in this report was a *WiFi Card Reader*, which was measured approximately: 118 mm (L) x 79 mm (W) x 14 mm (H), rated input voltage: DC 3.7V battery. The highest operating frequency is 360 MHz.

Note: the serial model P-R2000-1AMKK01-FR and P-R2000-1AMKK01-RB are electrically identical, they are just different in model numbers and package due to marketing purposes, and the model P-R2000-1AMKK01-RB was selected to test, which was explained in the attached product similarity declaration letter provided and guaranteed by applicant.

** All measurement and test data in this report was gathered from production sample serial number: PYYWW000001 (Assigned by the Applicant). The EUT supplied by the applicant was received on 2014-04-03.*

Objective

This report is prepared on behalf of *Power7 Technology (Dong Guan) 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 15B, Class B.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submission with FCC ID: QT7W9M3R6-PNY.

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 typical mode which is provided by manufacture.

Test mode 1: Reading and writing the TF card by USB2.0.

Test mode 2: Reading and writing the TF card and storage device by WiFi & Charging.

EUT Exercise Software

“Burn test4.0” exercise software was used.

Equipment Modifications

No modification was made to the EUT tested.

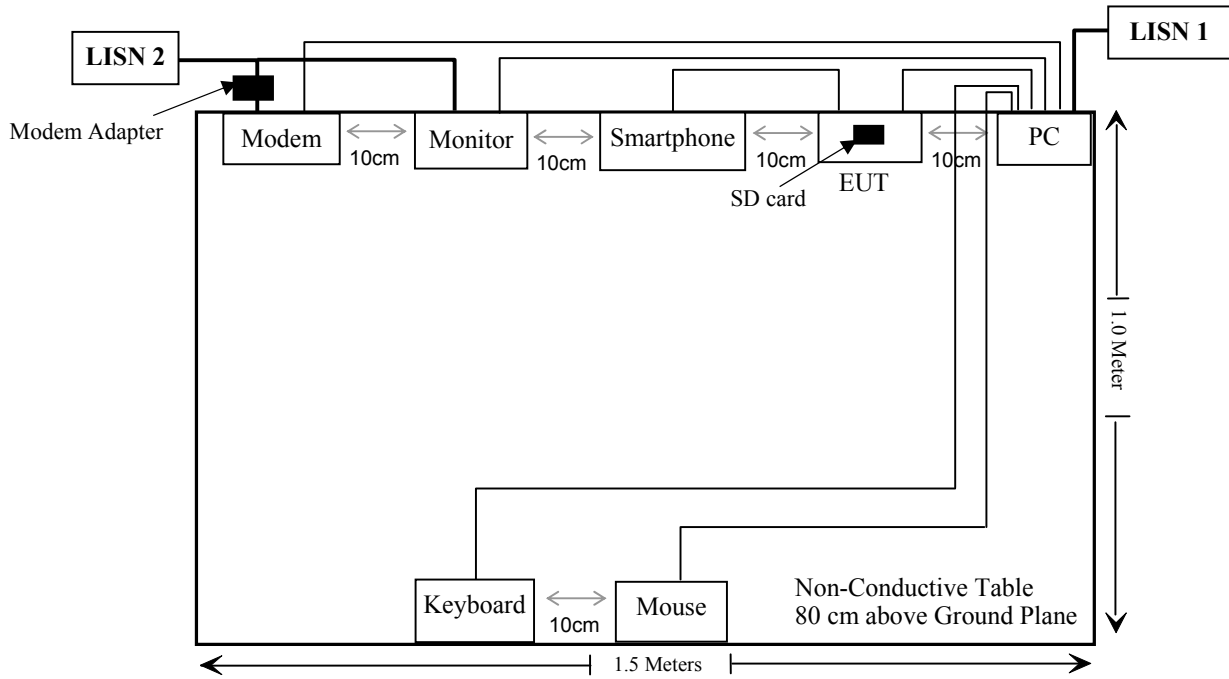
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Mouse	MOC5UO	G1900NKD
SAST	Modem	AEM-2100	0293
Motorola	Smartphone	TX535	N/A
Kingston	Micro SD card	4 GB	/

External I/O Cable

Cable Description	Length (m)	From Port	To
Shielding Detachable Serial Cable	1.2	Host PC	Modem
Shielding Detachable K/B Cable	1.5	Host PC	Keyboard
Shielding Detachable USB Cable	1.5	Host PC	Mouse
Shielding Detachable VGA Cable	1.5	Host PC	LCD Monitor
Unshielding Detachable USB Cable	0.5	EUT	Host PC
Unshielding Detachable AC Power Cable	2.0	PC/Host	LISN 1
Unshielding Detachable AC Power Cable	2.0	Monitor	LISN 2
Unshielding Detachable USB Cable	0.5	EUT	Smartphone

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC §15.107

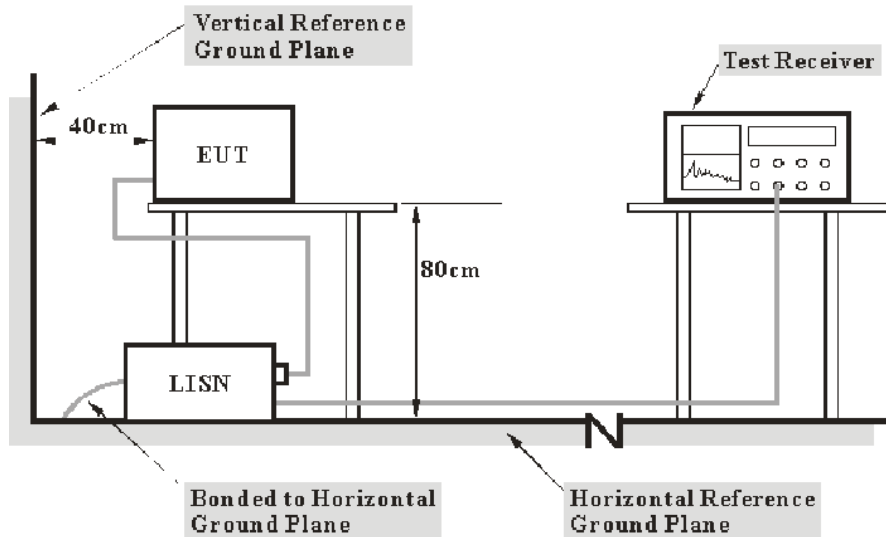
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements may be receiver reading, attenuation of the connection between LISN and receiver, LISN voltage division factor, LISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expanded combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Expanded Measurement uncertainty
AC Mains	3.26 dB (k=2, 95% level of confidence)
CAT 3	3.70 dB (k=2, 95% level of confidence)
CAT 5	3.86 dB (k=2, 95% level of confidence)
CAT 6	4.64 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 measurement procedure of EUT setup is according with 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 PC was connected to an AC 120V/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 emissions, the PC was connected to the first LISN, the other relevant equipments were connected to the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final 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	2013-06-17	2014-06-17
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2013-05-07	2014-05-07
Rohde & Schwarz	Transient limiter	ESH3Z2	DE25985	2013-10-15	2014-10-15
Rohde & Schwarz	CE Test software	EMC 32	V8.53	-	-

* **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 VDF (Voltage Division Factor), Cable Loss and Transient limiter Attenuation. The basic equation is as follows:

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

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, with the worst margin reading of:

10.0 dB at 3.800250 MHz in the **Neutral** conducted mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(L_m)} \leq L_{lim} + U_{cispr}$$

In BAACL, $U_{(L_m)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

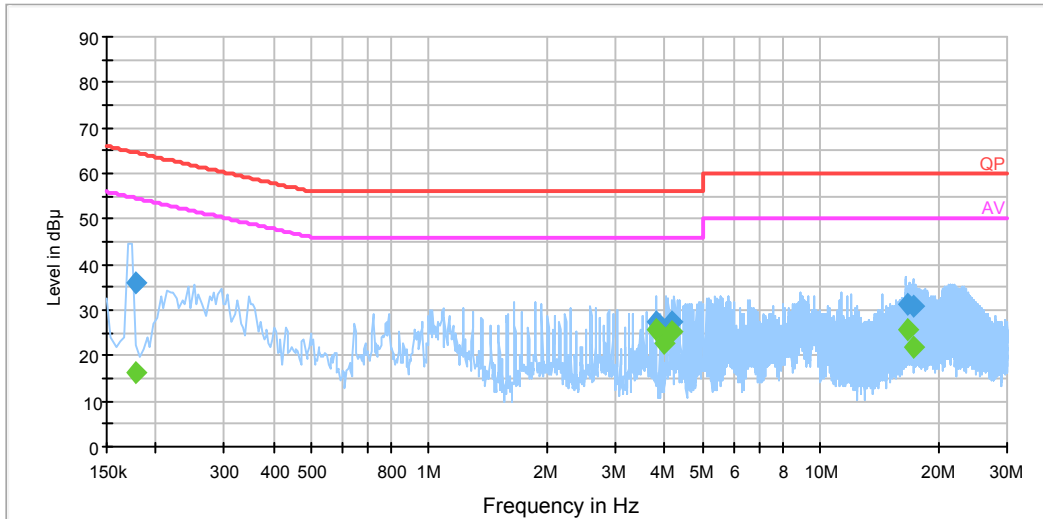
Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Simon Wang on 2014-04-11.

Test Mode 1:

AC 120V/60 Hz, Line

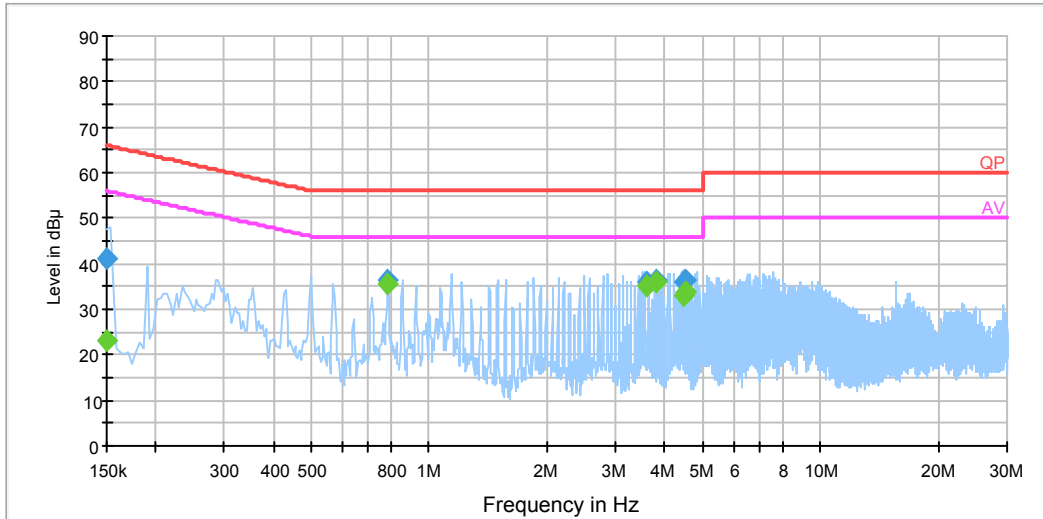
EMI Auto Test L



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/QP/Ave.)
0.178500	36.0	19.6	64.6	28.6	QP
0.178500	16.5	19.6	54.6	38.1	Ave.
3.820850	27.4	19.7	56.0	28.6	QP
3.820850	25.8	19.7	46.0	20.2	Ave.
3.969550	25.3	19.7	56.0	30.7	QP
3.969550	22.8	19.7	46.0	23.2	Ave.
4.182370	27.3	19.7	56.0	28.7	QP
4.182370	25.5	19.7	46.0	20.5	Ave.
16.673810	31.4	19.8	60.0	28.6	QP
16.673810	25.8	19.8	50.0	24.2	Ave.
17.307970	30.8	19.9	60.0	29.2	QP
17.307970	21.7	19.9	50.0	28.3	Ave.

AC 120V/60 Hz, Neutral

EMI Auto Test N



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/ QP/Ave.)
0.150000	41.3	19.6	66.0	24.7	QP
0.150000	23.0	19.6	56.0	33.0	Ave.
0.786270	36.2	19.6	56.0	19.8	QP
0.786270	35.5	19.6	46.0	10.5	Ave.
3.584510	36.2	19.7	56.0	19.8	QP
3.584510	35.1	19.7	46.0	10.9	Ave.
3.800250	36.6	19.7	56.0	19.4	QP
3.800250	36.0	19.7	46.0	10.0	Ave.
4.451670	36.2	19.7	56.0	19.8	QP
4.451670	33.0	19.7	46.0	13.0	Ave.
4.518650	36.3	19.7	56.0	19.7	QP
4.518650	33.9	19.7	46.0	12.1	Ave.

Note:

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

FCC §15.109 - RADIATED EMISSIONS

Applicable Standard

According to FCC §15.109

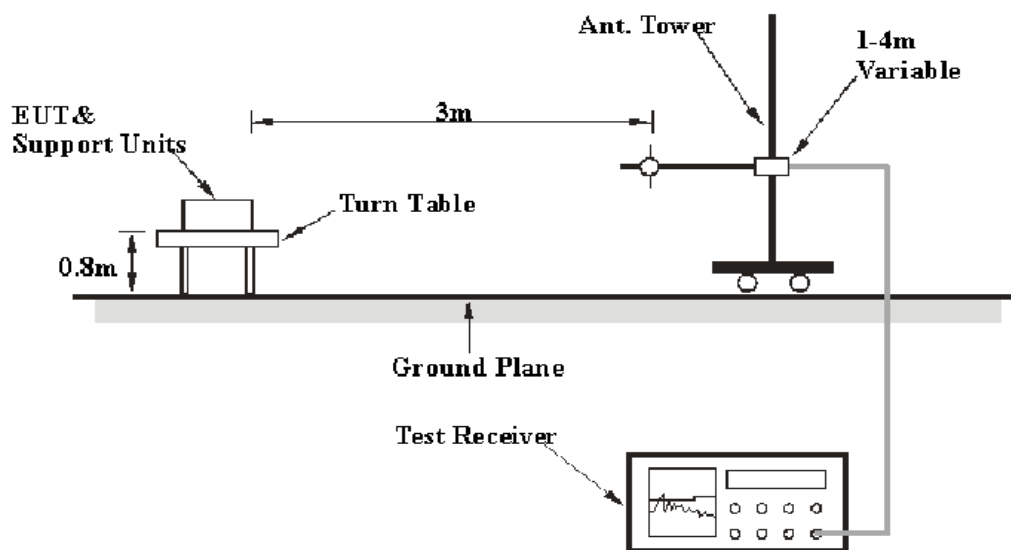
Measurement Uncertainty

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 16-4-2:2011, the expanded combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report

Frequency	Polarity	Measurement uncertainty
30MHz~200MHz	Horizontal	4.62 dB (k=2, 95% level of confidence)
	Vertical	4.54 dB (k=2, 95% level of confidence)
200MHz~1GHz	Horizontal	4.84 dB (k=2, 95% level of confidence)
	Vertical	5.91 dB (k=2, 95% level of confidence)
1 GHz~6 GHz	Horizontal/Vertical	4.68 dB (k=2, 95% level of confidence)
Above 6 GHz	Horizontal/Vertical	4.92 dB (k=2, 95% level of confidence)

EUT Setup



The radiated emission tests were performed in the 3 meters 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 PC was connected to an AC 120V/60 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 2 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

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

All final data was recorded in the Quasi-peak detection mode from 30 MHz to 1 GHz, Peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2013-09-30	2014-09-30
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2013-09-25	2014-09-25
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2014-04-03	2015-04-03
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2014-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2013-11-12	2014-11-12
R&S	Auto test Software	EMC32	V9.10	--	--

* **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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Correction Factor} = \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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, with the worst margin reading of:

2.08 dB at 145.245875 MHz in the Horizontal polarization (Test mode 2)

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BAACL, $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

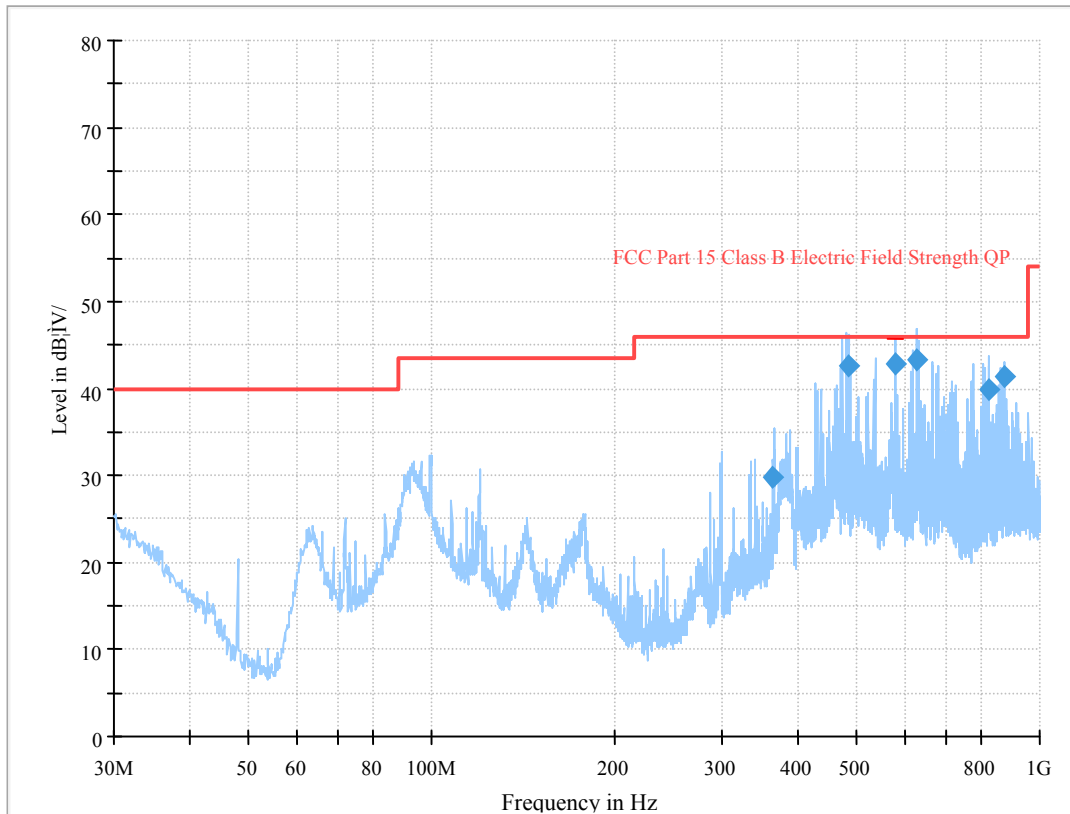
Temperature:	26 °C
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Simon Wang on 2014-04-11.

Test Mode 1:

1) 30 MHz ~ 1 GHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (Degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
365.053125	29.95	116.0	V	77.0	-12.3	46.00	16.05
483.989250	42.64	191.0	H	340.0	-9.6	46.00	3.36
580.001375	42.89	101.0	V	26.0	-8.6	46.00	3.11
627.994125	43.03	103.0	V	237.0	-7.6	46.00	2.97
823.987625	39.99	107.0	H	304.0	-5.0	46.00	6.01
875.972750	41.21	100.0	H	315.0	-4.2	46.00	4.79

Note:

- 1) Corrected Amplitude = Meter Reading + Correction Factor
- 2) Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain
- 3) Margin = Limit - Corrected Amplitude

2) Above 1GHz

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dB μ V/m)	FCC Part 15.109	
	Reading (dB μ V)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dB μ V/m)	Margin (dB)
1127.8	49.87	PK	47	1.2	H	-0.58	49.29	74	24.71
1127.8	29.32	Ave.	47	1.2	H	-0.58	28.74	54	25.26
1344.1	46.17	PK	330	1.1	V	0.19	46.36	74	27.64
1344.1	27.73	Ave.	330	1.1	V	0.19	27.92	54	26.08
1693.6	41.09	PK	322	1.6	H	1.77	42.86	74	31.14
1693.6	22.98	Ave.	322	1.6	H	1.77	24.75	54	29.25

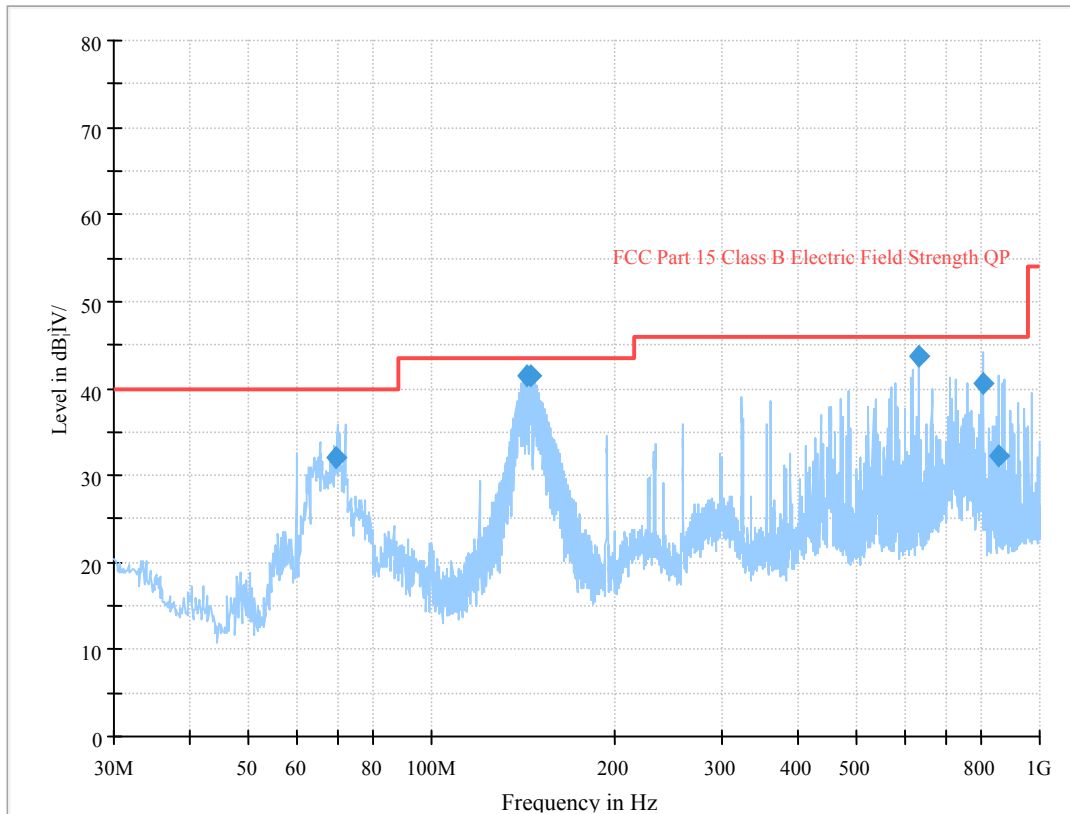
Note:

- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude

Test Mode 2:

1) 30 MHz ~ 1 GHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Position (Degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
69.853375	32.03	400.0	H	340.0	-20.1	40.00	7.97
143.399125	41.36	193.0	H	43.0	-14.1	43.50	2.14
145.245875	41.42	198.0	H	43.0	-14.3	43.50	2.08
632.013500	43.74	120.0	V	122.0	-7.4	46.00	2.26
807.953875	40.47	100.0	V	147.0	-5.0	46.00	5.53
856.093750	32.20	100.0	V	181.0	-4.6	46.00	13.80

Note:

- 1) Corrected Amplitude = Meter Reading + Correction Factor
- 2) Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain
- 3) Margin = Limit - Corrected Amplitude

2) Above 1GHz

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dB μ V/m)	FCC Part 15.109	
	Reading (dB μ V)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dB μ V/m)	Margin (dB)
1216.5	50.01	PK	16	1.8	H	0.13	50.14	74	23.86
1216.5	29.85	Ave.	16	1.8	H	0.13	29.98	54	24.02
1379.2	46.80	PK	125	1.2	V	0.19	46.99	74	27.01
1379.2	27.85	Ave.	125	1.2	V	0.19	28.04	54	25.96
1755.4	41.88	PK	22	1.7	H	2.24	44.12	74	29.88
1755.4	23.47	Ave.	22	1.7	H	2.24	25.71	54	28.29

Note:

- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude

PRODUCT SIMILARITY DECLARATION LETTER



东莞泰克威科技有限公司
POWER 7 TECHNOLOGY Co., Ltd.

POWER 7 TECHNOLOGY(Dongguan) Co., Ltd
No.28 binjiang Blvd Shishuikou Village, Qiaotou Town,Donguan,china
Tel: 86-769-89297777 Fax: 86-769-89299777

2014-05-05

Product Similarity Declaration

To Whom It May Concern,

We, POWER 7 TECHNOLOGY(Dongguan) Co., Ltd hereby declare that our WiFi Card Reader, Model Number: P-R2000-1AMKK01-FR , P-R2000-1AMKK01-RB , model number P-R2000-1AMKK01-RB was tested by BACL. They are just different in model numbers and package due to marketing purposes.

Please contact me if you have any question.

Signature:

ST Wang
Vice General Manager

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