

# FCC PART 15 B, CLASS B TEST REPORT

For

**SHUOYING INDUSTRIAL (SHENZHEN) CO., LTD.**

NO.1 Shuoying Rd., Hebei Industry Area, Dalang, Longhua Town, Baoan, Shenzhen, China

**FCC ID: XJN-PM0739X**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Mobile Internet Devices
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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 *SHUOYING INDUSTRIAL (SHENZHEN) CO., LTD.*'s product, model number: *PM0739* (FCC ID: *XJN-PM0739X*) or the "EUT" in this report was a *Mobile Internet Devices*, which was measured approximately: 18.8 cm (L) x 10.8 cm (W) x 0.8 cm (H), rated with input voltage: DC 3.7V Li-ion battery or DC 5.0V charging from adapter. The highest operating frequency is 1.2GHz.

#### Adapter Information:

Model: TEKA012-0502000UK

Input: AC 100-240V, 50/60 Hz, 0.35A Max

Output: DC 5V, 2A

*Note: the product Mobile Internet Devices, serial models IBT0725, IBT0725A and IBT0725B are electrically identical with the model PM0739 which was selected to test, and difference among them is just the model number which was explained in the product similarity declaration letter that provided and guaranteed by applicant.*

*\*All measurement and test data in this report was gathered from production sample serial number: 1312079 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-12-06.*

### Objective

This test report is prepared on behalf of *SHUOYING INDUSTRIAL (SHENZHEN) 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 the EUT with FCC Part 15 B.

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

FCC Part 15.247 DSS, Part 15.247 DTS and Part 22H&24E PCE submissions with FCC ID: XJN-PM0739X.

### 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: Downloading (data transforms with computer)

### EUT Exercise Software

“BurnIn test v5.3” exercise software was used.

### Special Accessories

No special accessory.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

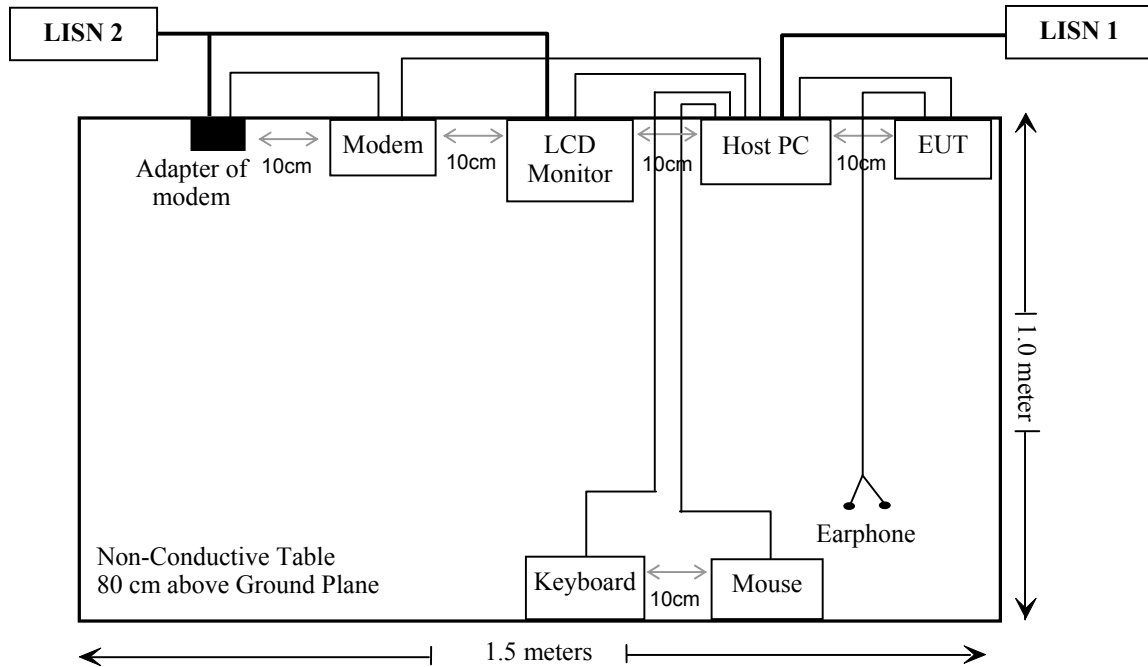
Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Mouse	MOC5UO	G1900NKD
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
SAST	Modem	AEM-2100	0293
/	Earphone	/	/

### External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielding Detachable USB Cable	1.5	Host PC	Mouse
Shielding Detachable Serial Cable	1.2	Host PC	Modem
Shielding Detachable K/B Cable	1.5	Host PC	Keyboard
Shielding Detachable VGA Cable	1.5	Host PC	LCD Monitor
Unshielding Detachable USB Cable	0.8	EUT	Host PC

## 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

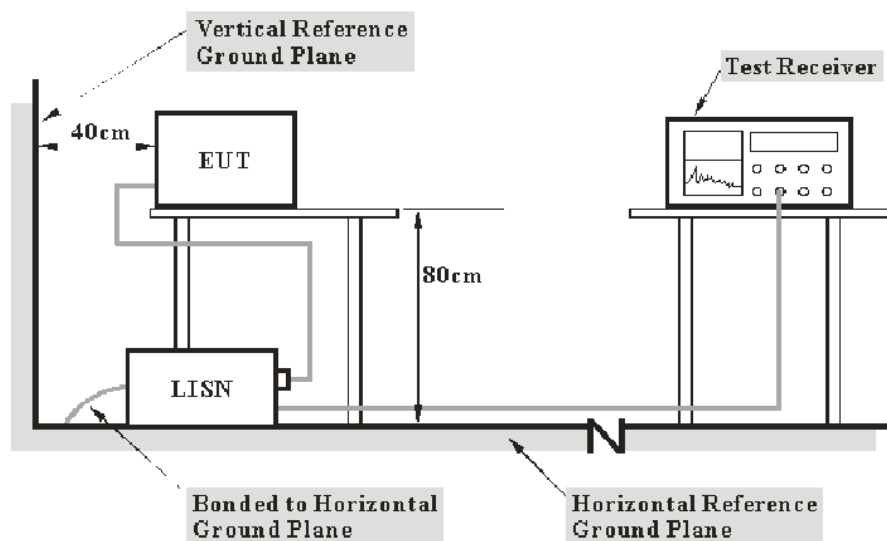
### Measurement Uncertainty

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

Based on CISPR 16-4-2:2011, the expended 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	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 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 host PC 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	IF B/W
150 kHz – 30 MHz	9 kHz

## Test Procedure

During the conducted emission test, the host PC was connected to the first LISN and the other relevant equipments 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 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	LISN	ESH2-Z5	892107/021	2013-08-09	2014-08-09
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. 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:

**8.5 dB at 8.954000 MHz in the Line conducted mode**

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

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

in BACL.,  $U_{(Lm)}$  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

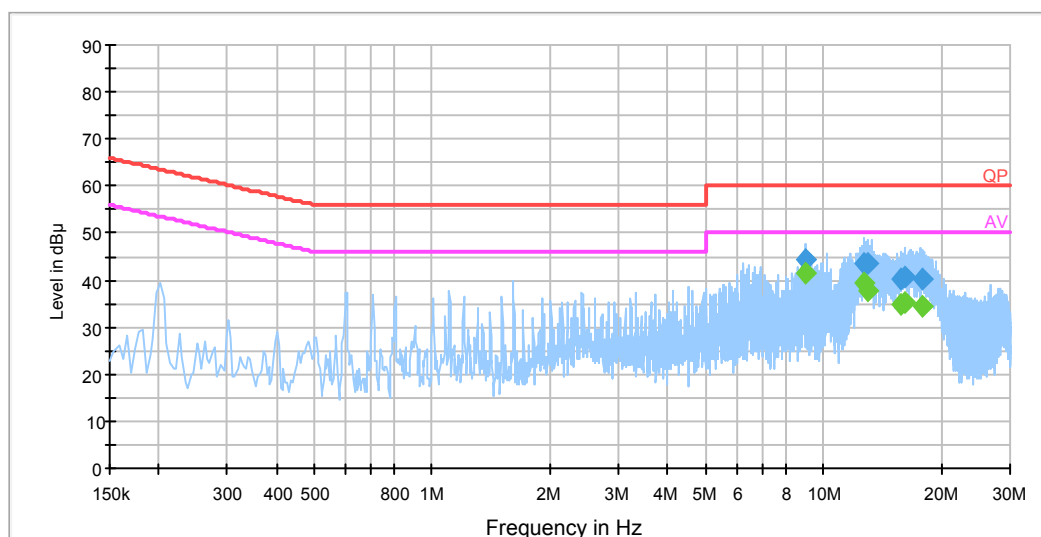
<b>Temperature:</b>	20 °C
<b>Relative Humidity:</b>	51 %
<b>ATM Pressure:</b>	100.1 kPa

*The testing was performed by Rocky Kang on 2013-12-12.*

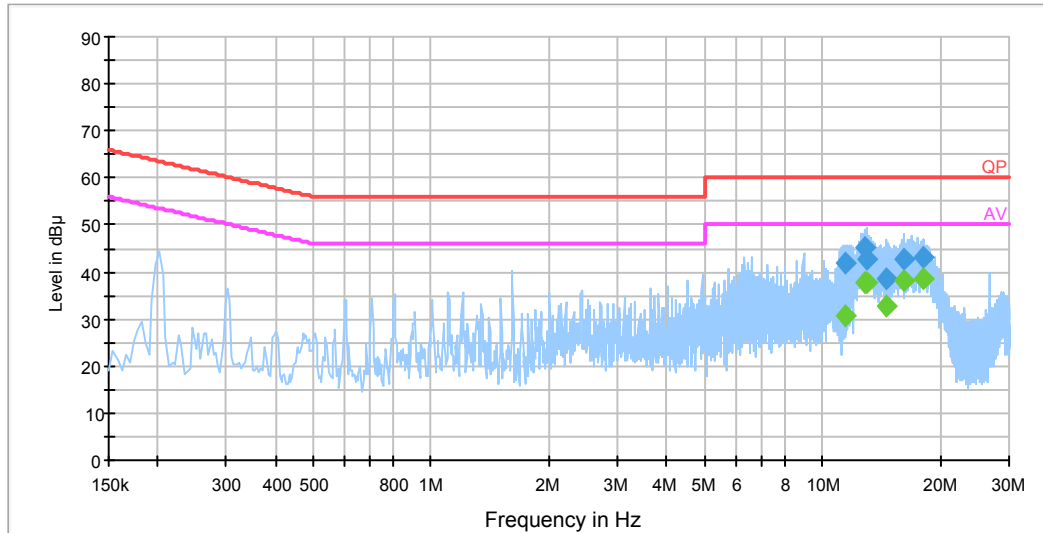
EUT Operation Mode: Downloading (data transforms with Computer)

### AC 120V/60 Hz, Line

EMI Auto Test L



Frequency (MHz)	Corrected Amplitude (dBμV)	Corrected Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave)
8.954000	44.3	19.7	60.0	15.7	QP
8.954000	41.5	19.7	50.0	8.5	Ave.
12.702000	43.5	19.7	60.0	16.5	QP
12.702000	39.6	19.7	50.0	10.4	Ave.
12.942000	43.7	19.7	60.0	16.3	QP
12.942000	37.7	19.7	50.0	12.3	Ave.
15.834000	40.2	19.8	60.0	19.8	QP
15.834000	35.0	19.8	50.0	15.0	Ave.
16.226000	40.6	19.8	60.0	19.4	QP
16.226000	35.2	19.8	50.0	14.8	Ave.
17.998000	40.1	19.9	60.0	19.9	QP
17.998000	34.5	19.9	50.0	15.5	Ave.

**AC 120V/60 Hz, Neutral****EMI Auto Test N**

Frequency (MHz)	Corrected Amplitude (dBμV)	Corrected Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave)
11.474000	41.9	19.8	60.0	18.1	QP
11.474000	30.5	19.8	50.0	19.5	Ave.
12.834000	45.0	19.8	60.0	15.0	QP
12.834000	37.7	19.8	50.0	12.3	Ave.
12.942000	42.6	19.8	60.0	17.4	QP
12.942000	37.6	19.8	50.0	12.4	Ave.
14.530000	38.8	19.9	60.0	21.2	QP
14.530000	32.7	19.9	50.0	17.3	Ave.
16.166000	42.7	19.9	60.0	17.3	QP
16.166000	38.0	19.9	50.0	12.0	Ave.
18.154000	42.9	20.0	60.0	17.1	QP
18.154000	38.7	20.0	50.0	11.3	Ave.

**Note:**

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation  
The corrected factor has been input into the transducer of the test software.
- 2) Corrected Amplitude = Reading + Correction Factor + Transient Limiter
- 3) Margin = Limit – Corrected Amplitude

## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### Applicable Standard

FCC §15.109

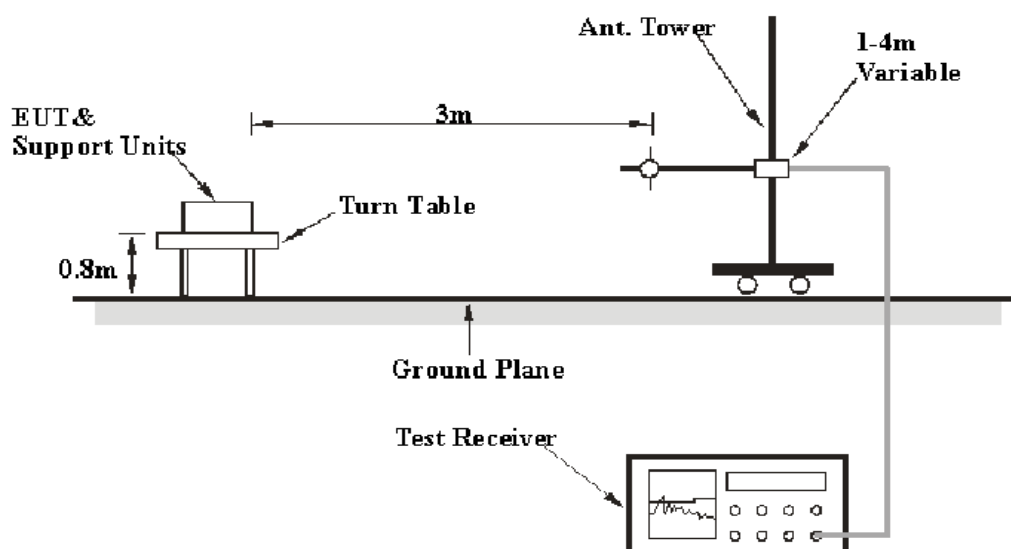
### Measurement Uncertainty

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

### EMI Test Receiver Setup

The system was investigated from 30 MHz to 6 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

For the radiated emissions test, the host PC and relevant equipments were connected to AC floor outlet.

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

### 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	2013-09-17	2014-09-17
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Mini	Amplifier	ZVA-183-S+	5969001149	2013-04-03	2014-04-03
A.H. System	Horn Antenna	SAS-200/571	135	2012-02-11	2015-02-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2013-11-12	2014-11-12
R&S	Auto test Software	EMC32	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 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:

**8.60 dB at 498.422750 MHz in the Horizontal polarization**

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

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

in BACL.,  $U_{(Lm)}$  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

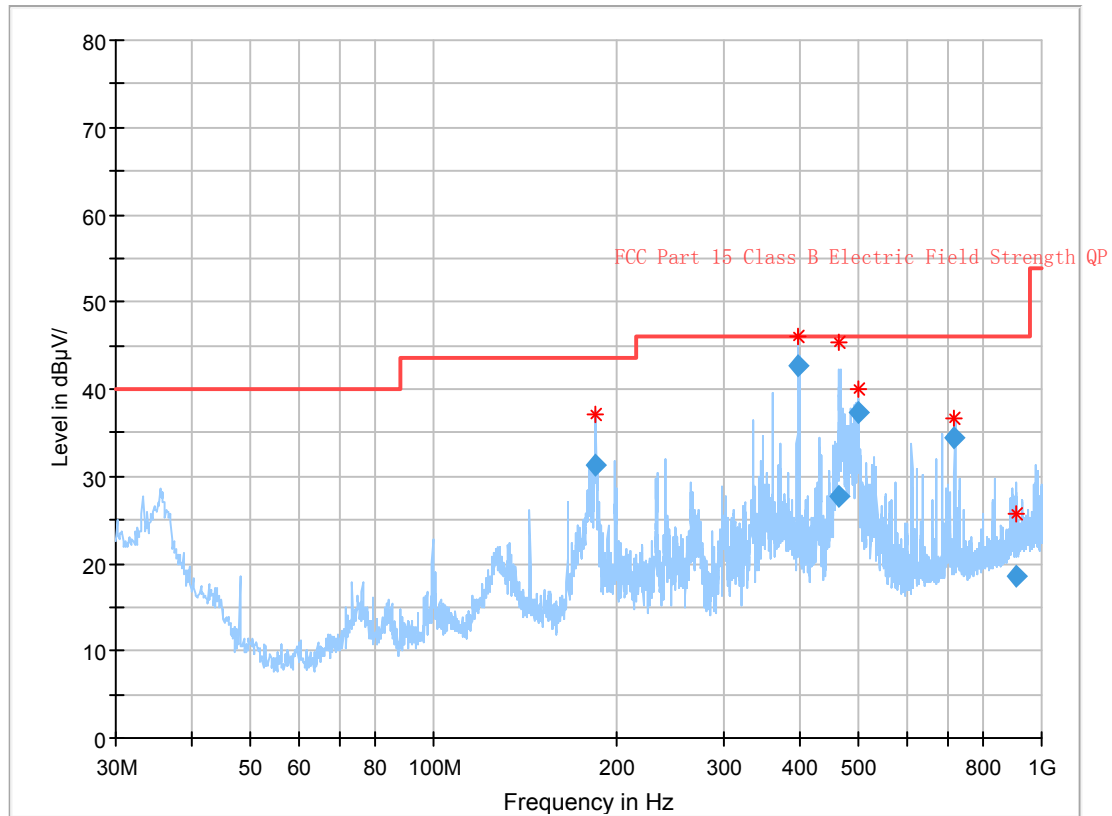
<b>Temperature:</b>	20 °C
<b>Relative Humidity:</b>	51 %
<b>ATM Pressure:</b>	100.1 kPa

*The testing was performed by Rocky Kang on 2013-12-12.*

*EUT Operation Mode: Downloading (data transforms with Computer)*

## 1) 30 MHz -1 GHz:

Full Spectrum



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
184.740600	31.24	104.0	V	214.0	-15.7	43.50	12.26
398.134200	42.70	110.0	H	290.0	-11.2	46.00	3.30
465.552950	27.64	272.0	H	103.0	-9.9	46.00	18.36
498.422750	37.40	113.0	H	304.0	-9.5	46.00	8.60
719.990850	34.46	101.0	V	214.0	-6.3	46.00	11.54
906.903600	18.48	325.0	H	19.0	-4.0	46.00	27.52

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

**2) 1 GHz – 6 GHz:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15B, Class B	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
1131.5	41.44	PK	75	1.1	H	-0.58	40.86	74	33.14
1131.5	37.11	Ave.	75	1.1	H	-0.58	36.53	54	17.47
1513.2	38.24	PK	186	1.3	V	1.15	39.39	74	34.61
1513.2	32.55	Ave.	186	1.3	V	1.15	33.70	54	20.30

Note:

1) Corrected Amplitude = Corrected Factor + Reading

2) Corrected Factor=Antenna factor (RX) + Cable loss – Amplifier factor

3) Margin = Limit - Corrected Amplitude



## **PRODUCT SIMILARITY DECLARATION LETTER**



**SHUOYING INDUSTRIAL(SHENZHEN)CO.,LTD.**

Add: No.1 Shuoying Rd., Hebei Industry Area, Dalang, Longhua Town, Baoan, Shenzhen, China.

Tel: 0755-28177777

Fax: 0755-28177111

### **DECLARATION OF SIMILARITY**

2013-12-06

Dear Sir or Madam:

We, SHUOYING INDUSTRIAL(SHENZHEN)CO.,LTD., hereby declare that our product: Mobile Internet Devices, models: IBT0725, IBT0725A, IBT0725B are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as PM0739, And it was tested by BACL, the results of which are featured in BACL project.

A description of the differences between the tested model and those that are declared similar areas follows:

Models: PM0739, IBT0725, IBT0725A, IBT0725B. The only difference is the model name.

Please contact me should there be need for any additional clarification or information.

Best Regards,

Signature:

A handwritten signature in black ink, appearing to read "Wei Hua Lei", written over a light blue grid background.

Weihua lei, Product Manager

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