FCC PART 15B, CLASS B

MEASUREMENT AND TEST REPORT

For

Gajah International (HK) Co., Ltd.

18/F Bel Trade Commercial Building, 1-3, Burrows Street, Wan Chai, Hong Kong

FCC ID: UFKMD7018A00

Report Type:	**Product Type:**
Original Report	7”MID

Test Engineer:	Rocky Kang
Report Number:	RSZ130829001-00A
Report Date:	2013-09-06
Reviewed By:	Alvin Huang RF Leader
Prepared By:	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 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Gajah International (HK) Co., Ltd*'s product, model number: *PTAB780 (FCC ID: UFKMD7018A00)* or the "EUT" in this report was a *7"MID*, which was measured approximately: 211.9 mm (L) x 157.7 mm (W) x 17.9 mm (H), rated input voltage: DC 3.7V battery or DC 5V from adapter. The highest operating frequency is 1.2 GHz.

Adapter Information:
Model: YN12W-0500200UU
Input: 100-240V~50/60Hz, 0.3A
Output: DC 5V, 2A

Note: The serial models PTAB780 and MD7018A are electrically identical, they have the same PCB layout and schematics, the differences between them is just the model number, model PTAB780 was selected for fully testing, the details was explained in the attached 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: 1308141 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-08-29.*

Objective

This report is prepared on behalf of *Gajah International (HK) 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: UFKMD7018A00

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 in compliant 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 provided by manufacture.

EUT operation mode: Downloading

EUT Exercise Software

"winthrax" exercise software was used for downloading mode testing.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

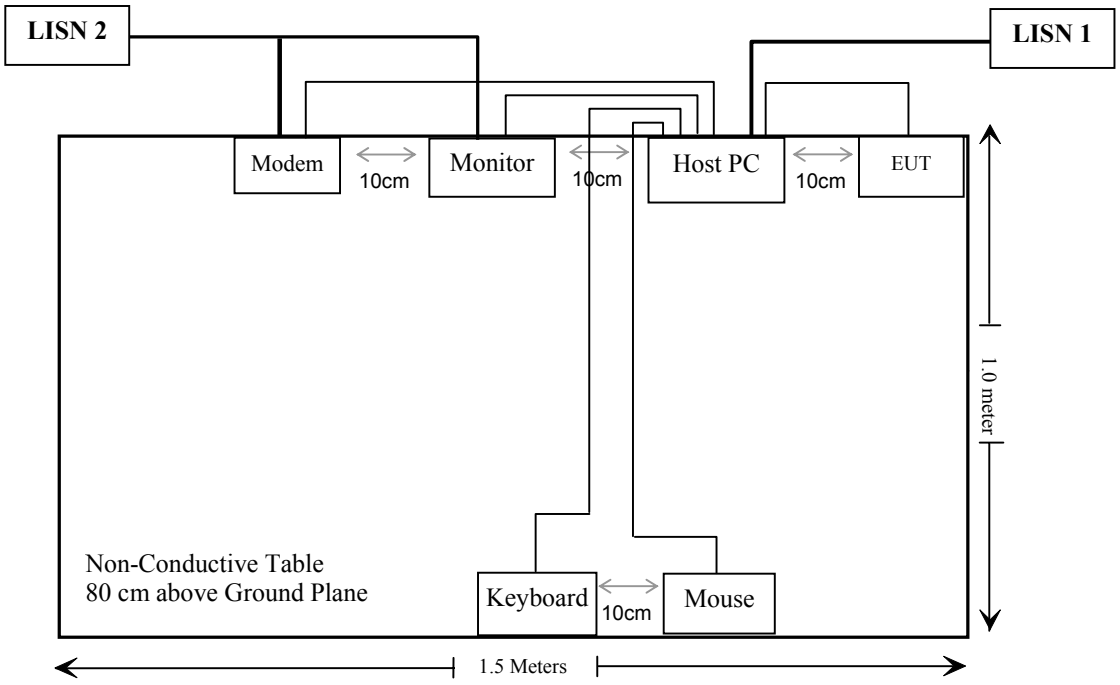
Manufacturer	Description	Model	Serial Number
DELL	Host PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL04TY
DELL	Mouse	MOC5UO	G1B0096D
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
SAST	Modem	AEM-2100	0293

External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable K/B Cable	1.5	Host PC	Keyboard
Shielded Detachable Mouse Cable	1.5	Host PC	Mouse
Shielded Detachable Serial Cable	1.2	Host PC	Modem
Shielded Detachable VGA Cable	1.5	Host PC	Monitor
Shielded Detachable Power Cable	1.2	Host PC	LISN
Unshielded Detachable USB Cable	1.0	Host PC	EUT

Block Diagram of Test Setup

For AC line conducted emissions



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

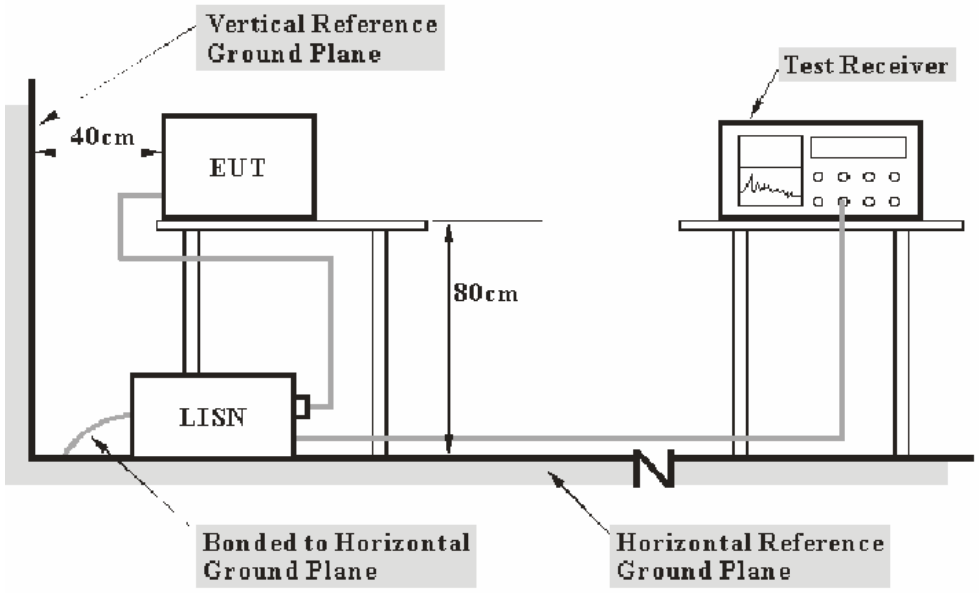
Measurement Uncertainty

Input quantities 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. Moreover, 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 ANSI C63.4-2009. The related limit is specified in FCC Part 15.107 Class B.

The spacing between the peripherals was 10 cm.

The host 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 host PC was connected to the outlet of the first LISN, the modem and monitor was connected to outlet of 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	L.I.S.N.	ENV216	3560.6650.12-101613-Yb	2013-05-07	2014-05-07
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2013-08-09	2014-08-09
Rohde & Schwarz	CE Test software	EMC 32	8.95	-	-

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements 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:

Correction Factor = LISN VDF + Cable Loss + 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, with the worst margin reading of:

14.2 dB at **0.262000 MHz** in the **Neutral** 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

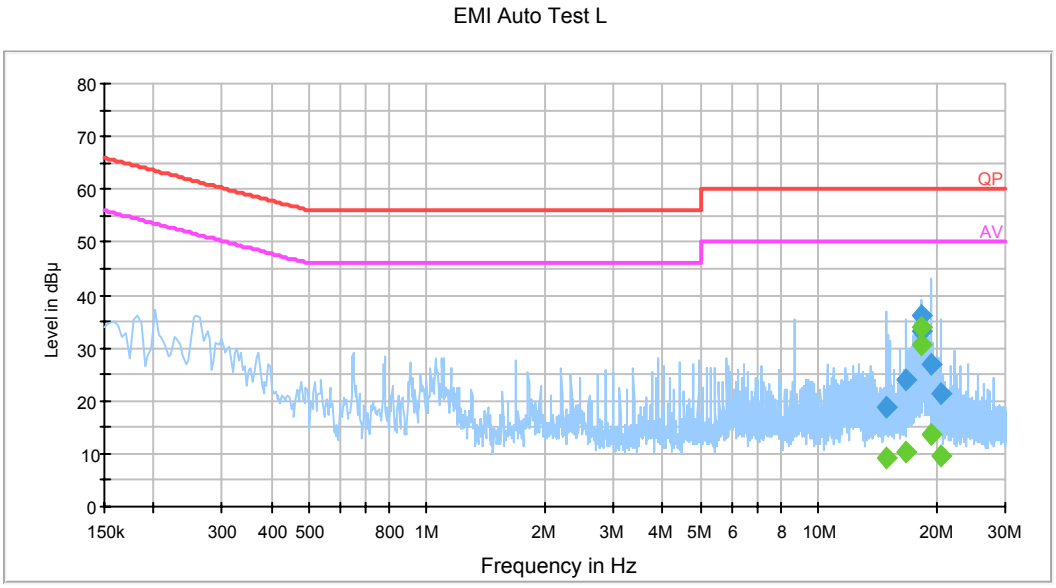
Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Rocky Kang on 2013-09-02.

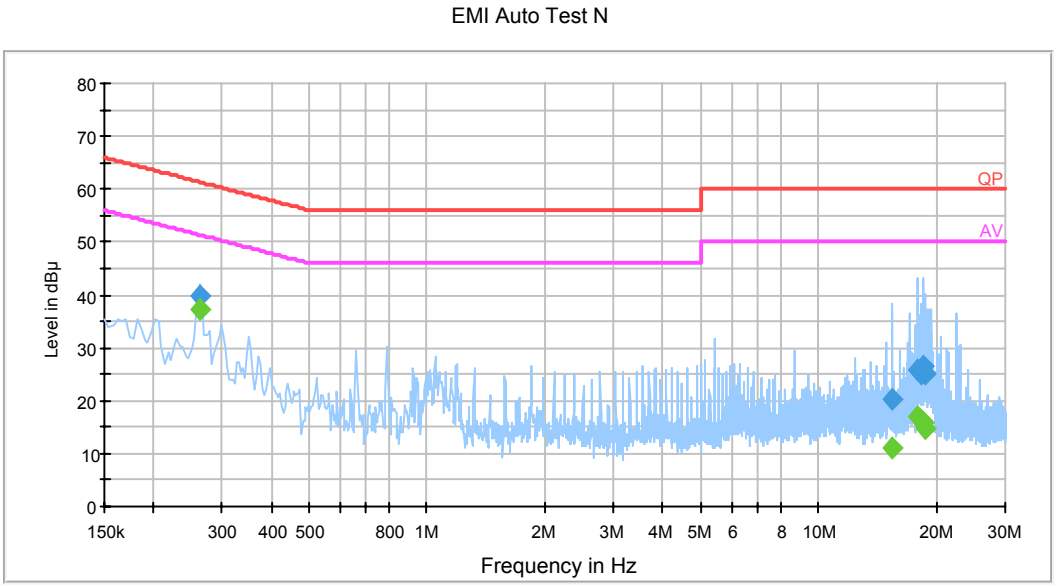
EUT operation mode: Downloading

AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/QP/Ave.)
14.962000	18.7	20.0	60.0	41.3	QP
14.962000	9.1	20.0	50.0	40.9	Ave.
16.642000	23.8	20.0	60.0	36.2	QP
16.642000	10.3	20.0	50.0	39.7	Ave.
18.246000	36.1	20.0	60.0	23.9	QP
18.246000	33.9	20.0	50.0	16.1	Ave.
18.366000	33.1	20.0	60.0	26.9	QP
18.366000	30.4	20.0	50.0	19.6	Ave.
19.350000	26.8	20.0	60.0	33.2	QP
19.350000	13.8	20.0	50.0	36.2	Ave.
20.594000	21.4	20.0	60.0	38.6	QP
20.594000	9.6	20.0	50.0	40.4	Ave.

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/QP/Ave.)
0.262000	39.9	19.5	61.4	21.5	QP
0.262000	37.2	19.5	51.4	14.2	Ave.
15.430000	20.2	20.1	60.0	39.8	QP
15.430000	11.2	20.1	50.0	38.8	Ave.
17.954000	26.0	20.1	60.0	34.0	QP
17.954000	16.9	20.1	50.0	33.1	Ave.
18.398000	25.1	20.1	60.0	34.9	QP
18.398000	16.2	20.1	50.0	33.8	Ave.
18.442000	26.5	20.1	60.0	33.5	QP
18.442000	16.0	20.1	50.0	34.0	Ave.
18.658000	25.2	20.1	60.0	34.8	QP
18.658000	14.8	20.1	50.0	35.2	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 EMISSIONS

Applicable Standard

According to FCC §15.109

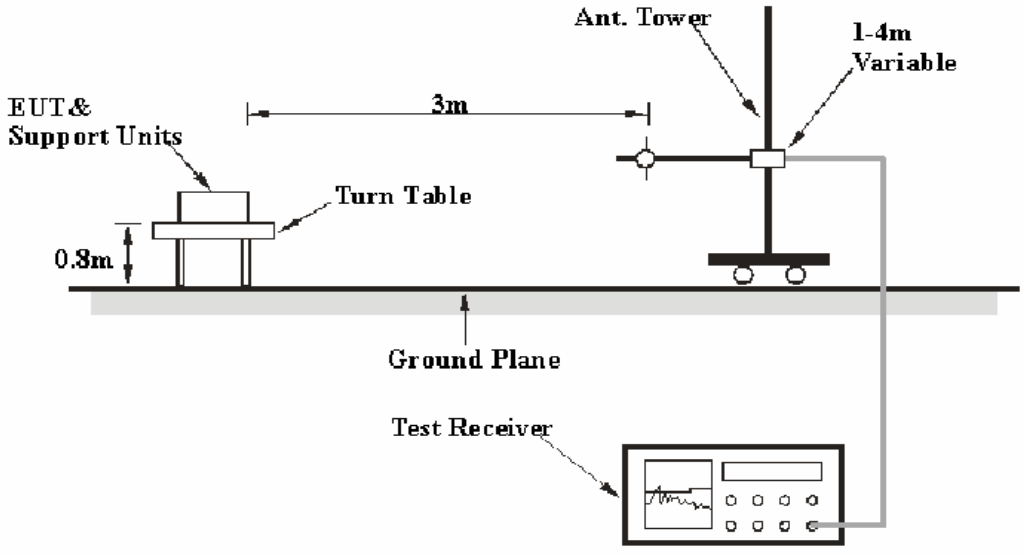
Measurement Uncertainty

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 expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown in below table. Moreover, 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 host PC was connected to an AC 120V/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
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

During the radiated emissions, the host PC, modem and monitor were connected to the AC floor outlet.

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2013-08-09	2014-08-09
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2013-05-09	2014-05-09
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
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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Correction Factor = Antenna Loss + Cable Loss - 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:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, with the worst margin reading of:

4.0 dB at **336.000800 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

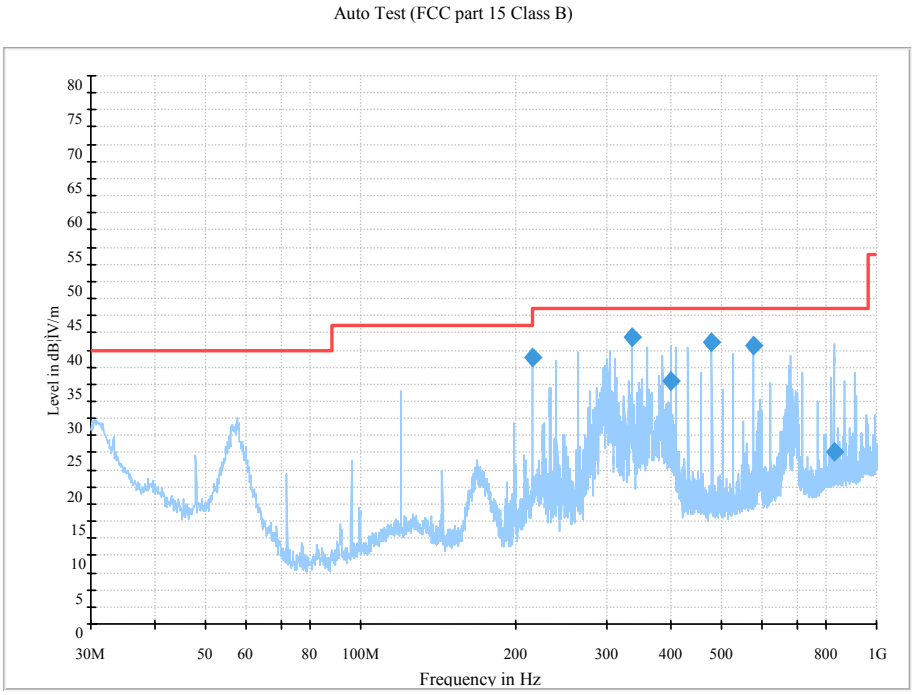
Environmental Conditions

Temperature:	25℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Rocky Kang on 2013-09-02.

EUT operation mode: Downloading

1) 30 MHz ~ 1 GHz



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (deg)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
216.013100	38.9	128.0	H	43.0	-16.4	46.0	7.1
336.000800	42.0	103.0	H	261.0	-13.5	46.0	4.0
399.160900	35.4	100.0	H	210.0	-11.8	46.0	10.6
480.013250	41.2	100.0	H	143.0	-10.1	46.0	4.8
576.009050	40.7	104.0	V	0.0	-8.9	46.0	5.3
826.603600	25.0	122.0	H	78.0	-5.0	46.0	21.0

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/m)	Corrected Amplitude (dBμV/m)	FCC Part 15.109	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
1331	36.35	PK	181	1.3	H	0.38	36.73	74	37.27
1331	21.54	Ave.	228	1.3	H	0.38	21.92	54	32.08
1331	35.78	PK	268	1.4	V	0.38	36.16	74	37.84
1331	21.67	Ave.	205	1.4	V	0.38	22.05	54	31.95

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

Gajah International (HK) Co.,Ltd
18/F Bel Trade Commercial Building, 1-3, Burrows Street, Wan Chai, Hong Kong.
Tel: +852-6326 5997

2013-9-2

Product Similarity Declaration

To Whom It May Concern,

We, Gajah International (HK) Co.,Ltd. hereby declare that our 7"MID, Model Number: MD7018A is electrically identical with PTAB780 that was certified by BACL. They are just different in model numbers due to marketing purposes.

Please contact me if you have any question.

Ying Keong Chaw
General Manager

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