

FCC PART 15B, CLASS B
MEASUREMENT AND TEST REPORT

For

Archos S.A

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FCC ID: SOVAK04

Report Type: Original Report	Product Type: 9.7inch Tablet PC
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Report Date: <u>2013-06-19</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 Archos S.A's product, model number: AK04 (FCC ID: SOVAK04) or the "EUT" as referred to in this report was a 9.7inch Tablet PC, which was measured approximately: 24.5 cm (L) x 19.0 cm (W) x 0.8 cm (H), rated input voltage: DC 3.7V rechargeable Li-ion battery and DC 5.0V charging from adapter. The highest operating frequency is 1.5 GHz.

Adapter information: AC ADAPTER
Model: HNC050250U
Input: AC100-240V, 50/60Hz, 0.45A max
Output: DC 5.0V, 2.5A

** All measurement and test data in this report was gathered from production sample serial number: 1305167 (Assigned by the BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-05-30.*

Objective

This report is prepared on behalf of Archos S.A 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 (Wi-Fi) and 15.247 DSS (BT) submissions with FCC ID: SOVAK04.

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.

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.

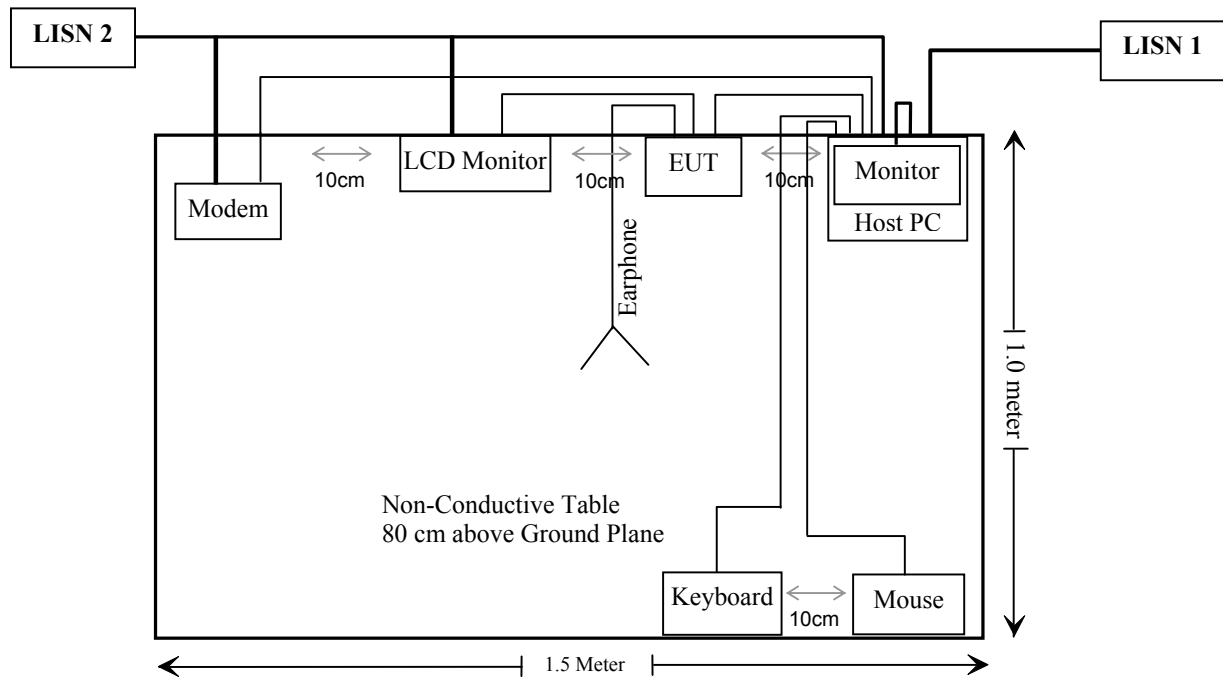
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL04TY
DELL	Mouse	MOC5UO	G1B0096D
DELL	Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
ECOM	Modem	5600pbs	N/A
DELL	LCD Monitor	ST2420LB	N/A
N/A	Earphone	N/A	N/A

External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielding Detachable K/B Cable	1.5	Host PC	Keyboard
Shielding Detachable Mouse Cable	1.5	Host PC	Mouse
Shielding Detachable Serial Cable	1.2	Host PC	Modem
Shielding Detachable VGA Cable	1.5	Host PC	Monitor
Unshielding Detachable USB Cable	1.2	Host PC	EUT
Unshielding Detachable DC Power Cable	1.2	EUT	Adapter
Shielding Detachable HDMI Cable	1.0	EUT	LCD Monitor

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

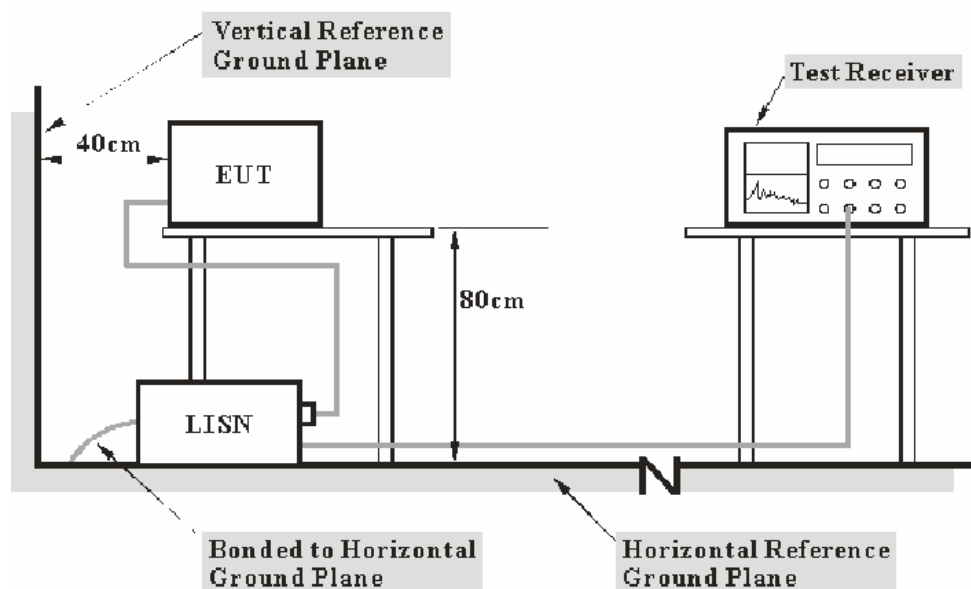
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements may be receiver reading, attenuation of the connection between 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 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	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 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 first LISN, the 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	ESCI	101122	2013-05-09	2014-05-09
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2012-08-22	2013-08-21
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, with the worst margin reading of:

11.5 dB at 0.179062 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 our lab., $U_{(Lm)}$ 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

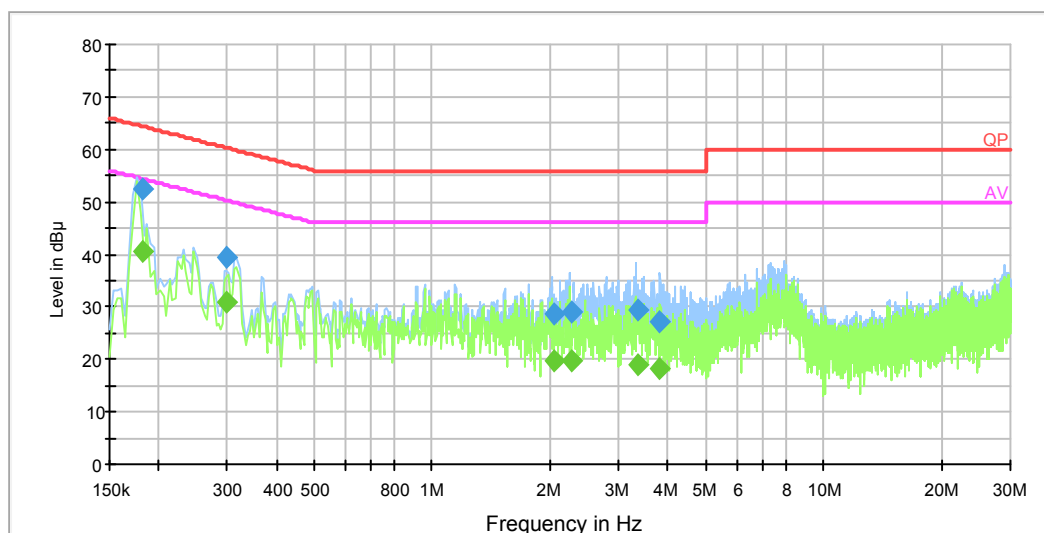
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.1 kPa

The testing was performed by Charlie Chen on 2013-06-10.

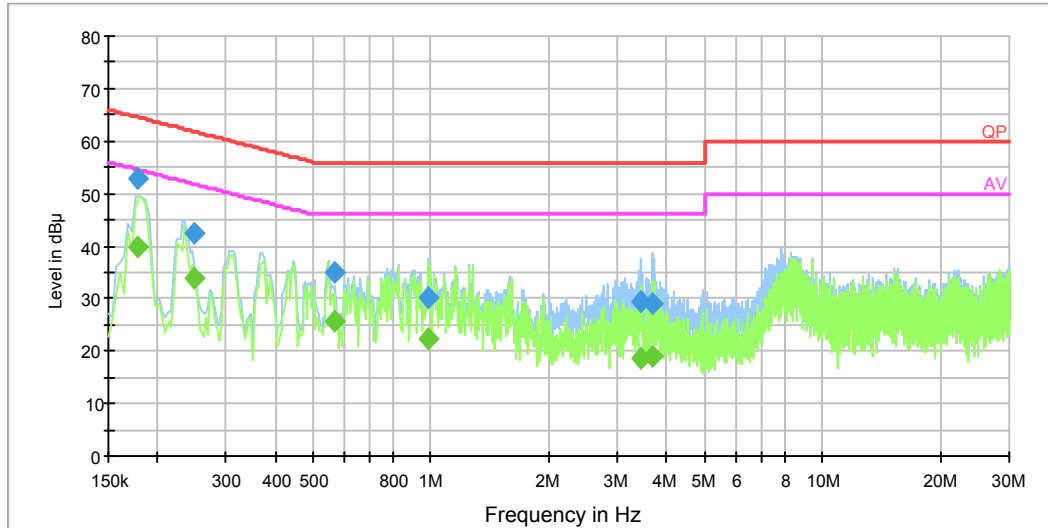
EUT operation mode: Downloading

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.)
0.181761	52.3	0.3	64.4	12.1	QP
0.181761	40.7	0.3	54.4	13.8	Ave.
0.298100	30.8	0.4	50.3	19.5	Ave.
0.298100	39.6	0.4	60.3	20.7	QP
2.272796	19.7	0.4	46.0	26.3	Ave.
2.038024	19.6	0.4	46.0	26.4	Ave.
3.350507	29.4	0.4	56.0	26.6	QP
2.272796	29.2	0.4	56.0	26.8	QP
3.350507	19.0	0.4	46.0	27.0	Ave.
2.038024	28.8	0.4	56.0	27.2	QP
3.821880	18.4	0.4	46.0	27.6	Ave.
3.821880	27.2	0.4	56.0	28.8	QP

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.)
0.179062	53.0	0.3	64.5	11.5	QP
0.179062	39.9	0.3	54.5	14.7	Ave.
0.248936	33.9	0.3	51.8	17.9	Ave.
0.248936	42.5	0.3	61.8	19.3	QP
0.567743	25.6	0.4	46.0	20.4	Ave.
0.567743	35.1	0.4	56.0	21.0	QP
0.981608	22.4	0.4	46.0	23.6	Ave.
0.981608	30.2	0.4	56.0	25.8	QP
3.443706	29.6	0.4	56.0	26.4	QP
3.685585	29.0	0.4	56.0	27.0	QP
3.685585	19.0	0.4	46.0	27.0	Ave.
3.443706	18.5	0.4	46.0	27.5	Ave.

Note:

- 1) Correction Factor = LISN/ISN VDF (Voltage Division Factor) + Cable Loss
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

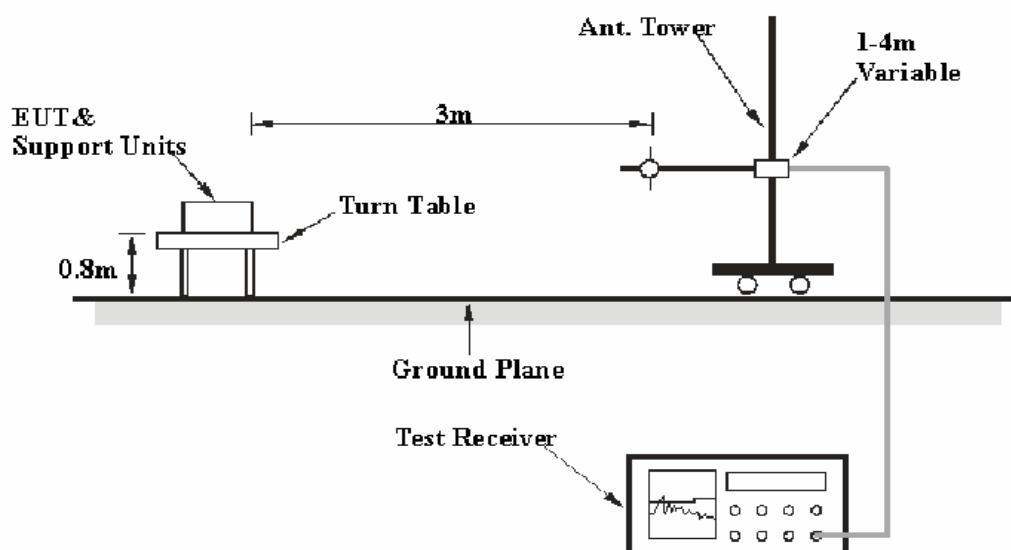
Measurement Uncertainty

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. 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	/	4.68 dB (k=2, 95% level of confidence)
Above 6 GHz	/	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 7.5 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, monitor and modem 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	2012-11-24	2013-11-23
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
Mini-Circuits	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:

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

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:

3.0 dB at 148.485400 MHz in the Vertical polarization

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

$$L_m + U_{(Lm)} \leq L_{\text{lim}} + U_{\text{cisp}}r$$

in our lab., $U_{(Lm)}$ is less than $U_{\text{cisp}}r$, if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

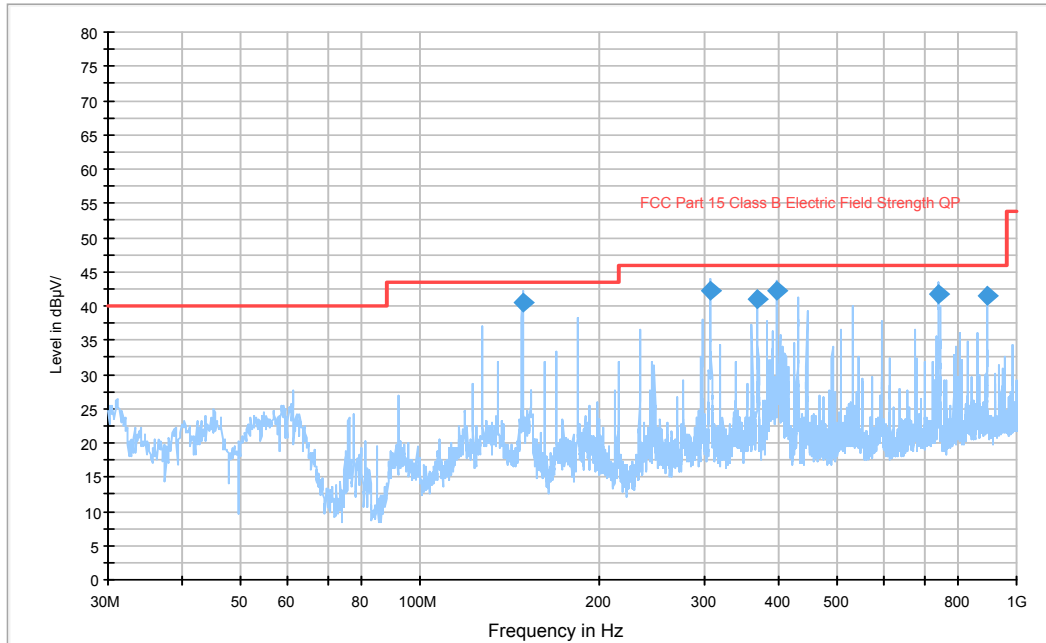
Temperature:	25 °C
Relative Humidity:	56 %
ATM Pressure:	100.1 kPa

The testing was performed by Charlie Chen on 2013-06-10.

EUT operation mode: Downloading

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 (deg)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
148.485400	40.5	125.0	V	174.0	-14.9	43.5	3.0
306.911000	42.1	160.0	H	36.0	-13.9	46.0	3.9
396.037250	42.1	103.0	H	170.0	-12.0	46.0	3.9
742.427100	41.8	105.0	H	322.0	-6.5	46.0	4.2
890.935800	41.5	202.0	H	117.0	-4.2	46.0	4.5
368.290050	41.0	100.0	H	303.0	-13.1	46.0	5.0

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 ~ 7.5 GHz

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.109	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
1480.9	46.09	Ave.	150	1.4	V	1.15	47.24	54	6.76
1186.5	45.32	Ave.	315	1.3	V	0.13	45.45	54	8.55
1480.9	58.75	PK	150	1.4	V	1.15	59.90	74	14.10
1186.5	58.13	PK	315	1.3	V	0.13	58.26	74	15.74

Note:

- 1) Corrected Amplitude = Corrected Factor + Reading
- 2) Corrected Factor=Antenna factor (RX) + Cable loss – Amplifier factor
- 3) Margin = Limit - Corrected Amplitude

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