



FCC PART 15 CLASS B
MEASUREMENT AND TEST REPORT

For

Shenzhen Contel Electronics Technology Co., Ltd.

3/F, R2-A, High-tech Industrial Park, Nanshan District, Shenzhen, China

FCC ID: YAPTAB730

Report Type: Original Report	Product Type: 7" Tablet MID
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Report Number: RSZ120618006-00A	
Report Date: 2012-07-13	
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* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Contel Electronics Technology Co., Ltd.*'s product, model number: *TAB-730* (FCC ID: *YAPTAB730*) or the "EUT" as referred to in this report is a 7" *Tablet MID*, named as 7" *Tablet* by applicant, which measures approximately: 20.0 cm (L) x 12.5 cm (W) x 1.0 cm (H), rated input voltage: DC 3.7V battery and DC 5V adapter for charging. The highest Operating Frequency is 1 GHz.

Adapter Information: SWITCHING ADAPTER
Model: SK02G-0500200U;
Input: 100-240V~50/60Hz 0.35A Max.
Output: 5V 2.0A

** All measurement and test data in this report was gathered from production sample serial number: 1206062 (Assigned by BACL, Shenzhen). The EUT was received on 2012-06-18.*

Objective

This report is prepared on behalf of *Shenzhen Contel Electronics Technology 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 15 Class B.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS submissions with FCC ID: YAPTAB730.

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.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

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: Downloading Mode

Test mode 2: Charging & Playing Mode

Test mode 3: HDMI output Mode

EUT Exercise Software

“winthrax” exercise software was used for downloading mode testing.

Equipment Modifications

No modification was made to the unit tested.

Support Equipment List and Details

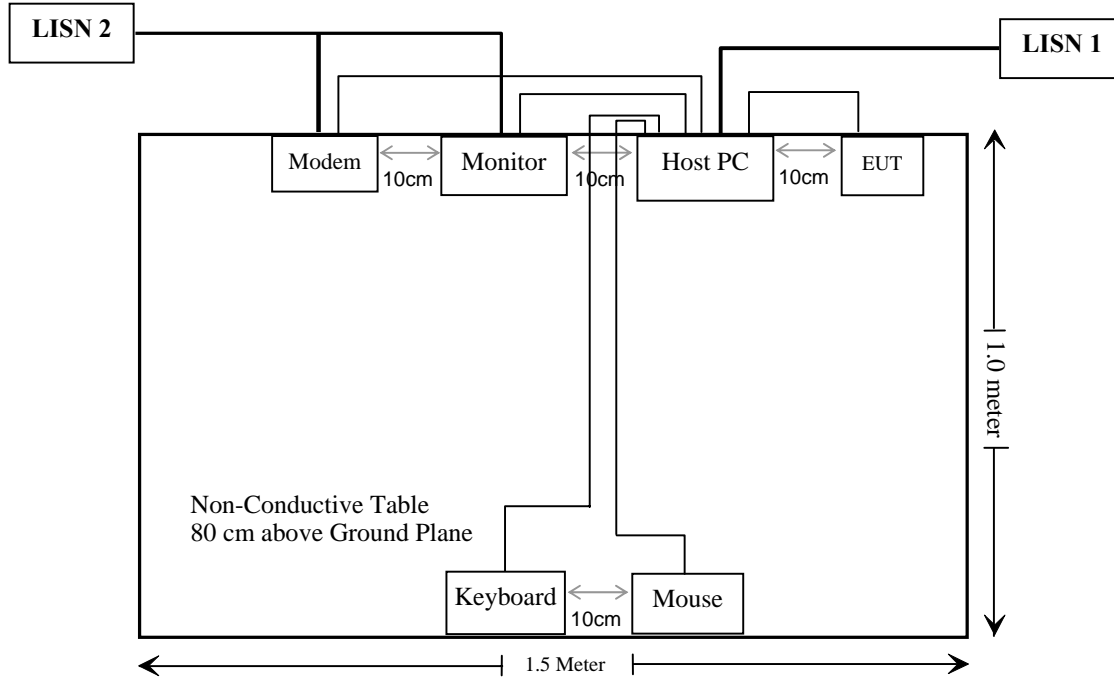
Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL04TY
DELL	Mouse	MOC5UO	G1B0096D
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
ECOM	Modem	5600pbs	N/A
SAMSUNG	Display	225MS	CR22HV2P401073M

External I/O Cable

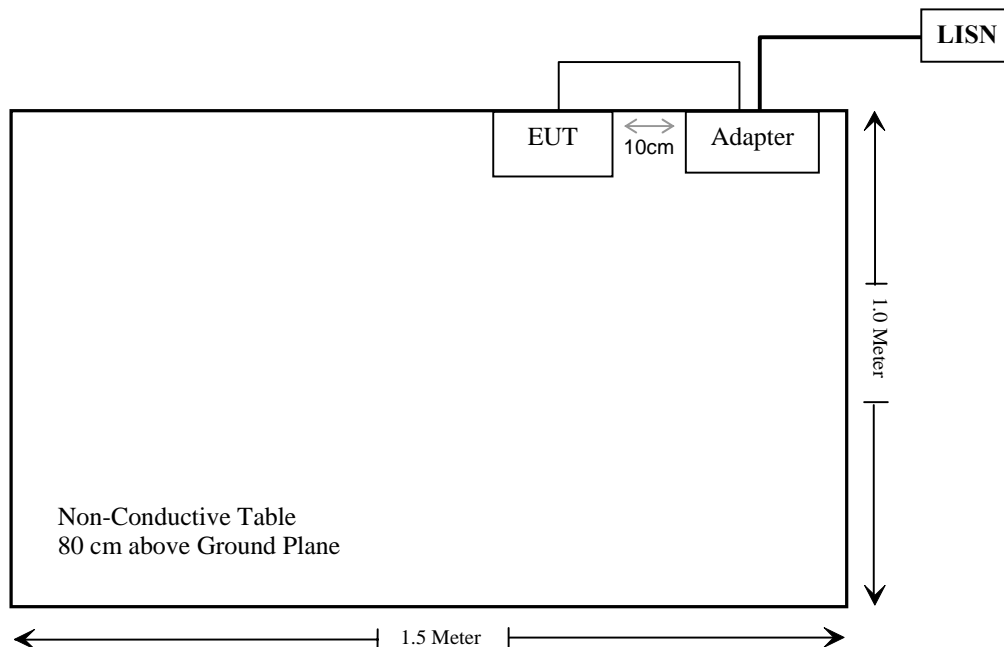
Cable Description	Length (m)	From/Port	To
Shielded Detachable K/B Cable	1.5	Host PC	Keyboard
Shielded Detachable Mouse Cable	1.5	Host PC	Mouse
Shielded Detachable Serial Cable	1.2	Host PC	Modem
Shielded Detachable VGA Cable	1.5	Host PC	Monitor
Unshielded Detachable USB Cable	1.2	Host PC	EUT
Unshielded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

Block Diagram of Test Setup

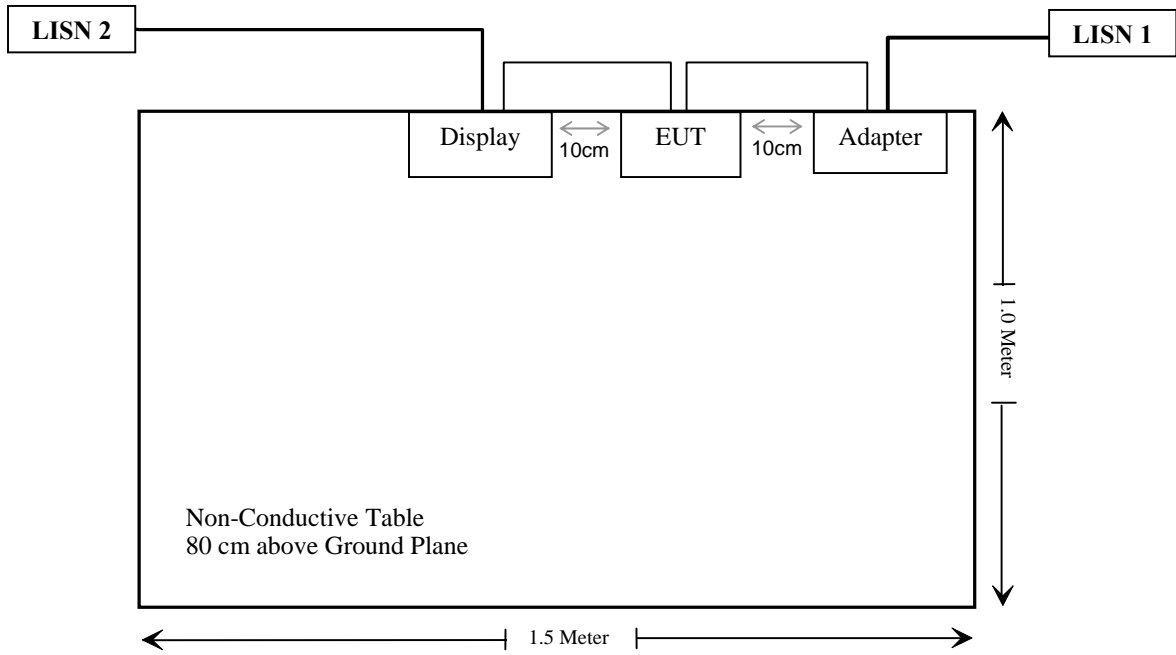
Downloading Mode:



Charging & Playing Mode:



HDMI Mode:



SUMMARY OF TEST RESULTS

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

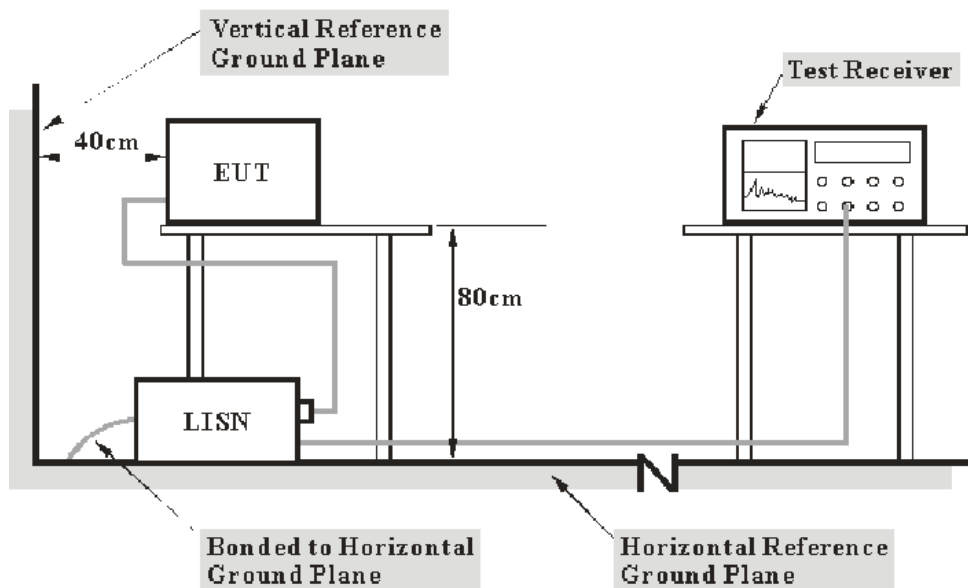
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 2.4 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 setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.107 Class B limits.

The spacing between the peripherals was 10 cm.

The host PC was connected to a 120 VAC/60 Hz power source for downloading mode.

The adapter of EUT was connected to a 120V/60Hz AC power source for charging & playing and HDMI mode.

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:

<i>Frequency Range</i>	<i>IF B/W</i>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-11-17	2012-11-16
Rohde & Schwarz	Attenuator	ESH3Z2	DE25985	2011-07-08	2012-07-07
BACL	CE Test software	BACL-CE	V1.0	-	-

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, for downloading mode, the host PC was connected to the outlet of the LISN. For charging & playing and HDMI mode, the adapter of EUT was connected to the outlet of the 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 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:

1.28 dB at 12.420 MHz in the Neutral conducted mode

Test Data

Environmental Conditions

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

The testing was performed by Eric Lee on 2012-06-22.

Test Mode 1: Downloading (worst case)

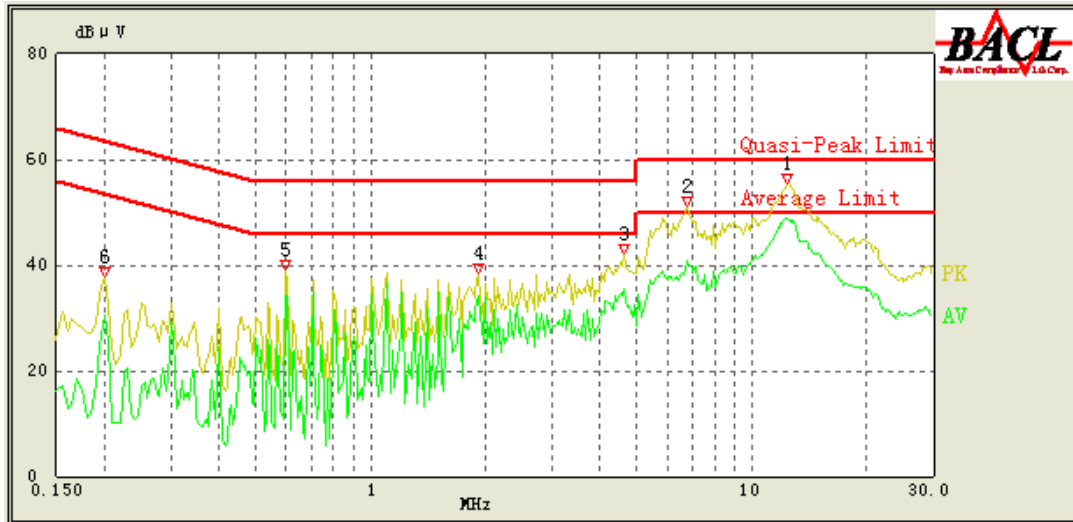
AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
12.605	48.25	10.72	50.00	1.75*	Ave.
12.605	50.25	10.72	60.00	9.75	QP
6.655	39.33	10.10	50.00	10.67	Ave.
0.600	32.88	9.72	46.00	13.12	Ave.
1.510	32.73	9.89	46.00	13.27	Ave.
0.200	41.10	9.67	54.57	13.47	Ave.
6.710	45.54	10.10	60.00	14.46	QP
0.780	28.76	9.79	46.00	17.24	Ave.
0.600	36.25	9.72	56.00	19.75	QP
0.200	42.38	9.67	64.57	22.19	QP
1.505	33.60	9.89	56.00	22.40	QP
0.780	31.17	9.79	56.00	24.83	QP

*Within measurement uncertainty.

AC 120V/60 Hz, Neutral



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
12.420	48.72	10.65	50.00	1.28*	Ave.
12.365	52.71	10.64	60.00	7.29	QP
6.735	40.70	10.09	50.00	9.30	Ave.
4.625	35.43	9.98	46.00	10.57	Ave.
0.600	34.24	9.72	46.00	11.76	Ave.
1.910	34.09	9.90	46.00	11.91	Ave.
6.735	44.41	10.09	60.00	15.59	QP
0.600	37.37	9.72	56.00	18.63	QP
4.625	35.93	9.98	56.00	20.07	QP
1.910	34.54	9.90	56.00	21.46	QP
0.200	30.52	9.64	54.57	24.05	Ave.
0.200	34.15	9.64	64.57	30.42	QP

*Within measurement uncertainty.

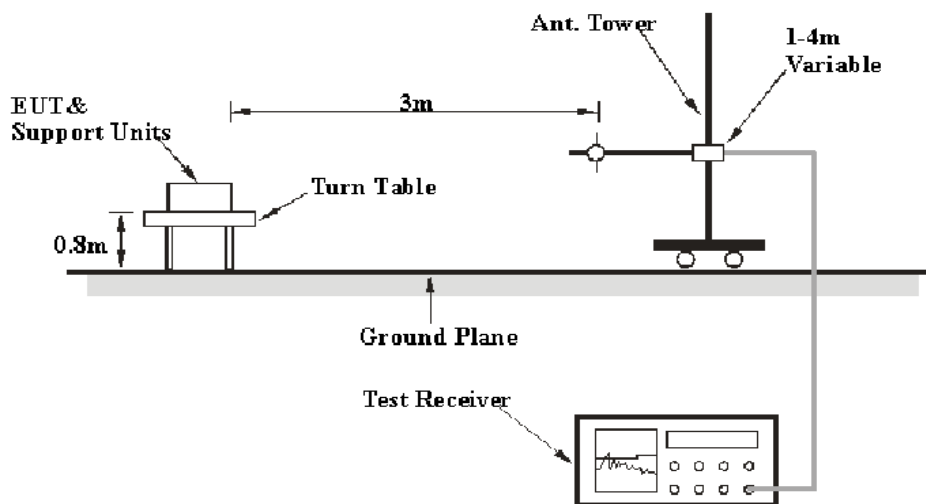
FCC §15.109 - RADIATED EMISSIONS

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, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 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 a 120 VAC/60 Hz power source for downloading mode.

The adapter of EUT was connected to a 120V/60Hz AC power source for charging & playing and HDMI mode.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 5000 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>Detector</i>
30MHz – 1000 MHz	100 kHz	300 kHz	QP
Above 1 GHz	1MHz	3 MHz	Peak
Above 1 GHz	1MHz	10 Hz	Ave.

Test Procedure

During the radiated emissions test, for downloading mode, the host PC was connected to AC floor outlet. For playing and HDMI mode, the adapter of EUT was 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
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
HP	Amplifier	8447E	1937A01046	2011-11-24	2012-11-23
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2012-03-08	2013-03-08
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-11-30
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 NVLAP requirements, traceable to the NIST.

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, the EUT complied with the FCC §15.109 Class B, with the worst margin reading of:

1.40 dB at 45.97 MHz in the Vertical polarization

Test Data

Environmental Conditions

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

The testing was performed by Eric Lee on 2012-07-12.

Test Mode 1: Downloading Mode (worst case)

30 MHz-5 GHz:

Frequency (MHz)	Detector	Corrected Amplitude (dB μ V/m)	Test Antenna		Turntable Position (degree)	Correction Factor (dB)	Limit (dB μ V/m)	Margin (dB)
	(PK/QP/Ave.)		Height (m)	Polarity (H/V)				
45.97	QP	38.60	1.5	V	344.0	-15.60	40.00	1.40*
41.94	QP	36.00	1.0	V	327.0	-13.30	40.00	4.00*
183.06	QP	39.50	2.4	H	76.0	-15.10	43.50	4.00*
717.65	QP	40.30	1.0	V	43.0	-2.80	46.00	5.70
141.87	QP	37.20	2.0	H	105.0	-13.30	43.50	6.30
147.32	QP	34.70	1.4	H	30.0	-13.80	43.50	8.80
1993.9	Ave.	34.02	1.2	V	16.0	3.13	54.00	19.99
1993.9	PK	53.69	1.2	V	16.0	3.13	74.00	20.32
2394.7	PK	52.96	1.0	H	8.0	6.13	74.00	21.04
2394.7	PK	51.76	1.1	V	27.0	6.13	74.00	22.24
2394.7	Ave.	31.44	1.0	H	8.0	6.13	54.00	22.56
2394.7	Ave.	31.10	1.1	V	27.0	6.13	54.00	22.90
2002.0	PK	50.12	1.1	H	325.0	3.23	74.00	23.89
2002.0	Ave.	28.51	1.1	H	325.0	3.23	54.00	25.50
1192.3	PK	46.94	1.2	V	88.0	0.13	74.00	27.06
1216.4	PK	46.51	1.0	H	138.0	0.13	74.00	27.49
1192.3	Ave.	25.52	1.2	V	88.0	0.13	54.00	28.48
1216.4	Ave.	25.47	1.0	H	138.0	0.13	54.00	28.53

*Within measurement uncertainty.

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