

# FCC PART 15B, CLASS B

## TEST REPORT

For

**SDATAWAY SA.**

Rte. de Pra de Plan 5, Post Office Box 68, 1618 Châtel-St-Denis, Switzerland

**FCC ID: QFHB10READER**

<b>Report Type:</b> Original Report	<b>Product Type:</b> B10 Reader
<b>Test Engineer:</b>	Leon Chen <i>leon chen</i>
<b>Report Number:</b>	R1XM121127051-00B
<b>Report Date:</b>	2012-12-21
<b>Reviewed By:</b>	Ivan Cao <i>Ivan Cao</i> RF Leader
<b>Test Laboratory:</b>	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>

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. (Dongguan).

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION.....</b>	<b>3</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	3
OBJECTIVE .....	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST FACILITY .....	3
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>4</b>
JUSTIFICATION .....	4
EUT EXERCISE SOFTWARE .....	4
EQUIPMENT MODIFICATIONS .....	4
SUPPORT EQUIPMENT LIST AND DETAILS .....	4
EXTERNAL CABLE.....	4
BLOCK DIAGRAM OF TEST SETUP .....	5
<b>SUMMARY OF TEST RESULTS .....</b>	<b>6</b>
<b>FCC §15.107 – AC LINE CONDUCTED EMISSIONS.....</b>	<b>7</b>
MEASUREMENT UNCERTAINTY.....	7
EUT SETUP.....	7
EMI TEST RECEIVER SETUP.....	7
TEST PROCEDURE .....	8
TEST EQUIPMENT LIST AND DETAILS.....	8
TEST RESULTS SUMMARY .....	8
TEST DATA .....	8
<b>FCC §15.109 - RADIATED EMISSIONS .....</b>	<b>11</b>
MEASUREMENT UNCERTAINTY.....	11
EUT SETUP.....	11
EMI TEST RECEIVER SETUP.....	11
TEST PROCEDURE .....	12
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	12
TEST EQUIPMENT LIST AND DETAILS.....	12
TEST RESULTS SUMMARY .....	12
TEST DATA .....	13

---

## GENERAL INFORMATION

---

### Product Description for Equipment under Test (EUT)

The SDATAWAY SA.'s product, model number: B10 Reader (*FCC ID: QFHB10READER*) or ("EUT") in this report is a B10 Reader, which was measured approximately: 23.0 cm (L) x11.0 cm (W) x8.4 cm (H), rated input voltage: DC 3.7V from lithium battery or DC 5V from adapter.

#### Adapter Information:

MODEL: KSAS0060500100D5D

INPUT: 100-240V, 50/60Hz, 0.18A

OUTPUT: 5.0V, 1.0A

*\* All measurement and test data in this report was gathered from production sample serial number: 121127051 (Assigned by BACL, Dongguan). The EUT was received on 2012-12-04.*

### Objective

This report is prepared on behalf of SDATAWAY SA. 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 compliance with FCC Part 15B, Class B.

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

FCC Part 15C DTS submissions with FCC ID: *QFHB10READER* for Wi-Fi.

FCC Part 15C DXX submissions with FCC ID: *QFHB10READER* for RFID.

### Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) 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 February 02, 2012. 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.: 273710. 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

### Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

### EUT Exercise Software

The software 'BreitlingEWarranty.exe' was used in the testing.

### Equipment Modifications

No modification was made to the EUT.

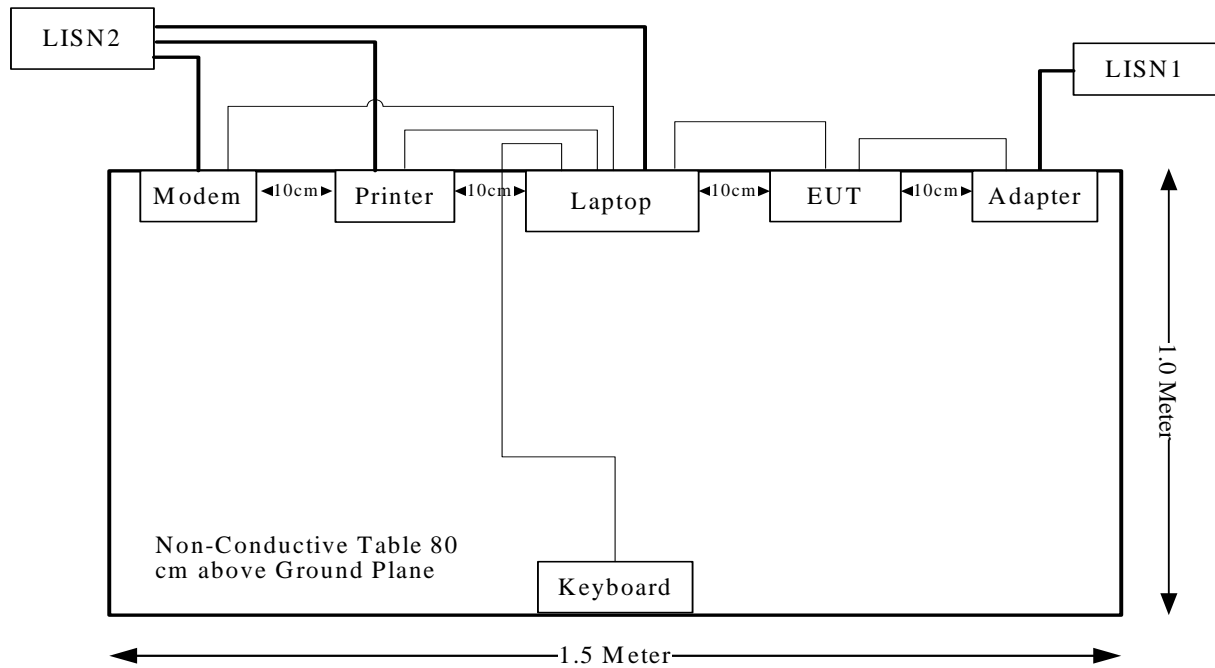
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293

### External Cable

Cable Description	Length (m)	From Port	To
Shielded Detachable Printer Cable	1.2	Parallel Port of Laptop	Printer
Shielded Detachable Serial Cable	1.2	Serial Port of Laptop	Modem
Shielded Detachable Keyboard Cable	1.5	Keyboard Port of Laptop	Keyboard
USB Cable	1.8	Laptop	EUT

## 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

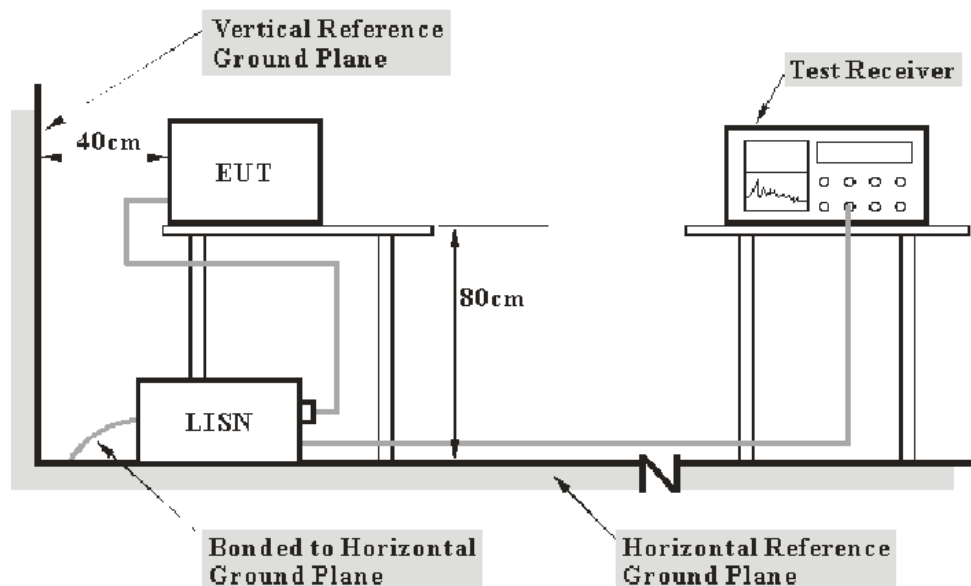
## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are Receiver, 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. (Dongguan) is 2.4 dB, and the uncertainty will not be taken into consideration for all the test data recorded in the report.

### 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 adapter 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:

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

## Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the 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
R&S	EMI Test Receiver	ESCS 30	830245/006	2012-11-29	2013-11-28
R&S	LISN1	ESH3-Z5	843331/015	2012-09-17	2013-09-16
R&S	LISN2	ESH3-Z5	100113	2012-11-29	2013-11-28

## 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:

**6.03 dB at 0.280MHz in the Neutral** conducted.

## Test Data

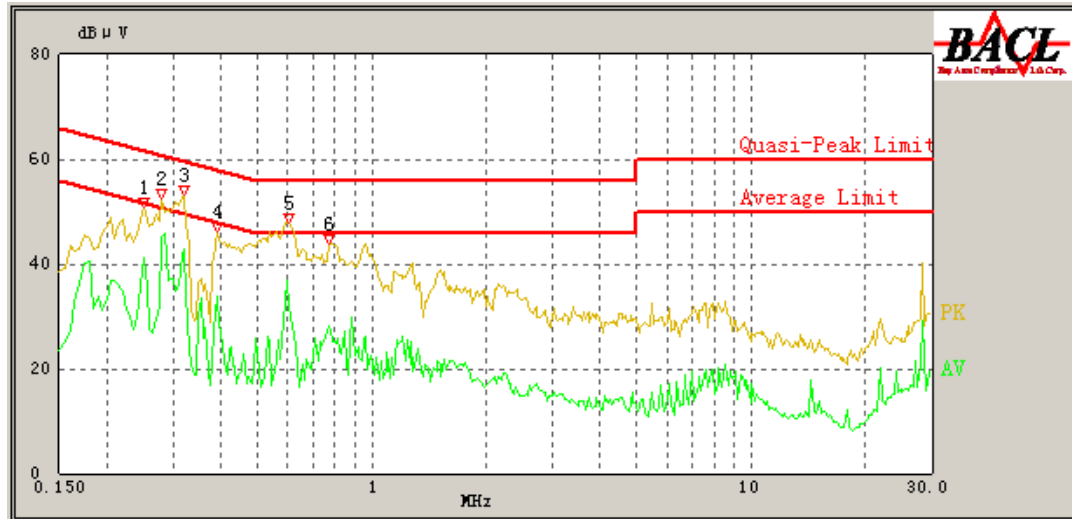
### Environmental Conditions

Temperature:	24.5 °C
Relative Humidity:	56 %
ATM Pressure:	101.3 kPa

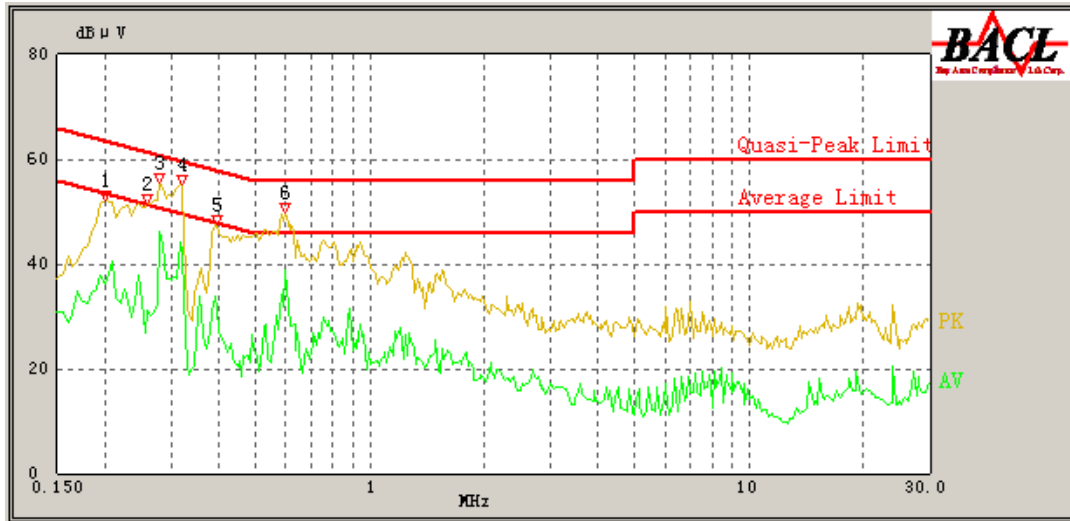
*The testing was performed by Leon Chen on 2012-12-06.*

Test mode: USB Communication

120 V, 60 Hz, Line:



Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.250	42.61	0.42	63.14	20.53	QP
0.250	41.17	0.42	53.14	11.97	AV
0.280	45.93	0.42	62.29	16.36	QP
0.280	45.19	0.42	52.29	7.10	AV
0.320	49.20	0.42	61.14	11.94	QP
0.320	42.78	0.42	51.14	8.36	AV
0.390	37.73	0.42	59.14	21.41	QP
0.390	33.80	0.42	49.14	15.34	AV
0.605	44.64	0.43	56.00	11.36	QP
0.605	32.17	0.43	46.00	13.83	AV
0.775	36.41	0.44	56.00	19.59	QP
0.775	28.15	0.44	46.00	17.85	AV

**120 V, 60 Hz, Neutral:**

Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.200	47.47	0.42	64.57	17.10	QP
0.200	36.26	0.42	54.57	18.31	AV
0.260	45.47	0.42	62.86	17.39	QP
0.260	31.28	0.42	52.86	21.58	AV
0.280	48.84	0.42	62.29	13.45	QP
0.280	46.26	0.42	52.29	6.03	AV
0.320	52.68	0.42	61.14	8.46	QP
0.320	42.47	0.42	51.14	8.67	AV
0.395	43.10	0.42	59.00	15.90	QP
0.395	31.76	0.42	49.00	17.24	AV
0.600	45.44	0.43	56.00	10.56	QP
0.600	38.78	0.43	46.00	7.22	AV

## FCC §15.109 - RADIATED EMISSIONS

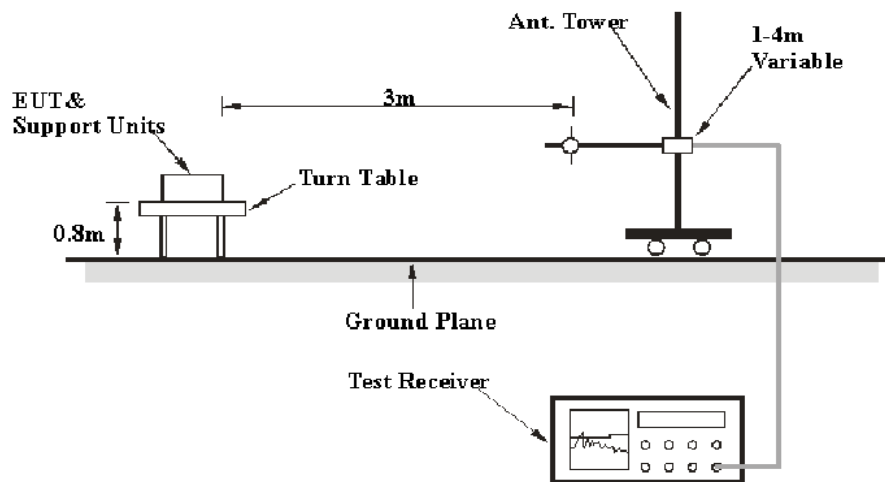
### Measurement Uncertainty

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 radiation emissions measurement from 30 MHz to 1 GHz at Bay Area Compliance Laboratories Corp. (Dongguan) is 4.0 dB, and the uncertainty will not be taken into consideration for all the test data recorded in the report.

### EUT Setup

Below 1 GHz:



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 adapter connected to a 120 VAC/60 Hz power source.

### EMI Test Receiver Setup

According to FCC 15.33 requirements, the system was measured from 30 MHz to 1 GHz.

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

<i><b>Frequency Range</b></i>	<i><b>RBW</b></i>	<i><b>Detector</b></i>
30MHz – 1000 MHz	120 kHz	QP

## Test Procedure

For the radiated emissions test, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz.

## 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:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2012-05-14	2013-05-13
Sunol Sciences	Hybrid Antennas	JB3	A060611-1	2011-09-06	2013-09-05
HP	Pre-amplifier	8447E	2434A02181	2012-10-08	2013-10-07
R&S	Spectrum Analyzer	FSEM 30	DE31388	2012-03-15	2013-03-14
ETS-LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2014-09-05
PICOSECOND	Amplifier	5828	2708	N/A	N/A

## 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:

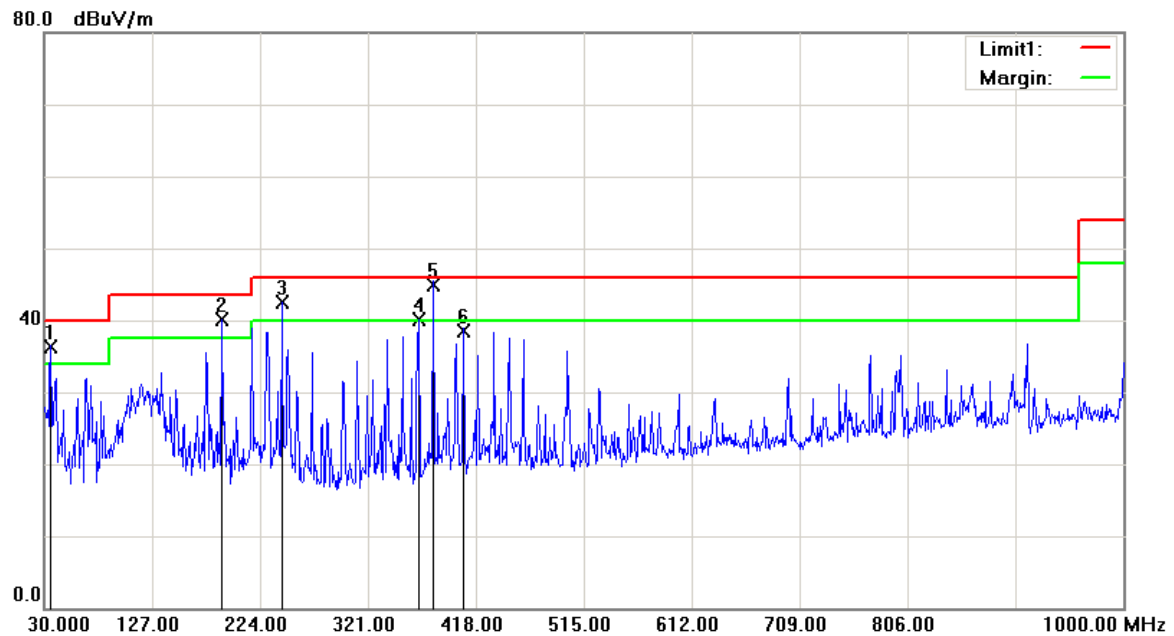
**1.10 dB at 380.1700 MHz in the Horizontal polarization**

**Test Data****Environmental Conditions**

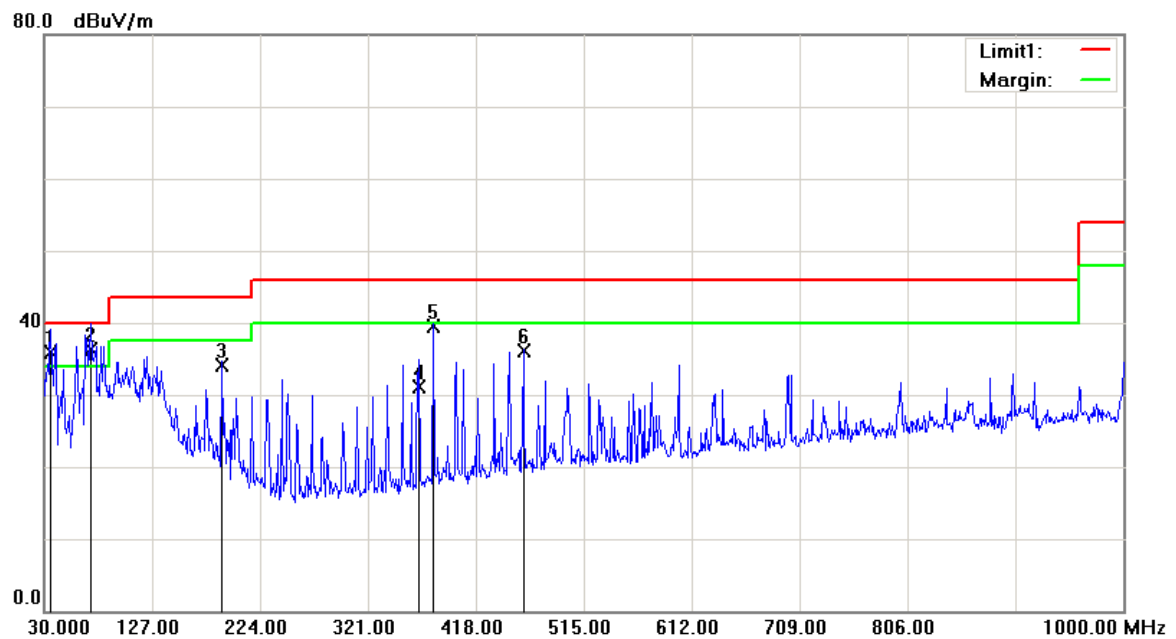
<b>Temperature:</b>	24.6°C
<b>Relative Humidity:</b>	60 %
<b>ATM Pressure:</b>	101.7 kPa

The testing was performed by Leon Chen on 2012-12-18.

Test mode: USB Communication

**Below 1G:****Horizontal:**

Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave )	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
35.8200	39.66	QP	-3.26	36.40	40.00	3.60
190.0500	48.98	QP	-8.93	40.05	43.50	3.45
243.4000	50.68	QP	-8.10	42.58	46.00	3.42
366.5900	44.61	QP	-4.56	40.05	46.00	5.95
380.1700	49.40	QP	-4.50	44.90	46.00	1.10
406.3600	42.41	QP	-3.91	38.50	46.00	7.50

**Vertical:**

Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave )	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
35.8200	39.16	QP	-3.26	35.90	40.00	4.10
71.7100	48.60	QP	-12.20	36.40	40.00	3.60
190.0500	43.03	QP	-8.93	34.10	43.50	9.40
366.5900	35.76	QP	-4.56	31.20	46.00	14.80
380.1700	44.10	QP	-4.50	39.60	46.00	6.40
460.6800	38.87	QP	-2.77	36.10	46.00	9.90

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