

FCC PART 15B

TEST REPORT

For

SECUTECH SOLUTIONS PTY LTD

Suite 5.14, 32 Delhi Rd, North Ryde, 2113, NSW, Australia

FCC ID: 2ABTZUNIMATETOKEN

Report Type: Original Report	Product Type: UniMate USB/TRRS PKI Token
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Report Number: R2BJ140211050-00	
Report Date: 2014-02-19	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The SECUTECH SOLUTIONS PTY LTD's product, model number: *UniMate Flex (FCC ID: 2ABTZUNIMATETOKEN)* (the "EUT") in this report was a *UniMate USB/TRRS PKI Token*, which was measured approximately: 6.5 cm (L) x 3.6 cm (W) x 1.14 cm (H), rated input voltage: DC 3.7 V from lithium battery or DC 5V from system. The highest operating frequency is 48MHz

** All measurement and test data in this report was gathered from production sample serial number: 140211050 (Assigned by BACL. Dongguan). The EUT was received on 2014-02-13*

Objective

This report is prepared on behalf of SECUTECH SOLUTIONS PTY LTD in accordance with Part 2, Subpart J, Part 15, Subparts A and B of the Federal Communications Commission's rules.

The objective of the manufacturer is to determine compliance with FCC Part 15B, Class B.

Related Submittal(s)/Grant(s)

No related submittal(s).

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 Communications 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 C63.4-2003.

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.

Additionally, Bay Area Compliance Laboratories Corp. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).



The current scope of accreditations can be found at <http://ts.nist.gov/standards/scopes/5000690.htm>

SYSTEM TEST CONFIGURATION

Justification

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

EUT Exercise Software

No exercise software was used.

Equipment Modifications

No modification was made to the EUT.

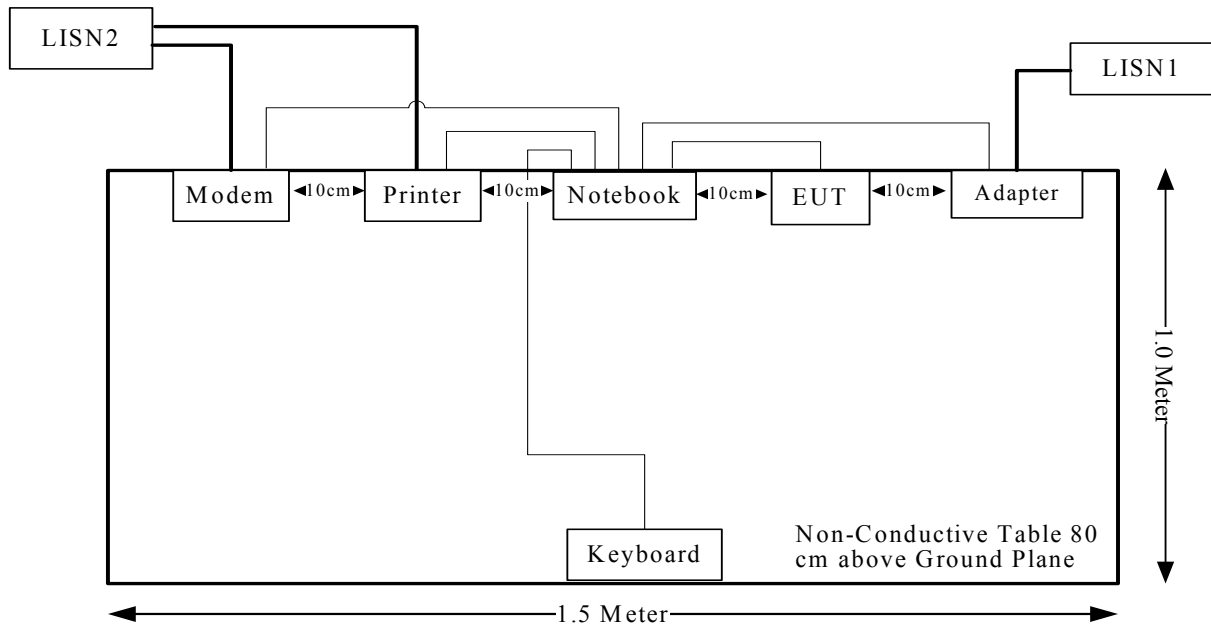
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Keyboard	SK-8115	CN-0DJ313-71616-05A-0DSO
DELL	Notebook Computer	PP11L	HLKYGB1
HP	Printer	C3990A	JPZW030603
SAST	Modem	AEM-2100	090200213

External I/O Cable

Cable Description	Length (m)	From / Port	To
Shielded Detachable Serial Cable	1.5	Serial Port of Notebook Computer	Modem
Shielded Detachable Parallel Cable	1.5	Parallel Port of Notebook Computer	Printer
Shielded Detachable Usb Cable	2.0	USB Port of Notebook Computer	Keyboard

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

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cisp} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cisp} of Table 1, then:

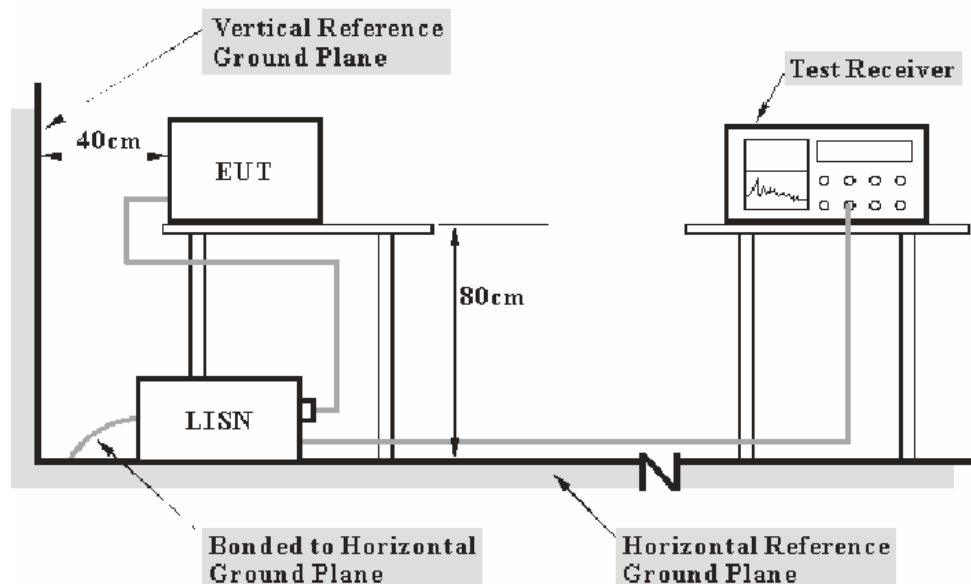
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cisp}

Measurement	U_{cisp}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

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 C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.107 Class B limits.

The spacing between the peripherals was 10 cm.

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:

Frequency Range	IF B/W
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.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum 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
R&S	EMI Test Receiver	ESCS 30	830245/006	2013-11-20	2014-11-19
R&S	Two-line V-network	ENV216	3560.6550.12	2014-01-22	2015-01-21
R&S	L.I.S.N	ESH3-Z5	100113	N/A	N/A
BACL	Test Software	BACL-EMC	V1.0-2010	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

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:

5.82 dB at 0.280 MHz in the **Neutral** conducted mode

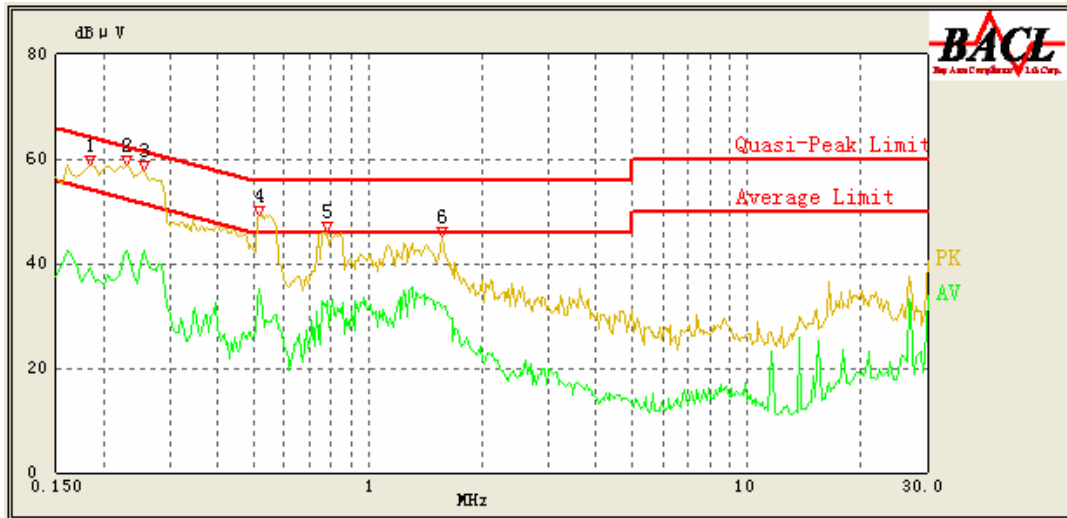
Test Data**Environmental Conditions**

Temperature:	21.6 °C
Relative Humidity:	56 %
ATM Pressure:	101.2 kPa

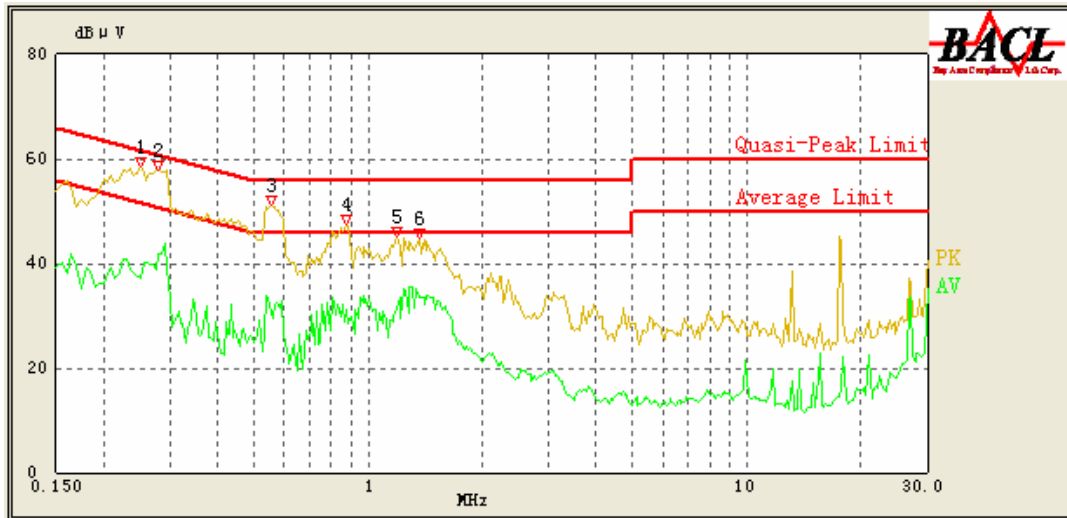
The testing was performed by Star Xie on 2014-02-17.

Test mode: Running

120 V, 60 Hz, Line:



Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.185	49.10	9.99	64.26	15.16	QP
0.185	39.15	9.99	54.26	15.11	AV
0.230	50.50	10.18	62.45	11.95	QP
0.230	42.35	10.18	52.45	10.10	AV
0.255	50.65	10.15	61.59	10.94	QP
0.255	42.35	10.15	51.59	9.24	AV
0.515	42.28	9.94	56.00	13.72	QP
0.515	35.12	9.94	46.00	10.88	AV
0.780	39.29	9.79	56.00	16.71	QP
0.780	32.94	9.79	46.00	13.06	AV
1.575	38.82	9.72	56.00	17.18	QP
1.575	31.65	9.72	46.00	14.35	AV

120 V, 60 Hz, Neutral:

Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
0.250	53.54	10.66	61.76	8.22	QP
0.250	37.14	10.66	51.76	14.62	AV
0.280	55.00	10.57	60.82	5.82	QP
0.280	41.79	10.57	50.82	9.03	AV
0.555	46.91	9.91	56.00	9.09	QP
0.555	30.52	9.91	46.00	15.48	AV
0.880	35.98	9.82	56.00	20.02	QP
0.880	31.30	9.82	46.00	14.70	AV
1.190	36.88	9.80	56.00	19.12	QP
1.190	31.49	9.80	46.00	14.51	AV
1.360	39.73	9.78	56.00	16.27	QP
1.360	33.62	9.78	46.00	12.38	AV

FCC §15.109 - RADIATED EMISSIONS

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

30M~200MHz: 5.0 dB

200M~1GHz: 6.2 dB

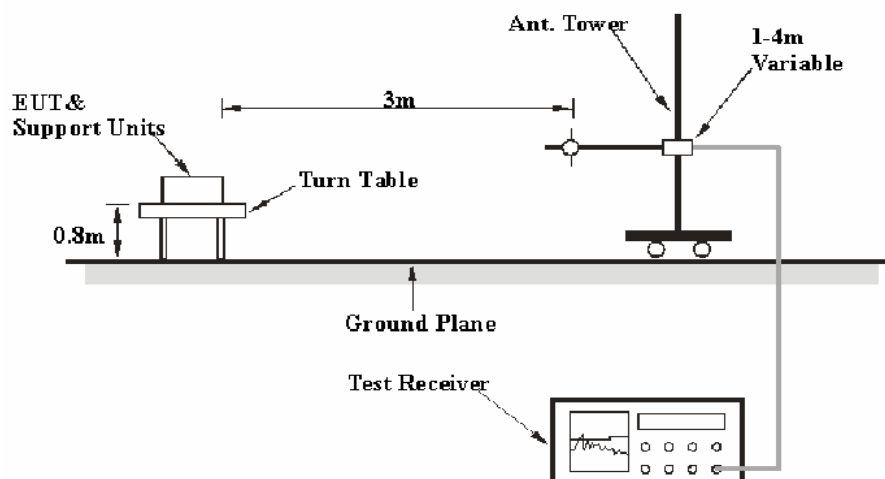
1G~6GHz: 4.45 dB

6G~18GHz: 5.23 dB

Table 2 – Values of U_{cispr}

Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2003. 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 adapter was 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:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	120kHz	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.

The data was recorded in Quasi-peak detection mode for 30 MHz to 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
R&S	EMI Test Receiver	ESCI	100224	2013-05-06	2014-05-05
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Primary Standards and International System of Units (SI).

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:

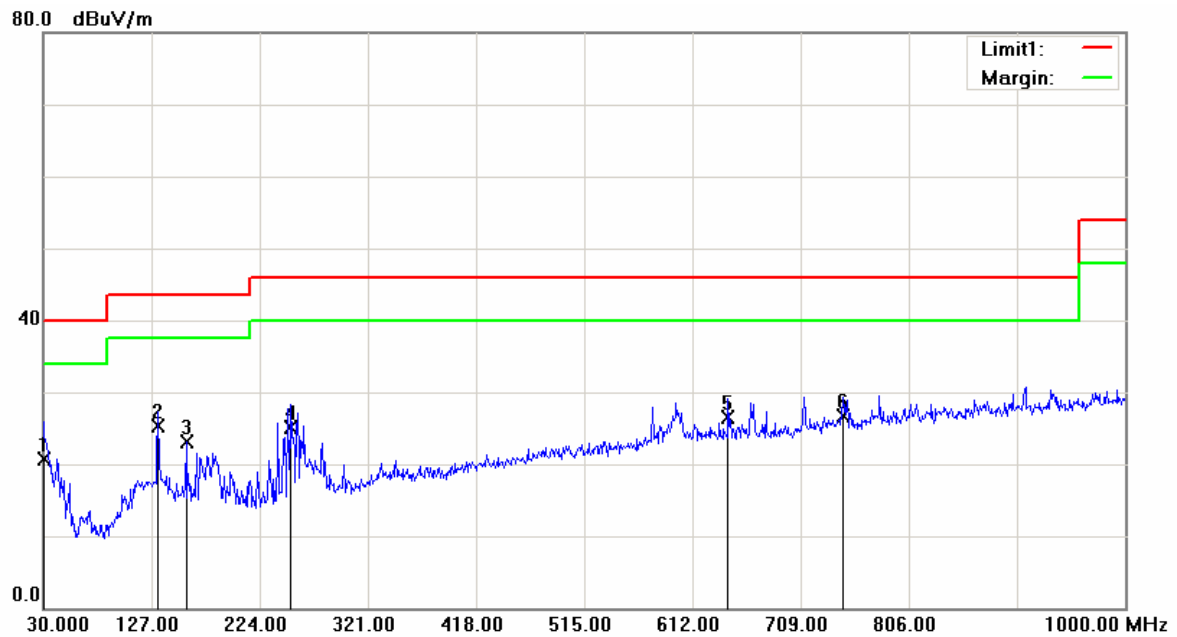
12.80 dB at 779.8100 MHz in the Vertical polarization

Test Data**Environmental Conditions**

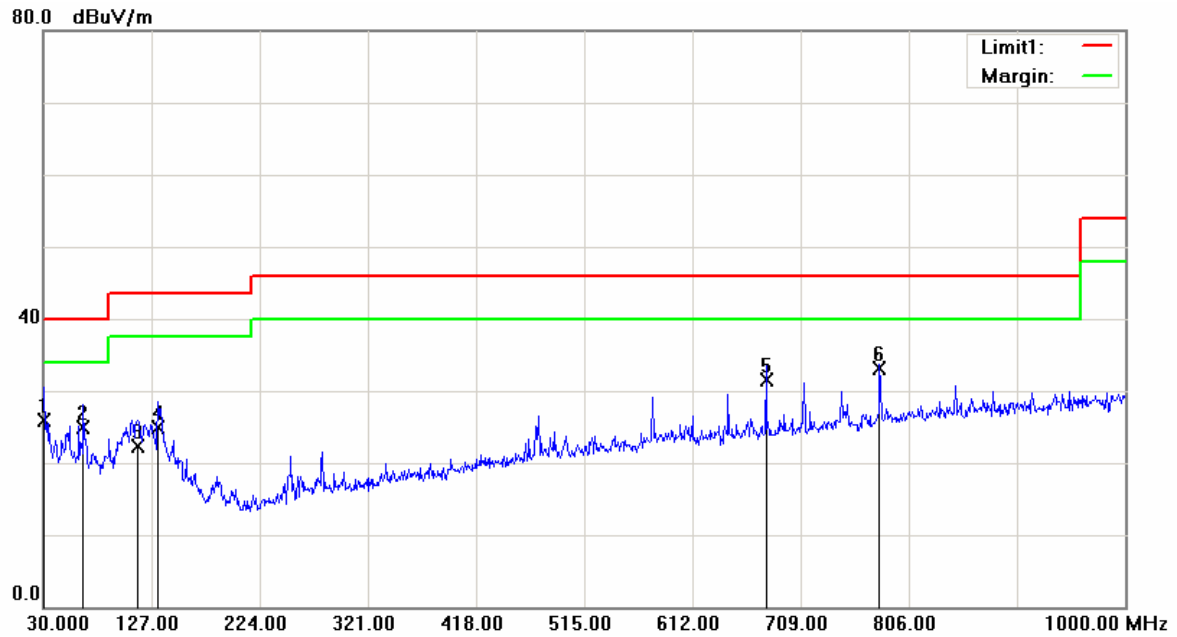
Temperature:	16.4 °C
Relative Humidity:	55 %
ATM Pressure:	101.2 kPa

The testing was performed by Star Xie on 2014-02-17.

Test mode: Running

Horizontal:

Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.0000	19.35	QP	1.45	20.80	40.00	19.20
132.8200	31.58	QP	-6.18	25.40	43.50	18.10
158.0400	30.13	QP	-7.09	23.04	43.50	20.46
252.1300	32.63	QP	-7.53	25.10	46.00	20.90
644.0100	25.75	QP	0.75	26.50	46.00	19.50
746.8300	24.58	QP	2.12	26.70	46.00	19.30

Vertical:

Frequency (MHz)	Receiver Reading (dBμV)	Detector (PK/QP/Ave)	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.0000	24.45	QP	1.45	25.90	40.00	14.10
65.8900	37.24	QP	-12.24	25.00	40.00	15.00
114.3900	28.89	QP	-6.59	22.30	43.50	21.20
132.8200	31.08	QP	-6.18	24.90	43.50	18.60
677.9600	30.65	QP	0.85	31.50	46.00	14.50
779.8100	30.62	QP	2.58	33.20	46.00	12.80

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