

FCC PART 15B, CLASS B

TEST REPORT

For

KAREL ELEKTRONIK SANAYI VE TICARET A.S.

Kore Sehitleri Caddesi, Yuzbasi Kaya Aldogan Sok. No: 16 Zincirlikuyu / Istanbul 34394, Turkey

FCC ID: OZWKAREL-IPV10

Report Type: Original Report	Product Type: IP PBX
Test Engineer: Star Xie	star xie
Report Number: R1XM120806050-00	
Report Date: 2012-12-26	
Reviewed By: EMC Leader	Harry Wu
Test Laboratory: Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn	Harry Wu

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).

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *KAREL ELEKTRONIK SANAYI VE TICARET A.S.*'s product, model number: *IPV10* (FCC ID: *OZWKAREL-IPV10*) (the "EUT") in this report is a *IP PBX*, which was measured approximately: 22.0 cm (L) x 14.4 cm (W) x 6.2 cm (H), rated input voltage: DC 12V from adapter, the highest operating frequency is 400MHz.

Adapter Information: HERO
Model: OH-1015A1201000U1-UL
Input: 100-240Vac, 50/60Hz, 350mA
Output: 12Vdc, 1A

All measurement and test data in this report was gathered from production sample serial number: 120806050 (Assigned by BACL, Dongguan). The EUT was received on 2012-12-18.

Objective

This report is prepared on behalf of *KAREL ELEKTRONIK SANAYI VE TICARET A.S.* 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)

No Related Submittal(s)/Grant(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 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

No exercise software was used.

Equipment Modifications

No modification was made to the EUT.

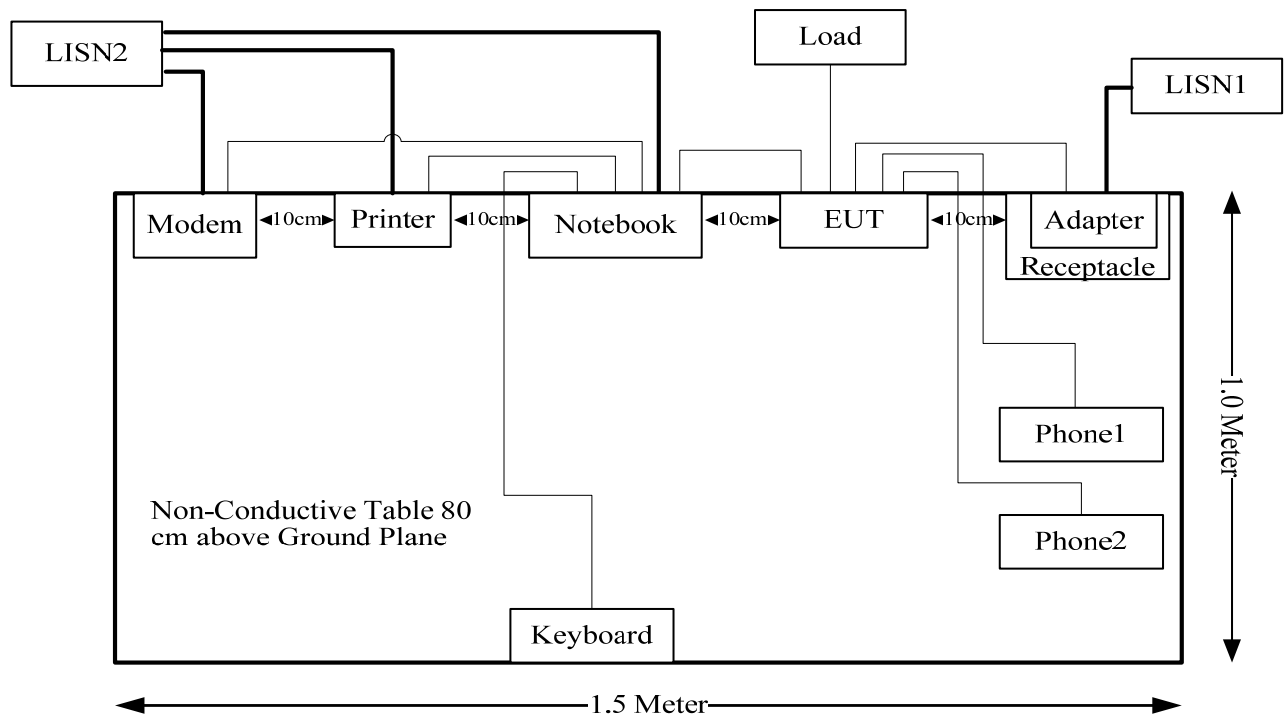
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Notebook	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTV013237
DELL	Keyboard	SK-8115	CN-0DJ313-716716-05A-0DSO
SAST	Modem	AEM-2100	090200213
Gold Top	Phone	Vintage	N/A
T.tce	Phone	N/A	N/A

External I/O Cable

Cable Description	Length (m)	From	To
Shielded Detachable Printer Cable	1.2	Parallel Port of PC	Printer
Shielded Detachable Serial Cable	1.2	Serial Port of PC	Modem
Shielded Detachable Keyboard Cable	1.5	Keyboard Port of PC	Keyboard
Unshielded Detachable RJ11 Cable	1.5	RJ11 Port of Phone 1	EUT
Unshielded Detachable RJ11 Cable	1.5	RJ11 Port of Phone 2	EUT
Unshielded Detachable RJ45 Cable	1.0	RJ45 Port of PC	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

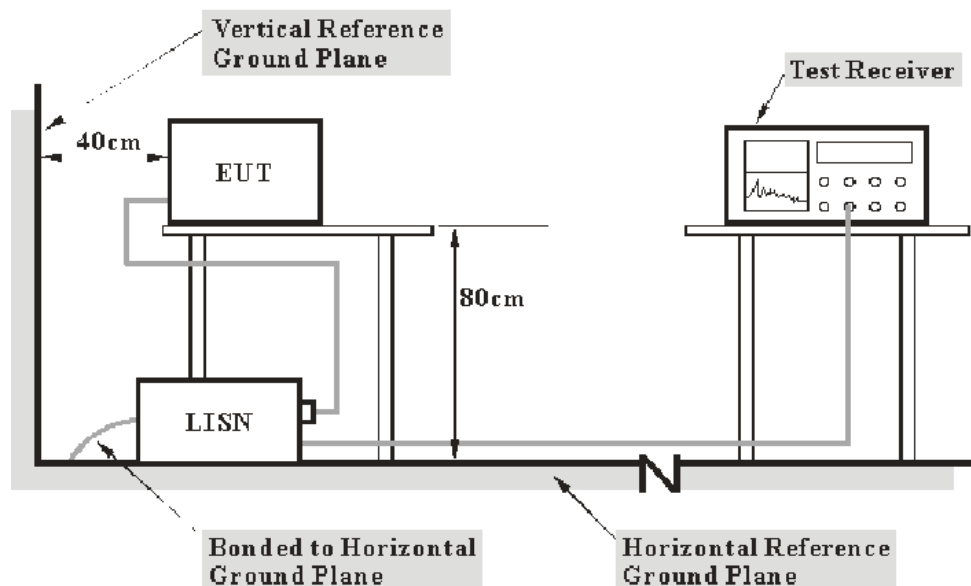
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

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:

6.06 dB at 0.290MHz in the Neutral conducted

Test Data

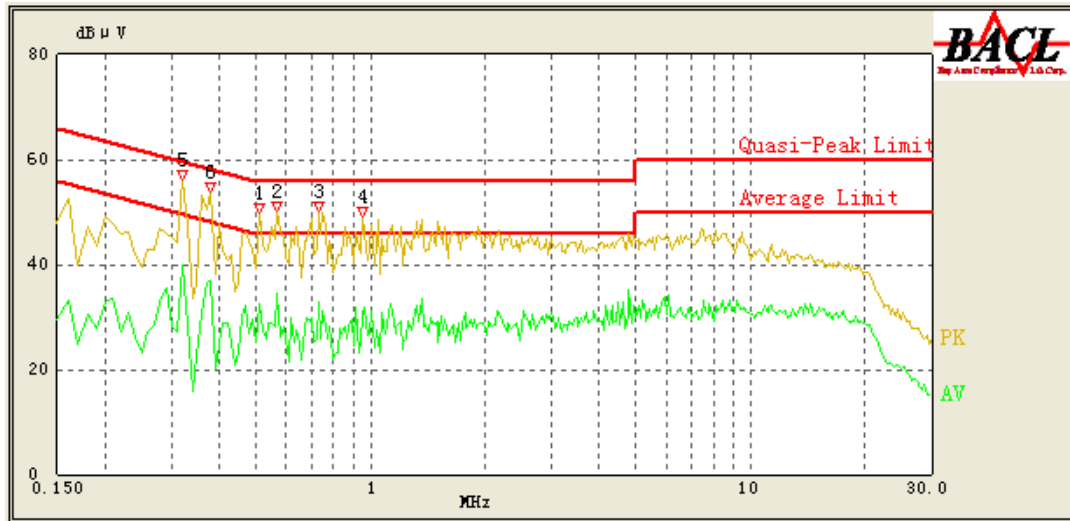
Environmental Conditions

Temperature:	19.3 °C
Relative Humidity:	36 %
ATM Pressure:	101.9kPa

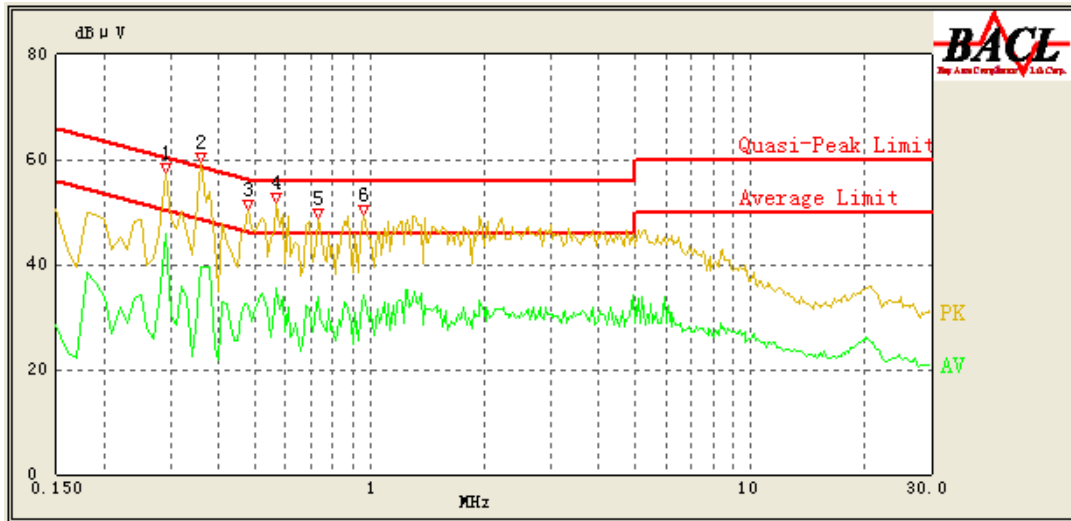
The testing was performed by Star Xie on 2012-12-24.

Test mode: Running

120 V, 60 Hz, Line:



No.	Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
1	0.510	45.10	0.31	56.00	10.90	QP
2	0.510	32.44	0.31	46.00	13.56	AV
3	0.570	43.67	0.32	56.00	12.33	QP
4	0.570	34.51	0.32	46.00	11.49	AV
5	0.730	43.67	0.33	56.00	12.33	QP
6	0.730	32.94	0.33	46.00	13.06	AV
7	0.950	42.95	0.32	56.00	13.05	QP
8	0.950	30.34	0.32	46.00	15.66	AV
9	0.320	49.70	0.34	61.14	11.44	QP
10	0.320	39.97	0.34	51.14	11.17	AV
11	0.380	49.89	0.33	59.43	9.54	QP
12	0.380	36.76	0.33	49.43	12.67	AV

120 V, 60 Hz, Neutral:

No.	Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
1	0.290	51.32	0.35	62.00	10.68	QP
2	0.290	45.94	0.35	52.00	6.06	AV
3	0.360	48.03	0.34	60.00	11.97	QP
4	0.360	39.44	0.34	50.00	10.56	AV
5	0.480	42.69	0.31	56.57	13.88	QP
6	0.480	32.13	0.31	46.57	14.44	AV
7	0.570	44.23	0.32	56.00	11.77	QP
8	0.570	35.61	0.32	46.00	10.39	AV
9	0.730	43.86	0.33	56.00	12.14	QP
10	0.730	33.91	0.33	46.00	12.09	AV
11	0.960	42.47	0.32	56.00	13.53	QP
12	0.960	34.12	0.32	46.00	11.88	AV

FCC §15.109 - RADIATED EMISSIONS

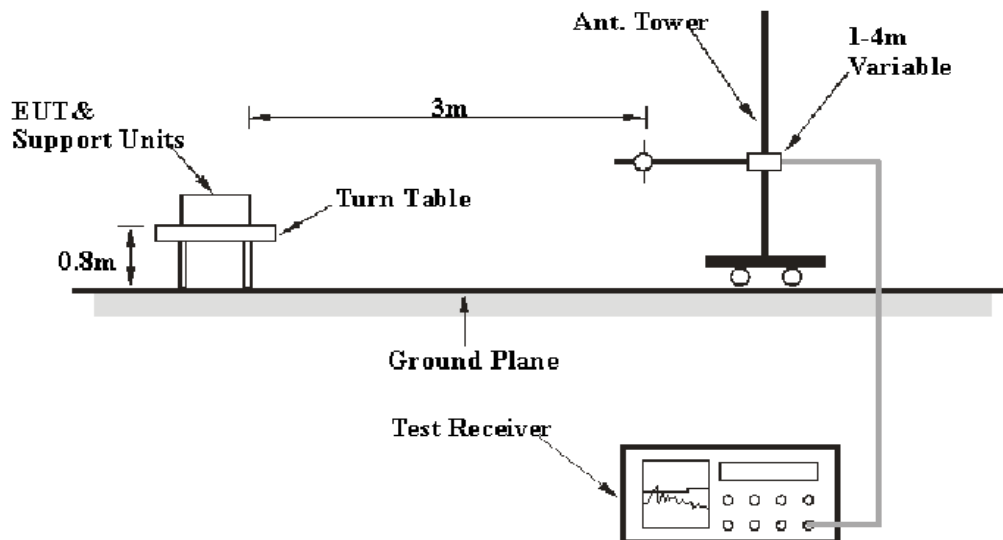
Measurement Uncertainty

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.

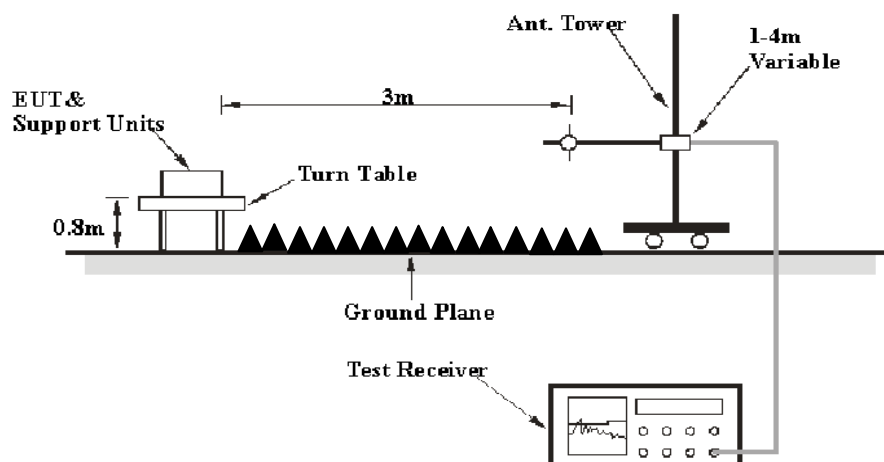
Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of radiation emissions measurement from 30 MHz to 1 GHz at Bay Area Compliance Laboratories Corp. (Dongguan) is 4.0 dB, and the uncertainty will not be taken into consideration for all the test data recorded in the report.

EUT Setup

Below 1GHz



Above 1GHz



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 2 GHz.

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

<i>Frequency Range</i>	<i>RBW</i>	<i>VBW</i>	<i>Detector</i>
30 MHz – 1000 MHz	120 kHz	300 kHz	QP
Above 1 GHz	1MHz	3 MHz	Peak
Above 1 GHz	1MHz	10 Hz	Ave

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 the Quasi-peak detection mode for below 1 GHz, Peak and average detection mode above 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
Mini-Circuits	Wideband Amplifier	ZVA-183-S+	96901149	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:

3.10 dB at 263.7700 MHz in the **Horizontal** polarization below 1GHz

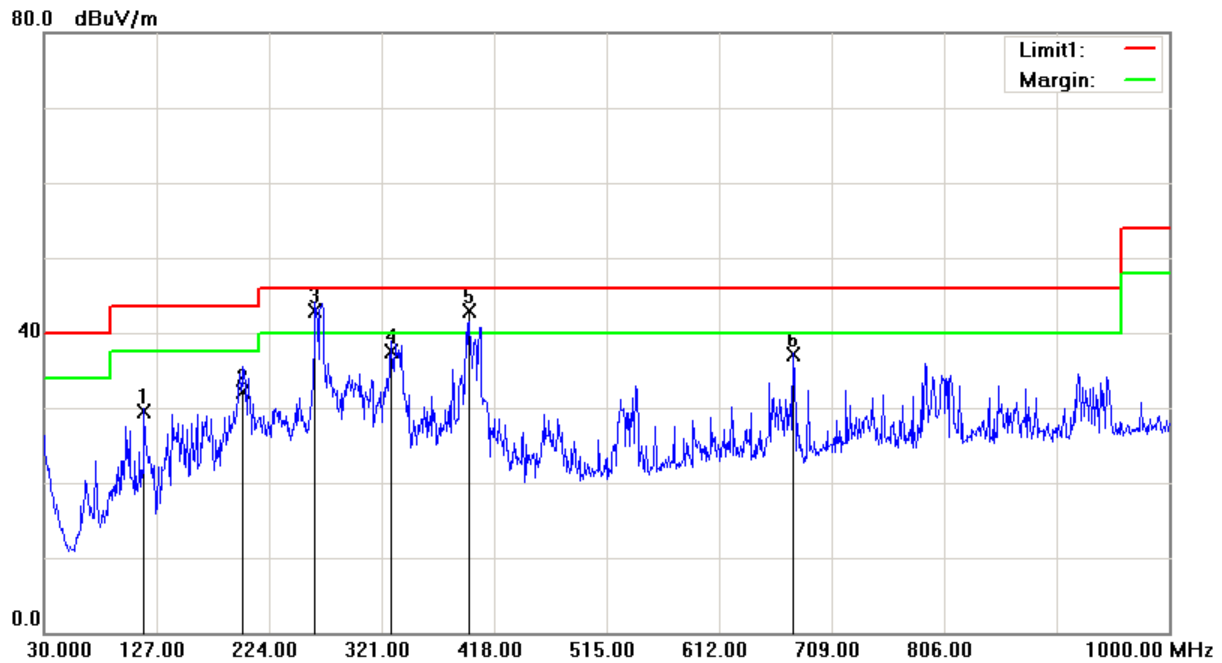
17.85 dB at 1064.128 MHz in the **Vertical** polarization above 1GHz

Test Data**Environmental Conditions**

Temperature:	24.3°C
Relative Humidity:	60 %
ATM Pressure:	100.8kPa

The testing was performed by Star Xie on 2012-12-17.

Test mode: Running

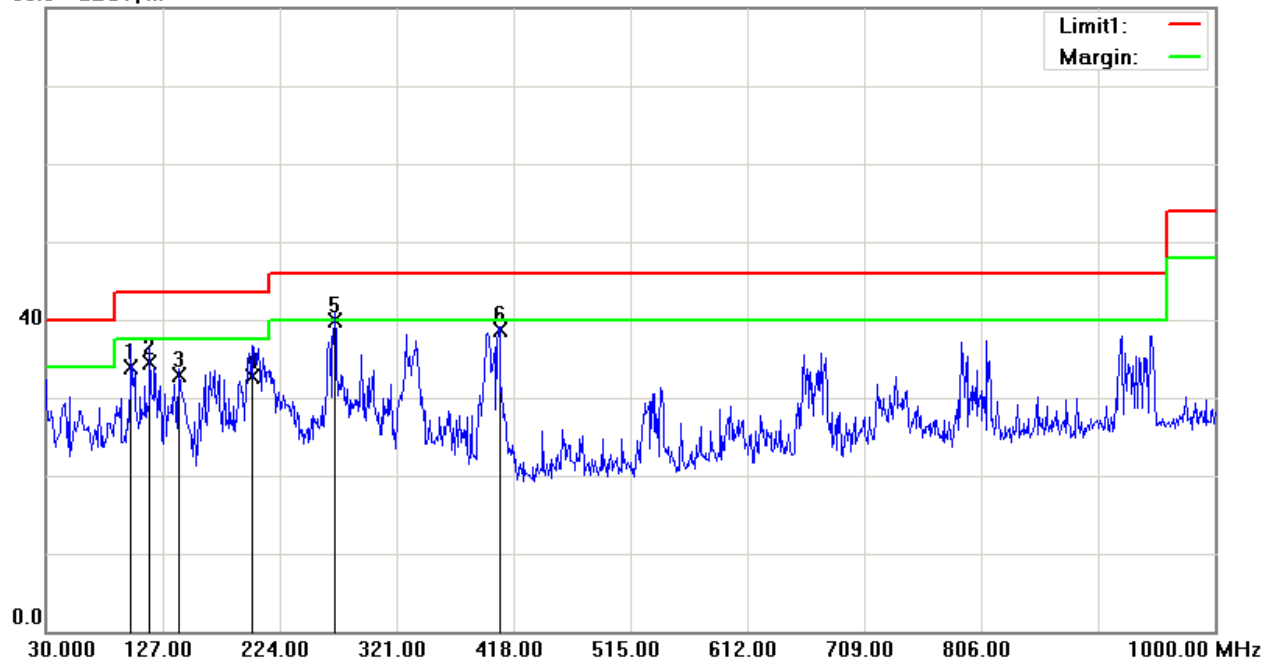
Below 1GHz:**Horizontal:**

Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
263.7700	49.93	QP	-7.03	42.90	46.00	3.10*
396.6600	47.10	QP	-4.20	41.90	46.00	4.10
328.7600	43.11	QP	-5.61	37.50	46.00	8.50
676.0200	37.21	QP	-0.11	37.10	46.00	8.90
201.6900	39.90	QP	-7.80	32.10	43.50	11.40
116.3300	36.40	QP	-6.80	29.60	43.50	13.90

*Within measurement uncertainty!

Vertical:

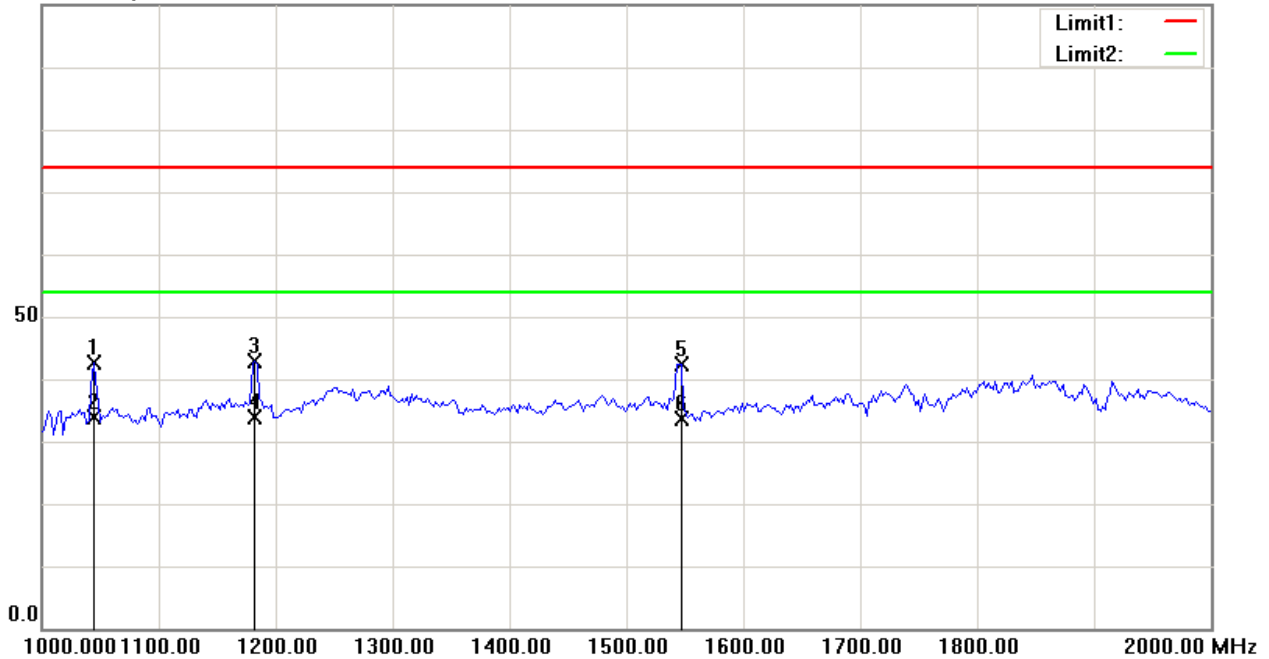
80.0 dBuV/m



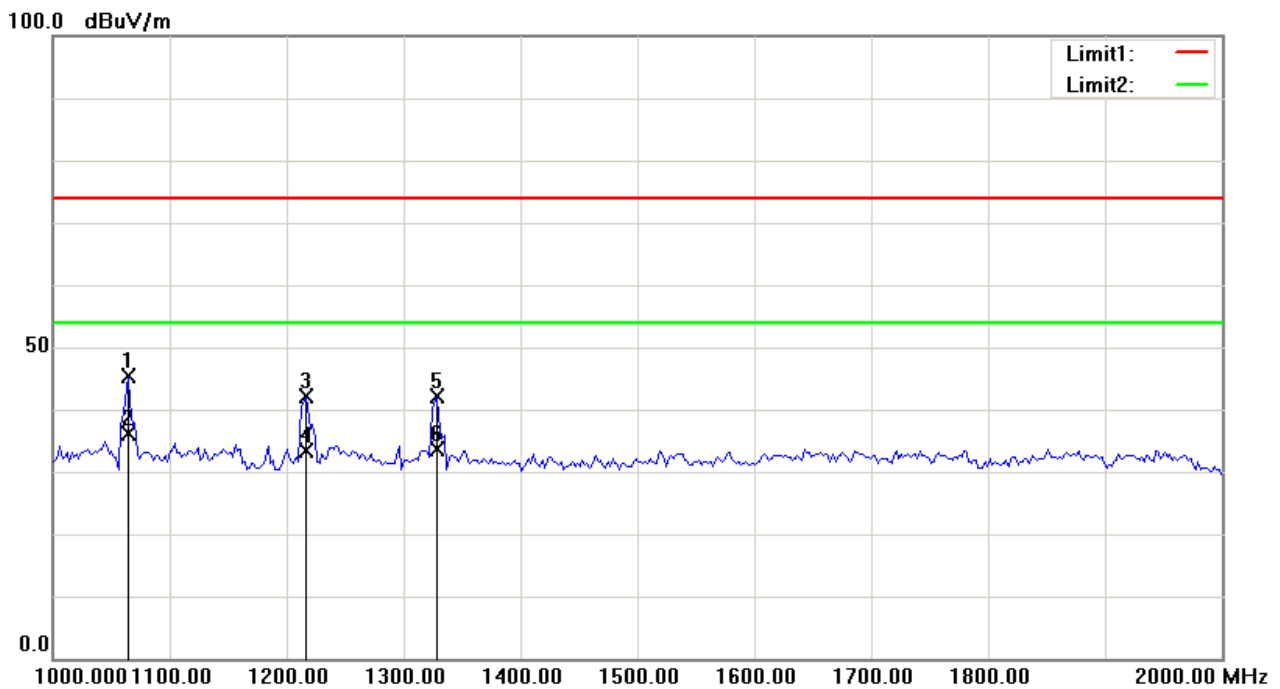
Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
269.5900	46.49	QP	-6.59	39.90	46.00	6.10
406.3600	42.61	QP	-3.91	38.70	46.00	7.30
116.3300	41.30	QP	-6.80	34.50	43.50	9.00
100.8100	43.77	QP	-9.87	33.90	43.50	9.60
140.5800	40.23	QP	-7.33	32.90	43.50	10.60
201.6900	40.60	QP	-7.80	32.80	43.50	10.70

Above 1GHz:**Horizontal:**

100.0 dBuV/m



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1044.088	36.21	AVG	-2.26	33.95	54.00	20.05
1182.365	35.76	AVG	-1.96	33.80	54.00	20.20
1547.094	34.45	AVG	-0.75	33.70	54.00	20.30
1182.365	44.87	peak	-1.96	42.91	74.00	31.09
1044.088	45.01	peak	-2.26	42.75	74.00	31.25
1547.094	43.10	peak	-0.75	42.35	74.00	31.65

Vertical:

Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1064.128	38.36	AVG	-2.21	36.15	54.00	17.85
1328.657	35.03	AVG	-1.45	33.58	54.00	20.42
1216.433	35.27	AVG	-1.79	33.48	54.00	20.52
1064.128	47.55	peak	-2.21	45.34	74.00	28.66
1216.433	43.95	peak	-1.79	42.16	74.00	31.84
1328.657	43.52	peak	-1.45	42.07	74.00	31.93

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