



## FCC PART 15B

## TEST REPORT

For

### DADI ORISTAR TECHNOLOGY DEVELOPMENT(BEIJING)CO.,LTD.

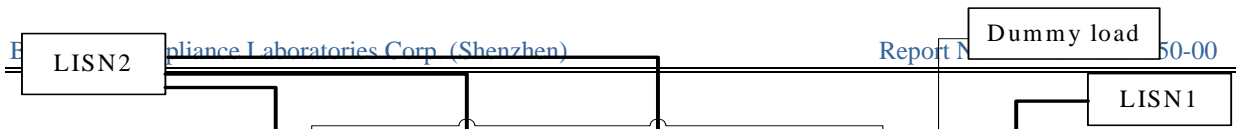
Building B3, Shumazhuangyuan, No.1, Disheng West Street, BDA, Beijing, 100176

**FCC ID: OB3-ORISTARAQ10MB**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Oristar AQ10
<b>Test Engineer:</b> Jone Lv	<i>Jone Lv</i>
<b>Report Number:</b> R1BJ120601050-00	
<b>Report Date:</b> 2012-06-07	
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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. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, or any agency of the Federal Government.

\* 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 *DADI ORISTAR TECHNOLOGY DEVELOPMENT(BEIJING)CO.,LTD.*'s product, model number: *ORISTAR-AQ10-MB (FCC ID: OB3-ORISTARAQ10MB)* (the "EUT") in this report is a Oristar AQ10, which was measured approximately:29.5 cm (L) x13.0 cm (W) x 1.3 cm (H), rated input voltage: DC 5V From PC Input AC 120V/60Hz, the highest operating frequency is 1.485G.

*All measurement and test data in this report was gathered from production sample serial number: 120601050 (Assigned by BAACL, Shenzhen). The EUT was received on 2012-06-01.*

### Objective

This report is prepared on behalf of *DADI ORISTAR TECHNOLOGY DEVELOPMENT(BEIJING) 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 compliance with FCC Part 15 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.

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 (FCC §15.27)

### Justification

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

### EUT Exercise Software

No Software was used

### Equipment Modifications

No modification was made to the EUT.

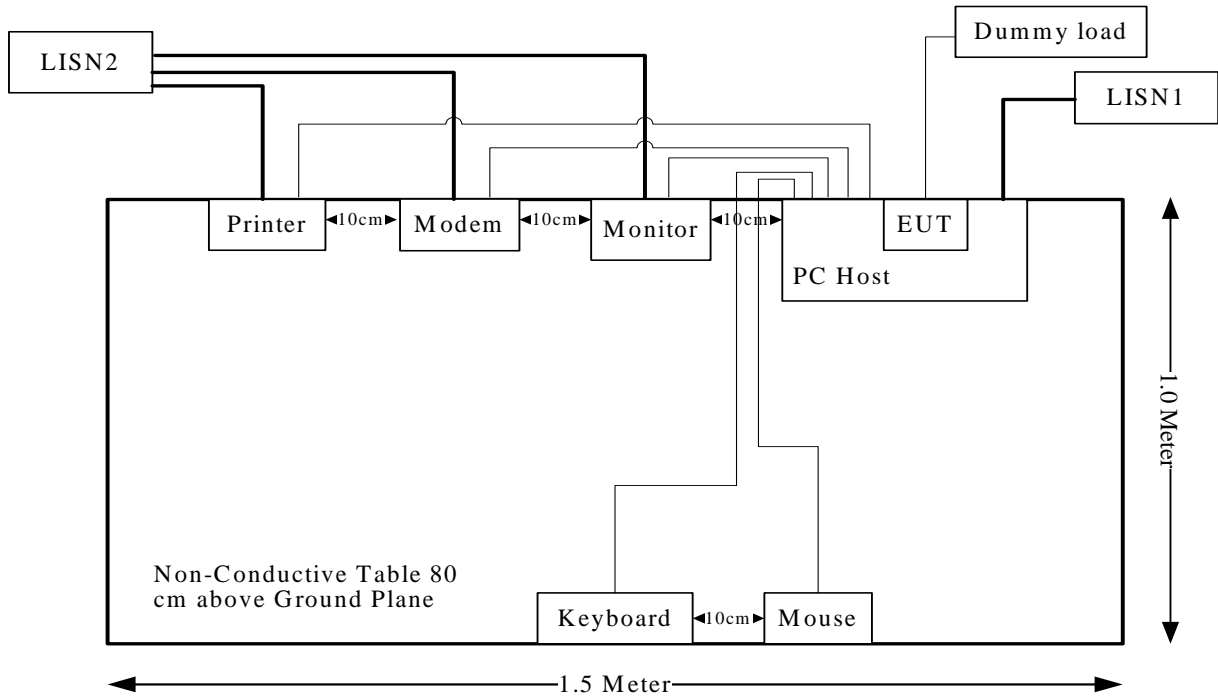
### Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
LENOVO	PC	M4300	NA10489830
HP	Printer	C3941A	JPTVOB2337
SAST	Modem	AEM-2100	0293
DELL	Mouse	OCJ339	F0Y02P7Y
DELL	Keyboard	L100	CNORH656658907BL 05DC
DELL	Monitor	E2010HC	CH-03D6N6-64180- 042-DQ1M

### External I/O Cable

Cable Description	Length (m)	From	To
Shielded Detachable Keyboard Cable	1.5	Keyboard Port / Host PC	Keyboard
Shielded Detachable Mouse Cable	1.5	Mouse Port / Host PC	Mouse
Shielded Detachable Printer Cable	1.2	Parallel Port / Host PC	Printer
Shielded Detachable Serial Cable	1.2	Serial Port / Host PC	Modem
Shielded Detachable VGA Cable	1.5	VGA Port of PC	Monitor

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Results</b>
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance
§15.33	Frequency range of radiated measurements	Compliance
§15.27	Special Accessories	Compliance

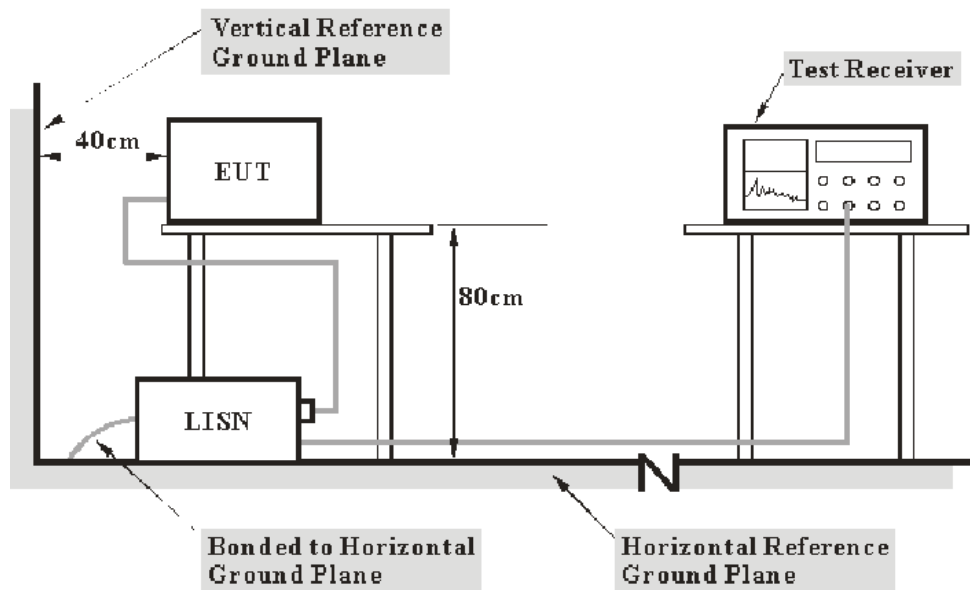
## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### 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. (Dongguan) is  $\pm 2.4$  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 PC 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:

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

## Test Procedure

During the conducted emission test, the PC 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 Reciever	ESCS 30	830245/006	2011-10-08	2012-10-07
R&S	LISN	ESH3-Z5	843331/015	2011-10-08	2012-10-07
R&S	LISN	ESH3-Z5	100113	2011-10-08	2012-10-07
SCHWARZBECK	ISN	NTFM 8158	8158-0011	2011-10-19	2012-10-18
SCHWARZBECK	ISN	NTFM 8132	8132185	2011-10-22	2012-10-21

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

## 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:

**16.91 dB at 2.400 MHz in the Line** conducted

## Test Data

### Environmental Conditions

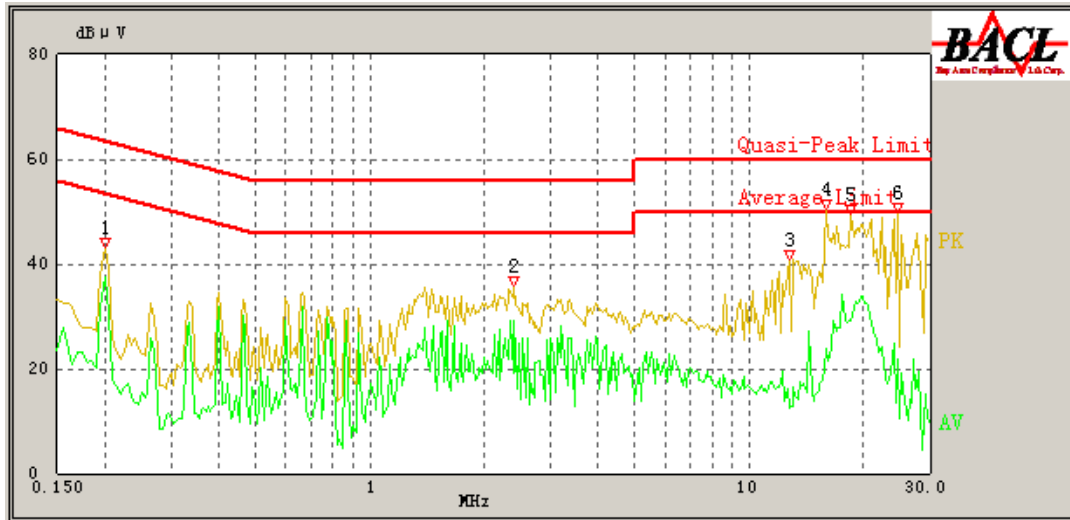
<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100.0 kPa

*The testing was performed by Jone Lv on 2012-06-05.*



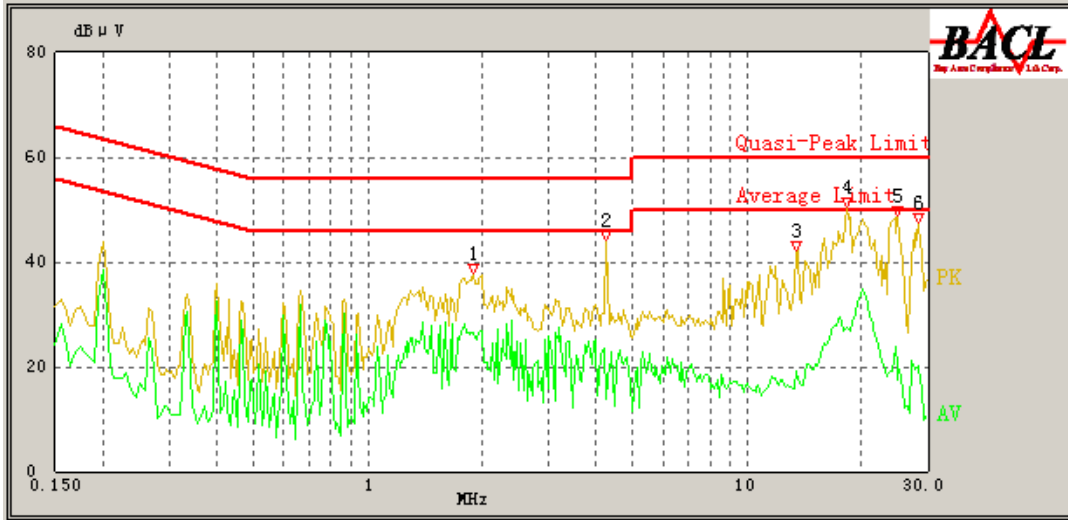
Test mode: Running

120 V, 60 Hz, Line:



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/ QP/Ave.)
2.400	29.09	0.48	46	16.91	Ave.
0.200	37.65	0.42	54.57	16.92	Ave.
18.495	29.16	1.58	50	20.84	Ave.
18.445	37.85	1.58	60	22.15	QP
24.635	37.85	2.41	60	22.15	QP
2.400	32.65	0.48	56	23.35	QP
0.200	40.95	0.42	64.57	23.62	QP
15.965	23.82	1.35	50	26.18	Ave.
24.635	21.88	2.41	50	28.12	Ave.
15.965	29.45	1.35	60	30.55	QP
12.805	12.48	1.00	50	37.52	Ave.
12.77	18.26	1.00	60	41.74	QP

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



Conducted Emissions			FCC Part 15.107 Class B		
Frequency (MHz)	Corrected Result (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/ QP/Ave.)
1.895	26.54	0.48	46	19.46	Ave.
18.34	27.46	1.57	50	22.54	Ave.
18.34	33.4	1.57	60	26.6	QP
1.895	27.47	0.48	56	28.53	QP
28.37	20.08	2.07	50	29.92	Ave.
13.48	19.09	1.08	50	30.91	Ave.
25.01	28	2.46	60	32.00	QP
4.265	13.85	0.50	46	32.15	Ave.
25.01	17.41	2.46	50	32.59	Ave.
13.48	26.5	1.08	60	33.5	QP
28.37	26.43	2.07	60	33.57	QP
4.235	21.01	0.50	56	34.99	QP

## FCC §15.109 - RADIATED EMISSIONS

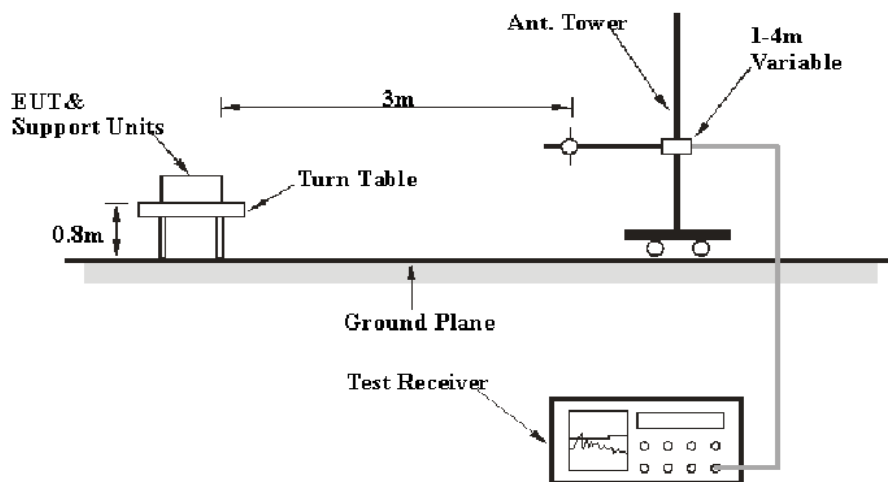
### Measurement Uncertainty

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.

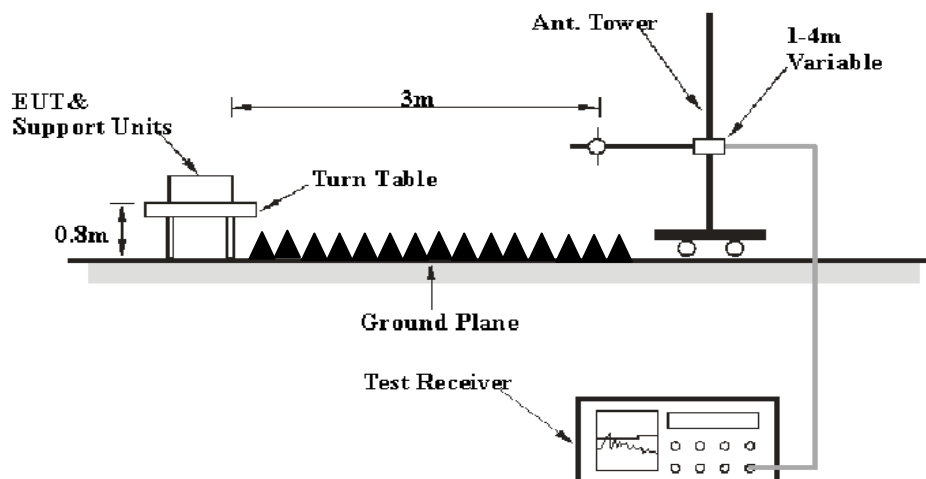
Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Dongguan) is 4.0 dB. (k=2, 95% level of confidence)

### EUT Setup

#### Below 1 GHz:



#### Above 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 PC 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 7.425 GHz.

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	120 kHz	300 kHz	QP
1G Hz – 7.425 GHz	1 MHz	3 MHz	PK
1G Hz – 7.425 GHz	1 MHz	10 Hz	Ave.

### Test Procedure

For the radiated emissions test, the PC was connected to 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, peak and Average detection modes for frequencies 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
R&S	EMI Test Reciever	ESCI	100224	2011-11-11	2012-11-10
Sunol Sciences	Hybrid Antennas	JB3	A060611-1	2011-09-06	2012-09-05
HP	Pre-amplifier	8447E	2434A02181	2011-10-08	2012-10-07
R&S	Spectrum Analyzer	FSEM	1079 8500	2011-10-09	2012-10-08
Beijingdayang	Horn Antenna	OMCDH10180	10279001B	2010-07-30	2015-07-29
Mini-Circuits	Wideband Amplifier	ZVA-183-S+	96901149	N/A	N/A

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

### 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:

#### Below 1GHz:

**3.00 dB** at **232.7300 MHz** in the **Vertical** polarization

#### Above 1GHz:

**11.40 dB** at **1377.755 MHz** in the **Vertical** polarization

### Test Data

#### Environmental Conditions

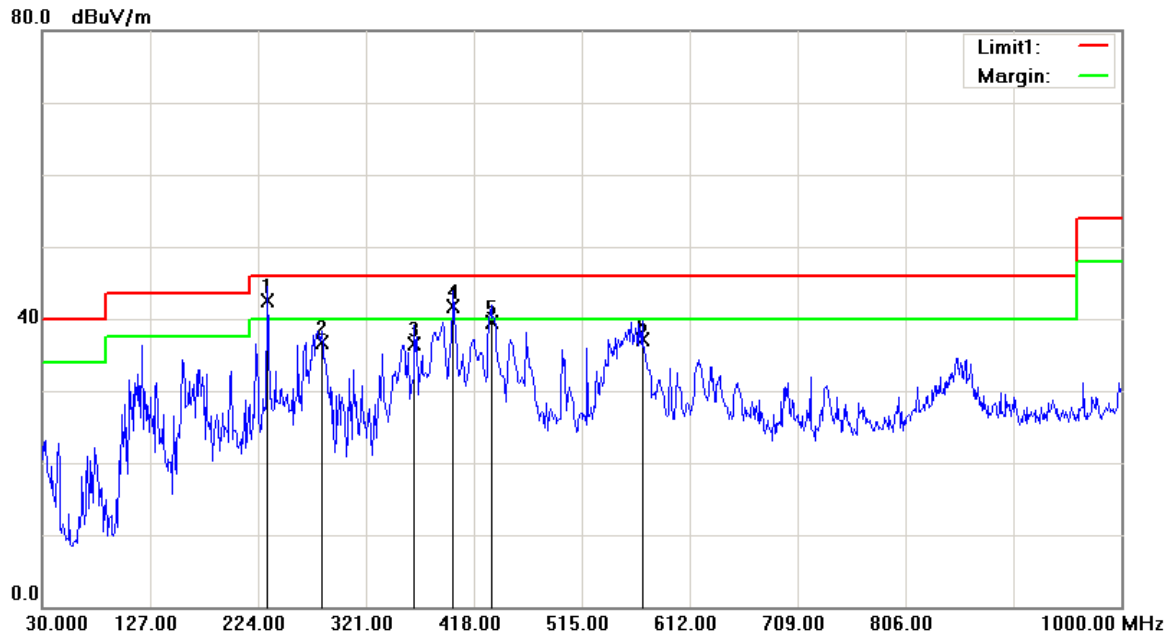
Temperature:	25 °C
Relative Humidity:	48 %
ATM Pressure:	100.0 kPa

*The testing was performed by Jone Lv on 2012-06-06.*

**1) Below 1GHz:**

Test mode: Running

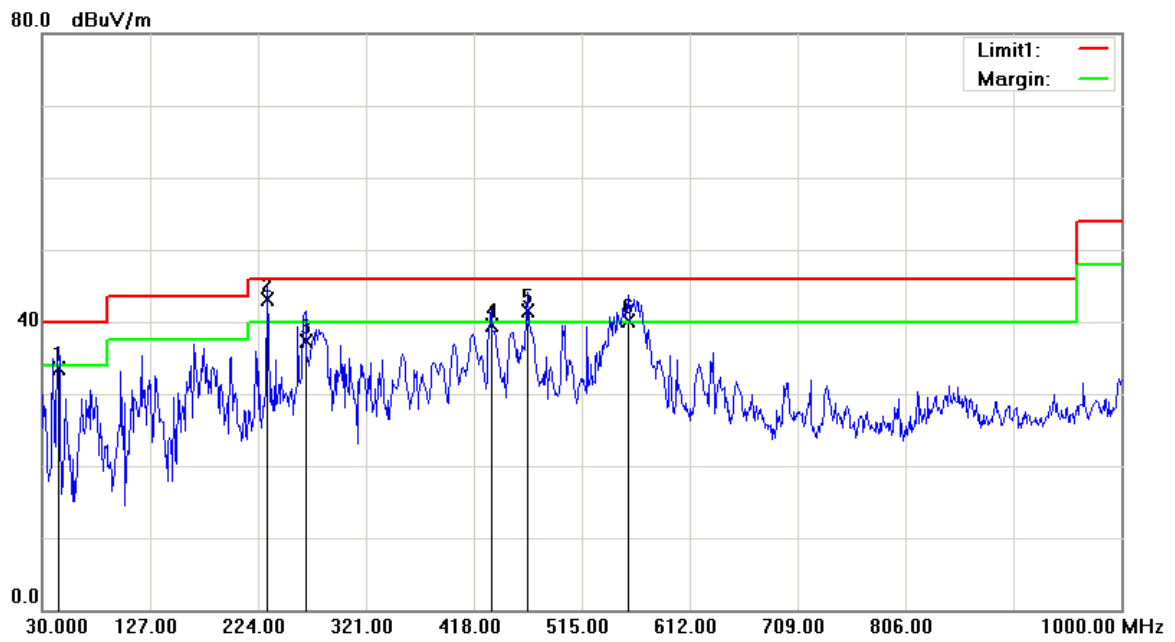
**Horizontal:**



Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
232.7300	50.58	QP	-8.08	42.50	46.00	3.50*
399.5700	45.61	QP	-3.91	41.70	46.00	4.30
433.5200	42.92	QP	-3.32	39.60	46.00	6.40
569.3200	38.23	QP	-1.03	37.20	46.00	8.80
281.2300	43.10	QP	-6.40	36.70	46.00	9.30
364.6500	40.91	QP	-4.41	36.50	46.00	9.50

\*Within measurement uncertainty!

**Vertical:**



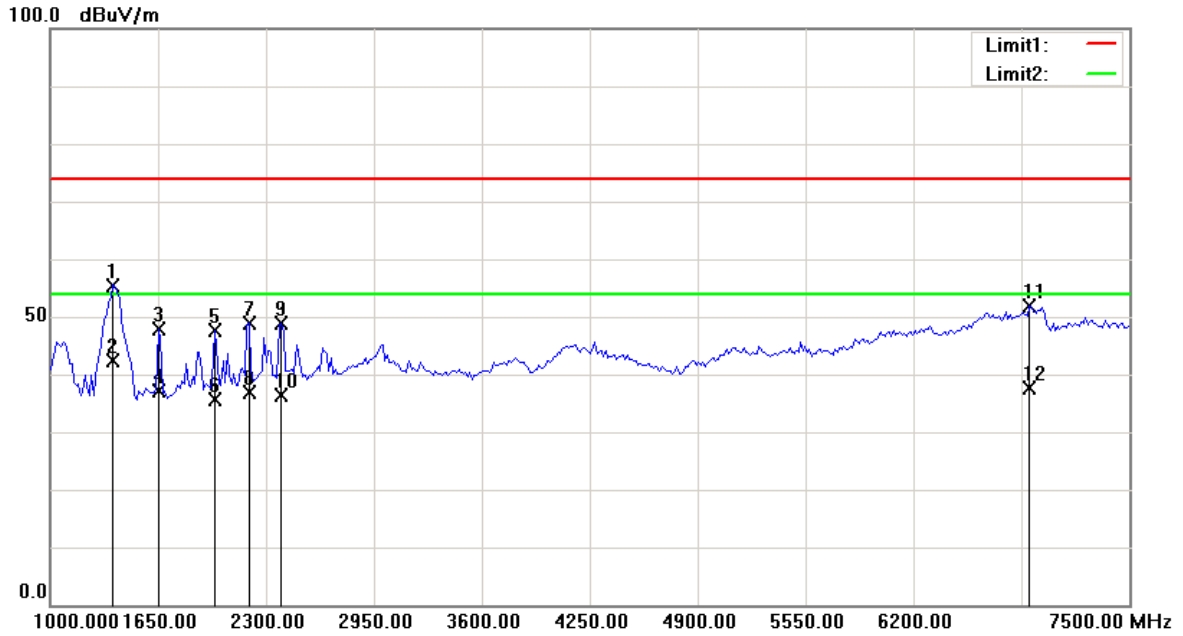
Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
232.7300	51.08	QP	-8.08	43.00	46.00	3.00*
466.5000	44.04	QP	-2.54	41.50	46.00	4.50
556.7100	41.78	QP	-1.68	40.10	46.00	5.90
44.5500	42.81	QP	-9.31	33.50	40.00	6.50
433.5200	42.82	QP	-3.32	39.50	46.00	6.50
266.6800	43.98	QP	-6.68	37.30	46.00	8.70

\*Within measurement uncertainty!

2) Above 1G

Test Mode: Running

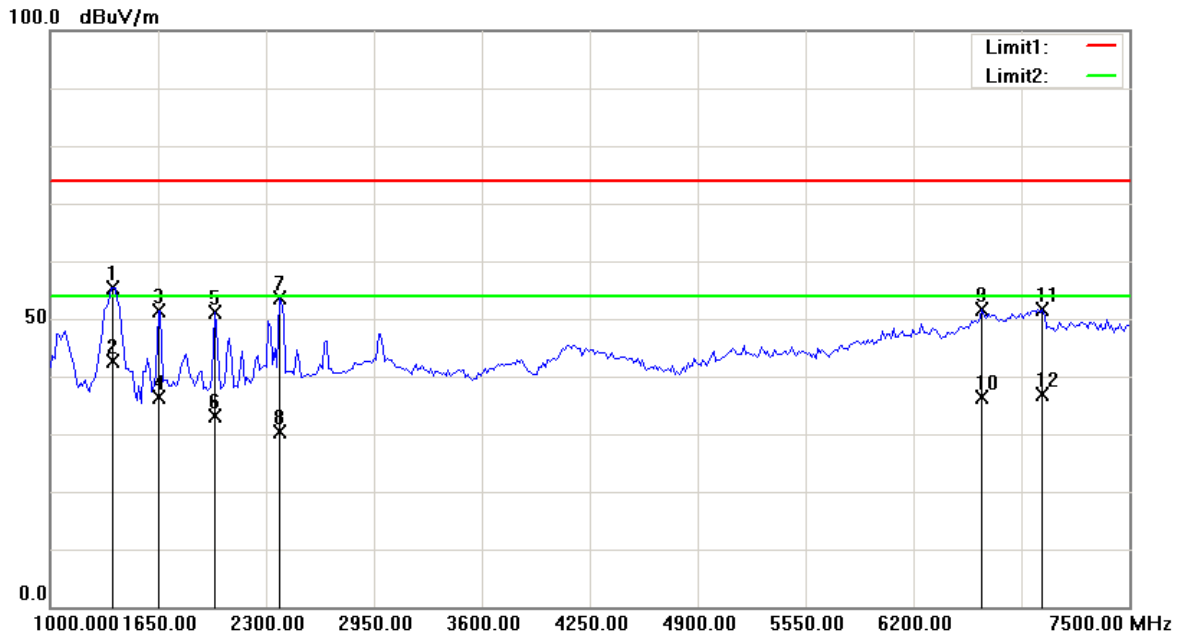
Horizontal:



Frequency	Reading	Detector	Corrected	Result	Limit	Margin
(MHz)	(dBuV/m)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1377.755	41.42	AVG	0.88	42.30	54.00	11.70
6900.802	20.21	AVG	17.39	37.60	54.00	16.40
1651.303	35.20	AVG	1.90	37.10	54.00	16.90
2198.397	31.06	AVG	5.74	36.80	54.00	17.20
2393.788	28.80	AVG	7.60	36.40	54.00	17.60
1989.980	30.95	AVG	4.65	35.60	54.00	18.40
1377.755	54.62	peak	0.88	55.50	74.00	18.50
6900.802	34.39	peak	17.39	51.78	74.00	22.22
2198.397	43.16	peak	5.74	48.90	74.00	25.10
2393.788	41.29	peak	7.60	48.89	74.00	25.11
1651.303	46.10	peak	1.90	48.00	74.00	26.00
1989.980	43.00	peak	4.65	47.65	74.00	26.35



**Vertical:**



Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1377.755	41.72	AVG	0.88	42.60	54.00	11.40
6978.958	18.88	AVG	17.93	36.81	54.00	17.19
1651.303	34.60	AVG	1.90	36.50	54.00	17.50
6614.229	20.86	AVG	15.40	36.26	54.00	17.74
1377.755	54.50	peak	0.88	55.38	74.00	18.62
2380.762	46.34	peak	7.39	53.73	74.00	20.27
1989.980	28.55	AVG	4.65	33.20	54.00	20.80
6978.958	33.73	peak	17.93	51.66	74.00	22.34
6614.229	36.21	peak	15.40	51.61	74.00	22.39
1651.303	49.42	peak	1.90	51.32	74.00	22.68
1989.980	46.58	peak	4.65	51.23	74.00	22.77
2380.762	23.11	AVG	7.39	30.50	54.00	23.50

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