

FCC PART 15B, CLASS B


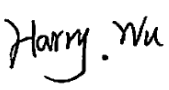
TEST REPORT

For

Beijing Osee Digital Technology Ltd.

Room 702, Tower D, Jinyujiahua Building, No.9, 3rd shangdi Street, Haidian District,
Beijing, China.

FCC ID: PGFLMW-230LCD

Report Type: Original Report	Product Type: LCD Monitor
Test Engineer: <u>Jone Lv</u> 	
Report Number: <u>R1BJ121018050-00</u>	
Report Date: <u>2012-10-29</u>	
Reviewed By: <u>Harry Wu</u>  EMC Engineer	
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	

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 *Beijing Osee Digital Technology Ltd.*'s product, model number: *LMW-230 (FCC ID: PGFLMW-230LCD)* (the "EUT") in this report is a *LCD Monitor*, which was measured approximately: 55.4 cm (L) x 36.9 cm (W) x 15.9 cm (H), rated input voltage: DC 12V from adapter, the highest operating frequency is 108MHz.

Adapter information:

Model: GP009CX

Input: AC 100-240V, 50/60Hz 1A-0.5A

Output: DC 12V, 5A

Note: model LMW-230, LMW-230H, LMW-230S and LMW-230V are electrically identical, the only difference is the model name. We selected LMW-230 for fully testing, the details was explained in the attached declaration letter.

All measurement and test data in this report was gathered from production sample serial number: 121018050 (Assigned by BACL, Dongguan). The EUT was received on 2012-10-18.

Objective

This report is prepared on behalf of *Beijing Osee Digital Technology 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 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 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). To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Mode:
DVI :1920*1080/60Hz (worse case)
DVI :1280*1024/75Hz
DVI: 800*600/60Hz

EUT Exercise Software

The software “BurnInTest V6.0” was used.

Equipment Modifications

No modification was made to the EUT.

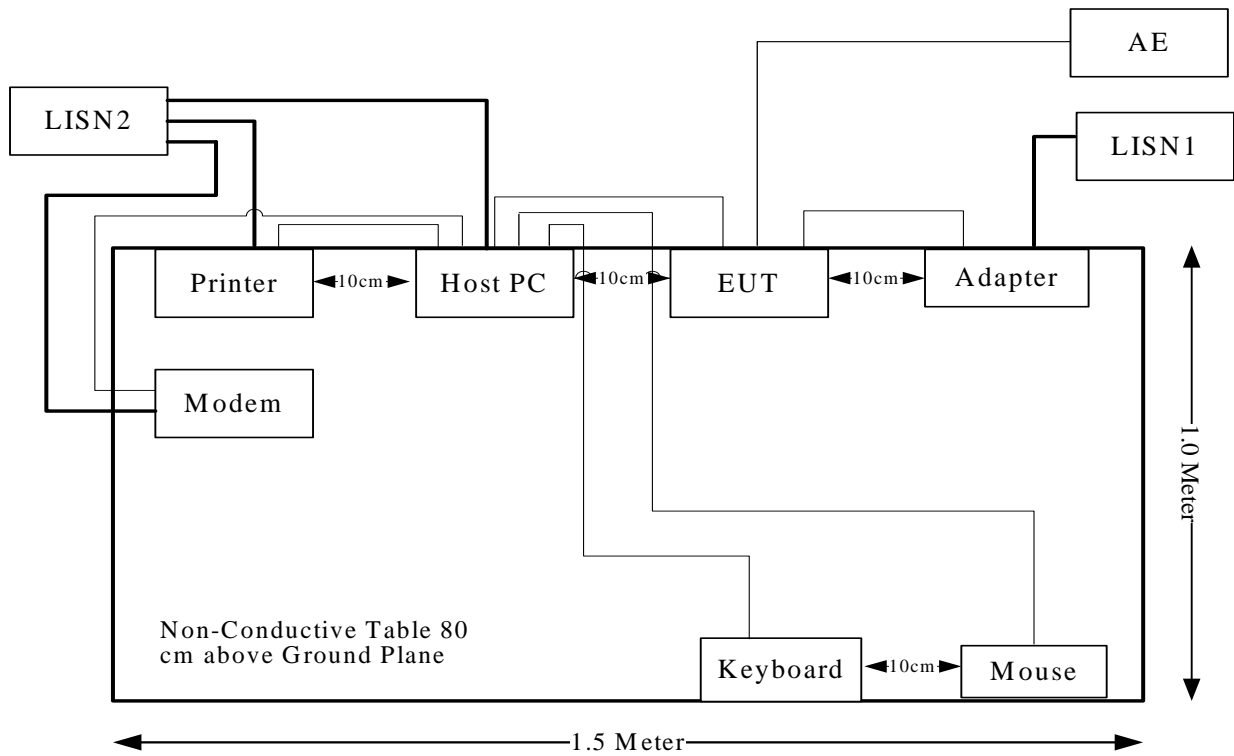
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	System PC	D07M	HNXJW2X
HP	Laser Jet5L	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL 05DC
SAST	Modem	AEM-2100	0293
DELL	Mouse	MO55UOA	FOY02P7Y

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
Shielded Detachable Mouse Cable	1.5	Mouse Port of PC	Mouse
Shielded Detachable DVI Cable	1.8	DVI 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
§15.33	Frequency range of radiated measurements	Compliance
§15.27	Special Accessories	Compliance

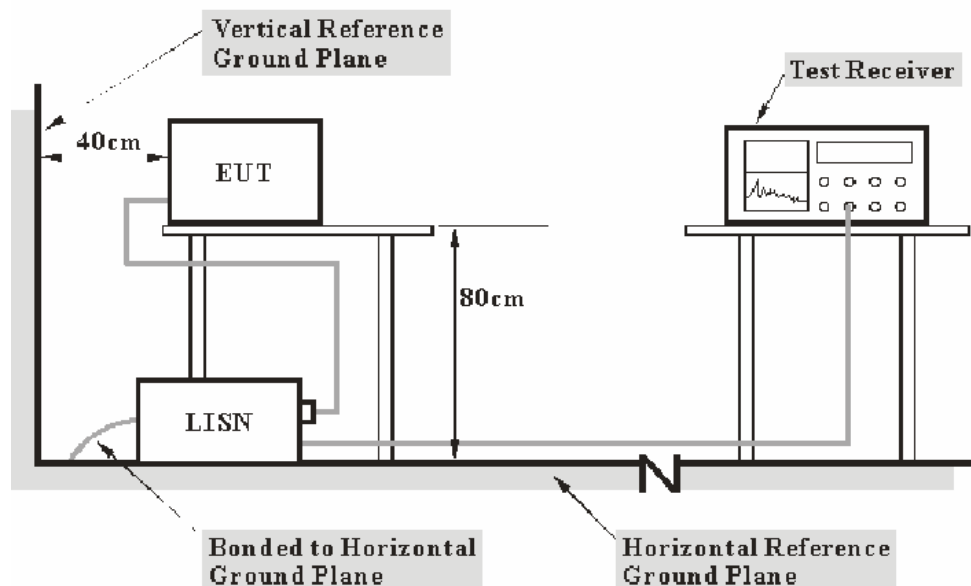
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

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 1.5 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	2012-10-08	2013-10-07
R & S	LISN1	ESH3-Z5	843331/015	2012-10-08	2013-10-07
R & S	LISN2	ESH3-Z5	100113	2012-10-08	2013-10-07

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:

3.06 dB at 4.880MHz in the Line conducted

Test Data

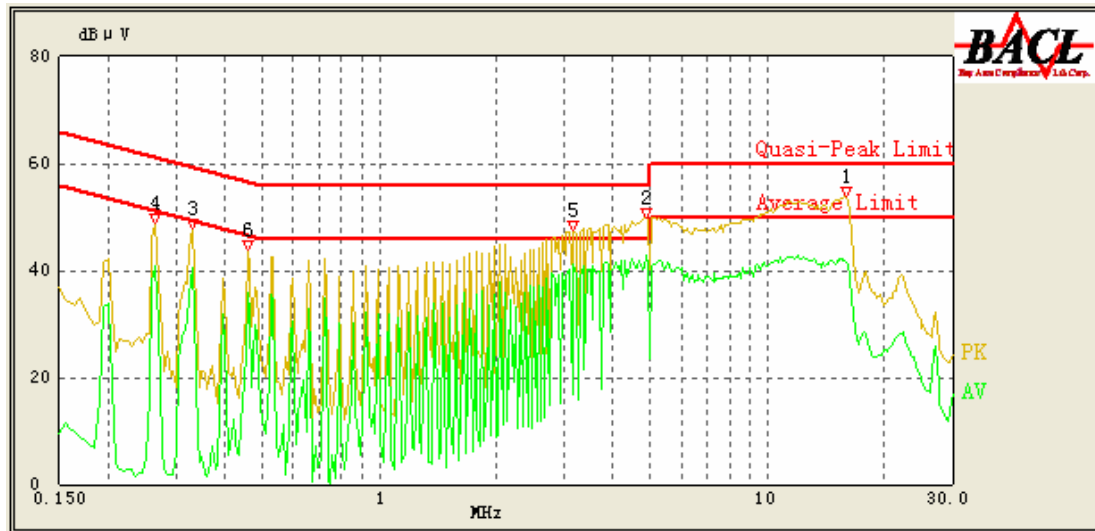
Environmental Conditions

Temperature:	27.3 °C
Relative Humidity:	61 %
ATM Pressure:	100.7 kPa

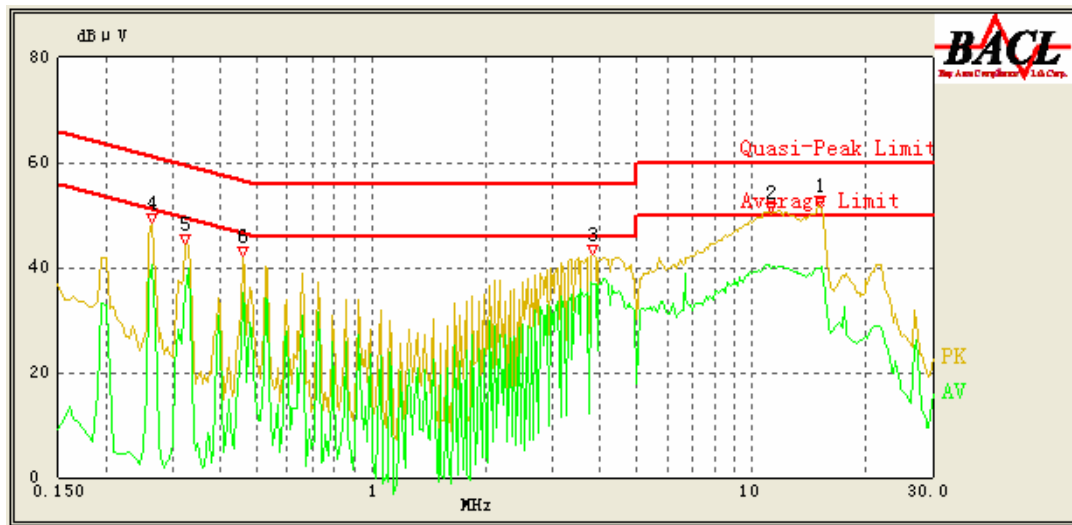
The testing was performed by Jone Lv on 2012-10-25.

Test mode: DVI :1920*1080/60Hz (worse case)

120 V, 60 Hz, Line:



No.	Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave/QP)
1	4.880	42.94	0.51	46.00	3.06	Ave.
2	3.165	41.32	0.49	46.00	4.68	Ave.
3	4.880	48.45	0.51	56.00	7.55	QP
4	15.895	41.62	1.34	50.00	8.38	Ave.
5	3.165	46.55	0.49	56.00	9.45	QP
6	0.330	40.52	0.42	50.86	10.34	Ave.
7	0.460	35.85	0.42	47.14	11.29	Ave.
8	0.265	40.73	0.42	52.71	11.98	Ave.
9	15.895	47.17	1.34	60.00	12.83	QP
10	0.330	45.39	0.42	60.86	15.47	QP
11	0.460	41.30	0.42	57.14	15.84	QP
12	0.265	46.20	0.42	62.71	16.51	QP

120 V, 60 Hz, Neutral:

No.	Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
1	3.825	36.96	0.50	46.00	9.04	Ave.
2	11.275	39.79	0.82	50.00	10.21	Ave.
3	15.235	39.74	1.28	50.00	10.26	Ave.
4	0.460	35.09	0.42	47.14	12.05	Ave.
5	0.265	40.43	0.42	52.71	12.28	Ave.
6	11.280	47.37	0.82	60.00	12.63	QP
7	15.105	46.89	1.27	60.00	13.11	QP
8	0.325	35.45	0.42	51.00	15.55	Ave.
9	3.825	40.29	0.50	56.00	15.71	QP
10	0.265	46.06	0.42	62.71	16.65	QP
11	0.460	39.89	0.42	57.14	17.25	QP
12	0.325	39.53	0.42	61.00	21.47	QP

FCC §15.109 - RADIATED EMISSIONS

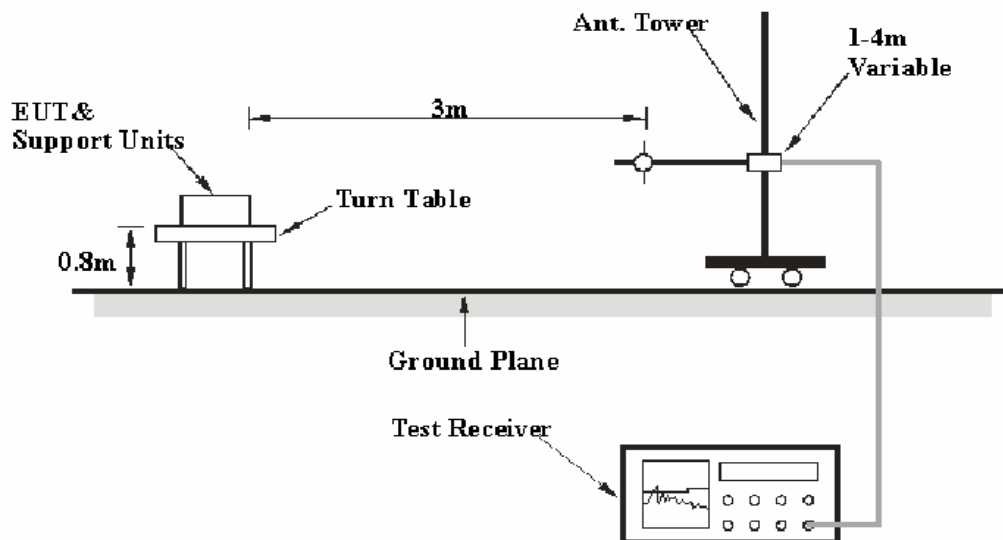
Measurement Uncertainty

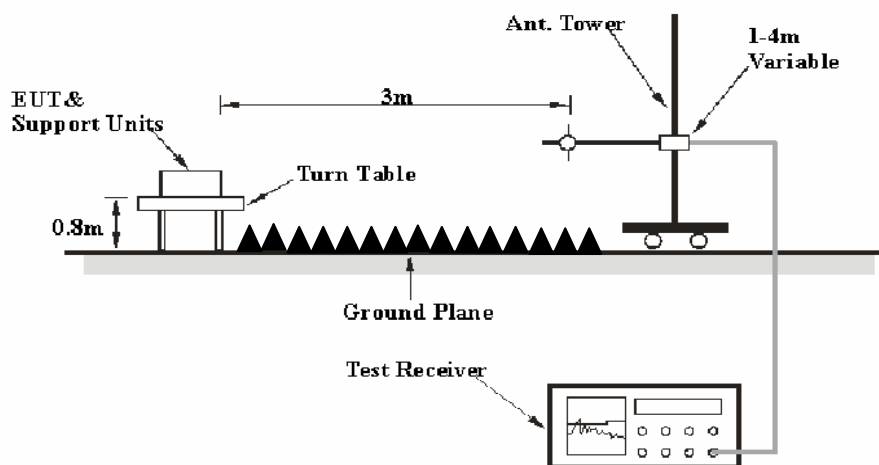
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency 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 radiation emissions measurement from 30 MHz to 2 GHz at Bay Area Compliance Laboratories Corp. (Dongguan) is 4.9 dB, and the uncertainty will not be taken into consideration for all the test data recorded in the report.

EUT Setup

Below 1GHz



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 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>Video B/W</i>	<i>Detector</i>
30MHz – 1000 MHz	120 kHz	300 kHz	120 kHz
Above 1 GHz	1MHz	3 MHz	Peak
Above 1 GHz	1MHz	10 Hz	Ave

Test Procedure

For the radiated emissions test, the PC 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
R & S	EMI Test Receiver	ESCI	100224	2011-11-11	2012-11-10
Sunol Sciences	Hybrid Antennas	JB3	A060611-1	2012-09-06	2013-09-05
HP	Pre-amplifier	8447E	2434A02181	2012-10-08	2013-10-07
R & S	Spectrum Analyzer	FSEM	1079 8500	2012-10-09	2013-10-08
Beijingdayang	Horn Antenna	OMCDH10180	10279001B	2010-07-30	2015-07-29
Mini-Circuits	Wideband Amplifier	ZVA-183-S+	96901149	N/A	N/A

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:

3.40 dB at 405.3900 MHz in the Horizontal polarization below 1GHz
7.37 dB at 1450.902 MHz in the Vertical polarization above 1GHz

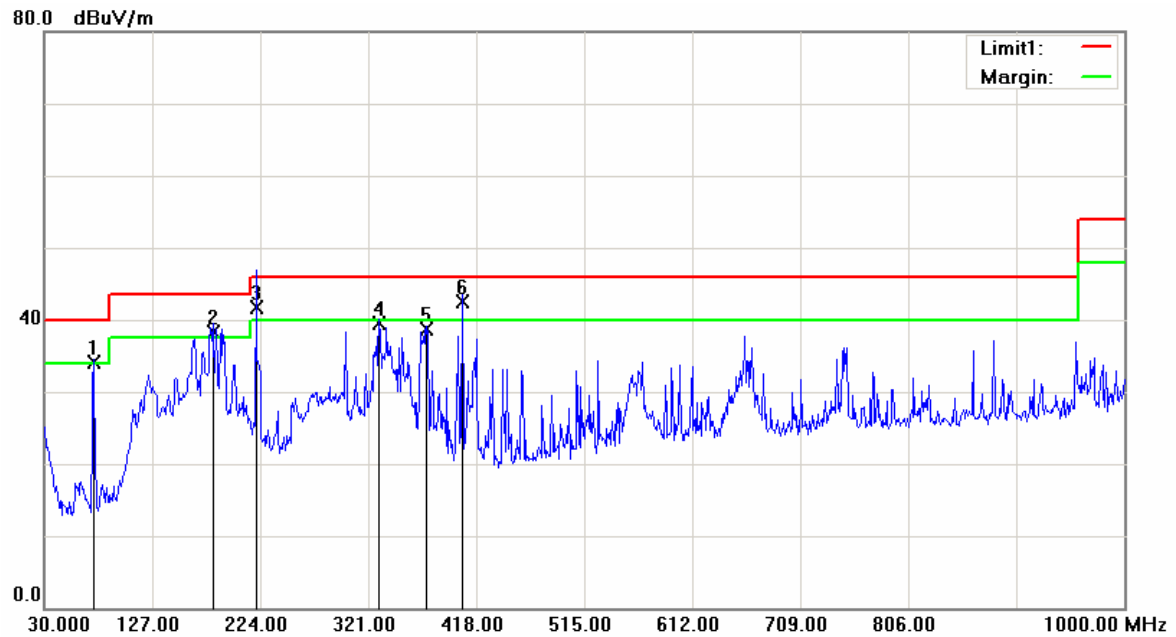
Test Data

Environmental Conditions

Temperature:	26.2°C
Relative Humidity:	57 %
ATM Pressure:	100.7 kPa

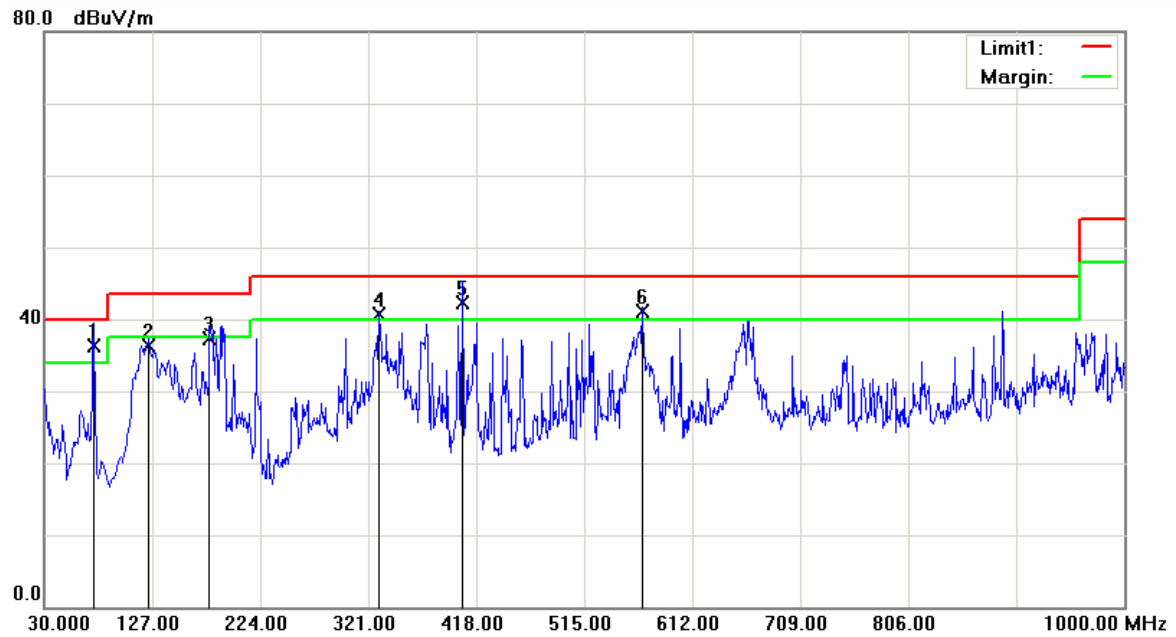
The testing was performed by Jone Lv on 2012-10-24.

Test mode: DVI :1920*1080/60Hz (worse case)

Below 1GHz**Horizontal:**

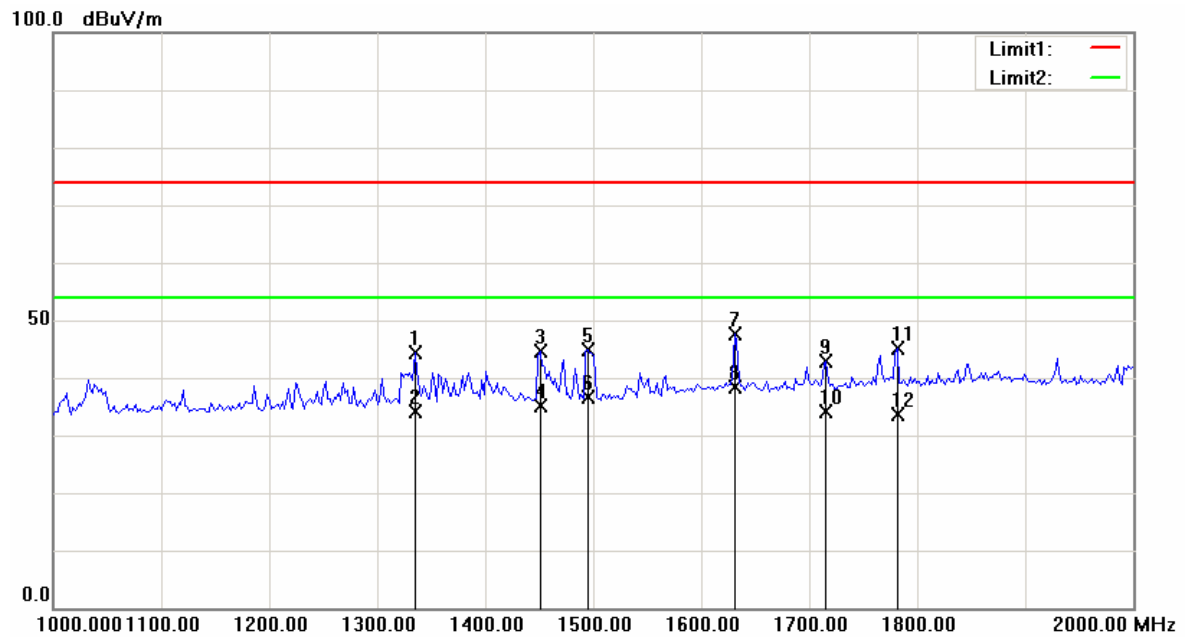
Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
405.3900	46.51	QP	-3.91	42.60	46.00	3.40*
220.1200	50.57	QP	-8.77	41.80	46.00	4.20
181.3200	47.45	QP	-9.05	38.40	43.50	5.10
74.6200	46.32	QP	-12.22	34.10	40.00	5.90
330.7000	45.09	QP	-5.59	39.50	46.00	6.50
373.3800	43.23	QP	-4.53	38.70	46.00	7.30

*Within measurement uncertainty!

Vertical:

Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
74.6200	48.62	QP	-12.22	36.40	40.00	3.60*
405.3900	46.21	QP	-3.91	42.30	46.00	3.70*
567.3800	42.60	QP	-1.40	41.20	46.00	4.80
330.7000	46.39	QP	-5.59	40.80	46.00	5.20
178.4100	46.45	QP	-9.05	37.40	43.50	6.10
124.0900	42.57	QP	-6.27	36.30	43.50	7.20

*Within measurement uncertainty!

Above 1GHz**Horizontal:**

Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1631.263	36.03	AVG	2.28	38.31	54.00	15.69
1494.990	35.40	AVG	1.19	36.59	54.00	17.41
1450.902	34.01	AVG	1.07	35.08	54.00	18.92
1715.431	31.53	AVG	2.71	34.24	54.00	19.76
1334.669	33.36	AVG	0.80	34.16	54.00	19.84
1781.563	30.39	AVG	3.28	33.67	54.00	20.33
1631.263	45.39	peak	2.28	47.67	74.00	26.33
1781.563	41.85	peak	3.28	45.13	74.00	28.87
1494.990	43.71	peak	1.19	44.90	74.00	29.10
1450.902	43.63	peak	1.07	44.70	74.00	29.30
1334.669	43.67	peak	0.80	44.47	74.00	29.53
1715.431	40.15	peak	2.71	42.86	74.00	31.14

Vertical:

Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1450.902	45.56	AVG	1.07	46.63	54.00	7.37
1472.946	37.28	AVG	1.13	38.41	54.00	15.59
2000.000	33.05	AVG	4.76	37.81	54.00	16.19
1765.531	34.29	AVG	3.20	37.49	54.00	16.51
1028.056	36.58	AVG	0.22	36.80	54.00	17.20
1450.902	55.10	peak	1.07	56.17	74.00	17.83
1492.986	34.73	AVG	1.18	35.91	54.00	18.09
2000.000	50.95	peak	4.76	55.71	74.00	18.29
1472.946	54.11	peak	1.13	55.24	74.00	18.76
1028.056	51.43	peak	0.22	51.65	74.00	22.35
1492.986	49.91	peak	1.18	51.09	74.00	22.91
1765.531	46.89	peak	3.20	50.09	74.00	23.91

DECLARATION LETTER



Beijing Osee Digital Technology Ltd.

Add: Room702, Tower D, Jinyujiahua Mansion, No. 9 3rd Shangdi Street, Haidian District, Beijing, China Post code: 100085
Tel: 8610-6296 8823 Fax: 8610-6297 7165

Product Similarity Declaration

To whom it may concern

We, Beijing Osee Digital Technology Ltd., hereby declare that the
LCD monitor, model number:

LMW-230 , LMW-230H, LMW-230S, LMW-230V,

Have the same circuit diagram, PCB layout in side, they just have
different model number . And the model LMW-230 is tested by
BACL.

Please contact me if you have any questions.

Date:2012-10-18

Sincerely

Iris shao

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