FCC PART 15B, CLASS B

TEST REPORT

For

China GreatWall Computer Shenzhen Co., Ltd.

No.3, Kefa Road, Science and Industry park, Nanshan, Shenzhen, China

FCC ID: QOTFC18D

Report Type:	Product Type:
Original Report	LED Monitor

Test Engineer:	Star Xie
Report Number:	R2DG130116001-00
Report Date:	2013-01-23
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *China GreatWall Computer Shenzhen Co., Ltd.*'s product, model number: *185LD (FCC ID: QOTFC18D)* (the "EUT") in this report is a *LED Monitor,* which was measured approximately: 45.5 cm (L) x 18.5 cm (W) x 35.5 cm (H), rated input voltage: DC 12V from adapter, the highest operating frequency is 87.5MHz.

Adapter information: MOSTCN
Model: M120200P911
Input: 100-240Vac, 50/60Hz, 1.2A
Output: 12VDC, 2000mA

** All measurement and test data in this report was gathered from production sample serial number: 130116001 (Assigned by BACL, Dongguan). The EUT was received on 2013-01-17.*

Objective

This report is prepared on behalf of *China GreatWall Computer Shenzhen 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 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

The software “EMC Test V1.0” was used.

Equipment Modifications

No modification was made to the EUT.

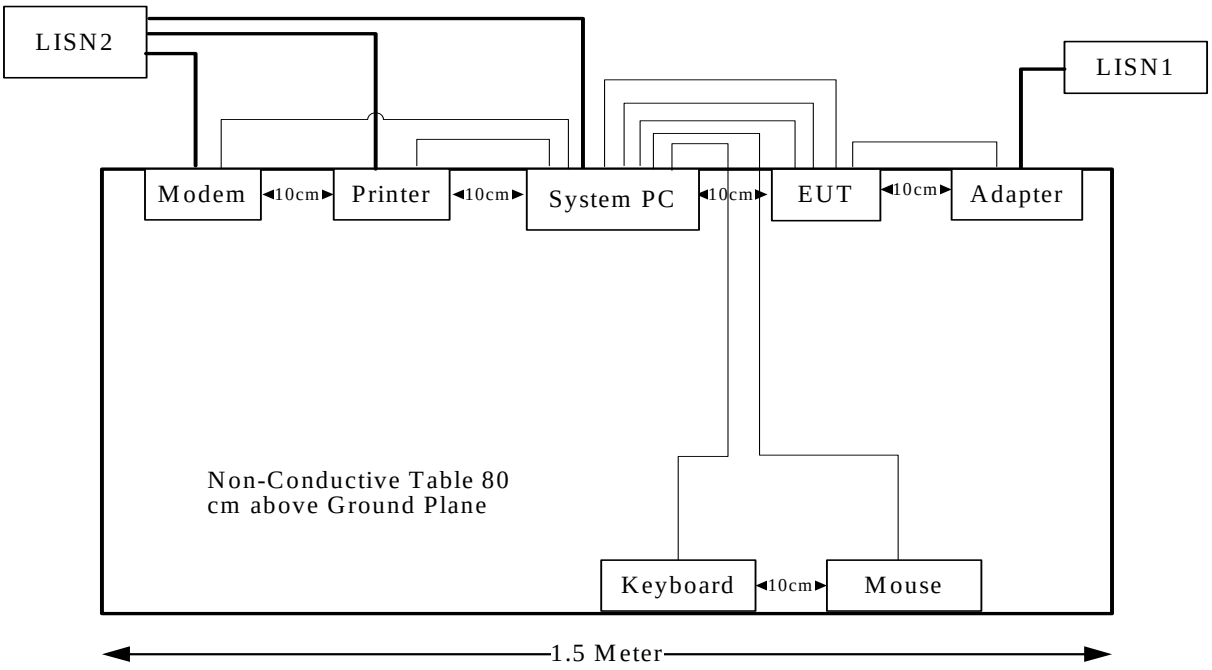
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	System PC	D07M	HNXJW2X
DELL	Mouse	MO56UOA	F0Y02P7Y
DELL	Keyboard	SK-8115	CN-0DJ313-716716-05A-0DSO
SAST	Modem	AEM-2100	090200213
HP	Printer	C3941A	JPTV013237

External I/O Cable

Cable Description	Length (m)	From	To
Shielded Detachable Parallel Cable	1.5	Parallel Port of PC	Printer
Shielded Detachable Serial Cable	1.5	Serial Port of PC	Modem
Shielded Detachable Mouse Cable	1.8	Mouse Port of PC	Mouse
Shielded Detachable Keyboard Cable	2.0	Keyboard Port of PC	Keyboard
shielded Detachable Audio Cable	1.0	Audio out Port of PC	EUT
Unshielded Detachable DVI Cable	1.5	DVI Port of PC	EUT
Unshielded Detachable VGA Cable	1.5	VGA 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

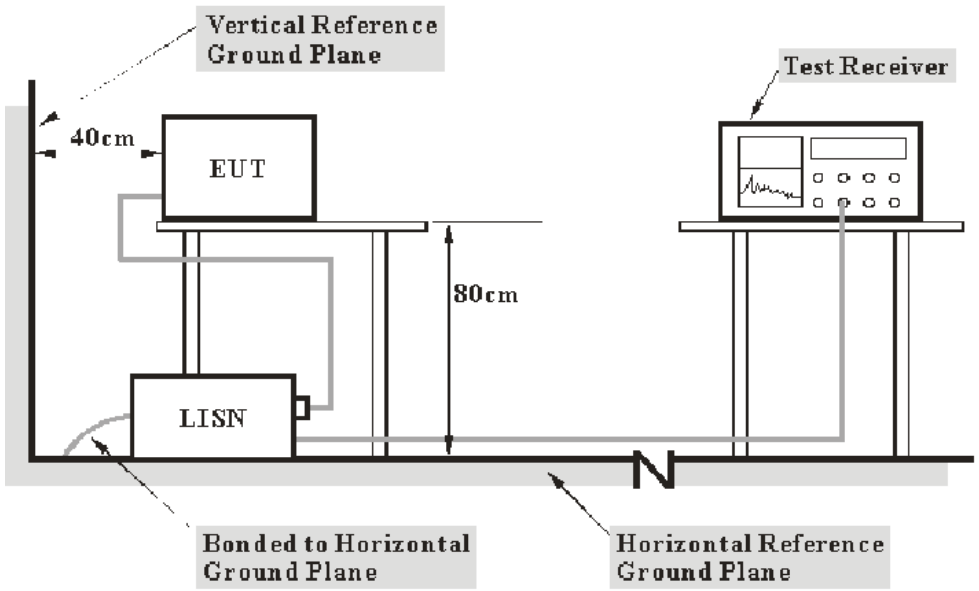
FCC §15.107 – AC LINE CONDUCTED EMISSIONS

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, 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), 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:

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.

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:

7.58 dB at **23.155MHz** in the **Line** conducted mode of DVI + Audio play

9.09 dB at **0.150MHz** in the **Neutral** conducted mode of VGA + Audio play

Test Data

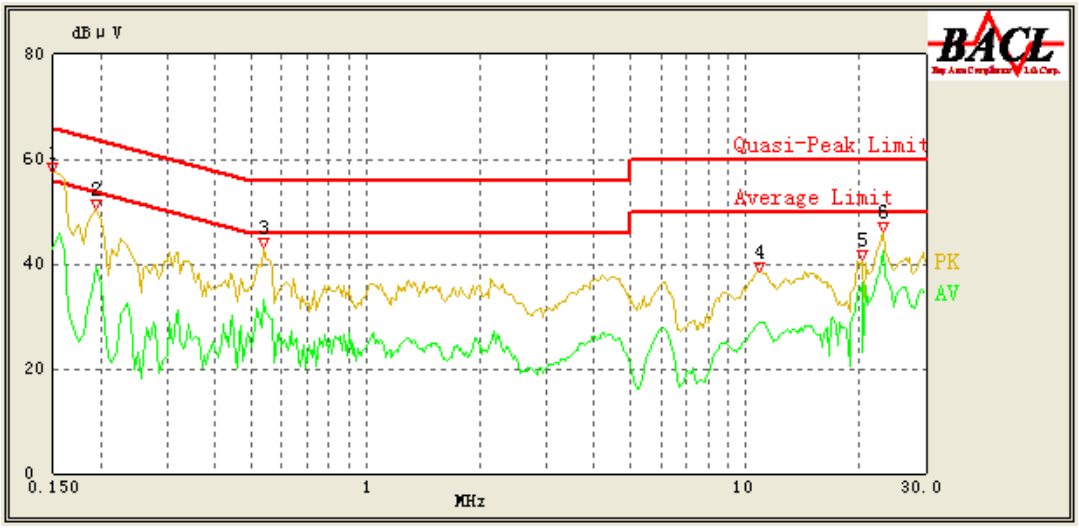
Environmental Conditions

Temperature:	19.8 °C
Relative Humidity:	40 %
ATM Pressure:	102.2kPa

The testing was performed by Star Xie on 2013-01-18.

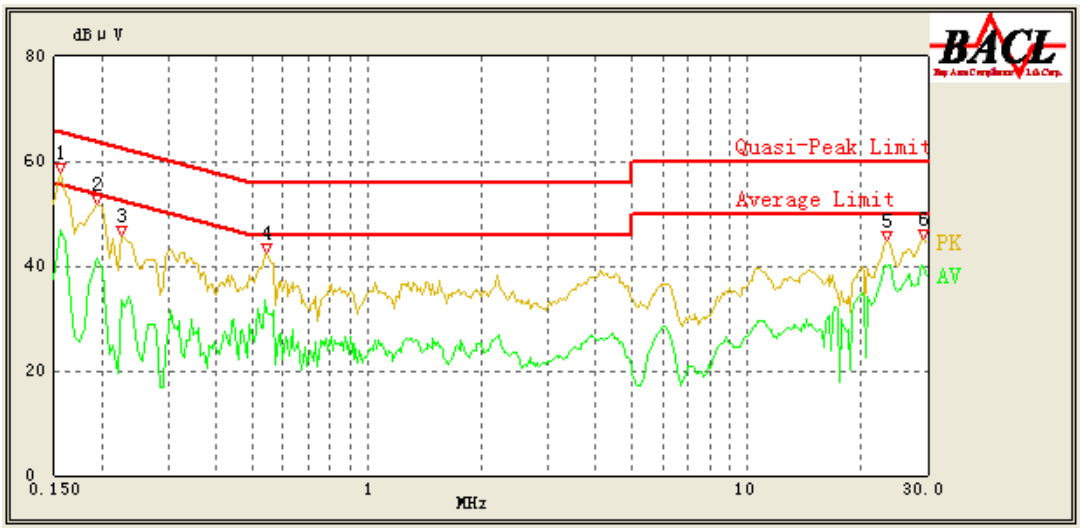
Test mode: DVI + Audio play

120 V, 60 Hz, Line:



No.	Frequency (MHz)	Cord. Reading (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/AV/QP)
1	0.150	54.16	1.06	66.00	11.84	QP
2	0.150	42.83	1.06	56.00	13.17	AV
3	0.195	48.53	0.98	64.71	16.18	QP
4	0.195	39.53	0.98	54.71	15.18	AV
5	0.540	40.30	0.51	56.00	15.70	QP
6	0.540	33.24	0.51	46.00	12.76	AV
7	10.870	33.96	1.02	60.00	26.04	QP
8	10.920	28.67	1.03	50.00	21.33	AV
9	20.405	37.24	2.62	60.00	22.76	QP
10	20.410	36.41	2.62	50.00	13.59	AV
11	23.155	43.08	2.50	60.00	16.92	QP
12	23.155	42.42	2.50	50.00	7.58	AV

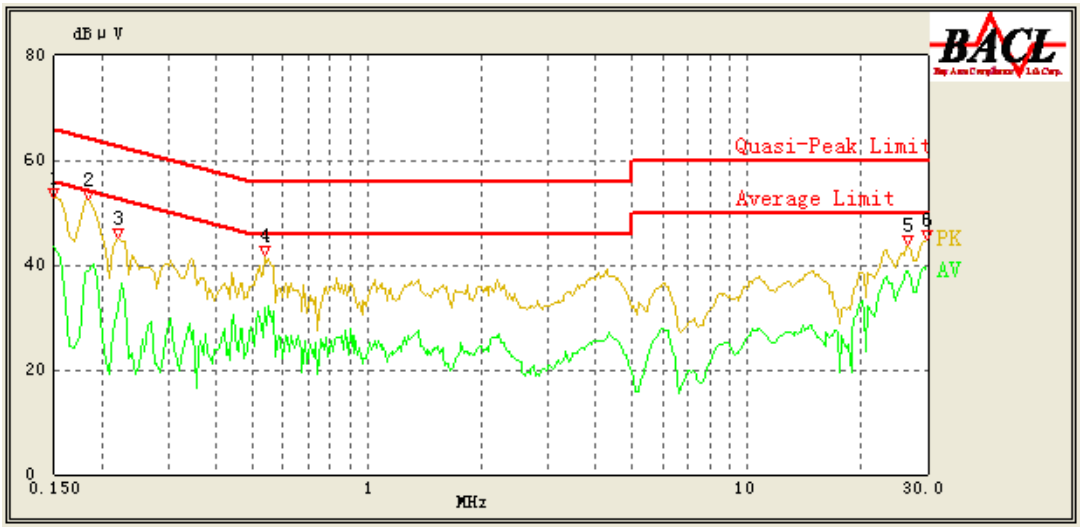
120 V, 60 Hz, Neutral:



No.	Frequency (MHz)	Cord. Reading (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/AV/QP)
1	0.155	55.12	1.81	65.86	10.74	QP
2	0.155	46.71	1.81	55.86	9.15	AV
3	0.195	49.23	1.61	64.71	15.48	QP
4	0.195	41.36	1.61	54.71	13.35	AV
5	0.225	42.49	1.46	63.86	21.37	QP
6	0.225	33.66	1.46	53.86	20.20	AV
7	0.545	39.88	0.52	56.00	16.12	QP
8	0.545	31.21	0.52	46.00	14.79	AV
9	23.465	43.09	1.91	60.00	16.91	QP
10	23.465	39.85	1.91	50.00	10.15	AV
11	29.255	43.52	2.62	60.00	16.48	QP
12	29.255	39.96	2.62	50.00	10.04	AV

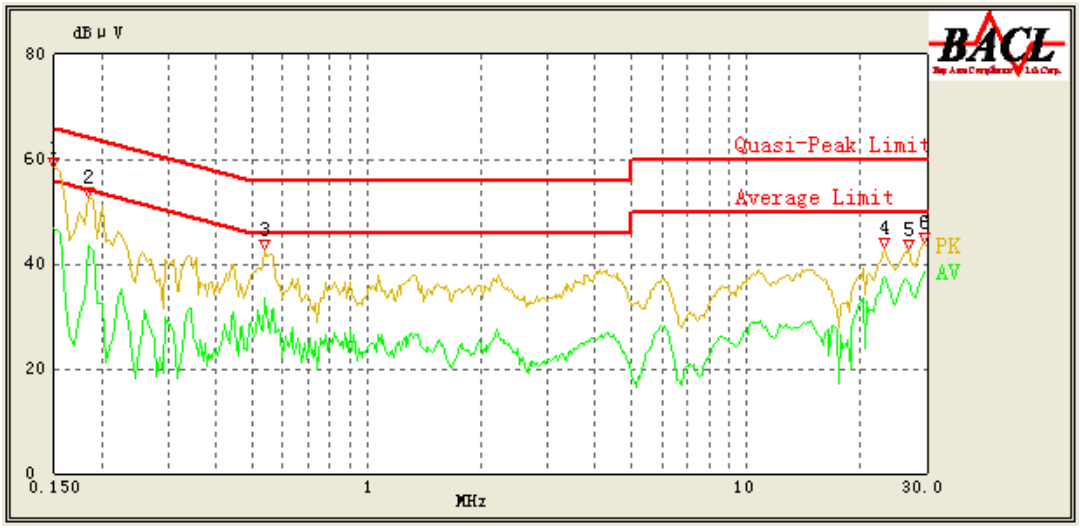
Test mode: VGA + Audio play

120 V, 60 Hz, Line:



No.	Frequency (MHz)	Cord. Reading (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/AV/QP)
1	0.150	54.97	1.06	66.00	11.03	QP
2	0.150	43.50	1.06	56.00	12.50	AV
3	0.185	49.53	1.00	65.00	15.47	QP
4	0.185	38.71	1.00	55.00	16.29	AV
5	0.220	42.64	0.94	64.00	21.36	QP
6	0.220	31.83	0.94	54.00	22.17	AV
7	0.535	38.60	0.52	56.00	17.40	QP
8	0.540	31.90	0.51	46.00	14.10	AV
9	26.495	41.06	2.35	60.00	18.94	QP
10	26.495	38.75	2.35	50.00	11.25	AV
11	29.845	42.07	2.21	60.00	17.93	QP
12	29.845	38.93	2.21	50.00	11.07	AV

120 V, 60 Hz, Neutral:



No.	Frequency (MHz)	Cord. Reading (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/AV/QP)
1	0.150	55.81	1.84	66.00	10.19	QP
2	0.150	46.91	1.84	56.00	9.09	AV
3	0.185	50.27	1.66	65.00	14.73	QP
4	0.185	43.54	1.66	55.00	11.46	AV
5	0.540	40.16	0.52	56.00	15.84	QP
6	0.540	33.43	0.52	46.00	12.57	AV
7	23.145	39.91	1.87	60.00	20.09	QP
8	23.155	37.40	1.87	50.00	12.60	AV
9	26.810	38.61	2.32	60.00	21.39	QP
10	26.805	36.46	2.32	50.00	13.54	AV
11	29.545	41.53	2.65	60.00	18.47	QP
12	29.545	38.53	2.65	50.00	11.47	AV

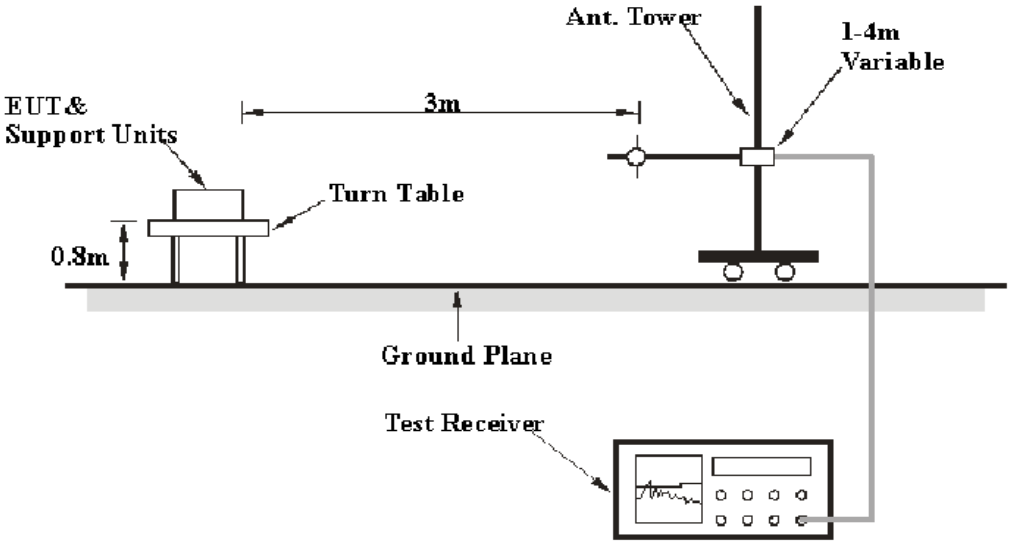
FCC §15.109 - RADIATED EMISSIONS

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, 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
and the uncertainty will not be taken into consideration for all the test data recorded in the report.

EUT Setup



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:

Frequency Range	***RBW***	***Video B/W***	***Detector***
30MHz – 1000 MHz	120 kHz	300 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:

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - 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:

Margin = Limit – 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:

3.00 dB at **131.8500 MHz** in the **Vertical** polarization of mode DVI + Audio play

3.10 dB at **133.7900 MHz** in the **Vertical** polarization of mode VGA + Audio play

Test Data

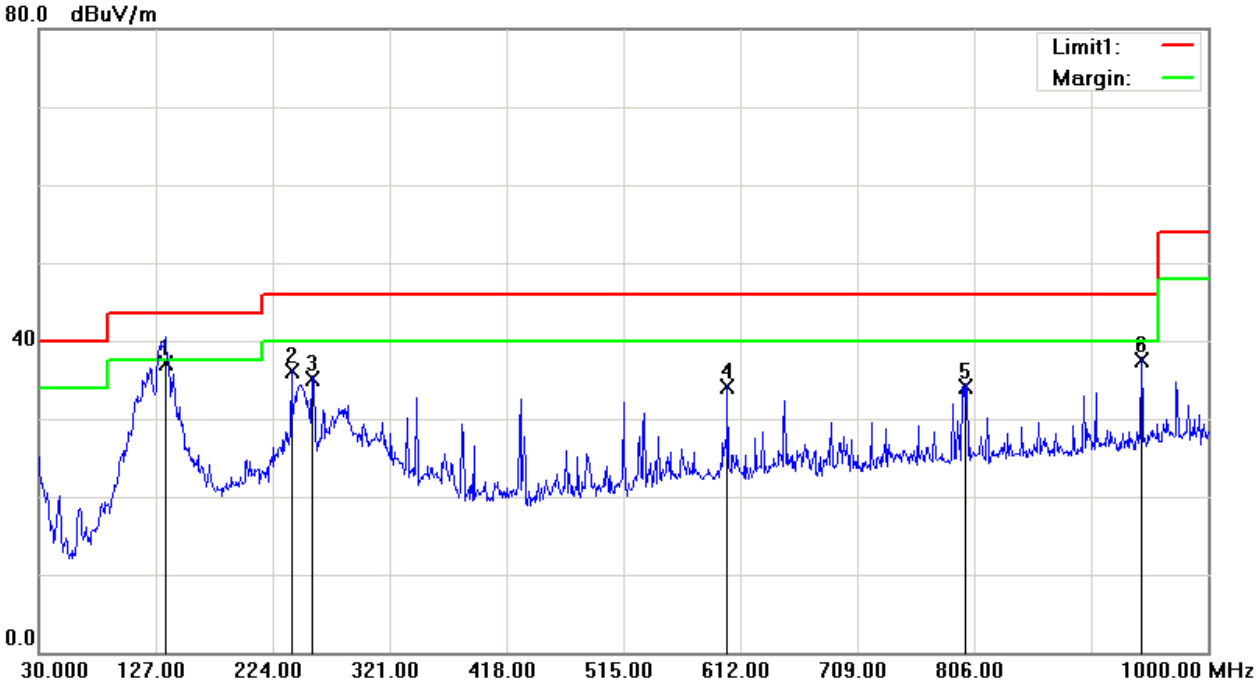
Environmental Conditions

Temperature:	22.3°C
Relative Humidity:	55 %
ATM Pressure:	101.5kPa

The testing was performed by Star Xie on 2013-01-21.

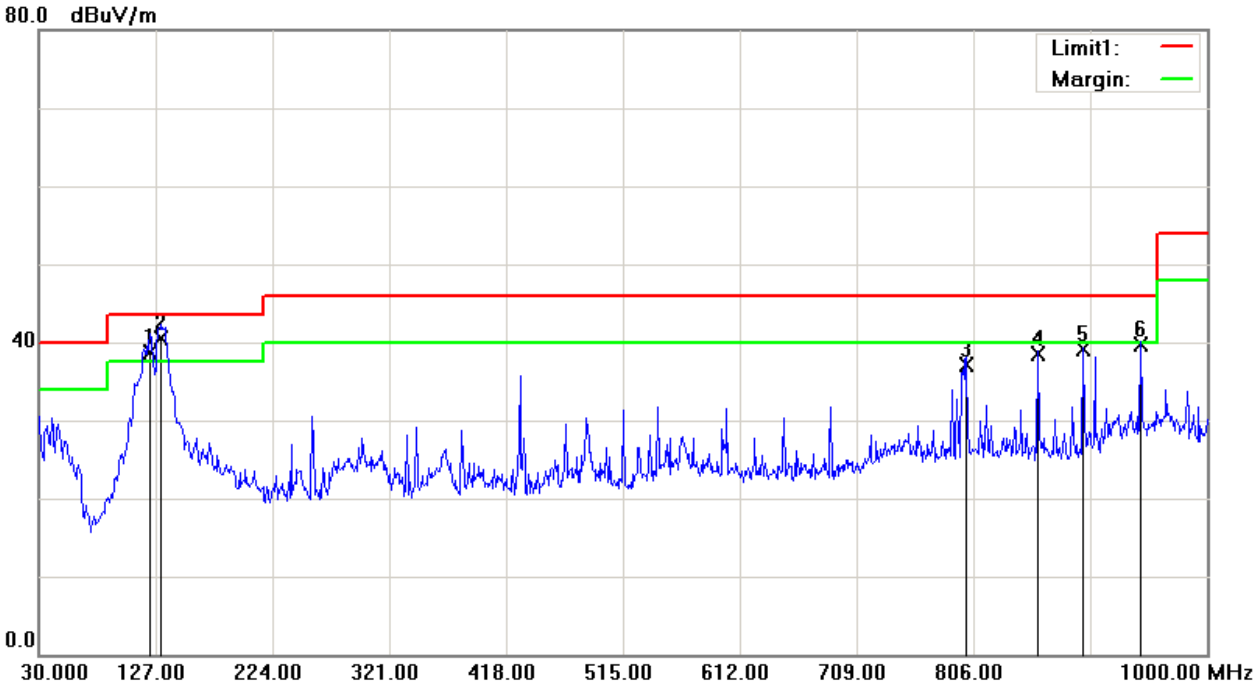
Test mode: DVI + Audio play

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
134.7600	43.87	QP	-6.77	37.10	43.50	6.40
944.7100	33.93	QP	3.57	37.50	46.00	8.50
239.5200	44.31	QP	-8.11	36.20	46.00	9.80
256.9800	43.01	QP	-7.91	35.10	46.00	10.90
601.3300	35.27	QP	-1.07	34.20	46.00	11.80
799.2100	32.34	QP	1.76	34.10	46.00	11.90

Vertical:

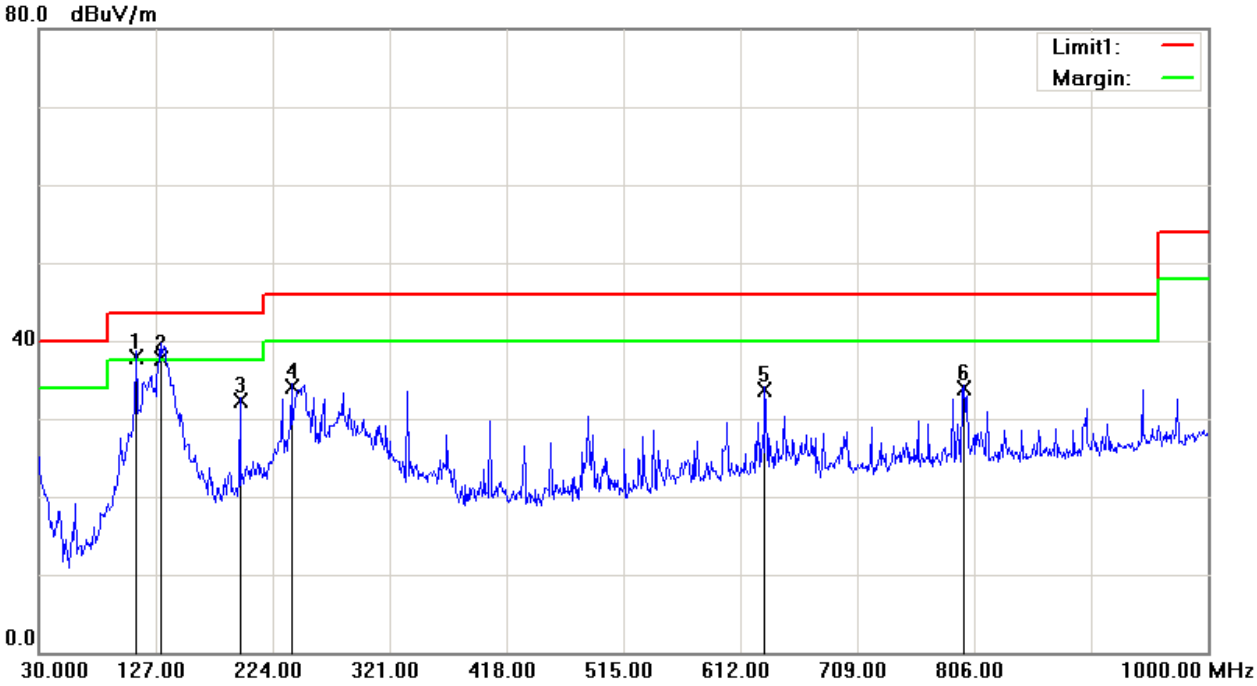


Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
131.8500	47.03	QP	-6.53	40.50	43.50	3.00*
122.1500	45.03	QP	-6.33	38.70	43.50	4.80*
944.7100	36.23	QP	3.57	39.80	46.00	6.20
897.1800	36.10	QP	3.00	39.10	46.00	6.90
859.3500	36.21	QP	2.39	38.60	46.00	7.40
800.1800	35.41	QP	1.79	37.20	46.00	8.80

*Within measurement uncertainty!

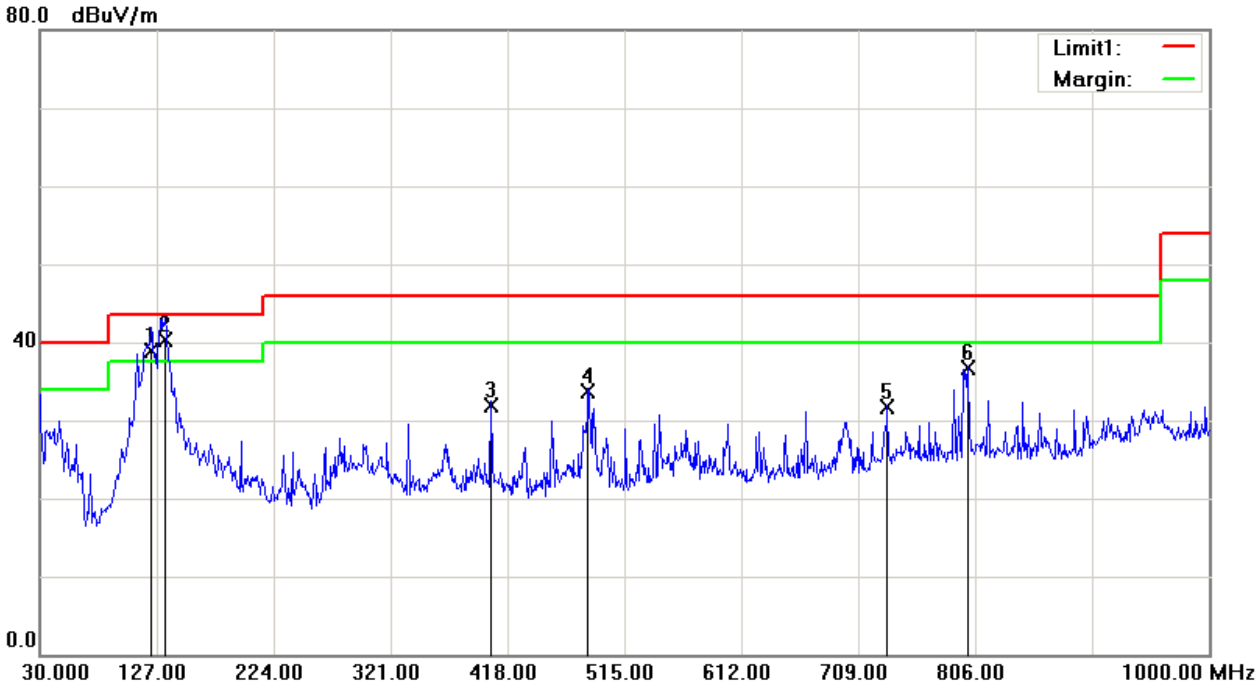
Test mode: VGA + Audio play

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
110.5100	45.62	QP	-7.62	38.00	43.50	5.50
130.8800	44.18	QP	-6.48	37.70	43.50	5.80
196.8400	40.60	QP	-8.20	32.40	43.50	11.10
239.5200	42.21	QP	-8.11	34.10	46.00	11.90
797.2700	32.19	QP	1.71	33.90	46.00	12.10
632.3700	34.13	QP	-0.33	33.80	46.00	12.20

Vertical:



Frequency (MHz)	Receiver Reading (dBuV/m)	Detector (PK/QP/Ave)	Correction Factor (dB)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
133.7900	47.07	QP	-6.67	40.40	43.50	3.10*
122.1500	45.23	QP	-6.33	38.90	43.50	4.60*
800.1800	35.01	QP	1.79	36.80	46.00	9.20
484.9300	36.05	QP	-2.25	33.80	46.00	12.20
404.4200	35.84	QP	-3.94	31.90	46.00	14.10
733.2500	30.72	QP	0.98	31.70	46.00	14.30

*Within measurement uncertainty!

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