



FCC TEST REPORT

According to

47 CFR, Part 2, Part 15 and CISPR PUB. 22

Applicant	: LG Electronics USA
Address	: 1000 Sylvan Avenue Englewood Cliffs New Jersey United States
Equipment	: LCD Monitor
Model No.	: IPS236VX
FCC ID	: BEJIPS236VX
Trade Name	: LG

This is a series report. The original report No. is SEFD1009016.

- The test result refers exclusively to the test presented test model / sample.
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- The test report must not be used by the clients to claim product certification approval by **NVLAP** or any agency of the Government.



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History of this test report

☐ ORIGINAL.

☐ Additional attachment as following record:

Attachment No.	Date	Description
SEFD1009016	Sep 17, 2010	First edition
SEFD1009016-F	Feb 24, 2012	Second edition(Add a adapter, and products increased internal EMI tape)



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FCC ID	: BEJIPS236VX
Trade Name	: LG

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2003** and the energy emitted by this equipment was **passed** **CISPR PUB. 22 and FCC Part 15** in both radiated and conducted emission class B limits. Testing was carried out on Feb 23, 2012 at **CerpPASS Technology Corp.**

Signature


Miro Chueh/ Technical director



1. Summary of Test Procedure and Test Result

Test Item	Normative References	Test Result
Conducted Emission	ANSI C63.4-2003 FCC Part 15 Subpart B	PASS
Radiated Emission	ANSI C63.4-2003 FCC Part 15 Subpart B	PASS



2. Test Configuration of Equipment under Test

2.1. Manufacturer

LG Electronics Nanjing Display Co.,Ltd.

No.346,Yaoxin Road Economic & Technical Development Zone Nanjing China

2.2. Feature of Equipment under Test

LCD Monitor	Model No:	IPS236VX
ADAPTER 1#	Manufacturer:	DELTA
	Model No:	EADP-40LB B
	Input:	100-240V~1.3A 50-60Hz
	Output:	19V $\overline{\text{---}}$ 2.1A
DC Cable	Non-Shielded, 1.5m	
ADAPTER 2#	Manufacturer:	LG
	Model No:	PA-1650-68
	Input:	100-240V~, 50-60Hz 2.0A
	Output:	19V $\overline{\text{---}}$ 3.42A
DC Cable	Non-Shielded, 1.5m, with one ferrite core bonded	
ADAPTER 3#	Manufacturer:	LG
	Model No:	ADS-40SG-19-3 19032G
	Input:	100-240V~50/60Hz 1.0A max
	Output:	19V $\overline{\text{---}}$ 1.7A
DC Cable	Non-Shielded, 1.5m	
VGA Cable	Shielded, 1.5m	
DVI Cable	Shielded, 1.5m	

Add the adapter:

ADAPTER 4#	Manufacturer:	LG
	Model No:	LCAP21A
	Input:	100-240V~, 50-60Hz 1.1A
	Output:	19V $\overline{\text{---}}$ 1.7A
DC Cable	Non-Shielded, 1.5m, with one ferrite core bonded	



2.3. Test Manner

Test Software

- a During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- b The complete test system included the PC, Printer, USB Keyboard, USB Mouse, and EUT for EMI test.
- c During the test, setup up the EUT and all system, turn on the power of all Equipments, run the EMC test software "H", set the contrast control to maximum, set the brightness control to maximum, use white letters on a black background to represent all colors, make the EUT at the test mode and it is normal operation, and then test.

The pre-test modes

Test Mode 1: Full system (VGA mode 1920*1080@60Hz)

Test Mode 2: Full system (VGA mode 1024*768@75Hz)

Test Mode 3: Full system (VGA mode 720*400@70Hz)

Test Mode 4: Full system (DVI mode 1920*1080@60Hz)

Test Mode 5: Full system (DVI mode 1024*768@75Hz)

Test Mode 6: Full system (DVI mode 720*400@70Hz)

Test Mode 7: Full system HDMI In

Select the worst case of the pre-test modes as the final test mode

Test Mode 1: Full system (VGA mode 1920*1080@60Hz)



2.4. Description of Support Unit

No.	Device	Manufacturer	Model No.	Description
1	PC	Dell	DCSM	N/A
2	Microphone&Ear phone	SALAR	N/A	N/A
3	USB Keyboard	DELL	SK-8115	N/A
4	USB Mouse	DELL	G0K02XYK	N/A
5	Printer	Epson	EX3	N/A

No	Cable	Quantity	Description
A	VGA Cable	1	Shielded, 1.5m
B	DVI Cable	1	Shielded, 1.5m
C	HDMI Cable	1	Shielded, 1.8m
D	Audio Cable	1	Non-Shielded, 2.0m
E	USB Cable	1	Shielded, 1.8m, with one ferrite core bonded
F	USB Cable	1	Shielded, 1.5m
G	Parallel Cable	1	Shielded, 1.8m



2.5. General Information of Test

Test Site:	CerpPASS Technology Corp.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz
Frequency Range Investigated :	Conducted Emission Test: from 150kHz to 30 MHz Radiated Emission Test: from 30 MHz to 1,000 MHz Radiated Emission Test: from 1GHz to 18GHz
Test Distance :	The test distance of radiated emission below 1GHz from antenna to EUT is 3 M. The test distance of radiated emission above 1GHz from antenna to EUT is 3 M.

LABORATORY ACCREDITATION



2.6. Measurement Uncertainty

Conducted Emission		
The measurement uncertainty is evaluated as ± 2.71 dB.		
Radiated Emission		
(30MHz -1000MHz)	Horizontal	The measurement uncertainty is evaluated as ± 3.59 dB.
	Vertical	The measurement uncertainty is evaluated as ± 3.89 dB
(1G-18GHz)	Horizontal	The measurement uncertainty is evaluated as ± 2.31 dB.
	Vertical	The measurement uncertainty is evaluated as ± 2.15 dB.



3. Test of Conducted Emission

3.1. Test Limit

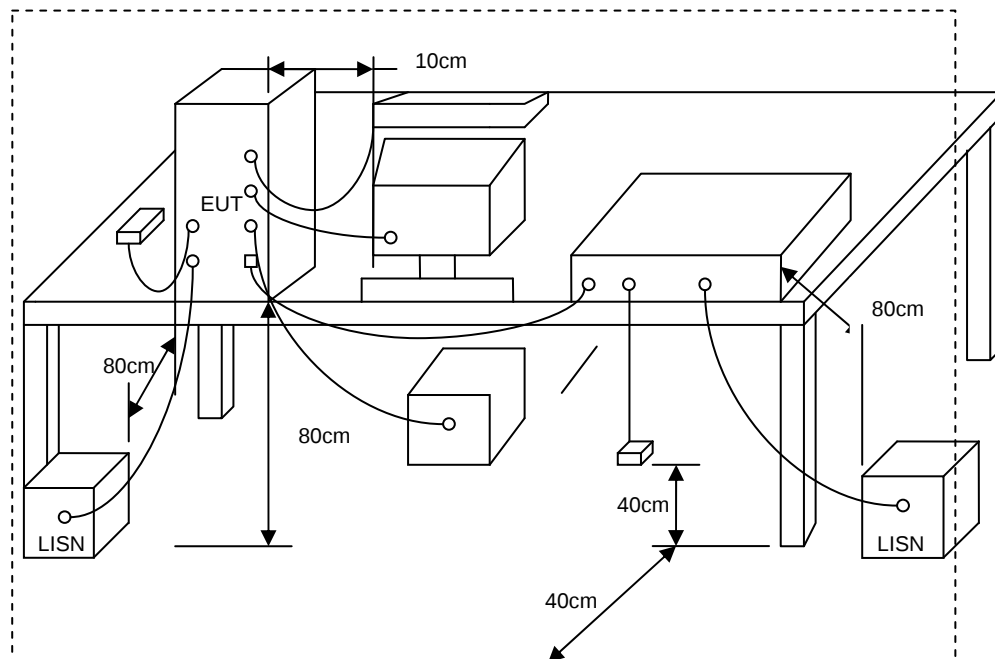
Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

3.2. Test Procedures

- The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

3.3. Typical test Setup



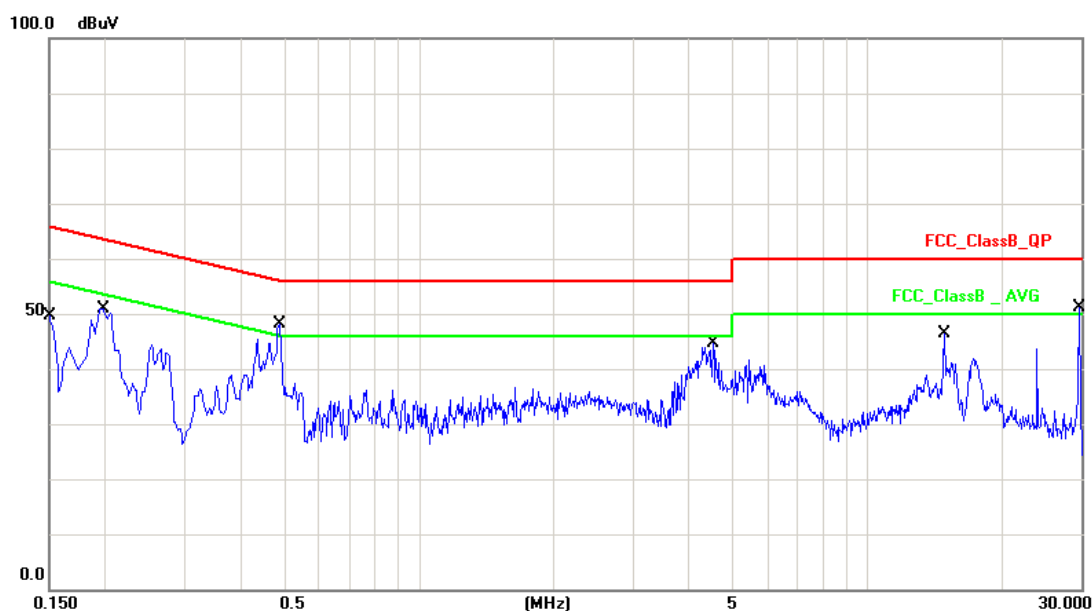
3.4. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2011.03.14	2012.03.13
AMN	R&S	ESH2-Z5	100182	2011.03.14	2012.03.13
Two-Line V-Network	R&S	ENV216	100325	2011.03.14	2012.03.13
ISN	FCC	FCC-TLISN-T2-02	20379	2011.03.14	2012.03.13
ISN	FCC	FCC-TLISN-T4-02	20380	2011.03.14	2012.03.13
ISN	FCC	FCC-TLISN-T8-02	20381	2011.03.14	2012.03.13
Current Probe	R&S	EZ-17	100303	2011.03.14	2012.03.13
Passive Voltage Probe	R&S	ESH2-Z3	100026	2011.03.14	2012.03.13
Attenuator	R&S	ESH3-Z2	100529	2011.03.14	2012.03.13
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2011.08.14	2012.08.13



3.5. Test Result and Data

Test Mode :	Mode 1: Full system (VGA mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Phase :	LINE
Temperature :	22°C	Humidity :	50%
Pressur(mbar) :	1002	Date :	2012/02/23

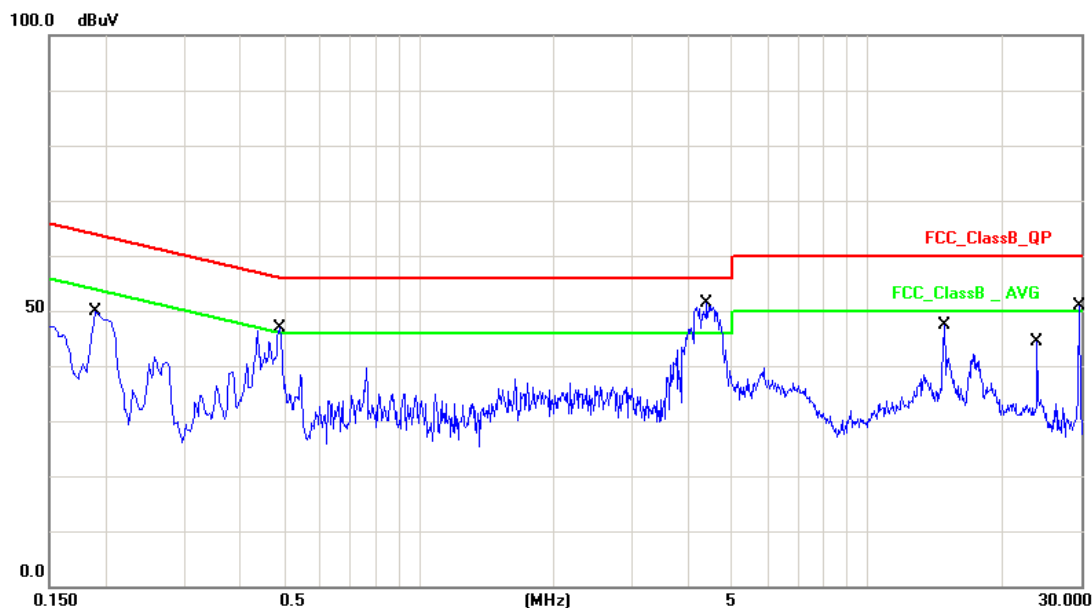


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	19.87	22.02	41.89	66.00	-24.11	QP
2	0.1500	19.87	4.97	24.84	56.00	-31.16	AVG
3	0.1980	19.87	28.47	48.34	63.69	-15.35	QP
4	0.1980	19.87	18.03	37.90	53.69	-15.79	AVG
5	0.4900	19.85	26.10	45.95	56.17	-10.22	QP
6	0.4900	19.85	18.37	38.22	46.17	-7.95	AVG
7	4.5300	19.71	17.26	36.97	56.00	-19.03	QP
8	4.5300	19.71	3.39	23.10	46.00	-22.90	AVG
9	14.8500	19.82	21.39	41.21	60.00	-18.79	QP
10	14.8500	19.82	17.04	36.86	50.00	-13.14	AVG
11	29.7020	19.56	29.74	49.30	60.00	-10.70	QP
12	29.7020	19.56	24.62	44.18	50.00	-5.82	AVG

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Mode 1: Full system (VGA mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Phase :	NEUTRAL
Temperature :	22°C	Humidity :	50%
Pressur(mbar) :	1002	Date :	2012/02/23



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1900	19.50	27.65	47.15	64.04	-16.89	QP
2	0.1900	19.50	13.58	33.08	54.04	-20.96	AVG
3	0.4900	19.50	25.15	44.65	56.17	-11.52	QP
4	0.4900	19.50	19.26	38.76	46.17	-7.41	AVG
5	4.4060	19.62	26.80	46.42	56.00	-9.58	QP
6	4.4060	19.62	7.54	27.16	46.00	-18.84	AVG
7	14.8500	19.94	25.19	45.13	60.00	-14.87	QP
8	14.8500	19.94	20.74	40.68	50.00	-9.32	AVG
9	23.9980	19.85	23.46	43.31	60.00	-16.69	QP
10	23.9980	19.85	23.27	43.12	50.00	-6.88	AVG
11	29.7020	19.87	29.74	49.61	60.00	-10.39	QP
12	29.7020	19.87	24.62	44.49	50.00	-5.51	AVG

Note: Measurement Level = Reading Level + Correct Factor

Test engineer: Seben



4. Test of Radiated Emission

4.1. Test Limit

Radiated emissions from 30 MHz to 1,000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-2003. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 3.2. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (m)	Level (dBuV/m)	Level (dBuV/m)
30 - 88	3	40(QP)	N/A
88 - 216	3	43(QP)	N/A
216-960	3	46(QP)	N/A
960-1000	3	54(QP)	N/A
1000-18000	3	74(PK)	54(AV)

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	10	30
230-1000	10	37

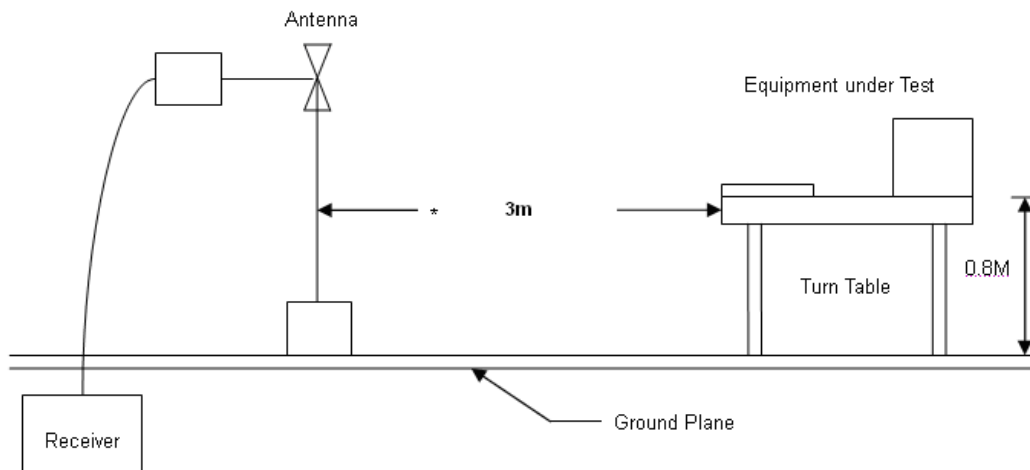


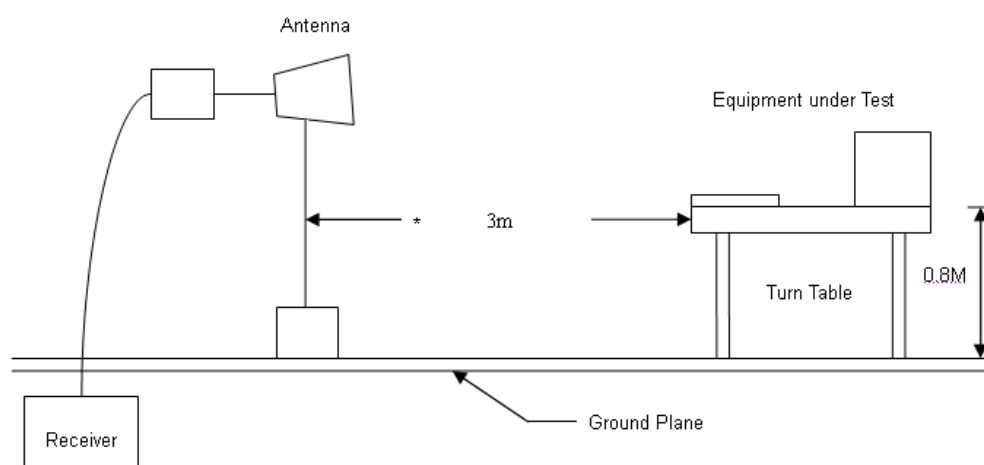
4.2. Test Procedures

- a. The EUT was placed on a Rota table top 0.8 meter above ground.
- b. The EUT and its simulators are placed on the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- c. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
- d. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.
- e. Radiated emissions were investigated over the frequency range from 30MHz to 1GHz using a receiver bandwidth of 120KHz and the frequency range from 1GHz to 18GHz using a receiver bandwidth of 1MHz.

4.3. Typical test Setup

Below 1GHz Test Setup



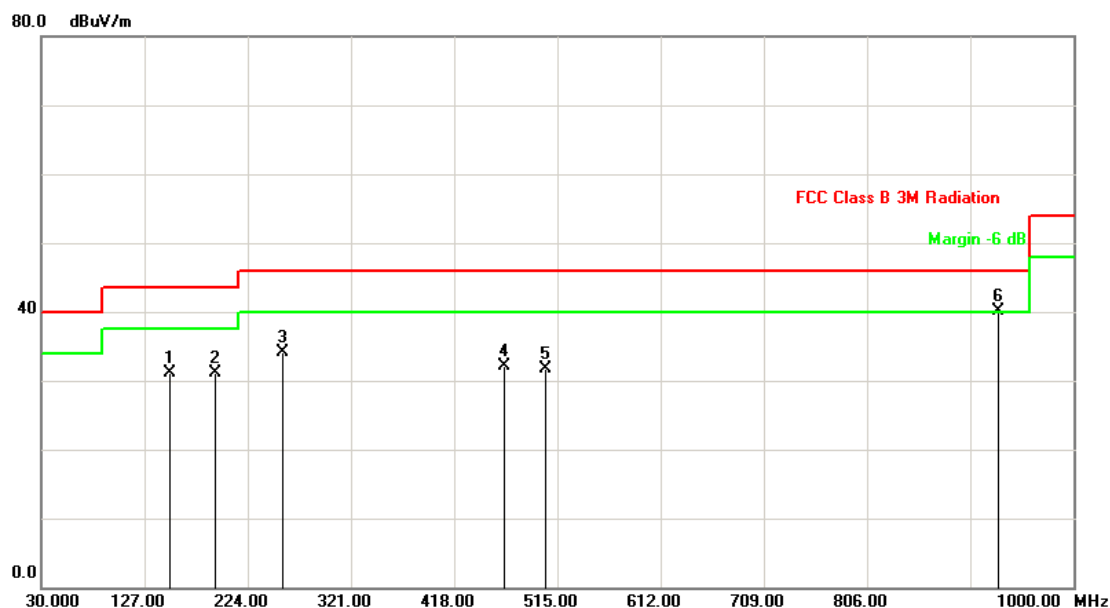
**Above 1GHz Test Setup****4.4. Measurement equipment**

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	100563	2011.03.14	2012.03.13
H64 Preamplifier	HP	8447F	3113A05582	2011.08.14	2012.08.13
Preamplifier	Agilent	8449B	3008A02342	2011.03.14	2012.03.13
Ultra Broadband Antenna	R&S	HL562	100362	2011.05.07	2012.05.06
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2011.05.07	2012.05.06
Spectrum Analyzer	R&S	FSP40	100324	2011.08.14	2012.08.13
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2011.08.17	2012.08.16



4.5. Test Result and Data (30MHz ~ 1000MHz)

Test Mode :	Mode 1: Full system (VGA mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Ant. Polarization:	Horizontal
Temp :	23°C	Humidity :	52%
Pressure(mbar) :	1002	Date :	2012/02/23

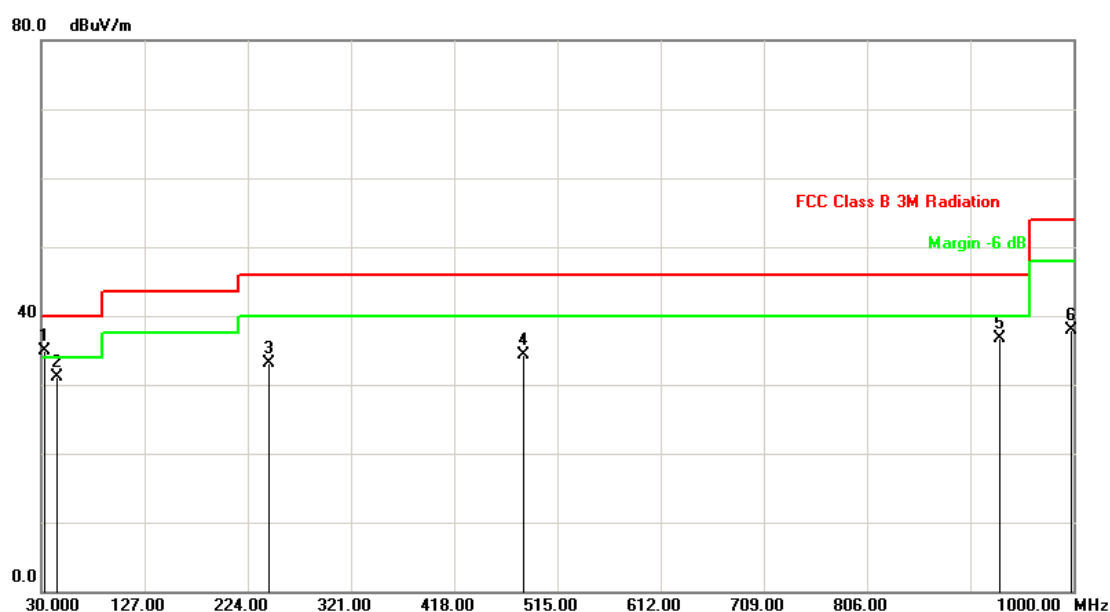


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	151.2500	-15.45	46.55	31.10	43.50	-12.40	QP	200	224
2	192.9600	-15.45	46.65	31.20	43.50	-12.30	QP	100	73
3	256.9800	-12.48	46.58	34.10	46.00	-11.90	QP	200	189
4	464.5600	-5.78	37.88	32.10	46.00	-13.90	QP	200	347
5	504.3299	-4.73	36.43	31.70	46.00	-14.30	QP	150	0
6	930.1599	3.44	36.66	40.10	46.00	-5.90	QP	200	252

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Mode 1: Full system (VGA mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Ant. Polarization:	Vertical
Temp :	23°C	Humidity :	52%
Pressure(mbar) :	1002	Date :	2012/02/23



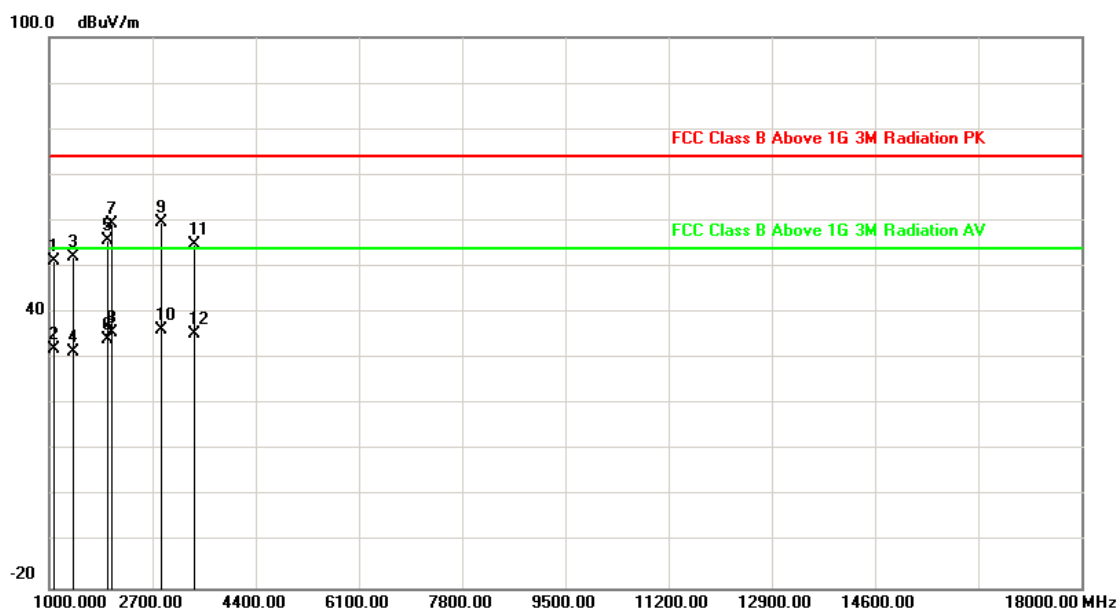
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	32.9100	-6.85	41.75	34.90	40.00	-5.10	QP	100	23
2	44.5500	-14.03	45.23	31.20	40.00	-8.80	QP	100	323
3	244.3700	-12.96	46.06	33.10	46.00	-12.90	QP	200	210
4	482.9900	-5.28	39.68	34.40	46.00	-11.60	QP	100	170
5	930.1600	3.44	33.26	36.70	46.00	-9.30	QP	200	359
6	998.0600	4.32	33.58	37.90	54.00	-16.10	QP	100	158

Note: Measurement Level = Reading Level + Correct Factor



4.6. Test Result and Data (1000MHz ~ 18000MHz)

Test Mode :	Mode 1: Full system (VGA mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Ant. Polarization:	Horizontal
Temp :	23℃	Humidity :	52%
Pressure(mbar) :	1002	Date :	2012/02/23

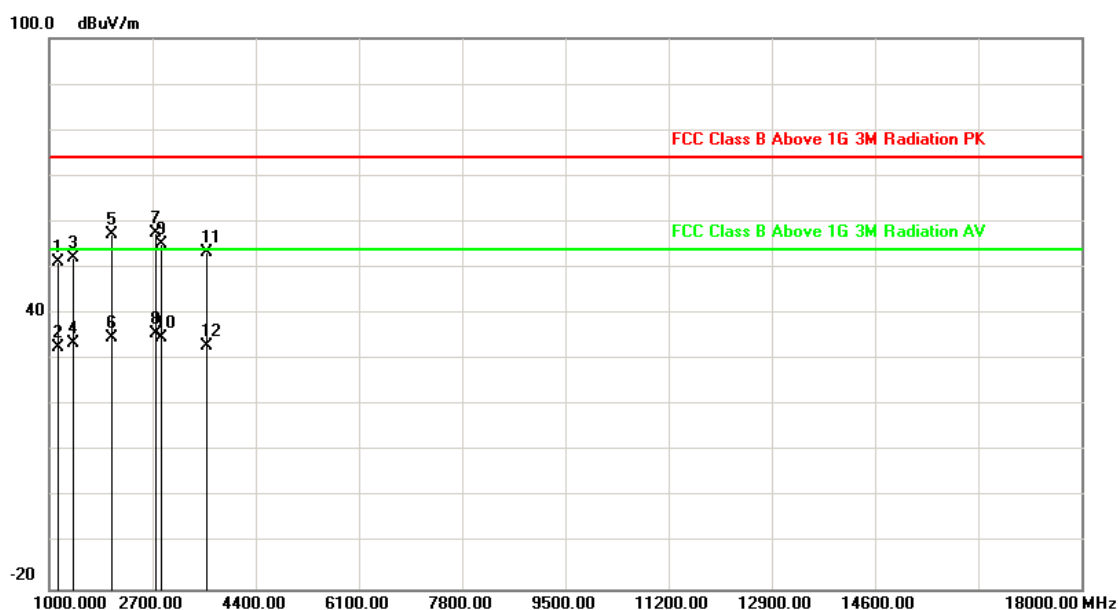


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	1085.000	-6.52	57.92	51.40	74.00	-22.60	peak	200	68
2	1085.000	-6.52	38.49	31.97	54.00	-22.03	AVG	200	68
3	1391.000	-5.24	57.30	52.06	74.00	-21.94	peak	200	132
4	1391.000	-5.24	36.58	31.34	54.00	-22.66	AVG	200	132
5	1952.000	-2.90	58.77	55.87	74.00	-18.13	peak	200	79
6	1952.000	-2.90	37.17	34.27	54.00	-19.73	AVG	200	79
7	2037.000	-2.58	61.91	59.33	74.00	-14.67	peak	100	216
8	2037.000	-2.58	38.35	35.77	54.00	-18.23	AVG	100	216
9	2836.000	0.10	59.41	59.51	74.00	-14.49	peak	200	344
10	2836.000	0.10	36.18	36.28	54.00	-17.72	AVG	200	344
11	3397.000	2.12	52.88	55.00	74.00	-19.00	peak	200	98
12	3397.000	2.12	33.19	35.31	54.00	-18.69	AVG	200	98

Note: Measurement Level = Reading Level + Correct Factor



Test Mode :	Mode 1: Full system (VGA mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Ant. Polarization:	Vertical
Temp :	23°C	Humidity :	52%
Pressure(mbar) :	1002	Date :	2012/02/23



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	1153.000	-6.23	57.60	51.37	74.00	-22.63	peak	100	37
2	1153.000	-6.23	38.92	32.69	54.00	-21.31	AVG	100	37
3	1391.000	-5.24	57.53	52.29	74.00	-21.71	peak	100	157
4	1391.000	-5.24	38.90	33.66	54.00	-20.34	AVG	100	157
5	2037.000	-2.58	59.80	57.22	74.00	-16.78	peak	200	234
6	2037.000	-2.58	37.47	34.89	54.00	-19.11	AVG	200	234
7	2751.000	-0.18	57.72	57.54	74.00	-16.46	peak	100	315
8	2751.000	-0.18	35.89	35.71	54.00	-18.29	AVG	100	315
9	2836.000	0.10	55.19	55.29	74.00	-18.71	peak	100	51
10	2836.000	0.10	34.52	34.62	54.00	-19.38	AVG	100	51
11	3584.000	2.82	50.43	53.25	74.00	-20.75	peak	100	164
12	3584.000	2.82	30.04	32.86	54.00	-21.14	AVG	100	164

Note: Measurement Level = Reading Level + Correct Factor

Test engineer: Cerber