FCC Test Report

Product Name : LED touch display

Model No. : TS55M4, TS55M4H, LE-55ME68

Applicant : Xiamen Overseas Chinese Electronic Co.,Ltd.

Address : 22 Huli Blvd, Huli Industrial District, Xiamen Fujian 361006, China

Date of Receipt : 2013/11/19

Issued Date : 2013/12/16

Report No. : 13B0323R-AVUSP03V01

Report Version : V1.0

Test Report Certification

Issued Date : 2013/12/16
Report No. : 13B0323R-AVUSP03V01

QuieTek

Product Name	:	LED touch display
Applicant	:	Xiamen Overseas Chinese Electronic Co.,Ltd.
Address	:	22 Huli Blvd, Huli Industrial District, Xiamen Fujian 361006, China
Manufacturer	:	Xiamen Overseas Chinese Electronic Co.,Ltd.
Address	:	22 Huli Blvd, Huli Industrial District, Xiamen Fujian 361006, China
Model No.	:	TS55M4, TS55M4H, LE-55ME68
EUT Rated Voltage	:	AC 100-240V / 50-60Hz
EUT Test Voltage	:	AC 120V / 60Hz
Trade Name	:	Tatung, Hatch
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart B: 2011, Class B, ANSI C63.4: 2009, Part 15.111
Test Result	:	Complied
Performed Location	:	Quietek Corporation (Linkou Laboratory) No. 5-22, Rueishu Keng, Linkou Dist., New Taipei City 24451, Taiwan. R.O.C. TEL:+866-2-8601-3788 / FAX:+886-2-8601-3789

This report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

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Reviewed By :
(Manager / Vincent Lin)

Laboratory Information

We, **QuieTek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scopes:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
Norway	**:**	**Nemko, DNV**
USA	**:**	**FCC, NVLAP**
Japan	**:**	**VCCI**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	LED touch display
Trade Name	Tatung, Hatch
Model No.	TS55M4, TS55M4H, LE-55ME68

Note: The different model name is only for different marketing requirement.

The Trade name of TS55M4 is Tatung, and the Trade name of TS55M4H is Hatch.

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
Mode 1: VGA(1920*1080@60Hz) Mode Mode 2: VGA(1360*768@60Hz) Mode Mode 3: VGA(800*600@75Hz) Mode Mode 4: HDMI 1 1080P Mode 5: HDMI 2 1080P Mode 6: AV Mode Mode 7: YPbPr Mode Mode 8: USB Mode	
Final Test Mode	
Emission	Mode 2: VGA(1360*768@60Hz) Mode Mode 4: HDMI 1 1080P Mode 8: USB Mode

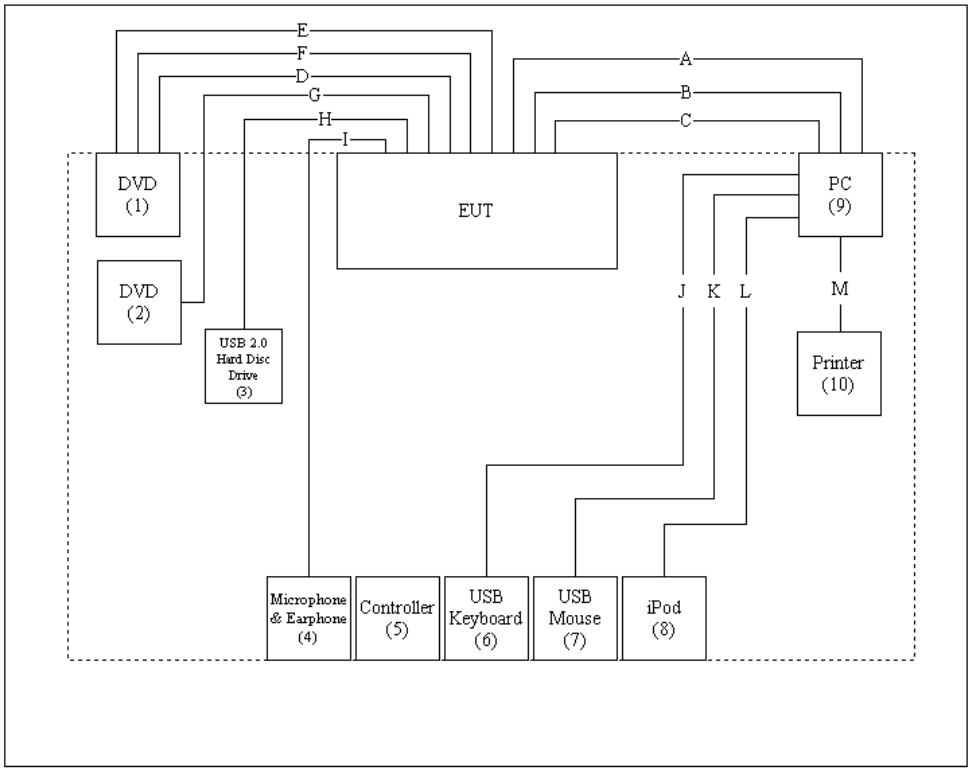
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord	FCC Approved
1	DVD	Pioneer	DV-410V-G	IEKD018404CN	Non-Shielded, 1.8m	FCC VoC
2	DVD	Pioneer	BDP-4111-G	KJTL030056CN	Non-Shielded, 1.5m	FCC VoC
3	USB 2.0 Hard Disc Drive	Lenovo	F118	OA0563521000473	Power by EUT	FCC DoC
4	Microphone & Earphone	SALAR	V81	N/A	Power by EUT	N/A
5	Controller	N/A	RC-1311-OA	N/A	Power by battery	N/A
6	USB Keyboard	DELL	L100	CN0RH65665890968042R	Power by PC	FCC DoC
7	USB Mouse	DELL	MOC5UO	10H03OKU	Power by PC	FCC DoC
8	iPod	Apple	A1199	YM715J43VQ5	Power by PC	FCC DoC
9	PC	HP	Compaq 6000	N/A	Non-Shielded, 1.8m	FCC DoC
10	Printer	HP	1020	CNCK707086	Non-Shielded, 1.8m	FCC DoC

1.4. Configuration of Tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	Audio Cable	Non-Shielded,1.8m
B	VGA Cable	Shielded, 1.8m, with two ferrite cores bonded
C	USB Cable	Shielded, 1.5m
D	YPbPr Cable	Non-Shielded, 1.5m
E	Audio Cable	Non-Shielded,1.5m
F	HDMI Cable	Shielded, 1.5m
G	HDMI Cable	Shielded, 1.5m
H	USB 2.0 Cable	Shielded, 0.3m
I	Microphone & Earphone Cable	Non-Shielded, 2.1m
J	USB Keyboard Cable	Shielded, 1.8m, with one ferrite core bonded
K	USB Mouse Cable	Shielded, 1.8m
L	USB Cable	Shielded, 1.0m
M	USB Cable	Shielded, 1.8m

1.5. EUT Exercise Software

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of all equipment.
3	Tune the EUT to test mode.
4	EUT will receive a color bar signal with a 1kHz for AV, HDMI and YPbPr mode.
5	EUT will be showed Photo on screen for USB mode.
6	EUT will be exercised using “H” pattern showed on screen for VGA mode.
7	Start test.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Emission			
Performed Item	Normative References	Test Performed	Deviation
Section 15.107 Conducted Emission	FCC CFR Title 47 Part 15 Subpart B: 2011 Class B ANSI C63.4: 2009	Yes	No
Section 15.109 Radiated Emission	FCC CFR Title 47 Part 15 Subpart B: 2011 Class B ANSI C63.4: 2009	Yes	No
Section 15.111 Antenna Power Conduction	FCC CFR Title 47 Part 15 Subpart B: 2011 Class B, Part 15.111, ANSI C63.4: 2009	N/A	N/A

2.2. List of Test Equipment

Section 15.107 Conducted Emission / SR8

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCS 30	100369	2013/09/14
LISN	R&S	ESH3-Z5	836679/017	2013/01/09
LISN	R&S	ENV216	100097	2013/01/16
Pulse Limiter	R&S	ESH3-Z2	100412	2013/09/04
Coaxial Cable	QTK(Arnist)	RG 214	LC002-RG	2013/06/18
R&S TS 9980	R&S	N/A	N/A	N/A

Section 15.109 Radiated Emission / CB7

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESU	100433	2013/07/29
Bilog Antenna	Schaffner Chase	CBL6112B	2905	2013/05/06
Pre-Amplifier	QuieTek	AP-180C	CHM/071920	2013/06/25
R&S TS 9980	R&S	N/A	N/A	N/A

Section 15.109 Radiated Emission / AC5

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date
EMI Receiver	Agilent	N9038A	MY51210196	2013/06/09
Preamplifier	Miteq	NSP1800-25	1364185	2013/05/03
DRG Horn	ETS-Lindgren	3117	00123988	2013/01/21
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2013/03/01

Section 15.111 Antenna Power Conduction / SR8

Instrument	Manufacturer	Type No.	Serial No	Cal. Date
EMI Test Receiver	R&S	ESCS 30	100369	2013/09/14
Isolation Transformer	Erika Fiedler	D-65396 Walluf	19	N/A
R&S TS 9980	R&S	N/A	N/A	N/A

2.3. Measurement Uncertainty

Section 15.107 Conducted Emission

The measurement uncertainty is evaluated as ± 2.26 dB.

Section 15.109 Radiated Emission

The measurement uncertainty is evaluated as ± 3.19 dB.

Section 15.111 Antenna Power Conduction

The measurement uncertainty is defined as ± 2.02 dB.

2.4. Test Environment

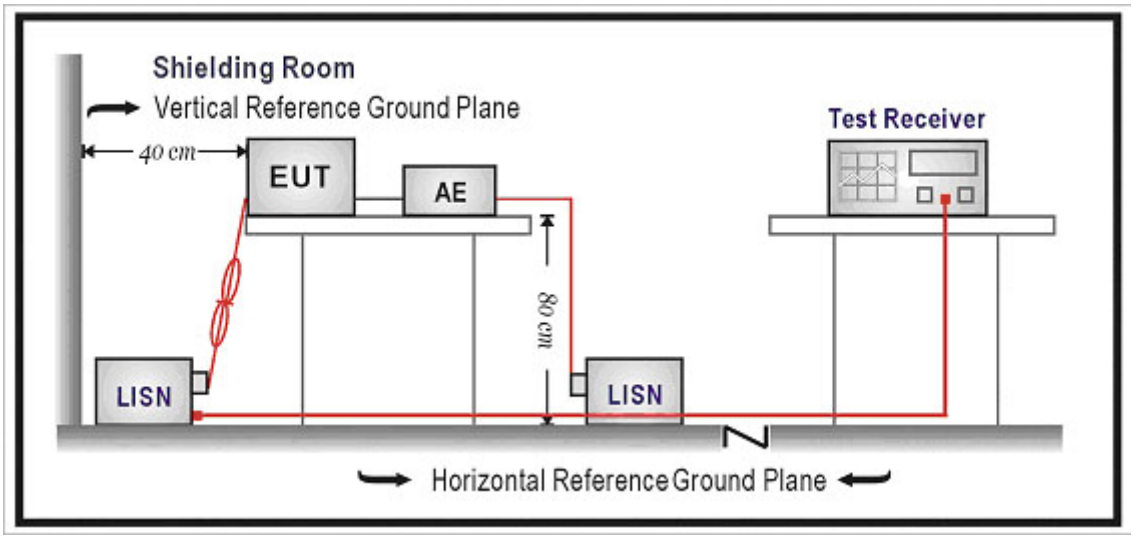
Performed Item	Items	Required	Actual
Section 15.107 Conducted Emission	Temperature (°C)	15-35	23
	Humidity (%RH)	25-75	61
	Barometric pressure (mbar)	860-1060	922
Section 15.109 Radiated Emission	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	61
	Barometric pressure (mbar)	860-1060	959
Section 15.111 Antenna Power Conduction	Temperature (°C)	15-35	25
	Humidity (%RH)	25-75	61
	Barometric pressure (mbar)	860-1060	935

3. Conducted Emission

3.1. Test Specification

According to EMC Standard: FCC Part 15 Subpart B, ANSI C63.4

3.2. Test Setup



3.3. Limit

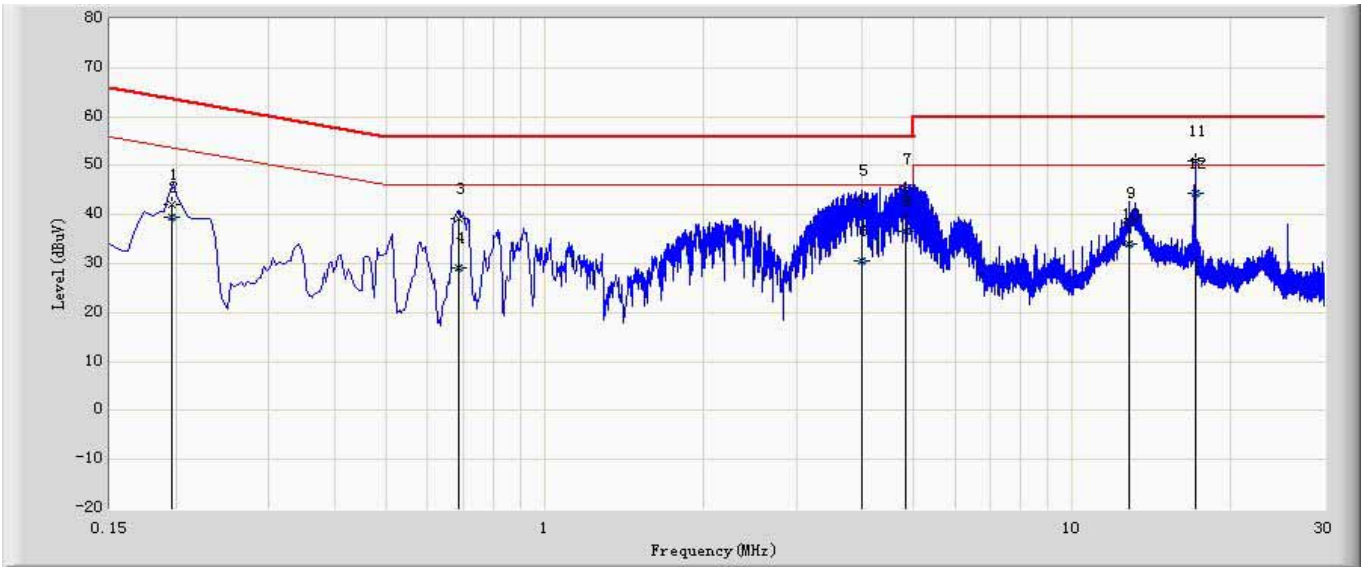
Limits		
Frequency (MHz)	QP (dBuV/m)	AV (dBuV/m)
0.15 – 0.50	66 – 56	56 - 46
0.50 – 5.0	56	46
5.0 - 30	60	50
Remarks: In the above table, the tighter limit applies at the band edges		

3.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.5. Test Result

Site: SR8	Time: 2013/11/18 - 13:14
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-L1	Polarity: Line
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 2: VGA(1360*768@60Hz) Mode	

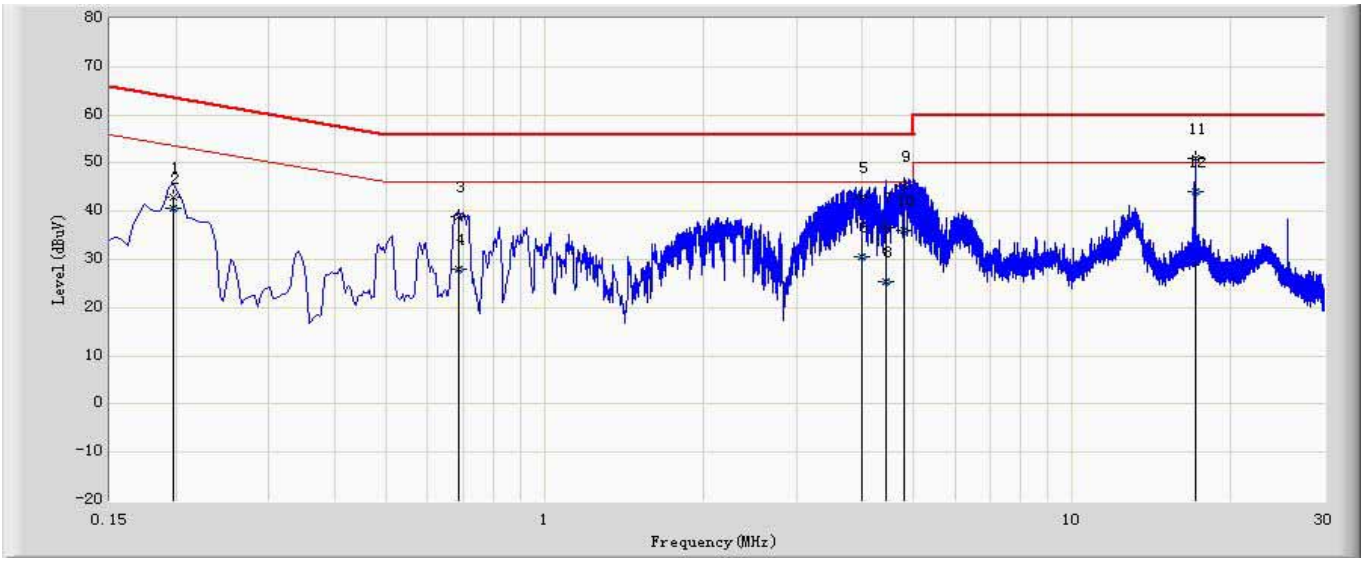


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.196	42.129	32.419	-21.649	63.778	9.650	0.060	0.000	QP
2		0.196	39.402	29.692	-14.376	53.778	9.650	0.060	0.000	AV
3		0.686	39.072	29.382	-16.928	56.000	9.620	0.070	0.000	QP
4		0.686	29.029	19.339	-16.971	46.000	9.620	0.070	0.000	AV
5		4.006	43.047	33.247	-12.953	56.000	9.660	0.140	0.000	QP
6		4.006	30.535	20.735	-15.465	46.000	9.660	0.140	0.000	AV
7		4.846	45.233	35.403	-10.767	56.000	9.670	0.160	0.000	QP
8		4.846	36.720	26.890	-9.280	46.000	9.670	0.160	0.000	AV
9		12.810	38.326	28.236	-21.674	60.000	9.770	0.320	0.000	QP
10		12.810	33.939	23.849	-16.061	50.000	9.770	0.320	0.000	AV
11		17.082	51.065	40.825	-8.935	60.000	9.830	0.410	0.000	QP
12	*	17.082	44.265	34.025	-5.735	50.000	9.830	0.410	0.000	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: SR8	Time: 2013/11/18 - 13:16
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-N	Polarity: Neutral
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 2: VGA(1360*768@60Hz) Mode	

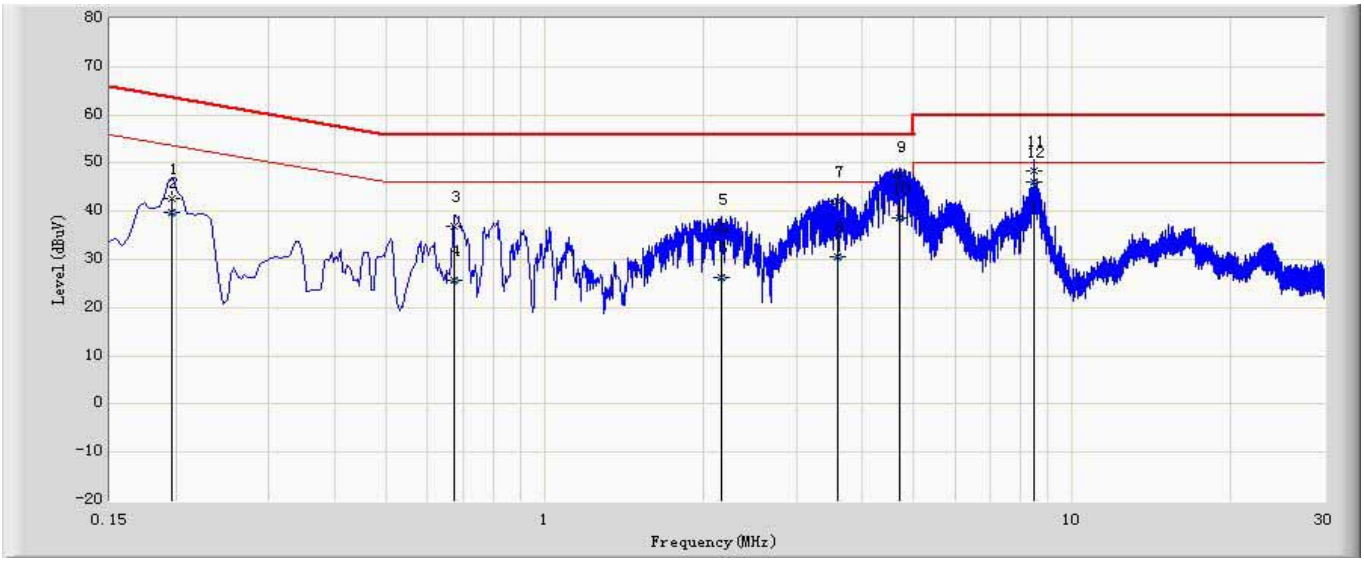


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.198	42.942	33.222	-20.752	63.694	9.660	0.060	0.000	QP
2		0.198	40.535	30.815	-13.159	53.694	9.660	0.060	0.000	AV
3		0.686	39.003	29.293	-16.997	56.000	9.640	0.070	0.000	QP
4		0.686	28.065	18.355	-17.935	46.000	9.640	0.070	0.000	AV
5		4.006	43.045	33.245	-12.955	56.000	9.660	0.140	0.000	QP
6		4.006	30.687	20.887	-15.313	46.000	9.660	0.140	0.000	AV
7		4.426	36.609	26.799	-19.391	56.000	9.660	0.150	0.000	QP
8		4.426	25.344	15.534	-20.656	46.000	9.660	0.150	0.000	AV
9		4.802	45.157	35.327	-10.843	56.000	9.670	0.160	0.000	QP
10		4.802	36.157	26.327	-9.843	46.000	9.670	0.160	0.000	AV
11		17.082	50.916	40.676	-9.084	60.000	9.830	0.410	0.000	QP
12	*	17.082	44.116	33.876	-5.884	50.000	9.830	0.410	0.000	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: SR8	Time: 2013/11/18 - 13:10
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-L1	Polarity: Line
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 4: HDMI 1 1080P	

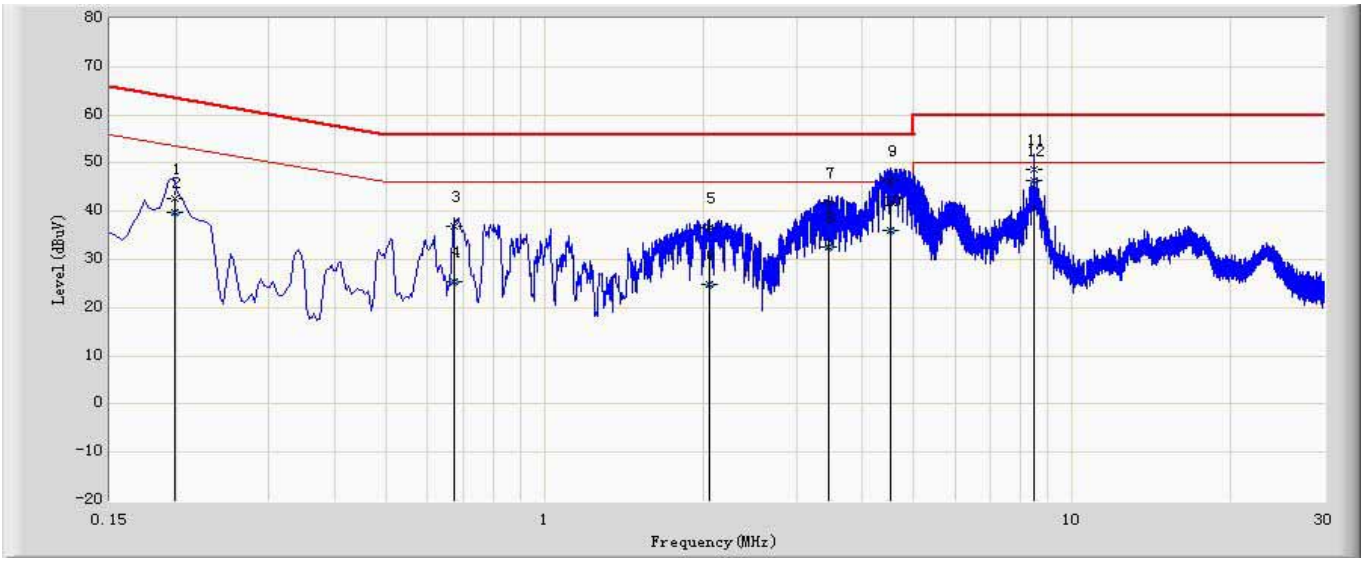


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.196	42.520	32.810	-21.258	63.778	9.650	0.060	0.000	QP
2		0.196	39.692	29.982	-14.086	53.778	9.650	0.060	0.000	AV
3		0.674	36.926	27.236	-19.074	56.000	9.620	0.070	0.000	QP
4		0.674	25.663	15.973	-20.337	46.000	9.620	0.070	0.000	AV
5		2.158	36.347	26.607	-19.653	56.000	9.640	0.100	0.000	QP
6		2.158	26.337	16.597	-19.663	46.000	9.640	0.100	0.000	AV
7		3.594	41.958	32.168	-14.042	56.000	9.660	0.130	0.000	QP
8		3.594	30.518	20.728	-15.482	46.000	9.660	0.130	0.000	AV
9		4.702	47.226	37.406	-8.774	56.000	9.670	0.150	0.000	QP
10		4.702	38.526	28.706	-7.474	46.000	9.670	0.150	0.000	AV
11		8.474	48.426	38.486	-11.574	60.000	9.710	0.230	0.000	QP
12	*	8.474	46.226	36.286	-3.774	50.000	9.710	0.230	0.000	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: SR8	Time: 2013/11/19 - 13:08
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-N	Polarity: Neutral
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 4: HDMI 1 1080P	

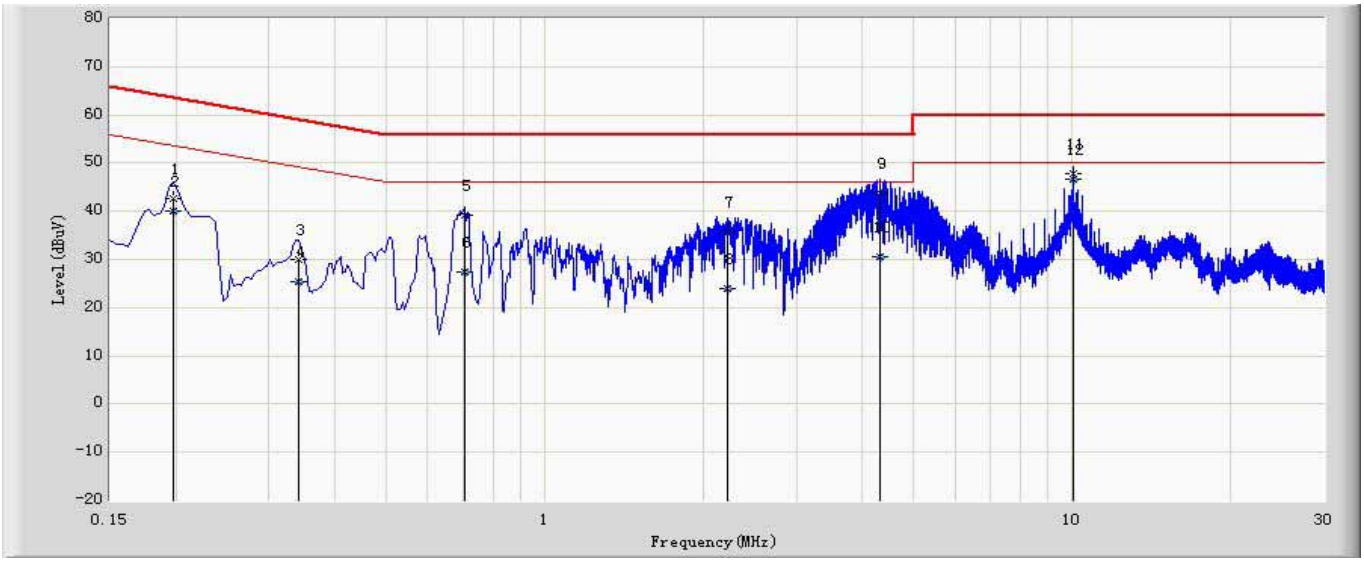


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.199	42.569	32.849	-21.083	63.652	9.660	0.060	0.000	QP
2		0.199	39.701	29.981	-13.951	53.652	9.660	0.060	0.000	AV
3		0.674	36.966	27.256	-19.034	56.000	9.640	0.070	0.000	QP
4		0.674	25.333	15.623	-20.667	46.000	9.640	0.070	0.000	AV
5		2.054	36.547	26.807	-19.453	56.000	9.640	0.100	0.000	QP
6		2.054	24.942	15.202	-21.058	46.000	9.640	0.100	0.000	AV
7		3.462	41.911	32.131	-14.089	56.000	9.650	0.130	0.000	QP
8		3.462	32.722	22.942	-13.278	46.000	9.650	0.130	0.000	AV
9		4.522	46.250	36.430	-9.750	56.000	9.670	0.150	0.000	QP
10		4.522	35.950	26.130	-10.050	46.000	9.670	0.150	0.000	AV
11		8.474	48.671	38.731	-11.329	60.000	9.710	0.230	0.000	QP
12	*	8.474	46.371	36.431	-3.629	50.000	9.710	0.230	0.000	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: SR8	Time: 2013/11/18 - 13:03
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-L1	Polarity: Line
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 8: USB Mode	

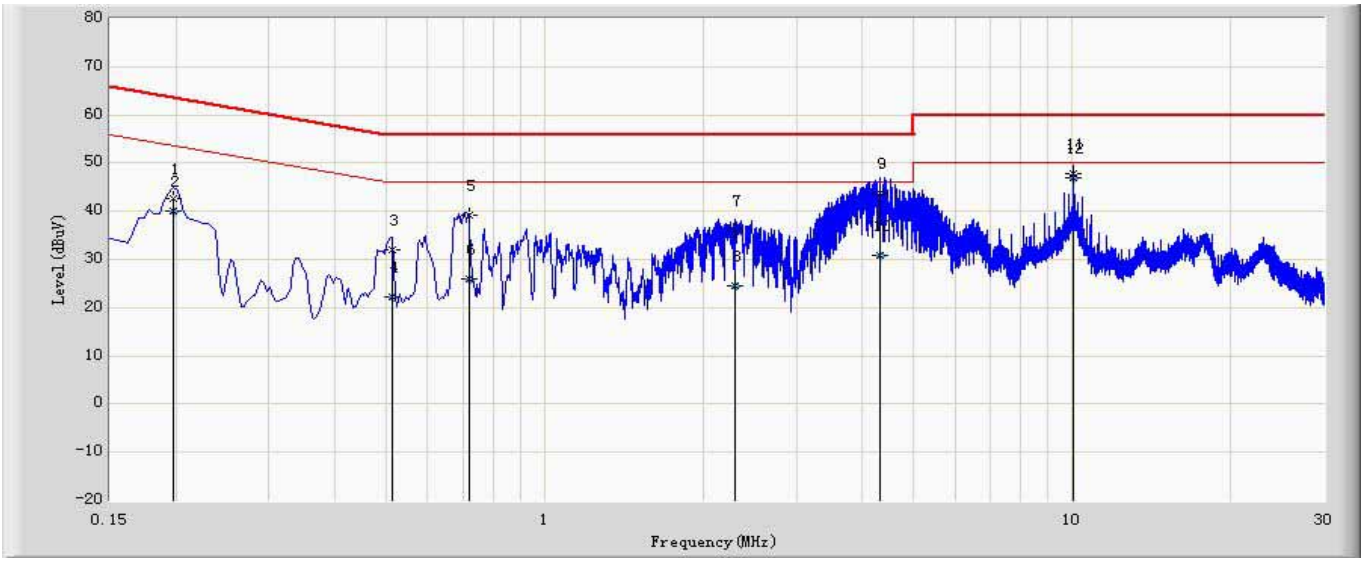


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.198	42.587	32.877	-21.107	63.694	9.650	0.060	0.000	QP
2		0.198	40.001	30.291	-13.693	53.694	9.650	0.060	0.000	AV
3		0.342	30.063	20.363	-29.092	59.155	9.640	0.060	0.000	QP
4		0.342	25.277	15.577	-23.878	49.155	9.640	0.060	0.000	AV
5		0.706	39.142	29.452	-16.858	56.000	9.620	0.070	0.000	QP
6		0.706	27.499	17.809	-18.501	46.000	9.620	0.070	0.000	AV
7		2.218	35.825	26.085	-20.175	56.000	9.640	0.100	0.000	QP
8		2.218	23.827	14.087	-22.173	46.000	9.640	0.100	0.000	AV
9		4.330	43.671	33.861	-12.329	56.000	9.660	0.150	0.000	QP
10		4.330	30.604	20.794	-15.396	46.000	9.660	0.150	0.000	AV
11		10.050	47.741	37.741	-12.259	60.000	9.730	0.270	0.000	QP
12	*	10.050	46.741	36.741	-3.259	50.000	9.730	0.270	0.000	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: SR8	Time: 2013/11/18 - 13:05
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-N	Polarity: Neutral
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 8: USB Mode	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.198	42.719	32.999	-20.975	63.694	9.660	0.060	0.000	QP
2		0.198	40.172	30.452	-13.522	53.694	9.660	0.060	0.000	AV
3		0.514	31.958	22.258	-24.042	56.000	9.630	0.070	0.000	QP
4		0.514	22.326	12.626	-23.674	46.000	9.630	0.070	0.000	AV
5		0.718	39.125	29.415	-16.875	56.000	9.640	0.070	0.000	QP
6		0.718	25.845	16.135	-20.155	46.000	9.640	0.070	0.000	AV
7		2.302	36.050	26.309	-19.950	56.000	9.640	0.101	0.000	QP
8		2.302	24.620	14.879	-21.380	46.000	9.640	0.101	0.000	AV
9		4.330	43.882	34.072	-12.118	56.000	9.660	0.150	0.000	QP
10		4.330	30.876	21.066	-15.124	46.000	9.660	0.150	0.000	AV
11		10.050	47.728	37.718	-12.272	60.000	9.740	0.270	0.000	QP
12	*	10.050	46.828	36.818	-3.172	50.000	9.740	0.270	0.000	AV

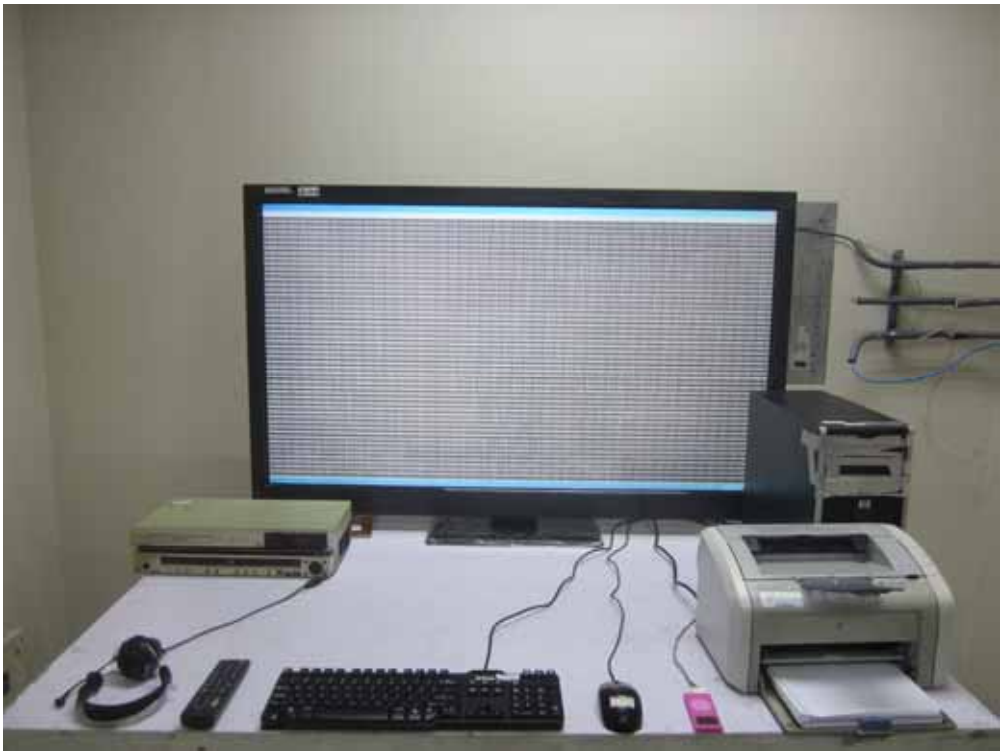
Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

3.6. Test Photograph

Test Mode : Mode 2: VGA(1360*768@60Hz) Mode

Description : Front View of Conducted Test



Test Mode : Mode 2: VGA(1360*768@60Hz) Mode

Description : Back View of Conducted Test

Test Mode : Mode 4: HDMI 1 1080P

Description : Front View of Conducted Test

Test Mode : Mode 4: HDMI 1 1080P

Description : Back View of Conducted Test

Test Mode : Mode 8: USB Mode

Description : Front View of Conducted Test

Test Mode : Mode 8: USB Mode

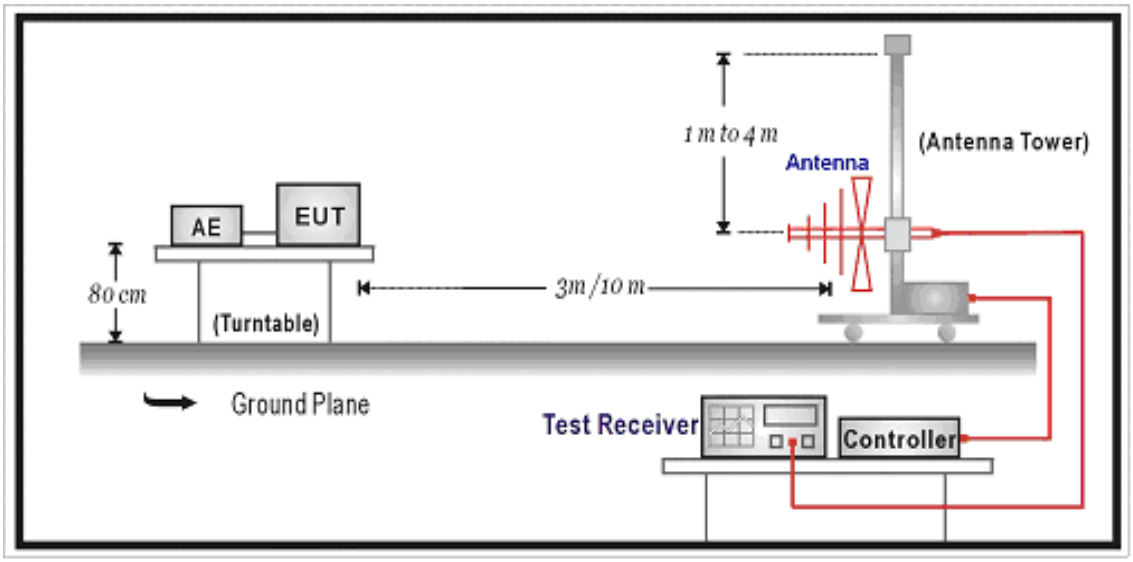
Description : Back View of Conducted Test

4. Radiated Emission

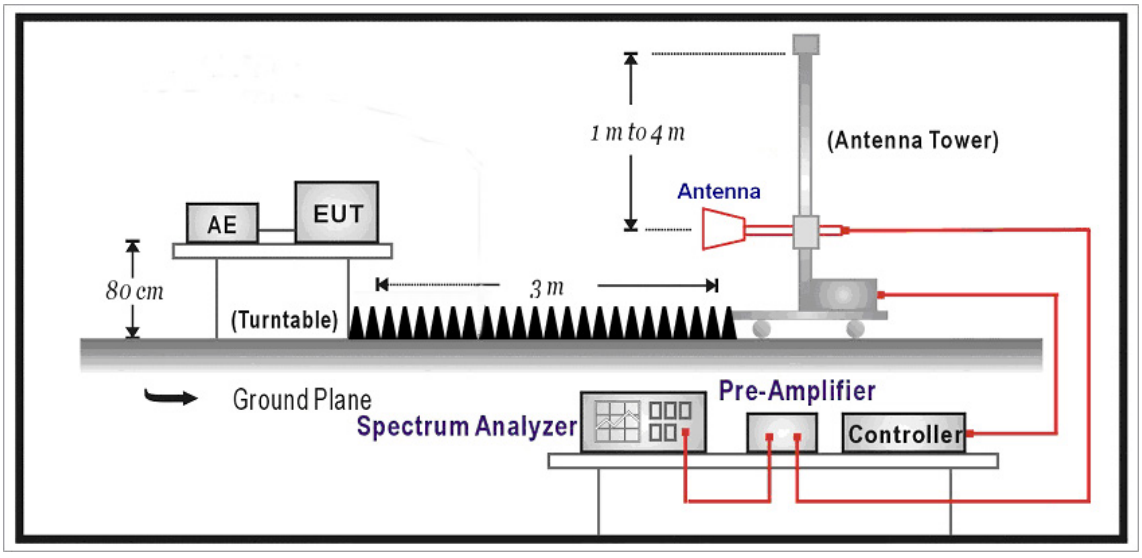
4.1. Test Specification

According to EMC Standard: FCC Part 15 Subpart B, ANSI C63.4

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.2. Limit

Test result shall not exceed the following value:

FCC Part 15 Subpart B Paragraph 15.109 Limits (dBuV/m)		
Frequency (MHz)	Distance (m)	dBuV/m
30-88	3	40
88-216	3	43.5
216-960	3	46
Above 960	3	54

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
3. RF Voltage (dBuV/m) = 20 log RF Voltage (uV/m)

4.3. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level and the antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

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.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the folowing table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000 MHz, the radiated limits shown are based measuring equipment employing an average detector function.

When average radiated emission measurement are included emission measurement Above 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

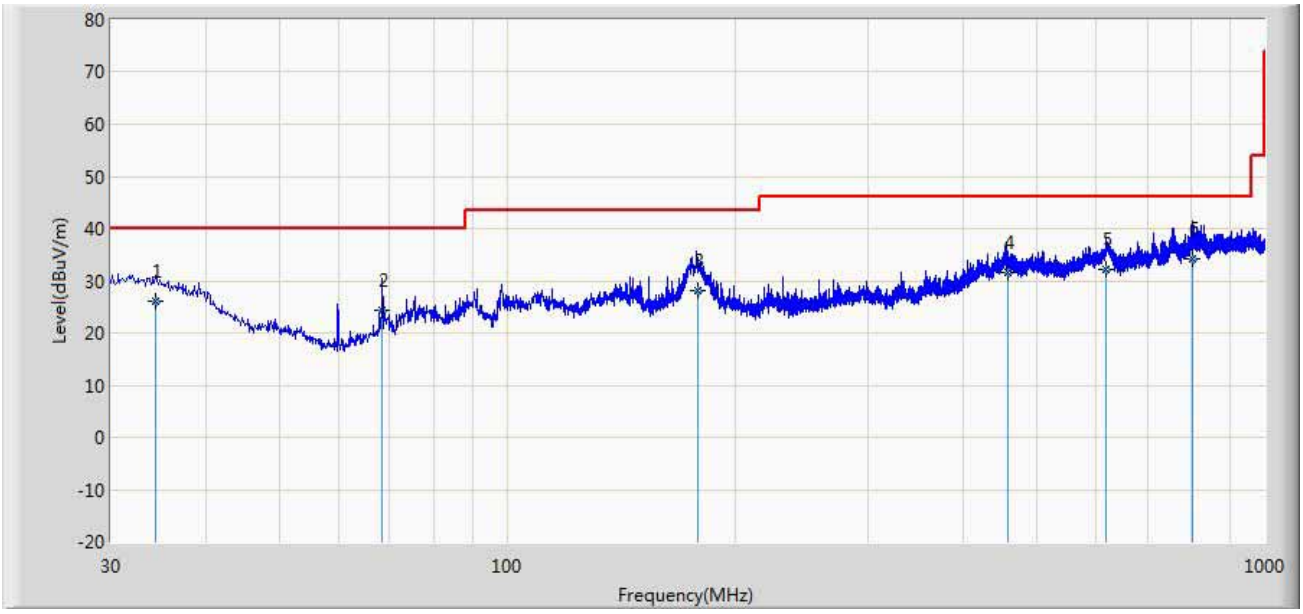
For class A, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and above 1GHz.

For class B, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 120 kHz and above 1GHz is 1MHz.

4.4. Test Result

Site: CB7	Time: 2013/11/16 - 03:24
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CB7_CBL6112_0726	Polarity: Horizontal
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 2: VGA(1360*768@60Hz) Mode	

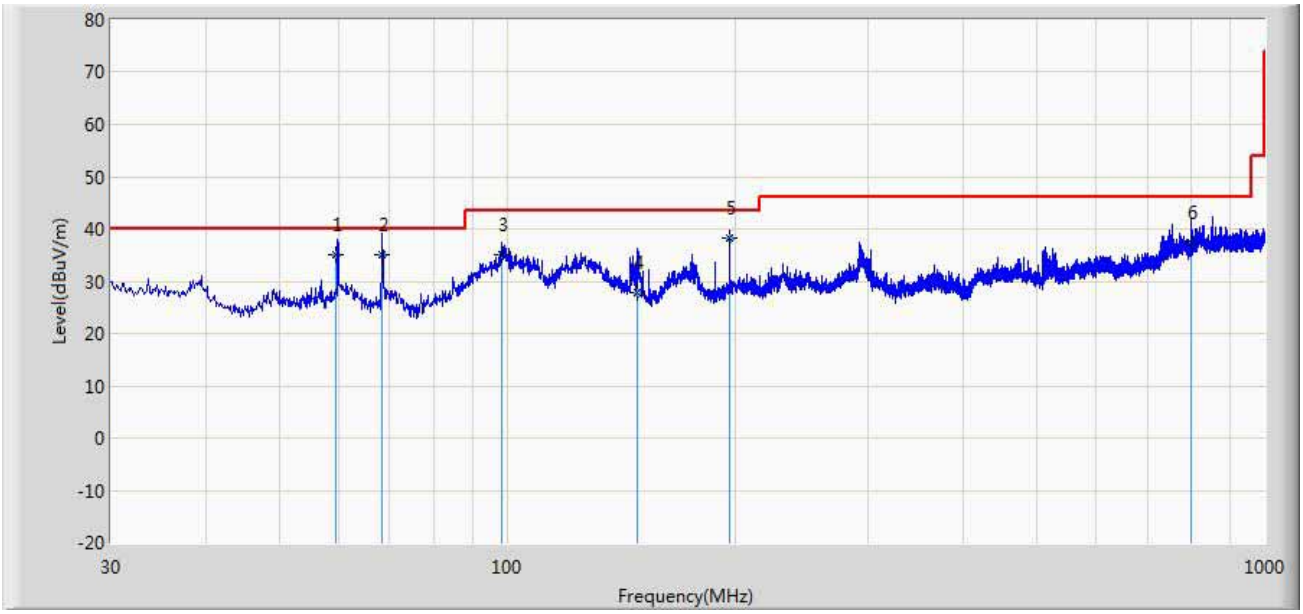


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		34.336	26.064	0.500	-13.936	40.000	19.079	6.485	0.000	144	360	QP
2		68.314	24.454	12.624	-15.546	40.000	5.145	6.685	0.000	214	21	QP
3		178.344	28.120	10.000	-15.380	43.500	10.971	7.149	0.000	100	321	QP
4		457.314	31.505	1.200	-14.495	46.000	22.331	7.975	0.000	200	3	QP
5		617.314	32.213	0.200	-13.787	46.000	23.655	8.358	0.000	100	319	QP
6	*	802.614	34.309	1.600	-11.691	46.000	23.941	8.768	0.000	100	201	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2013/11/16 - 03:28
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CB7_CBL6112_0726	Polarity: Vertical
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 2: VGA(1360*768@60Hz) Mode	

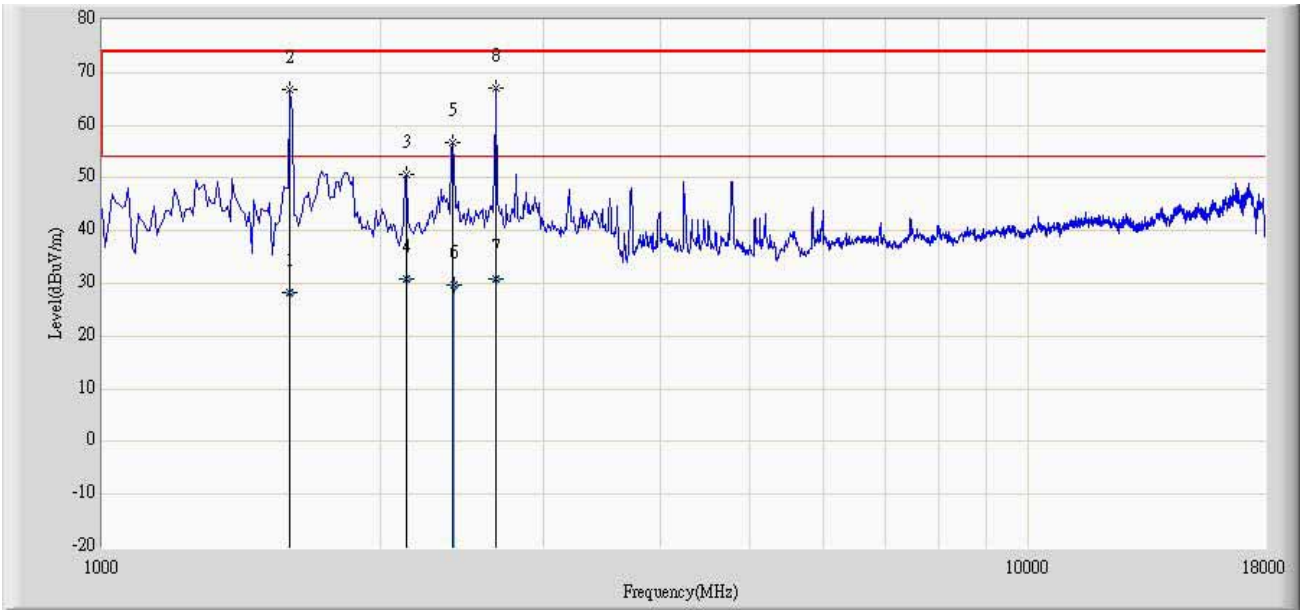


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	59.360	35.090	17.800	-4.910	40.000	10.654	6.636	0.000	100	288	QP
2		68.314	34.948	18.600	-5.052	40.000	9.663	6.685	0.000	100	314	QP
3		98.614	34.957	12.600	-8.543	43.500	15.526	6.831	0.000	100	360	QP
4		148.634	27.964	8.700	-15.536	43.500	12.226	7.037	0.000	100	224	QP
5		196.541	38.325	14.334	-5.175	43.500	16.778	7.213	0.000	100	314	QP
6		800.361	37.462	5.400	-8.538	46.000	23.300	8.763	0.000	100	25	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: AC5	Time: 2013/11/16 - 00:24
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 2: VGA(1360*768@60Hz) Mode	

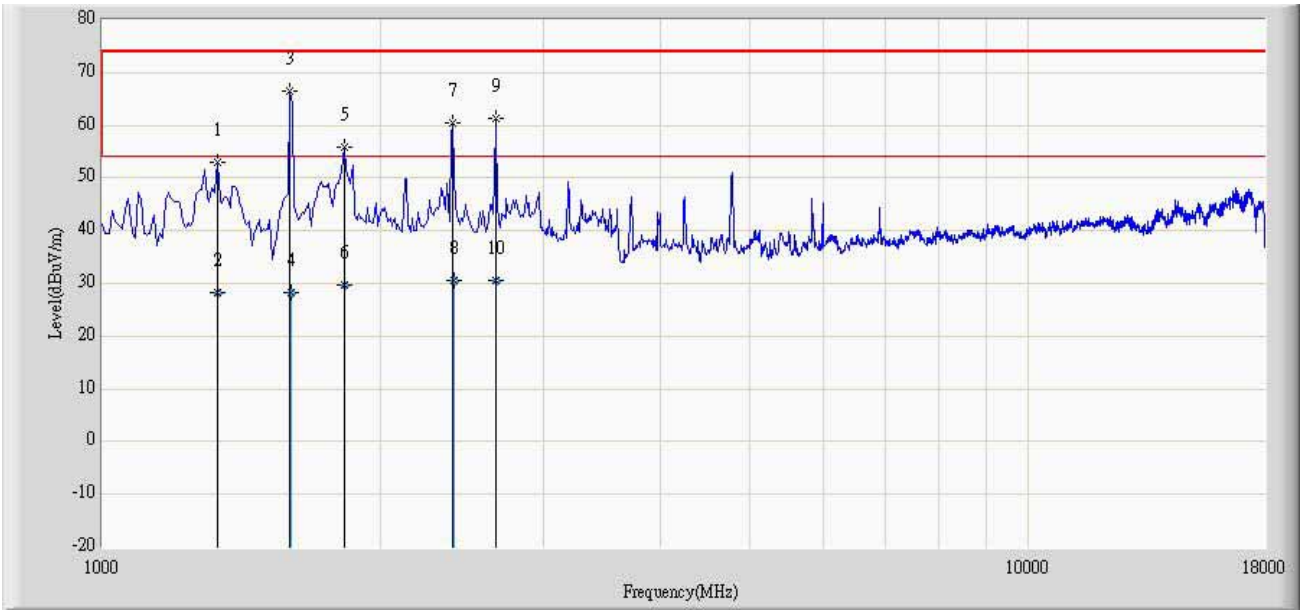


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1			1593.150	28.171	43.526	-25.829	54.000	28.902	4.252	48.509	100	131	AV
2			1595.000	66.826	82.148	-7.174	74.000	28.934	4.255	48.511	100	131	PK
3			2130.500	50.685	63.293	-23.315	74.000	30.630	4.964	48.202	200	118	PK
4			2131.983	30.854	43.449	-23.146	54.000	30.639	4.966	48.200	200	118	AV
5			2394.000	56.767	67.265	-17.233	74.000	32.394	5.289	48.181	100	112	PK
6			2394.712	29.839	40.331	-24.161	54.000	32.399	5.290	48.181	100	112	AV
7			2665.405	30.911	41.188	-23.089	54.000	32.208	5.609	48.094	200	153	AV
8		*	2666.000	67.096	77.376	-6.904	74.000	32.204	5.610	48.094	200	153	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: AC5	Time: 2013/11/16 - 00:26
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 2: VGA(1360*768@60Hz) Mode	

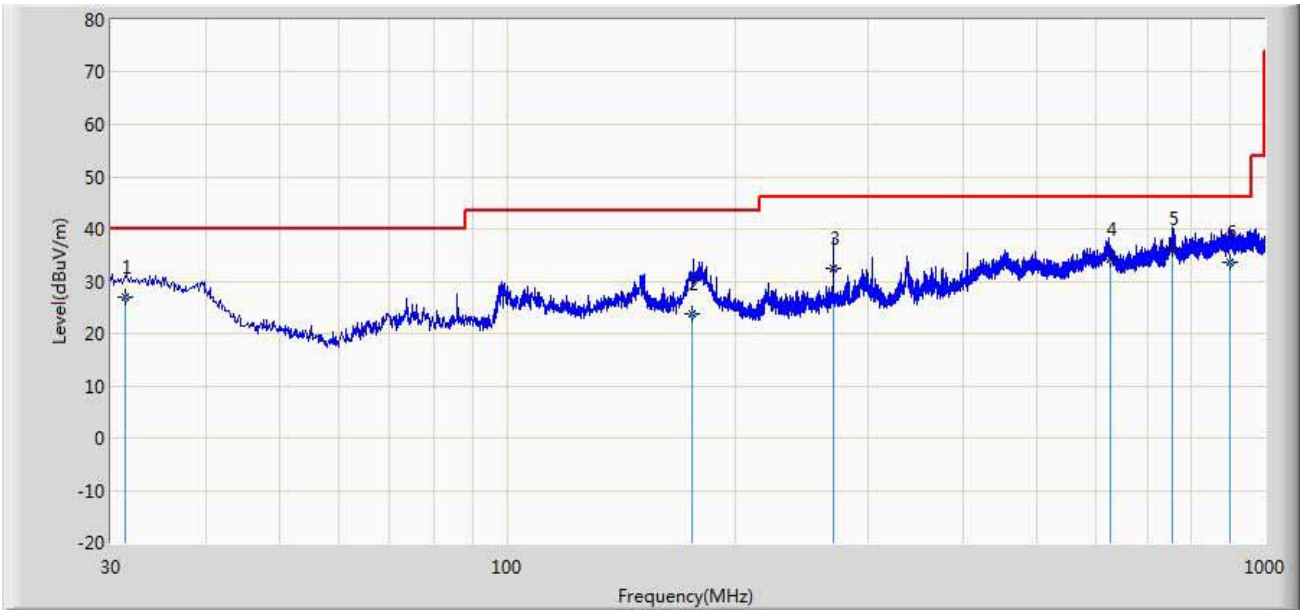


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1			1331.500	53.047	69.921	-20.953	74.000	27.841	3.862	48.578	105	360	PK
2			1333.435	28.283	45.160	-25.717	54.000	27.833	3.865	48.575	105	360	AV
3		*	1595.000	66.430	82.598	-7.570	74.000	28.088	4.255	48.511	200	15	PK
4			1597.100	28.325	44.463	-25.675	54.000	28.110	4.258	48.506	200	15	AV
5			1824.500	55.905	69.517	-18.095	74.000	30.147	4.574	48.332	200	346	PK
6			1824.590	29.815	43.426	-24.185	54.000	30.148	4.574	48.332	200	346	AV
7			2394.000	60.506	71.680	-13.494	74.000	31.718	5.289	48.181	100	183	PK
8			2396.040	30.582	41.746	-23.418	54.000	31.725	5.292	48.182	100	183	AV
9			2657.500	61.238	71.387	-12.762	74.000	32.352	5.601	48.102	100	283	PK
10			2657.839	30.436	40.583	-23.564	54.000	32.353	5.602	48.102	100	283	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2013/11/16 - 03:31
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CB7_CBL6112_0726	Polarity: Horizontal
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 4: HDMI 1 1080P	

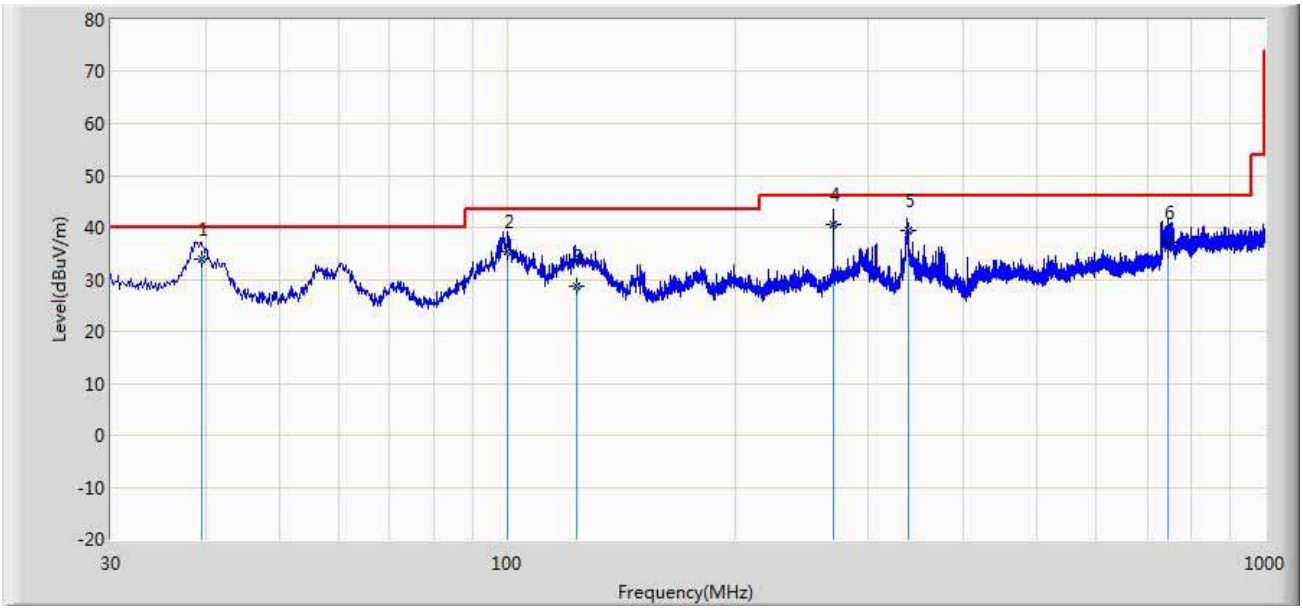


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		31.344	26.898	1.200	-13.102	40.000	19.236	6.463	0.000	100	355	QP
2		175.621	23.782	5.300	-19.718	43.500	11.343	7.138	0.000	200	214	QP
3		269.364	32.607	11.600	-13.393	46.000	13.558	7.450	0.000	154	100	QP
4		625.644	34.181	2.300	-11.819	46.000	23.504	8.377	0.000	150	125	QP
5	*	755.361	36.331	3.500	-9.669	46.000	24.165	8.666	0.000	100	154	QP
6		901.321	33.528	0.200	-12.472	46.000	24.354	8.974	0.000	100	348	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2013/11/16 - 03:32
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CB7_CBL6112_0726	Polarity: Vertical
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 4: HDMI 1 1080P	

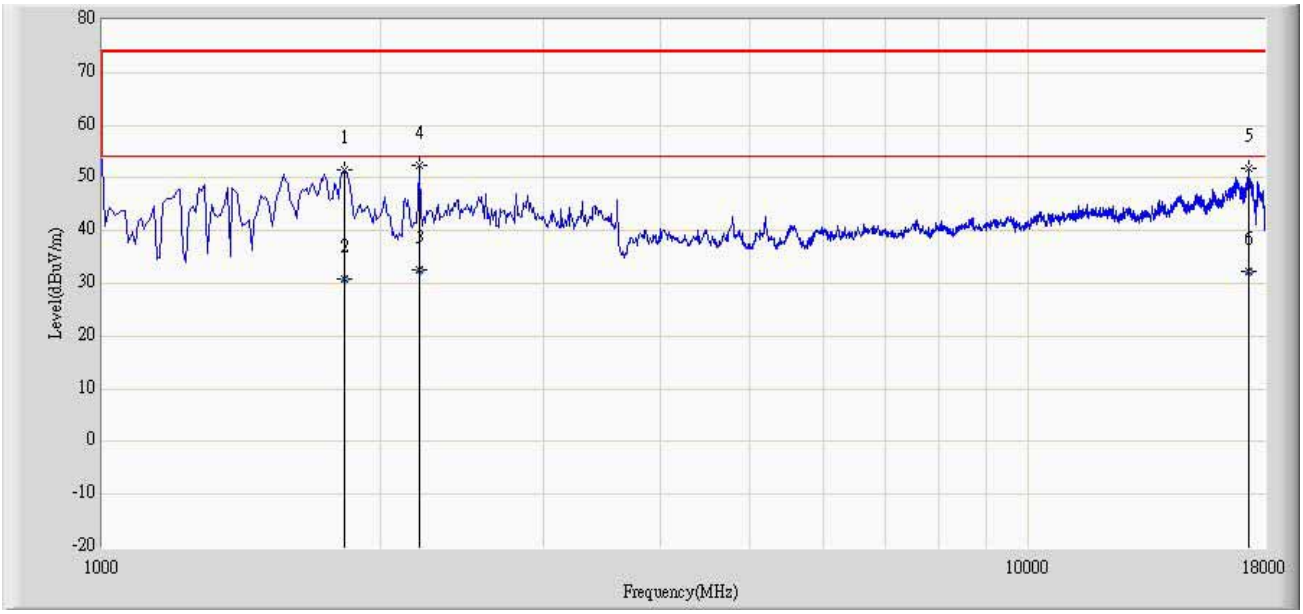


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		39.554	33.898	43.206	-6.102	40.000	13.259	0.680	23.247	100	211	QP
2		100.340	35.336	46.295	-8.164	43.500	11.126	1.085	23.170	100	325	QP
3		123.644	28.603	38.211	-14.897	43.500	12.282	1.200	23.090	200	314	QP
4	*	269.540	40.603	49.174	-5.397	46.000	12.859	1.760	23.190	100	214	QP
5		338.654	39.557	46.122	-6.443	46.000	14.405	2.000	22.970	214	224	QP
6		745.928	37.186	37.070	-8.814	46.000	19.726	3.020	22.630	210	22	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: AC5	Time: 2013/11/16 - 00:48
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 4: HDMI 1 1080P	

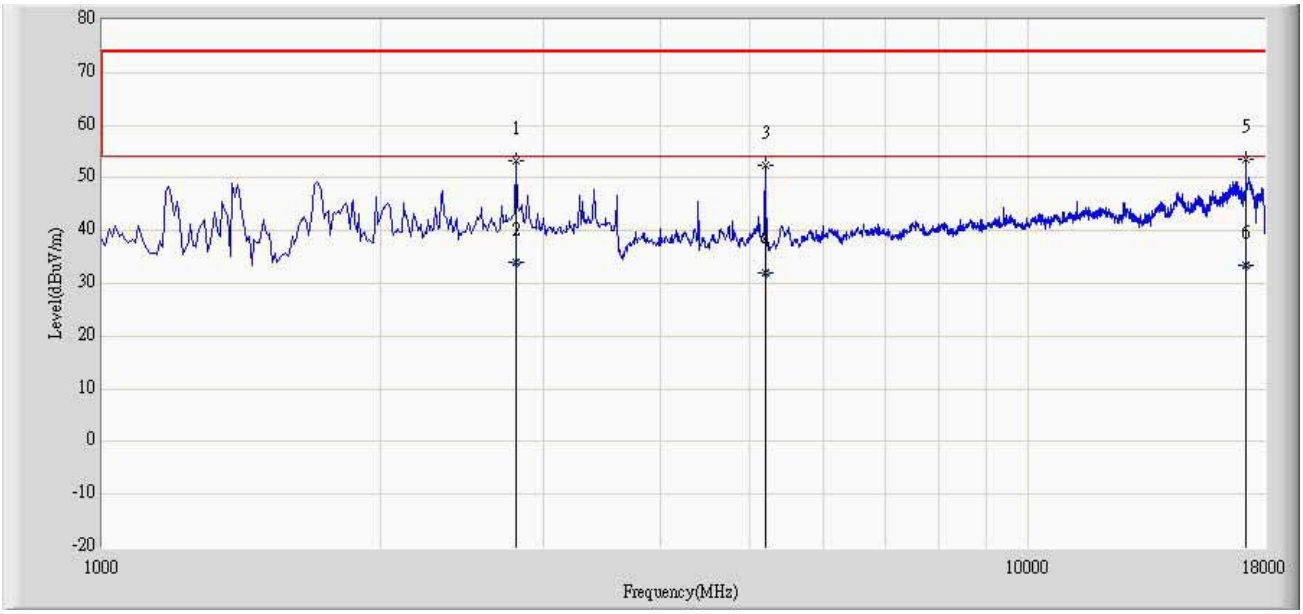


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1			1824.500	51.639	64.304	-22.361	74.000	31.093	4.574	48.332	200	25	PK
2			1825.633	30.819	43.489	-23.181	54.000	31.086	4.575	48.331	200	25	AV
3		*	2197.127	32.499	44.616	-21.501	54.000	31.004	5.046	48.167	100	61	AV
4			2198.500	52.276	64.383	-21.724	74.000	31.011	5.048	48.166	100	61	PK
5			17286.000	51.856	38.002	-22.144	74.000	41.057	17.761	44.964	100	263	PK
6			17288.321	32.411	18.552	-21.589	54.000	41.054	17.762	44.958	100	263	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: AC5	Time: 2013/11/16 - 00:51
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 4: HDMI 1 1080P	

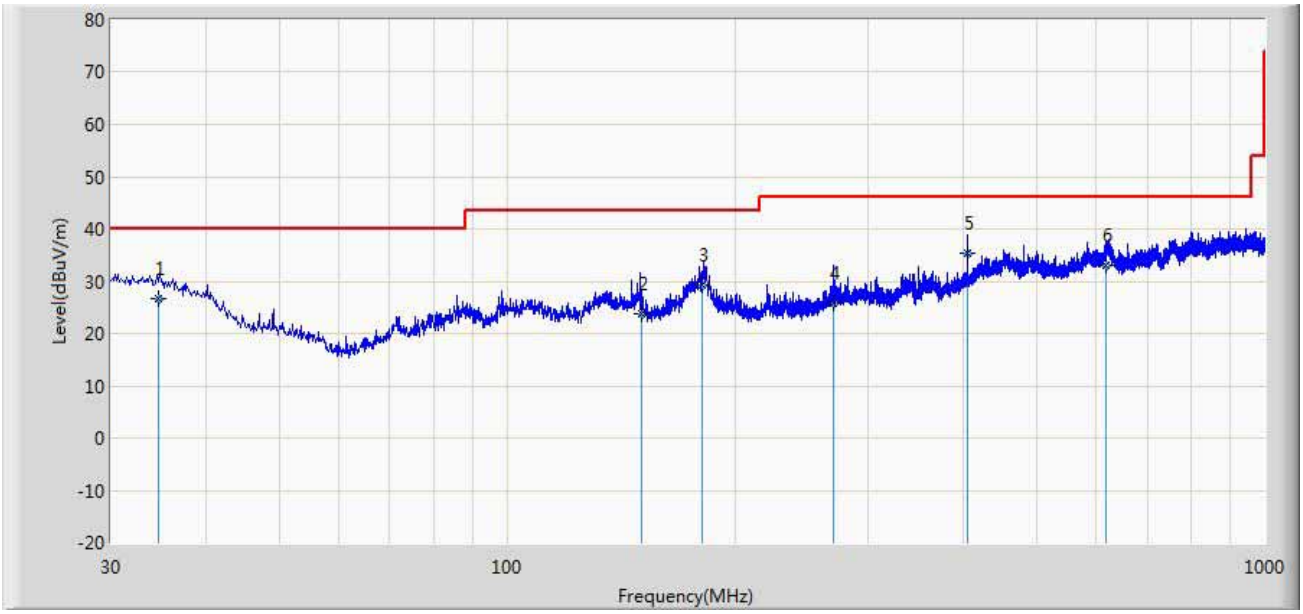


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1			2802.000	53.301	63.018	-20.699	74.000	32.438	5.766	47.921	200	100	PK
2		*	2803.561	33.907	43.624	-20.093	54.000	32.436	5.768	47.921	200	100	AV
3			5199.000	52.535	58.777	-21.465	74.000	34.000	8.042	48.284	100	360	PK
4			5200.624	31.913	38.156	-22.087	54.000	34.000	8.043	48.286	100	360	AV
5			17192.500	53.540	39.552	-20.460	74.000	41.177	17.752	44.941	200	155	PK
6			17193.965	33.533	19.548	-20.467	54.000	41.178	17.750	44.942	200	155	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2013/11/16 - 03:34
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CB7_CBL6112_0726	Polarity: Horizontal
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 8: USB Mode	

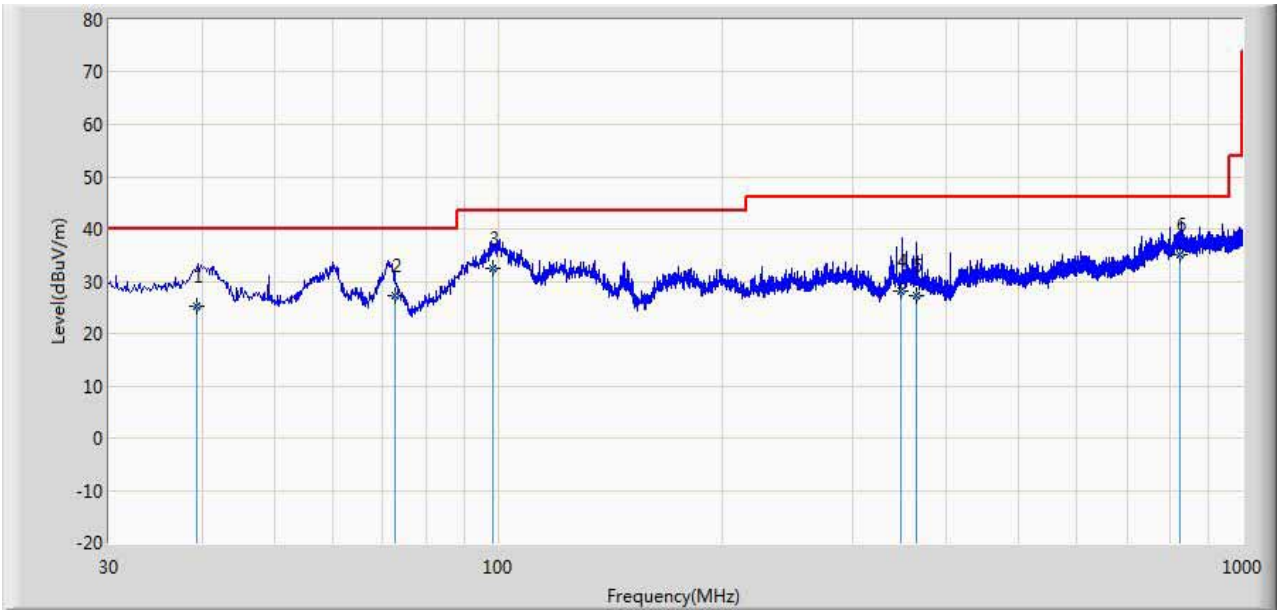


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		34.614	26.758	1.200	-13.242	40.000	19.071	6.487	0.000	128	210	QP
2		150.334	23.865	5.600	-19.635	43.500	11.221	7.044	0.000	100	138	QP
3		180.624	29.240	11.300	-14.260	43.500	10.783	7.157	0.000	200	314	QP
4		269.340	25.906	4.900	-20.094	46.000	13.557	7.449	0.000	200	3	QP
5	*	405.614	35.329	8.700	-10.671	46.000	18.789	7.841	0.000	100	321	QP
6		617.614	33.186	1.100	-12.814	46.000	23.727	8.359	0.000	200	360	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: CB7	Time: 2013/11/16 - 03:37
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: CB7_CBL6112_0726	Polarity: Vertical
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 8: USB Mode	

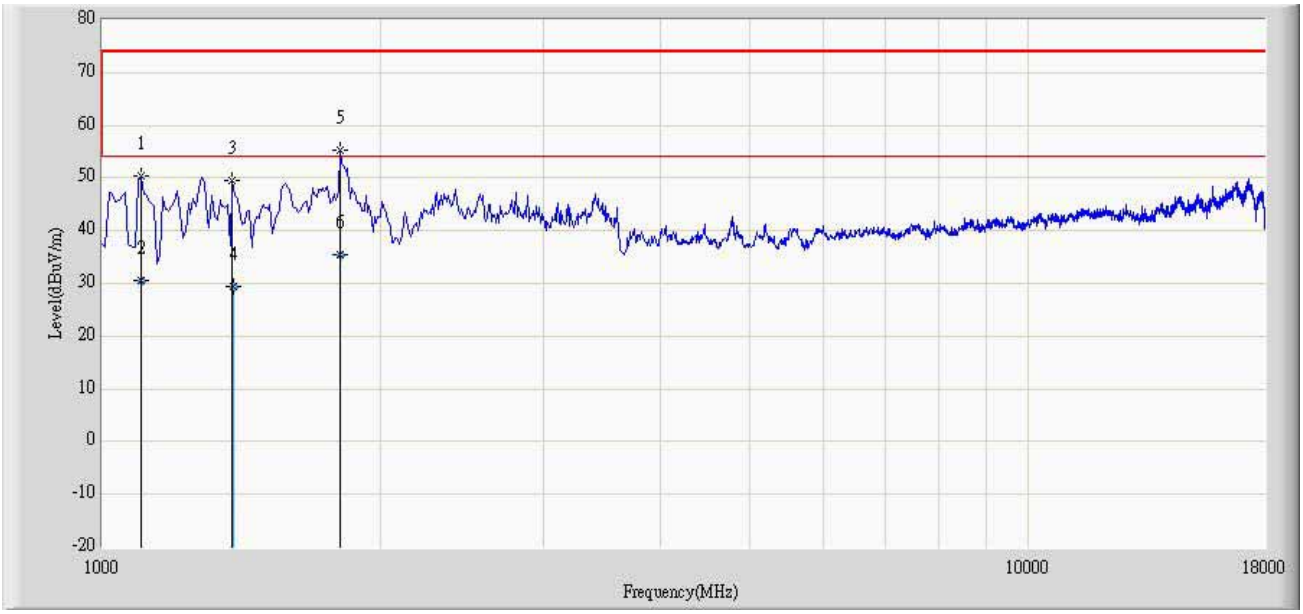


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		39.314	25.290	5.800	-14.710	40.000	12.970	6.519	0.000	100	174	QP
2		72.621	27.163	11.600	-12.837	40.000	8.854	6.708	0.000	100	241	QP
3		98.340	32.428	10.200	-11.072	43.500	15.399	6.830	0.000	100	251	QP
4		348.314	27.986	2.600	-18.014	46.000	17.702	7.684	0.000	100	22	QP
5		365.314	27.162	1.600	-18.838	46.000	17.832	7.730	0.000	200	336	QP
6	*	826.314	35.134	1.600	-10.866	46.000	24.711	8.823	0.000	200	21	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: AC5	Time: 2013/11/16 - 01:03
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Horizontal
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 8: USB Mode	

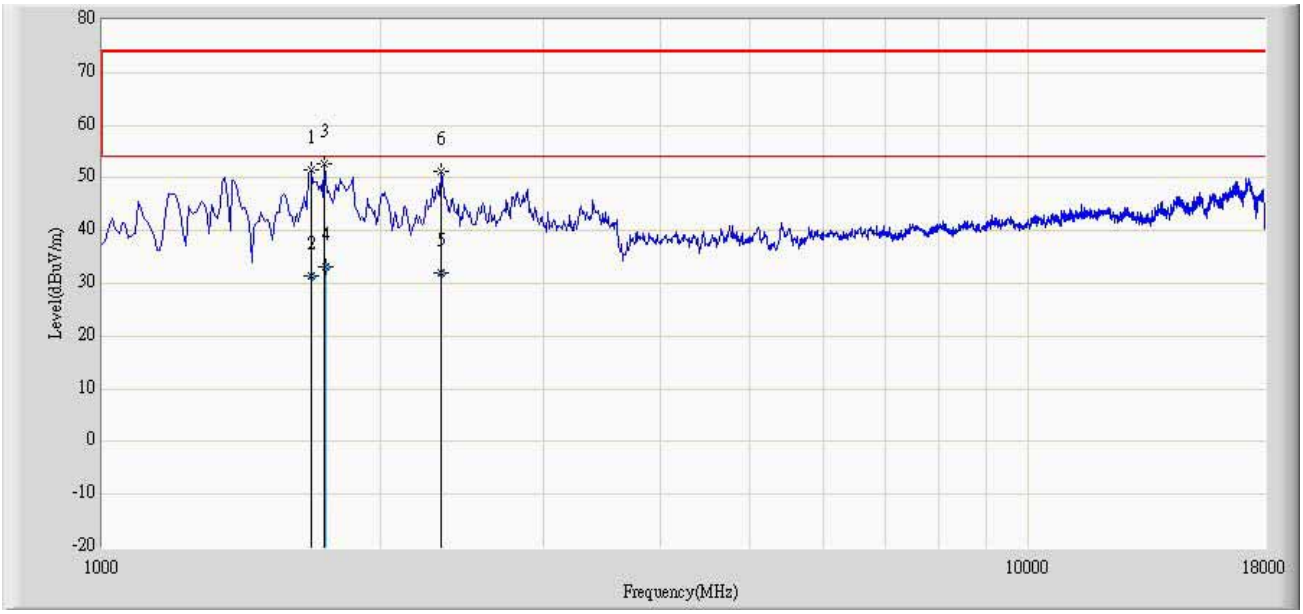


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1			1102.000	50.263	67.694	-23.737	74.000	27.814	3.494	48.739	200	66	PK
2			1103.155	30.531	47.962	-23.469	54.000	27.811	3.496	48.738	200	66	AV
3			1382.500	49.488	66.778	-24.512	74.000	27.347	3.942	48.578	100	150	PK
4			1383.613	29.554	46.841	-24.446	54.000	27.347	3.944	48.577	100	150	AV
5			1807.500	55.222	67.810	-18.778	74.000	31.209	4.549	48.346	200	154	PK
6		*	1808.621	35.329	47.921	-18.671	54.000	31.201	4.551	48.344	200	154	AV

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Site: AC5	Time: 2013/11/16 - 01:05
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: Horn_3117_988(1-18GHz)	Polarity: Vertical
EUT: LED touch display	Power: AC 120V/60Hz
Note: Mode 8: USB Mode	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1			1680.000	51.679	66.746	-22.321	74.000	28.972	4.373	48.412	120	360	PK
2			1681.621	31.546	46.594	-22.454	54.000	28.989	4.375	48.412	120	360	AV
3			1739.500	52.719	67.051	-21.281	74.000	29.590	4.454	48.376	200	351	PK
4		*	1740.841	33.169	47.485	-20.831	54.000	29.604	4.455	48.376	200	351	AV
5			2325.922	32.048	43.541	-21.952	54.000	31.474	5.202	48.169	200	79	AV
6			2326.000	51.240	62.733	-22.760	74.000	31.474	5.202	48.169	200	79	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

4.5. Test Photograph

Test Mode : Mode 2: VGA(1360*768@60Hz) Mode

Description : Front View of Radiated Test

Test Mode : Mode 2: VGA(1360*768@60Hz) Mode

Description : Back View of Radiated Test

Test Mode : Mode 2: VGA(1360*768@60Hz) Mode

Description : Front View of High Frequency Radiated Test

Test Mode : Mode 2: VGA(1360*768@60Hz) Mode

Description : Back View of High Frequency Radiated Test

Test Mode : Mode 4: HDMI 1 1080P

Description : Front View of Radiated Test

Test Mode : Mode 4: HDMI 1 1080P

Description : Back View of Radiated Test

Test Mode : Mode 4: HDMI 1 1080P

Description : Front View of High Frequency Radiated Test

Test Mode : Mode 4: HDMI 1 1080P

Description : Back View of High Frequency Radiated Test

Test Mode : Mode 8: USB Mode

Description : Front View of Radiated Test

Test Mode : Mode 8: USB Mode

Description : Back View of Radiated Test

Test Mode : Mode 8: USB Mode

Description : Front View of High Frequency Radiated Test

Test Mode : Mode 8: USB Mode

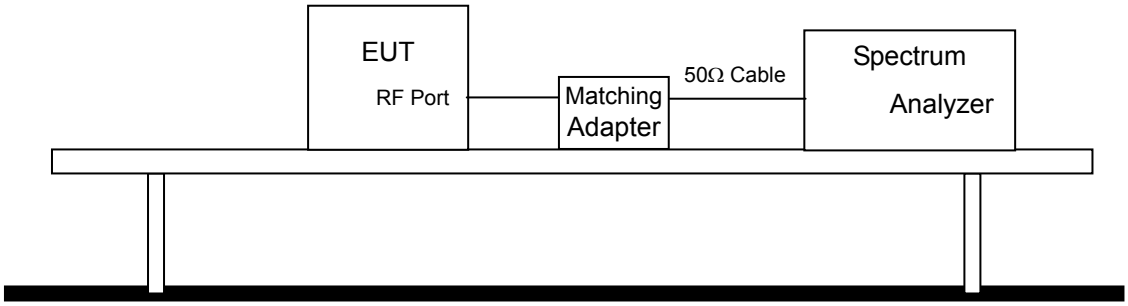
Description : Back View of High Frequency Radiated Test

5. Antenna Power Conduction

5.1. Test Specification

According to EMC Standard: FCC Part 15 Subpart B, ANSI C63.4

5.2. Test Setup



Metallic Ground Plane

5.3. Limit

Antenna Power Conduction Limits for Receivers		
Frequency (MHz)	nW	dB(μV)
30MHz to 1000MHz	2.0	51.76
Above 1000MHz	2.0	71.76
NOTE: For frequencies below or equal to 1000 MHz, a quasi-peak detector shall be used for these measurements; For frequencies above 1000 MHz, both a peak and an average detector shall be used for these measurements.		

5.4. Test Procedure

The EUT and its simulators are placed on a table which is 0.8 meter above ground. Using an impedance-matching device, if necessary, connect a length of coaxial cable between the antenna input port of the switch and the measuring instrument.
For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the folowing table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

5.5. Deviation from Test Standard

No deviation.

5.6. Test Result

The EUT does not contain the RF output terminals, so it need not to perform this test item.

6. Attachment

➢ EUT Photograph

(1) EUT Photo

(2) EUT Photo

(3) EUT Photo

(4) EUT Photo

(5) EUT Photo

(6) EUT Photo

(7) EUT Photo