

FCC EVALUATION REPORT FOR CERTIFICATION

Applicant : LG Electronics Inc.**19-1, Cheongho-ri, Jinwi-myeon,****Pyeongteak-si, Gyeonggi-do, Korea.****Attn: Mr. Sang-Wook Lee, Chief research engineer****Date of Issue : January 27, 2010****Order Number: GETEC-C1-10-029****Test Report Number: GETEC-E3-10-011****Test Site: Gumi College EMC Center****FCC Registration Number: (100749, 443957)****FCC ID.: BEJ19LE5300UE****Applicant: LG Electronics Inc.**

Rule Part(s)	: FCC Part 15 Subpart B
Equipment Class	: Class B computing device peripheral (JBP)
EUT Type	: LED LCD TV/Monitor
Type of Authority	: Certification
Model Name	: 19LE5300-UE
Trade Name	: LG

This equipment has been shown to be in compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003 / Canadian standard ICES-003

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the vest of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested by,**Reviewed by,**

Soon-Hoon Jeong, Engineer
GUMI College EMC center



Jae-Hoon Jeong, Senior Engineer
GUMI College EMC center



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Scope: Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and / or unintentional radiators for compliance with technical rules and regulations of the Federal Communications Commission.

1. General Information

Applicant: LG Electronics Inc.

Applicant Address: 19-1, Cheongho-ri, Jinwi-myeon, Pyeongteak-si, Gyeonggi-do, Korea.

Manufacturer: LG Electronics Inc.

Manufacturer Address: 19-1, Cheongho-ri, Jinwi-myeon, Pyeongteak-si, Gyeonggi-do, Korea.

Contact Person: Mr. Sang-Wook Lee, Chief research engineer

Tel Number: +82-31-610-9623

- **FCC ID.** BEJ19LE5300UE
- **EUT Type** LED LCD TV/Monitor
- **Model Name** 19LE5300-UE
- **Trade Name** LG
- **Serial Number** Prototype
- **Rule Part(s)** FCC Part 15 Subpart B
- **Type of Authority** Certification
- **Test Procedure(s)** ANSI C63.4 (2003) / Canadian standard ICES-003
- **Dates of Test** January 26 ~ 27, 2010
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-10-011
- **Dates of Issue** January 27, 2010



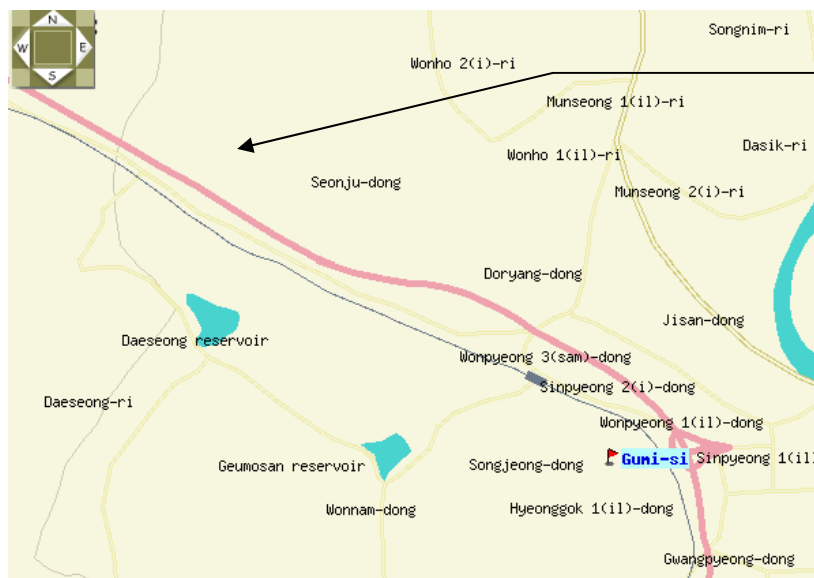
2. Introduction

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Nose Emissions From Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ASNI C63.4-2003) was used in determining radiated and conducted emissions emanating from **LG Electronics Inc. LED LCD TV/Monitor (Model Name: 19LE5300-UE)**

These measurement tests were conducted at **Gumi College EMC Center**.

The site address is 407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.

This test site is one of the highest point of Gumi 1 college at about 200 km away from Seoul city and 40 km away from Daegu city. It is located in the valley surrounded by mountains in all directions where ambient radio signal conditions are quiet and a favorable area to measure the radio frequency interference on open field test site for the computing and ISM devices manufactures. The detailed description of the measurement facility was found to be in compliance with the requirements of §2.948 according to ANSI C63.4 (2003)



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Gyeongbuk 730-711, Korea.
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Fig 1. The map above shows the Gumi College in vicinity area.



3. Product Information

3.1 Description of EUT

The Equipment under Test (EUT) is the **LG Electronics Inc. LED LCD TV/Monitor (Model Name: 19LE5300-UE) FCC ID.: BEJ19LE5300UE**

MODELS		19LE5300 (19LE5300-UE)	22LE5300 (22LE5300-UE)
Dimensions (Width x Height x Depth)	With stand	471.2 x 365.9 x 155.4 mm (18.6 x 14.4 x 6.1 inches)	542.9 x 407.1 x 155.4 mm (21.4 x 16.0 x 6.1 inches)
	Without stand	471.2 x 315.5 x 34.4 mm (18.6 x 12.4 x 1.4 inches)	542.9 x 357.6 x 34.4 mm (21.4 x 14.1 x 1.4 inches)
Weight	With stand	3.4 kg (7.5 lbs)	4.2 kg (9.3 lbs)
	Without stand	3.2 kg (7.1 lbs)	3.9 kg (8.6 lbs)
Power Requirement		19LE5300: DC 24V, 1.6A 22LE5300: DC 24V, 1.7A 26LE5300: DC 24V, 1.8A	
Adapter (DC Power)		In: AC100-240V 50/60Hz Out: DC 24V, 3.42A * Adapter Model No. PA-1820-0 AC/DC Adapter, LITE-ON TECHNOLOGY CORPORATION	
Television System		NTSC-M, ATSC, 64 256 QAM	
Program Coverage		VHF 2-13, UHF 14-69, CATV 1-135, DTV 2-69, CADTV 1-135	
External Antenna Impedance		75 ohm	
Environment condition	Operating Temperature	32 104°F (0 40°C)	
	Operating Humidity	Less than 80%	
	Storage Temperature	-4 140°F (-20 60°C)	
	Storage Humidity	Less than 85%	

-. **Maximum Frequency range** : 667 MHz

-. **Used AC/DC Adapter** : Model name: PA-1820-0
Manufacturer: LITE-ON TECHNOLOGY COPORATION
Ratings: AC 100 V – 240 V~, 50 Hz / 60 Hz
DC 24 V, 3.42 A
Serial number: L20943000520



3.2 Support Equipment / Cables used

3.2.1 Used Support Equipment

Description	Manufacturer	Model Name	S/N & FCC ID
PC	Hewlett Packard	D530	S/N: CNG34800PY FCC ID: DoC
Video card	ATI	ATI RV360(9600)	S/N: SN0402017176 FCC ID: DoC
Keyboard	COMPAQ	166516-AD6	S/N: B13BBOR391006D FCC ID: AQ6-23K15
PS2 mouse	LOGITECH	M-S69	S/N: 334684-108 FCC ID: JNZ211443
Joystick	MICROSOFT	X05-92626	S/N: 9262600296169 FCC ID: DoC
DVD player	LG Electronics Inc	LC-954	S/N: 3850R-Z674K FCC ID: DoC
Headset	GOWOONSORI	GW-500M	S/N: N/A FCC ID: DoC
Printer	Hewlett Packard	970CXI	S/N: MY9B01F1FG FCC ID: DoC
TV signal generator	FLUKE	54200	S/N: 831011 FCC ID: DoC
USB memory stick	SM Electronics	UDD-32M	S/N: N/A FCC ID: DoC

See “Appendix D – Test Setup Photographs” for actual system test set-up

3.2.2 System configuration

Description	Manufacturer	Model Name	S/N & FCC ID
None	-	-	-



3.2.3 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the adapter	1.80 m unshielded
Adapter cable	Connected to the EUT	1.70 m shielded with a ferrite core
RGB(D-Sub) in cable	Connected to the EUT and PC	1.80 m shielded with two ferrite cores
HDMI/DVI in cable	Connected to the EUT and PC	2.00 m shielded
Audio in(RGB/DVI) in cable	Connected to the EUT and PC	1.80 m shielded
AV in cable	Connected to the EUT and DVD player	3.00 m shielded
Component cable	Connected to the EUT and DVD player	2.00 m shielded
Component sound cable	Connected to the EUT and DVD player	3.00 m shielded
Antenna cable	Connected to the EUT and TV signal generator	10.00 m shielded
Headphone cable	Connected to the EUT and headset	2.75 m shielded
RS-232C in (Service & Control) cable	Connected to the EUT and PC	1.30 m shielded with two ferrite cores

3.3 Modification Item(s)

- None



4. Description of tests

4.1 Test Condition

The EUT was installed, arranged and operated in a manner that is most representative of equipment as typically used. The measurements were carried out while varying operating modes and cable positions within typically arrangement to determine maximum emission level.

The representative and worst test mode(s) were noted in the test report.

- Test Voltage / Frequency : AC 120 V / 60 Hz

- Test Mode(s)

- . Monitor mode

Radiated emission: 1 920 × 1 080 / 60 Hz (RGB: Analog, HDMI/DVI: Digital)

Conducted emission: 1 920 × 1 080 / 60 Hz (RGB: Analog, HDMI/DVI: Digital)

1 024 × 768 / 60 Hz (RGB: Analog), 640 × 480 / 60 Hz (RGB: Analog)

◆ Operating test pattern

- . “H” character scrolling mode (Font size: 10)
- . Black background white character
- . Brightness and contrast was adjusted as maximum level
- . 1 kHz sound tone with winamp player

- . USB memory stick play mode

◆ Operating test pattern

- . Continuous playback mode with picture file and 1 kHz audio files.

“The verification report for TV/AV mode would be issued by LG Electronics Inc.”



4.2 Conducted Emission

The Line conducted emission test facility is inside a 4 m × 8 m × 2.5 m shielded enclosure. (FCC Registration No.: 100749)

The EUT was placed on a non-conducting 1.0 m by 1.5 m table, which is 0.8 m in height and 0.4 m away from the vertical wall of the shielded enclosure.

The EUT is powered from the Rohde & Schwarz LISN (ESH2-Z5) and the support equipment is powered from the Rohde & Schwarz LISN (ESH3-Z5). Powers to the LISN are filtered by high-current high insertion loss power line filter.

Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

The RF output of the LISN was connected to the EMI test receiver (Rohde & Schwarz, ESCS30).

The EMI test receiver was scanned from 150 kHz to 30 MHz with 20 ms sweep time to determine the frequency producing the maximum EME from the EUT. The frequency producing the maximum level was re-examined using Quasi-Peak mode of the EMI test receiver.

The bandwidth of Quasi-peak mode was set to 9 kHz. Each emission was maximized consistent with typical applications by varying the configuration of the test sample. Interface cables were connected to the available interface ports of the test unit. The effect of varying the position of cables was investigated to find the configuration that produces maximum diagram emission. Excess cable lengths were bundled at center with 30 cm ~ 40 cm.

Each EME reported was calibrated using the R/S signal generator

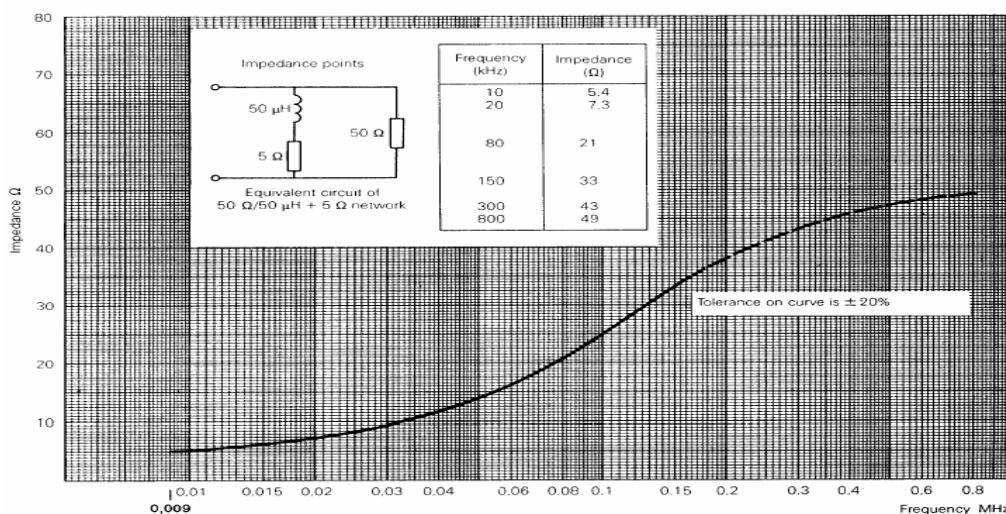


Fig 2. Impedance of LISN



4.3 Radiated Emission

Preliminary measurements were conducted 3 m semi anechoic chamber using broadband antennas to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The technology configuration, mode of operation and turntable azimuth with respect to antenna was note for each frequency found.

Final measurements were made 3 m chamber (FCC registration No.: 443957) and/or 10 m OATS (FCC registration No.: 100749).

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

Each frequency found during pre-scan measurements was re-examined and investigated using EMI test receiver. The detector function was set to CISPR quasi-peak mode average mode and the bandwidth of the receiver was set to 120 kHz or 1 MHz depending on the frequency or type of signal.

The EUT, support equipment and interconnecting cables were reconfigured to the setup producing the maximum emission for the frequency and were placed on top of a 0.8 m high non-metallic 1.0 m × 1.5 m table.

The turntable containing the test sample was rotated; the antenna height was varied 1 to 4 meter and stopped at the azimuth or height producing the maximum emission.

Each EME reported was calibrated using the R/S signal generator

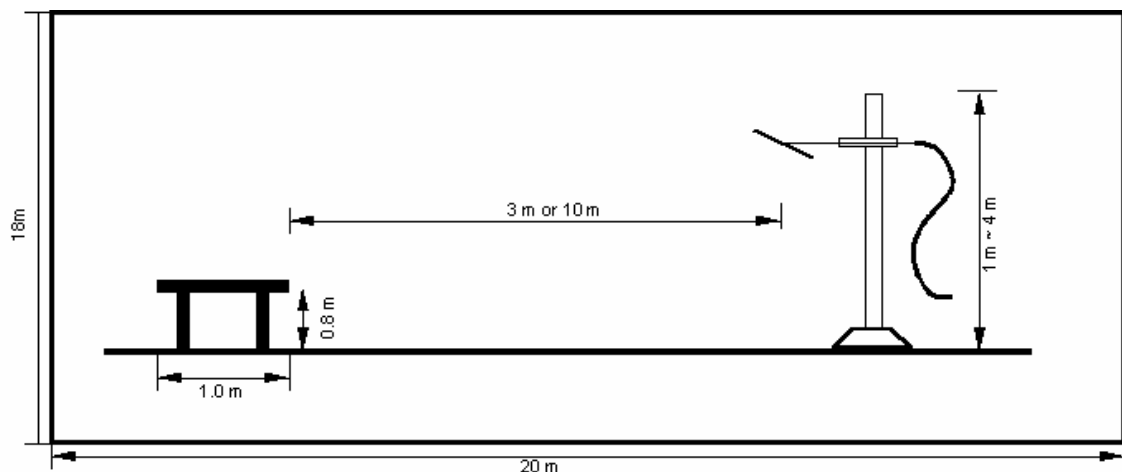


Fig 3. Dimensions of test site.



5. Conducted Emission

5.1 Operating Environment

Temperature : 25 °C
Relative Humidity : 39 % R.H.

5.2 Test Set-up

The conducted emission measurements were performed in the shielded room.

The EUT was placed on wooden table, 0.8 m heights above the floor, 0.4 m from the reference ground plane (GRP) wall and 0.8 m from AMN.

AMN is bonded on horizontal reference ground plane.

The ground plane, which was electrically bonded to the shield room, ground system and all power lines entering the shield room, were filtered.

5.3 Measurement Uncertainty

The measurement uncertainty was calculated in accordance with ISO "Guide to the expression of uncertainty in measurement."

The measurement uncertainty was given with a confidence of 95 %.

Test Items	Uncertainty	Remark
Conducted emission (9 kHz ~ 150 kHz)	± 2.69 dB	Confidence levels of 95 % (k=2)
Conducted emission (150 kHz ~ 30 MHz)	± 4.16 dB	Confidence levels of 95 % (k=2)



5.4 Limit

RFI Conducted	FCC Limit(dB) Class B	
Freq. Range	Quasi-Peak	Average
150 kHz ~ 0.5 MHz	66 ~ 56*	56 ~ 46*
0.5 MHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50
*Limits decreases linearly with the logarithm of frequency.		

5.5 Test Equipment used

Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESCS30	Rohde & Schwarz	EMI test receiver	839809/003	12. 10. 2010
■ - ESH3-Z5	Rohde & Schwarz	LISN	838979/020	12. 10. 2010
■ - ESH2-Z5	Rohde & Schwarz	LISN	829991/009	12. 10. 2010
□ - ISN T8	TESEQ. GmbH	ISN	24568	10. 16. 2010

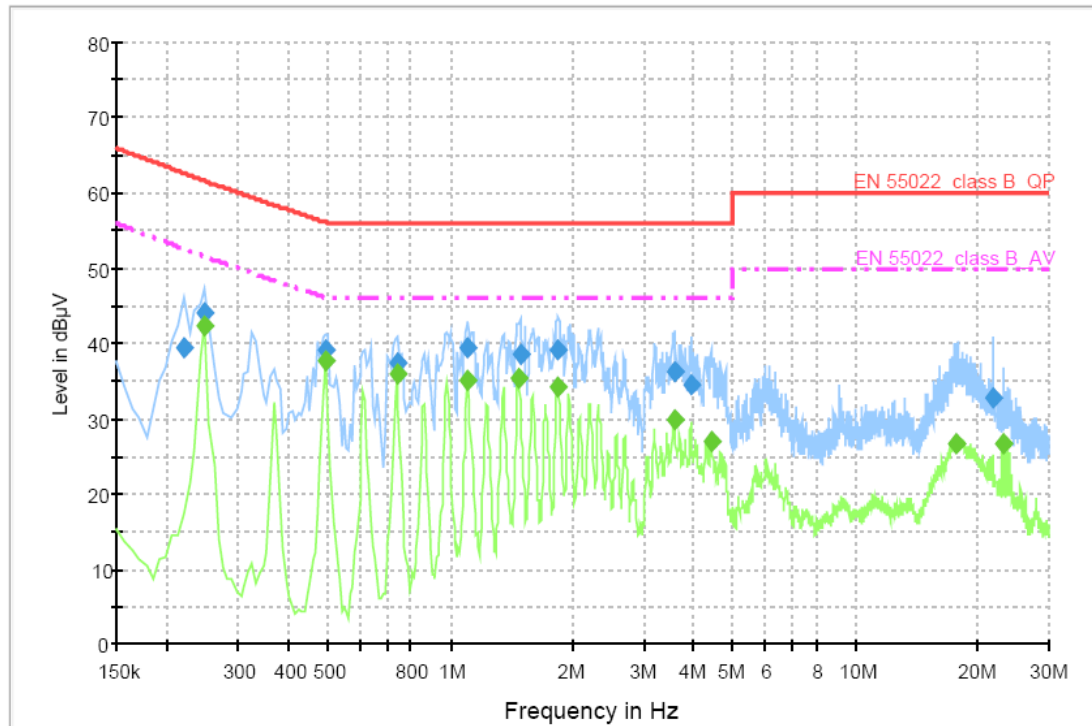
5.6 Test data for Conducted Emission

- . Test Date : January 26, 2010
- . Resolution Bandwidth : 9 kHz
- . Frequency Range : 0.15 MHz ~ 30 MHz



◆ Operating condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.220000	39.3	1000.000	9.000	GND	L1	10.0	23.3	62.6	
0.248000	44.0	1000.000	9.000	GND	L1	10.0	17.6	61.6	
0.493000	39.2	1000.000	9.000	GND	L1	10.0	16.9	56.1	
0.745000	37.3	1000.000	9.000	GND	L1	10.0	18.7	56.0	
1.109000	39.6	1000.000	9.000	GND	L1	10.0	16.4	56.0	
1.487000	38.4	1000.000	9.000	GND	L1	10.1	17.6	56.0	
1.851000	39.2	1000.000	9.000	GND	L1	10.1	16.8	56.0	
3.580000	36.2	1000.000	9.000	GND	L1	10.2	19.8	56.0	
3.951000	34.5	1000.000	9.000	GND	L1	10.2	21.5	56.0	
21.962000	32.7	1000.000	9.000	GND	L1	11.1	27.3	60.0	

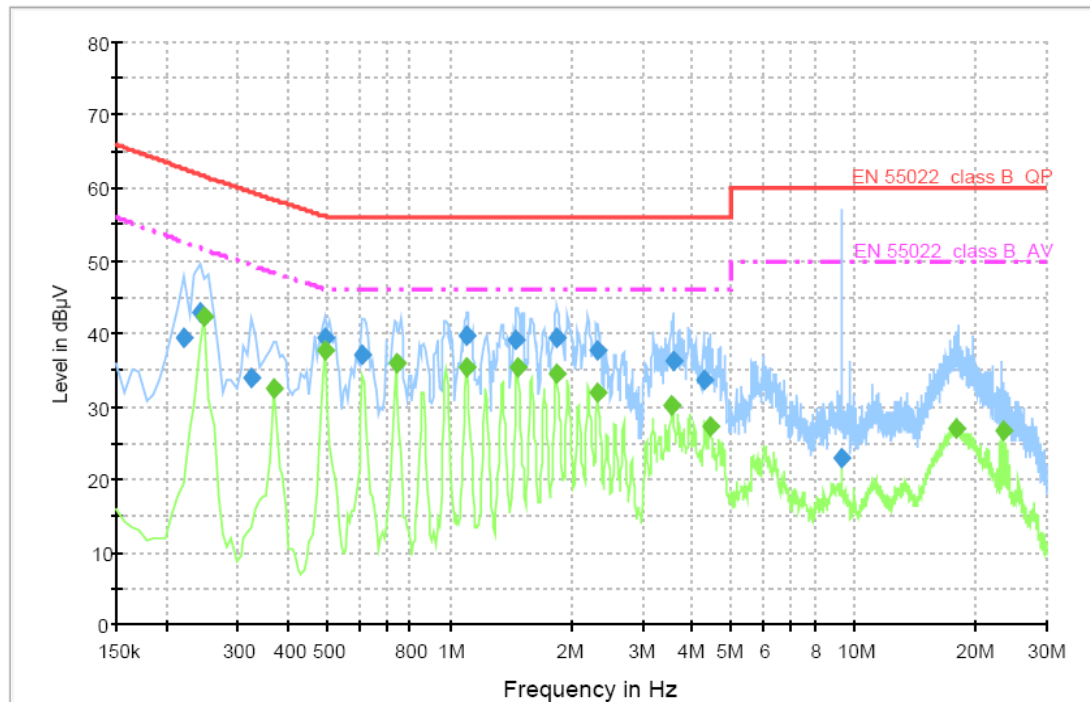
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.248000	42.4	1000.000	9.000	GND	L1	10.0	9.2	51.6	
0.493000	37.7	1000.000	9.000	GND	L1	10.0	8.4	46.1	
0.738000	35.9	1000.000	9.000	GND	L1	10.0	10.1	46.0	
1.102000	35.1	1000.000	9.000	GND	L1	10.0	10.9	46.0	
1.473000	35.4	1000.000	9.000	GND	L1	10.1	10.6	46.0	
1.844000	34.3	1000.000	9.000	GND	L1	10.1	11.7	46.0	
3.566000	29.8	1000.000	9.000	GND	L1	10.2	16.2	46.0	
4.406000	27.0	1000.000	9.000	GND	L1	10.2	19.0	46.0	
17.839000	26.6	1000.000	9.000	GND	L1	10.9	23.4	50.0	
23.187000	26.7	1000.000	9.000	GND	L1	11.2	23.3	50.0	

< Fig 4. Conducted emission result (Live line)>



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.220000	39.5	1000.000	9.000	GND	N	10.0	23.1	62.6	
0.241000	42.8	1000.000	9.000	GND	N	10.0	19.1	61.9	
0.325000	34.0	1000.000	9.000	GND	N	10.0	25.4	59.4	
0.493000	39.3	1000.000	9.000	GND	N	10.0	16.8	56.1	
0.612000	37.1	1000.000	9.000	GND	N	10.0	18.9	56.0	
1.109000	39.6	1000.000	9.000	GND	N	10.1	16.4	56.0	
1.466000	39.2	1000.000	9.000	GND	N	10.1	16.8	56.0	
1.851000	39.3	1000.000	9.000	GND	N	10.1	16.7	56.0	
2.334000	37.6	1000.000	9.000	GND	N	10.1	18.4	56.0	
3.573000	36.2	1000.000	9.000	GND	N	10.2	19.8	56.0	
4.287000	33.6	1000.000	9.000	GND	N	10.2	22.4	56.0	
9.369000	22.8	1000.000	9.000	GND	N	10.4	37.2	60.0	

Final Measurement Detector 2

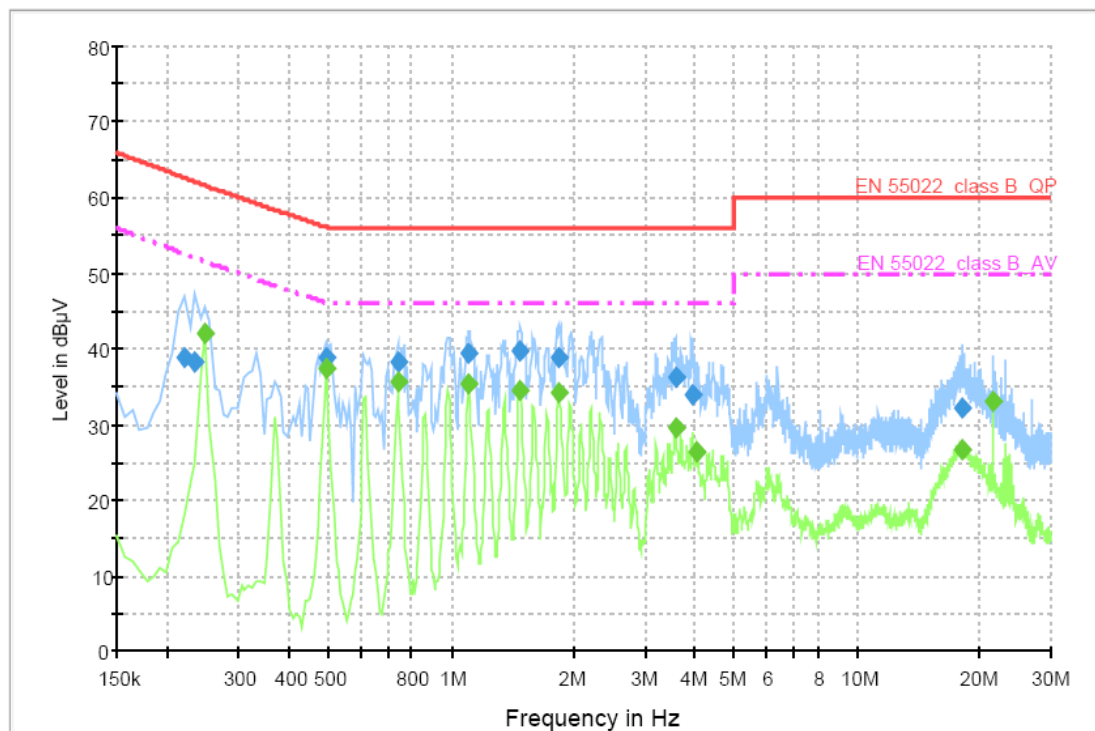
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.248000	42.4	1000.000	9.000	GND	N	10.0	9.2	51.6	
0.367000	32.5	1000.000	9.000	GND	N	10.0	15.9	48.4	
0.493000	37.6	1000.000	9.000	GND	N	10.0	8.5	46.1	
0.738000	36.0	1000.000	9.000	GND	N	10.0	10.0	46.0	
1.109000	35.4	1000.000	9.000	GND	N	10.1	10.6	46.0	
1.473000	35.5	1000.000	9.000	GND	N	10.1	10.5	46.0	
1.844000	34.5	1000.000	9.000	GND	N	10.1	11.5	46.0	
2.334000	31.8	1000.000	9.000	GND	N	10.1	14.2	46.0	
3.545000	30.0	1000.000	9.000	GND	N	10.2	16.0	46.0	
4.420000	27.2	1000.000	9.000	GND	N	10.2	18.8	46.0	
17.993000	26.9	1000.000	9.000	GND	N	10.7	23.1	50.0	
23.488000	26.6	1000.000	9.000	GND	N	10.8	23.4	50.0	

< Fig 5. Conducted emission result (Neutral line)>



◆ Operating condition: 1 024 × 768 / 60 Hz (RGB: Analog)

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.220000	39.0	1000.000	9.000	GND	L1	10.0	23.6	62.6	
0.234000	38.1	1000.000	9.000	GND	L1	10.0	24.0	62.1	
0.493000	38.7	1000.000	9.000	GND	L1	10.0	17.4	56.1	
0.738000	38.2	1000.000	9.000	GND	L1	10.0	17.8	56.0	
1.109000	39.3	1000.000	9.000	GND	L1	10.0	16.7	56.0	
1.480000	39.7	1000.000	9.000	GND	L1	10.1	16.3	56.0	
1.837000	39.0	1000.000	9.000	GND	L1	10.1	17.0	56.0	
3.566000	36.2	1000.000	9.000	GND	L1	10.2	19.8	56.0	
3.958000	34.0	1000.000	9.000	GND	L1	10.2	22.0	56.0	
18.077000	32.2	1000.000	9.000	GND	L1	10.9	27.8	60.0	

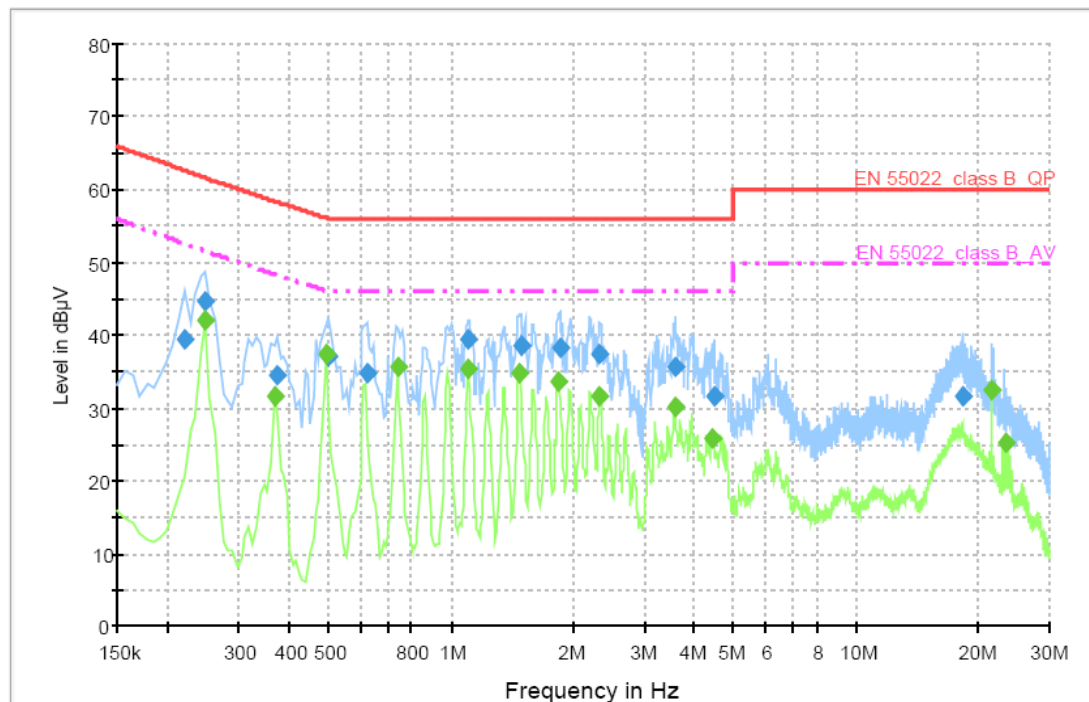
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.248000	42.2	1000.000	9.000	GND	L1	10.0	9.4	51.6	
0.493000	37.3	1000.000	9.000	GND	L1	10.0	8.8	46.1	
0.738000	35.5	1000.000	9.000	GND	L1	10.0	10.5	46.0	
1.109000	35.3	1000.000	9.000	GND	L1	10.0	10.7	46.0	
1.480000	34.6	1000.000	9.000	GND	L1	10.1	11.4	46.0	
1.844000	34.1	1000.000	9.000	GND	L1	10.1	11.9	46.0	
3.573000	29.5	1000.000	9.000	GND	L1	10.2	16.5	46.0	
4.049000	26.3	1000.000	9.000	GND	L1	10.2	19.7	46.0	
18.091000	26.8	1000.000	9.000	GND	L1	10.9	23.2	50.0	
21.598000	33.2	1000.000	9.000	GND	L1	11.1	16.8	50.0	

< Fig 6. Conducted emission result (Live line)>



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.220000	39.3	1000.000	9.000	GND	N	10.0	23.3	62.6	
0.248000	44.7	1000.000	9.000	GND	N	10.0	17.0	61.6	
0.374000	34.4	1000.000	9.000	GND	N	10.0	23.9	58.3	
0.500000	37.2	1000.000	9.000	GND	N	10.0	18.8	56.0	
0.626000	34.8	1000.000	9.000	GND	N	10.0	21.2	56.0	
1.109000	39.4	1000.000	9.000	GND	N	10.1	16.6	56.0	
1.487000	38.6	1000.000	9.000	GND	N	10.1	17.4	56.0	
1.858000	38.2	1000.000	9.000	GND	N	10.1	17.8	56.0	
2.341000	37.4	1000.000	9.000	GND	N	10.1	18.6	56.0	
3.587000	35.6	1000.000	9.000	GND	N	10.2	20.4	56.0	
4.462000	31.6	1000.000	9.000	GND	N	10.2	24.4	56.0	
18.273000	31.7	1000.000	9.000	GND	N	10.7	28.3	60.0	

Final Measurement Detector 2

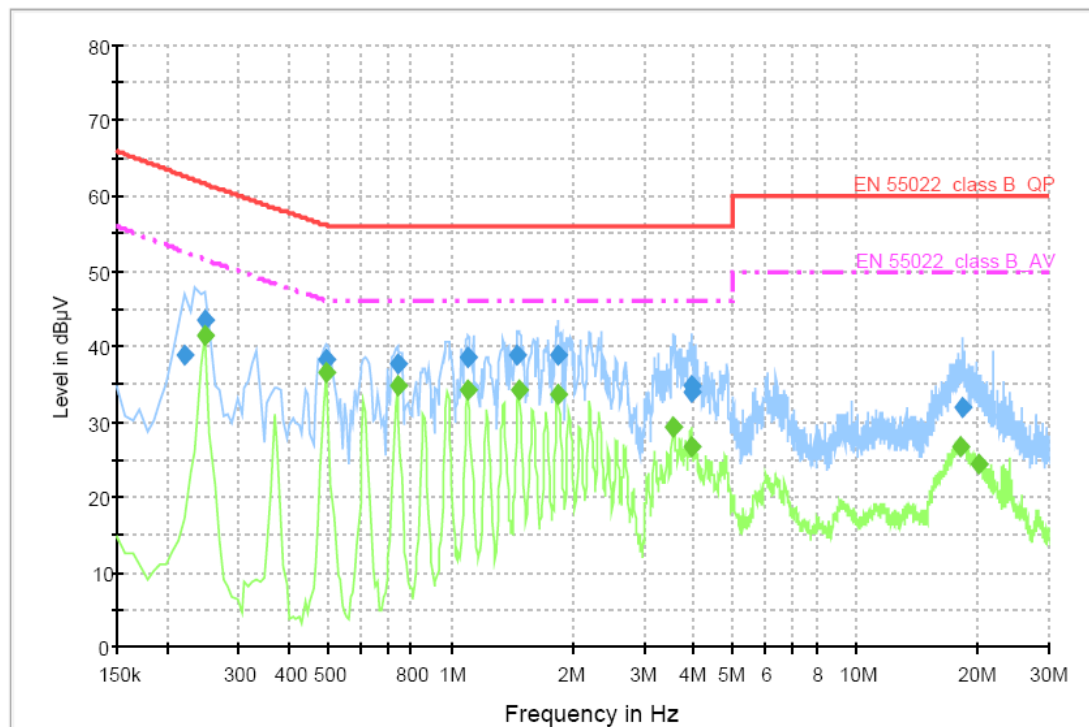
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.248000	42.2	1000.000	9.000	GND	N	10.0	9.4	51.6	
0.367000	31.7	1000.000	9.000	GND	N	10.0	16.7	48.4	
0.493000	37.3	1000.000	9.000	GND	N	10.0	8.8	46.1	
0.738000	35.7	1000.000	9.000	GND	N	10.0	10.3	46.0	
1.109000	35.4	1000.000	9.000	GND	N	10.1	10.6	46.0	
1.480000	34.7	1000.000	9.000	GND	N	10.1	11.3	46.0	
1.837000	33.7	1000.000	9.000	GND	N	10.1	12.3	46.0	
2.334000	31.5	1000.000	9.000	GND	N	10.1	14.5	46.0	
3.566000	30.0	1000.000	9.000	GND	N	10.2	16.0	46.0	
4.441000	25.7	1000.000	9.000	GND	N	10.2	20.3	46.0	
21.598000	32.4	1000.000	9.000	GND	N	10.8	17.6	50.0	
23.495000	25.3	1000.000	9.000	GND	N	10.8	24.7	50.0	

< Fig 7. Conducted emission result (Neutral line)>



◆ Operating condition: 640 × 480 / 60 Hz (RGB: Analog)

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.220000	38.8	1000.000	9.000	GND	L1	10.0	23.8	62.6	
0.248000	43.4	1000.000	9.000	GND	L1	10.0	18.2	61.6	
0.493000	38.3	1000.000	9.000	GND	L1	10.0	17.8	56.1	
0.738000	37.6	1000.000	9.000	GND	L1	10.0	18.4	56.0	
1.109000	38.7	1000.000	9.000	GND	L1	10.0	17.3	56.0	
1.466000	38.7	1000.000	9.000	GND	L1	10.1	17.3	56.0	
1.844000	38.9	1000.000	9.000	GND	L1	10.1	17.1	56.0	
3.930000	34.9	1000.000	9.000	GND	L1	10.2	21.1	56.0	
3.958000	33.8	1000.000	9.000	GND	L1	10.2	22.2	56.0	
18.441000	31.9	1000.000	9.000	GND	L1	10.9	28.1	60.0	

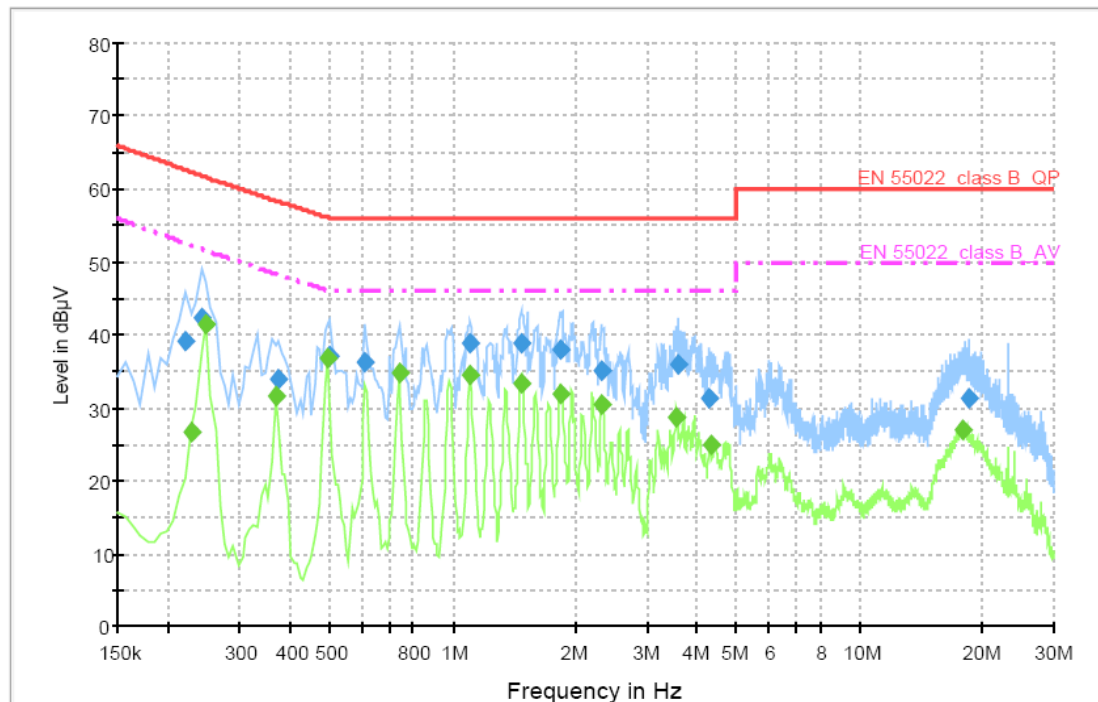
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.248000	41.4	1000.000	9.000	GND	L1	10.0	10.2	51.6	
0.493000	36.5	1000.000	9.000	GND	L1	10.0	9.6	46.1	
0.738000	34.8	1000.000	9.000	GND	L1	10.0	11.2	46.0	
1.102000	34.2	1000.000	9.000	GND	L1	10.0	11.8	46.0	
1.473000	34.3	1000.000	9.000	GND	L1	10.1	11.7	46.0	
1.844000	33.6	1000.000	9.000	GND	L1	10.1	12.4	46.0	
3.559000	29.3	1000.000	9.000	GND	L1	10.2	16.7	46.0	
3.958000	26.7	1000.000	9.000	GND	L1	10.2	19.3	46.0	
18.231000	26.7	1000.000	9.000	GND	L1	10.9	23.3	50.0	
20.093000	24.3	1000.000	9.000	GND	L1	11.0	25.7	50.0	

< Fig 8. Conducted emission result (Live line)>



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.220000	39.1	1000.000	9.000	GND	N	10.0	23.6	62.6	
0.241000	42.3	1000.000	9.000	GND	N	10.0	19.6	61.9	
0.374000	33.8	1000.000	9.000	GND	N	10.0	24.5	58.3	
0.500000	37.0	1000.000	9.000	GND	N	10.0	19.0	56.0	
0.612000	36.3	1000.000	9.000	GND	N	10.0	19.7	56.0	
1.109000	38.8	1000.000	9.000	GND	N	10.1	17.2	56.0	
1.473000	38.8	1000.000	9.000	GND	N	10.1	17.2	56.0	
1.837000	38.0	1000.000	9.000	GND	N	10.1	18.0	56.0	
2.320000	35.1	1000.000	9.000	GND	N	10.1	20.9	56.0	
3.587000	35.8	1000.000	9.000	GND	N	10.2	20.2	56.0	
4.287000	31.3	1000.000	9.000	GND	N	10.2	24.7	56.0	
18.602000	31.4	1000.000	9.000	GND	N	10.7	28.6	60.0	

Final Measurement Detector 2

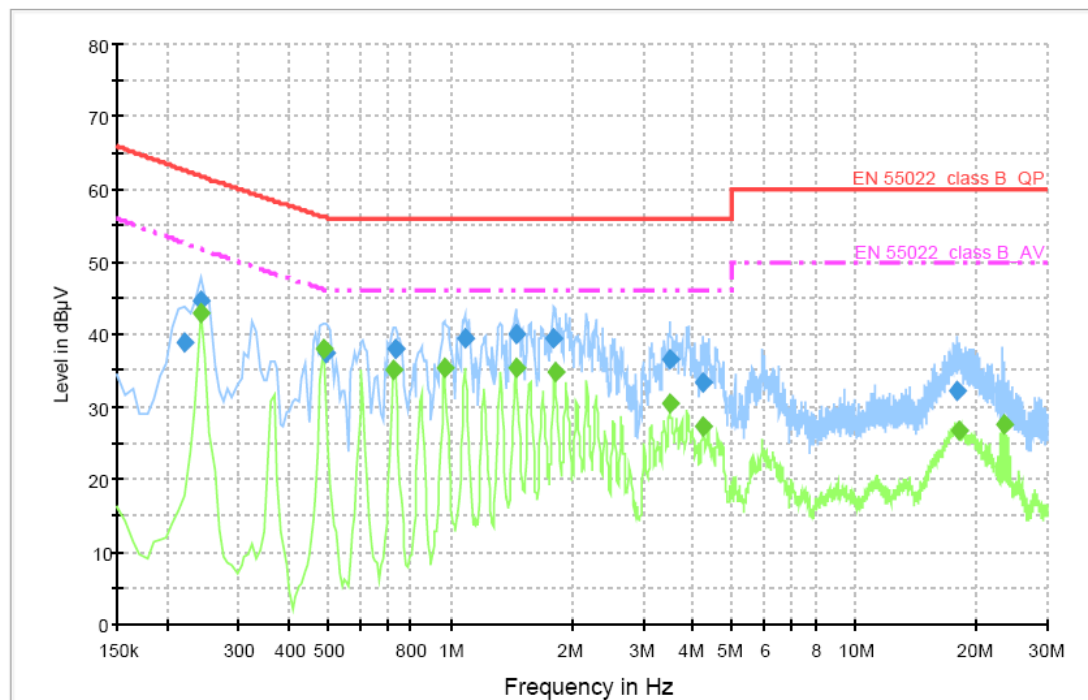
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.227000	26.8	1000.000	9.000	GND	N	10.0	25.5	52.3	
0.248000	41.6	1000.000	9.000	GND	N	10.0	10.0	51.6	
0.367000	31.5	1000.000	9.000	GND	N	10.0	16.9	48.4	
0.493000	36.7	1000.000	9.000	GND	N	10.0	9.4	46.1	
0.738000	34.9	1000.000	9.000	GND	N	10.0	11.1	46.0	
1.109000	34.6	1000.000	9.000	GND	N	10.1	11.4	46.0	
1.473000	33.3	1000.000	9.000	GND	N	10.1	12.7	46.0	
1.837000	31.7	1000.000	9.000	GND	N	10.1	14.3	46.0	
2.334000	30.3	1000.000	9.000	GND	N	10.1	15.7	46.0	
3.559000	28.8	1000.000	9.000	GND	N	10.2	17.2	46.0	
4.301000	25.1	1000.000	9.000	GND	N	10.2	20.9	46.0	
17.923000	26.8	1000.000	9.000	GND	N	10.7	23.2	50.0	

< Fig 9. Conducted emission result (Neutral line)>



◆ Operating condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)

Voltage with 4-Line-LISN L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.220000	38.7	1000.000	9.000	GND	L1	10.0	23.9	62.6	
0.241000	44.5	1000.000	9.000	GND	L1	10.0	17.4	61.9	
0.493000	37.5	1000.000	9.000	GND	L1	10.0	18.6	56.1	
0.731000	38.1	1000.000	9.000	GND	L1	10.0	17.9	56.0	
1.088000	39.4	1000.000	9.000	GND	L1	10.0	16.6	56.0	
1.452000	39.9	1000.000	9.000	GND	L1	10.1	16.1	56.0	
1.809000	39.4	1000.000	9.000	GND	L1	10.1	16.6	56.0	
3.510000	36.5	1000.000	9.000	GND	L1	10.2	19.5	56.0	
4.231000	33.4	1000.000	9.000	GND	L1	10.2	22.6	56.0	
17.958000	32.3	1000.000	9.000	GND	L1	10.9	27.7	60.0	

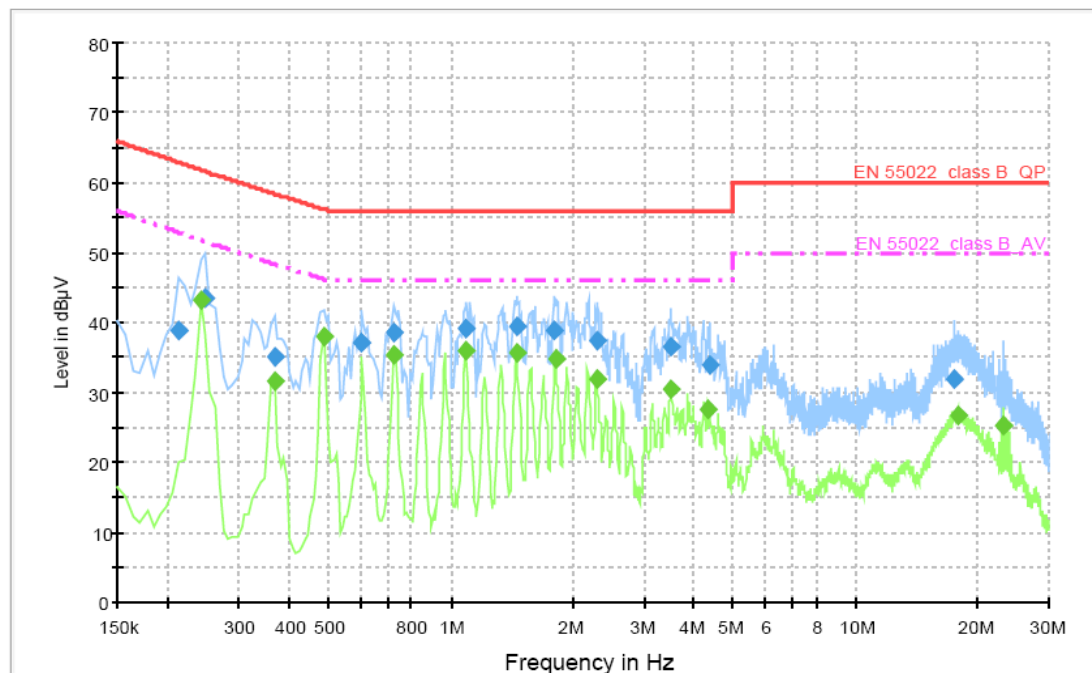
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.241000	42.9	1000.000	9.000	GND	L1	10.0	8.9	51.8	
0.486000	37.9	1000.000	9.000	GND	L1	10.0	8.4	46.2	
0.724000	35.2	1000.000	9.000	GND	L1	10.0	10.8	46.0	
0.969000	35.4	1000.000	9.000	GND	L1	10.0	10.6	46.0	
1.452000	35.4	1000.000	9.000	GND	L1	10.1	10.6	46.0	
1.816000	34.7	1000.000	9.000	GND	L1	10.1	11.3	46.0	
3.503000	30.4	1000.000	9.000	GND	L1	10.2	15.6	46.0	
4.231000	27.1	1000.000	9.000	GND	L1	10.2	18.9	46.0	
18.091000	26.8	1000.000	9.000	GND	L1	10.9	23.2	50.0	
23.488000	27.6	1000.000	9.000	GND	L1	11.2	22.4	50.0	

< Fig 10. Conducted emission result (Live line)>



Voltage with 4-Line-LISN N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.213000	38.8	1000.000	9.000	GND	N	10.0	24.1	62.9	
0.248000	43.6	1000.000	9.000	GND	N	10.0	18.0	61.6	
0.367000	35.1	1000.000	9.000	GND	N	10.0	23.3	58.4	
0.605000	37.2	1000.000	9.000	GND	N	10.0	18.8	56.0	
0.724000	38.5	1000.000	9.000	GND	N	10.0	17.5	56.0	
1.095000	39.1	1000.000	9.000	GND	N	10.1	16.9	56.0	
1.459000	39.5	1000.000	9.000	GND	N	10.1	16.5	56.0	
1.802000	38.8	1000.000	9.000	GND	N	10.1	17.2	56.0	
2.306000	37.4	1000.000	9.000	GND	N	10.1	18.6	56.0	
3.510000	36.5	1000.000	9.000	GND	N	10.2	19.5	56.0	
4.357000	33.9	1000.000	9.000	GND	N	10.2	22.1	56.0	
17.587000	31.9	1000.000	9.000	GND	N	10.7	28.1	60.0	

Final Measurement Detector 2

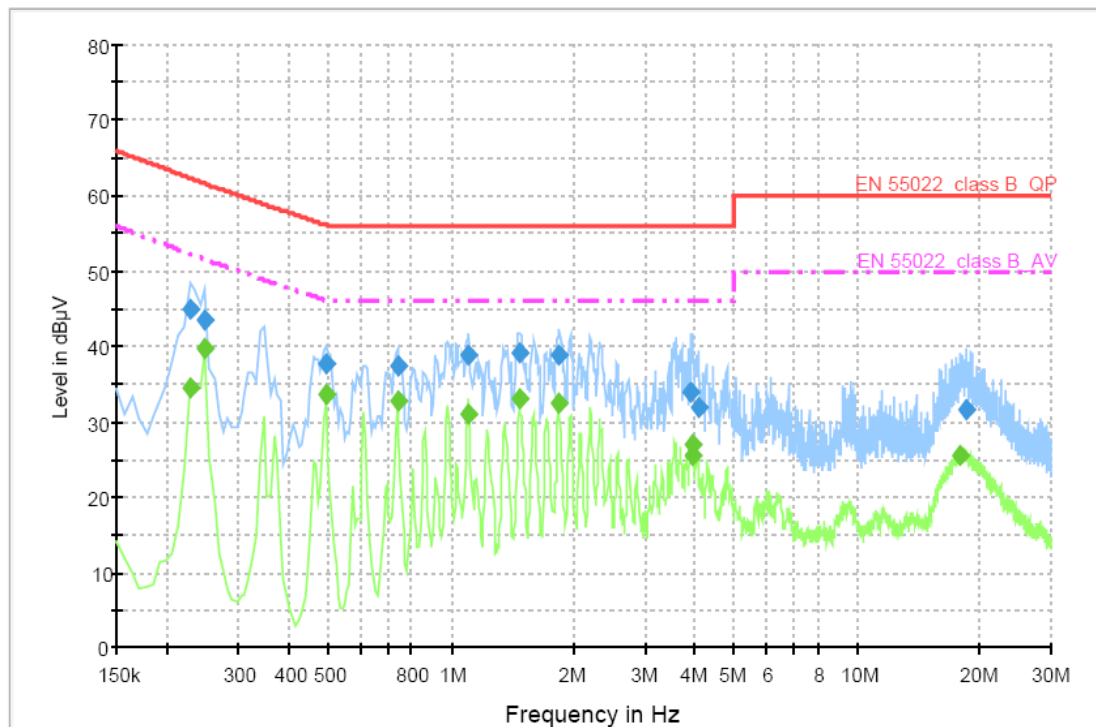
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.241000	43.2	1000.000	9.000	GND	N	10.0	8.6	51.8	
0.367000	31.6	1000.000	9.000	GND	N	10.0	16.8	48.4	
0.486000	38.0	1000.000	9.000	GND	N	10.0	8.2	46.2	
0.724000	35.4	1000.000	9.000	GND	N	10.0	10.6	46.0	
1.088000	35.9	1000.000	9.000	GND	N	10.1	10.1	46.0	
1.452000	35.6	1000.000	9.000	GND	N	10.1	10.4	46.0	
1.816000	34.9	1000.000	9.000	GND	N	10.1	11.1	46.0	
2.292000	31.9	1000.000	9.000	GND	N	10.1	14.1	46.0	
3.510000	30.4	1000.000	9.000	GND	N	10.2	15.6	46.0	
4.343000	27.7	1000.000	9.000	GND	N	10.2	18.3	46.0	
17.944000	26.6	1000.000	9.000	GND	N	10.7	23.4	50.0	
23.180000	25.3	1000.000	9.000	GND	N	10.8	24.7	50.0	

< Fig 11. Conducted emission result (Neutral line)>



◆ Operating condition: USB play mode

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.227000	45.0	1000.000	9.000	GND	L1	10.0	17.4	62.4	
0.248000	43.3	1000.000	9.000	GND	L1	10.0	18.3	61.6	
0.493000	37.8	1000.000	9.000	GND	L1	10.0	18.3	56.1	
0.738000	37.4	1000.000	9.000	GND	L1	10.0	18.6	56.0	
1.109000	38.7	1000.000	9.000	GND	L1	10.0	17.3	56.0	
1.480000	39.1	1000.000	9.000	GND	L1	10.1	16.9	56.0	
1.844000	38.9	1000.000	9.000	GND	L1	10.1	17.1	56.0	
3.895000	33.8	1000.000	9.000	GND	L1	10.2	22.2	56.0	
4.077000	32.0	1000.000	9.000	GND	L1	10.2	24.0	56.0	
18.609000	31.7	1000.000	9.000	GND	L1	10.9	28.3	60.0	

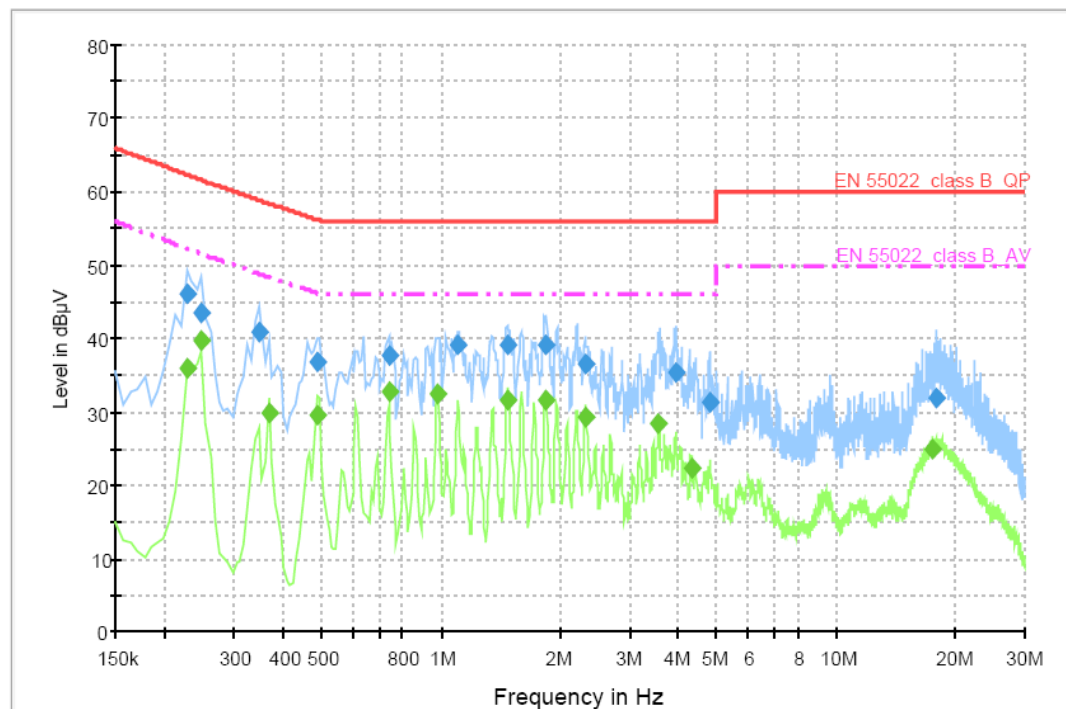
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.227000	34.4	1000.000	9.000	GND	L1	10.0	17.9	52.3	
0.248000	39.6	1000.000	9.000	GND	L1	10.0	12.0	51.6	
0.493000	33.6	1000.000	9.000	GND	L1	10.0	12.5	46.1	
0.738000	32.8	1000.000	9.000	GND	L1	10.0	13.2	46.0	
1.109000	31.0	1000.000	9.000	GND	L1	10.0	15.0	46.0	
1.473000	32.9	1000.000	9.000	GND	L1	10.1	13.1	46.0	
1.844000	32.4	1000.000	9.000	GND	L1	10.1	13.6	46.0	
3.937000	26.8	1000.000	9.000	GND	L1	10.2	19.2	46.0	
3.951000	25.4	1000.000	9.000	GND	L1	10.2	20.6	46.0	
17.986000	25.5	1000.000	9.000	GND	L1	10.9	24.5	50.0	

< Fig 12. Conducted emission result (Live line)>



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.227000	46.1	1000.000	9.000	GND	N	10.0	16.3	62.4	
0.248000	43.6	1000.000	9.000	GND	N	10.0	18.0	61.6	
0.346000	40.8	1000.000	9.000	GND	N	10.0	18.1	58.9	
0.486000	36.8	1000.000	9.000	GND	N	10.0	19.4	56.2	
0.738000	37.8	1000.000	9.000	GND	N	10.0	18.2	56.0	
1.109000	39.0	1000.000	9.000	GND	N	10.1	17.0	56.0	
1.473000	39.1	1000.000	9.000	GND	N	10.1	16.9	56.0	
1.851000	39.1	1000.000	9.000	GND	N	10.1	16.9	56.0	
2.327000	36.6	1000.000	9.000	GND	N	10.1	19.4	56.0	
3.937000	35.2	1000.000	9.000	GND	N	10.2	20.8	56.0	
4.777000	31.4	1000.000	9.000	GND	N	10.2	24.6	56.0	
17.895000	31.7	1000.000	9.000	GND	N	10.7	28.3	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.227000	35.9	1000.000	9.000	GND	N	10.0	16.4	52.3	
0.248000	39.6	1000.000	9.000	GND	N	10.0	12.0	51.6	
0.367000	29.7	1000.000	9.000	GND	N	10.0	18.7	48.4	
0.486000	29.5	1000.000	9.000	GND	N	10.0	16.7	46.2	
0.738000	32.8	1000.000	9.000	GND	N	10.0	13.2	46.0	
0.983000	32.5	1000.000	9.000	GND	N	10.0	13.5	46.0	
1.473000	31.6	1000.000	9.000	GND	N	10.1	14.4	46.0	
1.844000	31.5	1000.000	9.000	GND	N	10.1	14.5	46.0	
2.327000	29.2	1000.000	9.000	GND	N	10.1	16.8	46.0	
3.559000	28.4	1000.000	9.000	GND	N	10.2	17.6	46.0	
4.308000	22.4	1000.000	9.000	GND	N	10.2	23.6	46.0	
17.587000	25.1	1000.000	9.000	GND	N	10.7	24.9	50.0	

< Fig 13. Conducted emission result (Neutral line)>



6. Radiated Emission

6.1 Operating Environment

Temperature : 21 °C
Relative Humidity : 43 % R.H.

6.2 Test Set-up

A preliminary and final measurement was at 3 m anechoic chamber.

The EUT was placed on a non-conductive turntable approximately 0.8 m above the ground plane.

The turntable with EUT was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels.

This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

6.3 Measurement Uncertainty

The measurement uncertainty was calculated in accordance with ISO “Guide to the expression of uncertainty in measurement”.

The measurement uncertainty was given with a confidence of 95 %.

Test Items	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 3 m, Vertical)	± 3.54 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	± 3.49 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	± 3.85 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	± 3.76 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 10 m, Vertical)	± 3.21 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 10 m, Horizontal)	± 3.32 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 10 m, Vertical)	± 3.77 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 10 m, Horizontal)	± 3.84 dB	Confidence levels of 95 % (k=2)



6.4 Limit

Frequency (MHz)	FCC Limit @ 3 m. dB μ V/m	CISPR Limit @ 10 m. dB μ V/m
30 ~ 88	40.0	30.0
88 ~ 216	43.5	30.0
216 ~ 230	46.0	30.0
230 ~ 960	46.0	37.0
960 ~ 1 000	54.0	37.0
> 1 000	54.0	No Specified limit

6.5 Test Equipment used

Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESI	Rohde & Schwarz	EMI test receiver	830482/010	12. 11. 2010
■ - VULB9160	Schwarzbeck	Broadband Test Antenna	3099	07. 21. 2011
■ - BBHA9120D	Schwarzbeck	Horn ANT	597	12. 18. 2010
■ - MCU066	matur GmbH	Position Controller	1390306	N/A
■ - TT2.5SI	matur GmbH	Turntable	1390307	N/A
■ - AM 4.0	matur GmbH	Antenna Mast	1390308	N/A
■ - AFS 44 00101800-25-10P-44	MITEQ	Preamplifier	1258943	11. 12. 2010



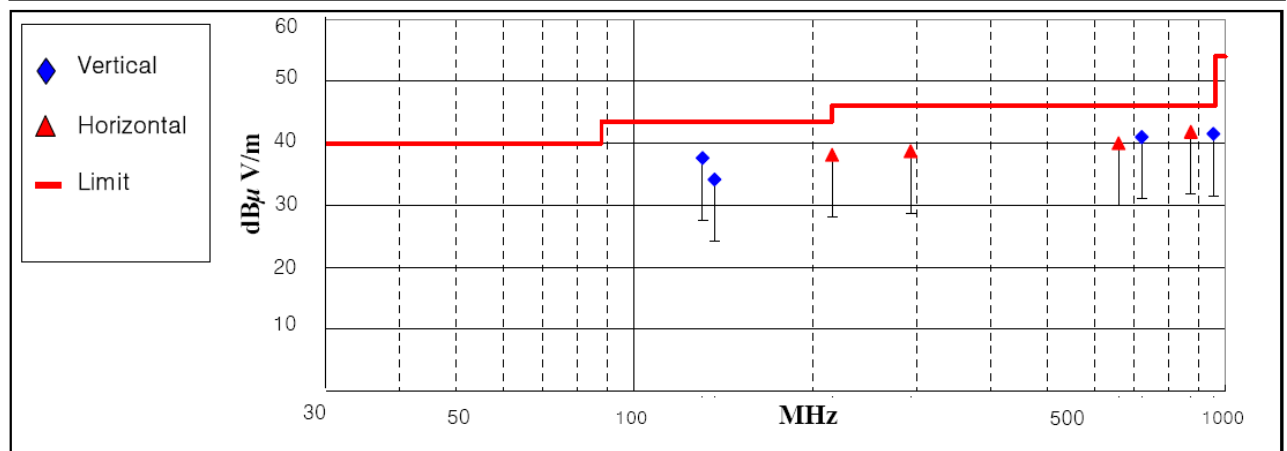
6.6 Test data for Radiated Emission

- Test Date : January 26, 2010
- Resolution Bandwidth : 120 kHz/1 MHz
- Frequency Range : 30 MHz ~ 5 000 MHz
- Measurement Distance : 3 m
- Note : The highest frequency of the internal source of the EUT is between 500 MHz and 1 000 MHz (667 MHz). The measurement was made up to 5 000 MHz.

◆ Operating Condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)

Detector mode: Quasi- peak detector mode

Frequency (MHz)	Measurement Level				Limit (dBμ V/m)	Margin (dB)	Positioning System		
	Reading	Antenna	Cable	Test Result			Pol.	Height	Angle
	Value(dBμ V)	Factor(dB/m)	Loss(dB)	(dBμ V/m)			(H/V)	(cm)	(°)
130.50	22.08	12.07	3.46	37.61	43.50	5.89	V	100	93
136.72	18.11	12.48	3.53	34.12	43.50	9.38	V	100	95
216.00	23.60	10.00	4.50	38.10	46.00	7.90	H	241	0
293.43	20.12	13.05	5.53	38.70	46.00	7.30	H	100	0
659.35	11.12	21.13	7.75	40.00	46.00	6.00	H	152	185
720.85	10.88	22.04	8.11	41.03	46.00	4.97	V	100	0
873.85	8.91	23.93	9.01	41.85	46.00	4.15	H	104	341
953.76	6.42	25.54	9.54	41.50	46.00	4.50	V	100	358

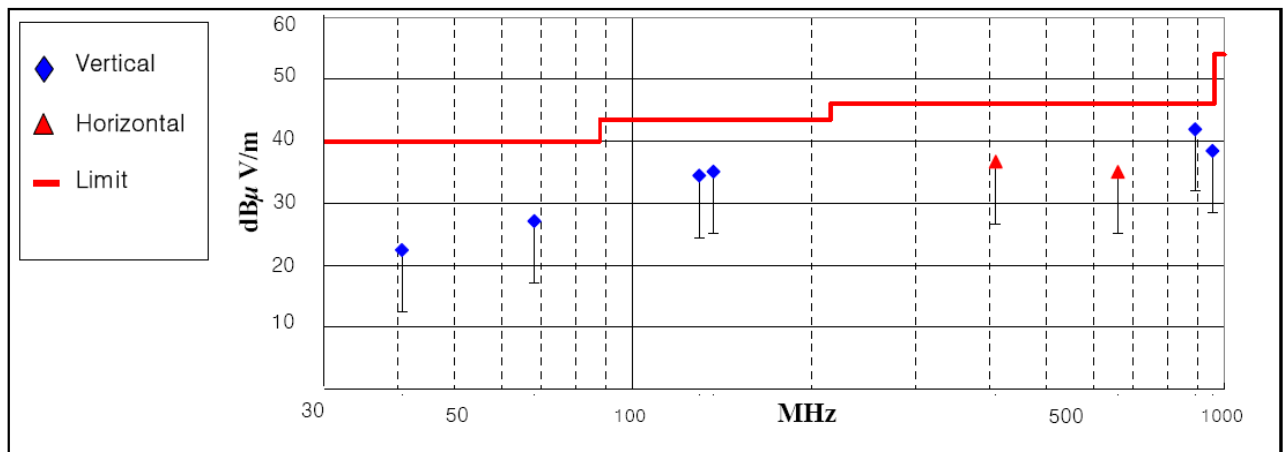


< Fig 14. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Detector mode: Quasi- peak detector mode

Frequency (MHz)	Measurement Level				Limit (dBμ V/m)	Margin (dB)	Positioning System		
	Reading	Antenna	Cable	Test Result			Pol.	Height	Angle
	Value(dBμ V)	Factor(dB/m)	Loss(dB)	(dBμ V/m)			V	(cm)	(°)
40.72	8.32	11.99	2.10	22.41	40.00	17.59	V	100	93
68.14	13.89	10.56	2.64	27.09	40.00	12.91	V	100	301
129.46	18.98	12.00	3.45	34.43	43.50	9.07	V	108	79
136.80	19.07	12.48	3.53	35.08	43.50	8.42	V	100	93
410.40	13.57	15.84	7.29	36.70	46.00	9.30	H	100	270
659.64	6.15	21.14	7.76	35.05	46.00	10.95	H	195	277
891.00	8.71	24.11	9.11	41.93	46.00	4.07	V	100	21
953.69	3.37	25.54	9.54	38.45	46.00	7.55	V	103	0

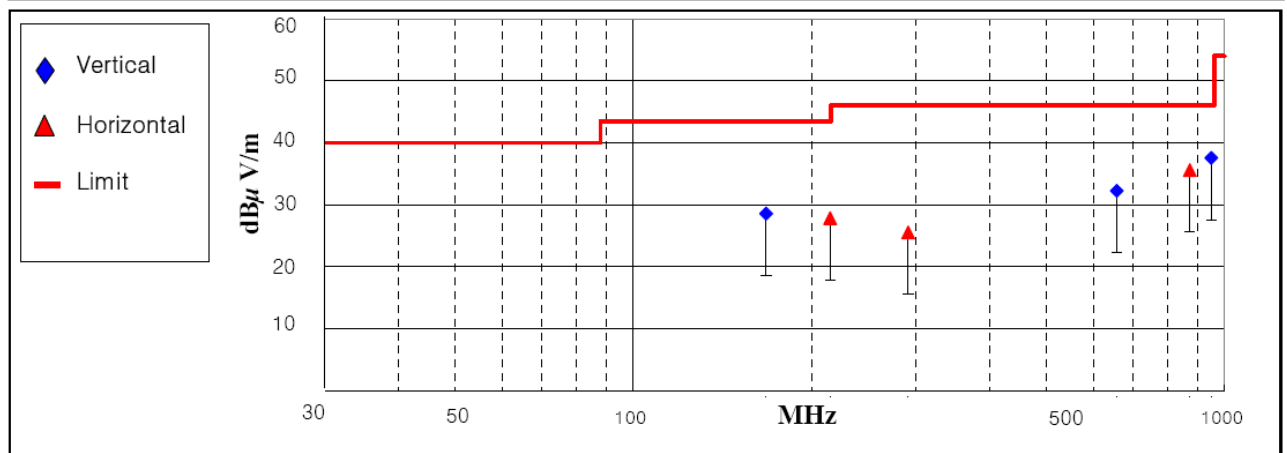


< Fig 15. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ Operating Condition: USB play mode
Detector mode: Quasi- peak detector mode

Frequency (MHz)	Measurement Level				Limit (dB μ V/m)	Margin (dB)	Positioning System		
	Reading	Antenna	Cable	Test Result			Pol.	Height	Angle
	Value(dB μ V)	Factor(dB/m)	Loss(dB)	(dB μ V/m)			(H/V)	(cm)	(°)
167.80	12.29	12.41	3.89	28.59	43.50	14.91	V	100	324
215.30	13.38	9.96	4.49	27.83	43.50	15.67	H	211	0
291.64	7.05	12.99	5.51	25.55	46.00	20.45	H	105	355
657.31	3.42	21.11	7.74	32.27	46.00	13.73	V	100	97
873.76	2.65	23.93	9.01	35.59	46.00	10.41	H	100	0
949.60	2.56	25.52	9.51	37.59	46.00	8.41	V	100	7

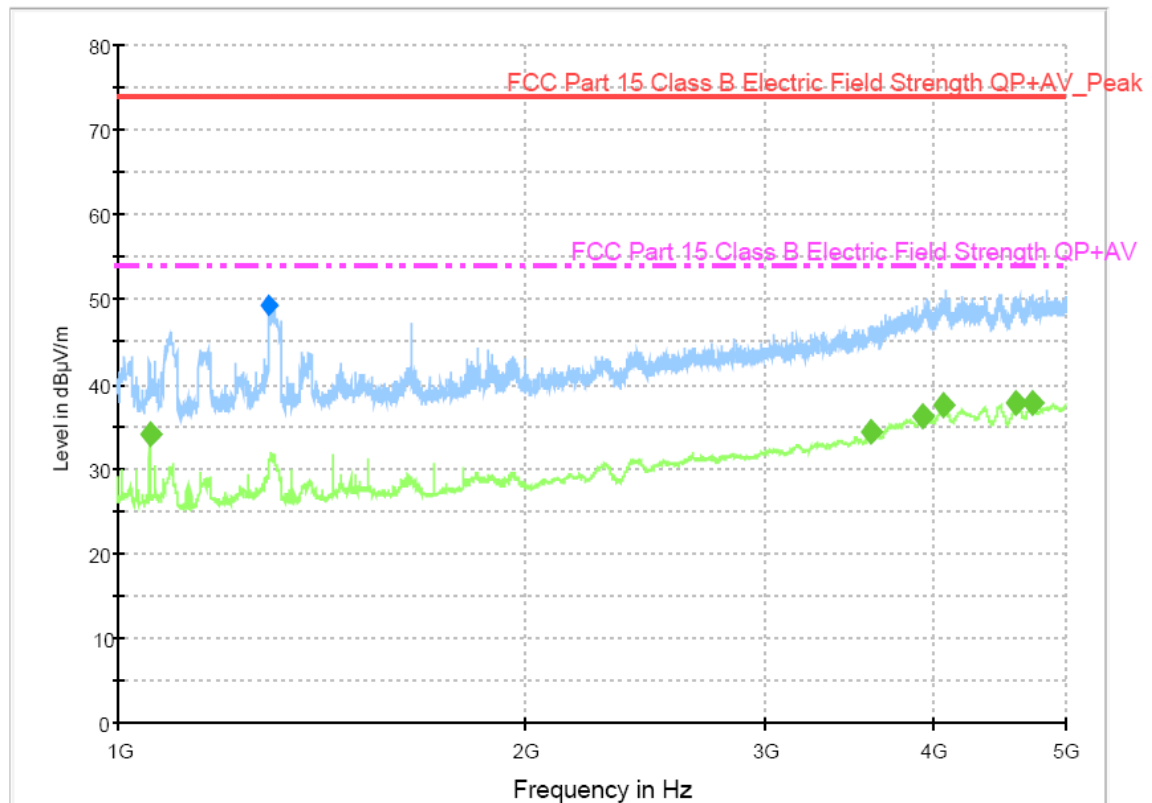


< Fig 16. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)
Detector mode: Peak detector mode / Average detector mode

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Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1292.800000	49.3	100.0	H	180.0	-15.0	24.7	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1056.000000	34.2	100.0	V	270.0	-16.3	19.8	54.0	
3599.600000	34.4	200.0	V	270.0	-6.1	19.6	54.0	
3920.000000	36.2	200.0	H	0.0	-3.8	17.8	54.0	
4065.200000	37.6	100.0	H	270.0	-3.2	16.4	54.0	
4603.200000	37.7	200.0	H	90.0	-3.2	16.3	54.0	
4718.400000	37.7	100.0	H	270.0	-3.0	16.3	54.0	

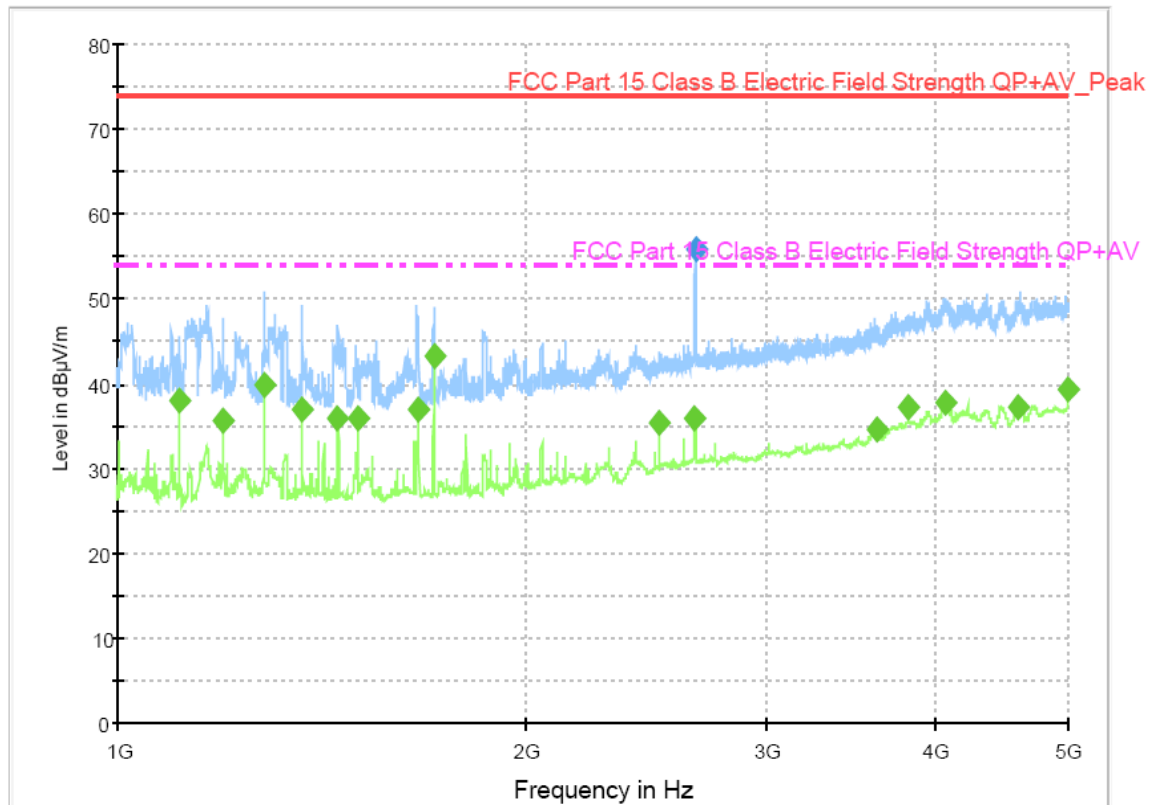
< Fig 17. Radiated emission result (1 000 MHz ~ 5 000 MHz)>



◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)

Detector mode: Peak detector mode / Average detector mode

FCC_ESIB_Preamplifier with Scans



Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2661.200000	55.9	200.0	V	0.0	-9.7	18.1	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
1111.600000	37.9	100.0	V	0.0	-16.1	16.1	54.0	
1196.800000	35.7	200.0	V	0.0	-15.9	18.3	54.0	
1282.800000	39.8	200.0	V	180.0	-15.1	14.2	54.0	
1368.000000	36.9	100.0	H	180.0	-14.8	17.1	54.0	
1453.600000	35.8	100.0	H	180.0	-14.8	18.2	54.0	
1503.600000	35.9	100.0	H	180.0	-14.8	18.1	54.0	
1666.800000	37.1	100.0	H	90.0	-14.4	16.9	54.0	
1710.000000	43.2	100.0	V	180.0	-14.3	10.8	54.0	
2500.000000	35.5	100.0	V	180.0	-10.2	18.5	54.0	
2657.200000	35.9	200.0	V	0.0	-9.7	18.1	54.0	
3614.400000	34.6	200.0	V	0.0	-6.0	19.4	54.0	
3815.200000	37.1	200.0	V	0.0	-4.5	16.9	54.0	
4056.800000	37.8	100.0	V	180.0	-3.2	16.2	54.0	
4598.000000	37.3	200.0	V	90.0	-3.2	16.7	54.0	
5000.000000	39.3	100.0	V	270.0	-2.4	14.7	54.0	

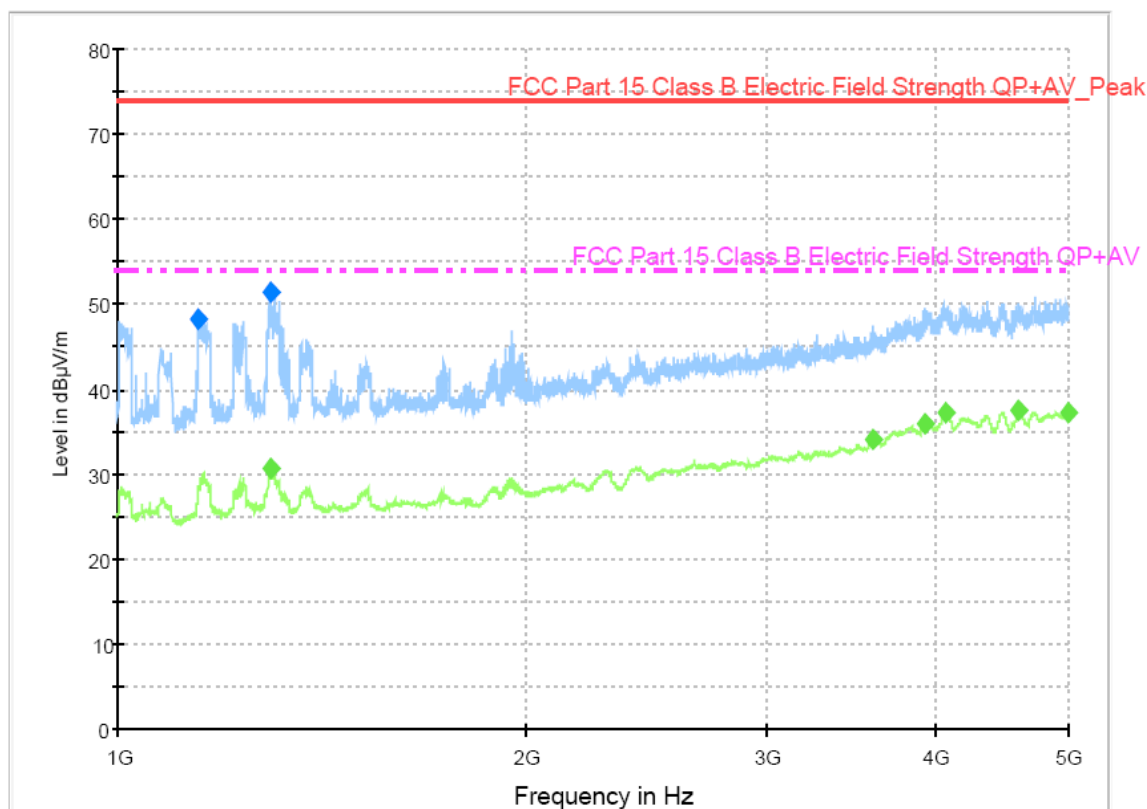
< Fig 18. Radiated emission result (1 000 MHz ~ 5 000 MHz)>



◆ Operating Condition: USB play mode

Detector mode: Peak detector mode / Average detector mode

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Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1147.200000	48.3	100.0	V	0.0	-16.0	25.7	74.0	
1294.800000	51.3	100.0	V	0.0	-6.1	22.7	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1298.000000	30.8	100.0	V	0.0	-14.9	23.2	54.0	
3599.200000	34.1	100.0	V	0.0	-6.1	19.9	54.0	
3925.200000	36.0	200.0	V	180.0	-3.7	18.0	54.0	
4066.000000	37.3	100.0	V	0.0	-3.2	16.7	54.0	
4603.200000	37.4	100.0	H	0.0	-3.2	16.6	54.0	
4999.600000	37.4	100.0	V	90.0	-2.4	16.6	54.0	

< Fig 19. Radiated emission result (1 000 MHz ~ 5 000 MHz)>



7. Sample Calculations

$$\begin{aligned} \text{dB}\mu\text{V} &= 20 \text{ Log}_{10}(\mu\text{V}/\text{m}) \\ \text{dB}\mu\text{V} &= \text{dBm} + 107 \\ \mu\text{V} &= 10^{(\text{dB}\mu\text{V}/20)} \end{aligned}$$

7.1 Example 1 :

■ 20.3 MHz

Class B Limit	= 250 μV = 48 dB μV
Reading	= 39.2 dB μV
$10^{(39.2\text{dB}\mu\text{V}/20)}$	= 91.2 μV
Margin	= 48 dB μV - 39.2 dB μV = 8.8 dB

7.2 Example 2 :

■ 66.7 MHz

Class B Limit	= 100 $\mu\text{V}/\text{m}$ = 40.0 dB $\mu\text{V}/\text{m}$
Reading	= 31.0 dB μV
Antenna Factor + Cable Loss = 5.8 dB	
Total	= 36.8 dB $\mu\text{V}/\text{m}$
Margin	= 40.0 dB $\mu\text{V}/\text{m}$ - 36.8 dB $\mu\text{V}/\text{m}$ = 3.2 dB



8. Recommendation & Conclusion

The data collected shows that the **LG Electronics Inc. LED LCD TV/Monitor (Model Name: 19LE5300-UE)** was complies with §15.107 and 15.109 of the FCC Rules.