



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 : February 4, 2010

Order Number: GETEC-C1-10-033

Test Report Number: GETEC-E3-10-010

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID.: BEJ32LE5400UC

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	: 32LE5400-UC
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 best 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.** BEJ32LE5400UC
- **EUT Type** LED LCD TV/Monitor
- **Model Name** 32LE5400-UC
- **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** February 1 ~ 2, 2010
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-10-010
- **Dates of Issue** February 4, 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: 32LE5400-UC)**

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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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: 32LE5400-UC) FCC ID.: BEJ32LE5400UC**

MODELS		32LE5400 (32LE5400-UC)	42LE5400 (42LE5400-UC)
			42LE5500 (42LE5500-UA)
Dimensions (Width x Height x Depth)	With stand	784.6 mm x 558.1 mm x 221.0 mm (30.8 inch x 21.9 inch x 8.7 inch)	1016.0 mm x 692.0 mm x 270.0 mm (40.0 inch x 27.2 inch x 10.6 inch)
	Without stand	784.6 mm x 499.5 mm x 39.9 mm (30.8 inch x 19.6 inch x 1.5 inch)	1016.0 mm x 630.0 mm x 29.3 mm (40.0 inch x 24.8 inch x 1.1 inch)
Weight	With stand	12.65 kg (27.8 lbs)	19.5 kg (42.9 lbs)
	Without stand	10.5 kg (23.1 lbs)	16.7 kg (36.8 lbs)
Power requirement		AC 120 V ~ 50 / 60 Hz	
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 Ω	
Environment condition	Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)	
	Operating Humidity	Less than 80 %	
	Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F)	
	Storage Humidity	Less than 85 %	

-. Maximum Frequency range : 667 MHz



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
Wireless ready dongle	LG Electronics Inc.	-	S/N: N/A FCC ID.: -

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 EUT	1.80 m unshielded
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(RGB/DVI) in cable	Connected to the EUT and PC	1.80 m shielded
AV in cable	Connected to the EUT and DVD player	1.70 m shielded
Component cable	Connected to the EUT and DVD player	1.50 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
LAN cable	Connected to the EUT and network	10.00 m unshielded
Wireless control cable	Connected to the EUT and wireless ready dongle	0.25 m shielded
RS-232C(Service only) in cable	Connected to the EUT and PC	1.50 m shielded with two ferrite cores
Component in 3 cable	Connected to the EUT and DVD player	2.10 m shielded
AV in 2 cable	Connected to the EUT and DVD player	3.10 m shielded

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
- . Network connecting

- . 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

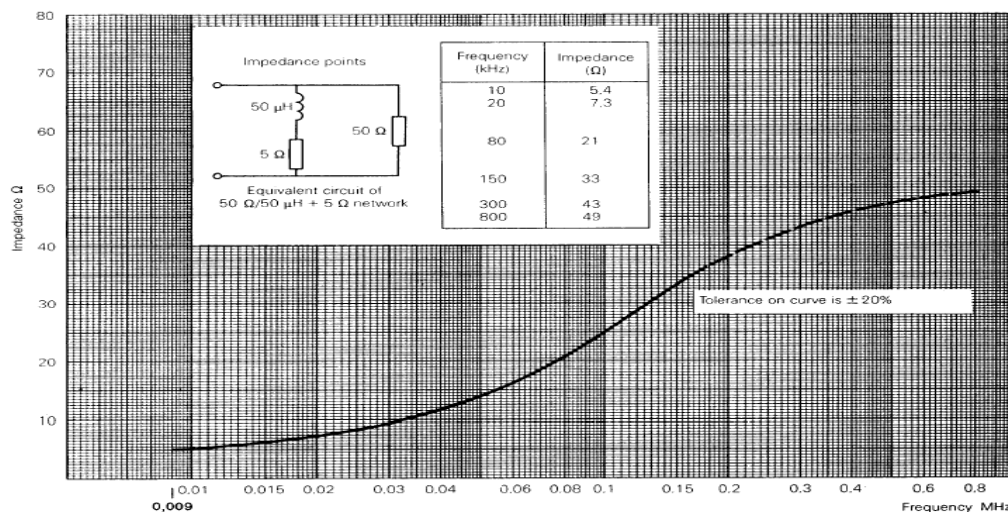


Fig 2. Impedance of LISN



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 : 26 °C
Relative Humidity : 42 % 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

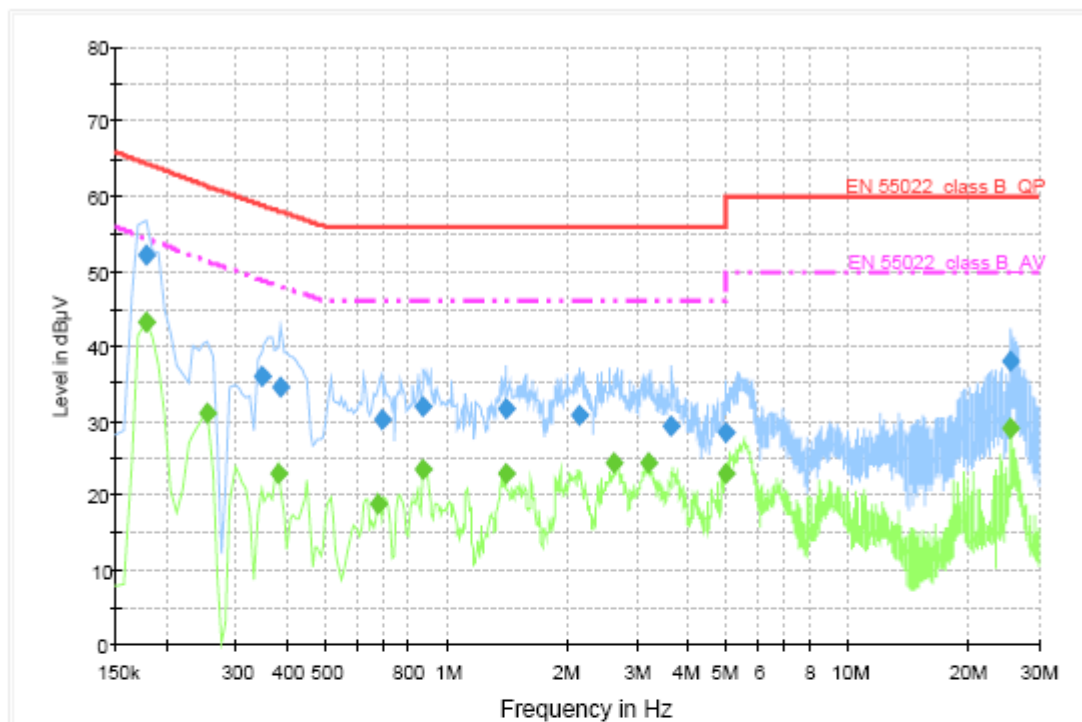
5.6 Test data for Conducted Emission

-. Test Date : February 1, 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
0.178000	52.1	1000.000	9.000	GND	L1	10.0	12.4	64.5	
0.346000	36.0	1000.000	9.000	GND	L1	10.0	22.9	58.9	
0.388000	34.6	1000.000	9.000	GND	L1	10.0	23.4	58.0	
0.689000	30.1	1000.000	9.000	GND	L1	10.0	25.9	56.0	
0.878000	31.9	1000.000	9.000	GND	L1	10.0	24.1	56.0	
1.410000	31.6	1000.000	9.000	GND	L1	10.1	24.4	56.0	
2.152000	30.6	1000.000	9.000	GND	L1	10.1	25.4	56.0	
3.643000	29.3	1000.000	9.000	GND	L1	10.2	26.7	56.0	
4.973000	28.6	1000.000	9.000	GND	L1	10.2	27.4	56.0	
25.623000	38.0	1000.000	9.000	GND	L1	11.3	22.0	60.0	

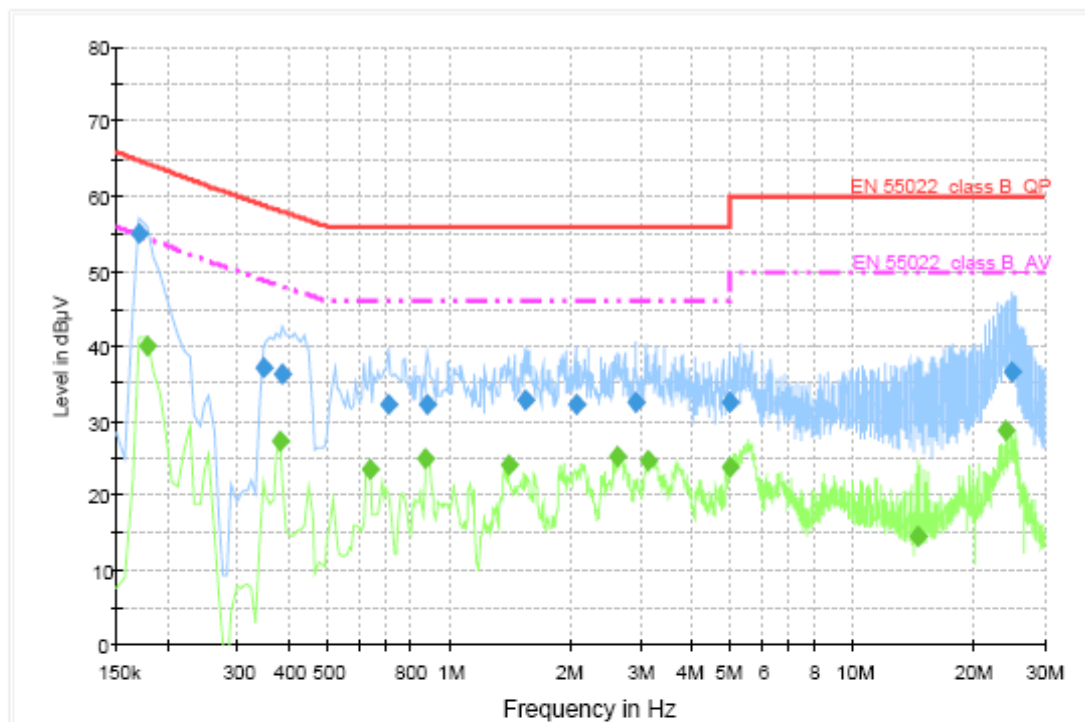
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.178000	43.2	1000.000	9.000	GND	L1	10.0	11.3	54.5	
0.255000	31.0	1000.000	9.000	GND	L1	10.0	20.3	51.3	
0.381000	22.9	1000.000	9.000	GND	L1	10.0	25.2	48.1	
0.675000	18.9	1000.000	9.000	GND	L1	10.0	27.1	46.0	
0.878000	23.5	1000.000	9.000	GND	L1	10.0	22.5	46.0	
1.403000	22.8	1000.000	9.000	GND	L1	10.1	23.2	46.0	
2.628000	24.3	1000.000	9.000	GND	L1	10.1	21.7	46.0	
3.202000	24.3	1000.000	9.000	GND	L1	10.1	21.7	46.0	
4.973000	23.0	1000.000	9.000	GND	L1	10.2	23.0	46.0	
25.623000	29.0	1000.000	9.000	GND	L1	11.3	21.0	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
0.171000	55.1	1000.000	9.000	GND	N	10.0	9.7	64.8	
0.346000	37.0	1000.000	9.000	GND	N	10.0	21.9	58.9	
0.388000	36.3	1000.000	9.000	GND	N	10.0	21.7	58.0	
0.710000	32.1	1000.000	9.000	GND	N	10.0	23.9	56.0	
0.885000	32.2	1000.000	9.000	GND	N	10.0	23.8	56.0	
1.543000	32.6	1000.000	9.000	GND	N	10.1	23.4	56.0	
2.061000	32.1	1000.000	9.000	GND	N	10.1	23.9	56.0	
2.908000	32.5	1000.000	9.000	GND	N	10.1	23.5	56.0	
4.945000	32.4	1000.000	9.000	GND	N	10.2	23.6	56.0	
24.881000	36.4	1000.000	9.000	GND	N	10.8	23.6	60.0	

Final Measurement Detector 2

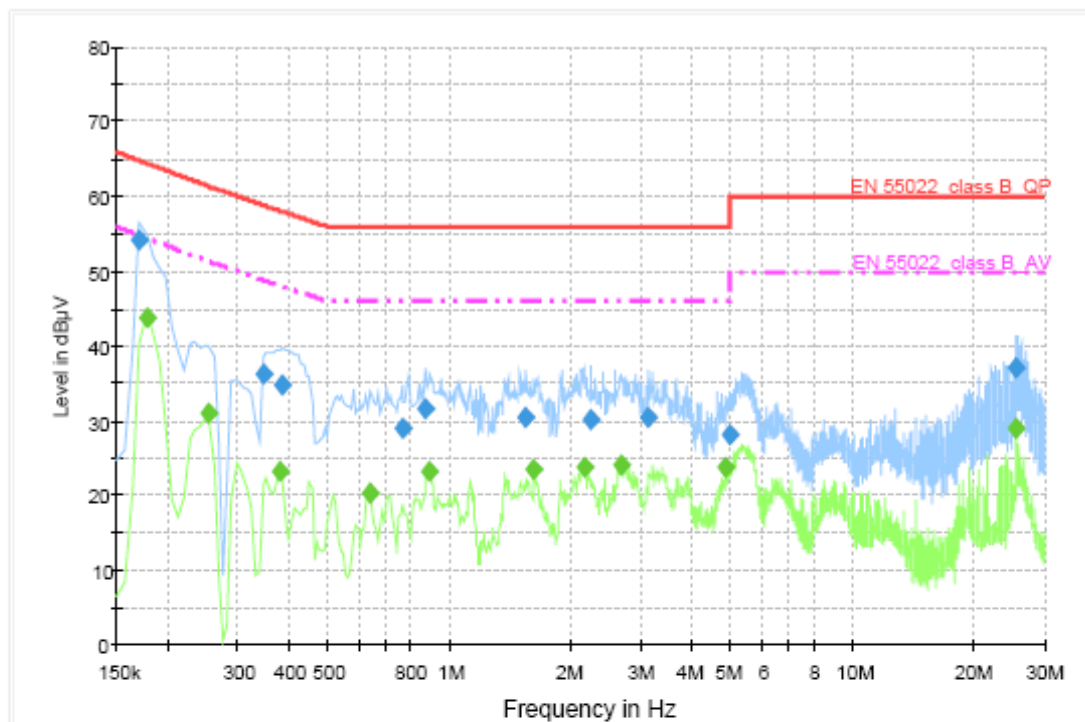
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.178000	40.0	1000.000	9.000	GND	N	10.0	14.5	54.5	
0.381000	27.2	1000.000	9.000	GND	N	10.0	20.9	48.1	
0.640000	23.4	1000.000	9.000	GND	N	10.0	22.6	46.0	
0.878000	24.8	1000.000	9.000	GND	N	10.0	21.2	46.0	
1.410000	24.0	1000.000	9.000	GND	N	10.1	22.0	46.0	
2.628000	25.2	1000.000	9.000	GND	N	10.1	20.8	46.0	
3.132000	24.7	1000.000	9.000	GND	N	10.1	21.3	46.0	
4.994000	23.9	1000.000	9.000	GND	N	10.2	22.1	46.0	
14.535000	14.6	1000.000	9.000	GND	N	10.6	35.4	50.0	
24.097000	28.8	1000.000	9.000	GND	N	10.8	21.2	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
0.171000	54.3	1000.000	9.000	GND	L1	10.0	10.5	64.8	
0.346000	36.2	1000.000	9.000	GND	L1	10.0	22.7	58.9	
0.388000	34.7	1000.000	9.000	GND	L1	10.0	23.3	58.0	
0.766000	29.0	1000.000	9.000	GND	L1	10.0	27.0	56.0	
0.878000	31.6	1000.000	9.000	GND	L1	10.0	24.4	56.0	
1.557000	30.5	1000.000	9.000	GND	L1	10.1	25.5	56.0	
2.243000	30.1	1000.000	9.000	GND	L1	10.1	25.9	56.0	
3.132000	30.4	1000.000	9.000	GND	L1	10.1	25.6	56.0	
4.952000	28.0	1000.000	9.000	GND	L1	10.2	28.0	56.0	
25.623000	37.2	1000.000	9.000	GND	L1	11.3	22.8	60.0	

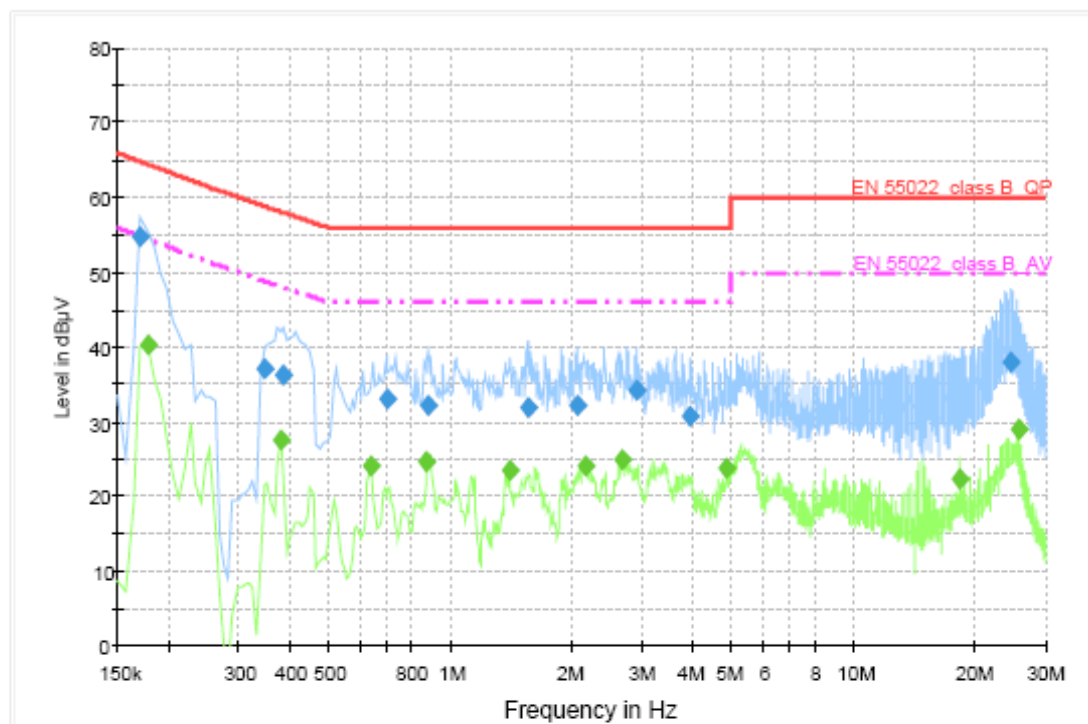
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.178000	43.7	1000.000	9.000	GND	L1	10.0	10.8	54.5	
0.255000	30.9	1000.000	9.000	GND	L1	10.0	20.4	51.3	
0.381000	23.2	1000.000	9.000	GND	L1	10.0	24.9	48.1	
0.640000	20.4	1000.000	9.000	GND	L1	10.0	25.6	46.0	
0.899000	23.3	1000.000	9.000	GND	L1	10.0	22.7	46.0	
1.627000	23.5	1000.000	9.000	GND	L1	10.1	22.5	46.0	
2.166000	23.7	1000.000	9.000	GND	L1	10.1	22.3	46.0	
2.684000	24.0	1000.000	9.000	GND	L1	10.1	22.0	46.0	
4.882000	23.8	1000.000	9.000	GND	L1	10.2	22.2	46.0	
25.623000	29.1	1000.000	9.000	GND	L1	11.3	20.9	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
0.171000	54.8	1000.000	9.000	GND	N	10.0	10.0	64.8	
0.346000	37.1	1000.000	9.000	GND	N	10.0	21.8	58.9	
0.388000	36.2	1000.000	9.000	GND	N	10.0	21.8	58.0	
0.696000	33.0	1000.000	9.000	GND	N	10.0	23.0	56.0	
0.885000	32.1	1000.000	9.000	GND	N	10.0	23.9	56.0	
1.564000	32.0	1000.000	9.000	GND	N	10.1	24.0	56.0	
2.068000	32.2	1000.000	9.000	GND	N	10.1	23.8	56.0	
2.915000	34.2	1000.000	9.000	GND	N	10.1	21.8	56.0	
3.958000	30.8	1000.000	9.000	GND	N	10.2	25.2	56.0	
24.678000	38.1	1000.000	9.000	GND	N	10.8	21.9	60.0	

Final Measurement Detector 2

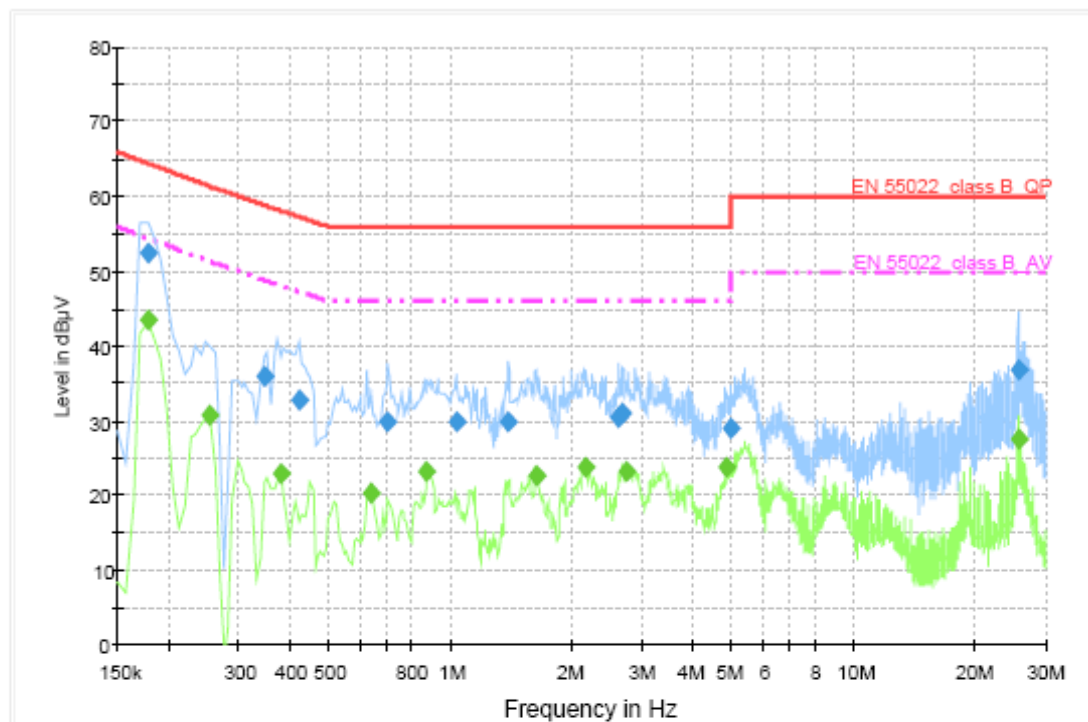
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.178000	40.4	1000.000	9.000	GND	N	10.0	14.1	54.5	
0.381000	27.5	1000.000	9.000	GND	N	10.0	20.6	48.1	
0.640000	24.1	1000.000	9.000	GND	N	10.0	22.0	46.0	
0.878000	24.6	1000.000	9.000	GND	N	10.0	21.4	46.0	
1.410000	23.5	1000.000	9.000	GND	N	10.1	22.5	46.0	
2.173000	24.0	1000.000	9.000	GND	N	10.1	22.0	46.0	
2.691000	24.9	1000.000	9.000	GND	N	10.1	21.1	46.0	
4.882000	23.6	1000.000	9.000	GND	N	10.2	22.4	46.0	
18.434000	22.3	1000.000	9.000	GND	N	10.7	27.7	50.0	
25.630000	28.8	1000.000	9.000	GND	N	10.8	21.2	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
0.178000	52.5	1000.000	9.000	GND	L1	10.0	12.0	64.5	
0.346000	36.1	1000.000	9.000	GND	L1	10.0	22.8	58.9	
0.423000	32.9	1000.000	9.000	GND	L1	10.0	24.5	57.3	
0.703000	29.8	1000.000	9.000	GND	L1	10.0	26.2	56.0	
1.039000	29.8	1000.000	9.000	GND	L1	10.0	26.2	56.0	
1.396000	29.9	1000.000	9.000	GND	L1	10.1	26.1	56.0	
2.628000	30.6	1000.000	9.000	GND	L1	10.1	25.4	56.0	
2.691000	30.9	1000.000	9.000	GND	L1	10.1	25.1	56.0	
4.973000	29.0	1000.000	9.000	GND	L1	10.2	27.0	56.0	
25.630000	36.9	1000.000	9.000	GND	L1	11.3	23.1	60.0	

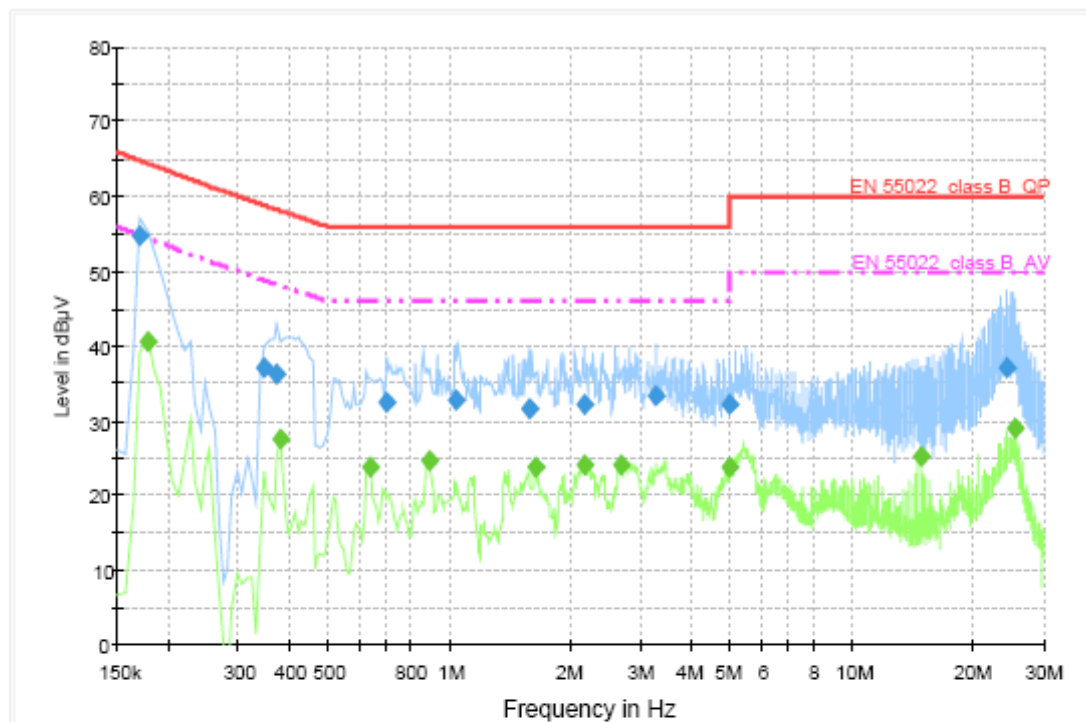
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.178000	43.6	1000.000	9.000	GND	L1	10.0	10.9	54.5	
0.255000	30.7	1000.000	9.000	GND	L1	10.0	20.6	51.3	
0.381000	22.8	1000.000	9.000	GND	L1	10.0	25.3	48.1	
0.640000	20.3	1000.000	9.000	GND	L1	10.0	25.8	46.0	
0.878000	23.2	1000.000	9.000	GND	L1	10.0	22.8	46.0	
1.634000	22.7	1000.000	9.000	GND	L1	10.1	23.3	46.0	
2.159000	23.8	1000.000	9.000	GND	L1	10.1	22.2	46.0	
2.747000	23.2	1000.000	9.000	GND	L1	10.1	22.8	46.0	
4.882000	23.8	1000.000	9.000	GND	L1	10.2	22.2	46.0	
25.630000	27.5	1000.000	9.000	GND	L1	11.3	22.5	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
0.171000	54.7	1000.000	9.000	GND	N	10.0	10.1	64.8	
0.346000	37.1	1000.000	9.000	GND	N	10.0	21.8	58.9	
0.374000	36.4	1000.000	9.000	GND	N	10.0	21.9	58.3	
0.703000	32.4	1000.000	9.000	GND	N	10.0	23.6	56.0	
1.039000	32.8	1000.000	9.000	GND	N	10.1	23.2	56.0	
1.578000	31.6	1000.000	9.000	GND	N	10.1	24.4	56.0	
2.166000	32.3	1000.000	9.000	GND	N	10.1	23.7	56.0	
3.258000	33.4	1000.000	9.000	GND	N	10.1	22.6	56.0	
4.973000	32.1	1000.000	9.000	GND	N	10.2	23.9	56.0	
24.188000	37.1	1000.000	9.000	GND	N	10.8	22.9	60.0	

Final Measurement Detector 2

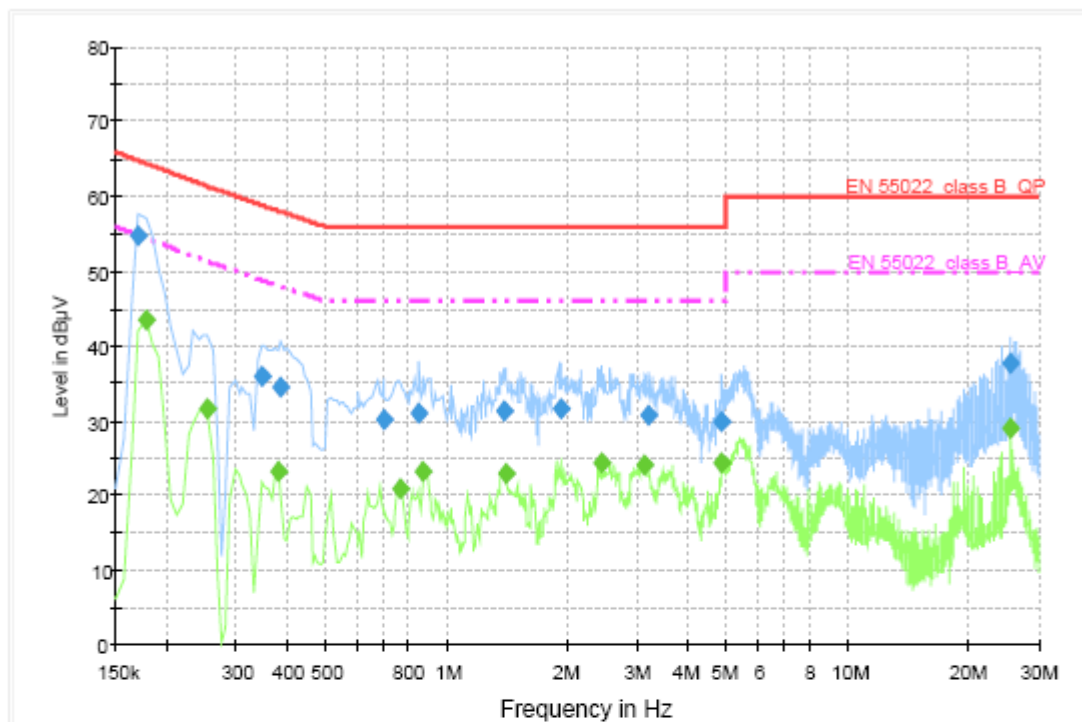
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.178000	40.5	1000.000	9.000	GND	N	10.0	14.0	54.5	
0.381000	27.6	1000.000	9.000	GND	N	10.0	20.5	48.1	
0.640000	23.9	1000.000	9.000	GND	N	10.0	22.1	46.0	
0.892000	24.5	1000.000	9.000	GND	N	10.0	21.5	46.0	
1.634000	23.8	1000.000	9.000	GND	N	10.1	22.2	46.0	
2.159000	24.2	1000.000	9.000	GND	N	10.1	21.8	46.0	
2.684000	24.1	1000.000	9.000	GND	N	10.1	21.9	46.0	
4.994000	23.8	1000.000	9.000	GND	N	10.2	22.2	46.0	
14.843000	25.1	1000.000	9.000	GND	N	10.6	24.9	50.0	
25.623000	29.1	1000.000	9.000	GND	N	10.8	20.9	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
0.171000	54.8	1000.000	9.000	GND	L1	10.0	10.0	64.8	
0.346000	36.0	1000.000	9.000	GND	L1	10.0	22.9	58.9	
0.388000	34.6	1000.000	9.000	GND	L1	10.0	23.4	58.0	
0.696000	30.3	1000.000	9.000	GND	L1	10.0	25.8	56.0	
0.857000	31.0	1000.000	9.000	GND	L1	10.0	25.0	56.0	
1.389000	31.2	1000.000	9.000	GND	L1	10.1	24.8	56.0	
1.921000	31.7	1000.000	9.000	GND	L1	10.1	24.3	56.0	
3.209000	30.8	1000.000	9.000	GND	L1	10.1	25.2	56.0	
4.882000	29.8	1000.000	9.000	GND	L1	10.2	26.2	56.0	
25.616000	37.7	1000.000	9.000	GND	L1	11.3	22.4	60.0	

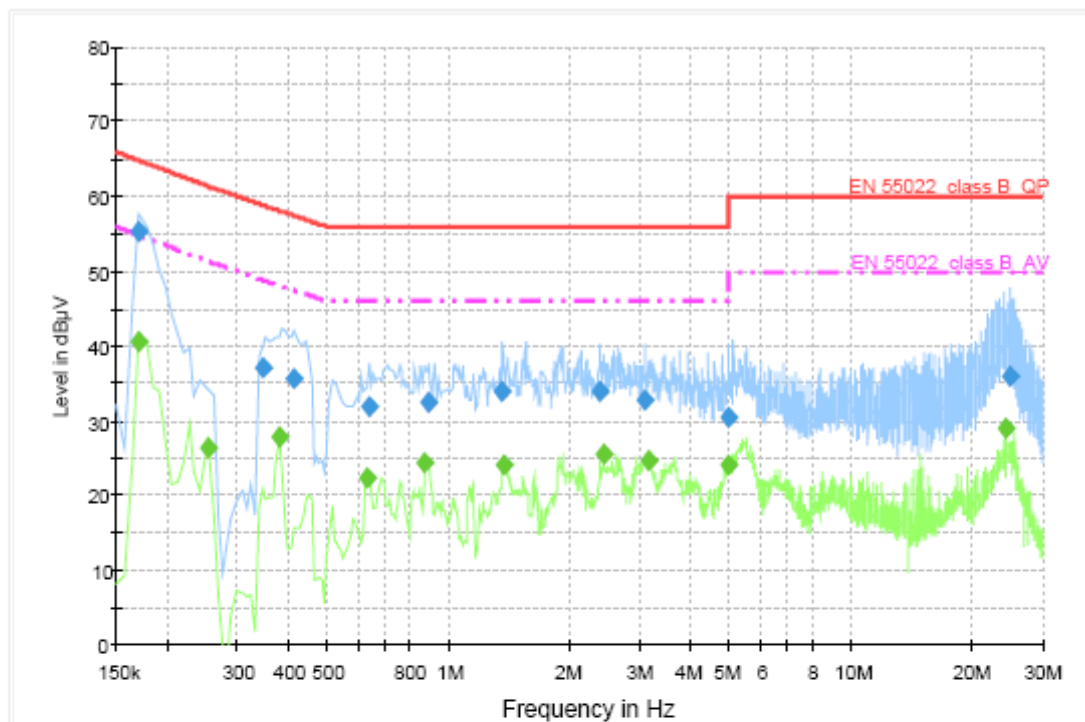
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.178000	43.6	1000.000	9.000	GND	L1	10.0	10.9	54.5	
0.255000	31.7	1000.000	9.000	GND	L1	10.0	19.6	51.3	
0.381000	23.1	1000.000	9.000	GND	L1	10.0	25.0	48.1	
0.766000	20.9	1000.000	9.000	GND	L1	10.0	25.1	46.0	
0.878000	23.3	1000.000	9.000	GND	L1	10.0	22.7	46.0	
1.403000	22.9	1000.000	9.000	GND	L1	10.1	23.1	46.0	
2.439000	24.5	1000.000	9.000	GND	L1	10.1	21.5	46.0	
3.132000	24.1	1000.000	9.000	GND	L1	10.1	21.9	46.0	
4.882000	24.4	1000.000	9.000	GND	L1	10.2	21.6	46.0	
25.616000	28.9	1000.000	9.000	GND	L1	11.3	21.1	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
0.171000	55.3	1000.000	9.000	GND	N	10.0	9.5	64.8	
0.346000	37.0	1000.000	9.000	GND	N	10.0	21.9	58.9	
0.416000	35.7	1000.000	9.000	GND	N	10.0	21.7	57.4	
0.640000	31.8	1000.000	9.000	GND	N	10.0	24.2	56.0	
0.899000	32.5	1000.000	9.000	GND	N	10.0	23.5	56.0	
1.368000	34.0	1000.000	9.000	GND	N	10.1	22.0	56.0	
2.390000	33.9	1000.000	9.000	GND	N	10.1	22.1	56.0	
3.076000	32.8	1000.000	9.000	GND	N	10.1	23.2	56.0	
4.966000	30.4	1000.000	9.000	GND	N	10.2	25.6	56.0	
24.916000	35.9	1000.000	9.000	GND	N	10.8	24.1	60.0	

Final Measurement Detector 2

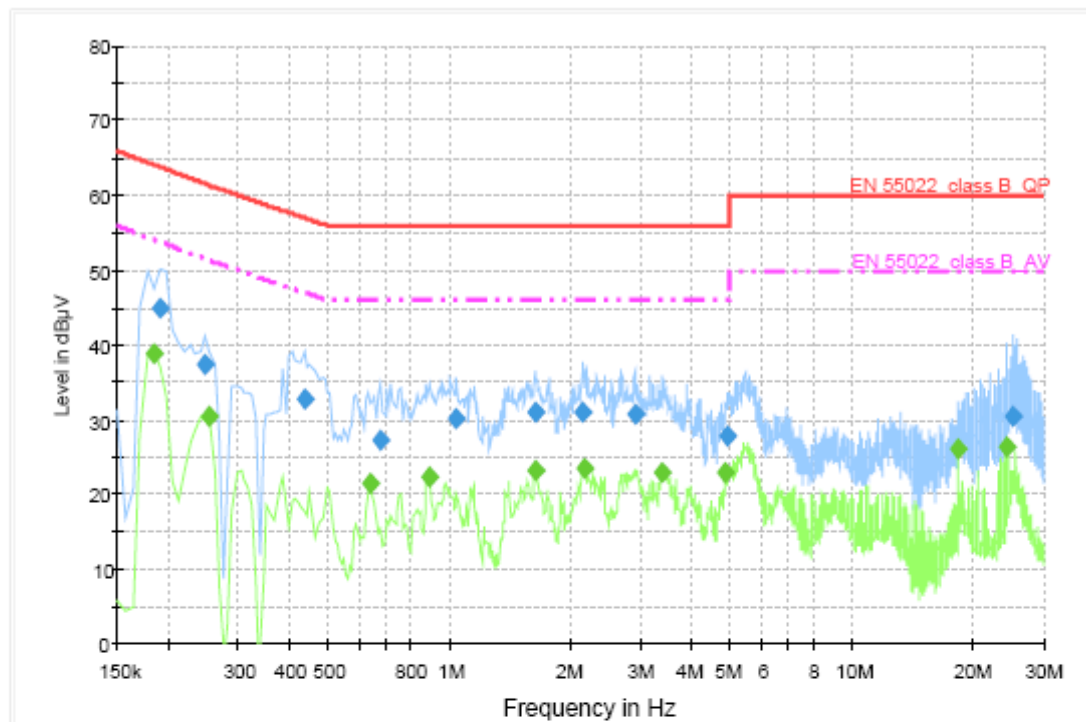
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.171000	40.5	1000.000	9.000	GND	N	10.0	14.3	54.8	
0.255000	26.4	1000.000	9.000	GND	N	10.0	24.9	51.3	
0.381000	27.8	1000.000	9.000	GND	N	10.0	20.3	48.1	
0.633000	22.4	1000.000	9.000	GND	N	10.0	23.6	46.0	
0.878000	24.4	1000.000	9.000	GND	N	10.0	21.6	46.0	
1.375000	24.1	1000.000	9.000	GND	N	10.1	21.9	46.0	
2.439000	25.4	1000.000	9.000	GND	N	10.1	20.6	46.0	
3.139000	24.8	1000.000	9.000	GND	N	10.1	21.2	46.0	
4.973000	24.2	1000.000	9.000	GND	N	10.2	21.8	46.0	
24.398000	29.0	1000.000	9.000	GND	N	10.8	21.0	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
0.192000	45.0	1000.000	9.000	GND	L1	10.0	18.8	63.8	
0.248000	37.5	1000.000	9.000	GND	L1	10.0	24.1	61.6	
0.437000	32.6	1000.000	9.000	GND	L1	10.0	24.4	57.0	
0.675000	27.1	1000.000	9.000	GND	L1	10.0	28.9	56.0	
1.046000	30.1	1000.000	9.000	GND	L1	10.0	25.9	56.0	
1.634000	31.1	1000.000	9.000	GND	L1	10.1	24.9	56.0	
2.152000	31.0	1000.000	9.000	GND	L1	10.1	25.0	56.0	
2.894000	30.8	1000.000	9.000	GND	L1	10.1	25.2	56.0	
4.938000	27.8	1000.000	9.000	GND	L1	10.2	28.2	56.0	
25.322000	30.4	1000.000	9.000	GND	L1	11.3	29.6	60.0	

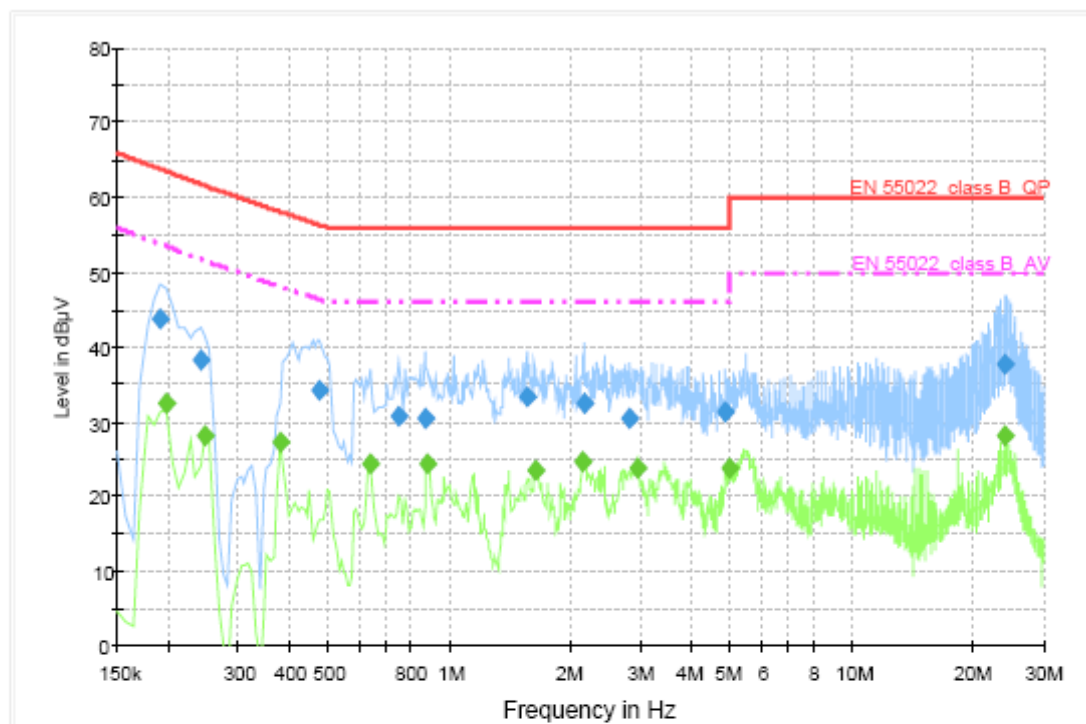
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.185000	38.8	1000.000	9.000	GND	L1	10.0	15.3	54.1	
0.255000	30.5	1000.000	9.000	GND	L1	10.0	20.8	51.3	
0.640000	21.4	1000.000	9.000	GND	L1	10.0	24.6	46.0	
0.892000	22.3	1000.000	9.000	GND	L1	10.0	23.7	46.0	
1.634000	23.3	1000.000	9.000	GND	L1	10.1	22.7	46.0	
2.180000	23.6	1000.000	9.000	GND	L1	10.1	22.4	46.0	
3.391000	22.9	1000.000	9.000	GND	L1	10.1	23.1	46.0	
4.882000	22.9	1000.000	9.000	GND	L1	10.2	23.1	46.0	
18.434000	26.1	1000.000	9.000	GND	L1	10.9	23.9	50.0	
24.405000	26.3	1000.000	9.000	GND	L1	11.2	23.7	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
0.192000	43.8	1000.000	9.000	GND	N	10.0	20.0	63.8	
0.241000	38.2	1000.000	9.000	GND	N	10.0	23.7	61.9	
0.479000	34.3	1000.000	9.000	GND	N	10.0	22.0	56.3	
0.752000	30.7	1000.000	9.000	GND	N	10.0	25.3	56.0	
0.871000	30.5	1000.000	9.000	GND	N	10.0	25.5	56.0	
1.564000	33.2	1000.000	9.000	GND	N	10.1	22.8	56.0	
2.173000	32.6	1000.000	9.000	GND	N	10.1	23.4	56.0	
2.810000	30.5	1000.000	9.000	GND	N	10.1	25.5	56.0	
4.875000	31.2	1000.000	9.000	GND	N	10.2	24.8	56.0	
23.964000	37.7	1000.000	9.000	GND	N	10.8	22.3	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.199000	32.5	1000.000	9.000	GND	N	10.0	21.1	53.5	
0.248000	28.2	1000.000	9.000	GND	N	10.0	23.4	51.6	
0.381000	27.2	1000.000	9.000	GND	N	10.0	20.9	48.1	
0.640000	24.5	1000.000	9.000	GND	N	10.0	21.6	46.0	
0.885000	24.4	1000.000	9.000	GND	N	10.0	21.6	46.0	
1.641000	23.5	1000.000	9.000	GND	N	10.1	22.5	46.0	
2.152000	24.7	1000.000	9.000	GND	N	10.1	21.3	46.0	
2.929000	23.6	1000.000	9.000	GND	N	10.1	22.4	46.0	
4.966000	23.7	1000.000	9.000	GND	N	10.2	22.3	46.0	
24.097000	28.0	1000.000	9.000	GND	N	10.8	22.0	50.0	

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



6. Radiated Emission

6.1 Operating Environment

Temperature : 22 °C
Relative Humidity : 44 % 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	maturo GmbH	Position Controller	1390306	N/A
■ - TT2.5SI	maturo GmbH	Turntable	1390307	N/A
■ - AM 4.0	maturo GmbH	Antenna Mast	1390308	N/A
■ - AFS 44 00101800-25-10P-44	MITEQ	Preamplifier	1258943	11. 12. 2010



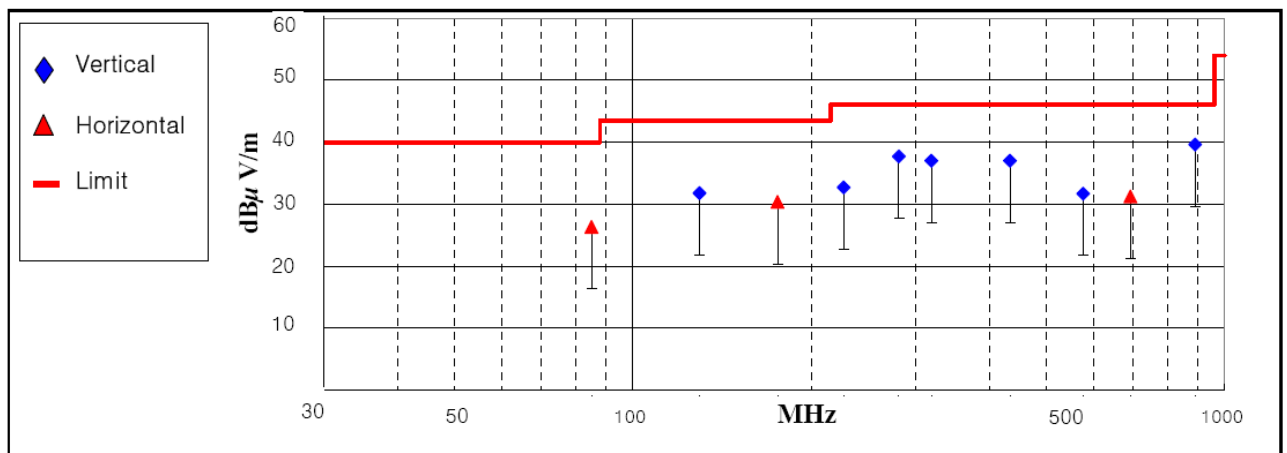
6.6 Test data for Radiated Emission

- Test Date : February 2, 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)	(°)
85.20	15.29	8.15	2.89	26.33	40.00	13.67	H	189	105
129.55	16.35	12.01	3.45	31.81	43.50	11.69	V	100	94
175.54	14.40	11.99	3.96	30.35	43.50	13.15	H	199	108
226.93	17.57	10.50	4.64	32.71	46.00	13.29	V	100	37
281.35	19.68	12.64	5.37	37.69	46.00	8.31	V	162	166
319.37	17.14	13.74	6.16	37.04	46.00	8.96	V	158	352
433.76	13.19	16.59	7.22	37.00	46.00	9.00	V	100	144
576.23	4.93	19.51	7.28	31.72	46.00	14.28	V	100	182
693.00	1.83	21.47	7.92	31.22	46.00	14.78	H	243	269
891.03	6.43	24.11	9.11	39.65	46.00	6.35	V	173	193

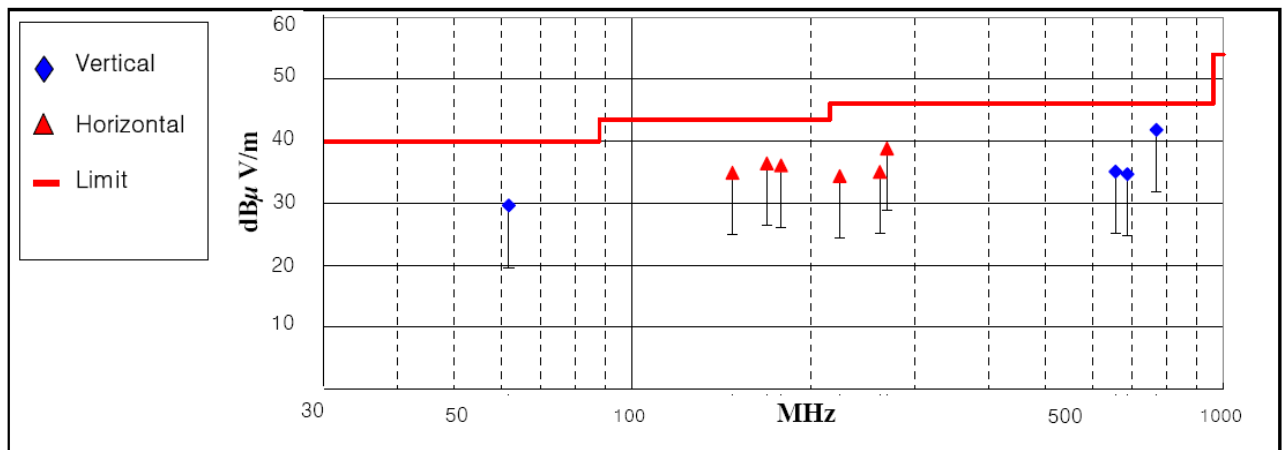


< Fig 14. Radiated emission result (30 MHz ~ 1 000 MHz)>



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

Frequency (MHz)	Measurement Level				Limit (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)	(°)
61.85	15.36	11.73	2.54	29.63	40.00	10.37	V	100	158
147.65	18.48	12.75	3.67	34.90	43.50	8.60	H	231	0
168.83	20.16	12.35	3.90	36.41	43.50	7.09	H	234	324
178.56	20.29	11.82	3.98	36.09	43.50	7.41	H	218	314
224.17	19.36	10.37	4.61	34.34	46.00	11.66	H	224	320
262.31	17.97	11.98	5.11	35.06	46.00	10.94	H	109	309
269.70	21.36	12.24	5.21	38.81	46.00	7.19	H	105	69
656.45	6.27	21.10	7.74	35.11	46.00	10.89	V	233	8
687.70	5.37	21.42	7.90	34.69	46.00	11.31	V	220	19
769.51	10.49	22.92	8.42	41.83	46.00	4.17	V	100	14

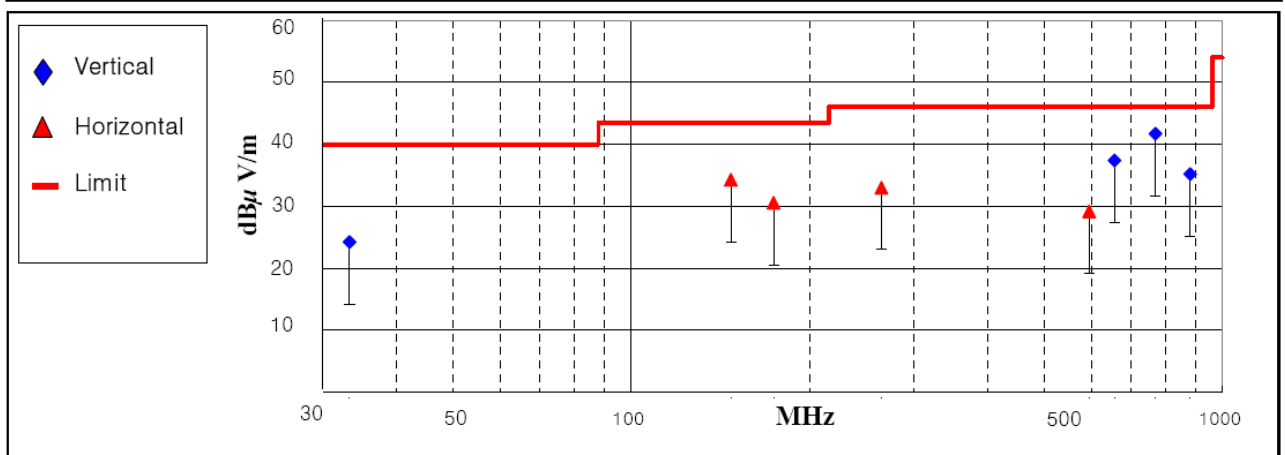


< Fig 15. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ 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)	(°)
33.40	10.37	11.88	1.95	24.20	40.00	15.80	V	100	275
147.45	17.86	12.75	3.66	34.27	43.50	9.23	H	211	0
174.02	14.55	12.07	3.94	30.56	43.50	12.94	H	225	281
264.90	15.78	12.07	5.15	33.00	46.00	13.00	H	106	279
594.77	1.62	20.16	7.39	29.17	46.00	16.83	H	254	4
656.45	8.54	21.10	7.74	37.38	46.00	8.62	V	231	0
769.51	10.38	22.92	8.42	41.72	46.00	4.28	V	100	13
881.40	2.14	24.01	9.05	35.20	46.00	10.80	V	100	0

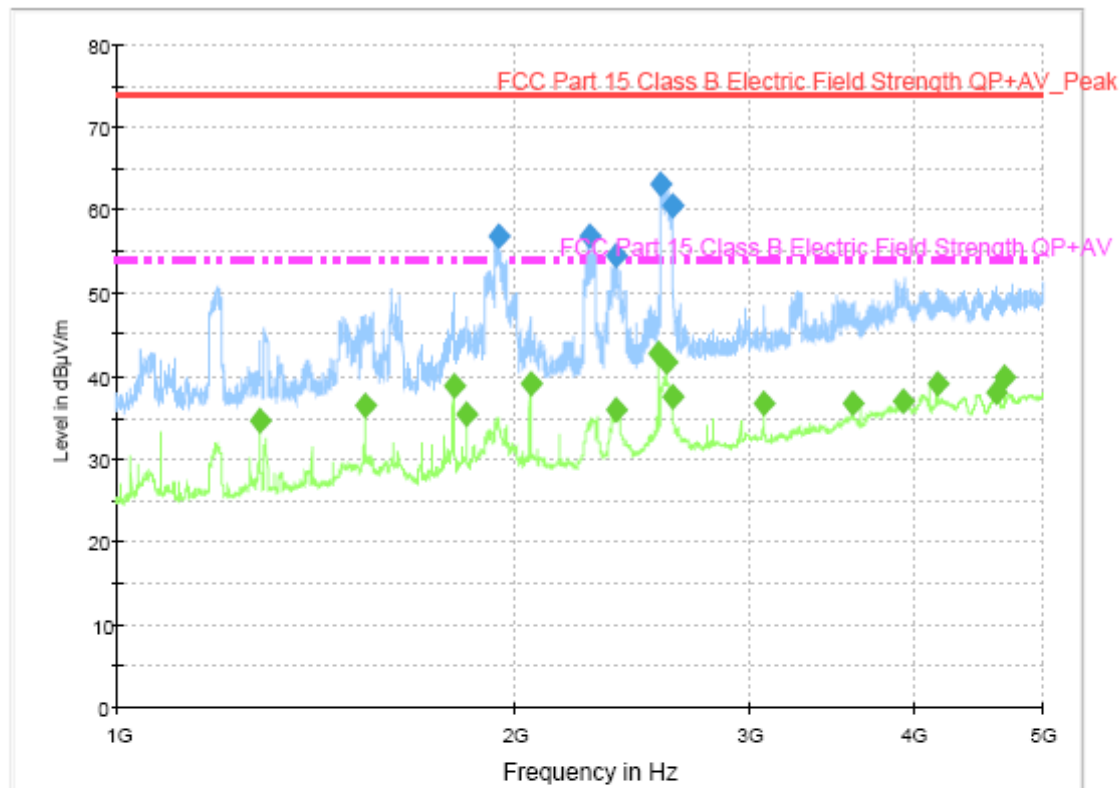


< Fig 16. Radiated emission result (30 MHz ~ 1 000 MHz)>



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

FCC_ESIB_Preamplifier_RE with Scans



Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1945.200000	56.8	200.0	V	0.0	-13.1	17.2	74.0	
2277.200000	56.9	200.0	V	0.0	-11.3	17.1	74.0	
2380.400000	54.6	100.0	V	0.0	-10.8	19.4	74.0	
2576.800000	63.2	100.0	V	0.0	-10.0	10.8	74.0	
2627.600000	60.5	100.0	V	0.0	-9.8	13.5	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1282.400000	34.6	100.0	V	0.0	-15.1	19.4	54.0	
1539.200000	36.4	200.0	V	0.0	-14.6	17.6	54.0	
1795.600000	38.9	100.0	V	180.0	-13.9	15.1	54.0	
1836.000000	35.4	100.0	V	180.0	-13.7	18.6	54.0	
2052.000000	39.0	100.0	V	0.0	-12.5	15.0	54.0	
2380.400000	36.0	100.0	V	0.0	-10.8	18.0	54.0	
2565.200000	42.7	200.0	V	0.0	-10.0	11.3	54.0	
2598.800000	41.7	100.0	V	0.0	-9.9	12.3	54.0	
2627.600000	37.5	100.0	V	0.0	-9.8	16.5	54.0	
3078.000000	36.6	200.0	H	270.0	-8.3	17.4	54.0	
3591.200000	36.6	100.0	V	0.0	-6.2	17.4	54.0	
3920.400000	37.0	100.0	V	0.0	-3.8	17.0	54.0	
4158.000000	39.1	100.0	V	0.0	-3.3	14.9	54.0	
4604.000000	38.1	100.0	V	0.0	-3.2	15.9	54.0	
4678.000000	39.9	100.0	V	0.0	-3.1	14.1	54.0	

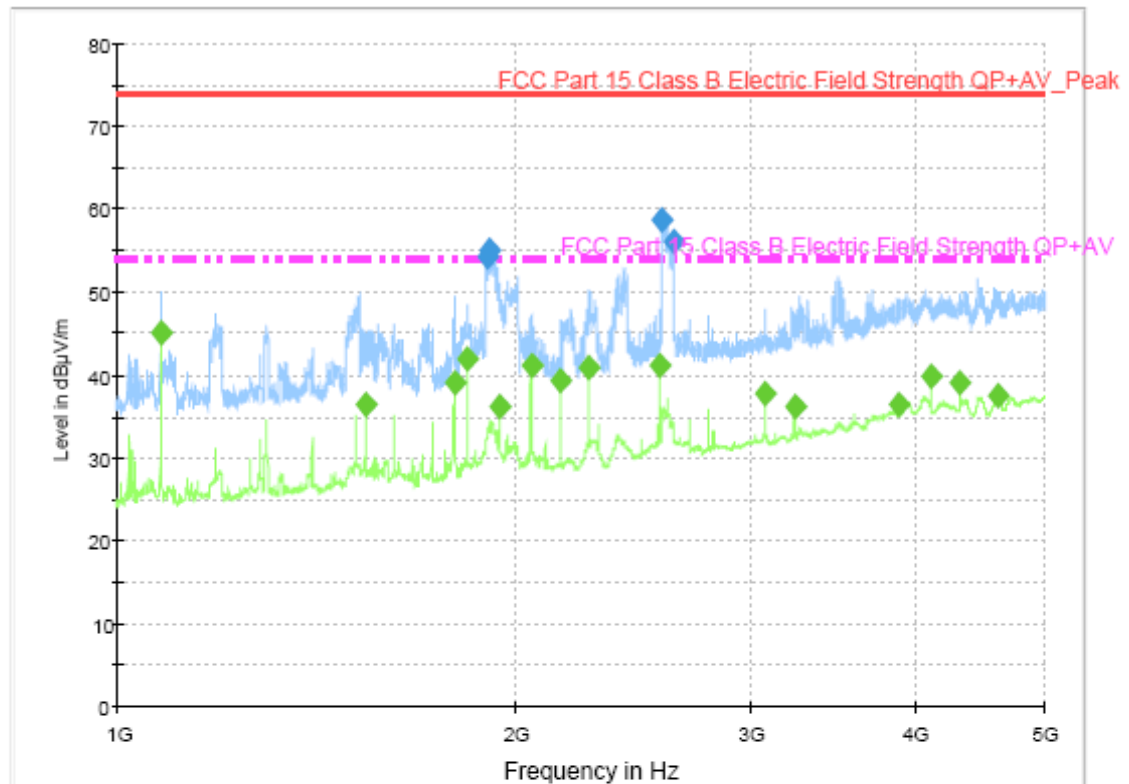
< Fig 17. Radiated emission result (1 000 MHz ~ 5 000 MHz)>



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

Detector mode: Peak detector mode / Average detector mode

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Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Comment
1899.200000	54.3	200.0	H	270.0	-13.5	19.7	74.0	
1911.200000	55.2	200.0	H	270.0	-13.4	18.8	74.0	
2576.800000	58.7	200.0	V	0.0	-10.0	15.3	74.0	
2628.000000	56.2	100.0	V	0.0	-9.8	17.8	74.0	

Final Result 2

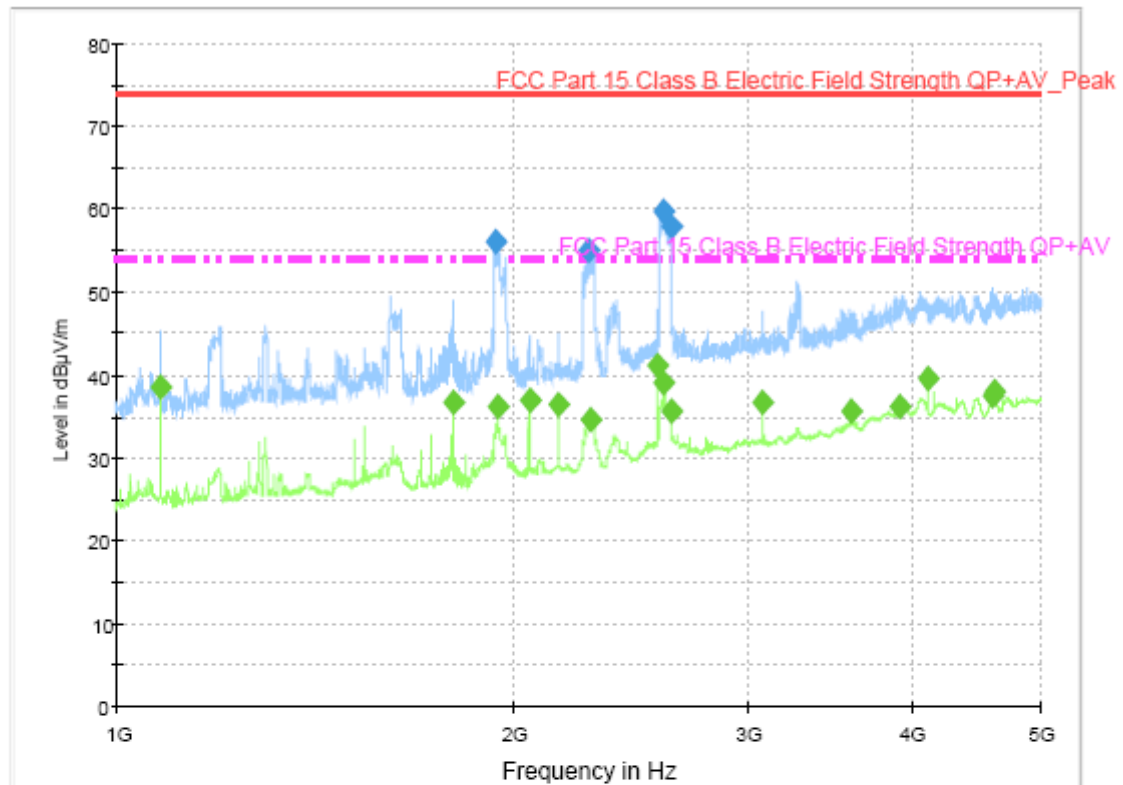
Frequency (MHz)	Average-MaxHold (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Comment
1080.000000	45.0	100.0	V	0.0	-16.2	9.0	54.0	
1539.200000	36.3	100.0	H	180.0	-14.6	17.7	54.0	
1795.600000	39.2	100.0	V	180.0	-13.9	14.8	54.0	
1836.000000	42.0	100.0	V	180.0	-13.7	12.0	54.0	
1944.000000	36.2	200.0	H	270.0	-13.2	17.8	54.0	
2052.000000	41.2	200.0	H	180.0	-12.5	12.8	54.0	
2160.000000	39.3	100.0	H	180.0	-11.9	14.7	54.0	
2268.000000	41.0	100.0	H	180.0	-11.3	13.0	54.0	
2565.200000	41.1	200.0	V	0.0	-10.0	12.9	54.0	
3078.000000	37.8	100.0	H	270.0	-8.3	16.2	54.0	
3240.000000	36.1	100.0	V	0.0	-7.8	17.9	54.0	
3888.000000	36.4	100.0	H	270.0	-4.0	17.6	54.0	
4104.000000	39.9	100.0	V	0.0	-3.2	14.1	54.0	
4320.400000	39.0	100.0	V	180.0	-3.4	15.0	54.0	
4616.800000	37.6	100.0	V	0.0	-3.2	16.4	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
1939.200000	56.1	200.0	V	0.0	-13.2	17.9	74.0	
2278.400000	55.1	200.0	V	0.0	-11.3	18.9	74.0	
2589.200000	59.9	200.0	V	0.0	-9.9	14.1	74.0	
2628.000000	57.9	100.0	V	0.0	-9.8	16.1	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1080.000000	38.5	100.0	V	0.0	-16.2	15.5	54.0	
1795.600000	36.6	100.0	V	180.0	-13.9	17.4	54.0	
1944.000000	36.1	200.0	H	270.0	-13.2	17.9	54.0	
2052.000000	37.1	100.0	V	0.0	-12.5	16.9	54.0	
2160.000000	36.5	100.0	H	180.0	-11.9	17.5	54.0	
2282.800000	34.7	200.0	V	0.0	-11.3	19.3	54.0	
2565.200000	41.1	200.0	V	0.0	-10.0	12.9	54.0	
2596.000000	39.1	100.0	V	0.0	-9.9	14.9	54.0	
2627.200000	35.7	100.0	V	0.0	-9.8	18.3	54.0	
3078.000000	36.8	200.0	V	0.0	-8.3	17.2	54.0	
3590.800000	35.8	200.0	H	270.0	-6.2	18.2	54.0	
3913.600000	36.2	100.0	H	270.0	-3.8	17.8	54.0	
4104.000000	39.7	100.0	V	0.0	-3.2	14.3	54.0	
4599.200000	37.4	100.0	V	0.0	-3.2	16.6	54.0	
4617.200000	38.0	200.0	H	270.0	-3.2	16.0	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: 32LE5400-UC)** was complies with §15.107 and 15.109 of the FCC Rules.