

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 14, 2010

Order Number: GETEC-C1-10-010

Test Report Number: GETEC-E3-10-001

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID.: BEJ60LD550UB

Applicant: LG Electronics Inc.

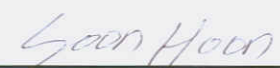
Rule Part(s)	: FCC Part 15 Subpart B
Equipment Class	: Class B computing device peripheral (JBP)
EUT Type	: LCD TV/Monitor
Type of Authority	: Certification
Model Name	: 60LD550-UB
Trade Name	: LG

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



CONTENTS

1. GENERAL INFORMATION	3
2. INTRODUCTION	4
3. PRODUCT INFORMATION	5
3.1 DESCRIPTION OF EUT.....	5
3.2 SUPPORT EQUIPMENT / CABLES USED	6
3.3 MODIFICATION ITEM(S).....	7
4. DESCRIPTION OF TESTS.....	8
4.1 TEST CONDITION.....	8
4.2 CONDUCTED EMISSION	9
4.3 RADIATED EMISSION.....	10
5. CONDUCTED EMISSION.....	11
5.1 OPERATING ENVIRONMENT	11
5.2 TEST SET-UP	11
5.3 MEASUREMENT UNCERTAINTY.....	11
5.4 LIMIT	12
5.5 TEST EQUIPMENT USED.....	12
5.6 TEST DATA FOR CONDUCTED EMISSION	12
6. RADIATED EMISSION	23
6.1 OPERATING ENVIRONMENT	23
6.2 TEST SET-UP	23
6.3 MEASUREMENT UNCERTAINTY.....	23
6.4 LIMIT	24
6.5 TEST EQUIPMENT USED.....	24
6.6 TEST DATA FOR RADIATED EMISSION.....	25
7. SAMPLE CALCULATIONS.....	31
7.1 EXAMPLE 1 :	31
7.2 EXAMPLE 2 :	31
8. RECOMMENDATION & CONCLUSION.....	32
APPENDIX A – ATTESTATION STATEMENT	
APPENDIX B – ID SAMPLE LABEL & LOCATION	
APPENDIX C – BLOCK DIAGRAM	
APPENDIX D – TEST SET-UP PHOTOGRAPHS	
APPENDIX E – EXTERNAL PHOTOGRAPHS	
APPENDIX F – INTERNAL PHOTOGRAPHS	
APPENDIX G – USER’S MANUAL	



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.** BEJ60LD550UB
- **EUT Type** LCD TV/Monitor
- **Model Name** 60LD550-UB
- **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 12 ~ 13, 2010
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-10-001
- **Dates of Issue** January 14, 2010



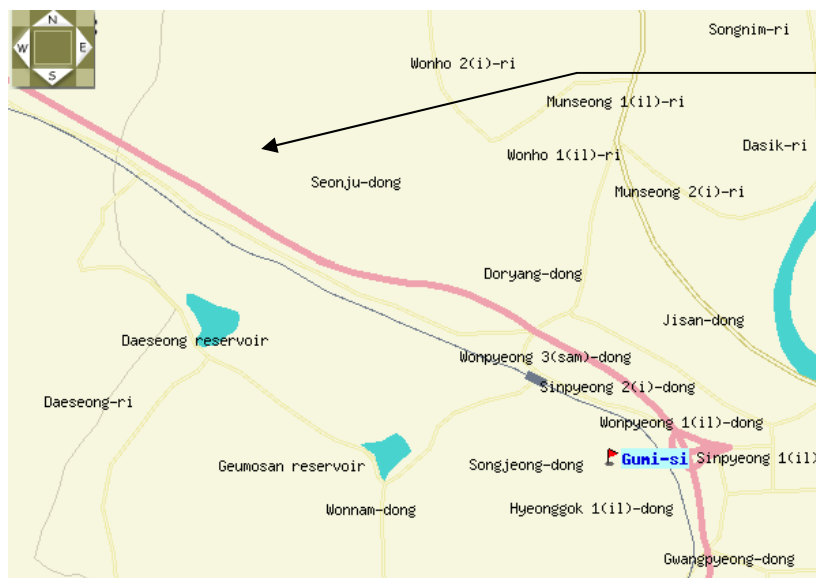
2. Introduction

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. LCD TV/Monitor (Model Name: 60LD550-UB)**

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)



GUMI COLLEGE EMC CENTER
407, Bugok-dong, Gumi-si,
Gyeongbuk 730-711, Korea.
Tel: +82-54-440-1195
Fax: +82-54-440-1199

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. LCD TV/Monitor (Model Name: 60LD550-UB) FCC ID.: BEJ60LD550UB**

MODELS		52LD550 (52LD550-UB)	60LD550 (60LD550-UB)
Dimensions (Width x Height x Depth)	With stand	49.8 x 33.5 x 13.0 inches 1266.0 x 851.0 x 330.0 mm	56.7 x 37.9 x 13.6 inches 1441.0 x 963.0 x 345.0 mm
	Without stand	49.8 x 29.3 x 3.8 inches 1266.0 x 745.0 x 96.4 mm	56.7 x 34.5 x 4.3 inches 1441.0 x 877.0 x 109.0 mm
Weight	With stand	59.3 lbs / 26.9 kg	86.6 lbs / 39.3 kg
	Without stand	52.0 lbs / 23.6 kg	78.2 lbs / 35.5 kg
Power requirement		AC100-240V ~ 50/60Hz	
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



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
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	INNATOR CO., LTD.	XM2-128	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 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the EUT	1.8 m unshielded
LAN cable	Connected to the EUT and network	10.0 m unshielded
Wireless control cable	Connected to the EUT and wireless ready dongle	0.25 m shielded
RGB(Analog) in cable	Connected to the EUT and PC	1.8 m shielded with two ferrite cores
HDMI/DVI(Digital) in cable	Connected to the EUT and PC	1.95 m shielded
Audio(RGB/DVI) in cable	Connected to the EUT and PC	1.8 m shielded
Component	Connected to the EUT and DVD player	2.0 m shielded
Component sound	Connected to the EUT and DVD player	3.0 m shielded
AV in cable	Connected to the EUT and DVD player	3.0 m shielded
Headphone cable	Connected to the EUT and headset	2.75 m shielded
Antenna cable	Connected to the EUT and TV signal generator	10.0 m shielded
RS-232C (Service only) cable	Connected to the EUT and PC	2.4 m shielded with four 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
- . 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

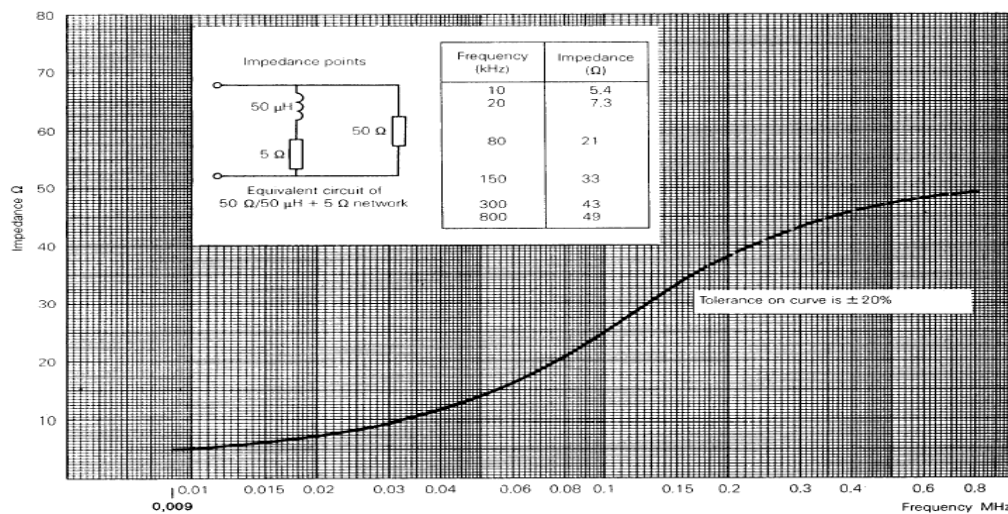


Fig 2. Impedance of LISN



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

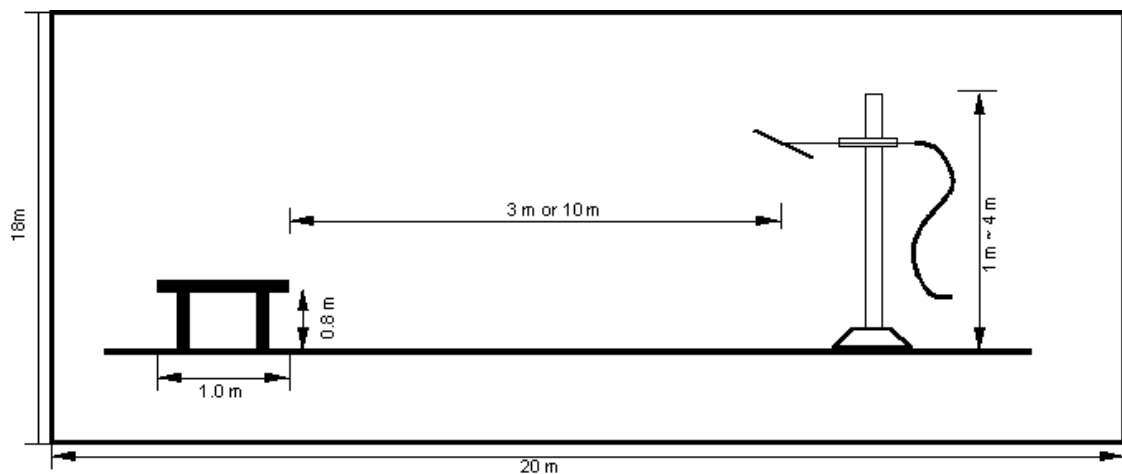


Fig 3. Dimensions of test site.



5. Conducted Emission

5.1 Operating Environment

Temperature : 25 °C
Relative Humidity : 43 % 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

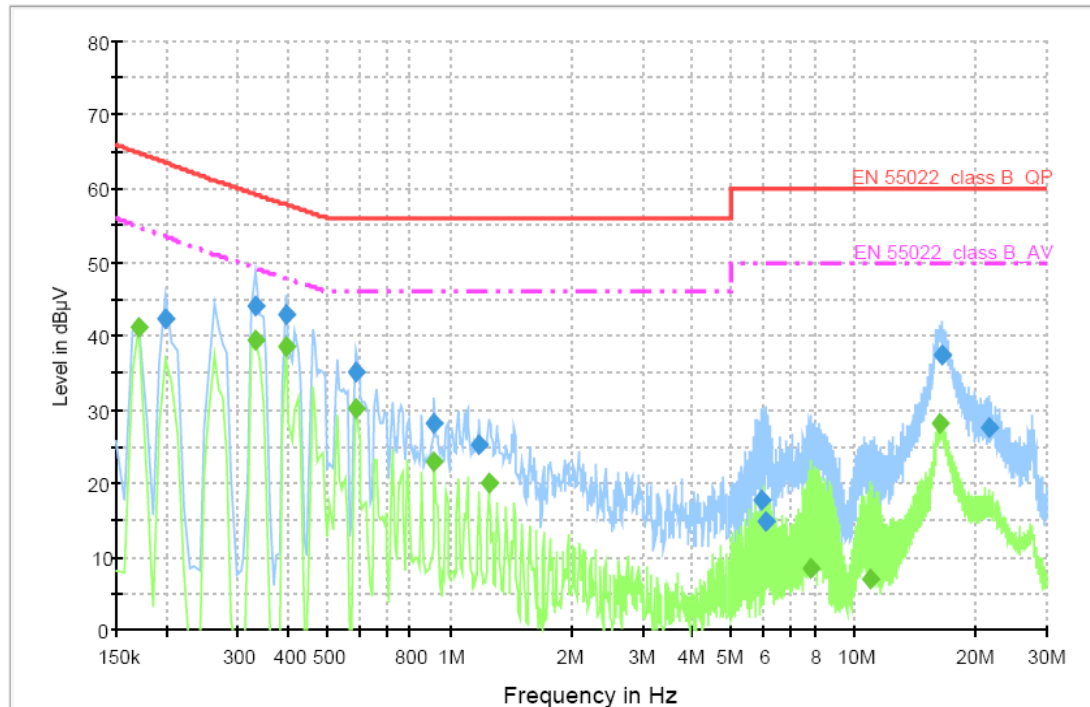
5.6 Test data for Conducted Emission

- . Test Date : January 12, 2010
- . Resolution Bandwidth : 9 kHz
- . Frequency Range : 0.15 MHz ~ 30 MHz



◆ Test resolution: 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
0.199000	42.4	1000.000	9.000	GND	L1	10.0	21.1	63.5	
0.332000	44.0	1000.000	9.000	GND	L1	10.0	15.2	59.2	
0.395000	42.8	1000.000	9.000	GND	L1	10.0	15.0	57.8	
0.591000	35.1	1000.000	9.000	GND	L1	10.0	20.9	56.0	
0.920000	28.2	1000.000	9.000	GND	L1	10.0	27.8	56.0	
1.186000	25.1	1000.000	9.000	GND	L1	10.1	30.9	56.0	
5.911000	17.8	1000.000	9.000	GND	L1	10.2	42.2	60.0	
6.044000	14.7	1000.000	9.000	GND	L1	10.2	45.3	60.0	
16.600000	37.3	1000.000	9.000	GND	L1	10.8	22.7	60.0	
21.556000	27.7	1000.000	9.000	GND	L1	11.1	32.3	60.0	

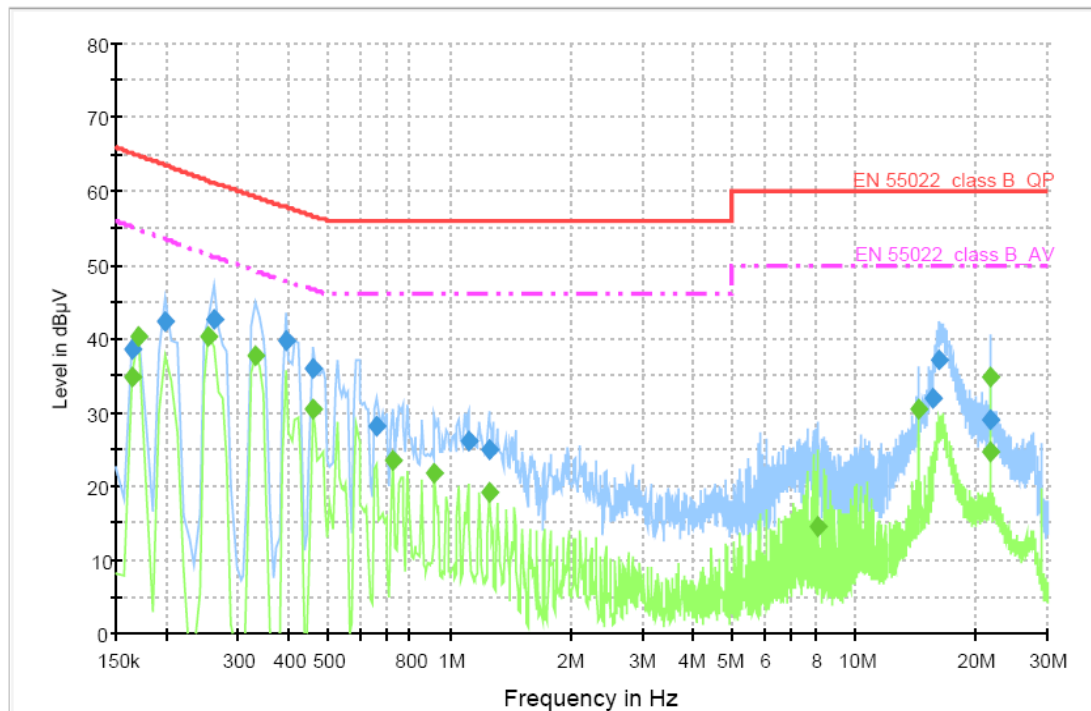
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.171000	41.1	1000.000	9.000	GND	L1	10.0	13.7	54.8	
0.332000	39.6	1000.000	9.000	GND	L1	10.0	9.6	49.2	
0.395000	38.6	1000.000	9.000	GND	L1	10.0	9.2	47.8	
0.591000	30.1	1000.000	9.000	GND	L1	10.0	15.9	46.0	
0.920000	22.9	1000.000	9.000	GND	L1	10.0	23.1	46.0	
1.249000	20.0	1000.000	9.000	GND	L1	10.1	26.0	46.0	
7.857000	8.4	1000.000	9.000	GND	L1	10.3	41.6	50.0	
11.014000	7.0	1000.000	9.000	GND	L1	10.5	43.0	50.0	
16.383000	28.0	1000.000	9.000	GND	L1	10.8	22.0	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
0.164000	38.5	1000.000	9.000	GND	N	10.0	26.7	65.2	
0.199000	42.4	1000.000	9.000	GND	N	10.0	21.1	63.5	
0.262000	42.5	1000.000	9.000	GND	N	10.0	18.7	61.2	
0.395000	39.8	1000.000	9.000	GND	N	10.0	18.0	57.8	
0.458000	36.1	1000.000	9.000	GND	N	10.0	20.6	56.7	
0.661000	28.0	1000.000	9.000	GND	N	10.0	28.0	56.0	
1.116000	26.0	1000.000	9.000	GND	N	10.1	30.0	56.0	
1.249000	25.1	1000.000	9.000	GND	N	10.1	30.9	56.0	
15.571000	31.8	1000.000	9.000	GND	N	10.6	28.2	60.0	
16.250000	37.1	1000.000	9.000	GND	N	10.6	22.9	60.0	
21.703000	28.9	1000.000	9.000	GND	N	10.8	31.1	60.0	

Final Measurement Detector 2

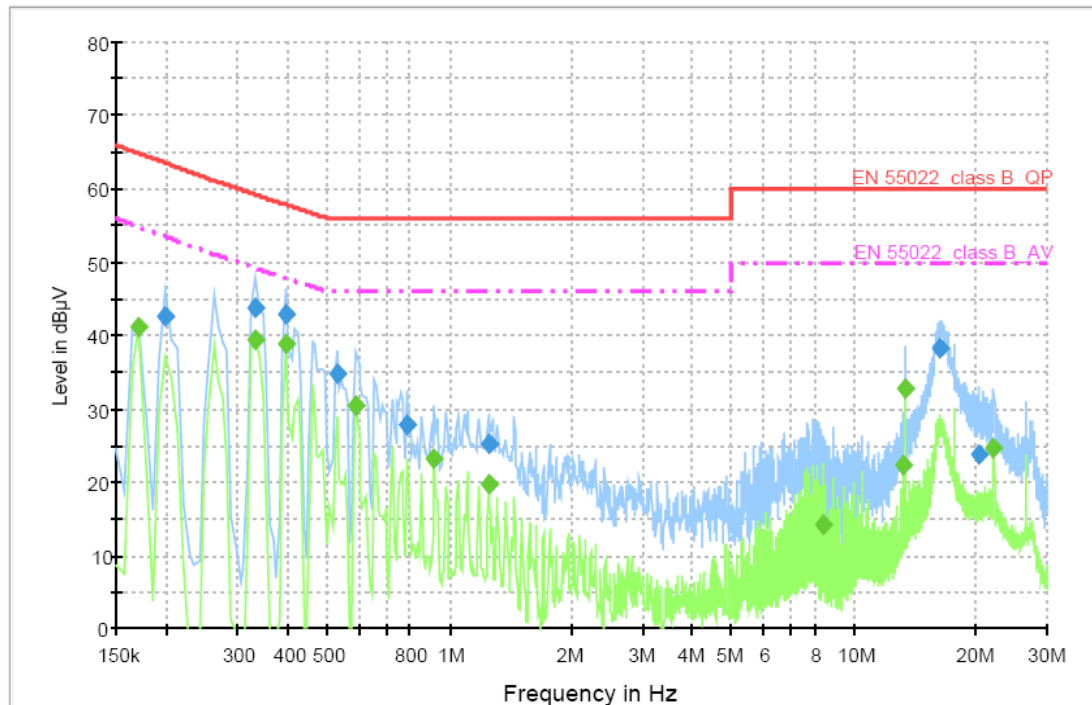
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	34.7	1000.000	9.000	GND	N	10.0	20.5	55.2	
0.171000	40.4	1000.000	9.000	GND	N	10.0	14.4	54.8	
0.255000	40.4	1000.000	9.000	GND	N	10.0	10.9	51.3	
0.332000	37.7	1000.000	9.000	GND	N	10.0	11.5	49.2	
0.458000	30.3	1000.000	9.000	GND	N	10.0	16.4	46.7	
0.724000	23.5	1000.000	9.000	GND	N	10.0	22.5	46.0	
0.920000	21.9	1000.000	9.000	GND	N	10.0	24.1	46.0	
1.249000	19.1	1000.000	9.000	GND	N	10.1	26.9	46.0	
8.088000	14.5	1000.000	9.000	GND	N	10.3	35.5	50.0	
14.451000	30.6	1000.000	9.000	GND	N	10.5	19.4	50.0	
21.654000	34.7	1000.000	9.000	GND	N	10.8	15.3	50.0	
21.703000	24.7	1000.000	9.000	GND	N	10.8	25.3	50.0	

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



◆ Test resolution: 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
0.199000	42.7	1000.000	9.000	GND	L1	10.0	20.8	63.5	
0.332000	43.9	1000.000	9.000	GND	L1	10.0	15.3	59.2	
0.395000	42.9	1000.000	9.000	GND	L1	10.0	14.9	57.8	
0.528000	34.7	1000.000	9.000	GND	L1	10.0	21.3	56.0	
0.787000	27.9	1000.000	9.000	GND	L1	10.0	28.1	56.0	
1.249000	25.3	1000.000	9.000	GND	L1	10.1	30.7	56.0	
16.390000	38.1	1000.000	9.000	GND	L1	10.8	21.9	60.0	
20.317000	23.8	1000.000	9.000	GND	L1	11.1	36.2	60.0	

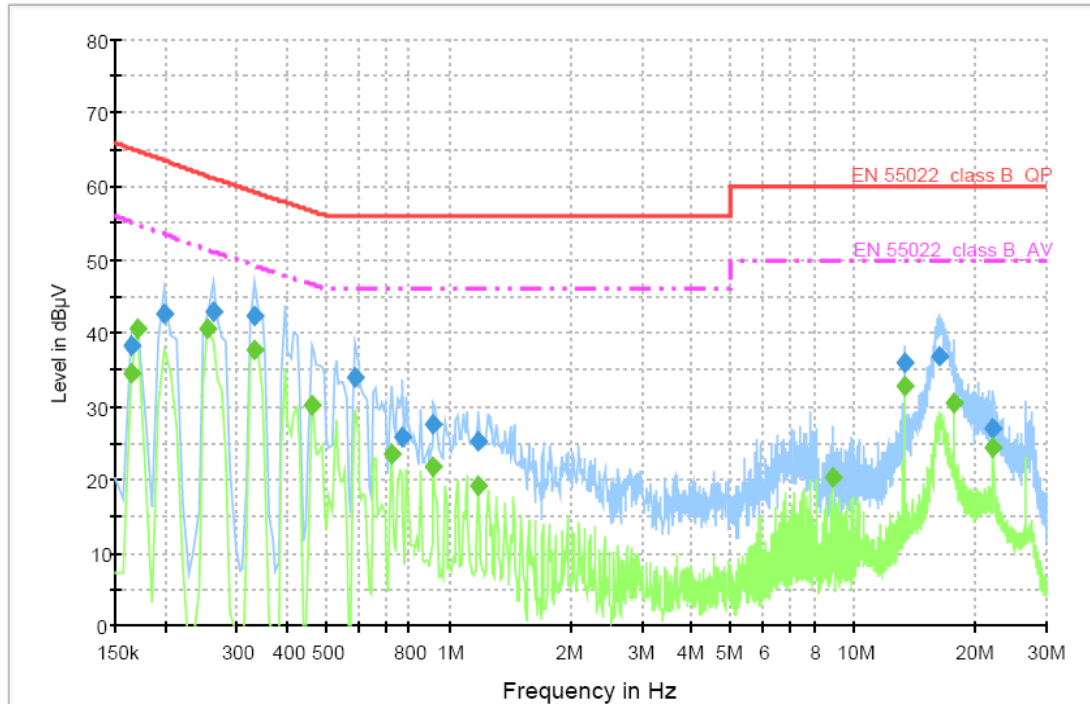
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.171000	41.2	1000.000	9.000	GND	L1	10.0	13.6	54.8	
0.332000	39.4	1000.000	9.000	GND	L1	10.0	9.8	49.2	
0.395000	38.8	1000.000	9.000	GND	L1	10.0	9.0	47.8	
0.591000	30.4	1000.000	9.000	GND	L1	10.0	15.6	46.0	
0.920000	23.2	1000.000	9.000	GND	L1	10.0	22.8	46.0	
1.249000	19.6	1000.000	9.000	GND	L1	10.1	26.4	46.0	
8.438000	14.3	1000.000	9.000	GND	L1	10.3	35.7	50.0	
13.324000	22.2	1000.000	9.000	GND	L1	10.6	27.8	50.0	
13.359000	32.6	1000.000	9.000	GND	L1	10.6	17.4	50.0	
22.277000	24.7	1000.000	9.000	GND	L1	11.1	25.3	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
0.164000	38.3	1000.000	9.000	GND	N	10.0	26.9	65.2	
0.199000	42.7	1000.000	9.000	GND	N	10.0	20.8	63.5	
0.262000	42.8	1000.000	9.000	GND	N	10.0	18.4	61.2	
0.332000	42.4	1000.000	9.000	GND	N	10.0	16.8	59.2	
0.591000	34.0	1000.000	9.000	GND	N	10.0	22.0	56.0	
0.773000	25.7	1000.000	9.000	GND	N	10.0	30.3	56.0	
0.920000	27.5	1000.000	9.000	GND	N	10.0	28.5	56.0	
1.186000	25.3	1000.000	9.000	GND	N	10.1	30.7	56.0	
13.359000	36.0	1000.000	9.000	GND	N	10.5	24.0	60.0	
16.334000	36.7	1000.000	9.000	GND	N	10.6	23.3	60.0	
22.242000	27.0	1000.000	9.000	GND	N	10.8	33.0	60.0	

Final Measurement Detector 2

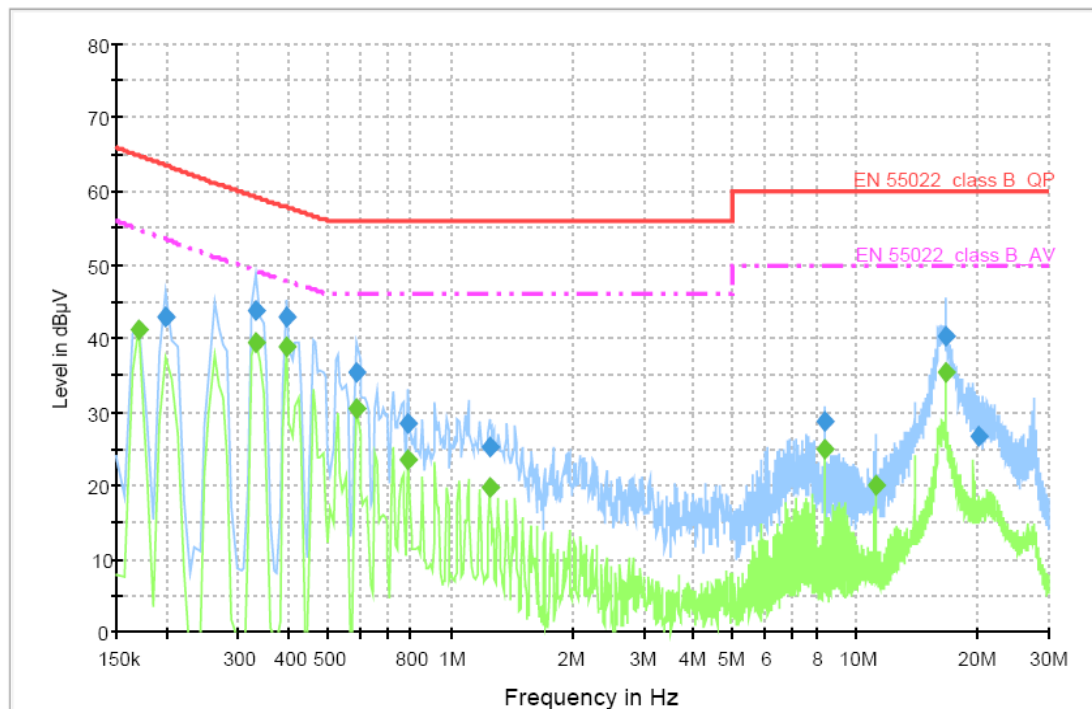
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	34.5	1000.000	9.000	GND	N	10.0	20.7	55.2	
0.171000	40.5	1000.000	9.000	GND	N	10.0	14.3	54.8	
0.255000	40.7	1000.000	9.000	GND	N	10.0	10.6	51.3	
0.332000	37.7	1000.000	9.000	GND	N	10.0	11.5	49.2	
0.458000	30.2	1000.000	9.000	GND	N	10.0	16.5	46.7	
0.724000	23.5	1000.000	9.000	GND	N	10.0	22.5	46.0	
0.920000	21.9	1000.000	9.000	GND	N	10.0	24.1	46.0	
1.186000	19.1	1000.000	9.000	GND	N	10.1	26.9	46.0	
8.921000	20.4	1000.000	9.000	GND	N	10.3	29.6	50.0	
13.359000	32.8	1000.000	9.000	GND	N	10.5	17.2	50.0	
17.797000	30.5	1000.000	9.000	GND	N	10.7	19.5	50.0	
22.277000	24.4	1000.000	9.000	GND	N	10.8	25.6	50.0	

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



◆ Test resolution: 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
0.199000	43.0	1000.000	9.000	GND	L1	10.0	20.5	63.5	
0.332000	43.9	1000.000	9.000	GND	L1	10.0	15.3	59.2	
0.395000	43.0	1000.000	9.000	GND	L1	10.0	14.8	57.8	
0.591000	35.4	1000.000	9.000	GND	L1	10.0	20.6	56.0	
0.787000	28.3	1000.000	9.000	GND	L1	10.0	27.7	56.0	
1.249000	25.3	1000.000	9.000	GND	L1	10.1	30.7	56.0	
8.410000	28.6	1000.000	9.000	GND	L1	10.3	31.4	60.0	
16.782000	40.2	1000.000	9.000	GND	L1	10.8	19.8	60.0	
20.072000	26.7	1000.000	9.000	GND	L1	11.0	33.3	60.0	

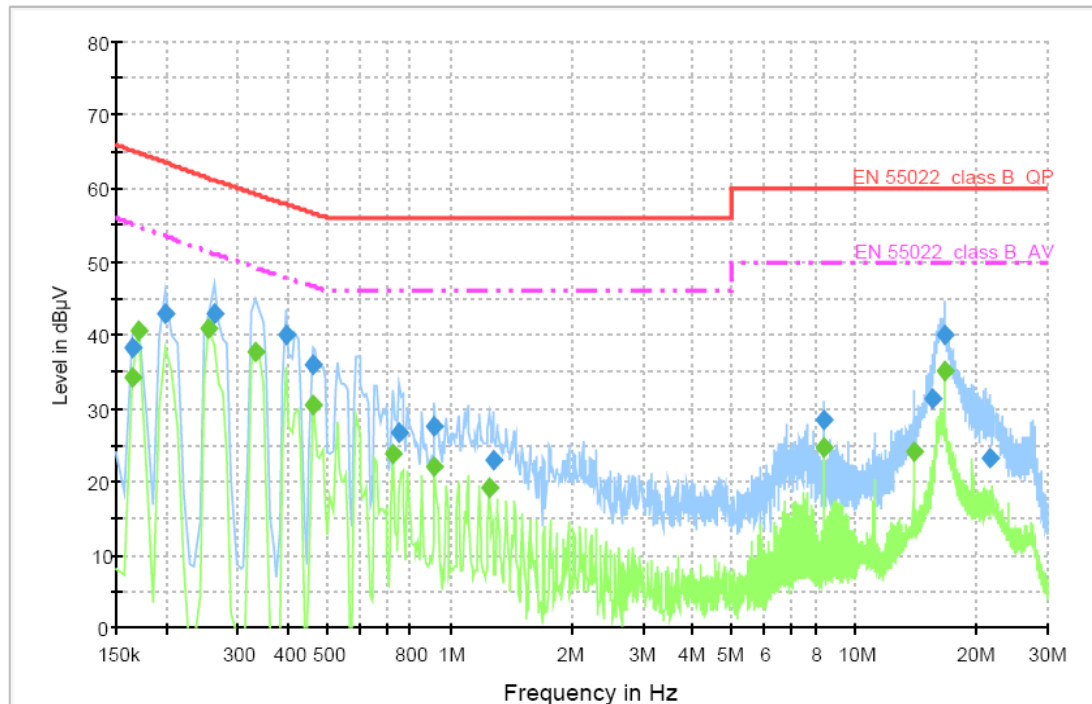
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.171000	41.2	1000.000	9.000	GND	L1	10.0	13.6	54.8	
0.332000	39.5	1000.000	9.000	GND	L1	10.0	9.7	49.2	
0.395000	38.8	1000.000	9.000	GND	L1	10.0	9.0	47.8	
0.591000	30.5	1000.000	9.000	GND	L1	10.0	15.5	46.0	
0.787000	23.4	1000.000	9.000	GND	L1	10.0	22.6	46.0	
1.249000	19.8	1000.000	9.000	GND	L1	10.1	26.2	46.0	
8.410000	25.0	1000.000	9.000	GND	L1	10.3	25.0	50.0	
11.210000	20.0	1000.000	9.000	GND	L1	10.5	30.0	50.0	
16.782000	35.2	1000.000	9.000	GND	L1	10.8	14.8	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
0.164000	38.3	1000.000	9.000	GND	N	10.0	26.9	65.2	
0.199000	42.8	1000.000	9.000	GND	N	10.0	20.7	63.5	
0.262000	43.0	1000.000	9.000	GND	N	10.0	18.2	61.2	
0.395000	40.1	1000.000	9.000	GND	N	10.0	17.7	57.8	
0.458000	36.1	1000.000	9.000	GND	N	10.0	20.6	56.7	
0.752000	26.8	1000.000	9.000	GND	N	10.0	29.2	56.0	
0.920000	27.6	1000.000	9.000	GND	N	10.0	28.4	56.0	
1.277000	22.9	1000.000	9.000	GND	N	10.1	33.1	56.0	
8.410000	28.3	1000.000	9.000	GND	N	10.3	31.7	60.0	
15.641000	31.4	1000.000	9.000	GND	N	10.6	28.6	60.0	
16.782000	40.0	1000.000	9.000	GND	N	10.6	20.0	60.0	
21.745000	23.1	1000.000	9.000	GND	N	10.8	36.9	60.0	

Final Measurement Detector 2

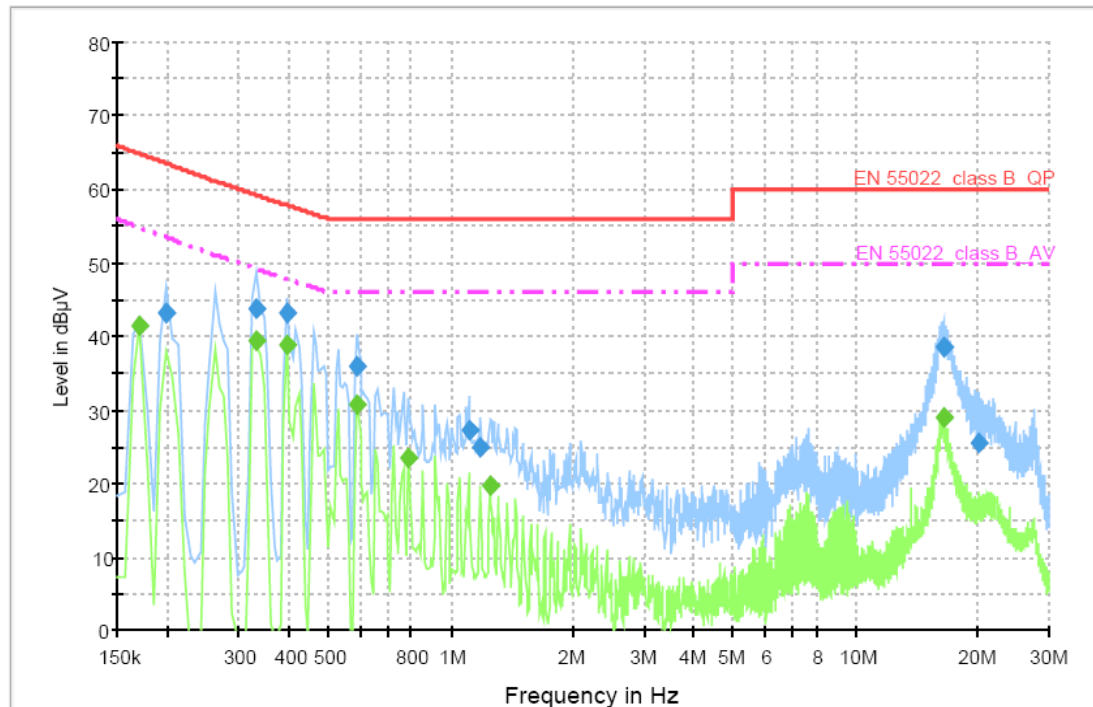
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	34.3	1000.000	9.000	GND	N	10.0	20.9	55.2	
0.171000	40.6	1000.000	9.000	GND	N	10.0	14.2	54.8	
0.255000	40.9	1000.000	9.000	GND	N	10.0	10.4	51.3	
0.332000	37.6	1000.000	9.000	GND	N	10.0	11.6	49.2	
0.458000	30.4	1000.000	9.000	GND	N	10.0	16.3	46.7	
0.724000	23.9	1000.000	9.000	GND	N	10.0	22.1	46.0	
0.920000	21.9	1000.000	9.000	GND	N	10.0	24.1	46.0	
1.249000	19.2	1000.000	9.000	GND	N	10.1	26.8	46.0	
8.410000	24.8	1000.000	9.000	GND	N	10.3	25.2	50.0	
13.982000	24.2	1000.000	9.000	GND	N	10.5	25.8	50.0	
16.782000	35.0	1000.000	9.000	GND	N	10.6	15.0	50.0	

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



◆ Test resolution: 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
0.199000	43.1	1000.000	9.000	GND	L1	10.0	20.4	63.5	
0.332000	43.8	1000.000	9.000	GND	L1	10.0	15.4	59.2	
0.395000	43.1	1000.000	9.000	GND	L1	10.0	14.7	57.8	
0.591000	35.8	1000.000	9.000	GND	L1	10.0	20.2	56.0	
1.116000	27.1	1000.000	9.000	GND	L1	10.0	28.9	56.0	
1.186000	25.1	1000.000	9.000	GND	L1	10.1	30.9	56.0	
16.460000	38.5	1000.000	9.000	GND	L1	10.8	21.5	60.0	
20.121000	25.6	1000.000	9.000	GND	L1	11.0	34.4	60.0	

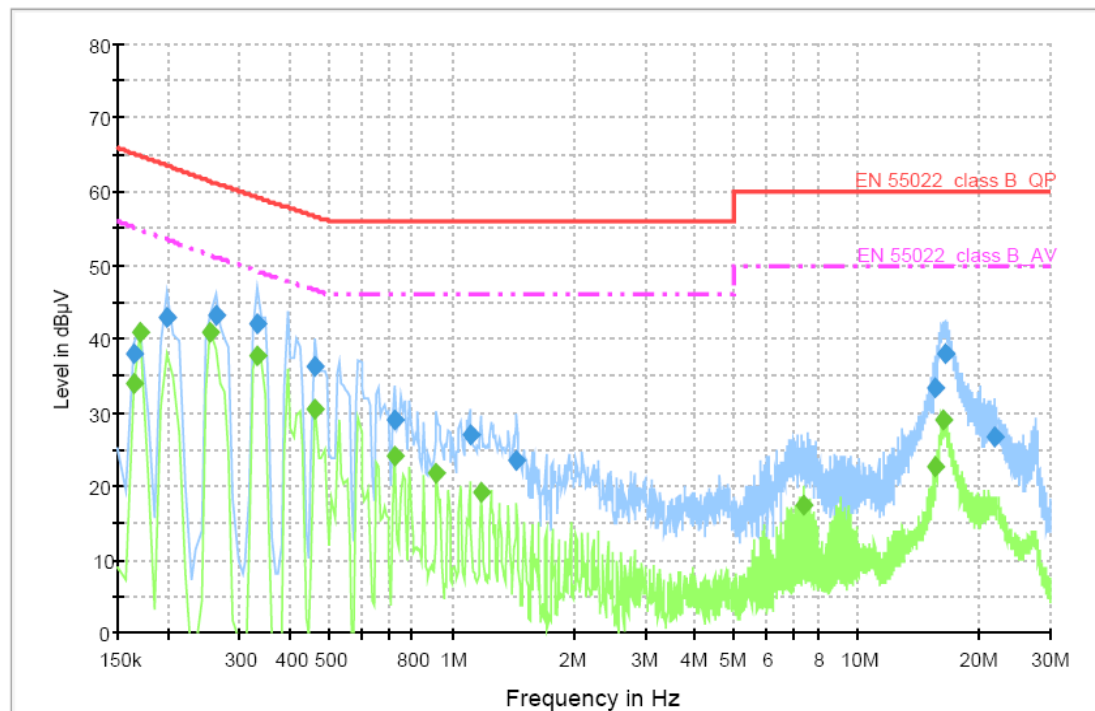
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.171000	41.3	1000.000	9.000	GND	L1	10.0	13.5	54.8	
0.332000	39.4	1000.000	9.000	GND	L1	10.0	9.8	49.2	
0.395000	38.8	1000.000	9.000	GND	L1	10.0	9.0	47.8	
0.591000	30.8	1000.000	9.000	GND	L1	10.0	15.2	46.0	
0.787000	23.6	1000.000	9.000	GND	L1	10.0	22.4	46.0	
1.249000	19.8	1000.000	9.000	GND	L1	10.1	26.2	46.0	
16.460000	28.9	1000.000	9.000	GND	L1	10.8	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
0.164000	38.1	1000.000	9.000	GND	N	10.0	27.1	65.2	
0.199000	42.8	1000.000	9.000	GND	N	10.0	20.7	63.5	
0.262000	43.1	1000.000	9.000	GND	N	10.0	18.1	61.2	
0.332000	42.1	1000.000	9.000	GND	N	10.0	17.1	59.2	
0.458000	36.1	1000.000	9.000	GND	N	10.0	20.6	56.7	
0.724000	29.0	1000.000	9.000	GND	N	10.0	27.0	56.0	
1.116000	26.9	1000.000	9.000	GND	N	10.1	29.1	56.0	
1.445000	23.4	1000.000	9.000	GND	N	10.1	32.6	56.0	
15.578000	33.4	1000.000	9.000	GND	N	10.6	26.6	60.0	
16.453000	38.0	1000.000	9.000	GND	N	10.6	22.0	60.0	
21.773000	26.5	1000.000	9.000	GND	N	10.8	33.5	60.0	

Final Measurement Detector 2

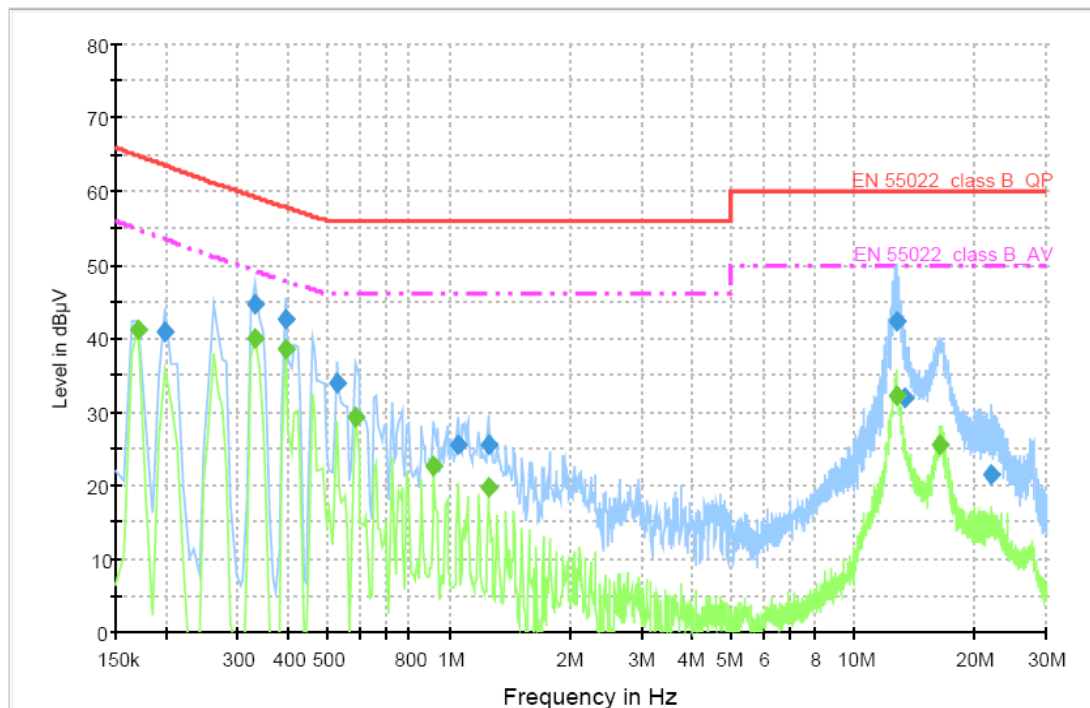
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	33.9	1000.000	9.000	GND	N	10.0	21.3	55.2	
0.171000	40.8	1000.000	9.000	GND	N	10.0	14.0	54.8	
0.255000	41.0	1000.000	9.000	GND	N	10.0	10.3	51.3	
0.332000	37.6	1000.000	9.000	GND	N	10.0	11.6	49.2	
0.458000	30.4	1000.000	9.000	GND	N	10.0	16.3	46.7	
0.724000	23.9	1000.000	9.000	GND	N	10.0	22.1	46.0	
0.920000	21.9	1000.000	9.000	GND	N	10.0	24.1	46.0	
1.186000	19.0	1000.000	9.000	GND	N	10.1	27.0	46.0	
7.416000	17.4	1000.000	9.000	GND	N	10.3	32.6	50.0	
15.578000	22.6	1000.000	9.000	GND	N	10.6	27.4	50.0	
16.418000	29.0	1000.000	9.000	GND	N	10.6	21.0	50.0	

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



◆ Test resolution: 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
0.199000	41.0	1000.000	9.000	GND	L1	10.0	22.5	63.5	
0.332000	44.8	1000.000	9.000	GND	L1	10.0	14.4	59.2	
0.395000	42.7	1000.000	9.000	GND	L1	10.0	15.1	57.8	
0.528000	33.9	1000.000	9.000	GND	L1	10.0	22.1	56.0	
1.053000	25.5	1000.000	9.000	GND	L1	10.0	30.5	56.0	
1.249000	25.4	1000.000	9.000	GND	L1	10.1	30.6	56.0	
12.799000	42.2	1000.000	9.000	GND	L1	10.6	17.8	60.0	
13.338000	31.8	1000.000	9.000	GND	L1	10.6	28.2	60.0	
21.801000	21.5	1000.000	9.000	GND	L1	11.1	38.5	60.0	

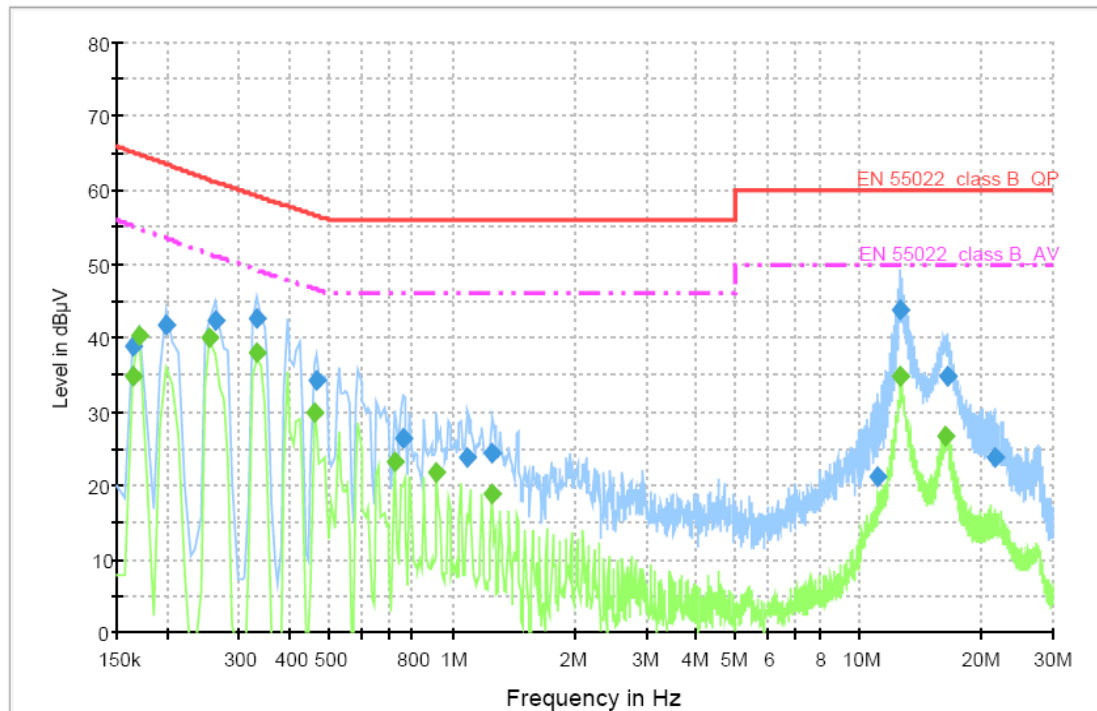
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.171000	41.2	1000.000	9.000	GND	L1	10.0	13.6	54.8	
0.332000	40.1	1000.000	9.000	GND	L1	10.0	9.1	49.2	
0.395000	38.5	1000.000	9.000	GND	L1	10.0	9.3	47.8	
0.591000	29.2	1000.000	9.000	GND	L1	10.0	16.8	46.0	
0.920000	22.5	1000.000	9.000	GND	L1	10.0	23.5	46.0	
1.249000	19.6	1000.000	9.000	GND	L1	10.1	26.4	46.0	
12.799000	32.1	1000.000	9.000	GND	L1	10.6	17.9	50.0	
16.383000	25.6	1000.000	9.000	GND	L1	10.8	24.4	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
0.164000	38.7	1000.000	9.000	GND	N	10.0	26.5	65.2	
0.199000	41.9	1000.000	9.000	GND	N	10.0	21.6	63.5	
0.262000	42.3	1000.000	9.000	GND	N	10.0	18.9	61.2	
0.332000	42.5	1000.000	9.000	GND	N	10.0	16.7	59.2	
0.465000	34.1	1000.000	9.000	GND	N	10.0	22.5	56.6	
0.759000	26.4	1000.000	9.000	GND	N	10.0	29.6	56.0	
1.095000	23.7	1000.000	9.000	GND	N	10.1	32.3	56.0	
1.256000	24.4	1000.000	9.000	GND	N	10.1	31.6	56.0	
11.182000	21.2	1000.000	9.000	GND	N	10.4	38.8	60.0	
12.659000	43.9	1000.000	9.000	GND	N	10.5	16.1	60.0	
16.537000	34.9	1000.000	9.000	GND	N	10.6	25.1	60.0	
21.724000	23.7	1000.000	9.000	GND	N	10.8	36.3	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	34.9	1000.000	9.000	GND	N	10.0	20.3	55.2	
0.171000	40.4	1000.000	9.000	GND	N	10.0	14.4	54.8	
0.255000	40.0	1000.000	9.000	GND	N	10.0	11.3	51.3	
0.332000	37.9	1000.000	9.000	GND	N	10.0	11.3	49.2	
0.458000	29.9	1000.000	9.000	GND	N	10.0	16.8	46.7	
0.724000	23.1	1000.000	9.000	GND	N	10.0	22.9	46.0	
0.920000	21.7	1000.000	9.000	GND	N	10.0	24.3	46.0	
1.249000	18.8	1000.000	9.000	GND	N	10.1	27.2	46.0	
12.666000	34.7	1000.000	9.000	GND	N	10.5	15.3	50.0	
16.425000	26.7	1000.000	9.000	GND	N	10.6	23.3	50.0	

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



6. Radiated Emission

6.1 Operating Environment

Temperature : 21 °C
Relative Humidity : 45 % 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



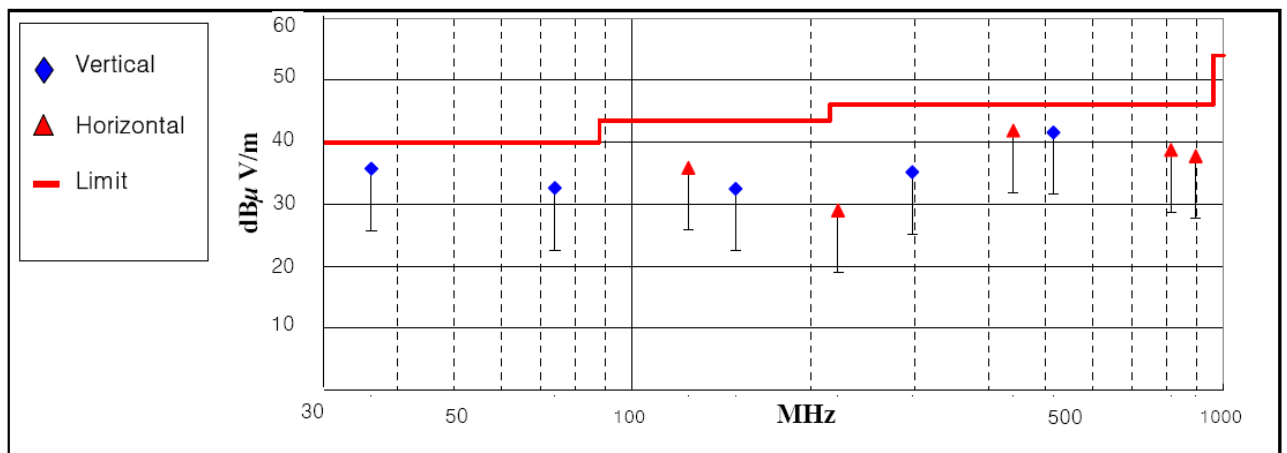
6.6 Test data for Radiated Emission

- Test Date : January 12, 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)	(°)
36.19	21.86	11.87	2.01	35.74	40.00	4.26	V	100	69
73.96	20.53	9.35	2.74	32.62	40.00	7.38	V	109	371
124.34	20.84	11.66	3.39	35.89	43.50	7.61	H	152	350
149.46	16.03	12.76	3.69	32.48	43.50	11.02	V	104	343
222.84	14.09	10.31	4.59	28.99	46.00	17.01	H	100	90
297.42	16.42	13.19	5.59	35.20	46.00	10.80	V	128	355
441.17	17.84	16.83	7.20	41.87	46.00	4.13	H	117	0
515.45	16.63	17.86	7.05	41.54	46.00	4.46	V	159	11
814.69	6.76	23.34	8.67	38.77	46.00	7.23	H	124	0
896.87	4.44	24.18	9.15	37.77	46.00	8.23	H	250	299

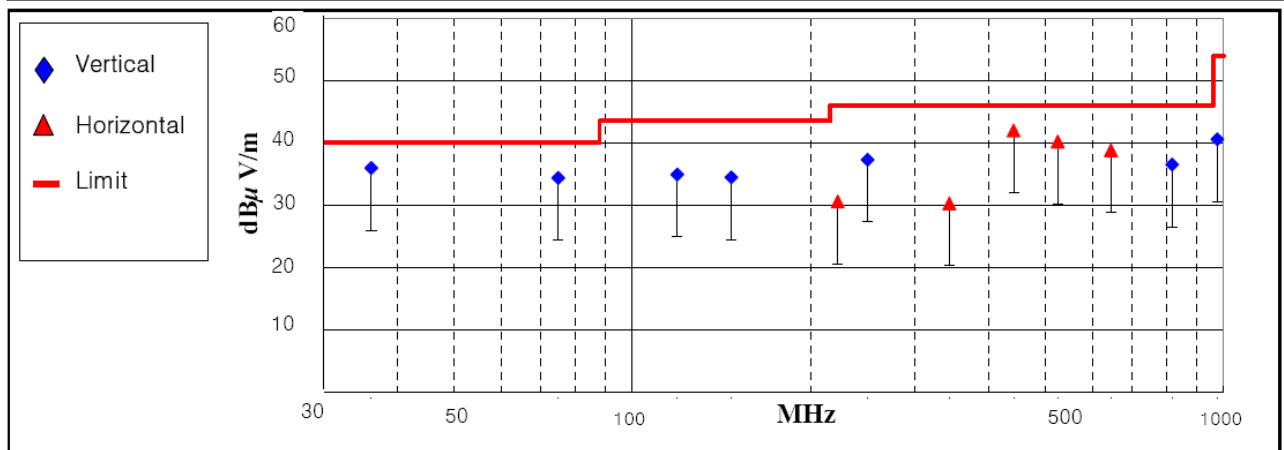


< Fig 14. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ 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)			(H/V)	(cm)	(°)
36.19	22.07	11.87	2.01	35.95	40.00	4.05	V	100	61
74.94	22.45	9.13	2.76	34.34	40.00	5.66	V	104	11
119.15	20.27	11.30	3.32	34.89	43.50	8.61	V	108	348
147.06	18.05	12.74	3.66	34.45	43.50	9.05	V	108	359
222.48	15.69	10.29	4.59	30.57	46.00	15.43	H	148	38
250.01	20.76	11.56	4.95	37.27	46.00	8.73	V	233	179
343.69	9.10	14.31	6.83	30.24	46.00	15.76	H	190	0
441.25	17.95	16.84	7.20	41.99	46.00	4.01	H	109	4
524.40	15.07	18.05	7.07	40.19	46.00	5.81	H	240	10
644.95	10.12	20.97	7.68	38.77	46.00	7.23	H	100	10
818.52	4.45	23.37	8.69	36.51	46.00	9.49	V	105	349
975.40	5.27	25.61	9.70	40.58	54.00	13.42	V	105	347

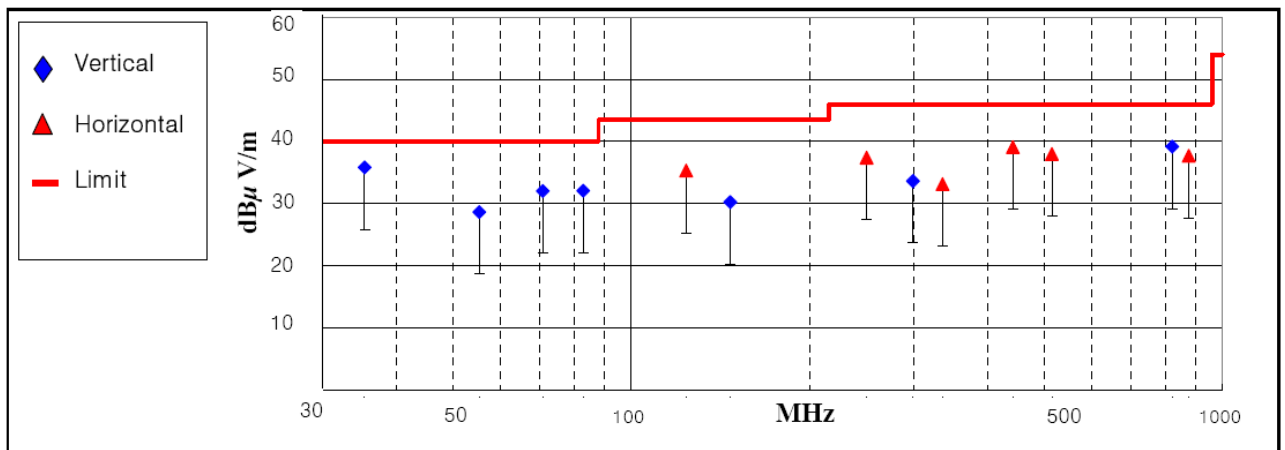


< Fig 15. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ 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)	(°)
35.40	22.02	11.85	1.99	35.86	40.00	4.14	V	100	65
55.34	14.04	12.24	2.41	28.69	40.00	11.31	V	104	180
70.82	19.32	10.04	2.68	32.04	40.00	7.96	V	104	162
82.96	21.15	8.09	2.87	32.11	40.00	7.89	V	119	350
123.84	20.32	11.63	3.38	35.33	43.50	8.17	H	162	10
147.00	13.86	12.74	3.66	30.26	43.50	13.24	V	120	3220
250.03	20.92	11.56	4.95	37.43	46.00	8.57	H	140	353
299.57	14.79	13.27	5.62	33.68	46.00	12.32	V	128	2
336.17	12.42	14.13	6.62	33.17	46.00	12.83	H	100	355
441.74	15.04	16.85	7.20	39.09	46.00	6.91	H	124	19
514.33	13.11	17.84	7.05	38.00	46.00	8.00	H	236	0
821.87	7.09	23.41	8.71	39.21	46.00	6.79	V	109	358
876.12	4.75	23.95	9.02	37.72	46.00	8.28	H	228	117



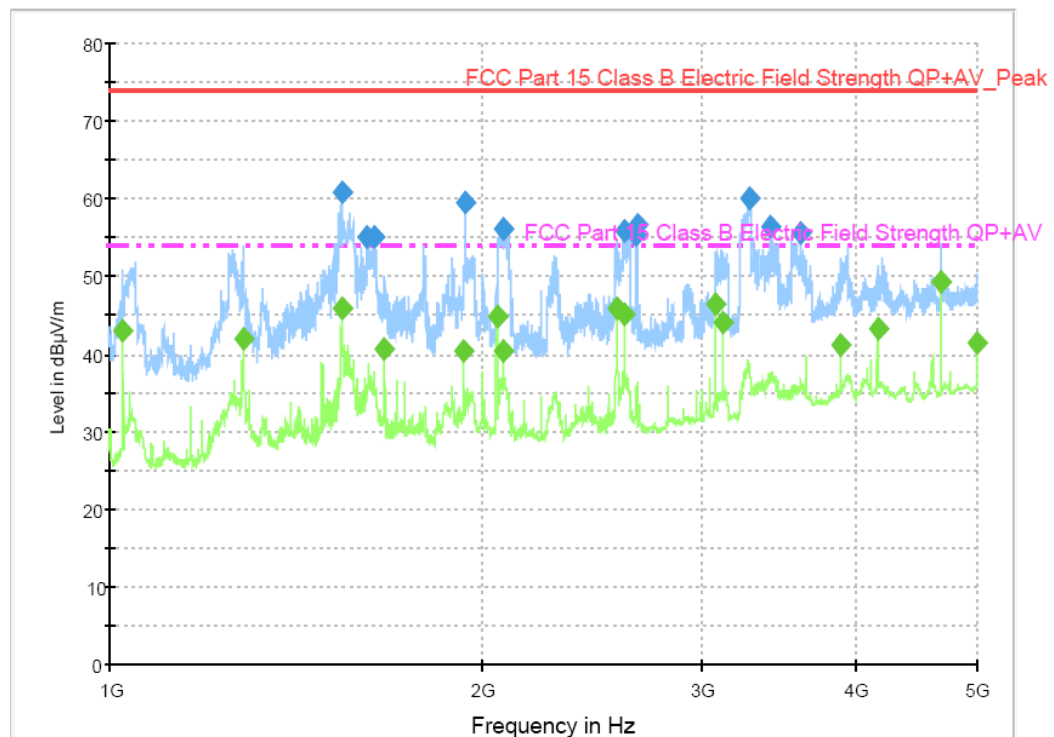
< Fig 16. Radiated emission result (30 MHz ~ 1 000 MHz)>



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

Detector mode: Peak detector mode / Average detector mode

FCC_ESIB_Preamplifier with Scans



Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1540.400000	60.8	100.0	H	180.0	-14.6	13.2	74.0	
1614.800000	55.2	100.0	H	180.0	-14.4	18.8	74.0	
1634.000000	55.1	100.0	H	180.0	-14.4	18.9	74.0	
1938.000000	59.5	100.0	H	180.0	-13.2	14.5	74.0	
2074.000000	56.2	100.0	V	180.0	-12.3	17.8	74.0	
2599.200000	55.9	100.0	H	180.0	-9.9	18.1	74.0	
2654.000000	55.3	100.0	H	180.0	-9.7	18.7	74.0	
2666.000000	56.6	100.0	H	180.0	-9.7	17.4	74.0	
3281.200000	60.0	100.0	H	180.0	-7.6	14.0	74.0	
3408.000000	56.3	100.0	H	180.0	-7.2	17.7	74.0	
3608.800000	55.6	200.0	H	180.0	-6.0	18.4	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1026.000000	43.0	100.0	V	180.0	-16.5	11.0	54.0	
1282.800000	42.0	200.0	H	180.0	-15.1	12.0	54.0	
1539.200000	45.8	100.0	H	180.0	-14.6	8.2	54.0	
1666.800000	40.6	100.0	V	180.0	-14.4	13.4	54.0	
1930.400000	40.4	100.0	V	180.0	-13.3	13.6	54.0	
2052.000000	44.8	200.0	V	180.0	-12.5	9.2	54.0	
2079.200000	40.5	100.0	V	180.0	-12.3	13.5	54.0	
2564.800000	45.9	100.0	H	180.0	-10.0	8.1	54.0	
2598.800000	45.1	100.0	H	180.0	-9.9	8.9	54.0	
3078.000000	46.4	100.0	H	180.0	-8.3	7.6	54.0	
3118.800000	44.0	100.0	H	180.0	-8.2	10.0	54.0	
3888.400000	41.2	200.0	V	180.0	-4.0	12.8	54.0	
4158.000000	43.3	100.0	V	180.0	-3.3	10.7	54.0	
4678.000000	49.2	100.0	V	180.0	-3.1	4.8	54.0	
5000.000000	41.5	100.0	V	270.0	-2.4	12.5	54.0	

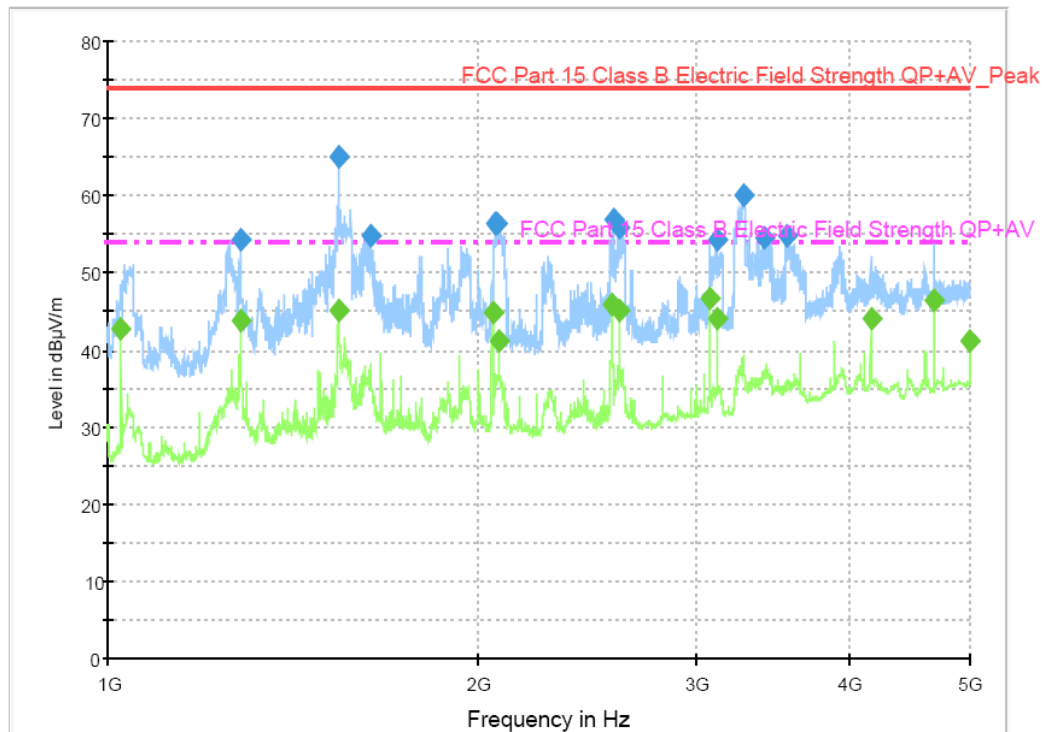
< Fig 17. Radiated emission result (1 000 MHz ~ 5 000 MHz)>



◆ 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
1282.400000	54.4	200.0	H	180.0	-15.1	19.6	74.0	
1539.200000	65.0	100.0	H	180.0	-14.6	9.0	74.0	
1633.600000	54.8	100.0	H	180.0	-14.4	19.2	74.0	
2062.800000	56.3	100.0	V	180.0	-12.4	17.7	74.0	
2073.200000	56.5	100.0	V	180.0	-12.3	17.5	74.0	
2569.600000	57.0	100.0	H	180.0	-10.0	17.0	74.0	
2598.000000	55.8	100.0	H	180.0	-9.9	18.2	74.0	
3118.800000	54.2	100.0	H	180.0	-8.2	19.8	74.0	
3282.000000	60.2	100.0	H	180.0	-7.6	13.8	74.0	
3407.600000	54.6	100.0	H	180.0	-7.2	19.4	74.0	
3562.000000	54.8	200.0	H	180.0	-6.4	19.2	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1026.000000	42.9	100.0	V	180.0	-16.5	11.1	54.0	
1282.400000	43.7	200.0	H	180.0	-15.1	10.3	54.0	
1538.800000	45.2	100.0	H	180.0	-14.6	8.8	54.0	
2052.000000	44.8	200.0	V	180.0	-12.5	9.2	54.0	
2079.200000	41.1	100.0	V	180.0	-12.3	12.9	54.0	
2564.800000	45.9	100.0	H	180.0	-10.0	8.1	54.0	
2598.800000	45.1	100.0	H	180.0	-9.9	8.9	54.0	
3078.000000	46.7	100.0	H	180.0	-8.3	7.3	54.0	
3118.800000	44.1	100.0	H	180.0	-8.2	9.9	54.0	
4158.400000	44.1	100.0	V	180.0	-3.3	9.9	54.0	
4678.000000	46.5	100.0	V	180.0	-3.1	7.5	54.0	
5000.000000	41.1	100.0	V	270.0	-2.4	12.9	54.0	

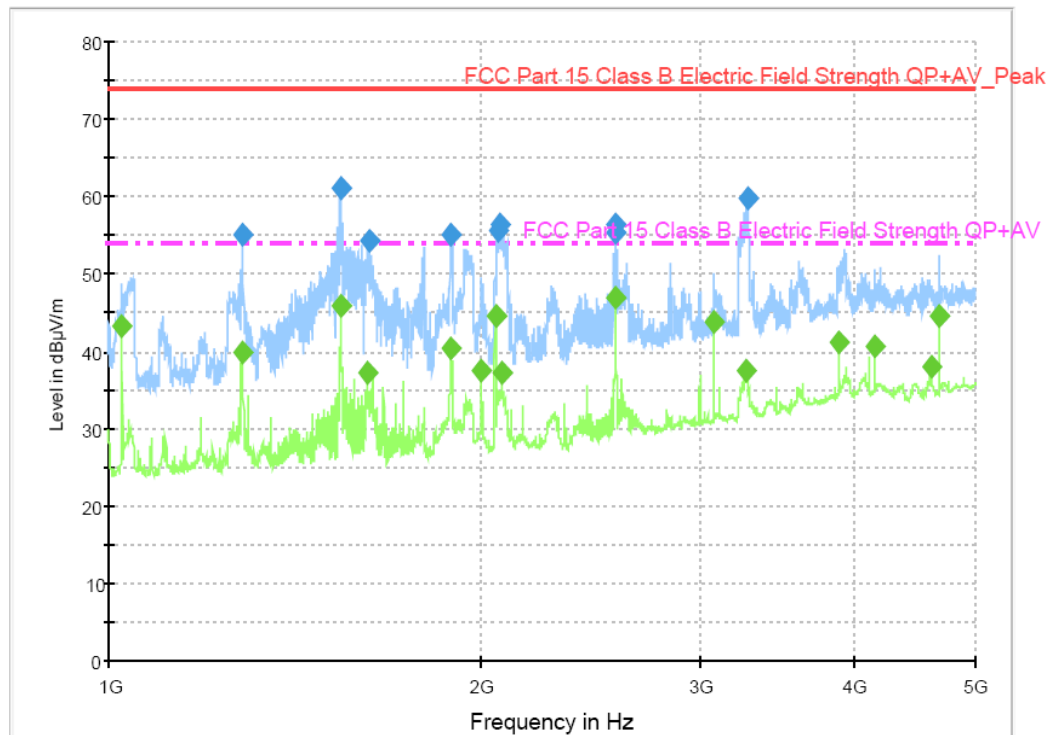
< Fig 18. Radiated emission result (1 000 MHz ~ 5 000 MHz)>



◆ Operating Condition: USB play mode

Detector mode: Peak detector mode / Average detector mode

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
1282.400000	55.1	200.0	H	180.0	-15.1	18.9	74.0	
1539.200000	61.1	100.0	H	180.0	-14.6	12.9	74.0	
1624.800000	54.2	100.0	H	180.0	-14.4	19.8	74.0	
1890.400000	55.0	100.0	V	180.0	-13.5	19.0	74.0	
2062.800000	55.5	100.0	V	180.0	-12.4	18.5	74.0	
2073.200000	56.5	100.0	V	180.0	-12.3	17.5	74.0	
2565.200000	56.4	100.0	H	180.0	-10.0	17.6	74.0	
2568.400000	55.4	100.0	H	180.0	-10.0	18.6	74.0	
3281.200000	59.8	100.0	H	180.0	-7.6	14.2	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1026.000000	43.3	100.0	V	180.0	-16.5	10.7	54.0	
1282.400000	39.9	200.0	H	180.0	-15.1	14.1	54.0	
1539.200000	46.0	100.0	H	180.0	-14.6	8.0	54.0	
1620.000000	37.3	100.0	H	180.0	-14.4	16.7	54.0	
1888.400000	40.5	100.0	V	180.0	-13.5	13.5	54.0	
2000.400000	37.4	200.0	V	180.0	-12.7	16.6	54.0	
2052.000000	44.6	200.0	V	180.0	-12.5	9.4	54.0	
2076.800000	37.4	100.0	V	180.0	-12.3	16.6	54.0	
2565.200000	47.0	100.0	H	180.0	-10.0	7.0	54.0	
3078.000000	43.8	100.0	H	180.0	-8.3	10.2	54.0	
3272.400000	37.6	100.0	H	180.0	-7.6	16.4	54.0	
3888.400000	41.2	200.0	V	180.0	-4.0	12.8	54.0	
4154.000000	40.7	100.0	V	180.0	-3.3	13.3	54.0	
4608.000000	38.1	100.0	H	180.0	-3.2	15.9	54.0	
4673.200000	44.5	100.0	V	180.0	-3.1	9.5	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. LCD TV/Monitor (Model Name: 60LD550-UB)** was complies with §15.107 and 15.109 of the FCC Rules.