

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 : December 11, 2009****Order Number: GETEC-C1-09-261****Test Report Number: GETEC-E3-09-155****Test Site: Gumi College EMC Center****FCC Registration Number: (100749, 443957)****FCC ID.: BEJ26LE5300UE****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	: 26LE5300-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 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,**
Hyounng Seop Kim, Associate 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.....	24
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.** BEJ26LE5300UE
- **EUT Type** LED LCD TV/Monitor
- **Model Name** 26LE5300-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** December 8 ~ 9, 2009
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-09-155
- **Dates of Issue** December 11, 2009



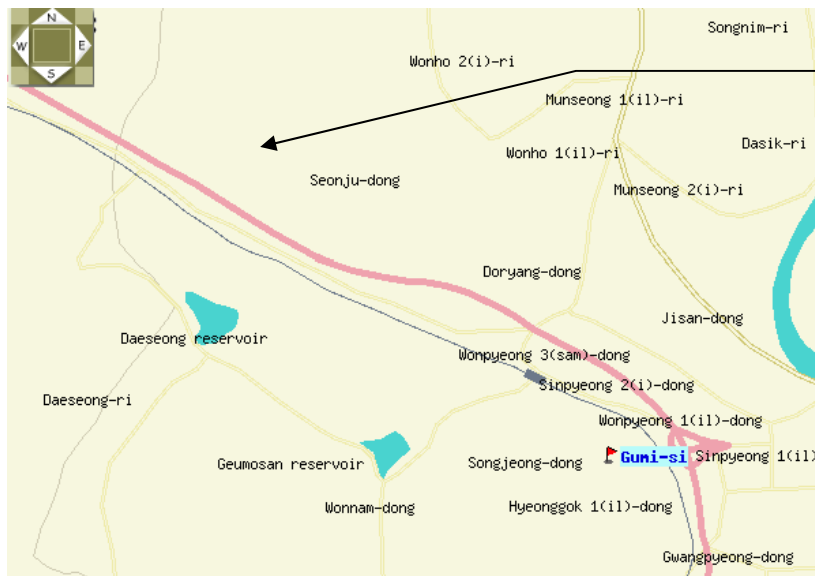
2. Introduction

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: 26LE5300-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)



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. LED LCD TV/Monitor (Model Name: 26LE5300-UE) FCC ID.: BEJ26LE5300UE**

MODELS		26LE5300 (26LE5300-UE)
Dimensions (Width x Height x Depth)	With stand	652.0 x 480.8 x 191.4 mm (25.7 x 18.9 x 7.5 inches)
	Without stand	652.0 x 420.3 x 34.4 mm (25.7 x 16.5 x 1.4 inches)
Weight	With stand	6.1 kg (13.4 lbs)
	Without stand	5.1 kg (11.2 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 : PA-1820-0(LITE-ON TECHNOLOTY CORPORATION)
Input: AC 100 V – 240 V~, 50 Hz – 60 Hz, 1.5 A
Output: DC 24 V, 3.42 A
Serial Number: 990001730C



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	ARI 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	INNATOR Co., Ltd.	XM2-128	S/N: N/A FCC ID: DoC

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 Adapter	1.8 m shielded a ferrite core
Adapter cable	Connected to the EUT	1.8 m unshielded
Video(RGB) input cable	Connected to the EUT and PC	1.8 m shielded with two ferrite cores
Video(HDMI/DVI) input cable	Connected to the EUT and PC	1.95 m shielded
RS-232C(Service & control) input cable	Connected to the EUT and PC	1.2 m shielded with two ferrite cores
Audio input cable	Connected to the EUT and PC	1.8 m shielded
Component input cable	Connected to the EUT and DVD Player	2.0 m shielded
Component sound input cable	Connected to the EUT and DVD Player	1.5 m shielded
AV input cable	Connected to the EUT and DVD Player	3.0 m shielded
Headset cable	Connected to the EUT	2.75 m shielded
Antenna cable	Connected to the EUT and TV signal generator	10.0 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), 1 920 * 1 080 / 60 Hz (HDMI/DVI: Digital)
 - Conducted emission: 1 920 * 1 080 / 60 Hz (RGB: Analog), 1 920 * 1 080 / 60 Hz (HDMI/DVI: Digital),
1 024 * 768 / 60 Hz (RGB: Analog), 640 * 480 / 60 Hz (RGB: Analog),
 - . USB memory stick play mode: Continuous play mode of Picture file and 1 kHz audio file.
- 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

"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

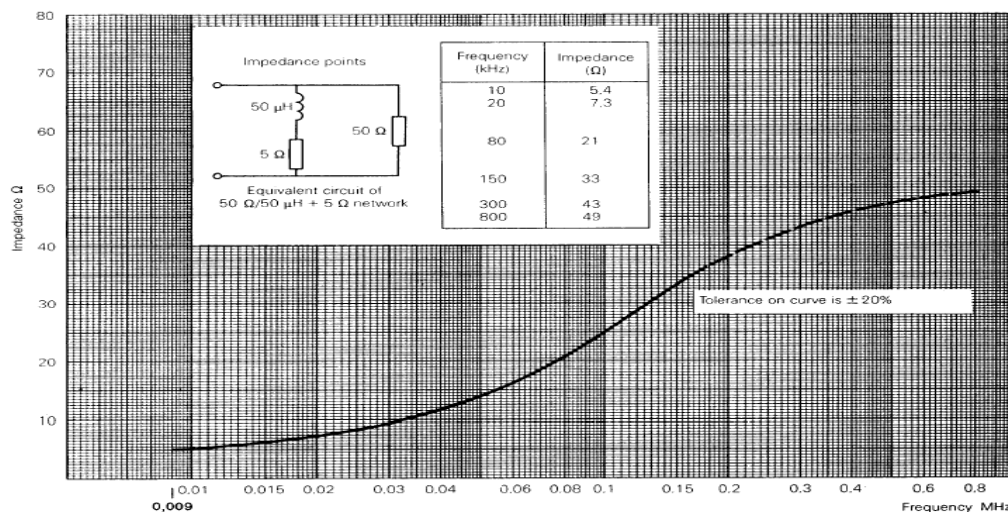


Fig 2. Impedance of LISN



4.3 Radiated Emission

The measurements were conducted 3 m anechoic chamber (FCC Registration No.: 443957) 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.

The spectrum was scanned from 30 to 1000 MHz, using bicornical log antenna (Schwarzbeck, VULB9160).

Above 1 GHz, horn antenna (Schwarzbeck, BBHA9120D / EMCO 3160) was used.

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 1MHz 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 m to 4 m and stopped at the azimuth or height producing the maximum emission.

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

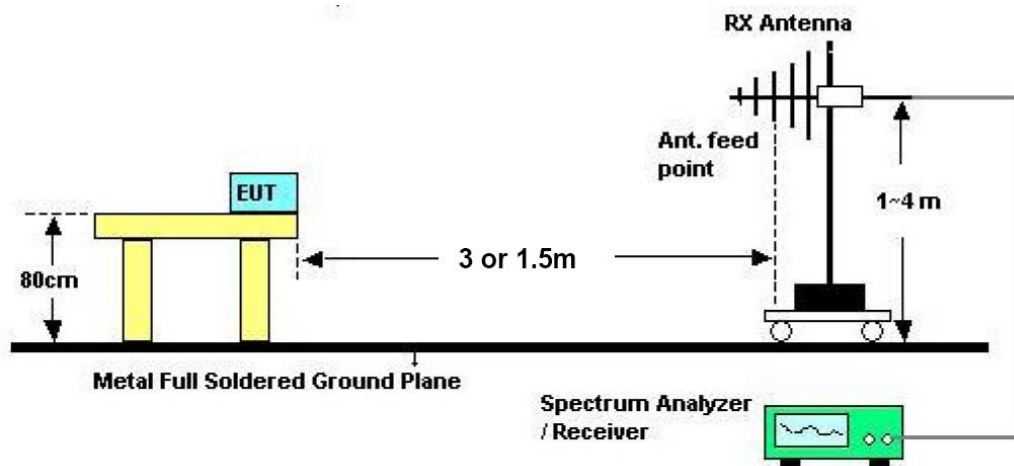


Fig 3. Dimensions of test site.



5. Conducted Emission

5.1 Operating Environment

Temperature : 25 °C
Relative Humidity : 45 % 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. 13. 2009
■ - ESH3-Z5	Rohde & Schwarz	LISN	838979/020	12. 12. 2009
■ - ESH2-Z5	Rohde & Schwarz	LISN	829991/009	12. 12. 2009
□ - ISN T8	TESEQ. GmbH	ISN	24568	10. 16. 2010

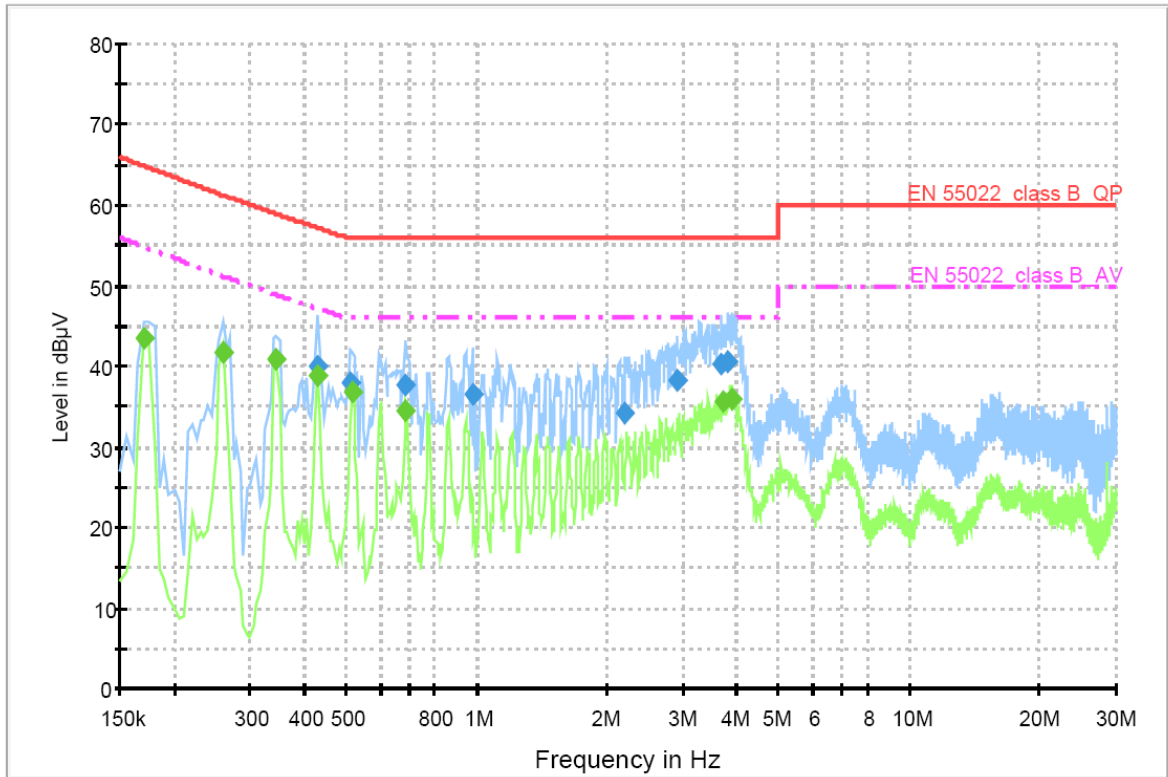
5.6 Test data for Conducted Emission

- . Test Date : December 8, 2009
- . Resolution Bandwidth : 9 kHz
- . Frequency Range : 0.15 MHz ~ 30 MHz



◆ Test resolution: 1 920 * 1 080 / 60 Hz (RGB: Analog 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
0.430000	39.9	1000.000	9.000	GND	L1	10.0	17.3	57.2	
0.510000	38.0	1000.000	9.000	GND	L1	10.0	18.0	56.0	
0.685000	37.8	1000.000	9.000	GND	L1	10.0	18.2	56.0	
0.980000	36.5	1000.000	9.000	GND	L1	10.0	19.5	56.0	
2.205000	34.2	1000.000	9.000	GND	L1	10.1	21.8	56.0	
2.905000	38.3	1000.000	9.000	GND	L1	10.1	17.7	56.0	
3.665000	40.3	1000.000	9.000	GND	L1	10.2	15.7	56.0	
3.815000	40.6	1000.000	9.000	GND	L1	10.2	15.4	56.0	

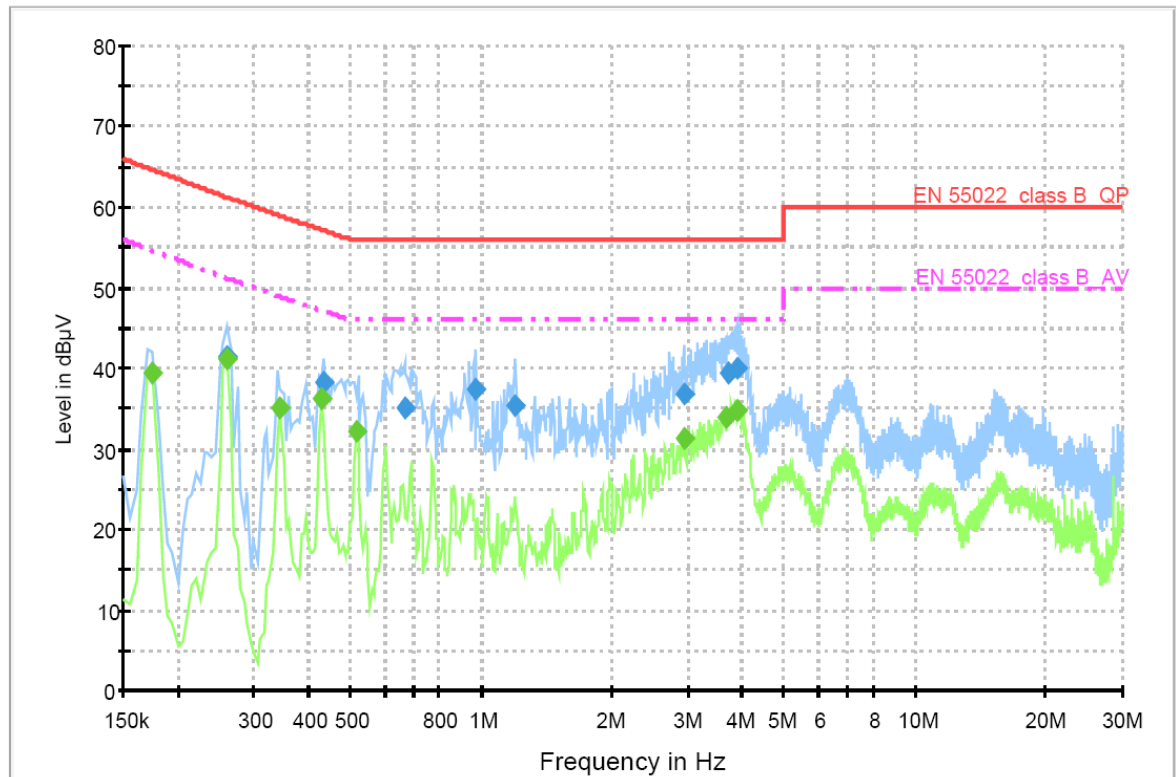
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.170000	43.4	1000.000	9.000	GND	L1	10.0	11.5	54.9	
0.260000	41.8	1000.000	9.000	GND	L1	10.0	9.4	51.2	
0.345000	40.7	1000.000	9.000	GND	L1	10.0	8.2	48.9	
0.430000	38.9	1000.000	9.000	GND	L1	10.0	8.2	47.1	
0.515000	37.0	1000.000	9.000	GND	L1	10.0	9.0	46.0	
0.685000	34.6	1000.000	9.000	GND	L1	10.0	11.4	46.0	
3.700000	35.7	1000.000	9.000	GND	L1	10.2	10.3	46.0	
3.885000	35.9	1000.000	9.000	GND	L1	10.2	10.1	46.0	

< 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
0.260000	41.6	1000.000	9.000	GND	N	10.0	19.6	61.2	
0.435000	38.3	1000.000	9.000	GND	N	10.0	18.8	57.1	
0.665000	35.1	1000.000	9.000	GND	N	10.0	20.9	56.0	
0.975000	37.4	1000.000	9.000	GND	N	10.0	18.6	56.0	
1.200000	35.3	1000.000	9.000	GND	N	10.1	20.7	56.0	
2.925000	36.7	1000.000	9.000	GND	N	10.1	19.3	56.0	
3.705000	39.4	1000.000	9.000	GND	N	10.2	16.6	56.0	
3.870000	40.0	1000.000	9.000	GND	N	10.2	16.0	56.0	

Final Measurement Detector 2

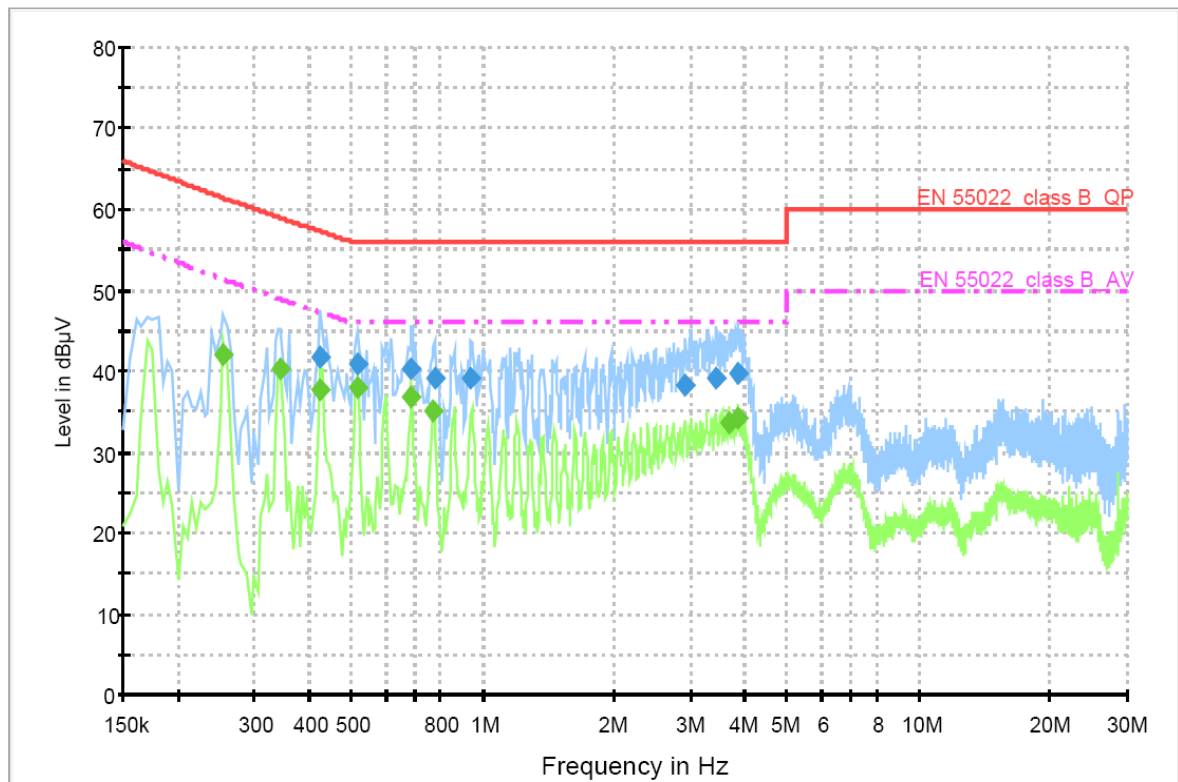
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.175000	39.3	1000.000	9.000	GND	N	10.0	15.3	54.6	
0.260000	41.2	1000.000	9.000	GND	N	10.0	10.0	51.2	
0.345000	35.1	1000.000	9.000	GND	N	10.0	13.8	48.9	
0.430000	36.2	1000.000	9.000	GND	N	10.0	10.9	47.1	
0.515000	32.2	1000.000	9.000	GND	N	10.0	13.8	46.0	
2.935000	31.3	1000.000	9.000	GND	N	10.1	14.7	46.0	
3.680000	33.8	1000.000	9.000	GND	N	10.2	12.2	46.0	
3.885000	34.8	1000.000	9.000	GND	N	10.2	11.2	46.0	

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



◆ Test resolution: 1 920 * 1 080 / 60 Hz (HDMI/DVI: Digital 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
0.425000	41.7	1000.000	9.000	GND	L1	10.0	15.6	57.3	
0.515000	41.0	1000.000	9.000	GND	L1	10.0	15.0	56.0	
0.685000	40.2	1000.000	9.000	GND	L1	10.0	15.8	56.0	
0.775000	39.0	1000.000	9.000	GND	L1	10.0	17.0	56.0	
0.940000	39.1	1000.000	9.000	GND	L1	10.0	16.9	56.0	
2.920000	38.4	1000.000	9.000	GND	L1	10.1	17.6	56.0	
3.430000	39.2	1000.000	9.000	GND	L1	10.1	16.8	56.0	
3.850000	39.8	1000.000	9.000	GND	L1	10.2	16.2	56.0	

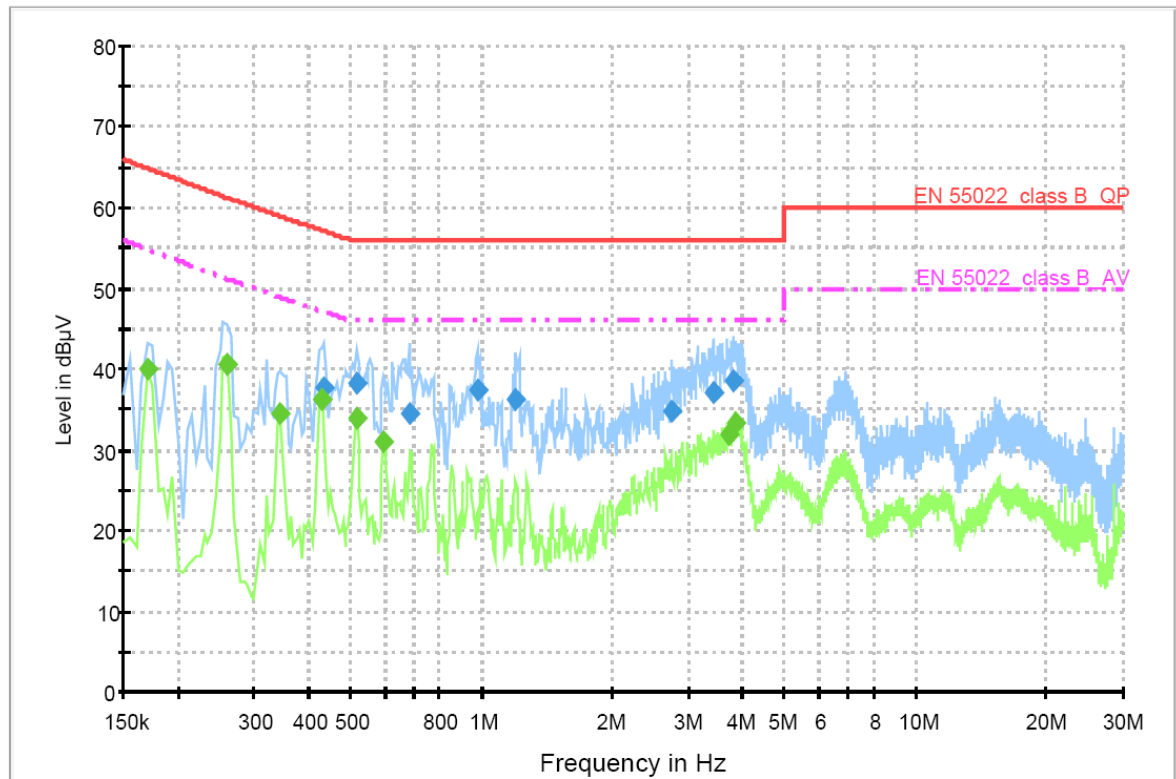
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.255000	42.2	1000.000	9.000	GND	L1	10.0	9.1	51.3	
0.345000	40.2	1000.000	9.000	GND	L1	10.0	8.7	48.9	
0.425000	37.7	1000.000	9.000	GND	L1	10.0	9.5	47.2	
0.515000	38.1	1000.000	9.000	GND	L1	10.0	7.9	46.0	
0.685000	36.8	1000.000	9.000	GND	L1	10.0	9.2	46.0	
0.770000	35.2	1000.000	9.000	GND	L1	10.0	10.8	46.0	
3.675000	33.7	1000.000	9.000	GND	L1	10.2	12.3	46.0	
3.860000	34.1	1000.000	9.000	GND	L1	10.2	11.9	46.0	

< 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
0.435000	37.6	1000.000	9.000	GND	N	10.0	19.5	57.1	
0.515000	38.1	1000.000	9.000	GND	N	10.0	17.9	56.0	
0.680000	34.5	1000.000	9.000	GND	N	10.0	21.5	56.0	
0.980000	37.3	1000.000	9.000	GND	N	10.0	18.7	56.0	
1.200000	36.2	1000.000	9.000	GND	N	10.1	19.8	56.0	
2.750000	34.9	1000.000	9.000	GND	N	10.1	21.1	56.0	
3.405000	37.0	1000.000	9.000	GND	N	10.1	19.0	56.0	
3.815000	38.6	1000.000	9.000	GND	N	10.2	17.4	56.0	

Final Measurement Detector 2

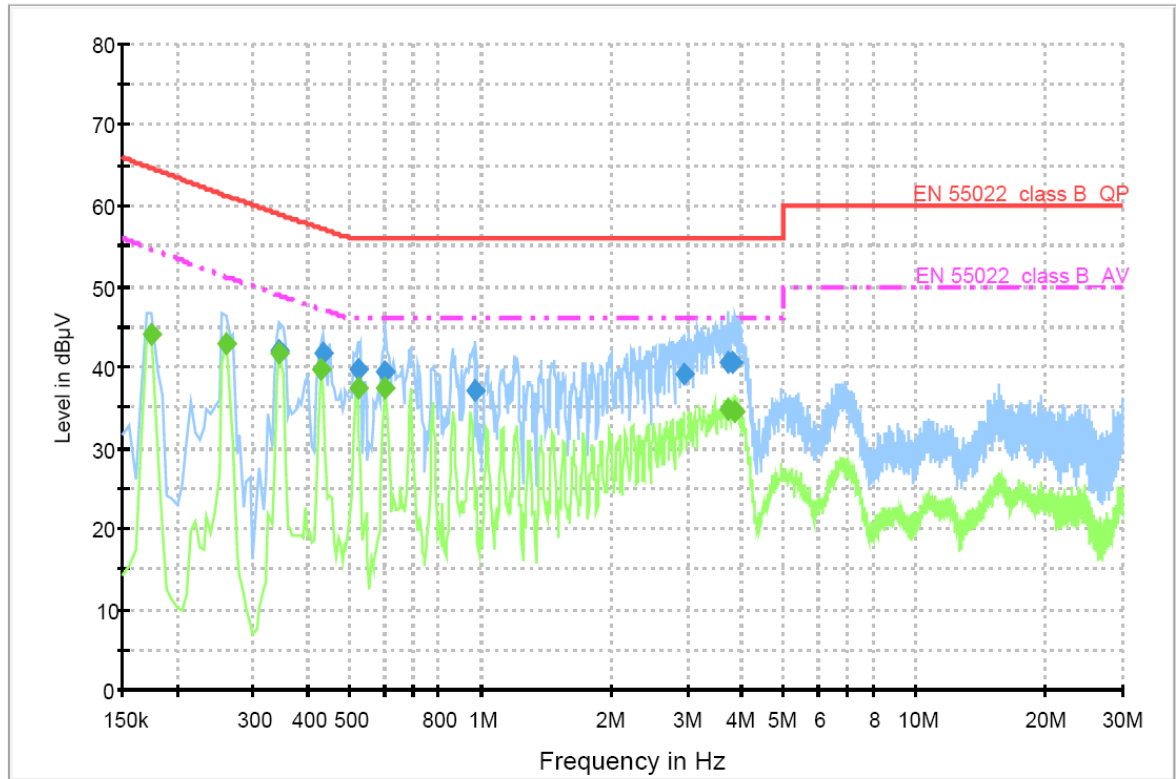
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.170000	40.0	1000.000	9.000	GND	N	10.0	14.9	54.9	
0.260000	40.5	1000.000	9.000	GND	N	10.0	10.7	51.2	
0.345000	34.5	1000.000	9.000	GND	N	10.0	14.4	48.9	
0.430000	36.1	1000.000	9.000	GND	N	10.0	11.0	47.1	
0.515000	33.8	1000.000	9.000	GND	N	10.0	12.2	46.0	
0.595000	30.9	1000.000	9.000	GND	N	10.0	15.1	46.0	
3.715000	31.8	1000.000	9.000	GND	N	10.2	14.2	46.0	
3.850000	33.3	1000.000	9.000	GND	N	10.2	12.7	46.0	

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



◆ Test resolution: 1 024 * 768 / 60 Hz (RGB: Analog 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
0.345000	42.1	1000.000	9.000	GND	L1	10.0	16.8	58.9	
0.435000	41.6	1000.000	9.000	GND	L1	10.0	15.5	57.1	
0.520000	39.7	1000.000	9.000	GND	L1	10.0	16.4	56.0	
0.605000	39.5	1000.000	9.000	GND	L1	10.0	16.5	56.0	
0.975000	37.2	1000.000	9.000	GND	L1	10.0	18.8	56.0	
2.925000	39.0	1000.000	9.000	GND	L1	10.1	17.0	56.0	
3.700000	40.6	1000.000	9.000	GND	L1	10.2	15.4	56.0	
3.810000	40.6	1000.000	9.000	GND	L1	10.2	15.4	56.0	

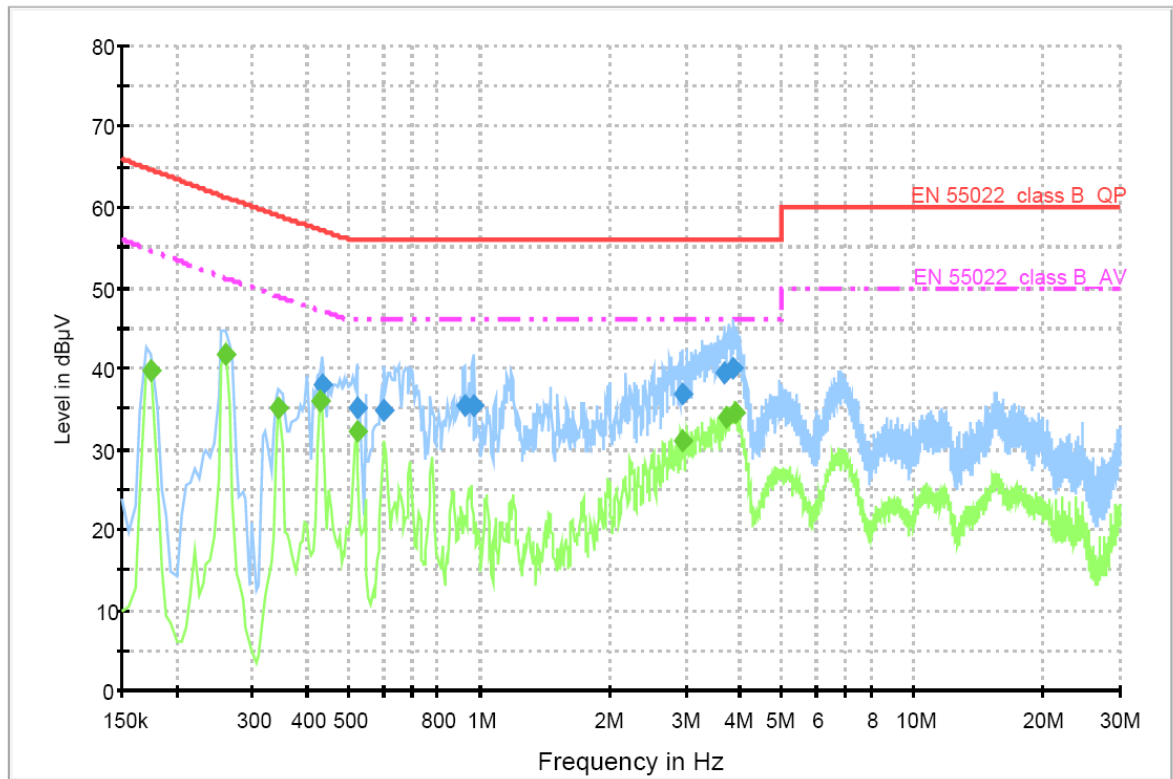
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.175000	44.0	1000.000	9.000	GND	L1	10.0	10.6	54.6	
0.260000	42.9	1000.000	9.000	GND	L1	10.0	8.3	51.2	
0.345000	41.8	1000.000	9.000	GND	L1	10.0	7.1	48.9	
0.430000	39.8	1000.000	9.000	GND	L1	10.0	7.3	47.1	
0.520000	37.4	1000.000	9.000	GND	L1	10.0	8.6	46.0	
0.605000	37.4	1000.000	9.000	GND	L1	10.0	8.6	46.0	
3.700000	34.9	1000.000	9.000	GND	L1	10.2	11.1	46.0	
3.830000	34.5	1000.000	9.000	GND	L1	10.2	11.5	46.0	

< 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
0.435000	38.1	1000.000	9.000	GND	N	10.0	19.0	57.1	
0.520000	35.0	1000.000	9.000	GND	N	10.0	21.0	56.0	
0.605000	34.9	1000.000	9.000	GND	N	10.0	21.1	56.0	
0.925000	35.3	1000.000	9.000	GND	N	10.0	20.7	56.0	
0.965000	35.3	1000.000	9.000	GND	N	10.0	20.7	56.0	
2.930000	36.8	1000.000	9.000	GND	N	10.1	19.2	56.0	
3.685000	39.3	1000.000	9.000	GND	N	10.2	16.7	56.0	
3.860000	40.0	1000.000	9.000	GND	N	10.2	16.0	56.0	

Final Measurement Detector 2

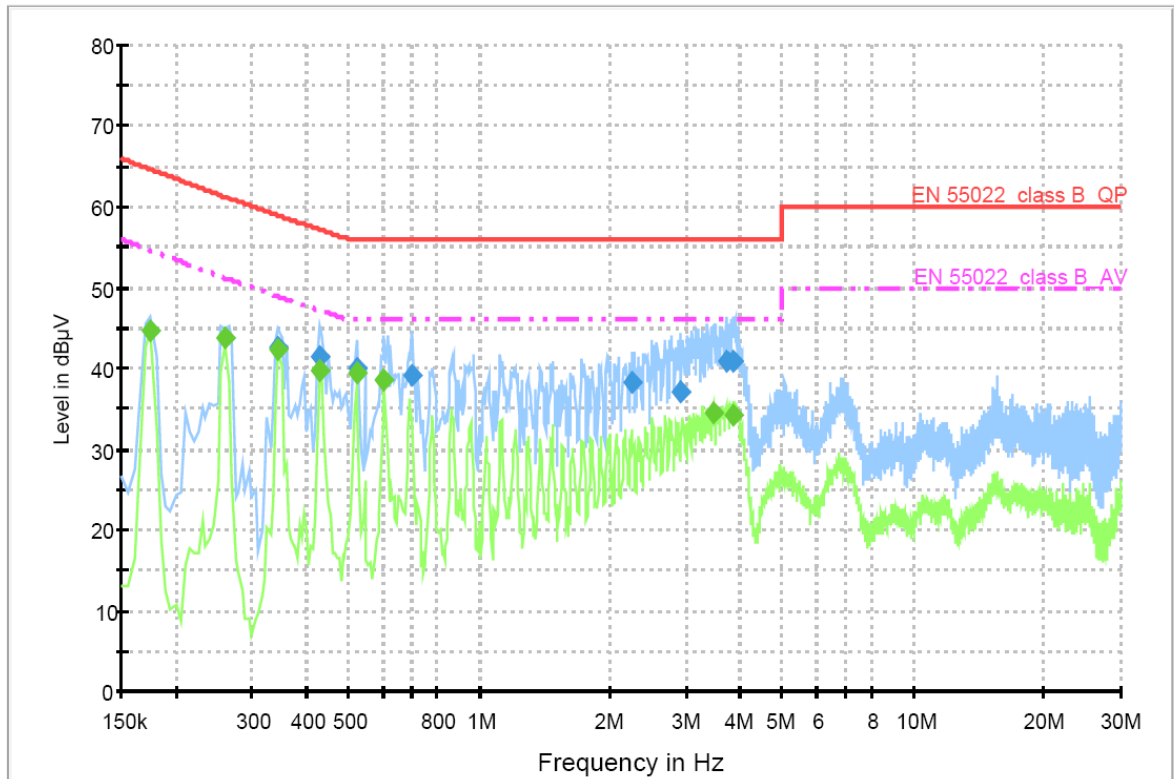
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.175000	39.6	1000.000	9.000	GND	N	10.0	15.0	54.6	
0.260000	41.6	1000.000	9.000	GND	N	10.0	9.6	51.2	
0.345000	35.0	1000.000	9.000	GND	N	10.0	13.9	48.9	
0.430000	35.9	1000.000	9.000	GND	N	10.0	11.2	47.1	
0.520000	32.1	1000.000	9.000	GND	N	10.0	13.9	46.0	
2.945000	30.9	1000.000	9.000	GND	N	10.1	15.1	46.0	
3.705000	33.9	1000.000	9.000	GND	N	10.2	12.1	46.0	
3.880000	34.5	1000.000	9.000	GND	N	10.2	11.5	46.0	

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



◆ Test resolution: 640 * 480 / 60 Hz (RGB: Analog 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
0.345000	42.6	1000.000	9.000	GND	L1	10.0	16.3	58.9	
0.430000	41.4	1000.000	9.000	GND	L1	10.0	15.8	57.2	
0.525000	40.1	1000.000	9.000	GND	L1	10.0	15.9	56.0	
0.700000	39.3	1000.000	9.000	GND	L1	10.0	16.7	56.0	
2.255000	38.1	1000.000	9.000	GND	L1	10.1	17.9	56.0	
2.900000	37.1	1000.000	9.000	GND	L1	10.1	18.9	56.0	
3.695000	40.8	1000.000	9.000	GND	L1	10.2	15.2	56.0	
3.860000	40.8	1000.000	9.000	GND	L1	10.2	15.2	56.0	

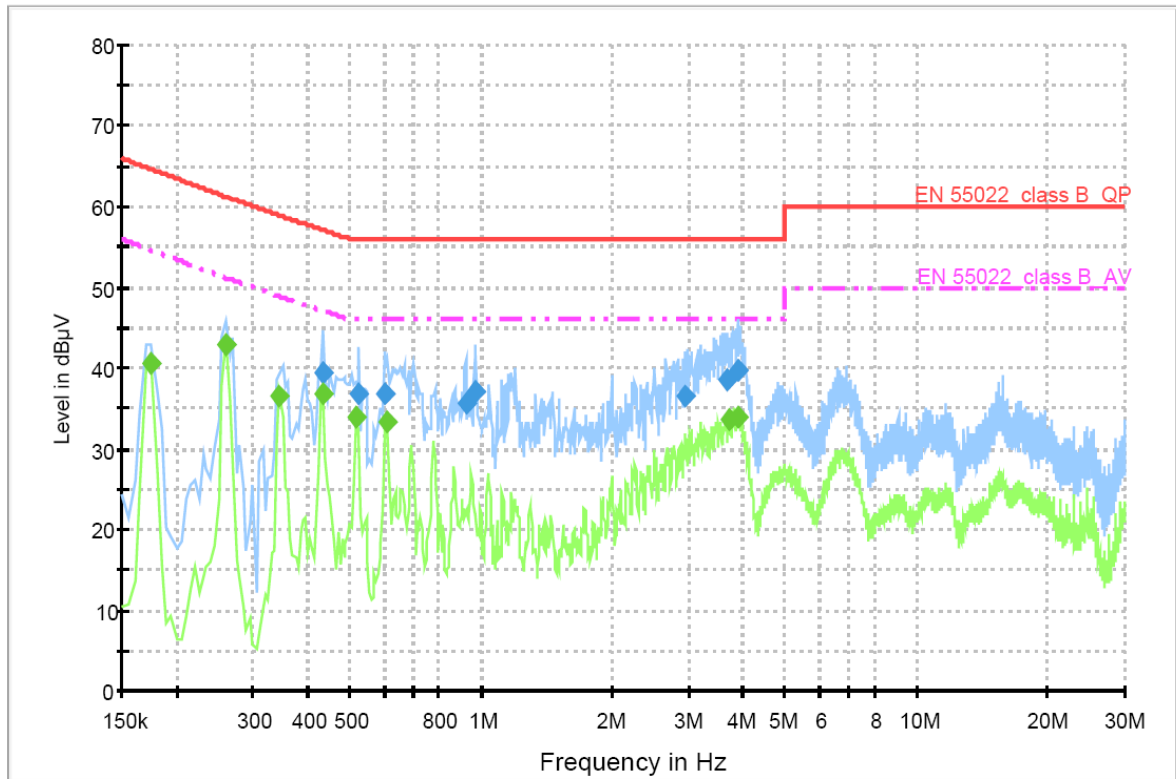
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.175000	44.6	1000.000	9.000	GND	L1	10.0	10.0	54.6	
0.260000	43.7	1000.000	9.000	GND	L1	10.0	7.5	51.2	
0.345000	42.3	1000.000	9.000	GND	L1	10.0	6.6	48.9	
0.430000	39.8	1000.000	9.000	GND	L1	10.0	7.3	47.1	
0.520000	39.3	1000.000	9.000	GND	L1	10.0	6.7	46.0	
0.605000	38.5	1000.000	9.000	GND	L1	10.0	7.5	46.0	
3.445000	34.4	1000.000	9.000	GND	L1	10.1	11.6	46.0	
3.840000	34.3	1000.000	9.000	GND	L1	10.2	11.7	46.0	

< 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
0.435000	39.4	1000.000	9.000	GND	N	10.0	17.7	57.1	
0.525000	36.9	1000.000	9.000	GND	N	10.0	19.1	56.0	
0.600000	36.9	1000.000	9.000	GND	N	10.0	19.1	56.0	
0.925000	35.8	1000.000	9.000	GND	N	10.0	20.2	56.0	
0.970000	37.1	1000.000	9.000	GND	N	10.0	18.9	56.0	
2.940000	36.5	1000.000	9.000	GND	N	10.1	19.5	56.0	
3.685000	38.4	1000.000	9.000	GND	N	10.2	17.6	56.0	
3.870000	39.8	1000.000	9.000	GND	N	10.2	16.2	56.0	

Final Measurement Detector 2

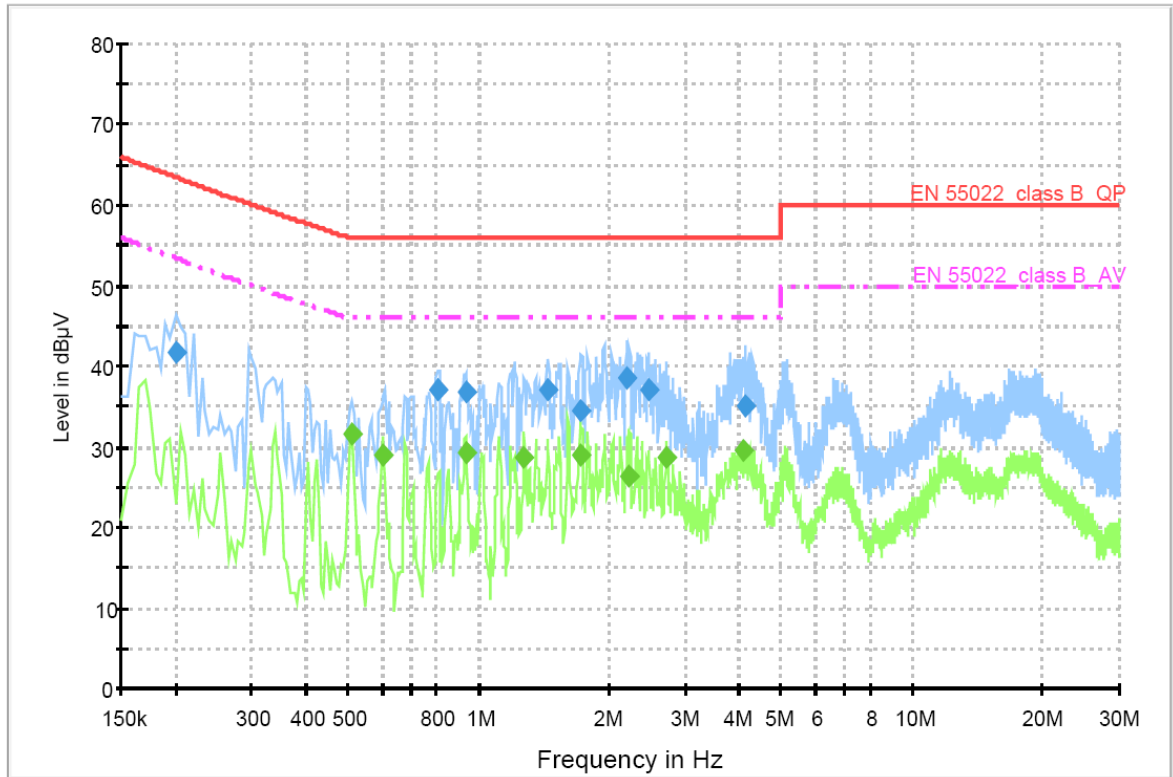
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.175000	40.7	1000.000	9.000	GND	N	10.0	13.9	54.6	
0.260000	42.9	1000.000	9.000	GND	N	10.0	8.3	51.2	
0.345000	36.5	1000.000	9.000	GND	N	10.0	12.4	48.9	
0.435000	36.8	1000.000	9.000	GND	N	10.0	10.3	47.1	
0.515000	33.8	1000.000	9.000	GND	N	10.0	12.2	46.0	
0.610000	33.3	1000.000	9.000	GND	N	10.0	12.7	46.0	
3.725000	33.6	1000.000	9.000	GND	N	10.2	12.4	46.0	
3.870000	33.9	1000.000	9.000	GND	N	10.2	12.1	46.0	

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



◆ Test resolution: USB memory stick 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
0.200000	41.8	1000.000	9.000	GND	L1	10.0	21.7	63.5	
0.805000	37.1	1000.000	9.000	GND	L1	10.0	18.9	56.0	
0.935000	36.8	1000.000	9.000	GND	L1	10.0	19.2	56.0	
1.450000	37.0	1000.000	9.000	GND	L1	10.1	19.0	56.0	
1.725000	34.5	1000.000	9.000	GND	L1	10.1	21.5	56.0	
2.205000	38.5	1000.000	9.000	GND	L1	10.1	17.5	56.0	
2.460000	37.1	1000.000	9.000	GND	L1	10.1	18.9	56.0	
4.110000	35.2	1000.000	9.000	GND	L1	10.2	20.8	56.0	

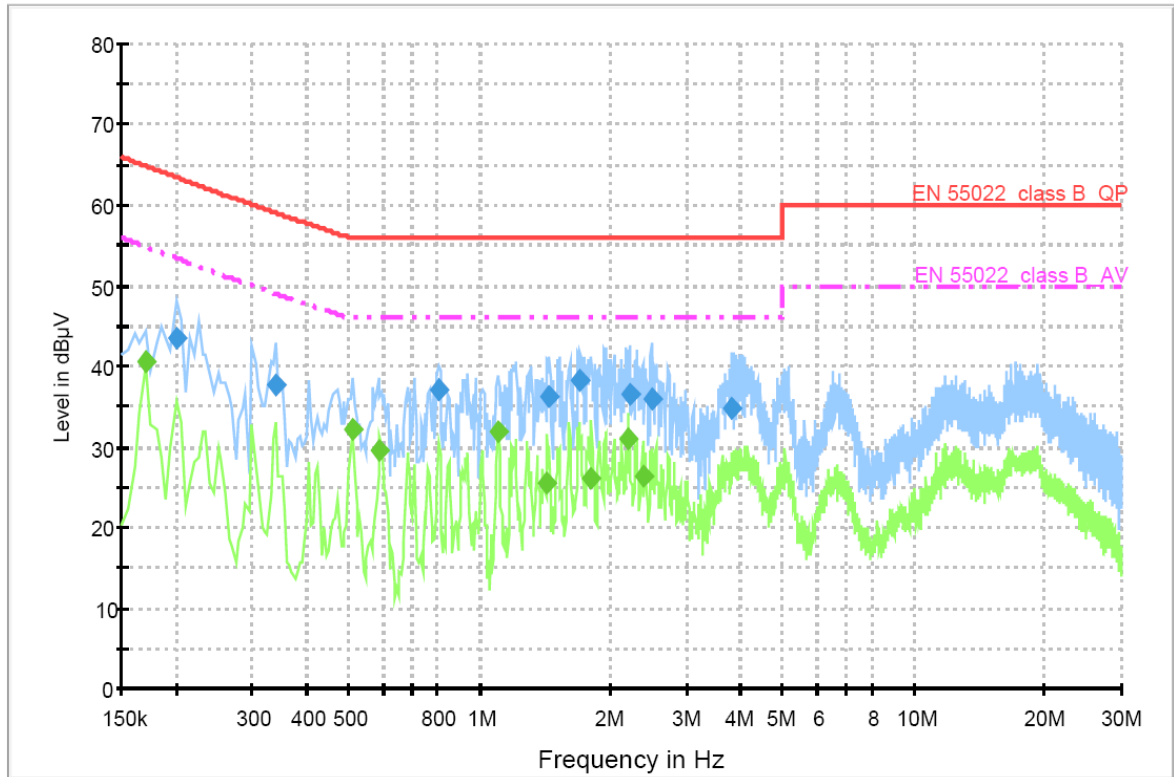
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.510000	31.6	1000.000	9.000	GND	L1	10.0	14.4	46.0	
0.600000	29.1	1000.000	9.000	GND	L1	10.0	16.9	46.0	
0.935000	29.2	1000.000	9.000	GND	L1	10.0	16.8	46.0	
1.275000	28.8	1000.000	9.000	GND	L1	10.1	17.2	46.0	
1.715000	29.1	1000.000	9.000	GND	L1	10.1	16.9	46.0	
2.235000	26.4	1000.000	9.000	GND	L1	10.1	19.6	46.0	
2.720000	28.8	1000.000	9.000	GND	L1	10.1	17.2	46.0	
4.080000	29.7	1000.000	9.000	GND	L1	10.2	16.3	46.0	

< 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
0.200000	43.6	1000.000	9.000	GND	N	10.0	19.9	63.5	
0.340000	37.8	1000.000	9.000	GND	N	10.0	21.2	59.0	
0.805000	37.2	1000.000	9.000	GND	N	10.0	18.8	56.0	
1.450000	36.2	1000.000	9.000	GND	N	10.1	19.8	56.0	
1.705000	38.3	1000.000	9.000	GND	N	10.1	17.7	56.0	
2.220000	36.6	1000.000	9.000	GND	N	10.1	19.4	56.0	
2.485000	36.1	1000.000	9.000	GND	N	10.1	19.9	56.0	
3.800000	34.7	1000.000	9.000	GND	N	10.2	21.3	56.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.170000	40.5	1000.000	9.000	GND	N	10.0	14.4	54.9	
0.510000	32.2	1000.000	9.000	GND	N	10.0	13.8	46.0	
0.590000	29.5	1000.000	9.000	GND	N	10.0	16.5	46.0	
1.100000	31.8	1000.000	9.000	GND	N	10.1	14.2	46.0	
1.430000	25.6	1000.000	9.000	GND	N	10.1	20.4	46.0	
1.810000	26.0	1000.000	9.000	GND	N	10.1	20.0	46.0	
2.200000	31.1	1000.000	9.000	GND	N	10.1	14.9	46.0	
2.375000	26.2	1000.000	9.000	GND	N	10.1	19.8	46.0	

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



6. Radiated Emission

6.1 Operating Environment

Temperature : 21 °C
Relative Humidity : 48 % 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. 14. 2009
■ - VULB9160	Schwarzbeck	Broadband Test Antenna	3193	12. 11. 2009
■ - BBHA9120D	Schwarzbeck	Horn ANT	207	12. 26. 2009
■ - MCU066	maturo GmbH	MCU066	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

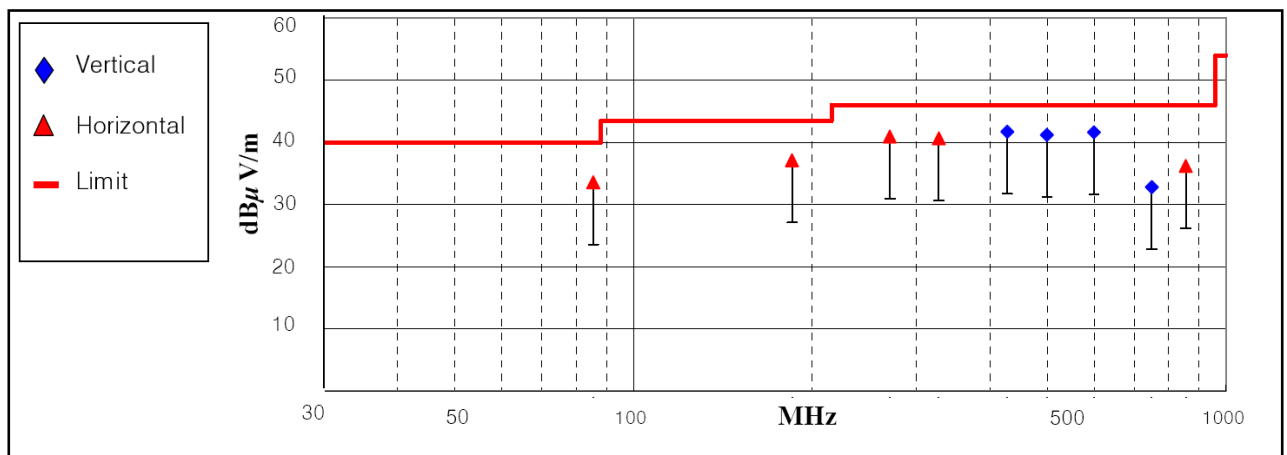
6.6 Test data for Radiated Emission

- Test Date : December 8, 2009
- 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 1000 MHz (667 MHz). The measurement was made up to 5 000 MHz



- ◆ Operating Condition: 1 920 * 1 080 / 60 Hz (RGB: Analog 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)	(°)
85.49	22.93	7.80	2.89	33.62	40.00	6.38	H	215	291
185.23	22.53	10.55	4.07	37.15	43.50	6.35	H	156	183
270.74	23.90	11.82	5.23	40.95	46.00	5.05	H	101	102
327.76	20.96	13.32	6.39	40.67	46.00	5.33	H	115	202
427.51	18.87	15.63	7.24	41.74	46.00	4.26	V	129	186
498.75	17.52	16.71	7.02	41.25	46.00	4.75	V	102	171
598.50	15.06	19.19	7.41	41.66	46.00	4.34	V	115	166
749.40	3.13	21.42	8.31	32.86	46.00	13.14	V	141	21
855.05	5.13	22.22	8.90	36.25	46.00	9.75	H	205	189

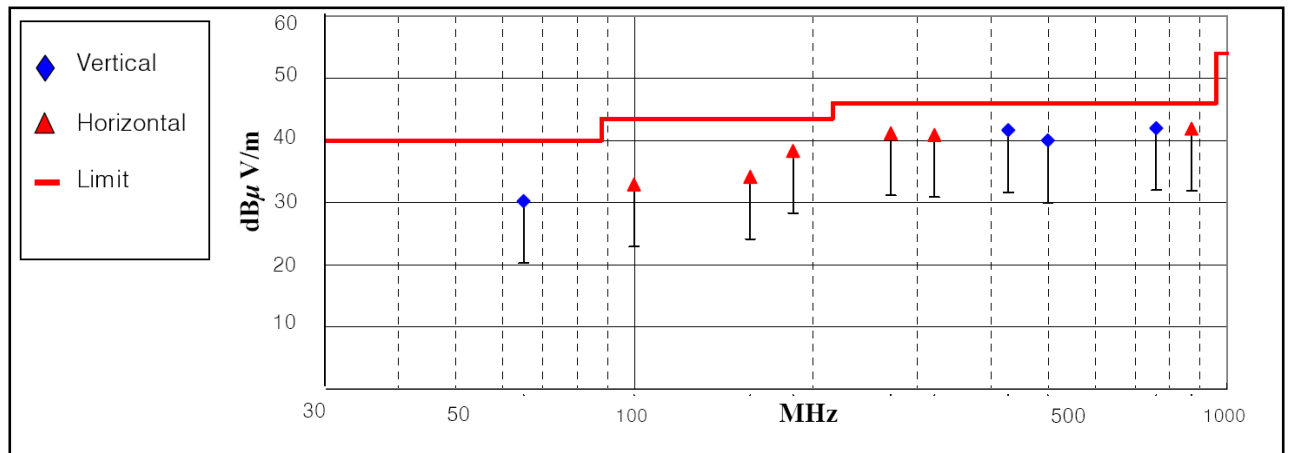


< Fig 14. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ Operating Condition: 1 920 * 1 080 / 60 Hz (HDMI/DVI: Digital 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)	(°)
64.99	17.12	10.54	2.59	30.25	40.00	9.75	V	126	290
99.76	20.81	9.02	3.06	32.89	43.50	10.61	H	201	263
156.75	17.68	12.65	3.78	34.11	43.50	9.39	H	170	277
185.23	23.69	10.55	4.07	38.31	43.50	5.19	H	176	180
270.77	24.10	11.82	5.23	41.15	46.00	4.85	H	115	286
320.65	21.50	13.17	6.19	40.86	46.00	5.14	H	102	199
427.49	18.79	15.63	7.24	41.66	46.00	4.34	V	100	155
498.77	16.26	16.71	7.02	39.99	46.00	6.01	V	226	147
759.85	12.15	21.47	8.37	41.99	46.00	4.01	V	126	22
872.09	10.61	22.29	9.00	41.90	46.00	4.10	H	117	45

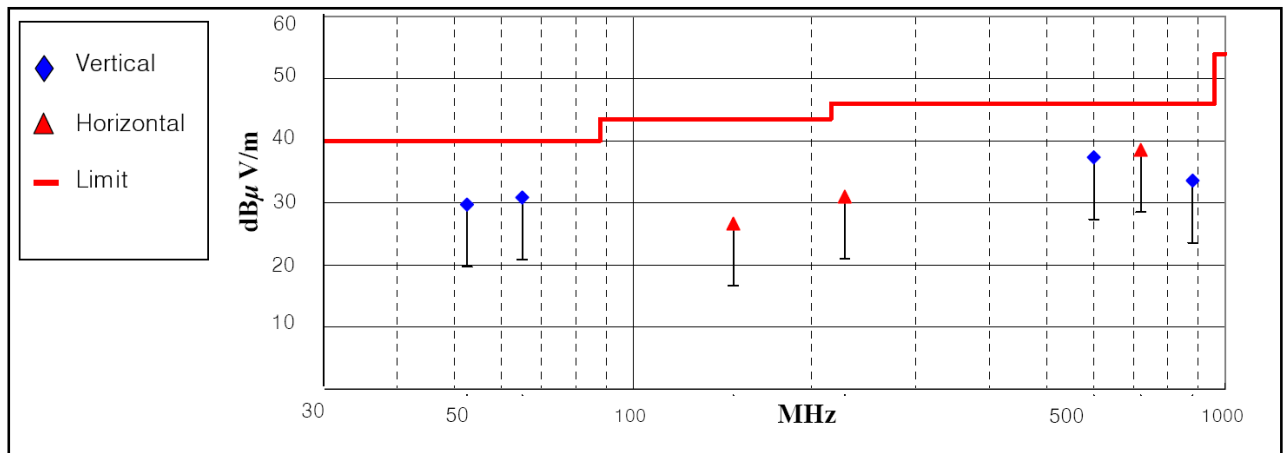


< Fig 15. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ Operating Condition: USB memory stick 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)	(°)
52.43	15.24	12.12	2.35	29.71	40.00	10.29	V	100	156
64.96	17.72	10.54	2.59	30.85	40.00	9.15	V	115	285
147.66	10.35	12.64	3.67	26.66	43.50	16.84	H	210	33
227.79	16.00	10.36	4.66	31.02	46.00	14.98	H	159	47
599.99	10.72	19.23	7.41	37.36	46.00	8.64	V	101	12
720.00	9.87	20.55	8.10	38.52	46.00	7.48	H	199	96
880.86	2.18	22.33	9.05	33.56	46.00	12.44	V	117	199

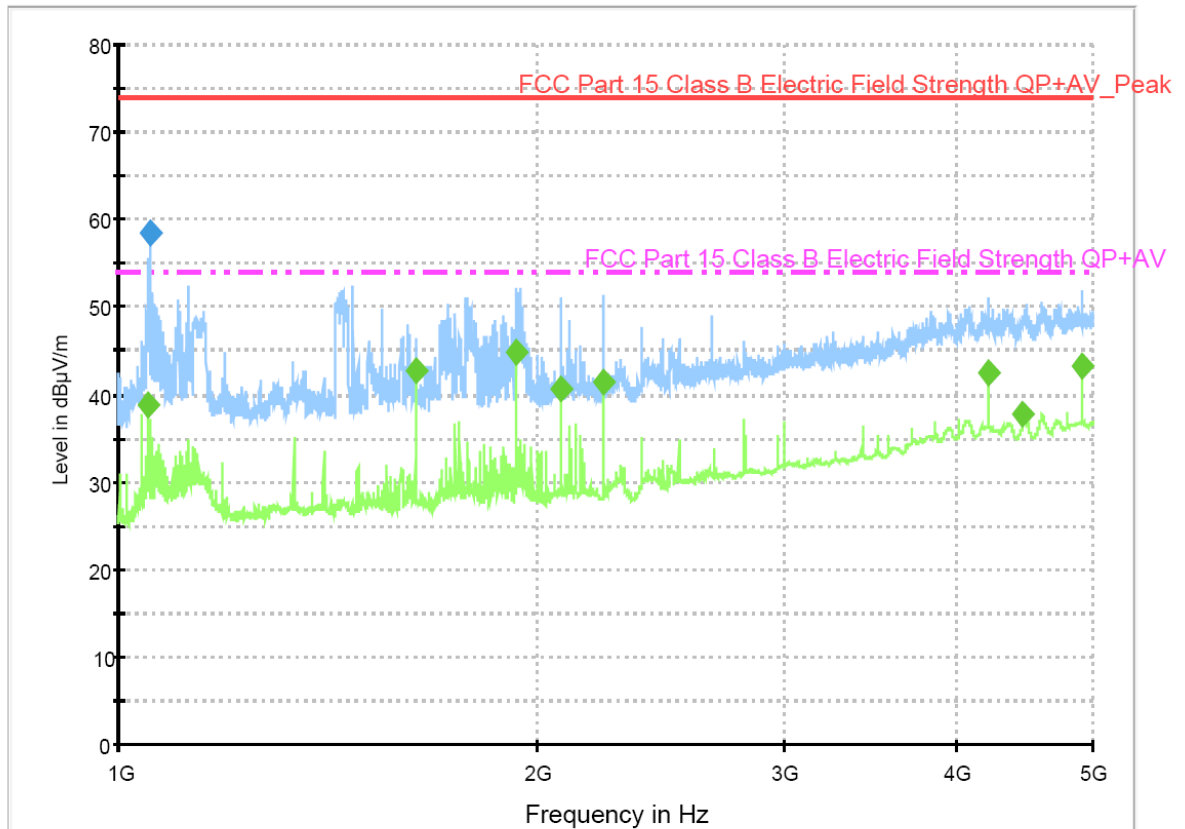


< Fig 16. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ Operating Condition: 1 920 * 1 080 / 60 Hz (RGB: Analog 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
1053.200000	58.4	100.0	V	270.0	-15.8	15.6	74.0	

Final Result 2

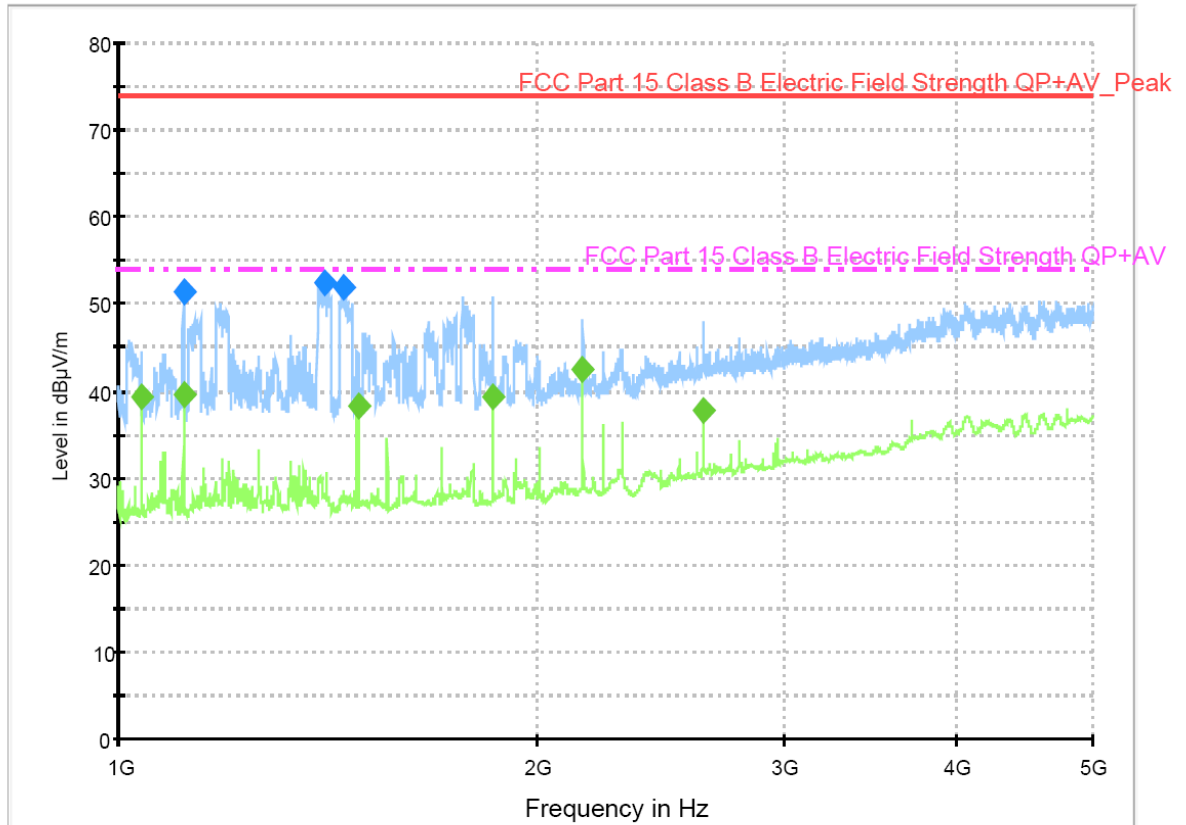
Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1051.200000	38.7	100.0	V	270.0	-15.8	15.3	54.0	
1633.600000	42.8	100.0	V	180.0	-13.7	11.2	54.0	
1930.400000	44.8	100.0	V	180.0	-12.9	9.2	54.0	
2079.200000	40.5	100.0	V	0.0	-12.2	13.5	54.0	
2227.200000	41.4	200.0	H	90.0	-11.5	12.6	54.0	
4212.000000	42.6	100.0	H	270.0	-3.3	11.4	54.0	
4455.200000	37.9	100.0	V	180.0	-3.3	16.1	54.0	
4914.000000	43.3	100.0	V	180.0	-2.7	10.7	54.0	

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



- ◆ Operating Condition: 1 920 * 1 080 / 60 Hz (HDMI/DVI: Digital mode)
Detector mode: Peak detector mode / Average detector mode

FCC_ESIB_Preamplifier with Scans



Final Result 1

Frequency (MHz)	Peak-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1113.600000	51.4	200.0	V	180.0	-15.5	22.6	74.0	
1406.800000	52.5	200.0	V	0.0	-14.6	21.5	74.0	
1451.600000	51.9	200.0	V	180.0	-14.5	22.1	74.0	

Final Result 2

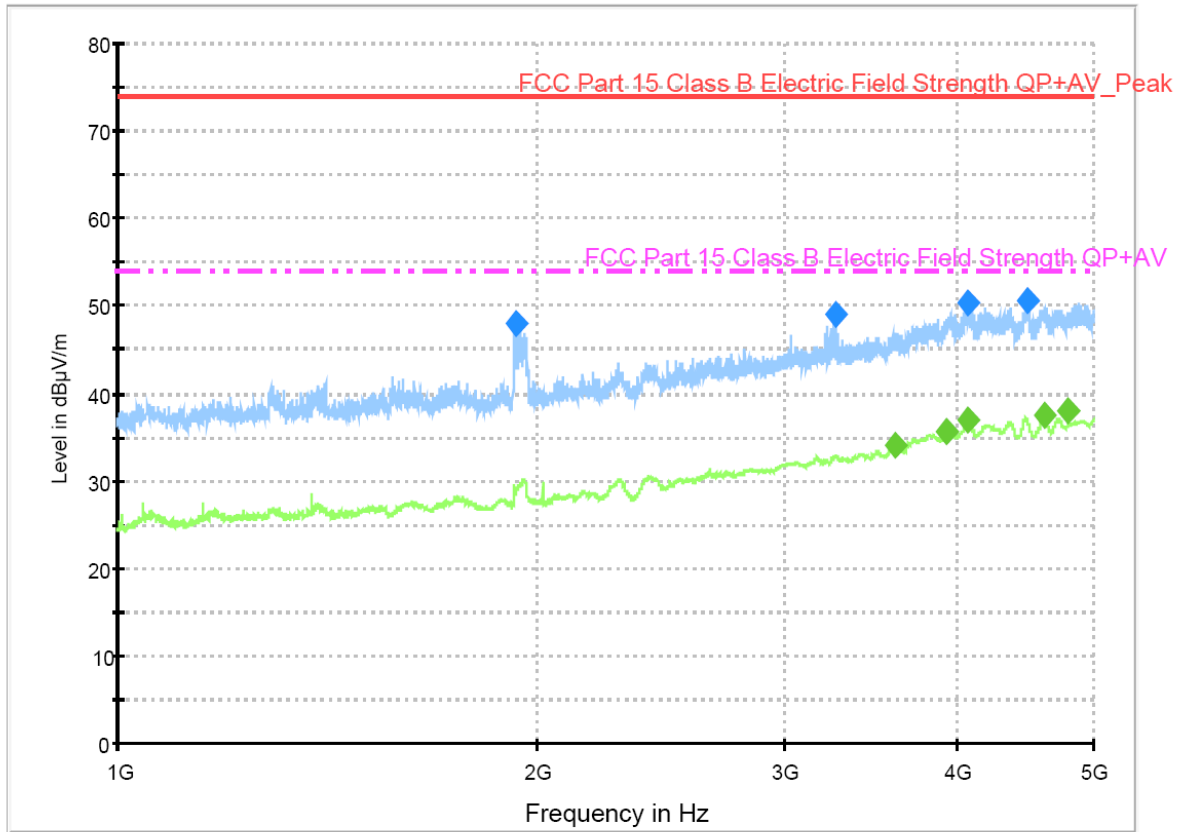
Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1039.600000	39.4	200.0	V	180.0	-15.9	14.6	54.0	
1114.000000	39.5	100.0	V	0.0	-15.5	14.5	54.0	
1485.200000	38.2	100.0	V	180.0	-14.5	15.8	54.0	
1856.400000	39.4	200.0	V	180.0	-13.1	14.6	54.0	
2153.200000	42.5	100.0	H	180.0	-11.9	11.5	54.0	
2628.000000	37.9	100.0	H	180.0	-9.8	16.1	54.0	

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



- ◆ Operating Condition: USB memory stick play mode
Detector mode: Peak detector mode / Average detector mode

FCC_ESIB_Preamplifier with Scans



Final Result 1

Frequency (MHz)	Peak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
1932.000000	48.0	200.0	V	0.0	-12.9	26.0	74.0	
3262.800000	49.0	100.0	H	270.0	-7.4	25.0	74.0	
4066.800000	50.3	100.0	V	0.0	-3.2	23.7	74.0	
4489.600000	50.6	100.0	V	90.0	-3.4	23.4	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
3603.600000	34.1	200.0	H	180.0	-5.9	19.9	54.0	
3926.800000	35.8	200.0	V	90.0	-3.7	18.2	54.0	
4065.200000	37.1	100.0	H	180.0	-3.2	16.9	54.0	
4608.000000	37.4	100.0	V	180.0	-3.2	16.6	54.0	
4800.000000	38.0	100.0	V	180.0	-2.8	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: 26LE5300-UE)** was complies with §15.107 and 15.109 of the FCC Rules.