



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 21, 2009

Order Number: GETEC-C1-09-268

Test Report Number: GETEC-E3-09-162

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID.: BEJ47LE8500UA

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	: 47LE8500-UA
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,

Hyoung Seop Kim, Associate 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.** BEJ47LE8500UA
- **EUT Type** LED LCD TV/Monitor
- **Model Name** 47LE8500-UA
- **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 15 ~ 16, 2009
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-09-162
- **Dates of Issue** December 21, 2009



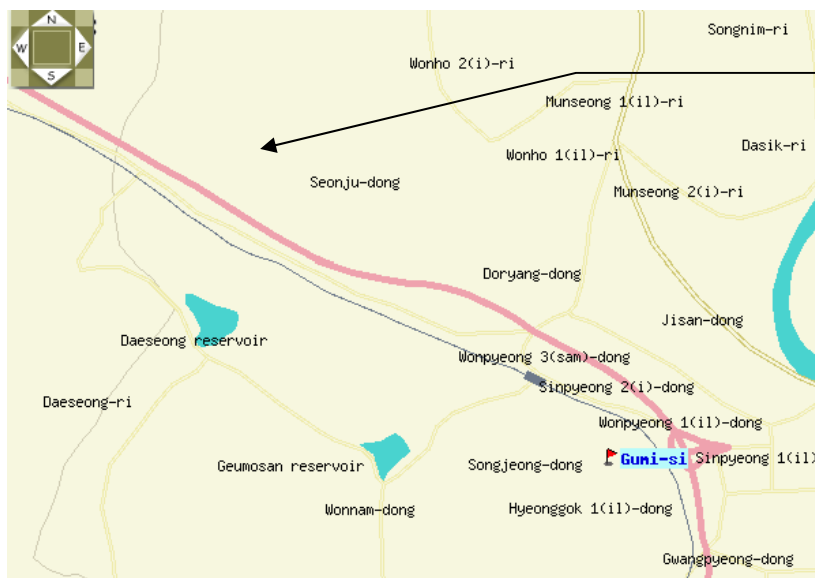
2. Introduction

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: 47LE8500-UA)**

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

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

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



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



3. Product Information

3.1 Description of EUT

The Equipment under Test (EUT) is the **LG Electronics Inc. LED LCD TV/Monitor (Model Name: 47LE8500-UA) FCC ID.: BEJ47LE8500UA**

MODELS		47LE8500 (47LE8500-UA)	55LE8500 (55LE8500-UA)
Dimensions (Width x Height x Depth)	With stand	1122.6 x 768.3 x 275.0 mm (44.1 x 30.2 x 10.8 inches)	1292.6 x 874.4 x 311.9 mm (50.8 x 34.4 x 12.2 inches)
	Without stand	1122.6 x 707.3 x 24.5 (max 39.7) mm (44.1 x 27.8 x 0.9 (max 1.5) inches)	1292.6 x 802.9 x 24.5 (max 39.7) mm (50.8 x 31.6 x 0.9 (max 1.5) inches)
Weight	With stand	31.6 kg (69.6 lbs)	43.8 kg (96.5 lbs)
	Without stand	26.9 kg (59.3 lbs)	35.8 kg (78.9 lbs)
Power requirement		AC120V ~ 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	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
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
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
Audio input cable	Connected to the EUT and PC	1.8 m shielded
AV input cable	Connected to the EUT and DVD Player	3.0 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	3.0 m shielded
Antenna cable	Connected to the EUT and TV signal generator	10.0 m shielded
Headset cable	Connected to the EUT	2.75 m shielded
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
RS-232C (Service only) cable	Connected to the EUT and PC	1.8 m shielded
Component input 3 cable	Connected to the EUT and DVD player	2.1 m shielded
AV input 2 cable	Connected to the EUT and DVD player	2.24 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)

◆ 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

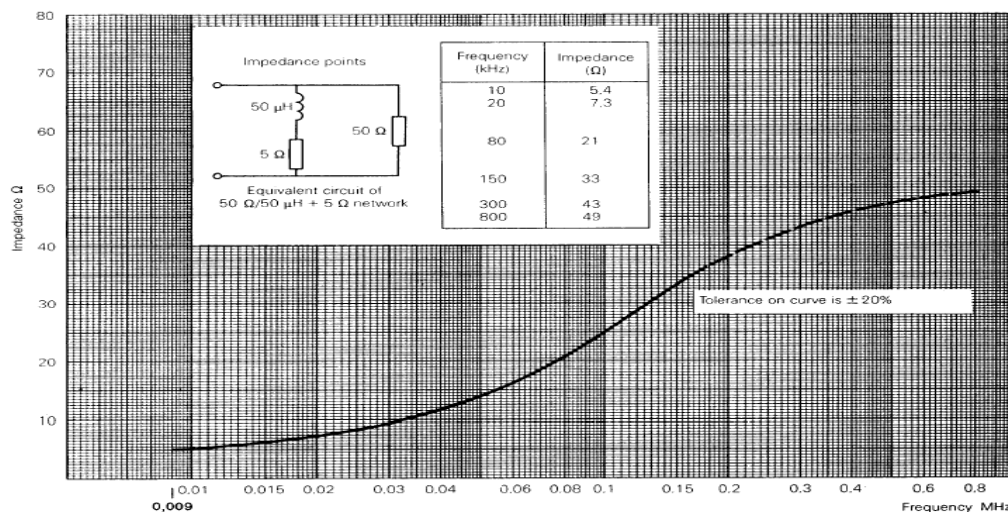


Fig 2. Impedance of LISN



4.3 Radiated Emission

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

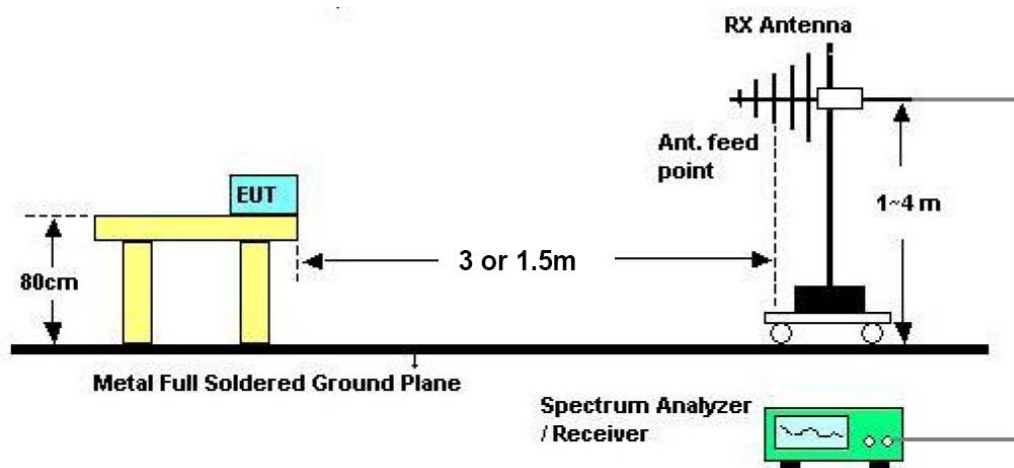


Fig 3. Dimensions of test site.



5. Conducted Emission

5.1 Operating Environment

Temperature : 23 °C
Relative Humidity : 39 % R.H.

5.2 Test Set-up

The conducted emission measurements were performed in the shielded room.

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

AMN is bonded on horizontal reference ground plane.

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

5.3 Measurement Uncertainty

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

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

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



5.4 Limit

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

5.5 Test Equipment used

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

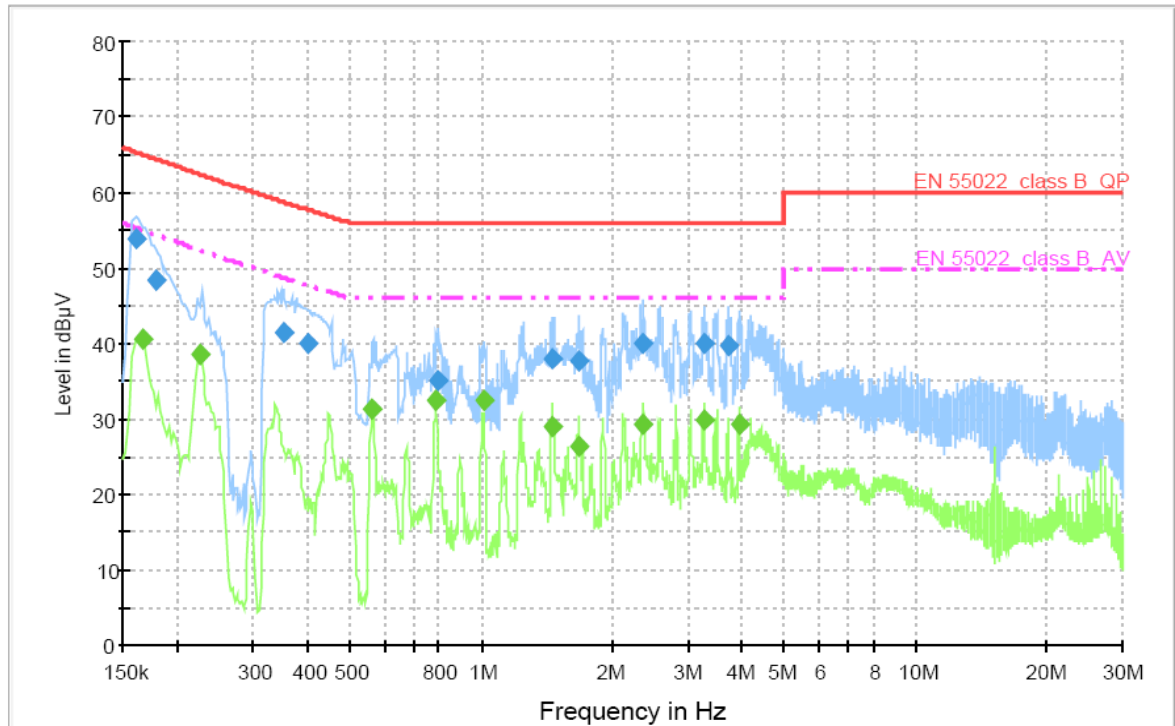
5.6 Test data for Conducted Emission

-. Test Date : December 15, 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
0.160000	54.0	1000.000	9.000	GND	L1	10.0	11.4	65.4	
0.178000	48.4	1000.000	9.000	GND	L1	10.0	16.1	64.5	
0.350000	41.4	1000.000	9.000	GND	L1	10.0	17.4	58.8	
0.398000	40.0	1000.000	9.000	GND	L1	10.0	17.8	57.8	
0.800000	35.0	1000.000	9.000	GND	L1	10.0	21.0	56.0	
1.468000	38.1	1000.000	9.000	GND	L1	10.1	17.9	56.0	
1.682000	37.6	1000.000	9.000	GND	L1	10.1	18.4	56.0	
2.366000	40.0	1000.000	9.000	GND	L1	10.1	16.0	56.0	
3.268000	39.9	1000.000	9.000	GND	L1	10.1	16.1	56.0	
3.720000	39.6	1000.000	9.000	GND	L1	10.2	16.4	56.0	

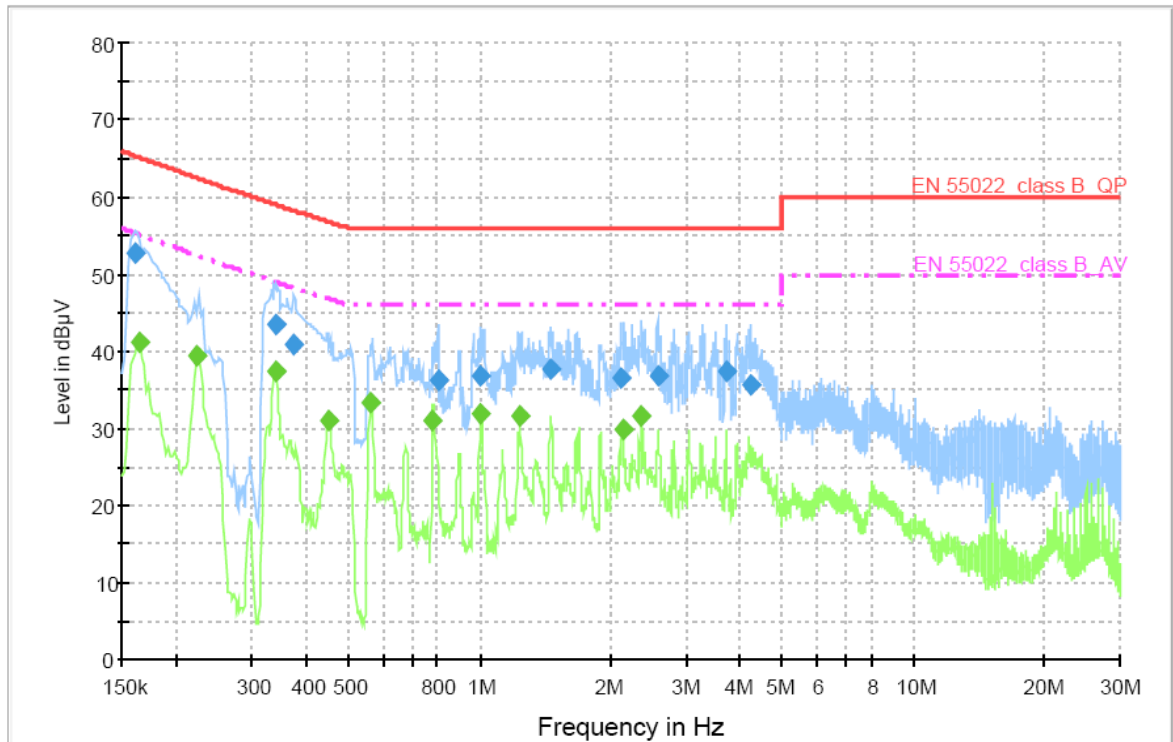
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.166000	40.5	1000.000	9.000	GND	L1	10.0	14.6	55.1	
0.226000	38.6	1000.000	9.000	GND	L1	10.0	13.8	52.4	
0.562000	31.4	1000.000	9.000	GND	L1	10.0	14.6	46.0	
0.786000	32.6	1000.000	9.000	GND	L1	10.0	13.4	46.0	
1.012000	32.3	1000.000	9.000	GND	L1	10.0	13.7	46.0	
1.458000	29.1	1000.000	9.000	GND	L1	10.1	16.9	46.0	
1.678000	26.5	1000.000	9.000	GND	L1	10.1	19.5	46.0	
2.368000	29.2	1000.000	9.000	GND	L1	10.1	16.8	46.0	
3.268000	29.8	1000.000	9.000	GND	L1	10.1	16.2	46.0	
3.942000	29.1	1000.000	9.000	GND	L1	10.2	16.9	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
0.160000	52.7	1000.000	9.000	GND	N	10.0	12.7	65.4	
0.340000	43.6	1000.000	9.000	GND	N	10.0	15.4	59.0	
0.374000	41.0	1000.000	9.000	GND	N	10.0	17.3	58.3	
0.802000	36.2	1000.000	9.000	GND	N	10.0	19.8	56.0	
1.002000	36.9	1000.000	9.000	GND	N	10.0	19.1	56.0	
1.466000	37.7	1000.000	9.000	GND	N	10.1	18.3	56.0	
2.124000	36.6	1000.000	9.000	GND	N	10.1	19.4	56.0	
2.572000	36.9	1000.000	9.000	GND	N	10.1	19.1	56.0	
3.702000	37.3	1000.000	9.000	GND	N	10.2	18.7	56.0	
4.204000	35.7	1000.000	9.000	GND	N	10.2	20.3	56.0	

Final Measurement Detector 2

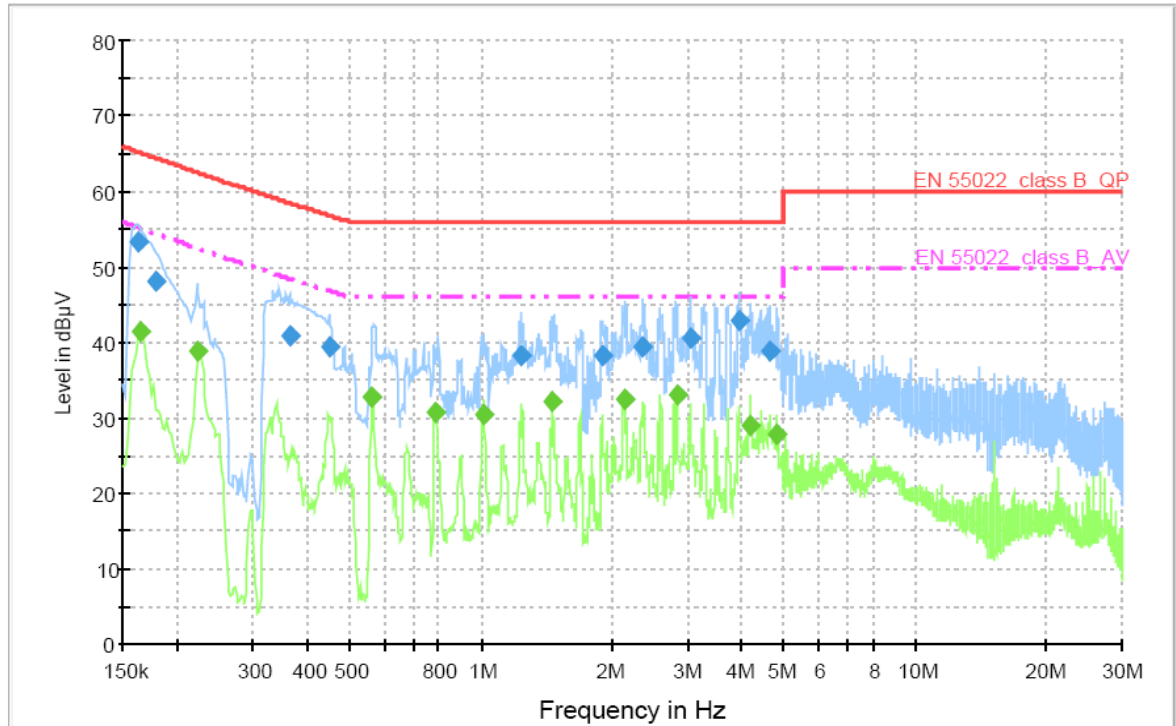
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	41.0	1000.000	9.000	GND	N	10.0	14.2	55.2	
0.224000	39.3	1000.000	9.000	GND	N	10.0	13.1	52.4	
0.338000	37.5	1000.000	9.000	GND	N	10.0	11.5	49.0	
0.448000	31.1	1000.000	9.000	GND	N	10.0	15.7	46.8	
0.562000	33.5	1000.000	9.000	GND	N	10.0	12.5	46.0	
0.782000	31.1	1000.000	9.000	GND	N	10.0	14.9	46.0	
1.010000	31.9	1000.000	9.000	GND	N	10.0	14.1	46.0	
1.242000	31.6	1000.000	9.000	GND	N	10.1	14.4	46.0	
2.136000	29.7	1000.000	9.000	GND	N	10.1	16.3	46.0	
2.368000	31.5	1000.000	9.000	GND	N	10.1	14.5	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
0.162000	53.4	1000.000	9.000	GND	L1	10.0	11.9	65.3	
0.178000	48.2	1000.000	9.000	GND	L1	10.0	16.3	64.5	
0.364000	41.0	1000.000	9.000	GND	L1	10.0	17.5	58.5	
0.448000	39.3	1000.000	9.000	GND	L1	10.0	17.5	56.8	
1.244000	38.2	1000.000	9.000	GND	L1	10.0	17.8	56.0	
1.910000	38.3	1000.000	9.000	GND	L1	10.1	17.7	56.0	
2.354000	39.4	1000.000	9.000	GND	L1	10.1	16.6	56.0	
3.032000	40.7	1000.000	9.000	GND	L1	10.1	15.3	56.0	
3.956000	43.0	1000.000	9.000	GND	L1	10.2	13.0	56.0	
4.624000	38.8	1000.000	9.000	GND	L1	10.2	17.2	56.0	

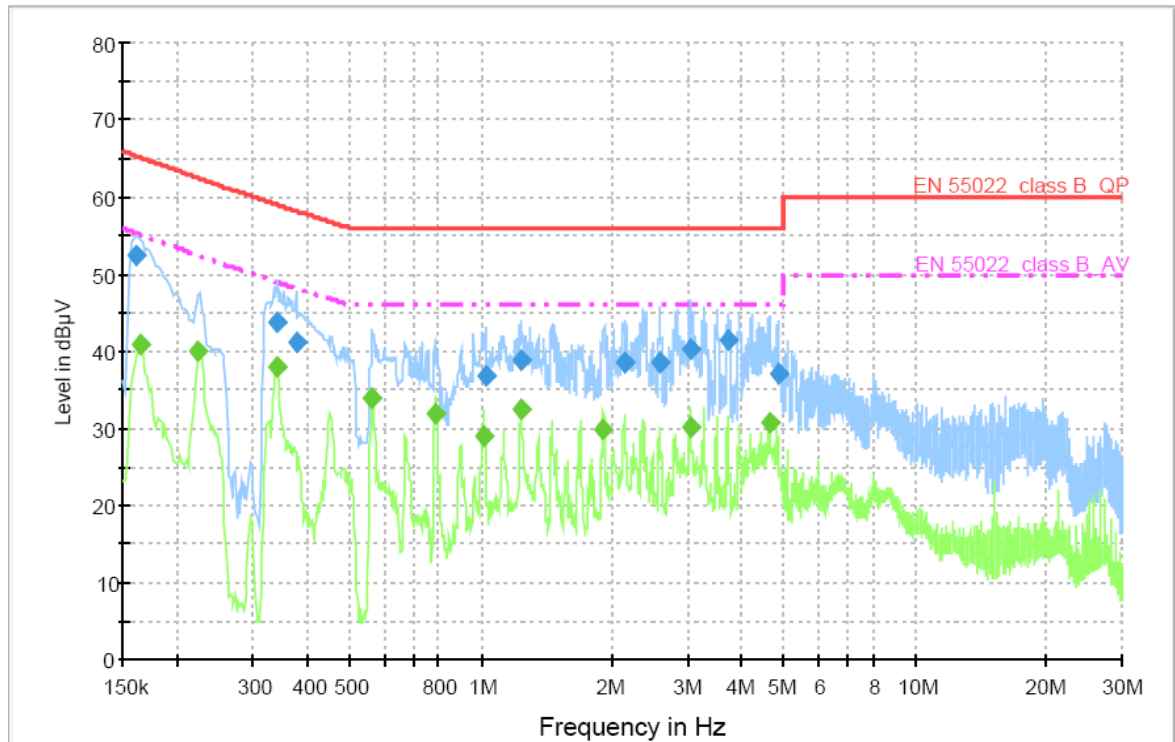
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	41.4	1000.000	9.000	GND	L1	10.0	13.8	55.2	
0.224000	38.8	1000.000	9.000	GND	L1	10.0	13.6	52.4	
0.564000	32.8	1000.000	9.000	GND	L1	10.0	13.2	46.0	
0.786000	30.8	1000.000	9.000	GND	L1	10.0	15.2	46.0	
1.018000	30.5	1000.000	9.000	GND	L1	10.0	15.5	46.0	
1.466000	32.1	1000.000	9.000	GND	L1	10.1	13.9	46.0	
2.146000	32.4	1000.000	9.000	GND	L1	10.1	13.6	46.0	
2.824000	33.0	1000.000	9.000	GND	L1	10.1	13.0	46.0	
4.180000	29.1	1000.000	9.000	GND	L1	10.2	16.9	46.0	
4.794000	28.0	1000.000	9.000	GND	L1	10.2	18.0	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
0.160000	52.4	1000.000	9.000	GND	N	10.0	13.0	65.4	
0.340000	43.9	1000.000	9.000	GND	N	10.0	15.1	59.0	
0.376000	41.1	1000.000	9.000	GND	N	10.0	17.1	58.2	
1.026000	36.9	1000.000	9.000	GND	N	10.0	19.1	56.0	
1.240000	38.7	1000.000	9.000	GND	N	10.1	17.3	56.0	
2.140000	38.6	1000.000	9.000	GND	N	10.1	17.4	56.0	
2.592000	38.7	1000.000	9.000	GND	N	10.1	17.3	56.0	
3.046000	40.3	1000.000	9.000	GND	N	10.1	15.7	56.0	
3.730000	41.6	1000.000	9.000	GND	N	10.2	14.4	56.0	
4.844000	37.1	1000.000	9.000	GND	N	10.2	18.9	56.0	

Final Measurement Detector 2

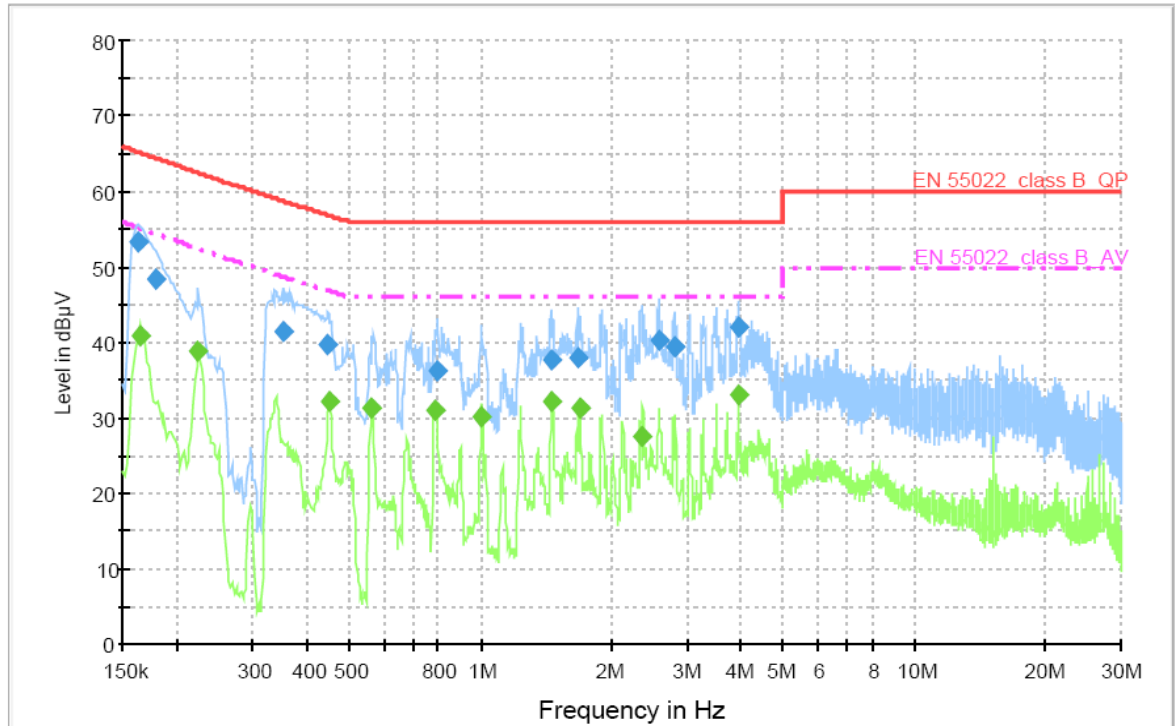
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	41.0	1000.000	9.000	GND	N	10.0	14.2	55.2	
0.224000	39.9	1000.000	9.000	GND	N	10.0	12.5	52.4	
0.338000	38.1	1000.000	9.000	GND	N	10.0	10.9	49.0	
0.562000	33.9	1000.000	9.000	GND	N	10.0	12.1	46.0	
0.788000	32.0	1000.000	9.000	GND	N	10.0	14.0	46.0	
1.018000	28.9	1000.000	9.000	GND	N	10.0	17.1	46.0	
1.240000	32.4	1000.000	9.000	GND	N	10.1	13.6	46.0	
1.920000	29.7	1000.000	9.000	GND	N	10.1	16.3	46.0	
3.050000	30.1	1000.000	9.000	GND	N	10.1	15.9	46.0	
4.632000	30.7	1000.000	9.000	GND	N	10.2	15.3	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
0.162000	53.2	1000.000	9.000	GND	L1	10.0	12.1	65.3	
0.178000	48.4	1000.000	9.000	GND	L1	10.0	16.1	64.5	
0.350000	41.5	1000.000	9.000	GND	L1	10.0	17.3	58.8	
0.446000	39.7	1000.000	9.000	GND	L1	10.0	17.2	56.9	
0.798000	36.4	1000.000	9.000	GND	L1	10.0	19.6	56.0	
1.460000	37.6	1000.000	9.000	GND	L1	10.1	18.4	56.0	
1.676000	37.9	1000.000	9.000	GND	L1	10.1	18.1	56.0	
2.596000	40.2	1000.000	9.000	GND	L1	10.1	15.8	56.0	
2.792000	39.5	1000.000	9.000	GND	L1	10.1	16.5	56.0	
3.942000	42.1	1000.000	9.000	GND	L1	10.2	13.9	56.0	

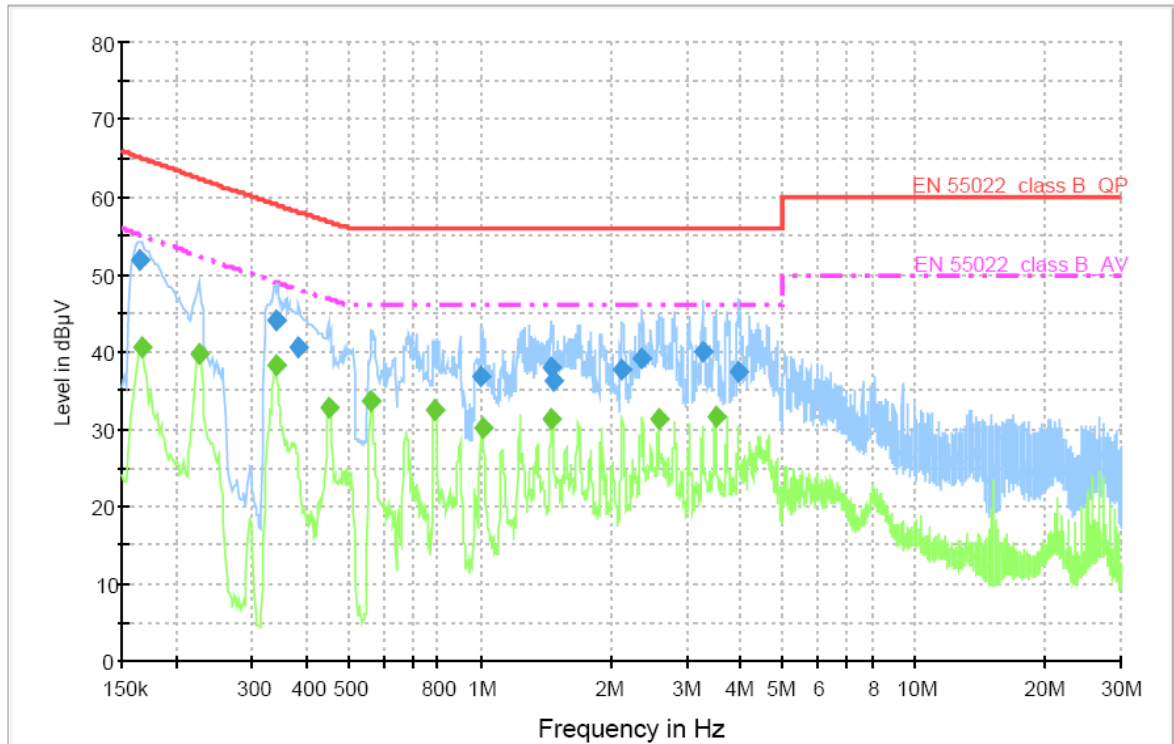
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	40.9	1000.000	9.000	GND	L1	10.0	14.3	55.2	
0.224000	38.8	1000.000	9.000	GND	L1	10.0	13.6	52.4	
0.450000	32.1	1000.000	9.000	GND	L1	10.0	14.7	46.8	
0.562000	31.4	1000.000	9.000	GND	L1	10.0	14.6	46.0	
0.788000	31.0	1000.000	9.000	GND	L1	10.0	15.0	46.0	
1.010000	30.2	1000.000	9.000	GND	L1	10.0	15.8	46.0	
1.466000	32.3	1000.000	9.000	GND	L1	10.1	13.7	46.0	
1.692000	31.4	1000.000	9.000	GND	L1	10.1	14.6	46.0	
2.370000	27.5	1000.000	9.000	GND	L1	10.1	18.5	46.0	
3.946000	33.2	1000.000	9.000	GND	L1	10.2	12.8	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
0.164000	51.8	1000.000	9.000	GND	N	10.0	13.4	65.2	
0.338000	44.0	1000.000	9.000	GND	N	10.0	15.1	59.1	
0.382000	40.5	1000.000	9.000	GND	N	10.0	17.6	58.1	
1.008000	36.7	1000.000	9.000	GND	N	10.0	19.3	56.0	
1.462000	38.0	1000.000	9.000	GND	N	10.1	18.0	56.0	
1.478000	36.4	1000.000	9.000	GND	N	10.1	19.6	56.0	
2.132000	37.7	1000.000	9.000	GND	N	10.1	18.3	56.0	
2.368000	39.1	1000.000	9.000	GND	N	10.1	16.9	56.0	
3.266000	40.0	1000.000	9.000	GND	N	10.1	16.0	56.0	
3.958000	37.4	1000.000	9.000	GND	N	10.2	18.6	56.0	

Final Measurement Detector 2

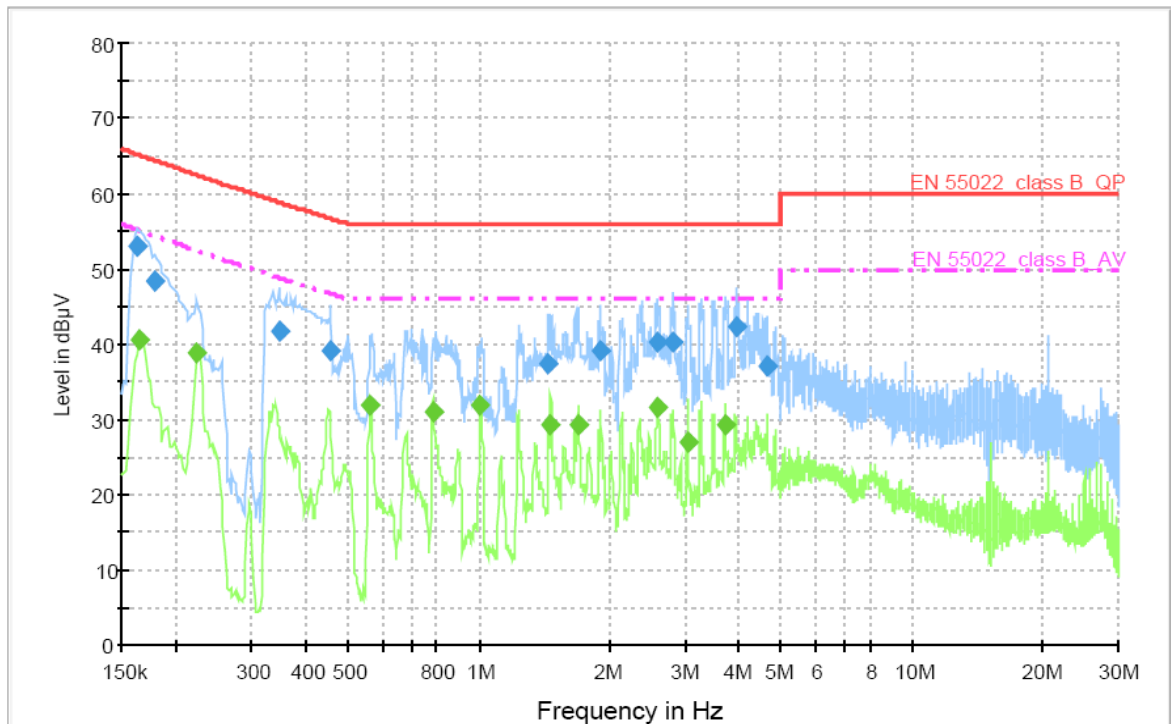
Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.166000	40.5	1000.000	9.000	GND	N	10.0	14.7	55.1	
0.226000	39.8	1000.000	9.000	GND	N	10.0	12.6	52.4	
0.338000	38.3	1000.000	9.000	GND	N	10.0	10.7	49.0	
0.450000	32.9	1000.000	9.000	GND	N	10.0	13.9	46.8	
0.562000	33.7	1000.000	9.000	GND	N	10.0	12.3	46.0	
0.786000	32.4	1000.000	9.000	GND	N	10.0	13.6	46.0	
1.014000	30.2	1000.000	9.000	GND	N	10.0	15.8	46.0	
1.464000	31.2	1000.000	9.000	GND	N	10.1	14.8	46.0	
2.590000	31.2	1000.000	9.000	GND	N	10.1	14.8	46.0	
3.500000	31.5	1000.000	9.000	GND	N	10.2	14.5	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
0.162000	53.0	1000.000	9.000	GND	L1	10.0	12.3	65.3	
0.178000	48.4	1000.000	9.000	GND	L1	10.0	16.1	64.5	
0.346000	41.8	1000.000	9.000	GND	L1	10.0	17.1	58.9	
0.454000	39.0	1000.000	9.000	GND	L1	10.0	17.7	56.7	
1.448000	37.4	1000.000	9.000	GND	L1	10.1	18.6	56.0	
1.916000	39.0	1000.000	9.000	GND	L1	10.1	17.0	56.0	
2.588000	40.2	1000.000	9.000	GND	L1	10.1	15.8	56.0	
2.812000	40.4	1000.000	9.000	GND	L1	10.1	15.6	56.0	
3.946000	42.2	1000.000	9.000	GND	L1	10.2	13.8	56.0	
4.630000	37.2	1000.000	9.000	GND	L1	10.2	18.8	56.0	

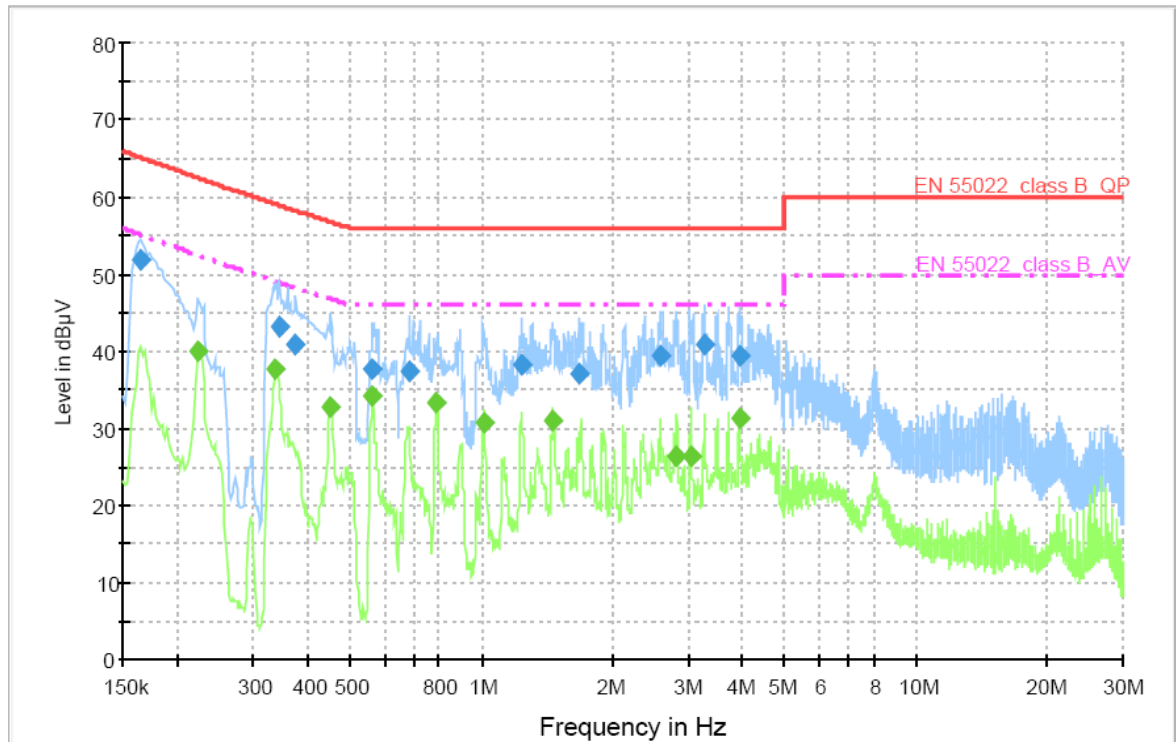
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	40.7	1000.000	9.000	GND	L1	10.0	14.5	55.2	
0.224000	38.9	1000.000	9.000	GND	L1	10.0	13.5	52.4	
0.564000	31.8	1000.000	9.000	GND	L1	10.0	14.2	46.0	
0.784000	31.1	1000.000	9.000	GND	L1	10.0	14.9	46.0	
1.010000	31.8	1000.000	9.000	GND	L1	10.0	14.2	46.0	
1.468000	29.2	1000.000	9.000	GND	L1	10.1	16.8	46.0	
1.692000	29.2	1000.000	9.000	GND	L1	10.1	16.8	46.0	
2.594000	31.5	1000.000	9.000	GND	L1	10.1	14.5	46.0	
3.048000	27.0	1000.000	9.000	GND	L1	10.1	19.0	46.0	
3.718000	29.3	1000.000	9.000	GND	L1	10.2	16.7	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
0.164000	51.9	1000.000	9.000	GND	N	10.0	13.3	65.2	
0.344000	43.1	1000.000	9.000	GND	N	10.0	15.8	58.9	
0.374000	41.0	1000.000	9.000	GND	N	10.0	17.3	58.3	
0.562000	37.7	1000.000	9.000	GND	N	10.0	18.3	56.0	
0.682000	37.5	1000.000	9.000	GND	N	10.0	18.5	56.0	
1.240000	38.2	1000.000	9.000	GND	N	10.1	17.8	56.0	
1.676000	37.1	1000.000	9.000	GND	N	10.1	18.9	56.0	
2.592000	39.5	1000.000	9.000	GND	N	10.1	16.5	56.0	
3.272000	40.9	1000.000	9.000	GND	N	10.1	15.1	56.0	
3.918000	39.4	1000.000	9.000	GND	N	10.2	16.6	56.0	

Final Measurement Detector 2

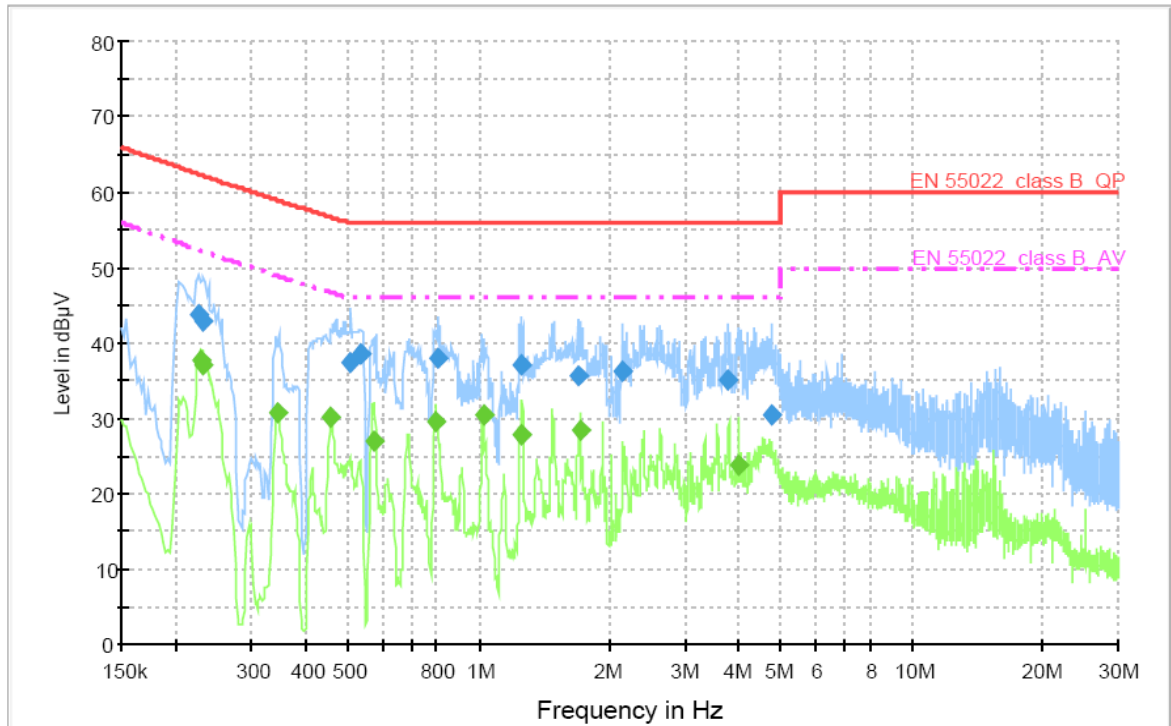
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.224000	40.1	1000.000	9.000	GND	N	10.0	12.3	52.4	
0.336000	37.6	1000.000	9.000	GND	N	10.0	11.5	49.1	
0.450000	32.6	1000.000	9.000	GND	N	10.0	14.2	46.8	
0.562000	34.2	1000.000	9.000	GND	N	10.0	11.8	46.0	
0.788000	33.5	1000.000	9.000	GND	N	10.0	12.6	46.0	
1.018000	30.8	1000.000	9.000	GND	N	10.0	15.2	46.0	
1.464000	31.1	1000.000	9.000	GND	N	10.1	14.9	46.0	
2.822000	26.3	1000.000	9.000	GND	N	10.1	19.7	46.0	
3.048000	26.3	1000.000	9.000	GND	N	10.1	19.7	46.0	
3.952000	31.2	1000.000	9.000	GND	N	10.2	14.8	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
0.226000	43.7	1000.000	9.000	GND	L1	10.0	18.7	62.4	
0.232000	42.9	1000.000	9.000	GND	L1	10.0	19.3	62.2	
0.506000	37.4	1000.000	9.000	GND	L1	10.0	18.6	56.0	
0.538000	38.5	1000.000	9.000	GND	L1	10.0	17.5	56.0	
0.806000	38.0	1000.000	9.000	GND	L1	10.0	18.0	56.0	
1.260000	37.1	1000.000	9.000	GND	L1	10.0	18.9	56.0	
1.690000	35.7	1000.000	9.000	GND	L1	10.1	20.3	56.0	
2.156000	36.2	1000.000	9.000	GND	L1	10.1	19.8	56.0	
3.762000	35.0	1000.000	9.000	GND	L1	10.2	21.0	56.0	
4.770000	30.4	1000.000	9.000	GND	L1	10.2	25.6	56.0	

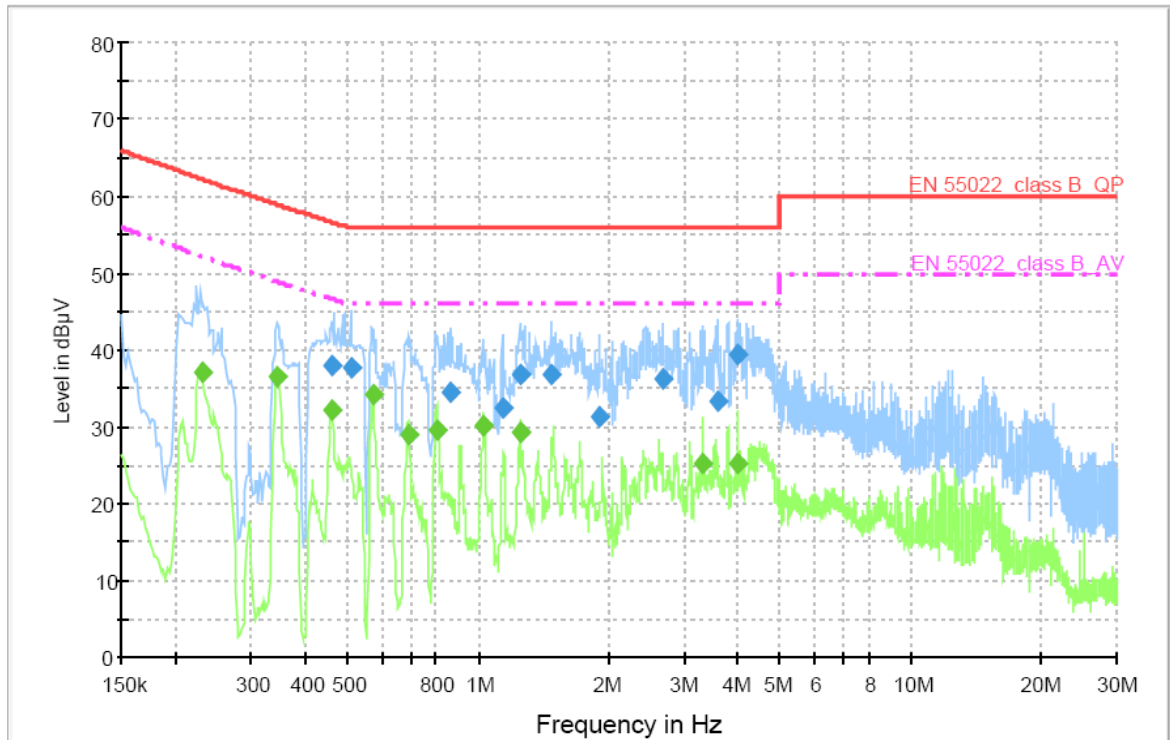
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.228000	37.7	1000.000	9.000	GND	L1	10.0	14.6	52.3	
0.232000	37.0	1000.000	9.000	GND	L1	10.0	15.1	52.1	
0.342000	30.8	1000.000	9.000	GND	L1	10.0	18.1	48.9	
0.456000	30.1	1000.000	9.000	GND	L1	10.0	16.6	46.7	
0.574000	27.0	1000.000	9.000	GND	L1	10.0	19.0	46.0	
0.794000	29.5	1000.000	9.000	GND	L1	10.0	16.5	46.0	
1.026000	30.3	1000.000	9.000	GND	L1	10.0	15.7	46.0	
1.262000	28.0	1000.000	9.000	GND	L1	10.0	18.0	46.0	
1.716000	28.5	1000.000	9.000	GND	L1	10.1	17.5	46.0	
3.984000	23.9	1000.000	9.000	GND	L1	10.2	22.1	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
0.458000	38.0	1000.000	9.000	GND	N	10.0	18.7	56.7	
0.508000	37.7	1000.000	9.000	GND	N	10.0	18.3	56.0	
0.868000	34.6	1000.000	9.000	GND	N	10.0	21.4	56.0	
1.138000	32.5	1000.000	9.000	GND	N	10.1	23.5	56.0	
1.248000	36.9	1000.000	9.000	GND	N	10.1	19.1	56.0	
1.482000	36.8	1000.000	9.000	GND	N	10.1	19.2	56.0	
1.912000	31.4	1000.000	9.000	GND	N	10.1	24.6	56.0	
2.680000	36.2	1000.000	9.000	GND	N	10.1	19.8	56.0	
3.584000	33.5	1000.000	9.000	GND	N	10.2	22.5	56.0	
3.980000	39.5	1000.000	9.000	GND	N	10.2	16.5	56.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.230000	37.1	1000.000	9.000	GND	N	10.0	15.1	52.2	
0.344000	36.7	1000.000	9.000	GND	N	10.0	12.2	48.9	
0.458000	32.1	1000.000	9.000	GND	N	10.0	14.6	46.7	
0.572000	34.2	1000.000	9.000	GND	N	10.0	11.8	46.0	
0.688000	28.9	1000.000	9.000	GND	N	10.0	17.1	46.0	
0.802000	29.6	1000.000	9.000	GND	N	10.0	16.4	46.0	
1.032000	30.2	1000.000	9.000	GND	N	10.1	15.8	46.0	
1.254000	29.3	1000.000	9.000	GND	N	10.1	16.7	46.0	
3.306000	25.2	1000.000	9.000	GND	N	10.1	20.8	46.0	
3.990000	25.1	1000.000	9.000	GND	N	10.2	20.9	46.0	

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



6. Radiated Emission

6.1 Operating Environment

Temperature : 21 °C
Relative Humidity : 46 % 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	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

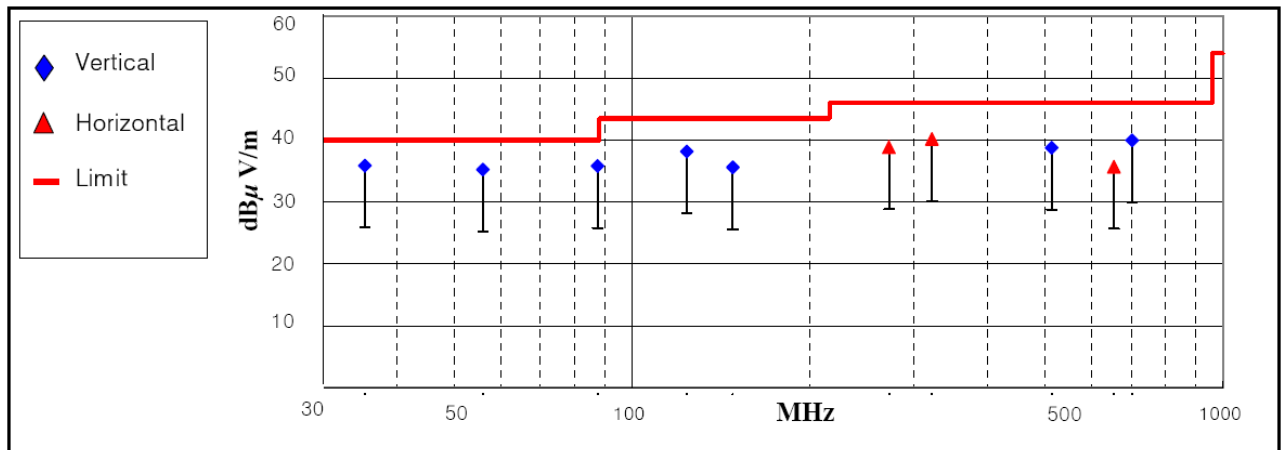
6.6 Test data for Radiated Emission

- Test Date : December 15, 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 1 000 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)	(°)
35.33	22.04	11.85	1.99	35.88	40.00	4.12	V	100	185
55.98	20.59	12.22	2.43	35.24	40.00	4.76	V	107	309
87.49	24.72	8.21	2.91	35.84	40.00	4.16	V	100	248
123.78	23.16	11.63	3.38	38.17	43.50	5.33	V	212	179
148.22	19.16	12.75	3.67	35.58	43.50	7.92	V	100	340
272.28	21.28	12.33	5.25	38.86	46.00	7.14	H	109	27
321.77	20.15	13.79	6.23	40.17	46.00	5.83	H	107	89
513.00	13.90	17.81	7.04	38.75	46.00	7.25	V	100	6
653.83	6.88	21.08	7.73	35.69	46.00	10.31	H	234	177
702.00	10.41	21.59	7.97	39.97	46.00	6.03	V	100	239

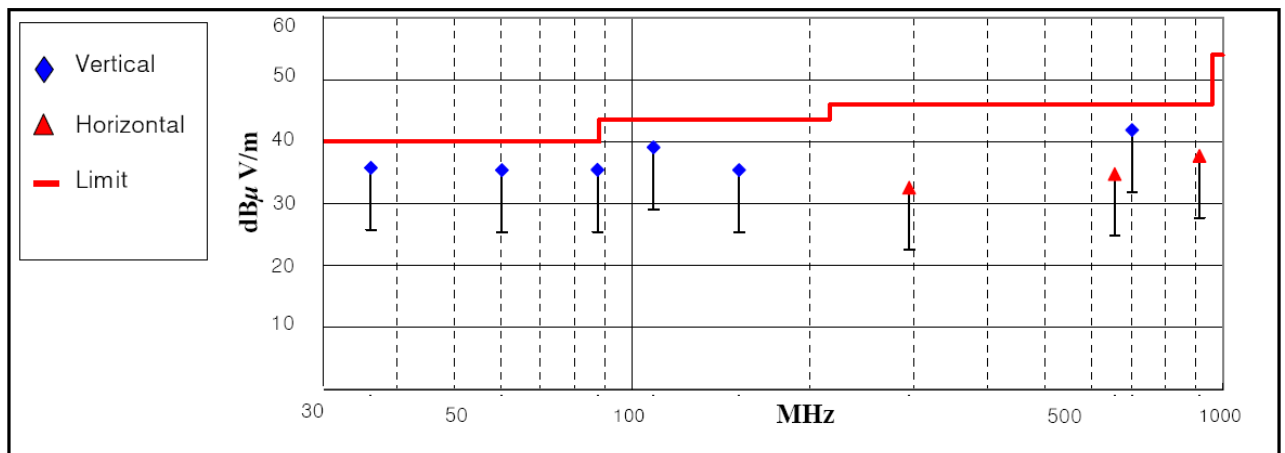


< Fig 14. Radiated emission result (30 MHz ~ 1 000 MHz)>



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

Frequency (MHz)	Measurement Level				Limit (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)	(°)
36.17	21.89	11.87	2.01	35.77	40.00	4.23	V	103	180
60.25	20.89	12.02	2.51	35.42	40.00	4.58	V	100	94
87.49	24.36	8.21	2.91	35.48	40.00	4.52	V	100	199
108.77	25.61	10.30	3.18	39.09	43.50	4.41	V	100	167
151.80	18.91	12.78	3.72	35.41	43.50	8.09	V	117	182
294.48	13.94	13.09	5.55	32.58	46.00	13.42	H	189	190
656.38	5.95	21.10	7.74	34.79	46.00	11.21	H	175	175
702.00	12.34	21.59	7.97	41.90	46.00	4.10	V	190	194
912.79	3.91	24.55	9.25	37.71	46.00	8.29	H	187	188

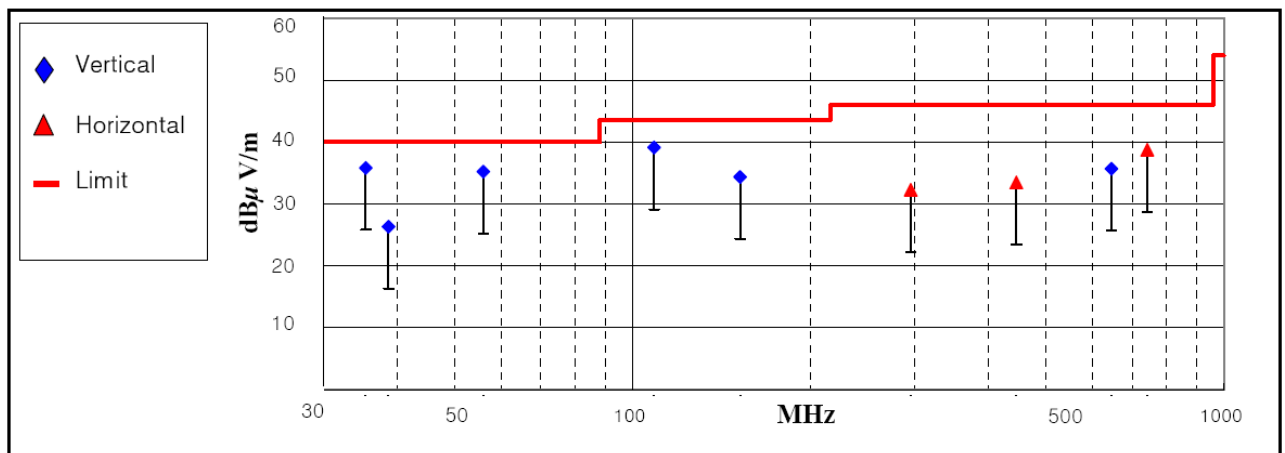


< Fig 15. Radiated emission result (30 MHz ~ 1 000 MHz)>



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

Frequency (MHz)	Measurement Level				Limit (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)	(°)
35.40	21.97	11.85	1.99	35.81	40.00	4.19	V	100	179
38.70	12.35	11.93	2.06	26.34	40.00	13.66	V	105	210
55.97	20.56	12.22	2.43	35.21	40.00	4.79	V	100	296
108.79	25.63	10.30	3.18	39.11	43.50	4.39	V	109	180
152.06	17.87	12.78	3.72	34.37	43.50	9.13	V	100	168
295.67	13.59	13.13	5.56	32.28	46.00	13.72	H	110	154
445.60	9.32	16.98	7.19	33.49	46.00	12.51	H	226	188
645.40	7.01	20.98	7.68	35.67	46.00	10.33	V	100	280
742.50	7.93	22.56	8.26	38.75	46.00	7.25	H	100	195

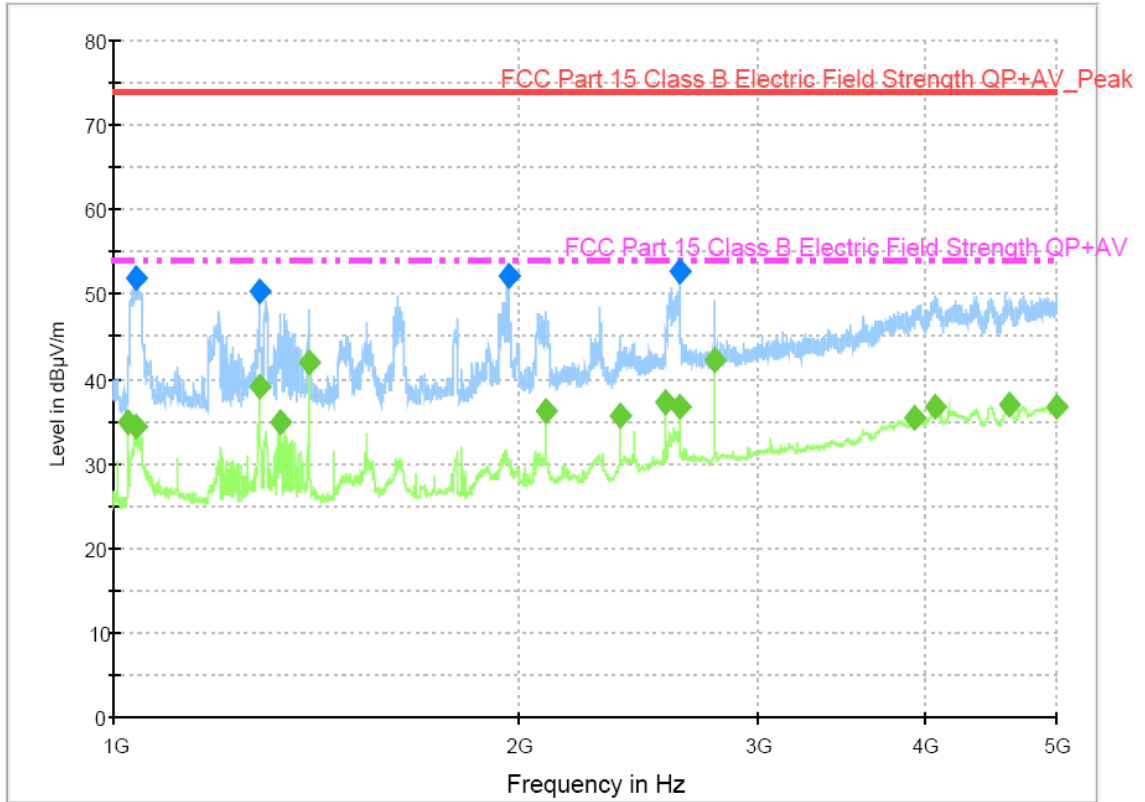


< Fig 16. Radiated emission result (30 MHz ~ 1 000 MHz)>



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

FCC_ESIB_Preamplifier_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
1039.200000	51.9	100.0	V	0.0	-16.4	22.1	74.0	
1282.800000	50.4	200.0	V	0.0	-15.1	23.6	74.0	
1960.000000	52.3	100.0	H	0.0	-13.0	21.7	74.0	
2625.600000	52.7	200.0	H	90.0	-9.8	21.3	74.0	

Final Result 2

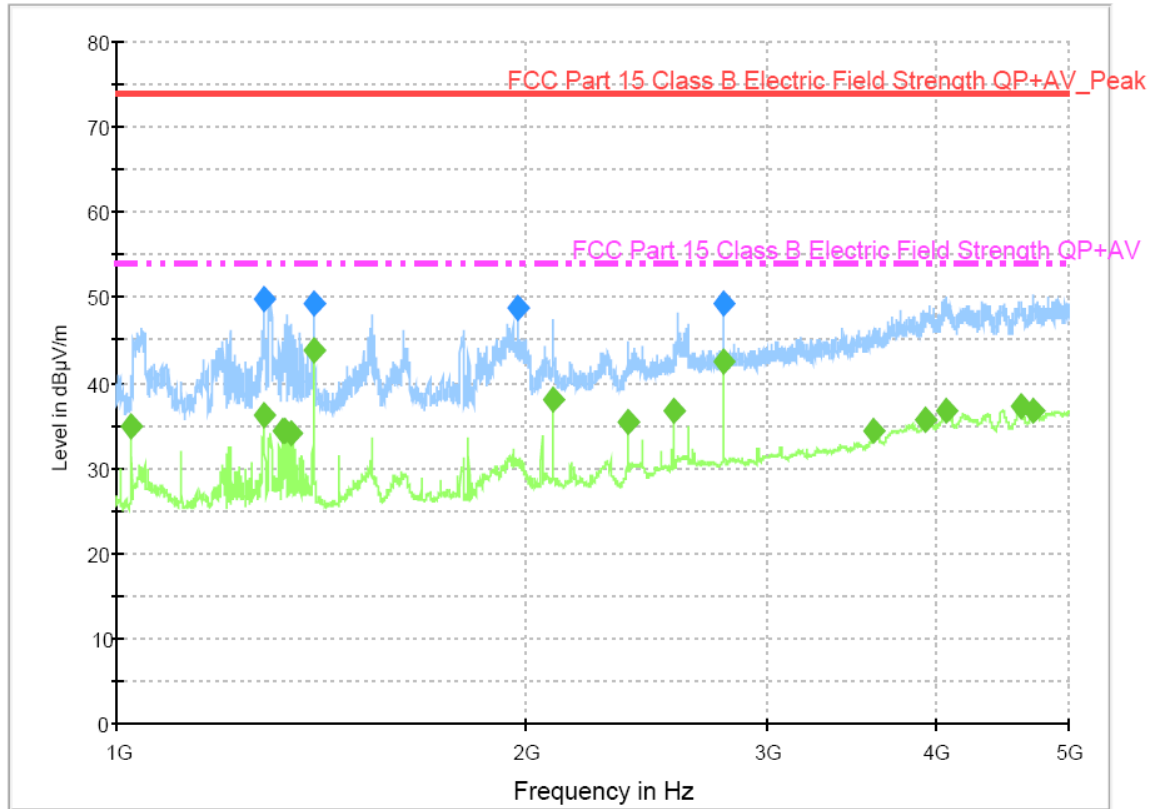
Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1026.000000	35.0	200.0	V	0.0	-16.5	19.0	54.0	
1039.600000	34.3	100.0	V	0.0	-16.4	19.7	54.0	
1282.800000	39.1	200.0	V	0.0	-15.1	14.9	54.0	
1327.600000	34.9	100.0	V	180.0	-14.9	19.1	54.0	
1395.200000	42.1	100.0	V	180.0	-14.8	11.9	54.0	
2092.400000	36.2	100.0	H	180.0	-12.2	17.8	54.0	
2371.600000	35.7	200.0	H	270.0	-10.8	18.3	54.0	
2565.200000	37.2	100.0	V	0.0	-10.0	16.8	54.0	
2628.000000	36.7	100.0	H	180.0	-9.8	17.3	54.0	
2790.000000	42.3	100.0	V	180.0	-9.3	11.7	54.0	
3924.400000	35.5	200.0	V	180.0	-3.7	18.5	54.0	
4066.000000	36.8	100.0	V	0.0	-3.2	17.2	54.0	
4608.000000	37.1	100.0	V	180.0	-3.2	16.9	54.0	
4998.800000	36.8	100.0	H	180.0	-2.4	17.2	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
1282.800000	49.9	200.0	V	0.0	-15.1	24.1	74.0	
1395.200000	49.4	100.0	V	180.0	-14.8	24.6	74.0	
1968.800000	48.9	100.0	H	0.0	-13.0	25.1	74.0	
2790.400000	49.4	100.0	V	180.0	-9.3	24.6	74.0	

Final Result 2

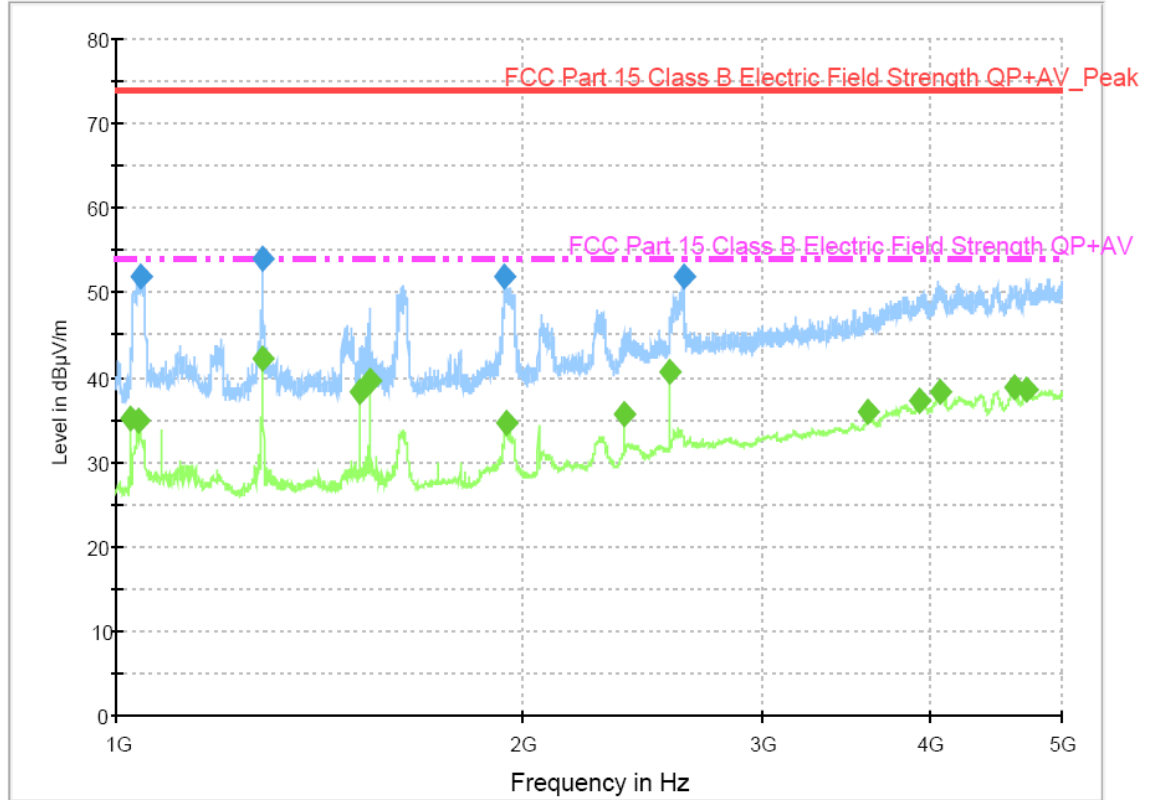
Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1026.000000	35.0	200.0	H	180.0	-16.5	19.0	54.0	
1282.400000	36.2	200.0	V	0.0	-15.1	17.8	54.0	
1322.800000	34.2	100.0	V	180.0	-14.9	19.8	54.0	
1328.000000	34.3	100.0	V	180.0	-14.9	19.7	54.0	
1344.000000	34.2	100.0	V	180.0	-14.9	19.8	54.0	
1395.200000	43.7	100.0	V	180.0	-14.8	10.3	54.0	
2092.800000	38.0	100.0	H	180.0	-12.2	16.0	54.0	
2371.600000	35.5	200.0	H	270.0	-10.8	18.5	54.0	
2565.200000	36.8	100.0	V	0.0	-10.0	17.2	54.0	
2790.000000	42.6	100.0	V	180.0	-9.3	11.4	54.0	
3591.200000	34.4	100.0	V	180.0	-6.2	19.6	54.0	
3926.400000	35.6	200.0	H	180.0	-3.7	18.4	54.0	
4066.400000	36.8	100.0	V	90.0	-3.2	17.2	54.0	
4608.000000	37.2	100.0	V	180.0	-3.2	16.8	54.0	
4716.800000	36.8	100.0	V	0.0	-3.0	17.2	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_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
1043.200000	51.9	100.0	V	0.0	-16.4	22.1	74.0	
1282.400000	54.1	200.0	V	0.0	-15.1	19.9	74.0	
1936.800000	52.0	200.0	H	90.0	-13.2	22.0	74.0	
2626.000000	52.0	200.0	200	90.0	-9.8	22.0	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	35.2	200.0	V	0.0	-16.5	18.8	54.0	
1039.600000	35.0	100.0	V	0.0	-16.4	19.0	54.0	
1282.400000	42.1	200.0	V	0.0	-15.1	11.9	54.0	
1512.000000	38.2	200.0	V	0.0	-14.7	15.8	54.0	
1538.800000	39.5	200.0	V	0.0	-14.6	14.5	54.0	
1944.000000	34.7	100.0	H	0.0	-13.2	19.3	54.0	
2376.000000	35.8	100.0	V	0.0	-10.8	18.2	54.0	
2565.200000	40.7	100.0	V	0.0	-10.0	13.3	54.0	
3591.200000	36.0	100.0	V	180.0	-6.2	18.0	54.0	
3926.400000	37.2	100.0	V	0.0	-3.7	16.8	54.0	
4065.200000	38.3	100.0	V	0.0	-3.2	15.7	54.0	
4608.000000	38.8	100.0	V	180.0	-3.2	15.2	54.0	
4716.400000	38.6	100.0	V	0.0	-3.0	15.4	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: 47LE8500-UA)** was complies with §15.107 and 15.109 of the FCC Rules.