

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-C1-09-267

Test Report Number: GETEC-E3-09-161

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID.: BEJ47LD650UA

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	: 47LD650-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.** BEJ47LD650UA
- **EUT Type** LCD TV/Monitor
- **Model Name** 47LD650-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-E3-09-161
- **Dates of Issue** December 21, 2009



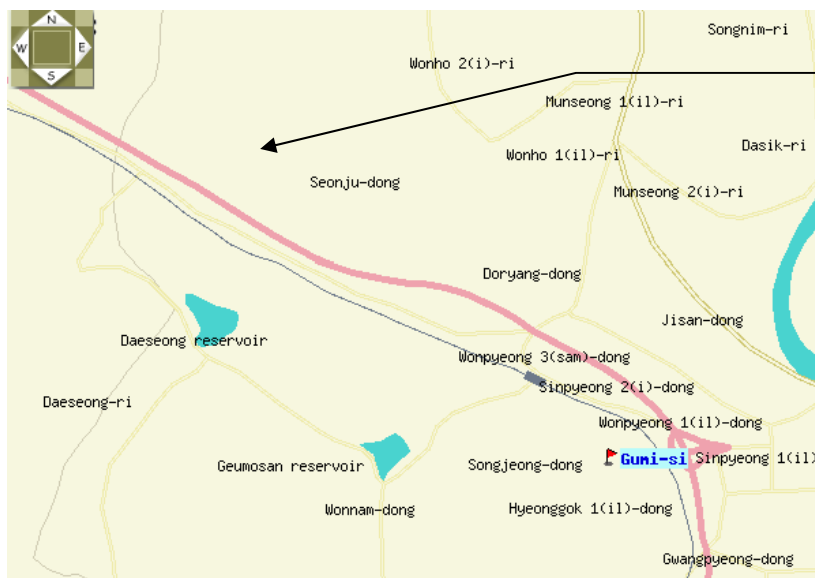
2. Introduction

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. LCD TV/Monitor (Model Name: 47LD650-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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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: 47LD650-UA) FCC ID.: BEJ47LD650UA**

MODELS		47LD650 (47LD650-UA)	55LD650 (55LD650-UA)
Dimensions (Width x Height x Depth)	With stand	44.7 x 29.8 x 10.6 inches 1137.0 x 758.0 x 270.0 mm	52.3 x 34.3 x 12.9 inches 1329.0 x 872.0 x 330.0 mm
	Without stand	44.7 x 26.9 x 3.0 inches 1137.0 x 685.0 x 76.8 mm	52.3 x 31.3 x 3.7 inches 1329.0 x 796.0 x 96.5 mm
Weight	With stand	44.7 lbs / 20.3 kg	70.7 lbs / 32.1 kg
	Without stand	40.3 lbs / 18.3 kg	63.7 lbs / 28.9 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	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	SM Electronics	UDD-32M	S/N: N/A FCC ID: DoC
Wireless Ready Dongle	LG Electronics Inc.	-	S/N: N/A FCC ID: -

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



3.2.2 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
RS-232C (Service only)	Connected to the EUT and PC	1.8 m shielded
Wireless control cable	Connected to the EUT and Wireless Ready Dongle	0.25 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
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
LAN cable	Connected to the EUT and Network	10.0 m unshielded

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 file.

"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

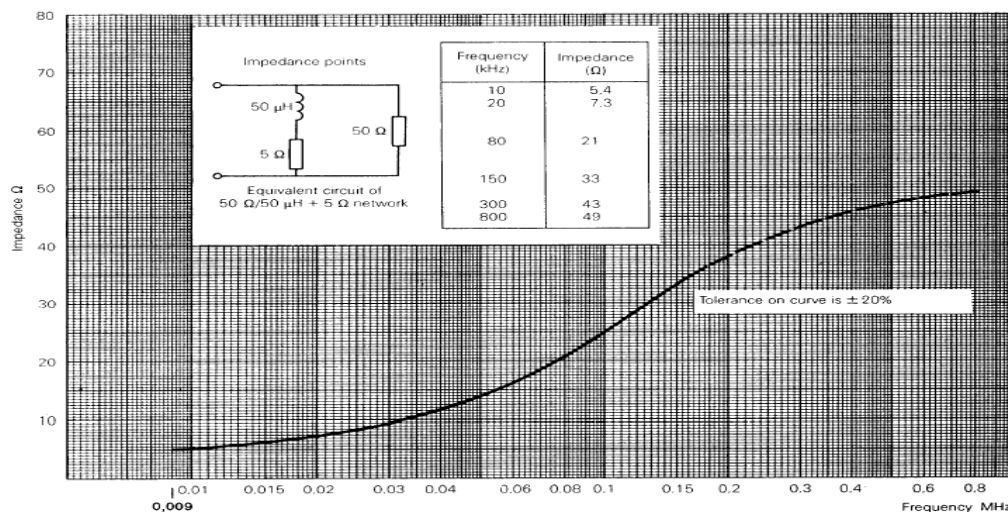


Fig 2. Impedance of LISN



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

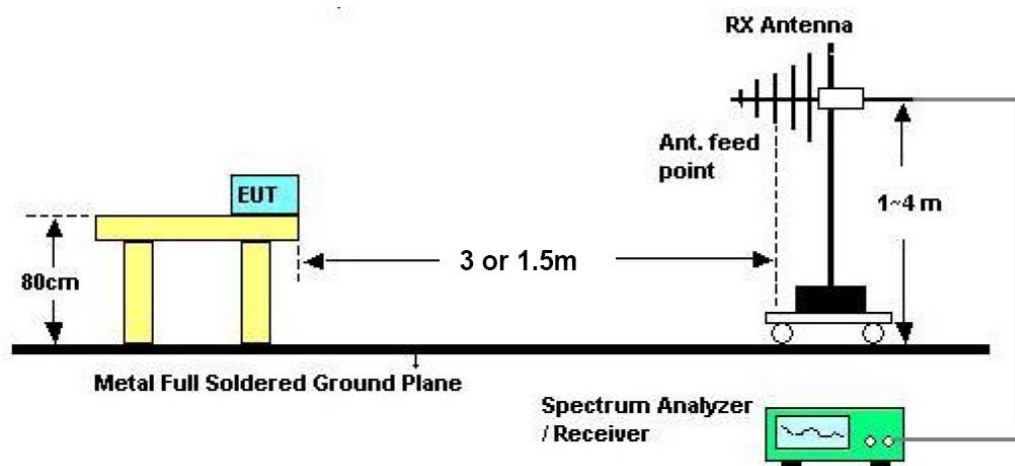


Fig 3. Dimensions of test site.



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

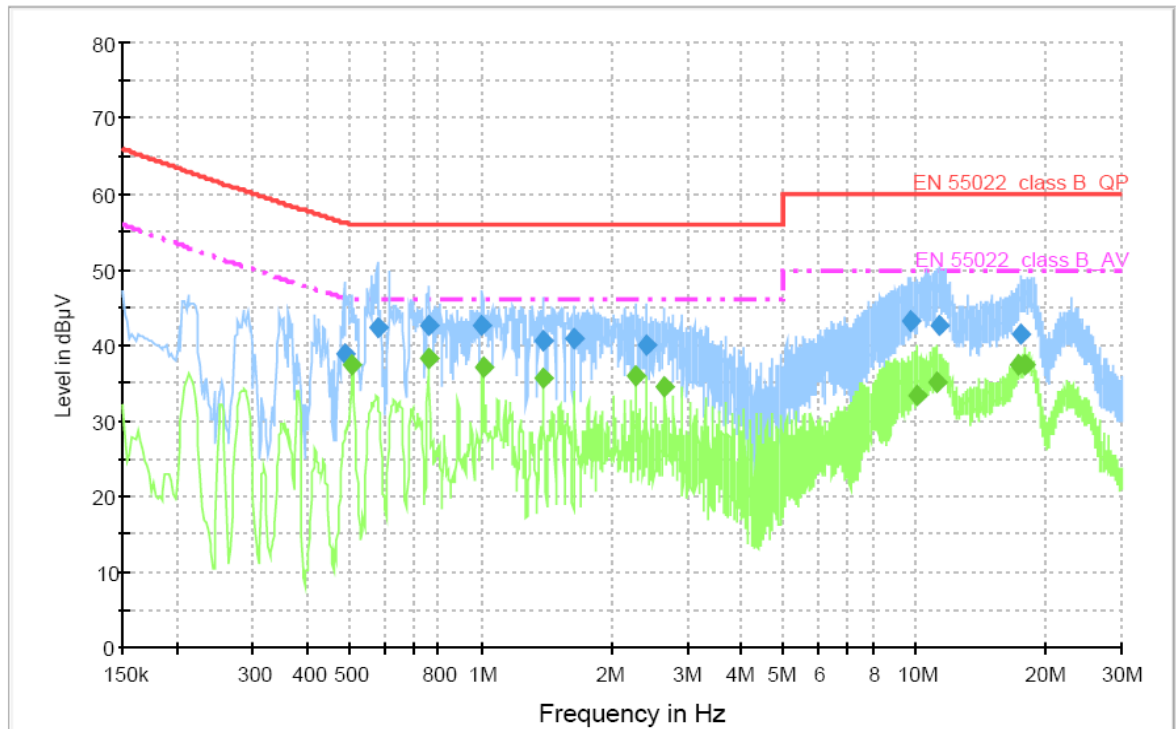
5.6 Test data for Conducted Emission

- . 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
0.486000	38.9	1000.000	9.000	GND	L1	10.0	17.3	56.2	
0.578000	42.4	1000.000	9.000	GND	L1	10.0	13.6	56.0	
0.762000	42.7	1000.000	9.000	GND	L1	10.0	13.3	56.0	
1.010000	42.7	1000.000	9.000	GND	L1	10.0	13.3	56.0	
1.392000	40.6	1000.000	9.000	GND	L1	10.1	15.4	56.0	
1.648000	40.9	1000.000	9.000	GND	L1	10.1	15.1	56.0	
2.402000	39.9	1000.000	9.000	GND	L1	10.1	16.1	56.0	
9.822000	43.2	1000.000	9.000	GND	L1	10.4	16.8	60.0	
11.440000	42.6	1000.000	9.000	GND	L1	10.4	17.4	60.0	
17.520000	41.5	1000.000	9.000	GND	L1	10.7	18.5	60.0	

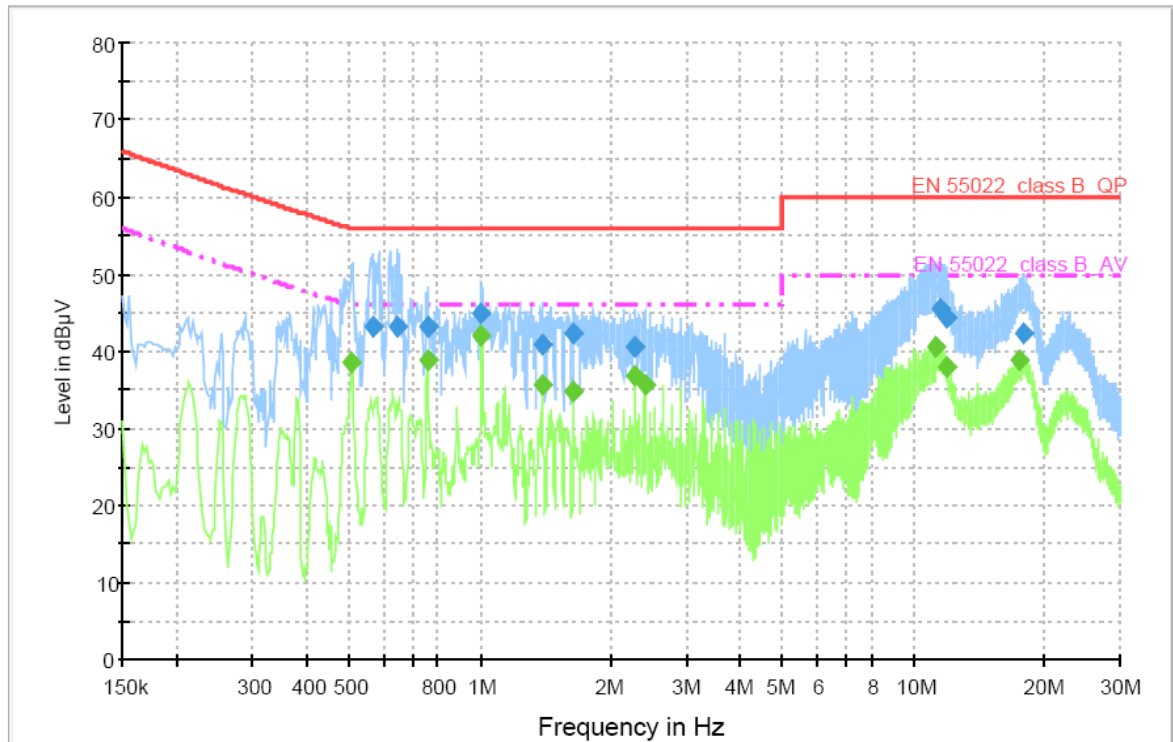
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.506000	37.4	1000.000	9.000	GND	L1	10.0	8.6	46.0	
0.758000	38.2	1000.000	9.000	GND	L1	10.0	7.8	46.0	
1.012000	37.0	1000.000	9.000	GND	L1	10.0	9.0	46.0	
1.392000	35.6	1000.000	9.000	GND	L1	10.1	10.4	46.0	
2.278000	36.0	1000.000	9.000	GND	L1	10.1	10.0	46.0	
2.658000	34.4	1000.000	9.000	GND	L1	10.1	11.6	46.0	
10.088000	33.3	1000.000	9.000	GND	L1	10.4	16.7	50.0	
11.216000	35.1	1000.000	9.000	GND	L1	10.4	14.9	50.0	
17.430000	37.2	1000.000	9.000	GND	L1	10.7	12.8	50.0	
17.980000	37.4	1000.000	9.000	GND	L1	10.7	12.6	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
0.566000	43.2	1000.000	9.000	GND	N	10.0	12.8	56.0	
0.644000	43.2	1000.000	9.000	GND	N	10.0	12.8	56.0	
0.760000	43.2	1000.000	9.000	GND	N	10.0	12.8	56.0	
1.010000	44.9	1000.000	9.000	GND	N	10.0	11.1	56.0	
1.390000	40.8	1000.000	9.000	GND	N	10.1	15.2	56.0	
1.644000	42.3	1000.000	9.000	GND	N	10.1	13.7	56.0	
2.272000	40.7	1000.000	9.000	GND	N	10.1	15.3	56.0	
11.546000	45.6	1000.000	9.000	GND	N	10.4	14.4	60.0	
11.872000	44.4	1000.000	9.000	GND	N	10.4	15.6	60.0	
17.882000	42.4	1000.000	9.000	GND	N	10.6	17.6	60.0	

Final Measurement Detector 2

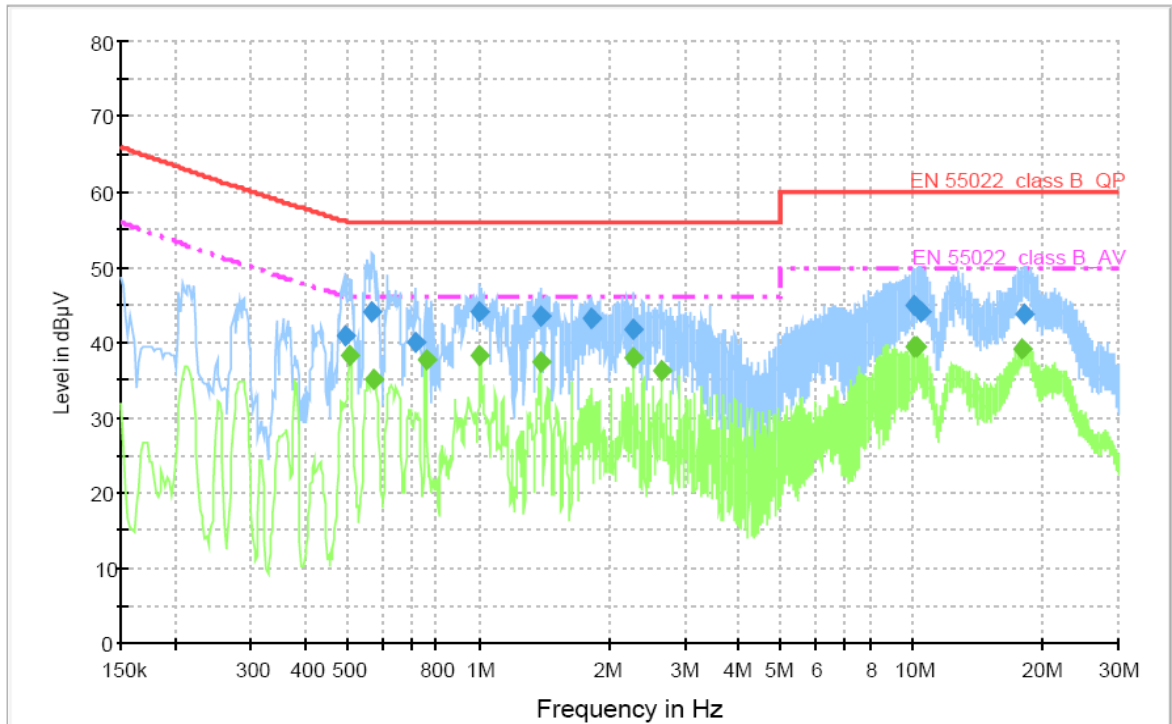
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.506000	38.4	1000.000	9.000	GND	N	10.0	7.6	46.0	
0.758000	38.7	1000.000	9.000	GND	N	10.0	7.3	46.0	
1.010000	41.9	1000.000	9.000	GND	N	10.0	4.1	46.0	
1.390000	35.7	1000.000	9.000	GND	N	10.1	10.3	46.0	
1.642000	34.7	1000.000	9.000	GND	N	10.1	11.3	46.0	
2.274000	36.9	1000.000	9.000	GND	N	10.1	9.1	46.0	
2.398000	35.7	1000.000	9.000	GND	N	10.1	10.3	46.0	
11.202000	40.7	1000.000	9.000	GND	N	10.4	9.3	50.0	
11.942000	38.0	1000.000	9.000	GND	N	10.4	12.0	50.0	
17.550000	38.9	1000.000	9.000	GND	N	10.6	11.1	50.0	

< 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
0.494000	40.7	1000.000	9.000	GND	L1	10.0	15.4	56.1	
0.570000	44.1	1000.000	9.000	GND	L1	10.0	12.0	56.0	
0.714000	40.1	1000.000	9.000	GND	L1	10.0	15.9	56.0	
1.008000	44.0	1000.000	9.000	GND	L1	10.0	12.0	56.0	
1.390000	43.4	1000.000	9.000	GND	L1	10.1	12.6	56.0	
1.828000	43.1	1000.000	9.000	GND	L1	10.1	12.9	56.0	
2.270000	41.8	1000.000	9.000	GND	L1	10.1	14.2	56.0	
10.088000	44.9	1000.000	9.000	GND	L1	10.4	15.1	60.0	
10.490000	44.0	1000.000	9.000	GND	L1	10.4	16.0	60.0	
18.184000	43.7	1000.000	9.000	GND	L1	10.7	16.3	60.0	

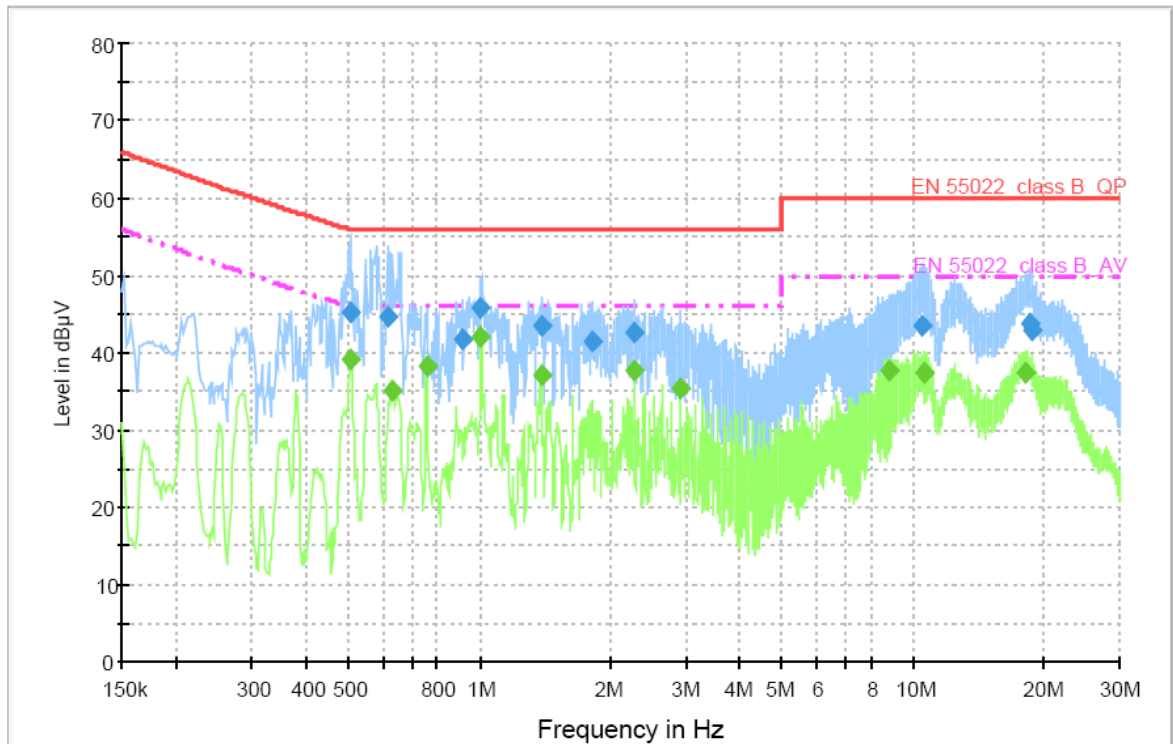
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.506000	38.2	1000.000	9.000	GND	L1	10.0	7.8	46.0	
0.572000	35.0	1000.000	9.000	GND	L1	10.0	11.0	46.0	
0.756000	37.8	1000.000	9.000	GND	L1	10.0	8.2	46.0	
1.010000	38.3	1000.000	9.000	GND	L1	10.0	7.7	46.0	
1.390000	37.4	1000.000	9.000	GND	L1	10.1	8.6	46.0	
2.272000	37.8	1000.000	9.000	GND	L1	10.1	8.2	46.0	
2.652000	36.3	1000.000	9.000	GND	L1	10.1	9.7	46.0	
10.132000	39.3	1000.000	9.000	GND	L1	10.4	10.7	50.0	
10.202000	39.4	1000.000	9.000	GND	L1	10.4	10.6	50.0	
17.888000	39.1	1000.000	9.000	GND	L1	10.7	10.9	50.0	

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



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.502000	45.3	1000.000	9.000	GND	N	10.0	10.7	56.0	
0.616000	44.5	1000.000	9.000	GND	N	10.0	11.5	56.0	
0.914000	41.7	1000.000	9.000	GND	N	10.0	14.3	56.0	
1.008000	45.9	1000.000	9.000	GND	N	10.0	10.1	56.0	
1.390000	43.5	1000.000	9.000	GND	N	10.1	12.5	56.0	
1.826000	41.4	1000.000	9.000	GND	N	10.1	14.6	56.0	
2.268000	42.7	1000.000	9.000	GND	N	10.1	13.3	56.0	
10.524000	43.4	1000.000	9.000	GND	N	10.4	16.6	60.0	
18.546000	43.7	1000.000	9.000	GND	N	10.6	16.3	60.0	
18.916000	43.0	1000.000	9.000	GND	N	10.7	17.0	60.0	

Final Measurement Detector 2

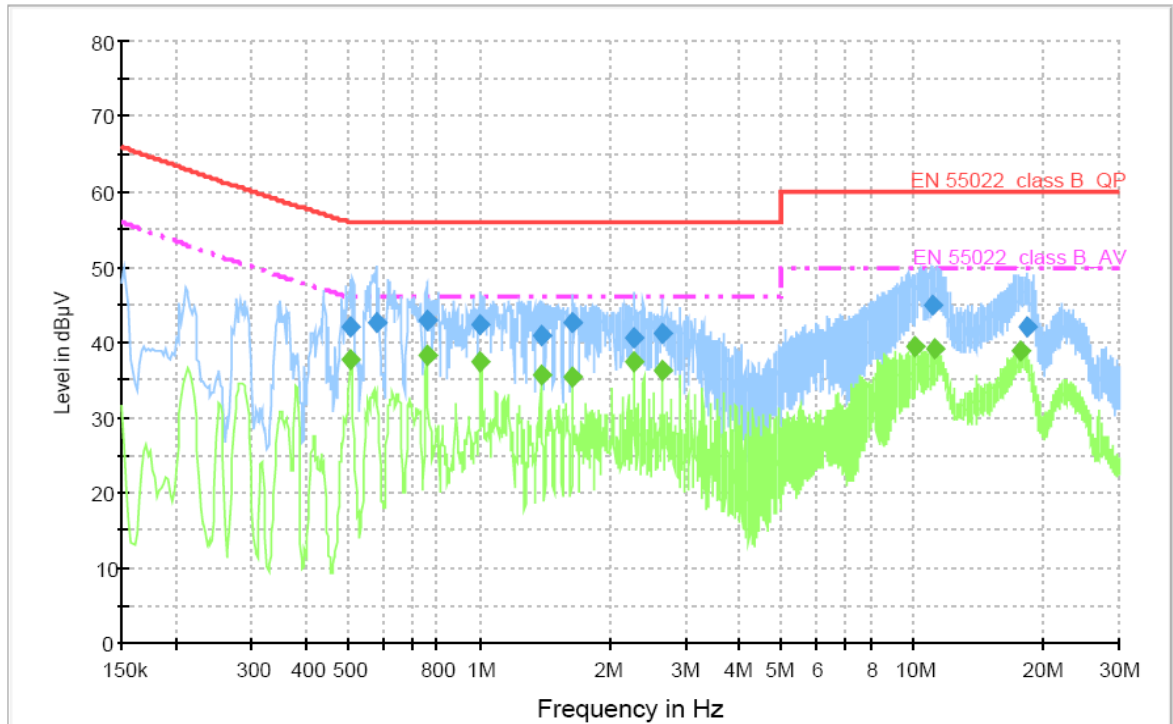
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.506000	39.1	1000.000	9.000	GND	N	10.0	6.9	46.0	
0.630000	34.9	1000.000	9.000	GND	N	10.0	11.1	46.0	
0.756000	38.2	1000.000	9.000	GND	N	10.0	7.8	46.0	
1.008000	41.9	1000.000	9.000	GND	N	10.0	4.1	46.0	
1.390000	37.1	1000.000	9.000	GND	N	10.1	8.9	46.0	
2.272000	37.8	1000.000	9.000	GND	N	10.1	8.2	46.0	
2.902000	35.2	1000.000	9.000	GND	N	10.1	10.8	46.0	
8.770000	37.6	1000.000	9.000	GND	N	10.3	12.4	50.0	
10.616000	37.3	1000.000	9.000	GND	N	10.4	12.7	50.0	
18.146000	37.5	1000.000	9.000	GND	N	10.6	12.5	50.0	

< 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
0.504000	42.0	1000.000	9.000	GND	L1	10.0	14.0	56.0	
0.578000	42.6	1000.000	9.000	GND	L1	10.0	13.4	56.0	
0.762000	42.9	1000.000	9.000	GND	L1	10.0	13.1	56.0	
1.006000	42.4	1000.000	9.000	GND	L1	10.0	13.6	56.0	
1.392000	40.9	1000.000	9.000	GND	L1	10.1	15.1	56.0	
1.644000	42.7	1000.000	9.000	GND	L1	10.1	13.3	56.0	
2.272000	40.6	1000.000	9.000	GND	L1	10.1	15.4	56.0	
2.652000	41.2	1000.000	9.000	GND	L1	10.1	14.8	56.0	
11.126000	45.1	1000.000	9.000	GND	L1	10.4	14.9	60.0	
18.442000	41.9	1000.000	9.000	GND	L1	10.7	18.1	60.0	

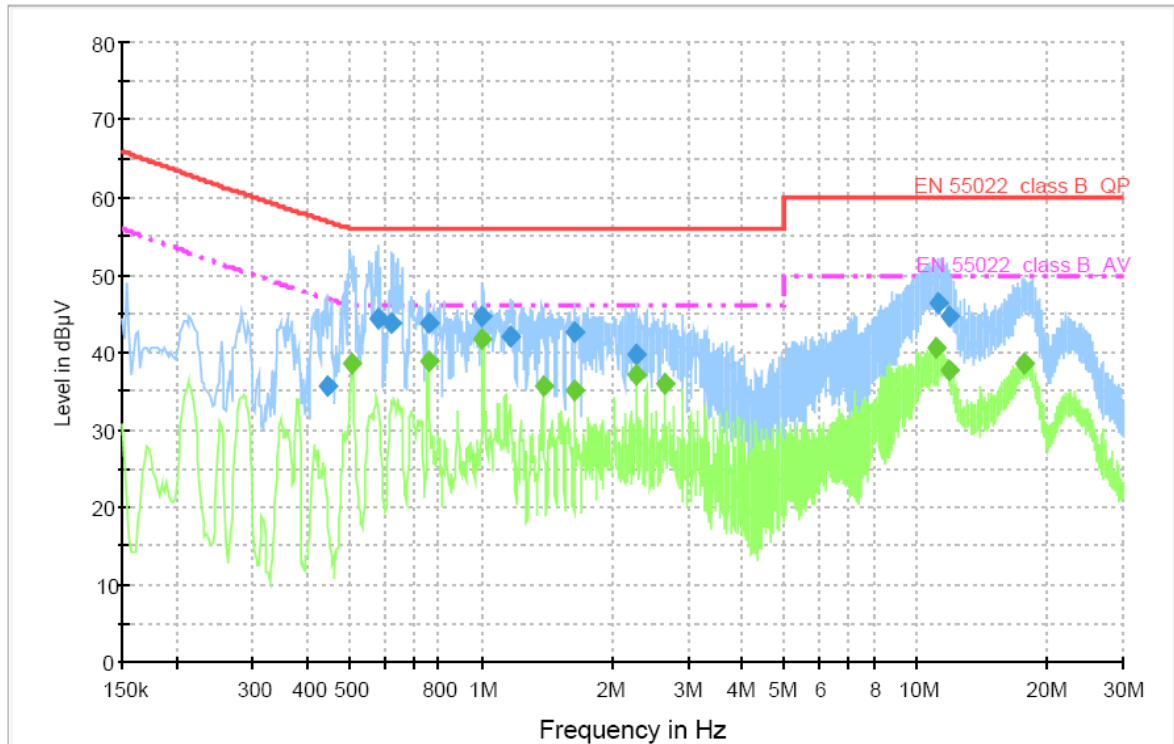
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.504000	37.6	1000.000	9.000	GND	L1	10.0	8.4	46.0	
0.756000	38.3	1000.000	9.000	GND	L1	10.0	7.7	46.0	
1.010000	37.4	1000.000	9.000	GND	L1	10.0	8.6	46.0	
1.390000	35.7	1000.000	9.000	GND	L1	10.1	10.3	46.0	
1.642000	35.3	1000.000	9.000	GND	L1	10.1	10.7	46.0	
2.272000	37.4	1000.000	9.000	GND	L1	10.1	8.6	46.0	
2.652000	36.2	1000.000	9.000	GND	L1	10.1	9.8	46.0	
10.142000	39.5	1000.000	9.000	GND	L1	10.4	10.5	50.0	
11.268000	39.1	1000.000	9.000	GND	L1	10.4	10.9	50.0	
17.764000	38.8	1000.000	9.000	GND	L1	10.7	11.2	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
0.444000	35.6	1000.000	9.000	GND	N	10.0	21.3	56.9	
0.580000	44.2	1000.000	9.000	GND	N	10.0	11.8	56.0	
0.622000	43.9	1000.000	9.000	GND	N	10.0	12.1	56.0	
0.760000	43.8	1000.000	9.000	GND	N	10.0	12.2	56.0	
1.010000	44.8	1000.000	9.000	GND	N	10.0	11.2	56.0	
1.174000	42.2	1000.000	9.000	GND	N	10.1	13.8	56.0	
1.644000	42.6	1000.000	9.000	GND	N	10.1	13.4	56.0	
2.268000	39.6	1000.000	9.000	GND	N	10.1	16.4	56.0	
11.196000	46.3	1000.000	9.000	GND	N	10.4	13.7	60.0	
11.912000	44.6	1000.000	9.000	GND	N	10.4	15.4	60.0	

Final Measurement Detector 2

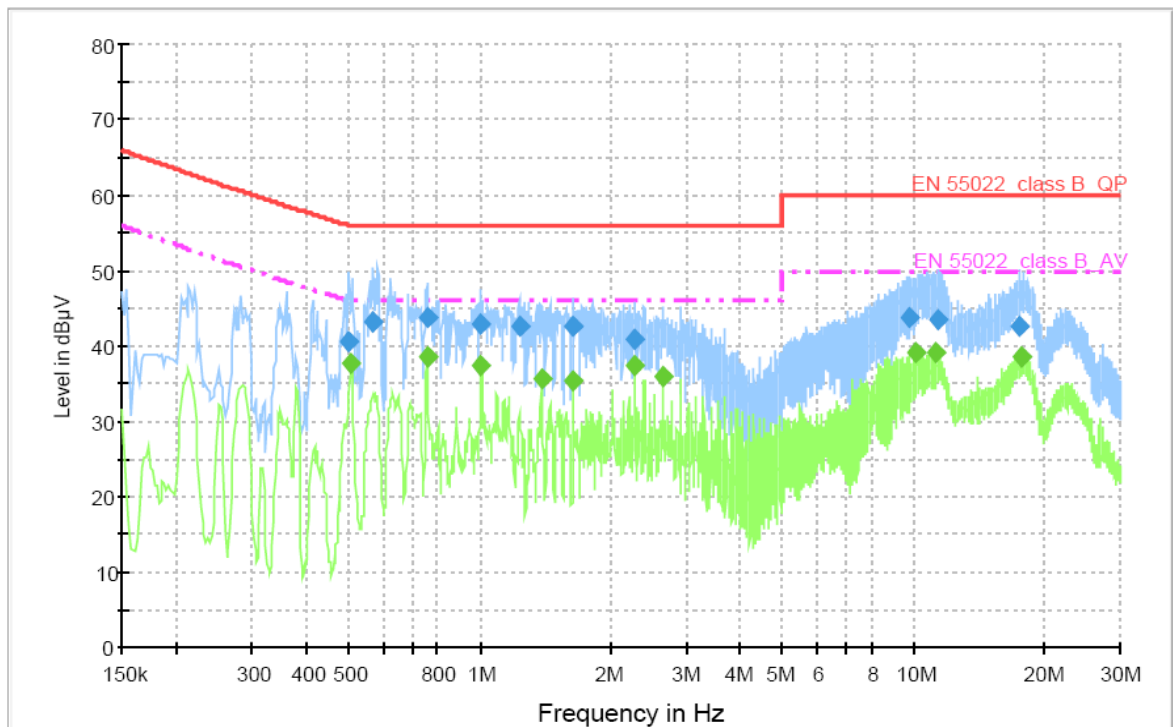
Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.504000	38.5	1000.000	9.000	GND	N	10.0	7.5	46.0	
0.758000	38.9	1000.000	9.000	GND	N	10.0	7.1	46.0	
1.010000	41.9	1000.000	9.000	GND	N	10.0	4.1	46.0	
1.390000	35.7	1000.000	9.000	GND	N	10.1	10.3	46.0	
1.642000	35.0	1000.000	9.000	GND	N	10.1	11.0	46.0	
2.272000	37.1	1000.000	9.000	GND	N	10.1	8.9	46.0	
2.652000	36.0	1000.000	9.000	GND	N	10.1	10.0	46.0	
11.126000	40.5	1000.000	9.000	GND	N	10.4	9.5	50.0	
11.982000	37.7	1000.000	9.000	GND	N	10.4	12.3	50.0	
17.698000	38.6	1000.000	9.000	GND	N	10.6	11.4	50.0	

< 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
0.500000	40.7	1000.000	9.000	GND	L1	10.0	15.3	56.0	
0.570000	43.1	1000.000	9.000	GND	L1	10.0	12.9	56.0	
0.758000	43.6	1000.000	9.000	GND	L1	10.0	12.4	56.0	
1.008000	43.0	1000.000	9.000	GND	L1	10.0	13.0	56.0	
1.234000	42.7	1000.000	9.000	GND	L1	10.0	13.3	56.0	
1.644000	42.7	1000.000	9.000	GND	L1	10.1	13.3	56.0	
2.270000	40.9	1000.000	9.000	GND	L1	10.1	15.1	56.0	
9.804000	43.6	1000.000	9.000	GND	L1	10.4	16.4	60.0	
11.364000	43.6	1000.000	9.000	GND	L1	10.4	16.4	60.0	
17.550000	42.7	1000.000	9.000	GND	L1	10.7	17.3	60.0	

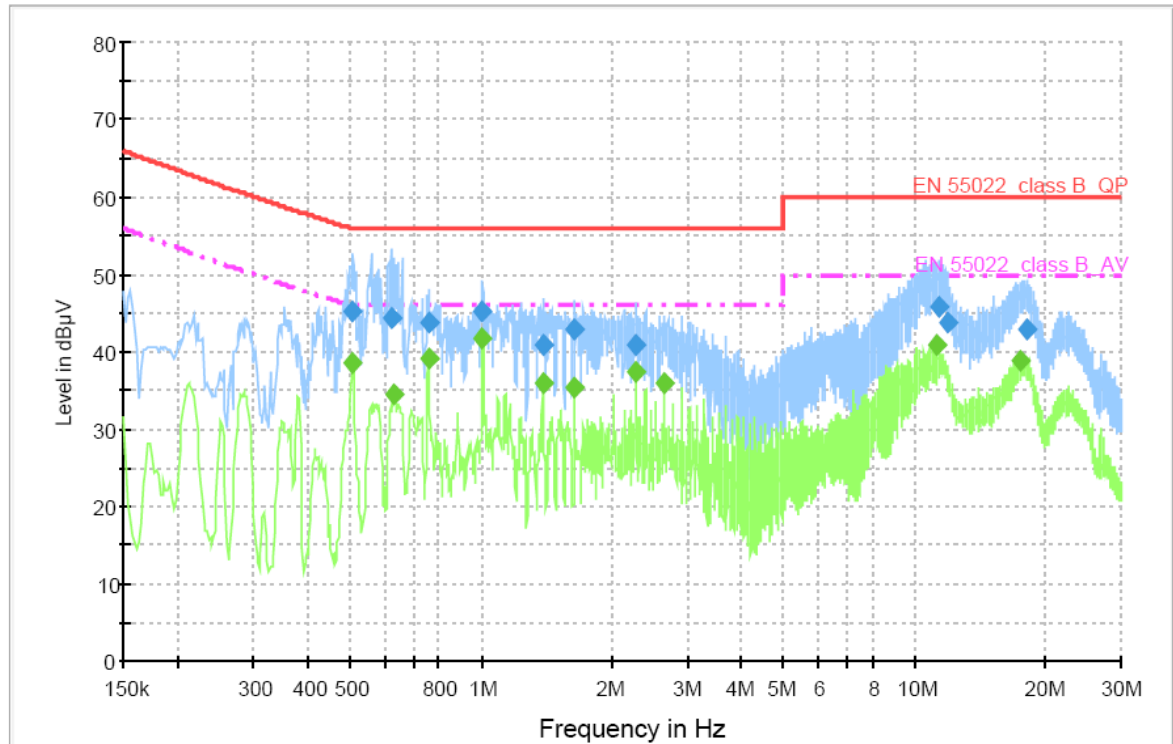
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.504000	37.6	1000.000	9.000	GND	L1	10.0	8.4	46.0	
0.758000	38.4	1000.000	9.000	GND	L1	10.0	7.6	46.0	
1.010000	37.4	1000.000	9.000	GND	L1	10.0	8.6	46.0	
1.390000	35.7	1000.000	9.000	GND	L1	10.1	10.3	46.0	
1.642000	35.3	1000.000	9.000	GND	L1	10.1	10.7	46.0	
2.274000	37.2	1000.000	9.000	GND	L1	10.1	8.8	46.0	
2.652000	36.0	1000.000	9.000	GND	L1	10.1	10.0	46.0	
10.142000	39.2	1000.000	9.000	GND	L1	10.4	10.8	50.0	
11.268000	39.1	1000.000	9.000	GND	L1	10.4	10.9	50.0	
17.692000	38.4	1000.000	9.000	GND	L1	10.7	11.6	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
0.506000	45.3	1000.000	9.000	GND	N	10.0	10.7	56.0	
0.620000	44.2	1000.000	9.000	GND	N	10.0	11.8	56.0	
0.760000	43.9	1000.000	9.000	GND	N	10.0	12.1	56.0	
1.008000	45.2	1000.000	9.000	GND	N	10.0	10.8	56.0	
1.390000	40.9	1000.000	9.000	GND	N	10.1	15.1	56.0	
1.644000	42.9	1000.000	9.000	GND	N	10.1	13.1	56.0	
2.272000	40.8	1000.000	9.000	GND	N	10.1	15.2	56.0	
11.362000	45.7	1000.000	9.000	GND	N	10.4	14.3	60.0	
11.938000	43.9	1000.000	9.000	GND	N	10.4	16.1	60.0	
18.232000	43.0	1000.000	9.000	GND	N	10.6	17.0	60.0	

Final Measurement Detector 2

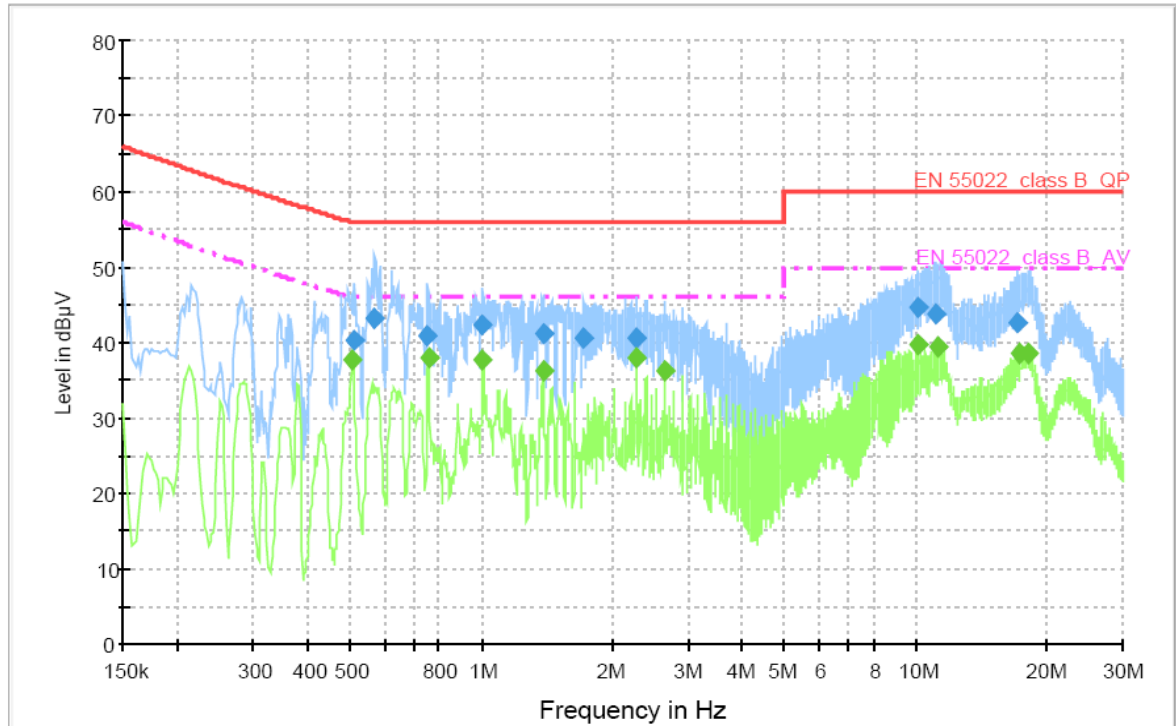
Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.504000	38.6	1000.000	9.000	GND	N	10.0	7.4	46.0	
0.630000	34.4	1000.000	9.000	GND	N	10.0	11.6	46.0	
0.756000	39.0	1000.000	9.000	GND	N	10.0	7.0	46.0	
1.010000	41.8	1000.000	9.000	GND	N	10.0	4.2	46.0	
1.388000	35.9	1000.000	9.000	GND	N	10.1	10.1	46.0	
1.642000	35.3	1000.000	9.000	GND	N	10.1	10.7	46.0	
2.272000	37.5	1000.000	9.000	GND	N	10.1	8.5	46.0	
2.652000	36.0	1000.000	9.000	GND	N	10.1	10.0	46.0	
11.196000	40.8	1000.000	9.000	GND	N	10.4	9.2	50.0	
17.470000	38.9	1000.000	9.000	GND	N	10.6	11.1	50.0	

< 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
0.512000	40.2	1000.000	9.000	GND	L1	10.0	15.8	56.0	
0.570000	43.2	1000.000	9.000	GND	L1	10.0	12.8	56.0	
0.754000	41.0	1000.000	9.000	GND	L1	10.0	15.0	56.0	
1.010000	42.4	1000.000	9.000	GND	L1	10.0	13.6	56.0	
1.388000	41.1	1000.000	9.000	GND	L1	10.1	14.9	56.0	
1.728000	40.7	1000.000	9.000	GND	L1	10.1	15.3	56.0	
2.268000	40.7	1000.000	9.000	GND	L1	10.1	15.3	56.0	
10.098000	44.8	1000.000	9.000	GND	L1	10.4	15.2	60.0	
11.178000	43.8	1000.000	9.000	GND	L1	10.4	16.2	60.0	
17.112000	42.7	1000.000	9.000	GND	L1	10.7	17.3	60.0	

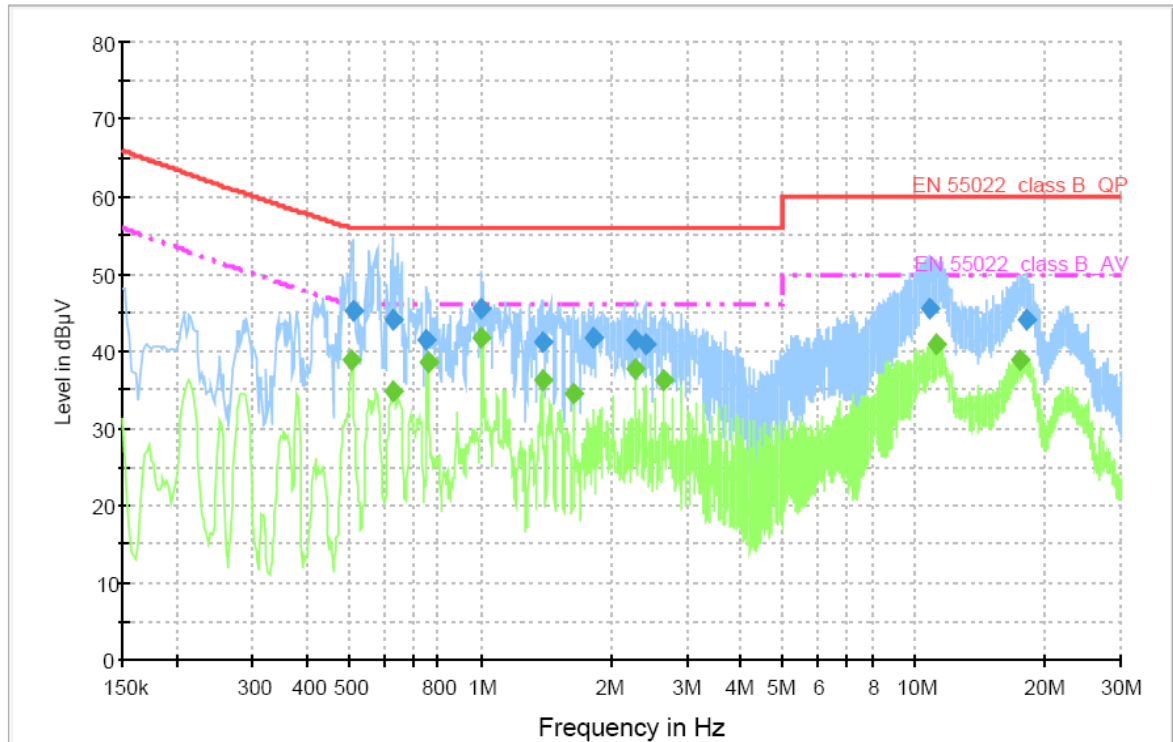
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.506000	37.6	1000.000	9.000	GND	L1	10.0	8.4	46.0	
0.758000	37.9	1000.000	9.000	GND	L1	10.0	8.1	46.0	
1.010000	37.8	1000.000	9.000	GND	L1	10.0	8.2	46.0	
1.388000	36.3	1000.000	9.000	GND	L1	10.1	9.7	46.0	
2.272000	37.8	1000.000	9.000	GND	L1	10.1	8.2	46.0	
2.652000	36.2	1000.000	9.000	GND	L1	10.1	9.8	46.0	
10.140000	39.6	1000.000	9.000	GND	L1	10.4	10.4	50.0	
11.196000	39.5	1000.000	9.000	GND	L1	10.4	10.5	50.0	
17.330000	38.6	1000.000	9.000	GND	L1	10.7	11.4	50.0	
18.236000	38.7	1000.000	9.000	GND	L1	10.7	11.3	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
0.508000	45.3	1000.000	9.000	GND	N	10.0	10.7	56.0	
0.628000	44.1	1000.000	9.000	GND	N	10.0	11.9	56.0	
0.754000	41.4	1000.000	9.000	GND	N	10.0	14.6	56.0	
1.008000	45.4	1000.000	9.000	GND	N	10.0	10.6	56.0	
1.388000	41.2	1000.000	9.000	GND	N	10.1	14.8	56.0	
1.828000	41.6	1000.000	9.000	GND	N	10.1	14.4	56.0	
2.270000	41.4	1000.000	9.000	GND	N	10.1	14.6	56.0	
2.398000	40.7	1000.000	9.000	GND	N	10.1	15.3	56.0	
10.828000	45.6	1000.000	9.000	GND	N	10.4	14.4	60.0	
18.092000	44.0	1000.000	9.000	GND	N	10.6	16.0	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.504000	38.8	1000.000	9.000	GND	N	10.0	7.2	46.0	
0.632000	34.7	1000.000	9.000	GND	N	10.0	11.3	46.0	
0.756000	38.6	1000.000	9.000	GND	N	10.0	7.4	46.0	
1.010000	41.6	1000.000	9.000	GND	N	10.0	4.4	46.0	
1.390000	36.2	1000.000	9.000	GND	N	10.1	9.8	46.0	
1.642000	34.6	1000.000	9.000	GND	N	10.1	11.4	46.0	
2.272000	37.6	1000.000	9.000	GND	N	10.1	8.4	46.0	
2.652000	36.1	1000.000	9.000	GND	N	10.1	9.9	46.0	
11.266000	41.0	1000.000	9.000	GND	N	10.4	9.0	50.0	
17.610000	39.0	1000.000	9.000	GND	N	10.6	11.0	50.0	

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



6. Radiated Emission

6.1 Operating Environment

Temperature : 21 °C
Relative Humidity : 44 % R.H.

6.2 Test Set-up

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

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

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

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

6.3 Measurement Uncertainty

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

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

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



6.4 Limit

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

6.5 Test Equipment used

Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESI	Rohde & Schwarz	EMI test receiver	830482/010	12. 11. 2010
■ - VULB9160	Schwarzbeck	Broadband Test Antenna	3099	07. 21. 2011
■ - BBHA9120D	Schwarzbeck	Horn ANT	597	12. 18. 2010
■ - MCU066	maturo GmbH	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

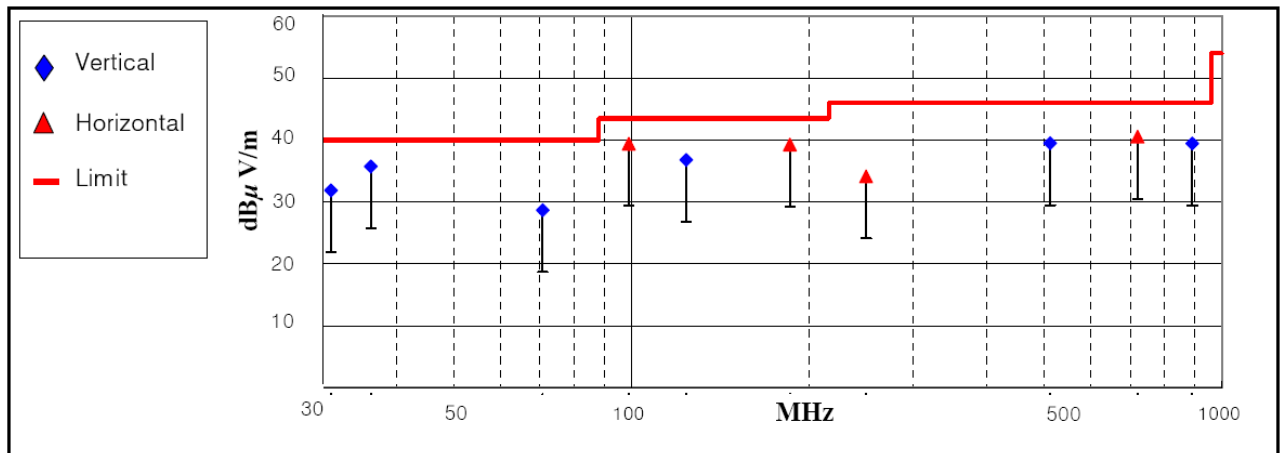
6.6 Test data for Radiated Emission

- 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)	(°)
31.01	18.02	11.93	1.91	31.86	40.00	8.14	V	117	285
36.20	21.85	11.87	2.01	35.73	40.00	4.27	V	102	177
70.80	15.94	10.04	2.68	28.66	40.00	11.34	V	100	299
99.01	27.01	9.33	3.05	39.39	43.50	4.11	H	199	266
123.80	21.76	11.63	3.38	36.77	43.50	6.73	V	100	296
185.64	24.14	11.04	4.08	39.26	43.50	4.24	H	226	185
249.78	17.65	11.55	4.95	34.15	46.00	11.85	H	130	101
511.87	14.67	17.79	7.04	39.50	46.00	6.50	V	100	190
720.00	10.44	22.02	8.10	40.56	46.00	5.44	H	177	180
891.06	6.24	24.11	9.11	39.46	46.00	6.54	V	102	25

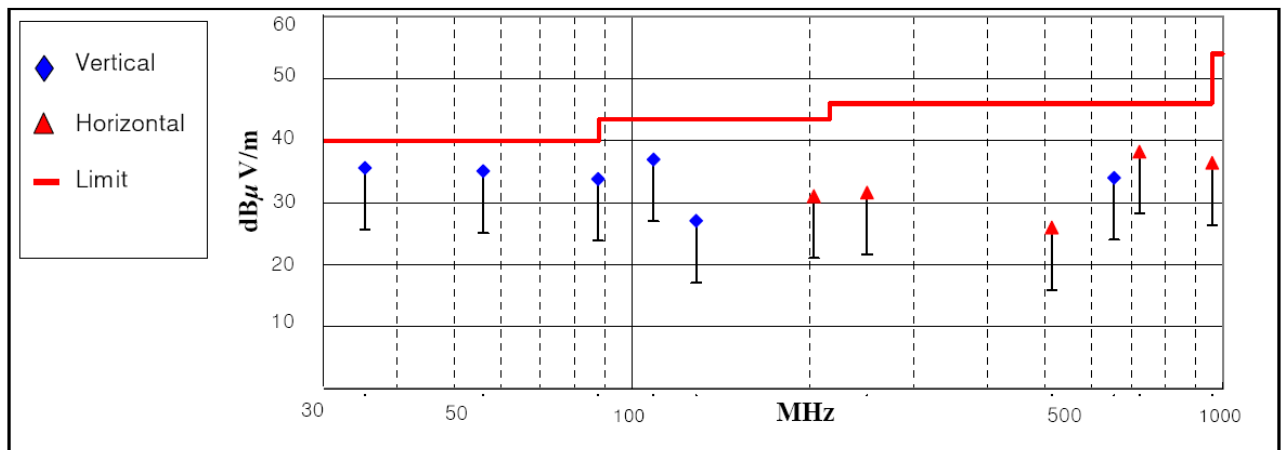


< Fig 14. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ 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)	(°)
35.33	21.77	11.85	1.99	35.61	40.00	4.39	V	121	181
56.02	20.46	12.22	2.43	35.11	40.00	4.89	V	117	320
87.66	22.73	8.21	2.91	33.85	40.00	6.15	V	102	357
108.80	23.53	10.30	3.18	37.01	43.50	6.49	V	100	295
128.39	11.76	11.93	3.43	27.12	43.50	16.38	V	125	85
203.20	17.36	9.41	4.33	31.10	43.50	12.40	H	100	136
250.03	15.15	11.56	4.95	31.66	46.00	14.34	H	106	173
513.67	1.13	17.83	7.05	26.01	46.00	19.99	H	135	31
654.54	5.22	21.09	7.73	34.04	46.00	11.96	V	220	64
722.50	8.05	22.08	8.12	38.25	46.00	7.75	H	146	205
960.00	1.29	25.56	9.59	36.44	54.00	17.56	H	185	230

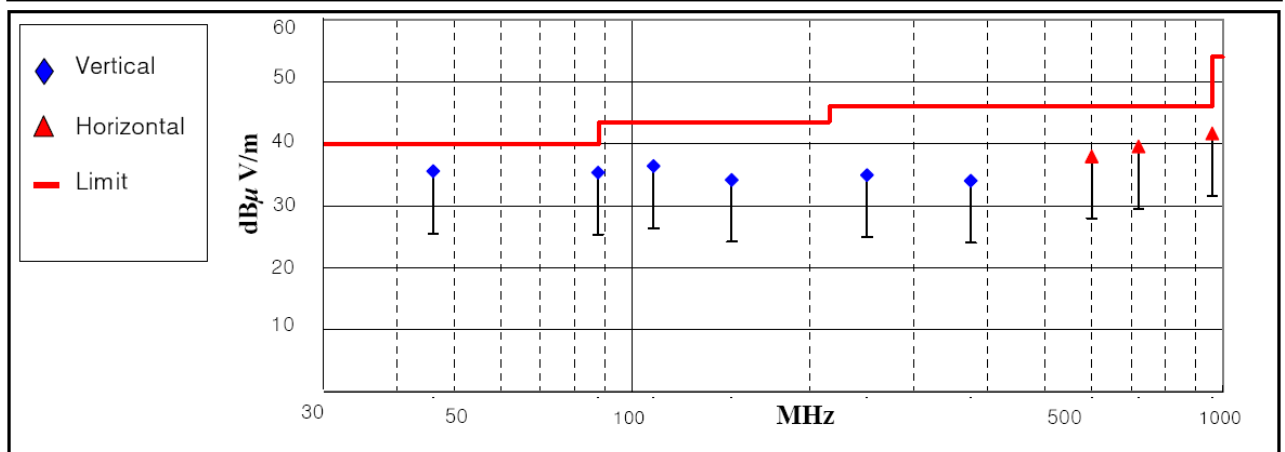


< Fig 15. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ 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)	(°)
46.11	21.11	12.23	2.22	35.56	40.00	4.44	V	105	191
87.65	24.23	8.21	2.91	35.35	40.00	4.65	V	116	65
108.77	22.93	10.30	3.18	36.41	43.50	7.09	V	100	296
147.56	17.75	12.75	3.67	34.17	43.50	9.33	V	106	201
250.00	18.45	11.56	4.95	34.96	46.00	11.04	V	100	213
374.82	11.87	14.98	7.16	34.01	46.00	11.99	V	136	155
599.99	10.21	20.34	7.41	37.96	46.00	8.04	H	117	201
720.00	9.43	22.02	8.10	39.55	46.00	6.45	H	100	177
960.01	6.50	25.56	9.59	41.65	54.00	12.35	H	123	185



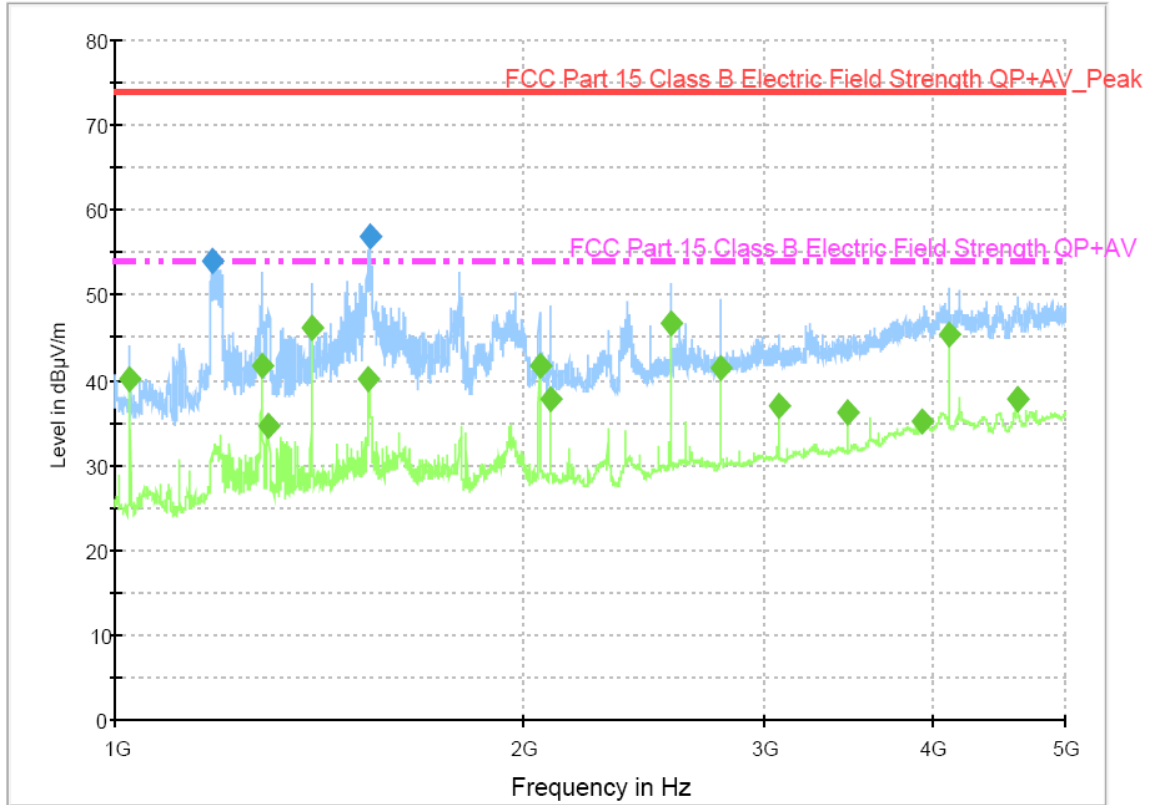
< Fig 16. Radiated emission result (30 MHz ~ 1 000 MHz)>



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

Detector mode: Peak detector mode / Average detector mode

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Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
1177.600000	54.0	100.0	V	180.0	-15.9	20.0	74.0	
1538.800000	57.0	100.0	H	180.0	-14.6	17.0	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	40.1	200.0	V	180.0	-16.5	13.9	54.0	
1282.400000	41.8	100.0	V	180.0	-15.1	12.2	54.0	
1296.000000	34.7	100.0	V	180.0	-14.9	19.3	54.0	
1395.200000	46.1	200.0	V	180.0	-14.8	7.9	54.0	
1537.600000	40.2	100.0	H	180.0	-14.6	13.8	54.0	
2052.000000	41.8	100.0	V	180.0	-12.5	12.2	54.0	
2092.400000	37.8	100.0	H	180.0	-12.2	16.2	54.0	
2565.200000	46.8	100.0	V	180.0	-10.0	7.2	54.0	
2790.000000	41.5	100.0	V	180.0	-9.3	12.5	54.0	
3078.000000	37.0	100.0	H	90.0	-8.3	17.0	54.0	
3456.000000	36.2	100.0	H	180.0	-7.0	17.8	54.0	
3926.800000	35.1	200.0	V	180.0	-3.7	18.9	54.0	
4104.000000	45.4	200.0	V	180.0	-3.2	8.6	54.0	
4608.000000	37.7	100.0	H	180.0	-3.2	16.3	54.0	
4616.800000	37.7	200.0	V	180.0	-3.2	16.3	54.0	

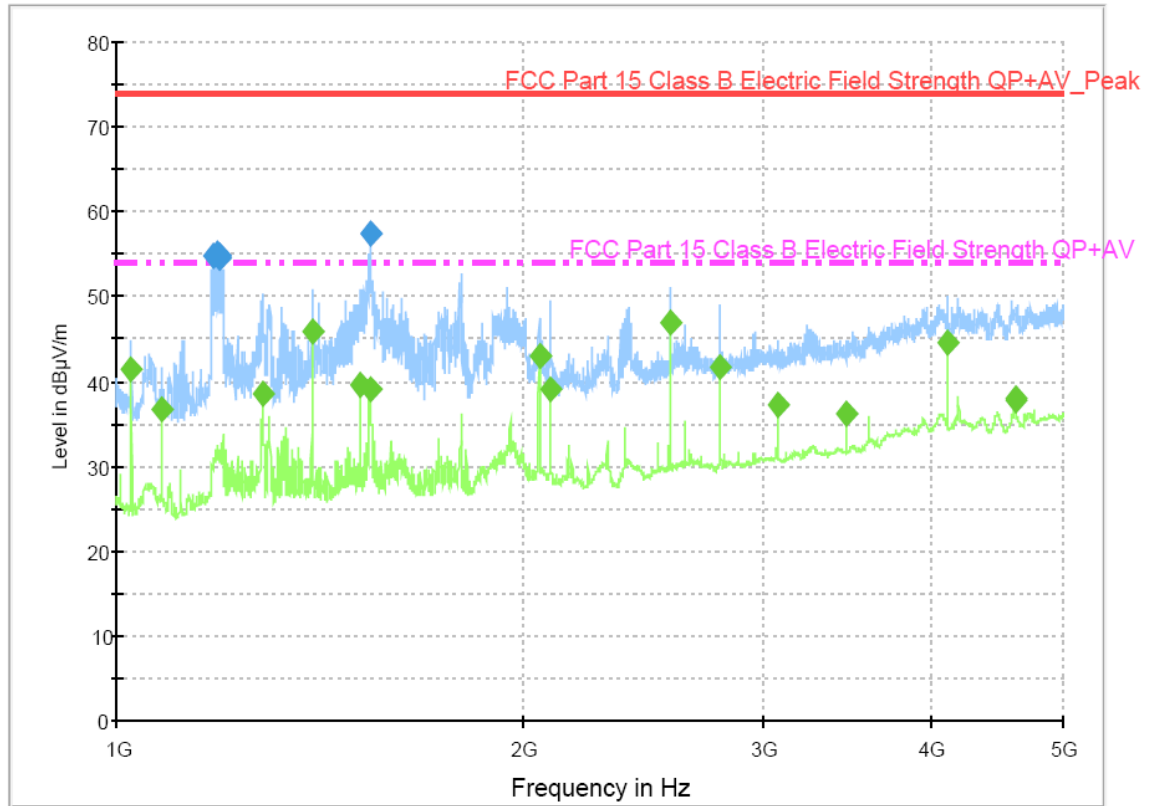
< Fig 17. Radiated emission result (1 000 MHz ~ 5 000 MHz)>



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

Detector mode: Peak detector mode / Average detector mode

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Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
1181.600000	54.8	100.0	V	180.0	-15.9	19.2	74.0	
1189.200000	55.0	100.0	V	180.0	-15.9	19.0	74.0	
1190.800000	54.8	100.0	V	180.0	-15.9	19.2	74.0	
1192.400000	54.4	100.0	V	180.0	-15.9	19.6	74.0	
1539.200000	57.4	200.0	H	180.0	-14.6	16.6	74.0	

Final Result 2

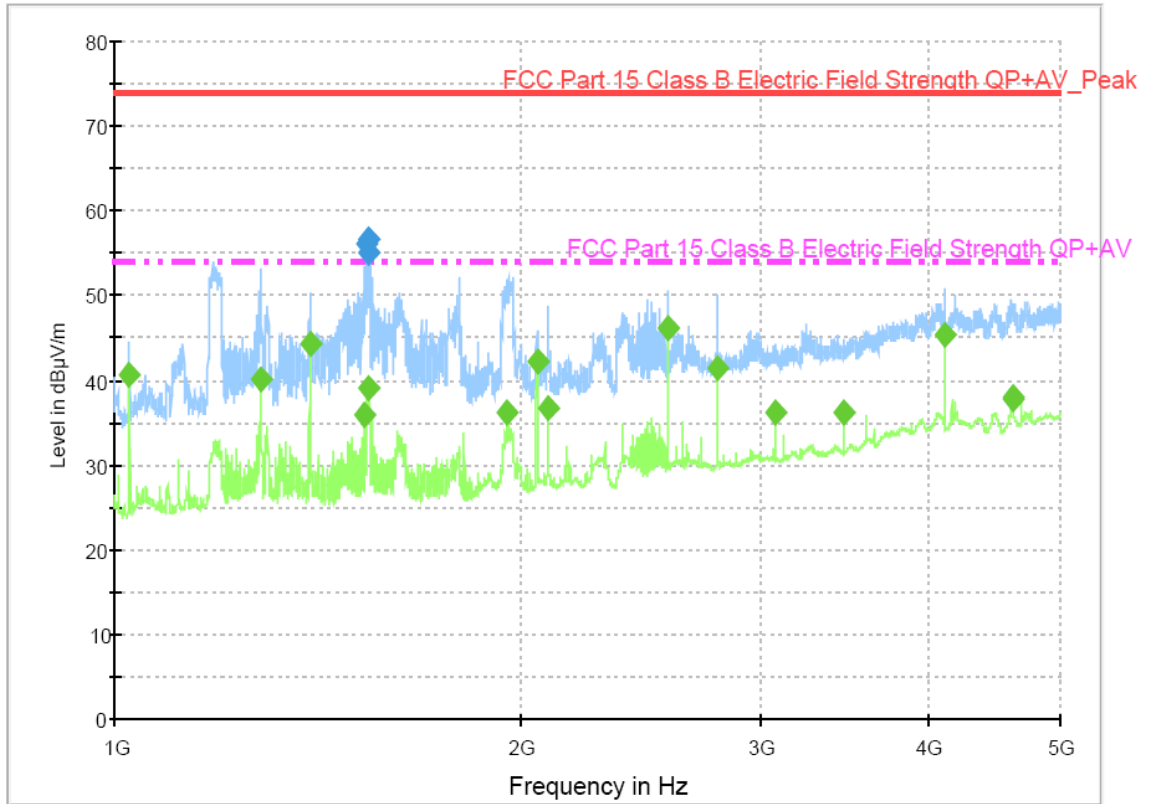
Frequency (MHz)	Average-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
1026.000000	41.4	200.0	V	180.0	-16.5	12.6	54.0	
1080.000000	36.7	100.0	V	180.0	-16.2	17.3	54.0	
1282.400000	38.5	100.0	V	180.0	-15.1	15.5	54.0	
1395.200000	45.9	200.0	V	180.0	-14.8	8.1	54.0	
1512.000000	39.6	200.0	V	180.0	-14.7	14.4	54.0	
1539.200000	39.1	200.0	H	90.0	-14.6	14.9	54.0	
2052.000000	43.1	100.0	V	180.0	-12.5	10.9	54.0	
2092.800000	39.2	100.0	H	180.0	-12.2	14.8	54.0	
2564.800000	46.8	100.0	V	180.0	-10.0	7.2	54.0	
2790.000000	41.6	100.0	V	180.0	-9.3	12.4	54.0	
3078.000000	37.2	100.0	H	90.0	-8.3	16.8	54.0	
3456.000000	36.3	100.0	H	180.0	-7.0	17.7	54.0	
4104.000000	44.5	200.0	V	180.0	-3.2	9.5	54.0	
4608.000000	37.8	100.0	H	180.0	-3.2	16.2	54.0	
4616.800000	38.0	200.0	V	180.0	-3.2	16.0	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

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Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1534.000000	56.2	200.0	H	180.0	-14.6	17.8	74.0	
1540.400000	56.5	200.0	H	180.0	-14.6	17.5	74.0	
1543.200000	55.0	100.0	H	180.0	-14.6	19.0	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	40.6	200.0	V	180.0	-16.5	13.4	54.0	
1282.400000	40.1	100.0	V	180.0	-15.1	13.9	54.0	
1395.200000	44.4	200.0	V	180.0	-14.8	9.6	54.0	
1531.200000	36.0	200.0	H	180.0	-14.7	18.0	54.0	
1539.600000	39.1	100.0	H	180.0	-14.6	14.9	54.0	
1952.800000	36.1	100.0	H	180.0	-13.1	17.9	54.0	
2052.000000	42.1	100.0	V	180.0	-12.5	11.9	54.0	
2092.400000	36.8	100.0	H	180.0	-12.2	17.2	54.0	
2564.800000	46.2	100.0	V	180.0	-10.0	7.8	54.0	
2790.000000	41.5	100.0	V	180.0	-9.3	12.5	54.0	
3078.000000	36.1	100.0	H	90.0	-8.3	17.9	54.0	
3456.000000	36.2	100.0	H	180.0	-7.0	17.8	54.0	
4104.000000	45.4	200.0	V	180.0	-3.2	8.6	54.0	
4608.000000	37.7	100.0	H	180.0	-3.2	16.3	54.0	
4617.200000	37.9	200.0	V	180.0	-3.2	16.1	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: 47LD650-UA)** was complies with §15.107 and 15.109 of the FCC Rules.