



FCC EVALUATION REPORT FOR CERTIFICATION

Applicant : LG Electronics Inc.

19-1, Cheongho-ri, Jinwi-myeon,

Pyeongteak-si, Gyeonggi-do, Korea.

Attn: Mr. Myoung-Kyu Lee, Chief research engineer

Date of Issue : September 16, 2010

Order Number: GETEC-C1-10-174

Test Report Number: GETEC-E3-10-090

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID.: BEJM4720CJ

Applicant: LG Electronics Inc.

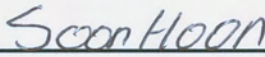
Rule Part(s)	: FCC Part 15 Subpart B
Equipment Class	: Class B computing device peripheral (JBP)
EUT Type	: LCD Monitor
Type of Authority	: Certification
Model Name	: M4720CJ
Trade Name	: LG

This equipment has been shown to be in compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003 / Canadian standard ICES-003

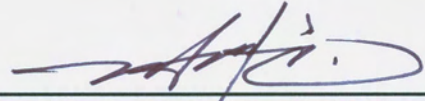
I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested by,

Reviewed by,



Soon-Hoon Jeong, Engineer
GUMI College EMC center



Jae-Hoon Jeong, Senior Engineer
GUMI College EMC center



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Scope: Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and / or unintentional radiators for compliance with technical rules and regulations of the Federal Communications Commission.

1. General Information

Applicant: LG Electronics Inc.

Applicant Address: 19-1, Cheongho-ri, Jinwi-myeon, Pyeongteak-si, Gyeonggi-do, Korea.

Manufacturer: LG Electronics Inc.

Manufacturer Address: 19-1, Cheongho-ri, Jinwi-myeon, Pyeongteak-si, Gyeonggi-do, Korea.

Contact Person: Mr. Myoung-Kyu Lee, Chief research engineer

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- **FCC ID.** BEJM4720CJ
- **EUT Type** LCD Monitor
- **Model Name** M4720CJ
- **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** September 13, 2010
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-10-090
- **Dates of Issue** September 16, 2010



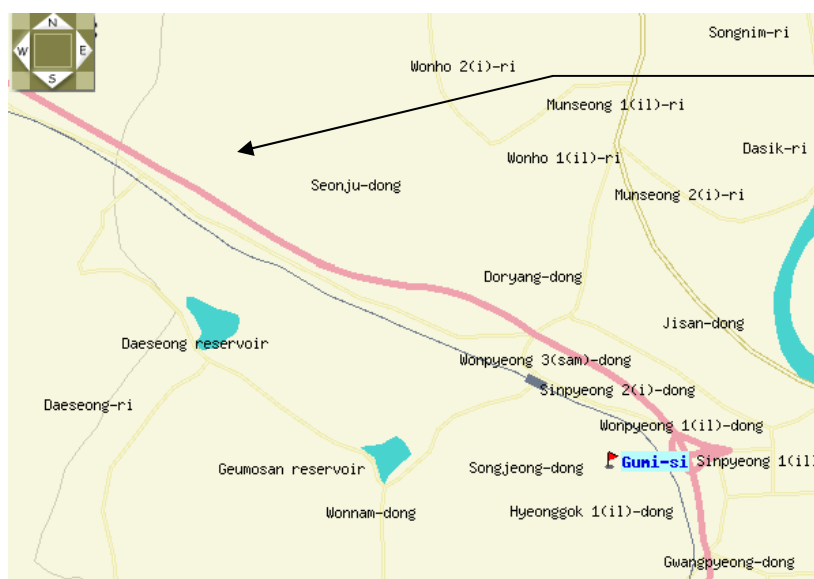
2. Introduction

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Nose Emissions From Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ASNI C63.4-2003) was used in determining radiated and conducted emissions emanating from **LG Electronics Inc. LCD Monitor (Model Name: M4720CJ)**

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 Monitor (Model Name: M4720CJ) FCC ID.: BEJM4720CJ**

LCD Panel	119.28 cm (46.96 inch) TFT (Thin Film Transistor) LCD (Liquid Crystal Display) Panel Visible diagonal size : 119.28 cm 0.5415 mm x 0.5415 mm X RGB (Pixel Pitch)	
Power	Rated Voltage	AC 100-240 V~ 50 / 60 Hz 40A
	Power Consumption	On Mode : 260 W Typ. Sleep Mode : ≤ 1 W (RGB) / 2 W (HDMI/DVI) (If LAN OFF is selected) Off Mode : ≤ 0.5 W
Dimensions & Weight	Width x Height x Depth [1] 107.95 cm (42.50 inch) x 62.46 cm (24.59 inch) x 12.29 cm (4.83 inch) [2] 107.95 cm (42.50 inch) x 69.77 cm (27.46 inch) x 29.83 cm (11.74 inch) [3] 107.95 cm (42.50 inch) x 62.46 cm (24.59 inch) x 12.92 cm (5.08 inch) [4] 107.95 cm (42.50 inch) x 69.77 cm (27.46 inch) x 29.83 cm (11.74 inch)	
	Net [1] 22.2 kg (48.94 lb) [2] 23.6 kg (52.02 lb) [3] 23.0 kg (50.70 lb) [4] 24.4 kg (53.79 lb)	
Video Signal	Max. Resolution	RGB : 1920 x 1080 @ 60 Hz HDMI/DVI : 1920 x 1080 @ 60 Hz - It may not be supported depending on the OS or video card type.
	Recommended Resolution	RGB : 1920 x 1080 @ 60 Hz HDMI/DVI : 1920 x 1080 @ 60 Hz - It may not be supported depending on the OS or video card type.
	Horizontal Frequency	RGB : 30 kHz to 83 kHz HDMI/DVI : 30 kHz to 83 kHz
	Vertical Frequency	RGB : 56 Hz to 75 Hz HDMI/DVI : 56 Hz to 60 Hz
	Synchronization Type	Composite/Separate/Digital
Input Connector	15-pin D-Sub type, HDMI/DVI(digital) Composite Video, Component, RS-232C, LAN, USB	
Environmental Conditions	Operational Condition	Temperature : 0 °C to 40 °C , Humidity : 10 % to 80 %
	Storage Condition	Temperature : -20 °C to 60 °C , Humidity : 5 % to 95 %

- . Maximum Frequency Range : 400 MHz

EUT Type: LCD Monitor

FCC ID.: BEJM4720CJ



3.2 Support Equipment / Cables used

3.2.1 Used Support Equipment

Description	Manufacturer	Model Name	S/N & FCC ID.
PC	Hewlett Packard	D530	S/N: CNG34800PY FCC ID.: DoC
Video card	ATI	ATI RV360(9600)	S/N: SN0402017176 FCC ID.: DoC
PS2 Key board	COMPAQ	166516-AD6	S/N: B13BBOR391006D FCC ID.: AQ6-23K15
PS2 mouse	LOGITECH	M-S69	S/N: 334684-108 FCC ID.: JNZ211443
Joy stick	MICROSOFT	X05-92626	S/N: 9262600296169 FCC ID.: DoC
Printer	Hewlett Packard	970CXI	S/N: MY9B01F1FG FCC ID.: DoC
DVD player	LG Electronics Inc.	LC-954	S/N: 3850R-Z674K FCC ID.: DoC
Monitor	LG Electronics Inc.	22LE5300-ZA	S/N: N/A FCC ID.: N/A
USB memory stick	LG Electronics Inc.	UM5 2GB	S/N: 003RLRZN37758 FCC ID.: N/A
Speaker	LG Electronics Inc.	SP-0000K	S/N: N/A FCC ID.: N/A

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

3.2.2 System configuration

Description	Manufacturer	Model Name	S/N & FCC ID.
None	-	-	S/N: - FCC ID.: -



3.2.3 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the EUT	1.80 m unshielded
RS-232C in cable	Connected to the EUT and PC	1.80 m shielded
RS-232C out cable	Connected to the EUT and monitor	1.80 m shielded
RGB(Analog) in cable	Connected to the EUT and PC	1.80 m shielded with two ferrite cores
RGB(Analog) out cable	Connected to the EUT and monitor	1.80 m shielded with two ferrite cores
HDMI/DVI in cable	Connected to the EUT and PC	2.00 m shielded
Audio(RGB/DVI) in cable	Connected to the EUT and PC	1.80 m shielded with a ferrite core
Component in cable	Connected to the EUT and DVD player	2.00 m shielded
Component sound in cable	Connected to the EUT and DVD player	3.00 m shielded
AV in cable	Connected to the EUT and DVD player	3.00 m shielded
AV out cable	Connected to the EUT and monitor	3.00 m shielded
LAN cable	Connected to the EUT and network	10.00 m unshielded
Speaker cable	Connected to the EUT and speaker	0.30 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 (RGB: 1 920 × 1 080 / 60 Hz, HDMI/DVI: 1 920 × 1 080 / 60 Hz)
 - ◆ Operating test pattern
 - . “H” character scrolling mode (Font size: 10)
 - . Black background white character
 - . Brightness and contrast was adjusted as maximum level
 - . Continuous playback of 1 kHz audio file with winamp player
 - . Operated DDC function with the eZ manager software
 - * [DDC is a communication channel over which the monitor automatically informs the host system \(PC\) about its capabilities](#)
 - . USB memory stick play mode
 - ◆ Operating test pattern
 - . Continuous playback mode with video files



4.2 Conducted Emission

The Line conducted emission test facility is inside a 4 m × 8 m × 2.5 m shielded enclosure. (FCC Registration No.: 100749)

The EUT was placed on a non-conducting 1.0 m by 1.5 m table, which is 0.8 m in height and 0.4 m away from the vertical wall of the shielded enclosure.

The EUT is powered from the Rohde & Schwarz LISN (ESH2-Z5) and the support equipment is powered from the Rohde & Schwarz LISN (ESH3-Z5). Powers to the LISN are filtered by high-current high insertion loss power line filter.

Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

The RF output of the LISN was connected to the EMI test receiver (Rohde & Schwarz, ESCS30).

The EMI test receiver was scanned from 150 kHz to 30 MHz with 20 ms sweep time to determine the frequency producing the maximum EME from the EUT. The frequency producing the maximum level was re-examined using Quasi-Peak mode of the EMI test receiver.

The bandwidth of Quasi-peak mode was set to 9 kHz. Each emission was maximized consistent with typical applications by varying the configuration of the test sample. Interface cables were connected to the available interface ports of the test unit. The effect of varying the position of cables was investigated to find the configuration that produces maximum diagram emission. Excess cable lengths were bundled at center with 30 cm ~ 40 cm.

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

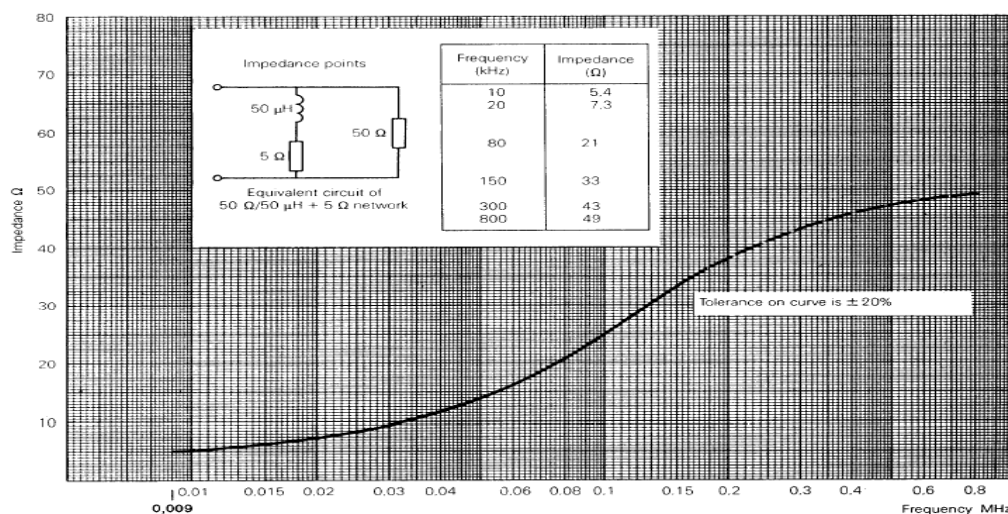


Fig 2. Impedance of LISN



4.3 Radiated Emission

Preliminary measurements were conducted 3 m semi anechoic chamber using broadband antennas to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The technology configuration, mode of operation and turntable azimuth with respect to antenna was note for each frequency found.

Final measurements were made 3 m chamber (FCC registration No.: 443957) and/or 10 m OATS (FCC registration No.: 100749).

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.

Each frequency found during pre-scan measurements was re-examined and investigated using EMI test receiver. The detector function was set to CISPR quasi-peak mode average mode and the bandwidth of the receiver was set to 120 kHz or 1 MHz depending on the frequency or type of signal.

The EUT, support equipment and interconnecting cables were reconfigured to the setup producing the maximum emission for the frequency and were placed on top of a 0.8 m high non-metallic 1.0 m × 1.5 m table.

The turntable containing the test sample was rotated; the antenna height was varied 1 to 4 meter and stopped at the azimuth or height producing the maximum emission.

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

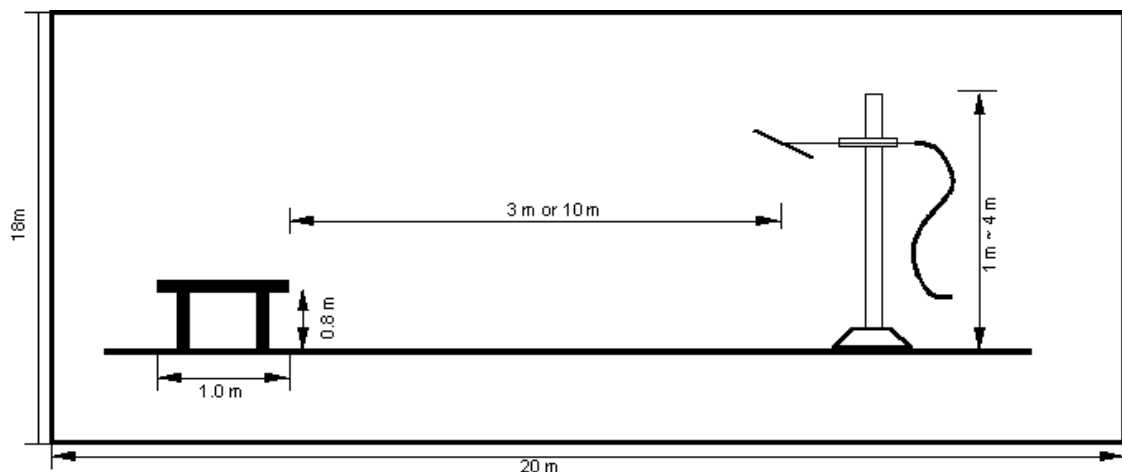


Fig 3. Dimensions of test site.



5. Conducted Emission

5.1 Operating Environment

Temperature : 27 °C
Relative Humidity : 55 % 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 & ISN.

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 μ V/m) 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	Impedance Network	24568	10. 16. 2010

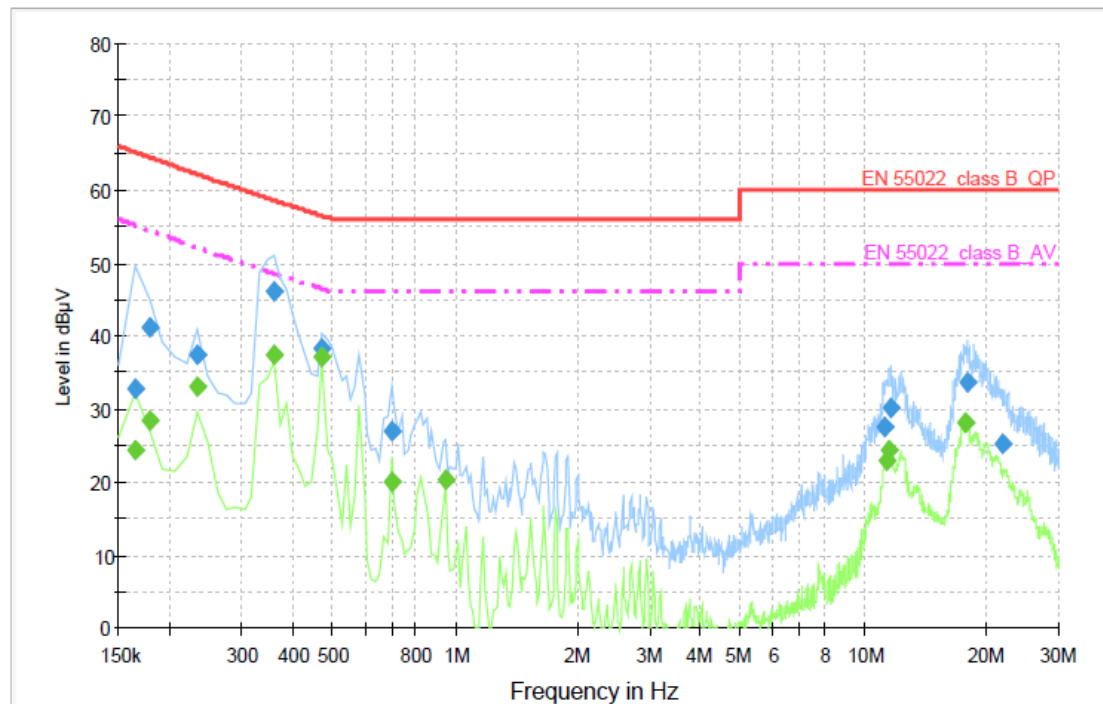
5.6 Test data for Conducted Emission

-. Test Date : September 13, 2010
-. Resolution Bandwidth : 9 kHz
-. Frequency Range : 0.15 MHz ~ 30 MHz



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

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	32.9	1000.000	9.000	GND	L1	10.0	32.3	65.2	
0.178000	41.3	1000.000	9.000	GND	L1	10.0	23.2	64.5	
0.234000	37.3	1000.000	9.000	GND	L1	10.0	24.8	62.1	
0.360000	46.1	1000.000	9.000	GND	L1	10.0	12.5	58.6	
0.472000	38.4	1000.000	9.000	GND	L1	10.0	18.0	56.4	
0.696000	27.1	1000.000	9.000	GND	L1	10.0	29.0	56.0	
11.252000	27.4	1000.000	9.000	GND	L1	10.5	32.6	60.0	
11.630000	30.2	1000.000	9.000	GND	L1	10.5	29.8	60.0	
17.944000	33.6	1000.000	9.000	GND	L1	10.9	26.4	60.0	
21.962000	25.3	1000.000	9.000	GND	L1	11.1	34.7	60.0	

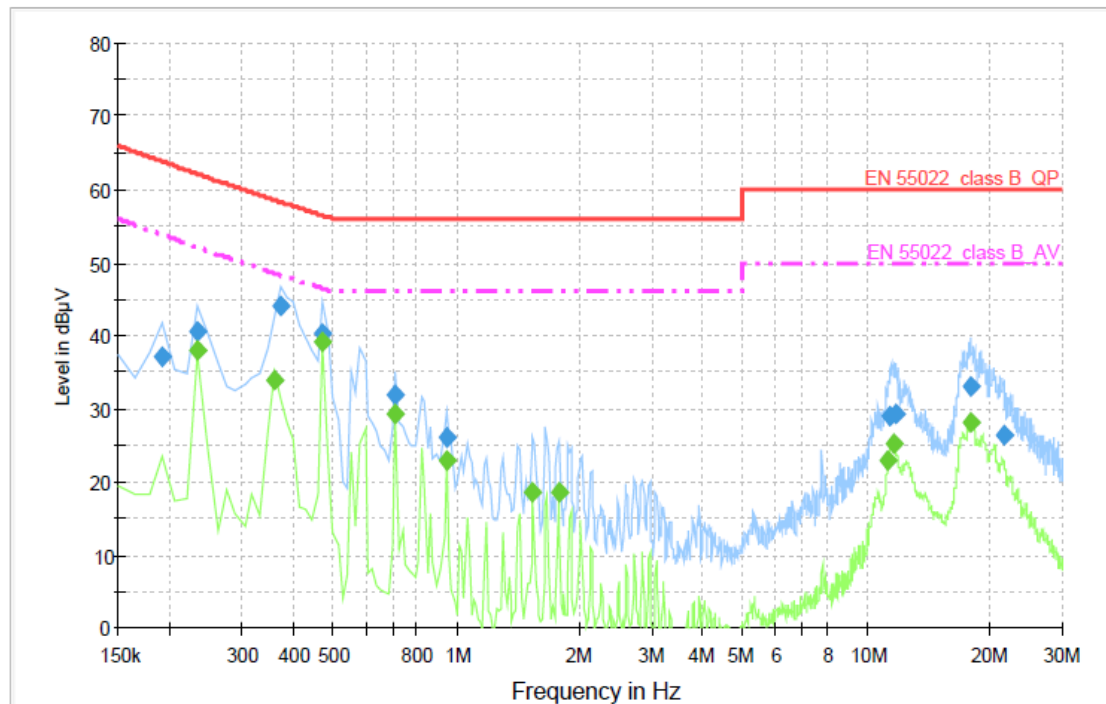
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	24.2	1000.000	9.000	GND	L1	10.0	31.0	55.2	
0.178000	28.5	1000.000	9.000	GND	L1	10.0	26.0	54.5	
0.234000	33.0	1000.000	9.000	GND	L1	10.0	19.1	52.1	
0.360000	37.5	1000.000	9.000	GND	L1	10.0	11.0	48.5	
0.472000	37.2	1000.000	9.000	GND	L1	10.0	9.2	46.4	
0.696000	20.1	1000.000	9.000	GND	L1	10.0	25.9	46.0	
0.948000	20.3	1000.000	9.000	GND	L1	10.0	25.7	46.0	
11.322000	22.8	1000.000	9.000	GND	L1	10.5	27.2	50.0	
11.490000	24.4	1000.000	9.000	GND	L1	10.5	25.6	50.0	
17.790000	28.0	1000.000	9.000	GND	L1	10.9	22.0	50.0	

< Fig 4. Conducted emission result (Live line) >



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.192000	37.2	1000.000	9.000	GND	N	10.0	26.6	63.8	
0.234000	40.7	1000.000	9.000	GND	N	10.0	21.4	62.1	
0.374000	44.1	1000.000	9.000	GND	N	10.0	14.2	58.3	
0.472000	40.4	1000.000	9.000	GND	N	10.0	16.0	56.4	
0.710000	31.9	1000.000	9.000	GND	N	10.0	24.1	56.0	
0.948000	26.2	1000.000	9.000	GND	N	10.0	29.8	56.0	
11.322000	28.9	1000.000	9.000	GND	N	10.4	31.1	60.0	
11.784000	29.4	1000.000	9.000	GND	N	10.4	30.6	60.0	
17.902000	33.0	1000.000	9.000	GND	N	10.7	27.0	60.0	
21.724000	26.4	1000.000	9.000	GND	N	10.8	33.6	60.0	

Final Measurement Detector 2

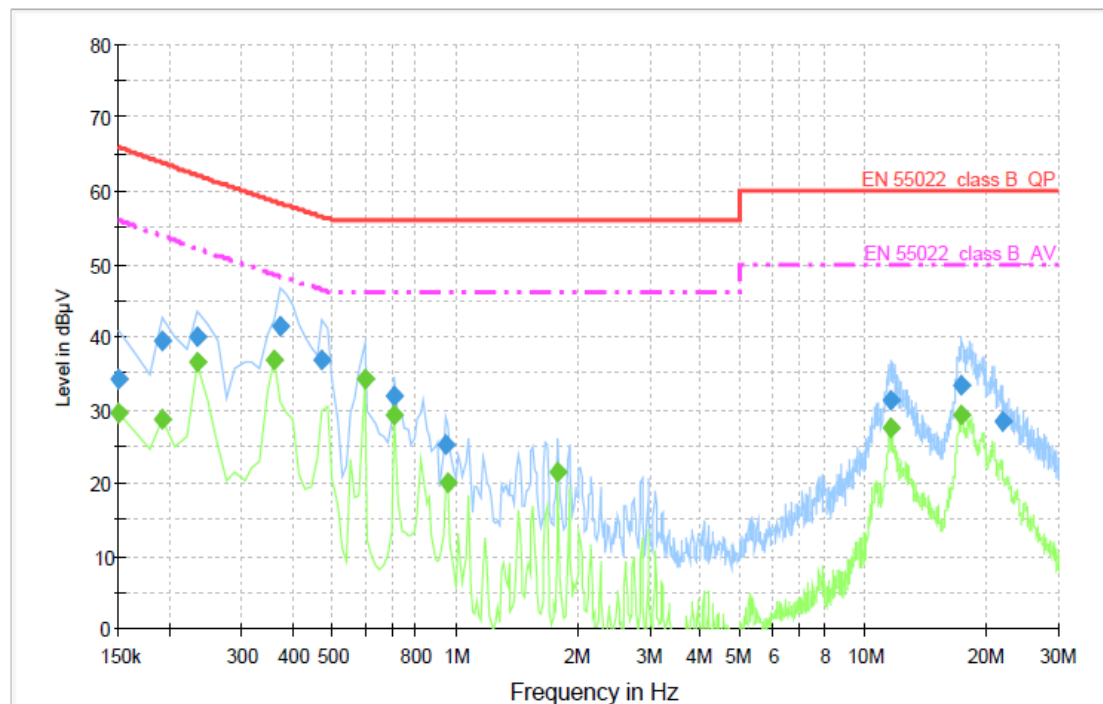
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.234000	38.1	1000.000	9.000	GND	N	10.0	14.0	52.1	
0.360000	33.9	1000.000	9.000	GND	N	10.0	14.6	48.5	
0.472000	39.3	1000.000	9.000	GND	N	10.0	7.1	46.4	
0.710000	29.4	1000.000	9.000	GND	N	10.0	16.6	46.0	
0.948000	22.9	1000.000	9.000	GND	N	10.0	23.1	46.0	
1.536000	18.6	1000.000	9.000	GND	N	10.1	27.4	46.0	
1.774000	18.5	1000.000	9.000	GND	N	10.1	27.5	46.0	
11.308000	22.9	1000.000	9.000	GND	N	10.4	27.1	50.0	
11.672000	25.3	1000.000	9.000	GND	N	10.4	24.7	50.0	
17.902000	28.2	1000.000	9.000	GND	N	10.7	21.8	50.0	

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



◆ Operating condition: 1 024 × 768 / 60 Hz (RGB: Analog)

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	34.2	1000.000	9.000	GND	L1	10.0	31.8	66.0	
0.192000	39.4	1000.000	9.000	GND	L1	10.0	24.4	63.8	
0.234000	40.0	1000.000	9.000	GND	L1	10.0	22.1	62.1	
0.374000	41.6	1000.000	9.000	GND	L1	10.0	16.7	58.3	
0.472000	36.7	1000.000	9.000	GND	L1	10.0	19.7	56.4	
0.710000	31.8	1000.000	9.000	GND	L1	10.0	24.2	56.0	
0.948000	25.2	1000.000	9.000	GND	L1	10.0	30.8	56.0	
11.672000	31.4	1000.000	9.000	GND	L1	10.5	28.6	60.0	
17.356000	33.4	1000.000	9.000	GND	L1	10.9	26.6	60.0	
21.766000	28.4	1000.000	9.000	GND	L1	11.1	31.6	60.0	

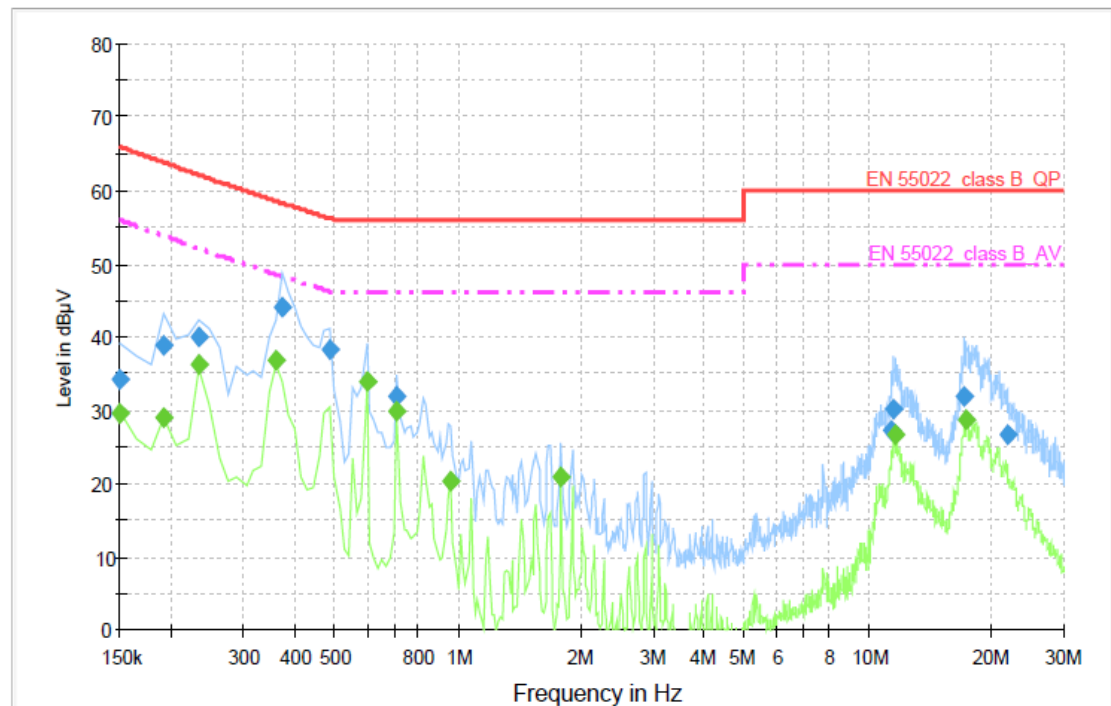
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	29.5	1000.000	9.000	GND	L1	10.0	26.5	56.0	
0.192000	28.8	1000.000	9.000	GND	L1	10.0	25.0	53.8	
0.234000	36.6	1000.000	9.000	GND	L1	10.0	15.5	52.1	
0.360000	36.8	1000.000	9.000	GND	L1	10.0	11.7	48.5	
0.598000	34.1	1000.000	9.000	GND	L1	10.0	11.9	46.0	
0.710000	29.4	1000.000	9.000	GND	L1	10.0	16.6	46.0	
0.962000	19.9	1000.000	9.000	GND	L1	10.0	26.1	46.0	
1.788000	21.4	1000.000	9.000	GND	L1	10.1	24.6	46.0	
11.700000	27.6	1000.000	9.000	GND	L1	10.5	22.4	50.0	
17.328000	29.3	1000.000	9.000	GND	L1	10.9	20.7	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
0.150000	34.2	1000.000	9.000	GND	N	10.0	31.8	66.0	
0.192000	38.8	1000.000	9.000	GND	N	10.0	25.0	63.8	
0.234000	40.0	1000.000	9.000	GND	N	10.0	22.1	62.1	
0.374000	43.9	1000.000	9.000	GND	N	10.0	14.4	58.3	
0.486000	38.2	1000.000	9.000	GND	N	10.0	18.0	56.2	
0.710000	31.9	1000.000	9.000	GND	N	10.0	24.1	56.0	
11.322000	27.3	1000.000	9.000	GND	N	10.4	32.7	60.0	
11.560000	30.1	1000.000	9.000	GND	N	10.4	29.9	60.0	
17.174000	32.0	1000.000	9.000	GND	N	10.7	28.0	60.0	
21.766000	26.8	1000.000	9.000	GND	N	10.8	33.2	60.0	

Final Measurement Detector 2

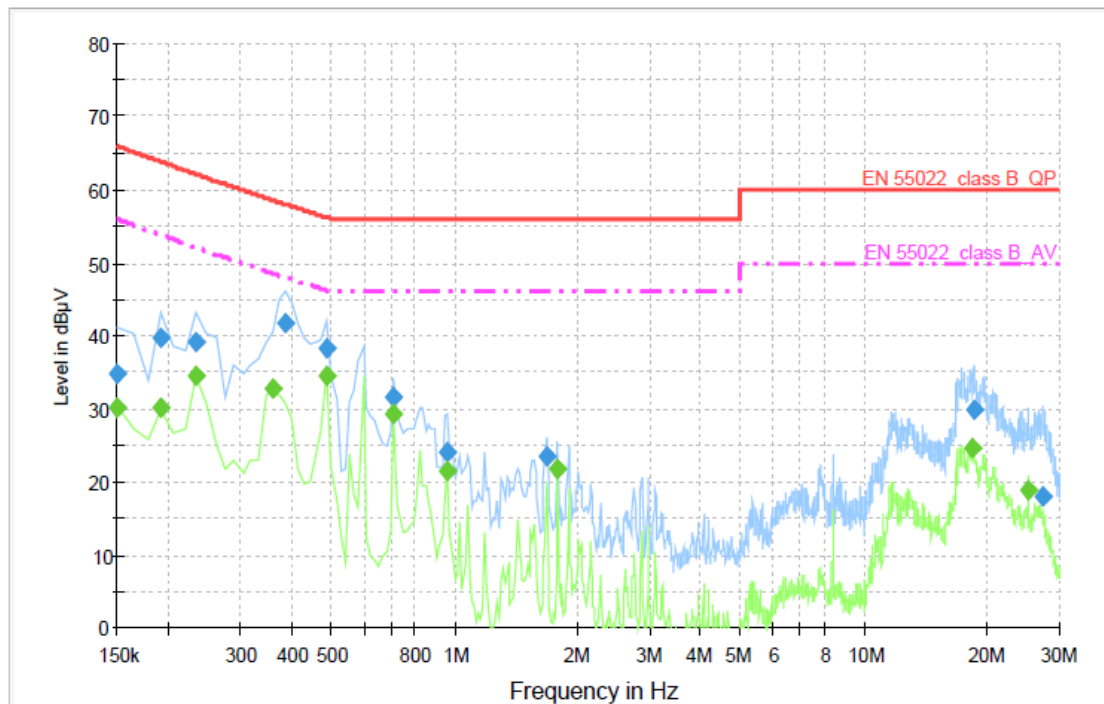
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	29.5	1000.000	9.000	GND	N	10.0	26.5	56.0	
0.192000	29.0	1000.000	9.000	GND	N	10.0	24.8	53.8	
0.234000	36.2	1000.000	9.000	GND	N	10.0	15.9	52.1	
0.360000	36.8	1000.000	9.000	GND	N	10.0	11.7	48.5	
0.598000	33.8	1000.000	9.000	GND	N	10.0	12.2	46.0	
0.710000	29.7	1000.000	9.000	GND	N	10.0	16.3	46.0	
0.962000	20.2	1000.000	9.000	GND	N	10.0	25.8	46.0	
1.788000	20.8	1000.000	9.000	GND	N	10.1	25.2	46.0	
11.686000	26.6	1000.000	9.000	GND	N	10.4	23.4	50.0	
17.328000	28.6	1000.000	9.000	GND	N	10.7	21.4	50.0	

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



◆ Operating condition: 640 × 480 / 60 Hz (RGB: Analog)

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	34.9	1000.000	9.000	GND	L1	10.0	31.1	66.0	
0.192000	39.7	1000.000	9.000	GND	L1	10.0	24.1	63.8	
0.234000	39.1	1000.000	9.000	GND	L1	10.0	23.0	62.1	
0.388000	41.6	1000.000	9.000	GND	L1	10.0	16.4	58.0	
0.486000	38.3	1000.000	9.000	GND	L1	10.0	17.9	56.2	
0.710000	31.6	1000.000	9.000	GND	L1	10.0	24.4	56.0	
0.962000	24.0	1000.000	9.000	GND	L1	10.0	32.0	56.0	
1.676000	23.4	1000.000	9.000	GND	L1	10.1	32.6	56.0	
18.532000	30.0	1000.000	9.000	GND	L1	10.9	30.0	60.0	
27.282000	18.0	1000.000	9.000	GND	L1	11.3	42.0	60.0	

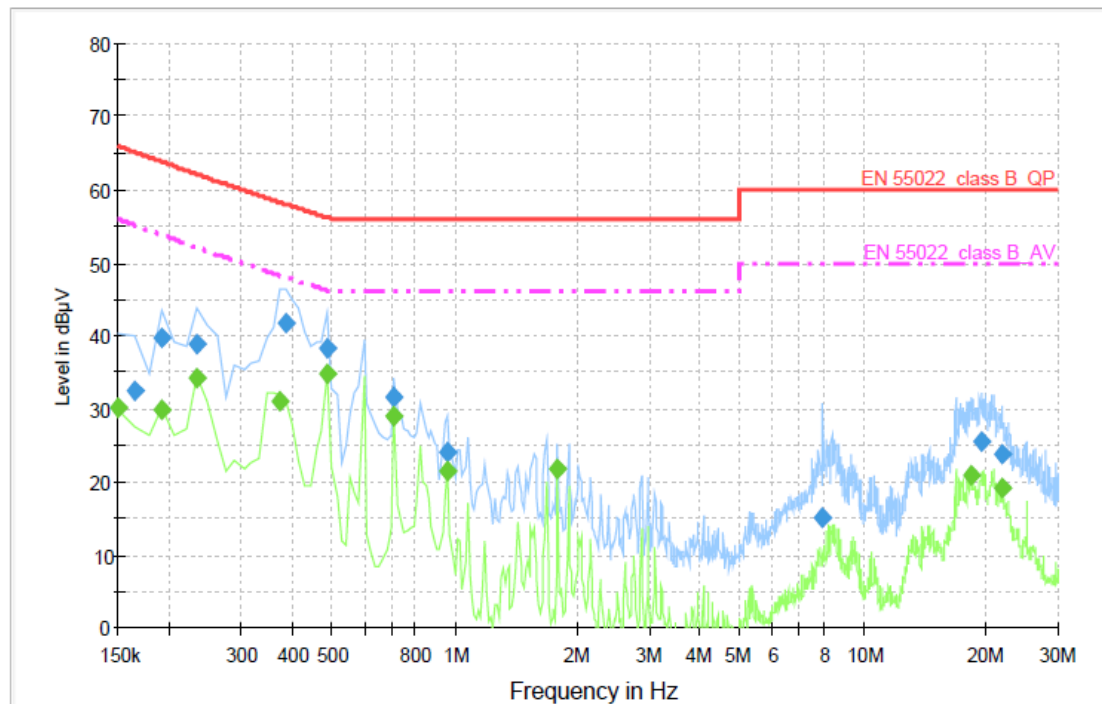
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	30.1	1000.000	9.000	GND	L1	10.0	25.9	56.0	
0.192000	30.2	1000.000	9.000	GND	L1	10.0	23.6	53.8	
0.234000	34.4	1000.000	9.000	GND	L1	10.0	17.7	52.1	
0.360000	32.7	1000.000	9.000	GND	L1	10.0	15.8	48.5	
0.486000	34.5	1000.000	9.000	GND	L1	10.0	11.7	46.2	
0.710000	29.2	1000.000	9.000	GND	L1	10.0	16.8	46.0	
0.962000	21.4	1000.000	9.000	GND	L1	10.0	24.6	46.0	
1.788000	21.7	1000.000	9.000	GND	L1	10.1	24.3	46.0	
18.420000	24.6	1000.000	9.000	GND	L1	10.9	25.4	50.0	
25.266000	18.9	1000.000	9.000	GND	L1	11.3	31.1	50.0	

< Fig 8. Conducted emission result (Live line) >



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	32.6	1000.000	9.000	GND	N	10.0	32.6	65.2	
0.192000	39.6	1000.000	9.000	GND	N	10.0	24.2	63.8	
0.234000	38.9	1000.000	9.000	GND	N	10.0	23.2	62.1	
0.388000	41.6	1000.000	9.000	GND	N	10.0	16.4	58.0	
0.486000	38.3	1000.000	9.000	GND	N	10.0	17.9	56.2	
0.710000	31.5	1000.000	9.000	GND	N	10.0	24.5	56.0	
0.962000	24.0	1000.000	9.000	GND	N	10.0	32.0	56.0	
7.976000	15.1	1000.000	9.000	GND	N	10.3	45.0	60.0	
19.484000	25.6	1000.000	9.000	GND	N	10.8	34.4	60.0	
21.878000	23.8	1000.000	9.000	GND	N	10.8	36.2	60.0	

Final Measurement Detector 2

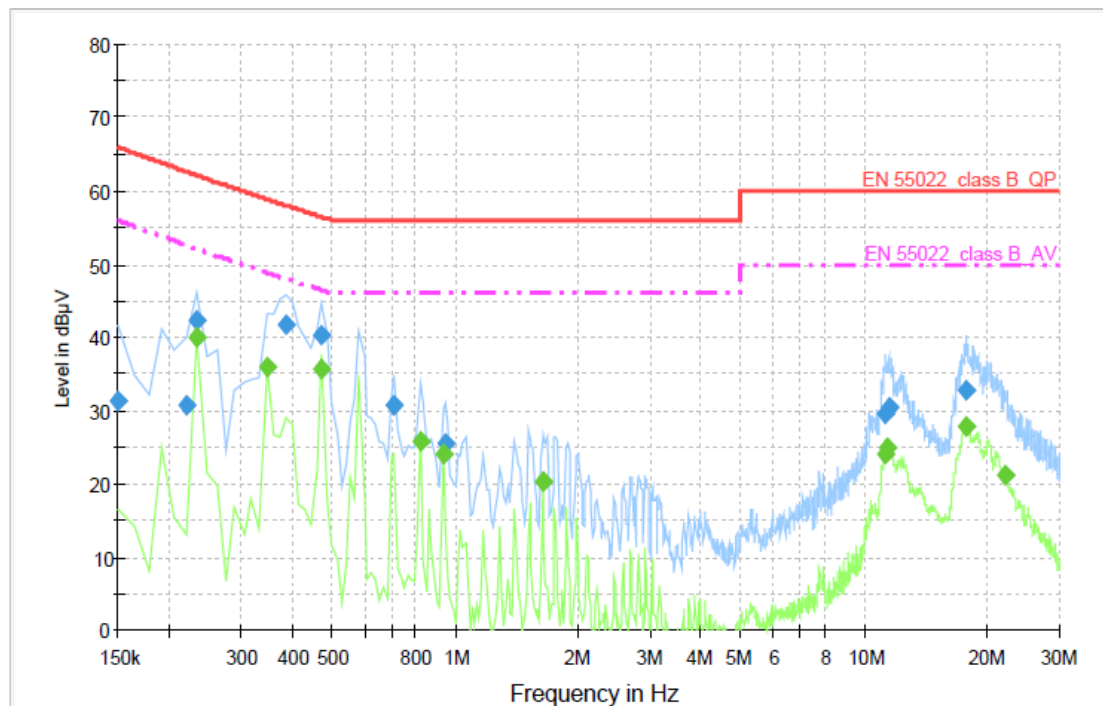
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	30.1	1000.000	9.000	GND	N	10.0	25.9	56.0	
0.192000	29.9	1000.000	9.000	GND	N	10.0	23.9	53.8	
0.234000	34.1	1000.000	9.000	GND	N	10.0	18.0	52.1	
0.374000	31.0	1000.000	9.000	GND	N	10.0	17.2	48.2	
0.486000	34.8	1000.000	9.000	GND	N	10.0	11.4	46.2	
0.710000	29.1	1000.000	9.000	GND	N	10.0	16.9	46.0	
0.962000	21.5	1000.000	9.000	GND	N	10.0	24.5	46.0	
1.788000	21.6	1000.000	9.000	GND	N	10.1	24.4	46.0	
18.420000	20.9	1000.000	9.000	GND	N	10.7	29.1	50.0	
21.766000	19.2	1000.000	9.000	GND	N	10.8	30.8	50.0	

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



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

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	31.4	1000.000	9.000	GND	L1	10.0	34.6	66.0	
0.220000	30.7	1000.000	9.000	GND	L1	10.0	31.9	62.6	
0.234000	42.5	1000.000	9.000	GND	L1	10.0	19.6	62.1	
0.388000	41.6	1000.000	9.000	GND	L1	10.0	16.4	58.0	
0.472000	40.3	1000.000	9.000	GND	L1	10.0	16.2	56.4	
0.710000	30.7	1000.000	9.000	GND	L1	10.0	25.4	56.0	
0.948000	25.4	1000.000	9.000	GND	L1	10.0	30.6	56.0	
11.294000	29.5	1000.000	9.000	GND	L1	10.5	30.5	60.0	
11.462000	30.4	1000.000	9.000	GND	L1	10.5	29.6	60.0	
17.720000	32.9	1000.000	9.000	GND	L1	10.9	27.1	60.0	

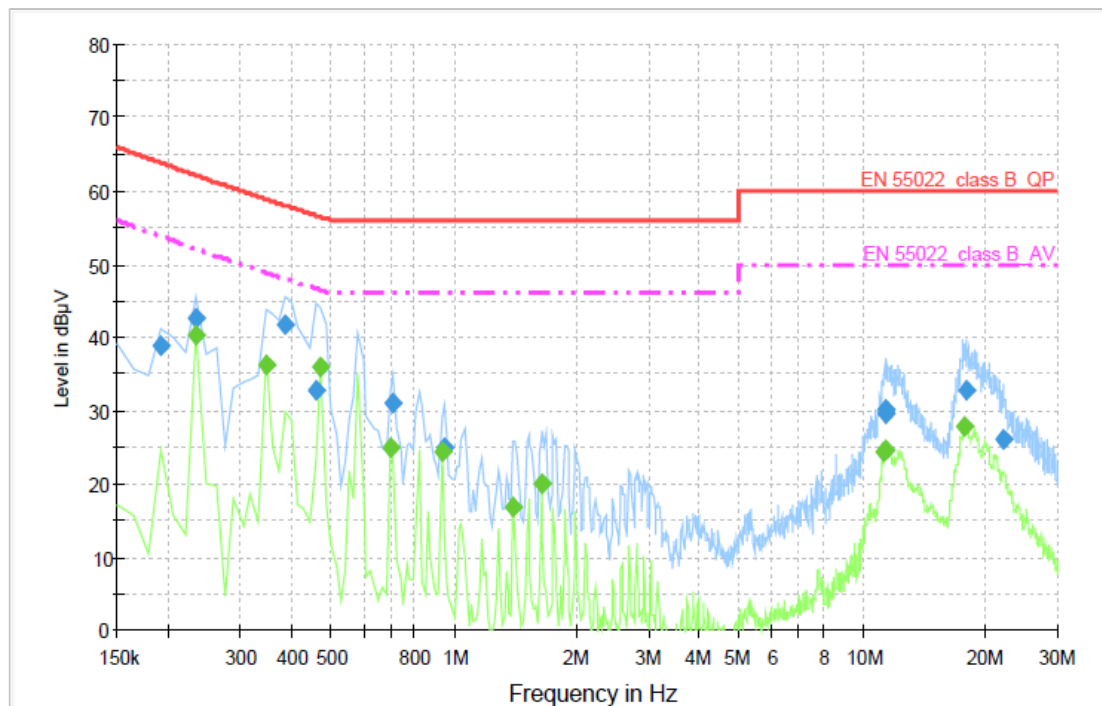
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.234000	40.1	1000.000	9.000	GND	L1	10.0	12.0	52.1	
0.346000	35.8	1000.000	9.000	GND	L1	10.0	13.1	48.9	
0.472000	35.7	1000.000	9.000	GND	L1	10.0	10.7	46.4	
0.822000	25.8	1000.000	9.000	GND	L1	10.0	20.2	46.0	
0.934000	24.1	1000.000	9.000	GND	L1	10.0	21.9	46.0	
1.634000	20.2	1000.000	9.000	GND	L1	10.1	25.8	46.0	
11.294000	24.0	1000.000	9.000	GND	L1	10.5	26.0	50.0	
11.420000	24.8	1000.000	9.000	GND	L1	10.5	25.2	50.0	
17.678000	27.9	1000.000	9.000	GND	L1	10.9	22.1	50.0	
22.060000	21.1	1000.000	9.000	GND	L1	11.1	28.9	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
0.192000	38.8	1000.000	9.000	GND	N	10.0	25.0	63.8	
0.234000	42.6	1000.000	9.000	GND	N	10.0	19.5	62.1	
0.388000	41.7	1000.000	9.000	GND	N	10.0	16.3	58.0	
0.458000	32.9	1000.000	9.000	GND	N	10.0	23.8	56.7	
0.710000	30.9	1000.000	9.000	GND	N	10.0	25.1	56.0	
0.948000	25.0	1000.000	9.000	GND	N	10.0	31.0	56.0	
11.322000	29.5	1000.000	9.000	GND	N	10.4	30.5	60.0	
11.448000	30.2	1000.000	9.000	GND	N	10.4	29.8	60.0	
17.874000	32.8	1000.000	9.000	GND	N	10.7	27.2	60.0	
22.060000	26.0	1000.000	9.000	GND	N	10.8	34.0	60.0	

Final Measurement Detector 2

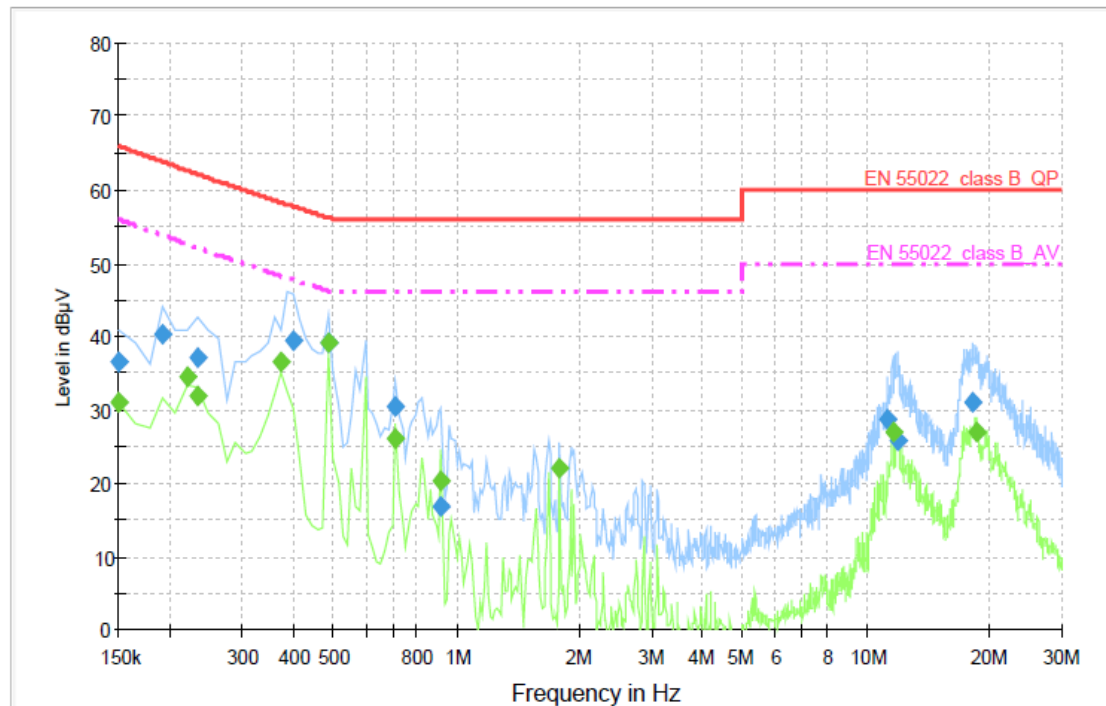
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.234000	40.4	1000.000	9.000	GND	N	10.0	11.7	52.1	
0.346000	36.4	1000.000	9.000	GND	N	10.0	12.5	48.9	
0.472000	35.8	1000.000	9.000	GND	N	10.0	10.6	46.4	
0.696000	24.9	1000.000	9.000	GND	N	10.0	21.1	46.0	
0.934000	24.3	1000.000	9.000	GND	N	10.0	21.7	46.0	
1.396000	16.9	1000.000	9.000	GND	N	10.1	29.1	46.0	
1.634000	19.9	1000.000	9.000	GND	N	10.1	26.1	46.0	
11.308000	24.4	1000.000	9.000	GND	N	10.4	25.6	50.0	
11.434000	24.8	1000.000	9.000	GND	N	10.4	25.2	50.0	
17.790000	27.7	1000.000	9.000	GND	N	10.7	22.3	50.0	

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



◆ Operating condition: 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
0.150000	36.4	1000.000	9.000	GND	L1	10.0	29.6	66.0	
0.192000	40.4	1000.000	9.000	GND	L1	10.0	23.4	63.8	
0.234000	37.1	1000.000	9.000	GND	L1	10.0	25.0	62.1	
0.402000	39.5	1000.000	9.000	GND	L1	10.0	18.2	57.7	
0.486000	39.2	1000.000	9.000	GND	L1	10.0	17.0	56.2	
0.710000	30.5	1000.000	9.000	GND	L1	10.0	25.5	56.0	
0.920000	16.8	1000.000	9.000	GND	L1	10.0	39.2	56.0	
11.224000	28.8	1000.000	9.000	GND	L1	10.5	31.2	60.0	
11.952000	25.8	1000.000	9.000	GND	L1	10.5	34.2	60.0	
18.182000	30.9	1000.000	9.000	GND	L1	10.9	29.1	60.0	

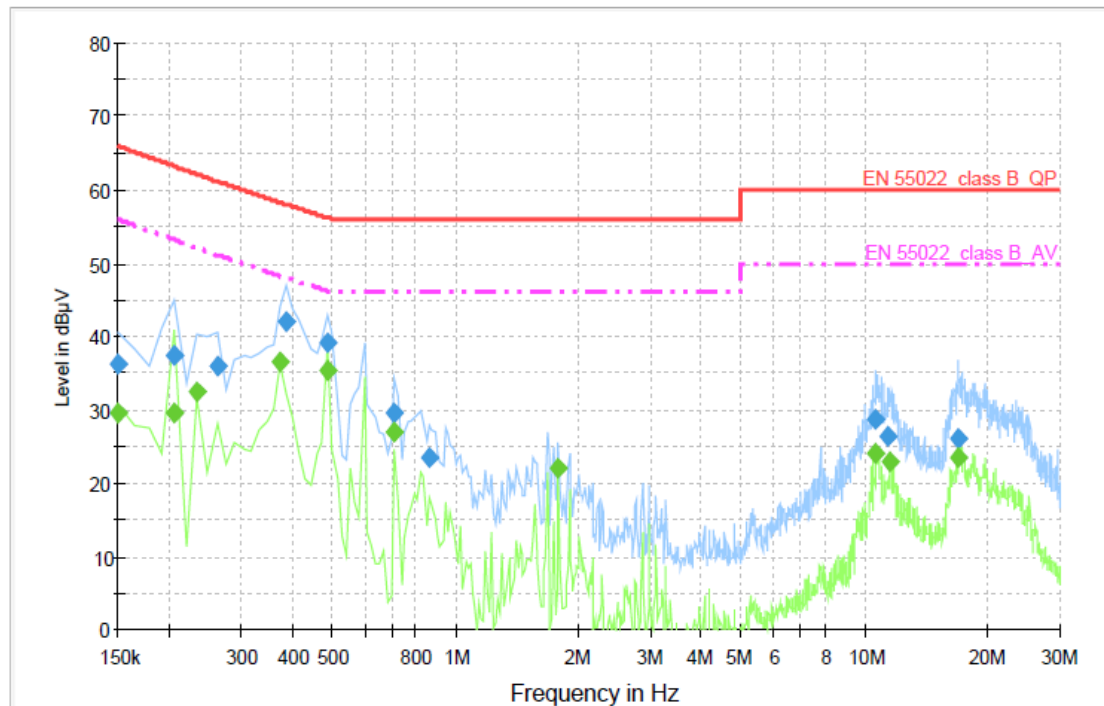
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	30.9	1000.000	9.000	GND	L1	10.0	25.1	56.0	
0.220000	34.6	1000.000	9.000	GND	L1	10.0	18.0	52.6	
0.234000	31.9	1000.000	9.000	GND	L1	10.0	20.2	52.1	
0.374000	36.4	1000.000	9.000	GND	L1	10.0	11.8	48.2	
0.486000	39.1	1000.000	9.000	GND	L1	10.0	7.2	46.2	
0.710000	26.2	1000.000	9.000	GND	L1	10.0	19.8	46.0	
0.920000	20.4	1000.000	9.000	GND	L1	10.0	25.6	46.0	
1.788000	22.1	1000.000	9.000	GND	L1	10.1	23.9	46.0	
11.700000	27.0	1000.000	9.000	GND	L1	10.5	23.0	50.0	
18.532000	26.8	1000.000	9.000	GND	L1	10.9	23.2	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
0.150000	36.3	1000.000	9.000	GND	N	10.0	29.7	66.0	
0.206000	37.3	1000.000	9.000	GND	N	10.0	25.9	63.2	
0.262000	35.9	1000.000	9.000	GND	N	10.0	25.3	61.2	
0.388000	42.1	1000.000	9.000	GND	N	10.0	15.9	58.0	
0.486000	39.2	1000.000	9.000	GND	N	10.0	17.0	56.2	
0.710000	29.7	1000.000	9.000	GND	N	10.0	26.3	56.0	
0.864000	23.4	1000.000	9.000	GND	N	10.0	32.6	56.0	
10.608000	28.8	1000.000	9.000	GND	N	10.4	31.2	60.0	
11.406000	26.3	1000.000	9.000	GND	N	10.4	33.7	60.0	
16.880000	26.1	1000.000	9.000	GND	N	10.6	33.9	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	29.6	1000.000	9.000	GND	N	10.0	26.4	56.0	
0.206000	29.6	1000.000	9.000	GND	N	10.0	23.6	53.2	
0.234000	32.5	1000.000	9.000	GND	N	10.0	19.6	52.1	
0.374000	36.4	1000.000	9.000	GND	N	10.0	11.8	48.2	
0.486000	35.3	1000.000	9.000	GND	N	10.0	10.9	46.2	
0.710000	27.1	1000.000	9.000	GND	N	10.0	18.9	46.0	
1.788000	22.0	1000.000	9.000	GND	N	10.1	24.0	46.0	
10.608000	24.2	1000.000	9.000	GND	N	10.4	25.8	50.0	
11.588000	22.8	1000.000	9.000	GND	N	10.4	27.2	50.0	
16.880000	23.4	1000.000	9.000	GND	N	10.6	26.6	50.0	

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



6. Radiated Emission

6.1 Operating Environment

Temperature : 26 °C
Relative Humidity : 43 % 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(Anechoic Chamber)	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 3 m, Vertical)	± 4.32 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	± 4.21 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	± 3.96 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	± 3.97 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

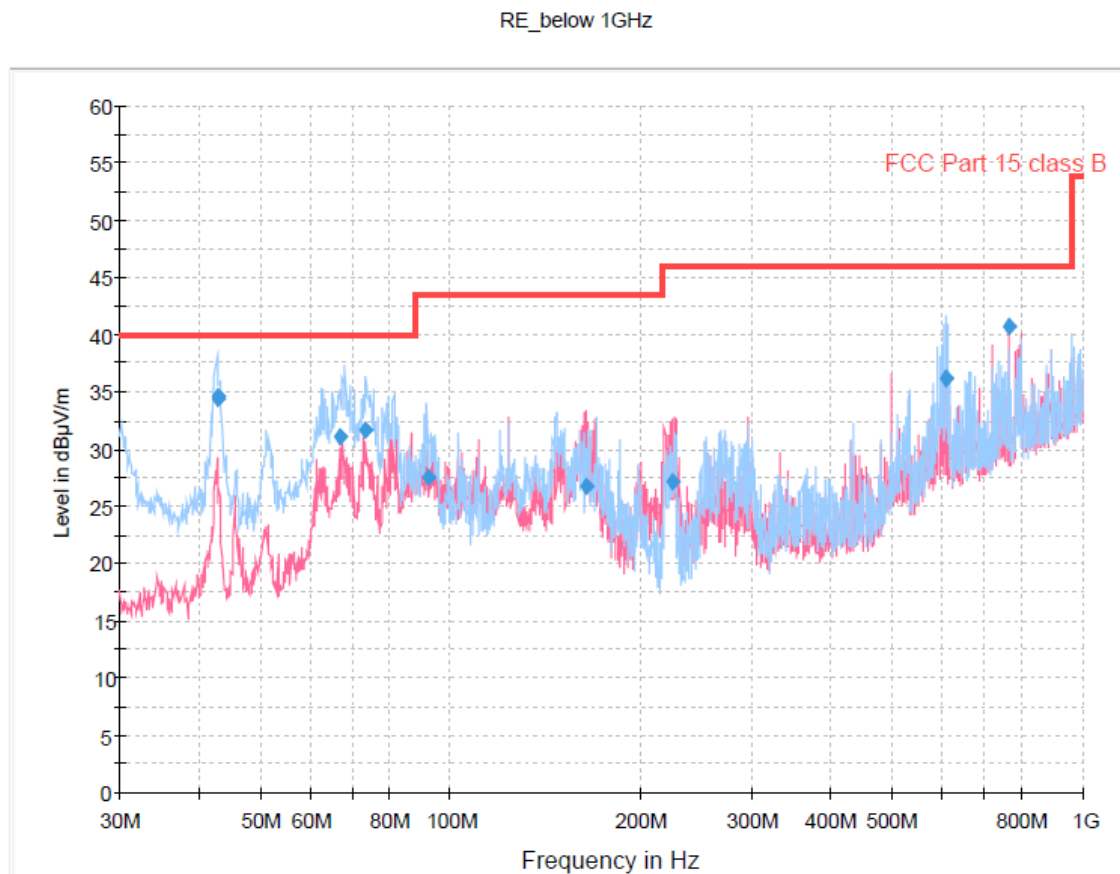
Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESIB26	Rohde & Schwarz	EMI Test Receiver	830482/010	12. 11. 2010
■ - VULB9160	Schwarzbeck	Broadband Test Antenna	3193	03. 15. 2012
■ - BBHA9120D	Schwarzbeck	Horn ANT	207	12. 22. 2011
■ - MCU066	maturo GmbH	Position Controller	1390306	N/A
■ - TT2.5SI	maturo GmbH	Turntable	1390307	N/A
■ - AM 4.0	maturo GmbH	Antenna Mast	1390308	N/A
■ - AFS 44 00101800-25-10P-44	MITEQ	Preamplifier	1258943	11. 12. 2010

6.6 Test data for Radiated Emission

- Test Date : September 13, 2010
- Resolution Bandwidth : 120 kHz/1 MHz
- Frequency Range : 30 MHz ~ 2 000 MHz
- Measurement Distance : 3 m
- Note : The highest frequency of the internal source of the EUT is between 108 MHz and 500 MHz (400 MHz). The measurement was made up to 2 000 MHz



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)
Red trace: Vertical polarization, Blue trace: Horizontal polarization



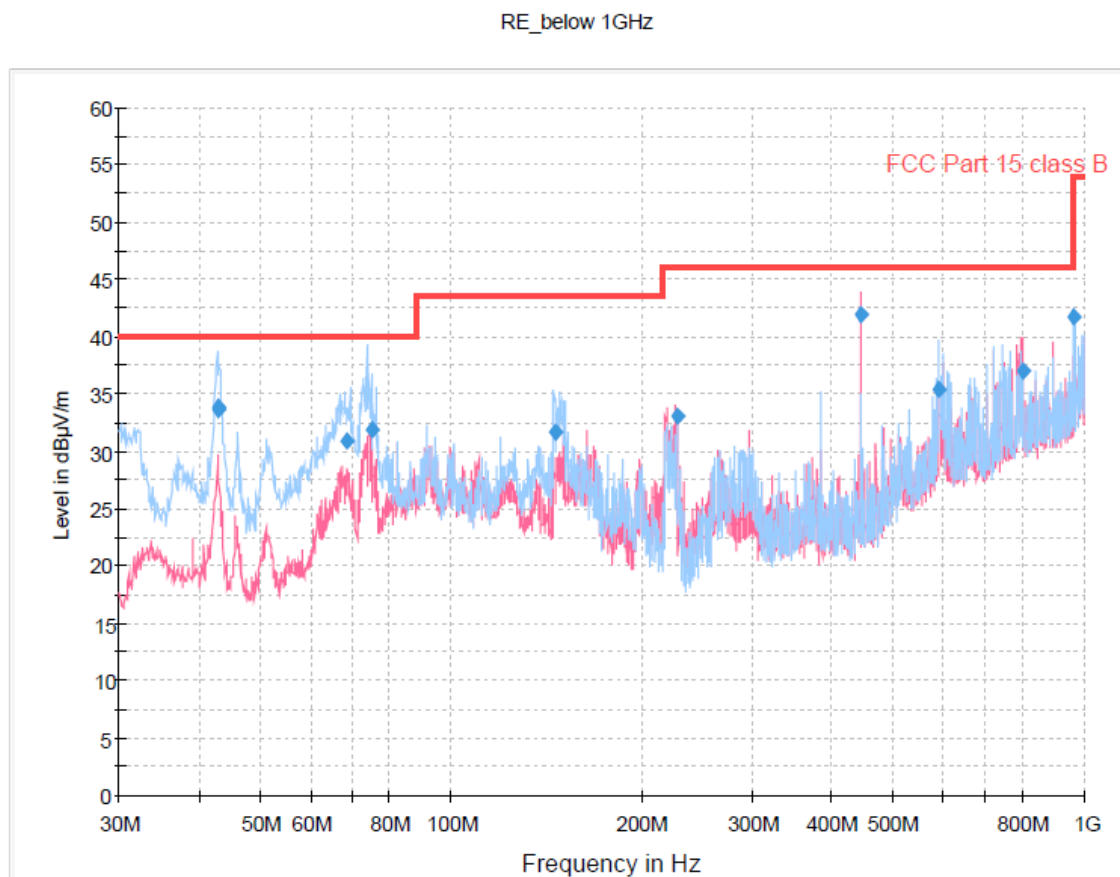
Final Result [1]

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
42.832500	34.4	1000.0	120.000	100.0	H	58.0	12.5	5.56	40.00
42.908750	34.5	1000.0	120.000	100.0	H	58.0	12.5	5.46	40.00
67.173750	31.1	1000.0	120.000	100.0	H	171.0	11.8	8.87	40.00
73.670000	31.7	1000.0	120.000	100.0	H	232.0	10.6	8.26	40.00
92.140000	27.5	1000.0	120.000	100.0	H	335.0	9.7	15.98	43.50
163.558750	26.8	1000.0	120.000	100.0	V	306.0	15.1	16.65	43.50
225.157500	27.2	1000.0	120.000	100.0	V	306.0	13.1	18.81	46.00
608.033750	36.2	1000.0	120.000	200.0	H	0.0	25.2	9.84	46.00
766.327500	40.7	1000.0	120.000	100.0	V	215.0	28.1	5.30	46.00

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



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Red trace: Vertical polarization, Blue trace: Horizontal polarization



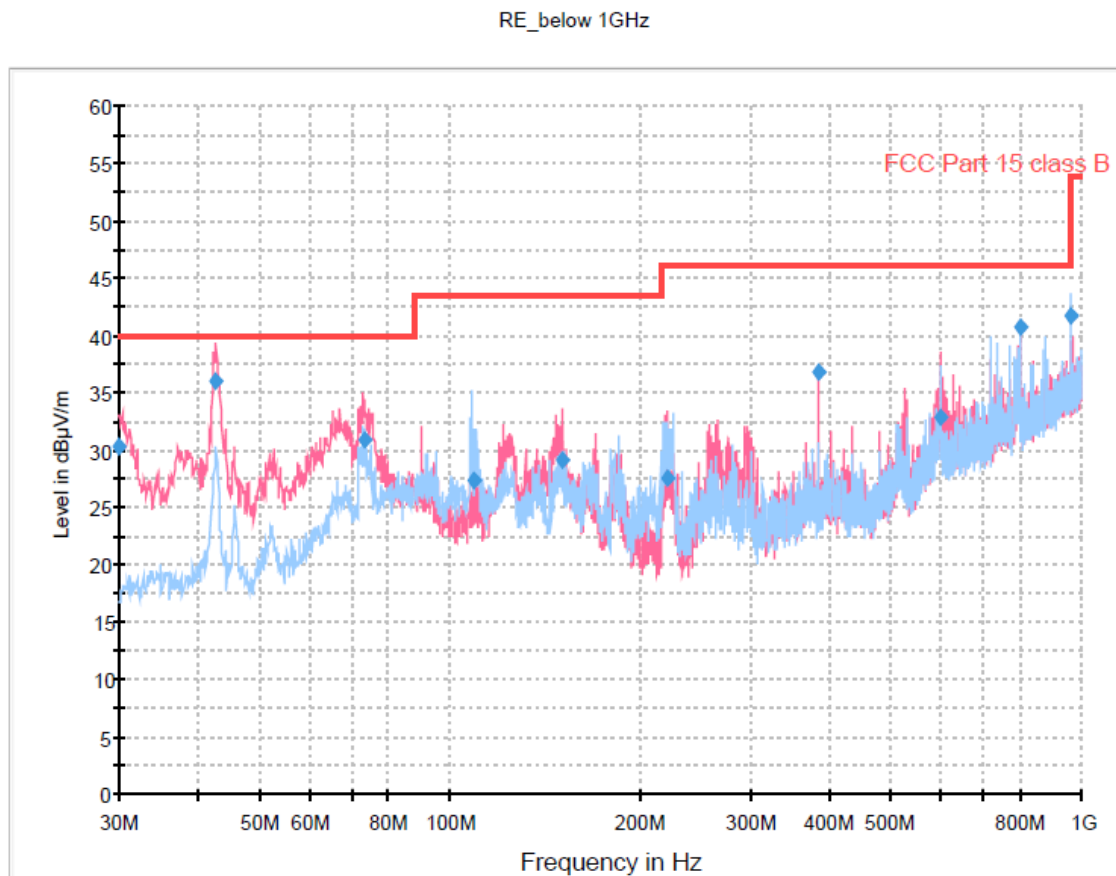
Final Result [1]

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
42.988750	33.6	1000.0	120.000	100.0	H	303.0	12.5	6.45	40.00
43.072500	33.7	1000.0	120.000	100.0	H	25.0	12.5	6.26	40.00
68.506250	30.9	1000.0	120.000	100.0	H	-1.0	11.7	9.06	40.00
75.071250	31.9	1000.0	120.000	100.0	H	-1.0	10.3	8.13	40.00
146.373750	31.6	1000.0	120.000	100.0	H	-1.0	14.8	11.90	43.50
227.766250	33.1	1000.0	120.000	100.0	V	45.0	13.2	12.88	46.00
445.503750	42.0	1000.0	120.000	100.0	V	151.0	19.7	4.00	46.00
589.145000	35.3	1000.0	120.000	100.0	H	183.0	24.7	10.66	46.00
799.476250	37.0	1000.0	120.000	100.0	V	151.0	28.9	9.05	46.00
960.008750	41.7	1000.0	120.000	100.0	H	196.0	30.9	10.29	52.00

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



- ◆ Operating Condition: USB memory stick play mode
Red trace: Vertical polarization, Blue trace: Horizontal polarization



Final Result [1]

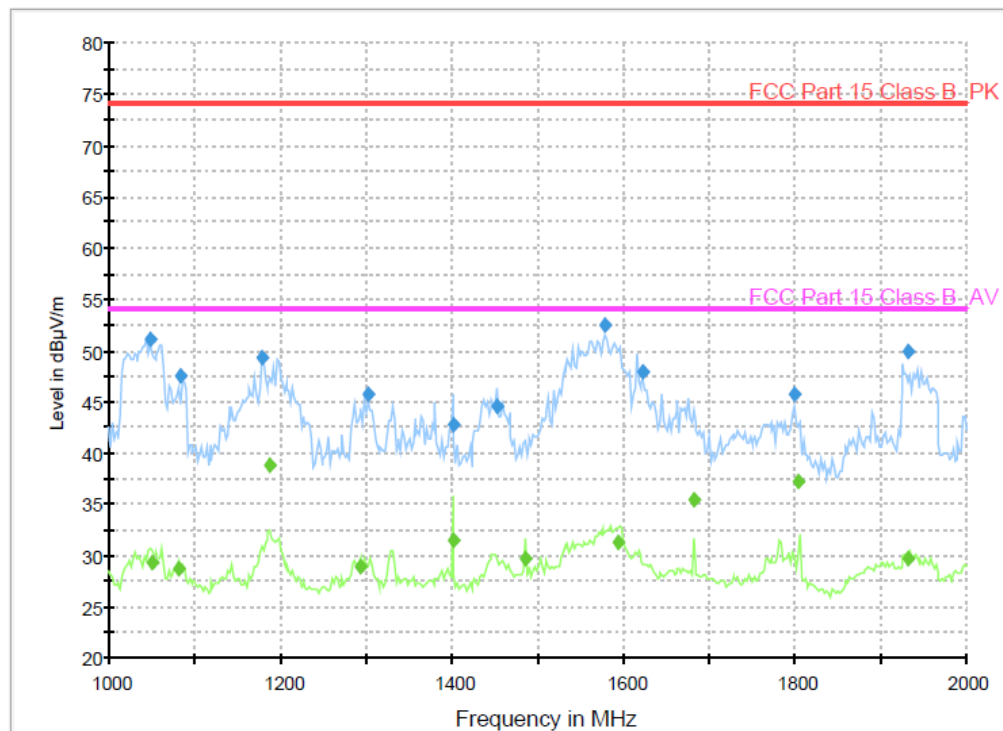
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.080000	30.2	1000.0	120.000	100.0	V	214.0	12.9	9.79	40.00
42.791250	35.9	1000.0	120.000	100.0	V	150.0	13.2	4.10	40.00
73.505000	31.0	1000.0	120.000	100.0	V	179.0	11.0	9.02	40.00
108.992500	27.4	1000.0	120.000	200.0	H	20.0	12.3	16.07	43.50
150.707500	29.1	1000.0	120.000	100.0	V	323.0	15.2	14.44	43.50
220.468750	27.5	1000.0	120.000	100.0	V	46.0	13.2	18.48	46.00
383.990000	36.8	1000.0	120.000	100.0	V	20.0	19.4	9.23	46.00
598.840000	32.9	1000.0	120.000	200.0	V	353.0	25.8	13.08	46.00
799.436250	40.6	1000.0	120.000	200.0	V	187.0	29.7	5.36	46.00
960.008750	41.8	1000.0	120.000	100.0	H	154.0	32.8	12.20	54.00

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



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)
Green trace: Average detector, Blue trace: Peak detector

Radiated Emission_above 1 GHz



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1049.088176	51.0	100.0	1000.000	196.0	H	137.0	-15.6	23.0	74.0
1084.376353	47.5	100.0	1000.000	100.0	H	217.0	-15.4	26.5	74.0
1177.756714	49.3	100.0	1000.000	100.0	V	211.0	-15.1	24.7	74.0
1302.797194	45.7	100.0	1000.000	150.0	H	211.0	-14.3	28.3	74.0
1401.401603	42.8	100.0	1000.000	100.0	V	231.0	-14.5	31.2	74.0
1451.505812	44.6	100.0	1000.000	211.0	H	280.0	-14.4	29.4	74.0
1578.958317	52.5	100.0	1000.000	150.0	H	218.0	-13.8	21.5	74.0
1623.054509	47.9	100.0	1000.000	139.0	V	196.0	-13.6	26.1	74.0
1798.199198	45.8	100.0	1000.000	150.0	V	143.0	-13.1	28.2	74.0
1930.851703	49.8	100.0	1000.000	150.0	H	286.0	-13.0	24.2	74.0

Final Result 2

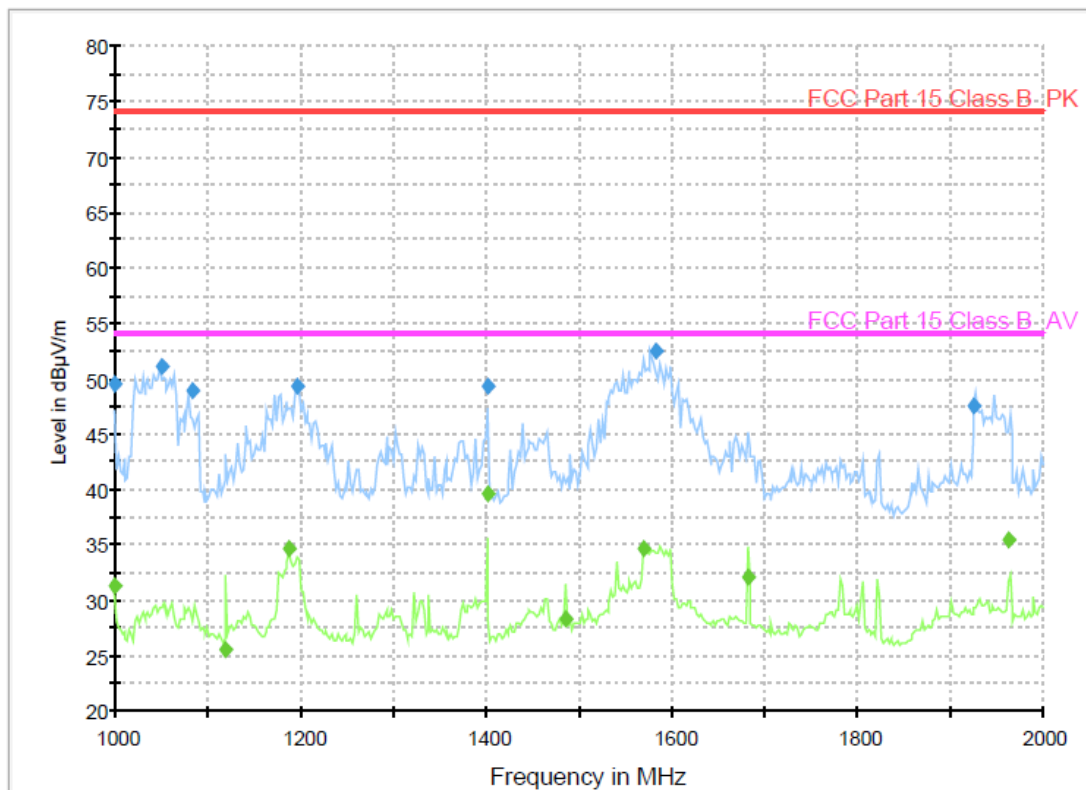
Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1049.896192	29.2	100.0	1000.000	100.0	V	183.0	-15.6	24.8	54.0
1081.564329	28.7	100.0	1000.000	173.0	H	217.0	-15.5	25.3	54.0
1188.176754	38.9	100.0	1000.000	150.0	H	129.0	-15.1	15.1	54.0
1292.785170	28.9	100.0	1000.000	150.0	H	211.0	-14.4	25.1	54.0
1401.401603	31.5	100.0	1000.000	100.0	V	231.0	-14.5	22.5	54.0
1485.169940	29.8	100.0	1000.000	187.0	V	176.0	-14.3	24.2	54.0
1593.790381	31.2	100.0	1000.000	127.0	V	182.0	-13.7	22.8	54.0
1681.562725	35.5	100.0	1000.000	100.0	H	135.0	-13.6	18.5	54.0
1804.211222	37.2	100.0	1000.000	150.0	V	351.0	-13.1	16.8	54.0
1932.067735	29.7	100.0	1000.000	150.0	H	286.0	-13.0	24.3	54.0

< Fig 17. Radiated emission result (1 000 MHz ~ 2 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Green trace: Average detector, Blue trace: Peak detector

Radiated Emission_above 1 GHz



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.000000	49.5	100.0	1000.000	198.0	V	173.0	-15.9	24.5	74.0
1050.696192	51.2	100.0	1000.000	191.0	H	143.0	-15.6	22.8	74.0
1083.560321	48.9	100.0	1000.000	100.0	H	217.0	-15.5	25.1	74.0
1196.992786	49.3	100.0	1000.000	100.0	V	211.0	-15.0	24.7	74.0
1401.401603	49.3	100.0	1000.000	100.0	V	162.0	-14.5	24.7	74.0
1582.154309	52.5	100.0	1000.000	150.0	H	216.0	-13.8	21.5	74.0
1925.655711	47.6	100.0	1000.000	180.0	H	278.0	-13.0	26.4	74.0

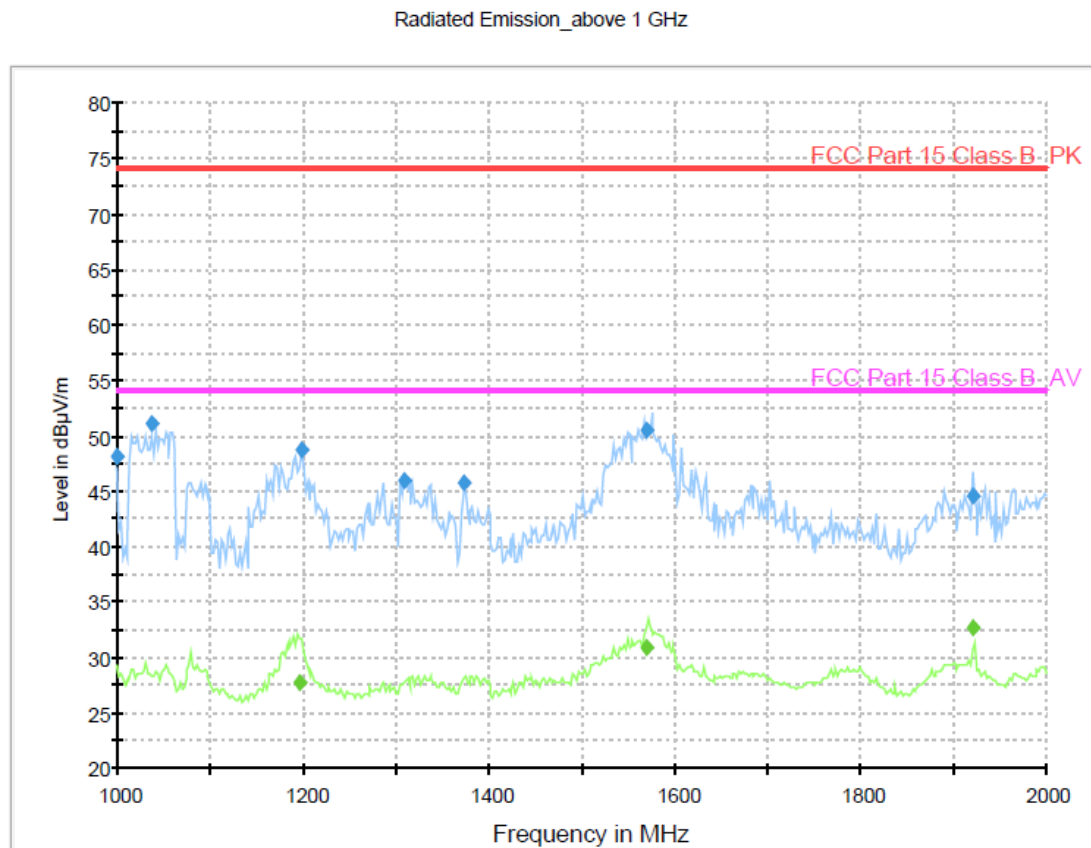
Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.000000	31.4	100.0	1000.000	200.0	V	173.0	-15.9	22.6	54.0
1119.240481	25.6	100.0	1000.000	189.0	V	150.0	-15.3	28.4	54.0
1188.176754	34.7	100.0	1000.000	234.0	H	216.0	-15.1	19.3	54.0
1401.401603	39.5	100.0	1000.000	100.0	V	162.0	-14.5	14.5	54.0
1485.169940	28.3	100.0	1000.000	150.0	H	120.0	-14.3	25.7	54.0
1569.738277	34.7	100.0	1000.000	150.0	H	223.0	-13.8	19.3	54.0
1681.562725	32.1	100.0	1000.000	100.0	H	145.0	-13.6	21.9	54.0
1962.127856	35.5	100.0	1000.000	100.0	V	134.0	-12.9	18.5	54.0

< Fig 18. Radiated emission result (1 000 MHz ~ 2 000 MHz) >



- ◆ Operating Condition: USB memory stick play mode
Green trace: Average detector, Blue trace: Peak detector



Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.000000	48.2	100.0	1000.000	100.0	V	210.0	-15.9	25.8	74.0
1038.284168	51.1	100.0	1000.000	113.0	H	176.0	-15.7	22.9	74.0
1198.996794	48.8	100.0	1000.000	150.0	V	193.0	-15.0	25.2	74.0
1308.017235	46.0	100.0	1000.000	100.0	V	197.0	-14.3	28.0	74.0
1373.749499	45.8	100.0	1000.000	163.0	H	222.0	-14.4	28.2	74.0
1570.150301	50.6	100.0	1000.000	100.0	V	183.0	-13.8	23.4	74.0
1920.039679	44.6	100.0	1000.000	172.0	H	229.0	-13.0	29.4	74.0

Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1195.388778	27.7	100.0	1000.000	100.0	H	122.0	-15.0	26.3	54.0
1568.942285	30.9	100.0	1000.000	100.0	V	176.0	-13.8	23.1	54.0
1920.043687	32.7	100.0	1000.000	178.0	H	235.0	-13.0	21.3	54.0

< Fig 19. Radiated emission result (1 000 MHz ~ 2 000 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 Monitor (Model Name: M4720CJ)** was complies with §15.107 and 15.109 of the FCC Rules.