

FCC EVALUATION REPORT FOR CERTIFICATION

Applicant: LG Electronics Inc.**19-1, Cheongho-ri, Jinwi-myeon,****Pyeongteak-si, Gyeonggi-do, Korea.****Attn: Mr. Do-Hyung Kim, Chief research engineer****Date of Issue: October 6, 2011****Order Number: GETEC-C1-11-228****Test Report Number: GETEC-E3-11-117****Test Site: Gumi College EMC Center****FCC Registration Number: (100749, 443957)****FCC ID. : BEJ55WS10****Applicant : LG Electronics Inc.**

Rule Part(s)	: FCC Part 15 Subpart B
Equipment Class	: Class B computing device peripheral (JBP)
EUT Type	: LED LCD Monitor
Type of Authority	: Certification
Model Name	: 55WS10
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,**

Hyun Kim, 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. Do-Hyung Kim, Chief research engineer

Tel Number: +82-31-610-9623

- **FCC ID.** BEJ55WS10
- **EUT Type** LED LCD Monitor
- **Model Name** 55WS10
- **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 26 ~ 28, 2011
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-11-117
- **Dates of Issue** October 6, 2011



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 Monitor (Model Name: 55WS10)**

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. LED LCD Monitor (Model Name: 55WS10) FCC ID.: BEJ55WS10**

LCD Panel	Screen Type	1387.80 mm Wide (55 inch) TFT (Thin Film Transistor) LCD (Liquid Crystal Display) Panel. Visible diagonal size : 1387.80 mm
	Pixel Pitch	0.630 mm(H) x 0.630 mm(V)
Video Signal	Max. Resolution	RGB : 1920 X 1080 @60 Hz HDMI,DVI-D, Display Port : 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-D, Display Port : 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-D, Display Port : 30 kHz to 83 kHz
	Vertical Frequency	RGB : 56 Hz to 75 Hz HDMI,DVI-D, Display Port : 56 Hz to 60 Hz
	Synchronization Type	Separate Sync, Composite Sync, Digital
Input Connector		15-pin D-Sub, HDMI, DVI-D, Display Port, RS-232C, LAN, USB, Audio
Power	Rated Voltage	100-240 V~ 50/60 Hz 2.0 A
	Power Consumption	On Mode : 140 W Typ. Sleep Mode (RGB) : ≤ 1 W Sleep Mode (HDMI, DVI-D, Display Port) : ≤ 1 W (Set Only) / ≤ 2 W (With External Device) Off Mode : ≤ 0.5 W
Dimensions (Width x Height x Depth) / Weight		
	1281.6 mm x 825.7 mm x 298.3 mm / 23.9 kg	

-. 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 (Main board)	ASLOCK	770iCafe	S/N: 0AM0X3097310 FCC ID.: DoC
Video card	Absolute Korea Co., LTD.	HIS6770	S/N: H110838565 FCC ID.: DoC
PS2 keyboard	COMPAQ	166516-AD6	S/N: B13BBOR391006D FCC ID.: AQ6-23K15
USB mouse	Great Pleasure Electronics Co., Ltd.	GP-M3100UE	S/N: 14036766 FCC ID: DoC
LCD TV	LG Electronics Inc.	22LE5300-ZA	S/N: None. FCC ID.: DoC
USB memory stick	SAMSUNG	SUM-PSB4	S/N: TBBB202478F FCC ID.: DoC

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.
IR remote controller	HANSUNG ELECTRONICS	AKB72915219	S/N: None. FCC ID.: N/A



3.2.3 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the EUT	1.80 m unshielded
RGB (Analog) in cable	Connected to the EUT and PC	1.50 m shielded
RGB (Analog) out cable	Connected to the EUT and LCD TV	1.80 m shielded
DVI (Digital) in cable	Connected to the EUT and PC	1.50 m shielded
HDMI/DVI (Digital) out cable	Connected to the EUT and LCD TV	2.00 m shielded
HDMI (Digital) cable	Connected to the EUT and PC	1.80 m shielded
DP (Digital) in cable	Connected to the EUT and PC	2.00 m shielded
RS-232C cable	Connected to the EUT(RS-232C in) and EUT(RS-232C out)	1.80 m shielded
Audio in cable	Connected to the EUT and PC	1.50 m shielded
Speaker (Left) cable	Connected to the EUT and PC	1.50 m shielded
Speaker (Right) cable	Connected to the EUT and PC	1.50 m shielded
LAN cable	Connected to the EUT and Network	10.00 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, DVI: Digital, HDMI: Digital, DP: Digital)

Conducted emission: 1 920 × 1 080 / 60 Hz (RGB: Analog, DVI: Digital, HDMI: Digital, DP: 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
- . Continuous playback of 1 kHz audio file with winamp player
- . Settings and control the display via the Network from a PC
- . USB memory stick was connected to the USB port



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

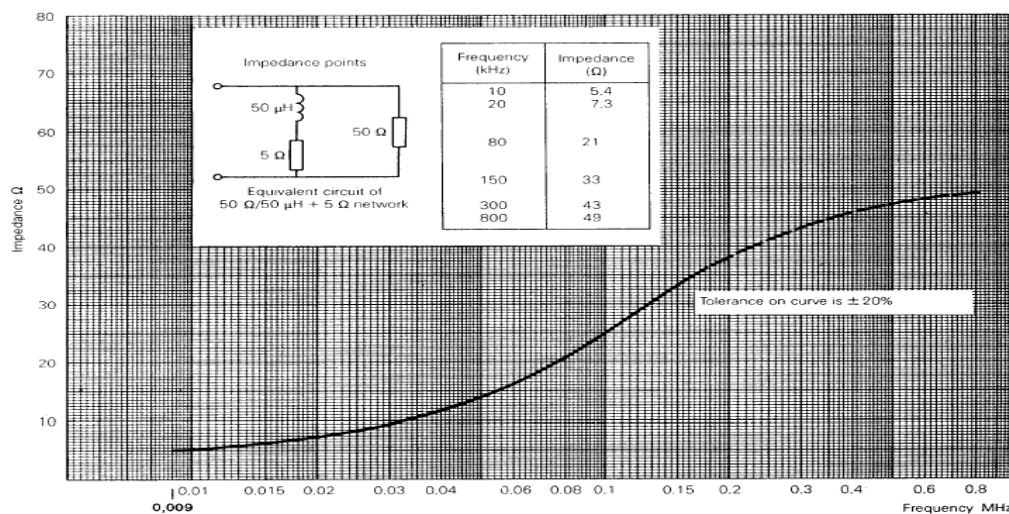


Fig 2. Impedance of LISN



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 : 23.0 °C
Relative Humidity : 39.0 % 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)	± 2.71 dB	Confidence levels of 95 % ($k = 2$)
Conducted emission (150 kHz ~ 30 MHz)	± 3.34 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. 2011
■ - ESH3-Z5	Rohde & Schwarz	LISN	838979/020	12. 10. 2011
■ - ESH2-Z5	Rohde & Schwarz	LISN	829991/009	12. 10. 2011
■ - ISN T8	TESEQ. GmbH	ISN	24568	11. 09. 2011

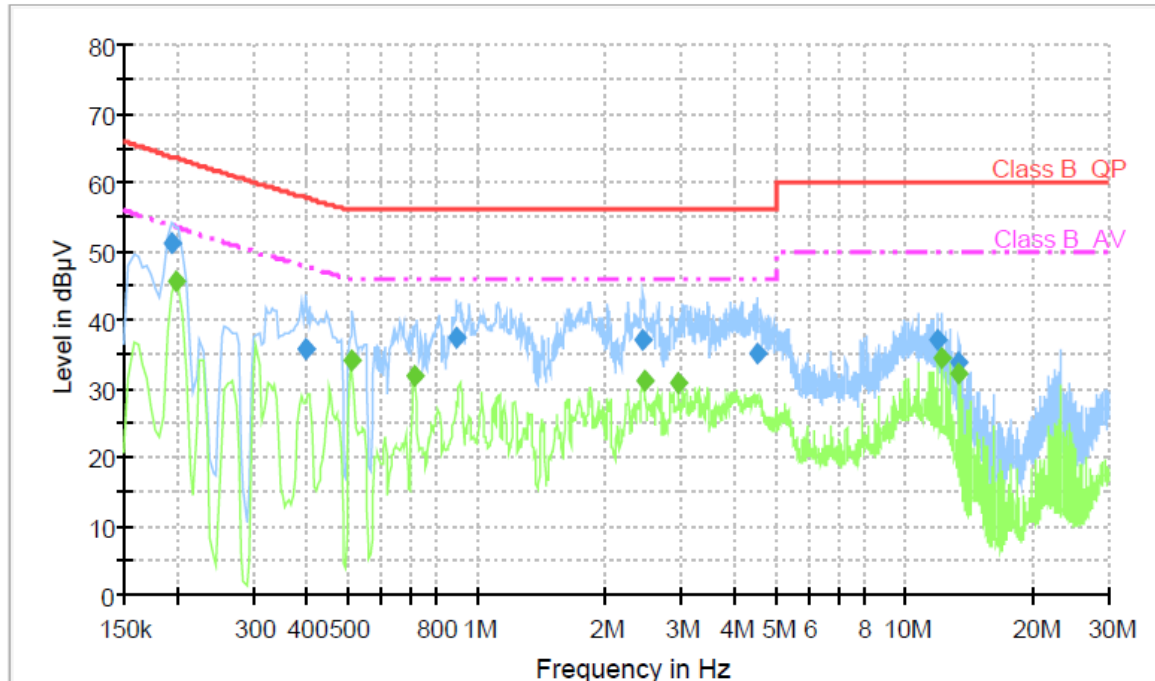
5.6 Test data for Conducted Emission

- Test Date : September 26, 2011
- 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_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.194000	51.2	1000.000	9.000	GND	N	10.1	12.5	63.7	
0.398000	35.7	1000.000	9.000	GND	N	10.1	22.1	57.8	
0.898000	37.4	1000.000	9.000	GND	N	10.1	18.6	56.0	
2.454000	37.0	1000.000	9.000	GND	N	10.2	19.0	56.0	
4.526000	35.1	1000.000	9.000	GND	N	10.3	20.9	56.0	
11.890000	37.2	1000.000	9.000	GND	N	10.6	22.8	60.0	
13.418000	33.9	1000.000	9.000	GND	N	10.7	26.1	60.0	

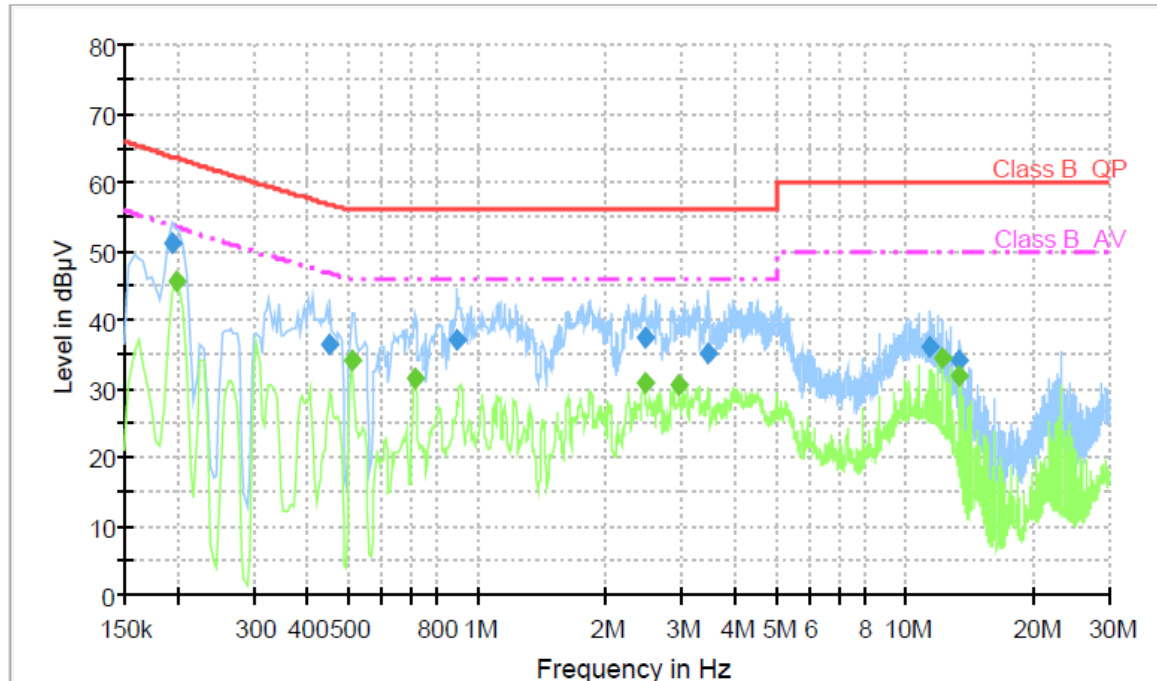
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	45.6	1000.000	9.000	GND	N	10.1	7.9	53.5	
0.510000	34.1	1000.000	9.000	GND	N	10.1	11.9	46.0	
0.714000	31.7	1000.000	9.000	GND	N	10.1	14.3	46.0	
2.466000	31.2	1000.000	9.000	GND	N	10.2	14.8	46.0	
2.958000	30.9	1000.000	9.000	GND	N	10.2	15.1	46.0	
12.198000	34.5	1000.000	9.000	GND	N	10.6	15.5	50.0	
13.418000	32.1	1000.000	9.000	GND	N	10.7	17.9	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
0.194000	51.1	1000.000	9.000	GND	N	10.1	12.6	63.7	
0.454000	36.4	1000.000	9.000	GND	N	10.1	20.3	56.7	
0.898000	37.2	1000.000	9.000	GND	N	10.1	18.8	56.0	
2.466000	37.5	1000.000	9.000	GND	N	10.2	18.5	56.0	
3.478000	35.0	1000.000	9.000	GND	N	10.2	21.0	56.0	
11.466000	36.1	1000.000	9.000	GND	N	10.6	23.9	60.0	
13.418000	34.0	1000.000	9.000	GND	N	10.7	26.0	60.0	

Final Measurement Detector 2

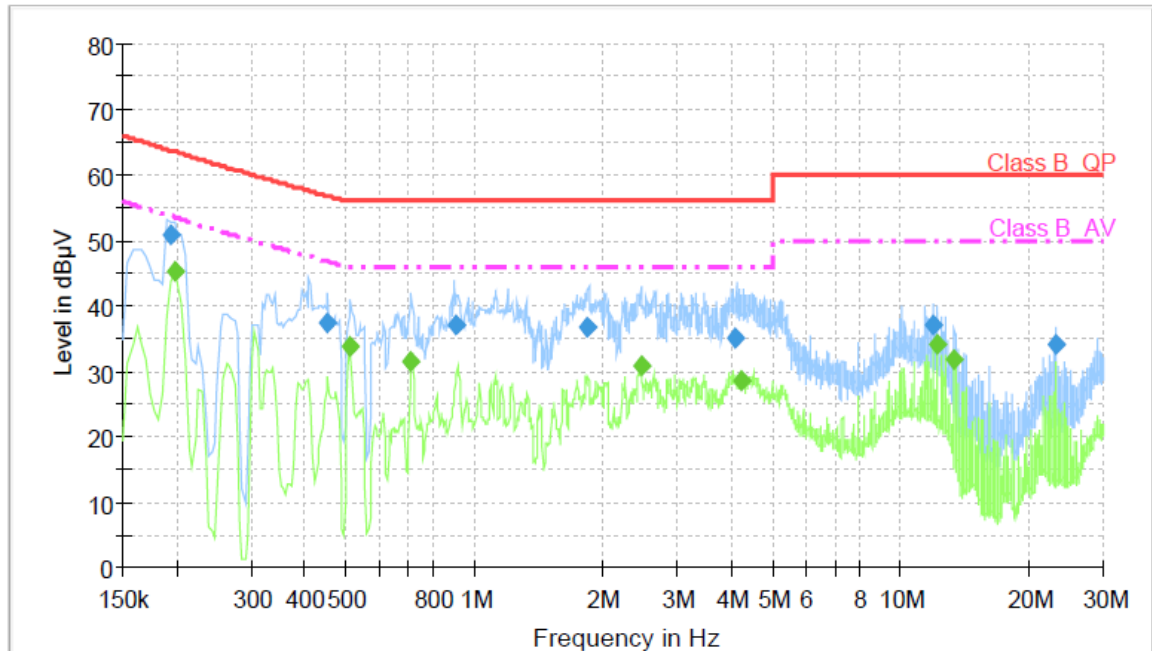
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.198000	45.5	1000.000	9.000	GND	N	10.1	8.0	53.5	
0.510000	34.0	1000.000	9.000	GND	N	10.1	12.0	46.0	
0.718000	31.5	1000.000	9.000	GND	N	10.1	14.5	46.0	
2.470000	30.9	1000.000	9.000	GND	N	10.2	15.1	46.0	
2.958000	30.4	1000.000	9.000	GND	N	10.2	15.6	46.0	
12.198000	34.5	1000.000	9.000	GND	N	10.6	15.5	50.0	
13.418000	31.8	1000.000	9.000	GND	N	10.7	18.2	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
0.194000	50.8	1000.000	9.000	GND	L1	10.1	12.9	63.7	
0.452000	37.4	1000.000	9.000	GND	L1	10.1	19.4	56.8	
0.904000	37.0	1000.000	9.000	GND	L1	10.1	19.0	56.0	
1.836000	36.8	1000.000	9.000	GND	L1	10.1	19.2	56.0	
4.092000	35.1	1000.000	9.000	GND	L1	10.3	20.9	56.0	
11.892000	37.1	1000.000	9.000	GND	L1	10.6	22.9	60.0	
23.128000	34.2	1000.000	9.000	GND	L1	11.1	25.8	60.0	

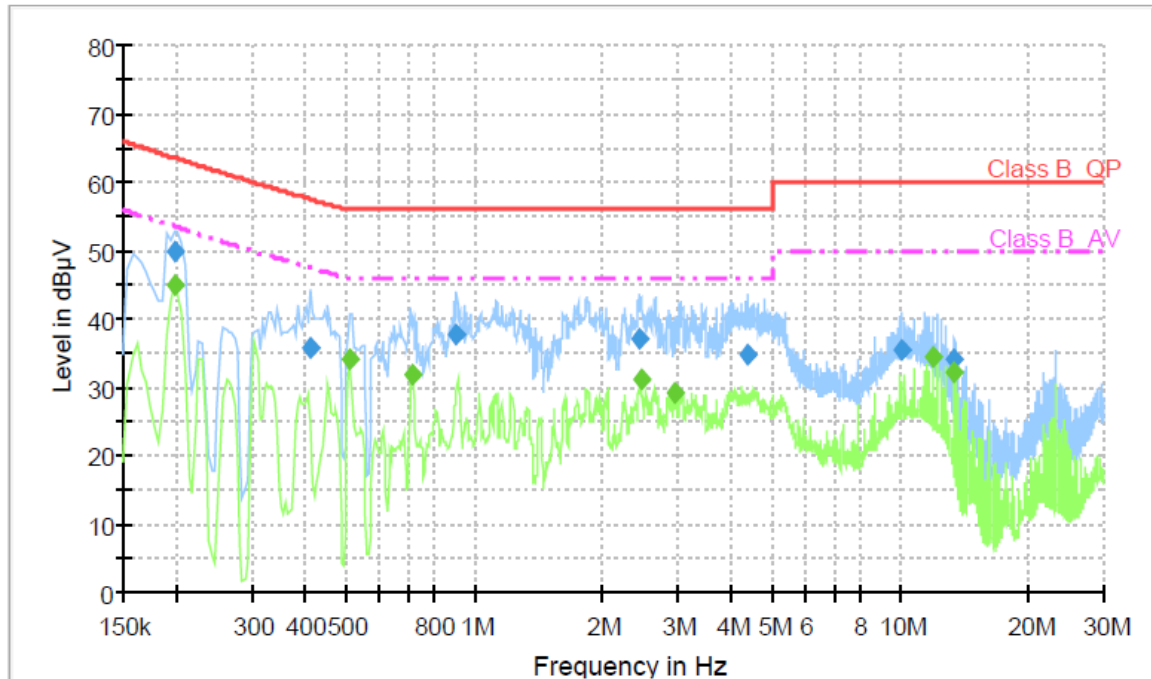
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	45.2	1000.000	9.000	GND	L1	10.1	8.3	53.5	
0.512000	33.7	1000.000	9.000	GND	L1	10.1	12.3	46.0	
0.712000	31.6	1000.000	9.000	GND	L1	10.1	14.4	46.0	
2.468000	30.9	1000.000	9.000	GND	L1	10.2	15.1	46.0	
4.252000	28.7	1000.000	9.000	GND	L1	10.3	17.4	46.0	
12.196000	34.1	1000.000	9.000	GND	L1	10.7	15.9	50.0	
13.420000	31.9	1000.000	9.000	GND	L1	10.8	18.1	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
0.198000	49.9	1000.000	9.000	GND	N	10.1	13.6	63.5	
0.414000	35.6	1000.000	9.000	GND	N	10.1	21.9	57.5	
0.910000	37.6	1000.000	9.000	GND	N	10.1	18.4	56.0	
2.434000	37.1	1000.000	9.000	GND	N	10.2	18.9	56.0	
4.382000	34.9	1000.000	9.000	GND	N	10.3	21.1	56.0	
10.062000	35.3	1000.000	9.000	GND	N	10.5	24.7	60.0	
13.418000	34.2	1000.000	9.000	GND	N	10.7	25.8	60.0	

Final Measurement Detector 2

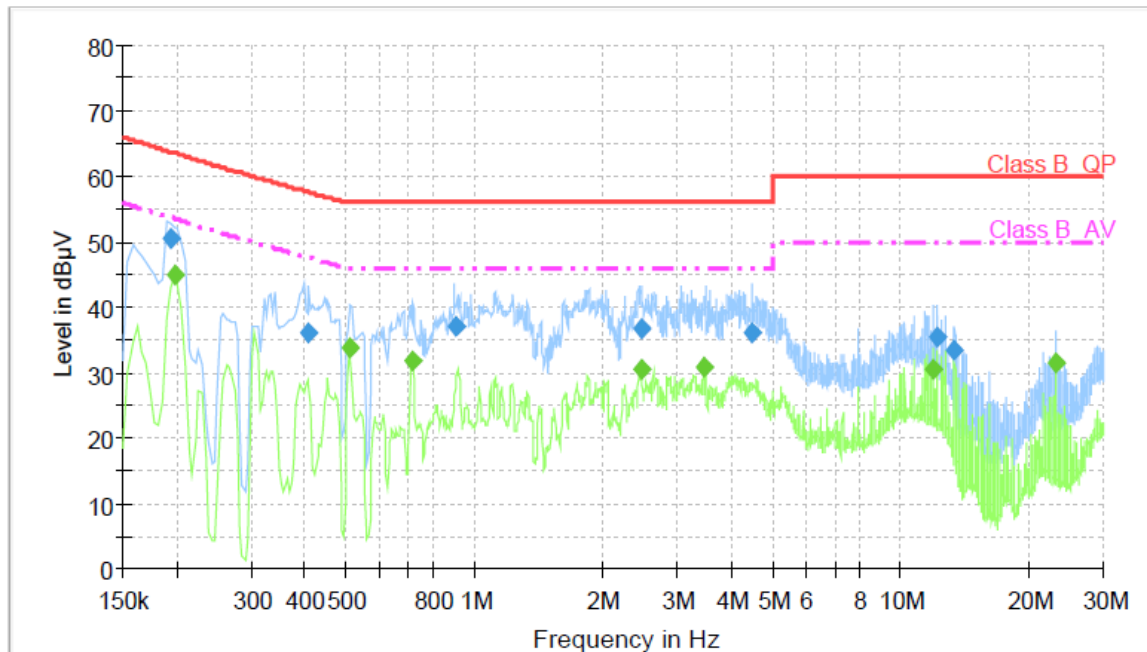
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	45.0	1000.000	9.000	GND	N	10.1	8.5	53.5	
0.510000	34.2	1000.000	9.000	GND	N	10.1	11.8	46.0	
0.718000	31.7	1000.000	9.000	GND	N	10.1	14.3	46.0	
2.466000	31.1	1000.000	9.000	GND	N	10.2	14.9	46.0	
2.954000	29.2	1000.000	9.000	GND	N	10.2	16.8	46.0	
11.894000	34.4	1000.000	9.000	GND	N	10.6	15.6	50.0	
13.358000	32.2	1000.000	9.000	GND	N	10.7	17.8	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
0.194000	50.4	1000.000	9.000	GND	L1	10.1	13.3	63.7	
0.408000	36.1	1000.000	9.000	GND	L1	10.1	21.5	57.6	
0.904000	36.9	1000.000	9.000	GND	L1	10.1	19.1	56.0	
2.460000	36.7	1000.000	9.000	GND	L1	10.2	19.3	56.0	
4.484000	36.1	1000.000	9.000	GND	L1	10.3	19.9	56.0	
12.200000	35.6	1000.000	9.000	GND	L1	10.7	24.4	60.0	
13.356000	33.6	1000.000	9.000	GND	L1	10.7	26.4	60.0	

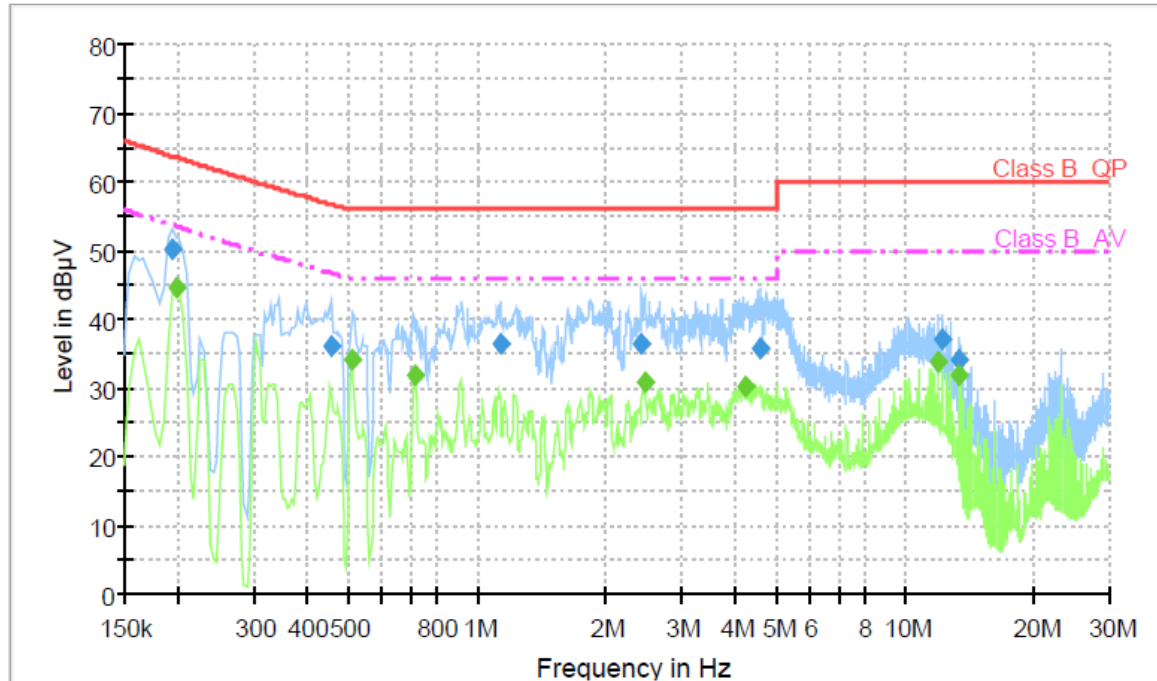
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	44.8	1000.000	9.000	GND	L1	10.1	8.7	53.5	
0.512000	33.8	1000.000	9.000	GND	L1	10.1	12.2	46.0	
0.716000	31.7	1000.000	9.000	GND	L1	10.1	14.3	46.0	
2.464000	30.6	1000.000	9.000	GND	L1	10.2	15.4	46.0	
3.452000	30.9	1000.000	9.000	GND	L1	10.2	15.1	46.0	
11.892000	30.6	1000.000	9.000	GND	L1	10.6	19.4	50.0	
23.128000	31.5	1000.000	9.000	GND	L1	11.1	18.5	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
0.194000	50.3	1000.000	9.000	GND	N	10.1	13.4	63.7	
0.458000	36.1	1000.000	9.000	GND	N	10.1	20.6	56.7	
1.134000	36.5	1000.000	9.000	GND	N	10.1	19.5	56.0	
2.426000	36.3	1000.000	9.000	GND	N	10.2	19.7	56.0	
4.570000	35.6	1000.000	9.000	GND	N	10.3	20.4	56.0	
12.198000	37.2	1000.000	9.000	GND	N	10.6	22.8	60.0	
13.358000	34.1	1000.000	9.000	GND	N	10.7	25.9	60.0	

Final Measurement Detector 2

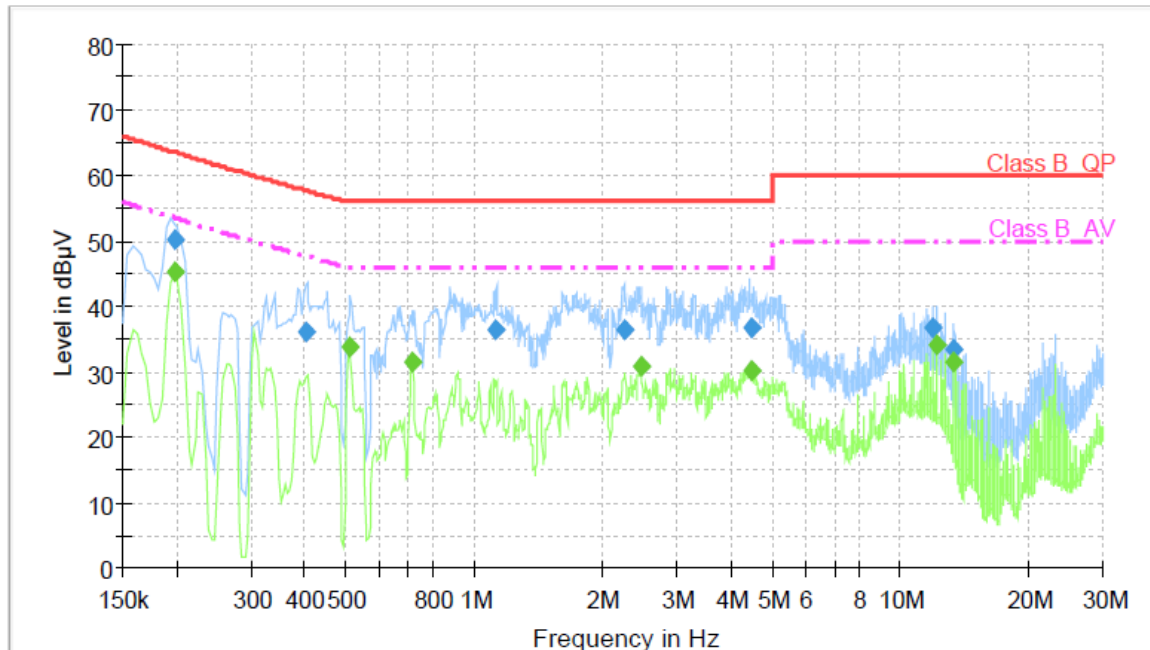
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	44.7	1000.000	9.000	GND	N	10.1	8.8	53.5	
0.510000	34.1	1000.000	9.000	GND	N	10.1	11.9	46.0	
0.714000	31.8	1000.000	9.000	GND	N	10.1	14.2	46.0	
2.466000	30.9	1000.000	9.000	GND	N	10.2	15.1	46.0	
4.226000	30.2	1000.000	9.000	GND	N	10.3	15.8	46.0	
11.954000	33.8	1000.000	9.000	GND	N	10.6	16.2	50.0	
13.358000	31.9	1000.000	9.000	GND	N	10.7	18.1	50.0	

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



◆ Operating condition: 1 920 × 1 080 / 60 Hz (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
0.198000	50.2	1000.000	9.000	GND	L1	10.1	13.3	63.5	
0.404000	36.2	1000.000	9.000	GND	L1	10.1	21.5	57.7	
1.120000	36.3	1000.000	9.000	GND	L1	10.1	19.7	56.0	
2.252000	36.5	1000.000	9.000	GND	L1	10.2	19.5	56.0	
4.464000	36.7	1000.000	9.000	GND	L1	10.3	19.3	56.0	
11.892000	36.7	1000.000	9.000	GND	L1	10.6	23.3	60.0	
13.360000	33.5	1000.000	9.000	GND	L1	10.7	26.5	60.0	

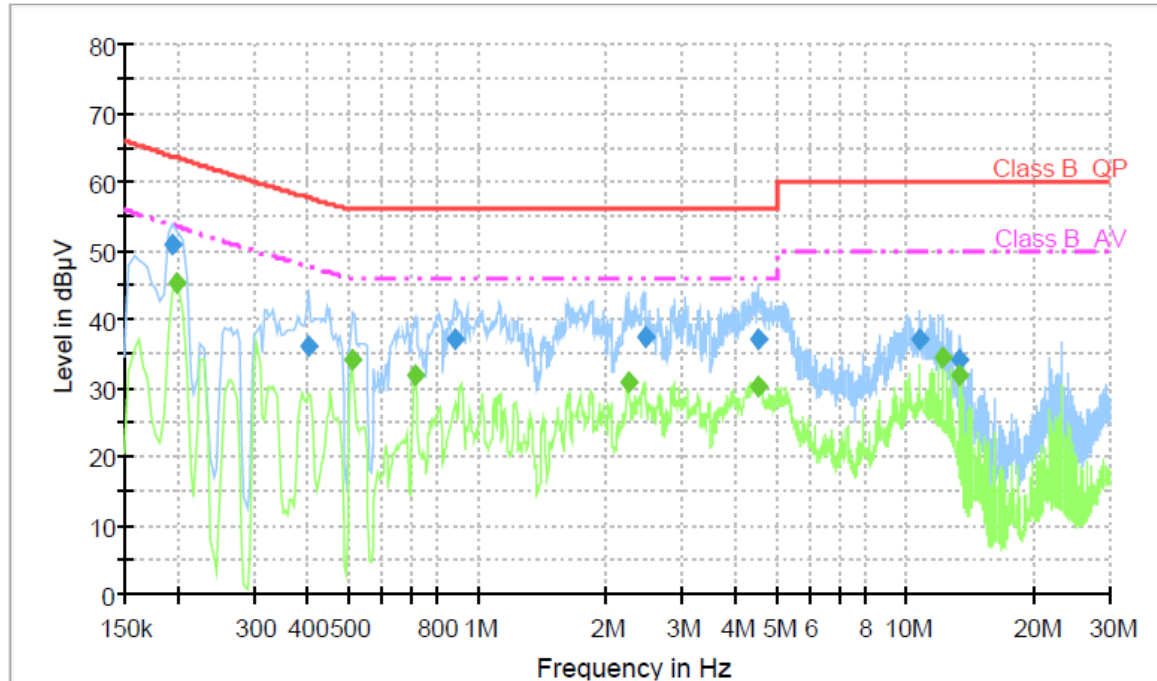
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	45.3	1000.000	9.000	GND	L1	10.1	8.2	53.5	
0.512000	33.6	1000.000	9.000	GND	L1	10.1	12.4	46.0	
0.716000	31.6	1000.000	9.000	GND	L1	10.1	14.4	46.0	
2.468000	30.7	1000.000	9.000	GND	L1	10.2	15.3	46.0	
4.488000	30.1	1000.000	9.000	GND	L1	10.3	15.9	46.0	
12.196000	33.9	1000.000	9.000	GND	L1	10.7	16.1	50.0	
13.360000	31.3	1000.000	9.000	GND	L1	10.7	18.7	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
0.194000	50.8	1000.000	9.000	GND	N	10.1	12.9	63.7	
0.402000	36.0	1000.000	9.000	GND	N	10.1	21.7	57.7	
0.886000	37.0	1000.000	9.000	GND	N	10.1	19.0	56.0	
2.466000	37.3	1000.000	9.000	GND	N	10.2	18.7	56.0	
4.530000	37.1	1000.000	9.000	GND	N	10.3	18.9	56.0	
10.794000	37.0	1000.000	9.000	GND	N	10.5	23.0	60.0	
13.418000	33.9	1000.000	9.000	GND	N	10.7	26.1	60.0	

Final Measurement Detector 2

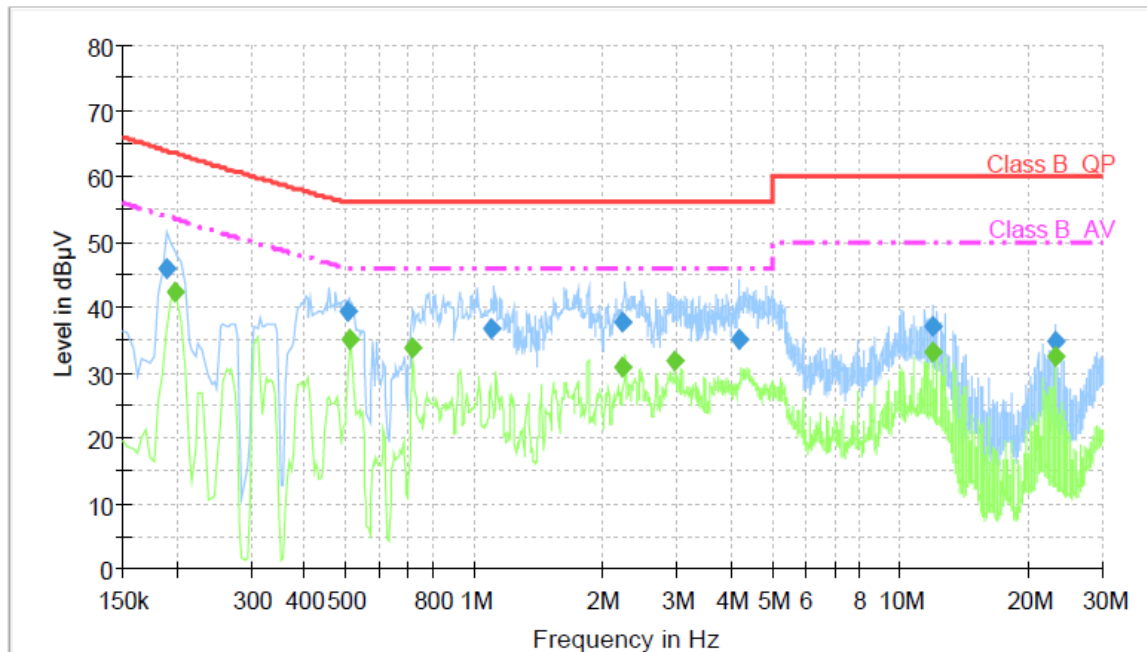
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	45.1	1000.000	9.000	GND	N	10.1	8.4	53.5	
0.510000	34.1	1000.000	9.000	GND	N	10.1	11.9	46.0	
0.714000	31.8	1000.000	9.000	GND	N	10.1	14.2	46.0	
2.262000	30.9	1000.000	9.000	GND	N	10.2	15.1	46.0	
4.530000	30.2	1000.000	9.000	GND	N	10.3	15.8	46.0	
12.198000	34.3	1000.000	9.000	GND	N	10.6	15.7	50.0	
13.358000	31.7	1000.000	9.000	GND	N	10.7	18.3	50.0	

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



◆ Operating condition: 1 920 × 1 080 / 60 Hz (HDMI: 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
0.190000	46.0	1000.000	9.000	GND	L1	10.1	17.9	63.9	
0.508000	39.2	1000.000	9.000	GND	L1	10.1	16.8	56.0	
1.100000	36.8	1000.000	9.000	GND	L1	10.1	19.2	56.0	
2.244000	37.7	1000.000	9.000	GND	L1	10.2	18.3	56.0	
4.200000	35.1	1000.000	9.000	GND	L1	10.3	20.9	56.0	
11.892000	36.9	1000.000	9.000	GND	L1	10.6	23.1	60.0	
23.128000	34.8	1000.000	9.000	GND	L1	11.1	25.2	60.0	

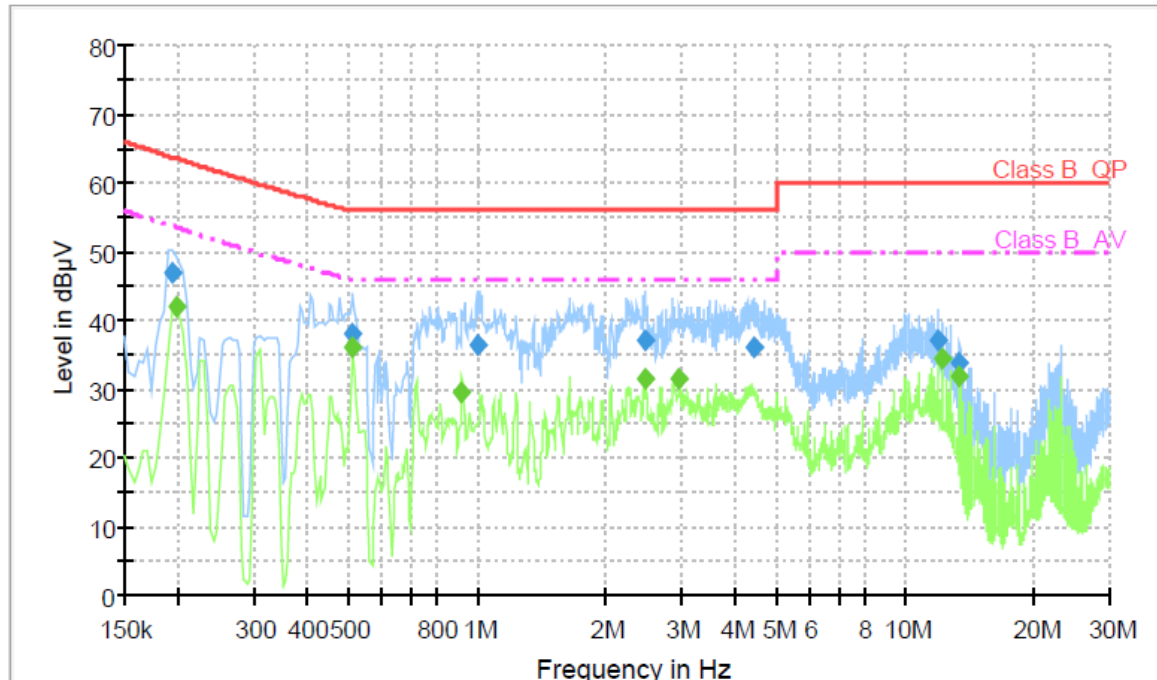
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	42.3	1000.000	9.000	GND	L1	10.1	11.2	53.5	
0.512000	35.2	1000.000	9.000	GND	L1	10.1	10.8	46.0	
0.720000	33.8	1000.000	9.000	GND	L1	10.1	12.2	46.0	
2.244000	30.8	1000.000	9.000	GND	L1	10.2	15.2	46.0	
2.956000	31.7	1000.000	9.000	GND	L1	10.2	14.3	46.0	
11.952000	33.2	1000.000	9.000	GND	L1	10.7	16.8	50.0	
23.128000	32.6	1000.000	9.000	GND	L1	11.1	17.4	50.0	

< Fig 12. Conducted emission result (Live line) >



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.194000	47.0	1000.000	9.000	GND	N	10.1	16.7	63.7	
0.514000	38.1	1000.000	9.000	GND	N	10.1	17.9	56.0	
1.002000	36.3	1000.000	9.000	GND	N	10.1	19.7	56.0	
2.466000	37.2	1000.000	9.000	GND	N	10.2	18.8	56.0	
4.414000	36.0	1000.000	9.000	GND	N	10.3	20.0	56.0	
11.890000	37.2	1000.000	9.000	GND	N	10.6	22.8	60.0	
13.418000	33.9	1000.000	9.000	GND	N	10.7	26.1	60.0	

Final Measurement Detector 2

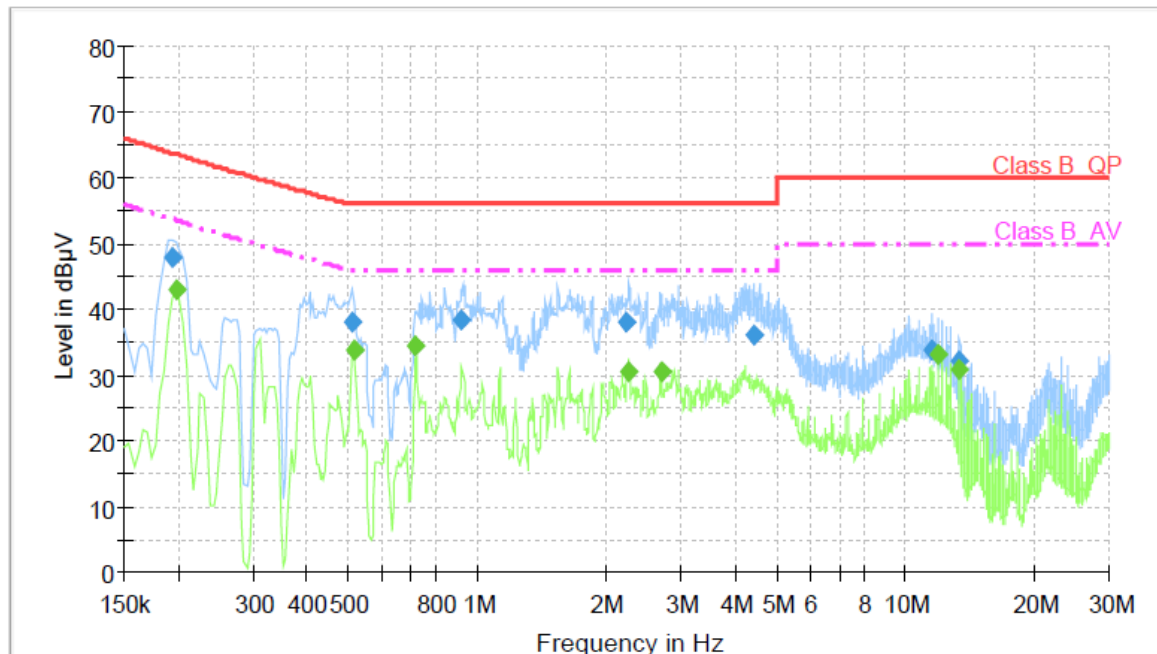
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	42.0	1000.000	9.000	GND	N	10.1	11.5	53.5	
0.514000	36.1	1000.000	9.000	GND	N	10.1	9.9	46.0	
0.922000	29.4	1000.000	9.000	GND	N	10.1	16.6	46.0	
2.466000	31.4	1000.000	9.000	GND	N	10.2	14.6	46.0	
2.958000	31.6	1000.000	9.000	GND	N	10.2	14.4	46.0	
12.198000	34.3	1000.000	9.000	GND	N	10.6	15.7	50.0	
13.358000	31.8	1000.000	9.000	GND	N	10.7	18.2	50.0	

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



◆ Operating condition: 1 920 × 1 080 / 60 Hz (DP: 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
0.194000	48.0	1000.000	9.000	GND	L1	10.1	15.7	63.7	
0.512000	38.0	1000.000	9.000	GND	L1	10.1	18.0	56.0	
0.920000	38.4	1000.000	9.000	GND	L1	10.1	17.6	56.0	
2.244000	37.9	1000.000	9.000	GND	L1	10.2	18.1	56.0	
4.448000	36.2	1000.000	9.000	GND	L1	10.3	19.8	56.0	
11.584000	33.8	1000.000	9.000	GND	L1	10.6	26.2	60.0	
13.420000	32.1	1000.000	9.000	GND	L1	10.8	27.9	60.0	

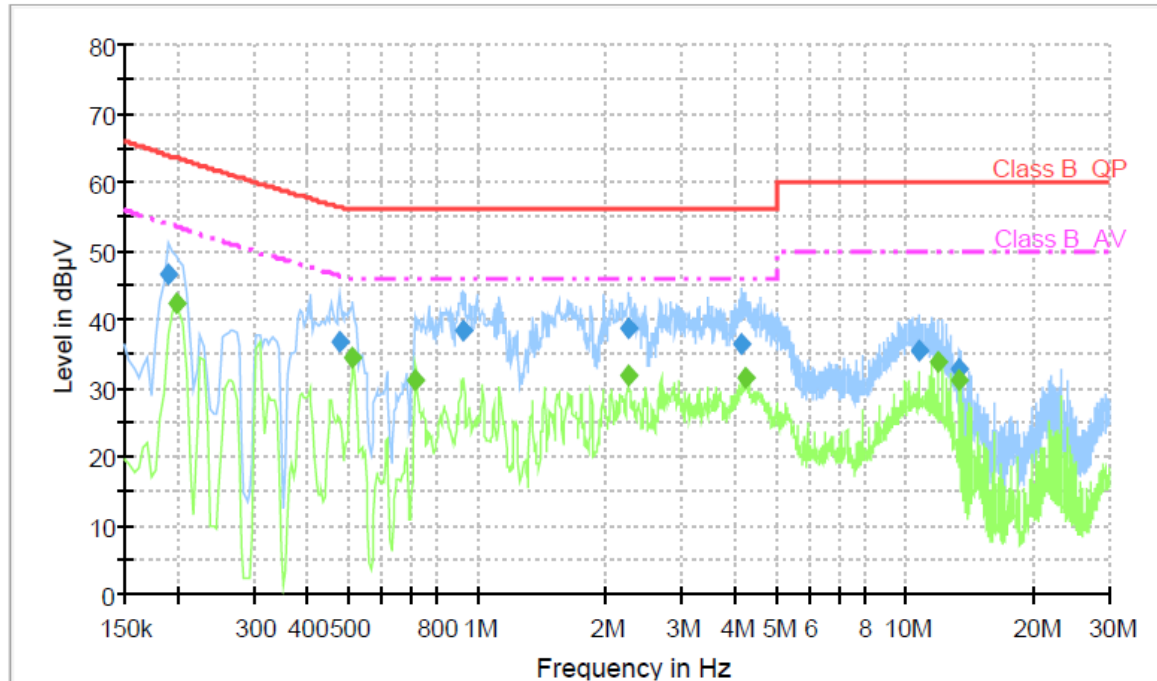
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	42.9	1000.000	9.000	GND	L1	10.1	10.6	53.5	
0.516000	33.9	1000.000	9.000	GND	L1	10.1	12.1	46.0	
0.720000	34.5	1000.000	9.000	GND	L1	10.1	11.5	46.0	
2.248000	30.5	1000.000	9.000	GND	L1	10.2	15.5	46.0	
2.692000	30.4	1000.000	9.000	GND	L1	10.2	15.6	46.0	
11.892000	33.0	1000.000	9.000	GND	L1	10.6	17.0	50.0	
13.420000	30.8	1000.000	9.000	GND	L1	10.8	19.2	50.0	

< Fig 14. 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
0.190000	46.4	1000.000	9.000	GND	N	10.1	17.5	63.9	
0.478000	36.6	1000.000	9.000	GND	N	10.1	19.7	56.3	
0.930000	38.4	1000.000	9.000	GND	N	10.1	17.6	56.0	
2.262000	38.7	1000.000	9.000	GND	N	10.2	17.3	56.0	
4.158000	36.3	1000.000	9.000	GND	N	10.3	19.7	56.0	
10.790000	35.4	1000.000	9.000	GND	N	10.5	24.6	60.0	
13.358000	32.9	1000.000	9.000	GND	N	10.7	27.1	60.0	

Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.198000	42.5	1000.000	9.000	GND	N	10.1	11.0	53.5	
0.514000	34.5	1000.000	9.000	GND	N	10.1	11.5	46.0	
0.718000	31.0	1000.000	9.000	GND	N	10.1	15.0	46.0	
2.254000	31.8	1000.000	9.000	GND	N	10.2	14.2	46.0	
4.222000	31.4	1000.000	9.000	GND	N	10.3	14.6	46.0	
11.894000	33.7	1000.000	9.000	GND	N	10.6	16.3	50.0	
13.358000	31.1	1000.000	9.000	GND	N	10.7	18.9	50.0	

< Fig 15. Conducted emission result (Neutral line) >



6. Radiated Emission

6.1 Operating Environment

Temperature : 25.0 °C
Relative Humidity : 35.0 % R.H.

6.2 Test Set-up

A preliminary scan with peak mode was performed in the semi anechoic chamber and found frequency for test site. The formal radiated emission was measured at 10 m distance open area test site and 3 m distance 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(Open area test site)	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 10 m, Vertical)	± 4.03 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (30 MHz ~ 300 MHz, 10 m, Horizontal)	± 3.96 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 10 m, Vertical)	± 4.01 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 10 m, Horizontal)	± 3.88 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
■ - ESCS30	Rohde & Schwarz	EMI Test Receiver	839809/003	12. 10. 2011
■ - HK116	Rohde & Schwarz	Biconical Antenna	832639/007	03. 15. 2012
■ - HL223	Rohde & Schwarz	Log Periodic Antenna	835998/004	03. 15. 2012
■ - HD100	HD GmbH	Position Controller	100/692/01	N/A
■ - DS415S	HD GmbH	Turntable	415/657/01	N/A
■ - MA240	HD GmbH	Antenna Mast	240/565/01	N/A
■ - ESIB26	Rohde & Schwarz	EMI Test Receiver	830482/010	12. 11. 2011
■ - BBHA9120D	Schwarzbeck	Horn Antenna	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	1258942	11. 12. 2011

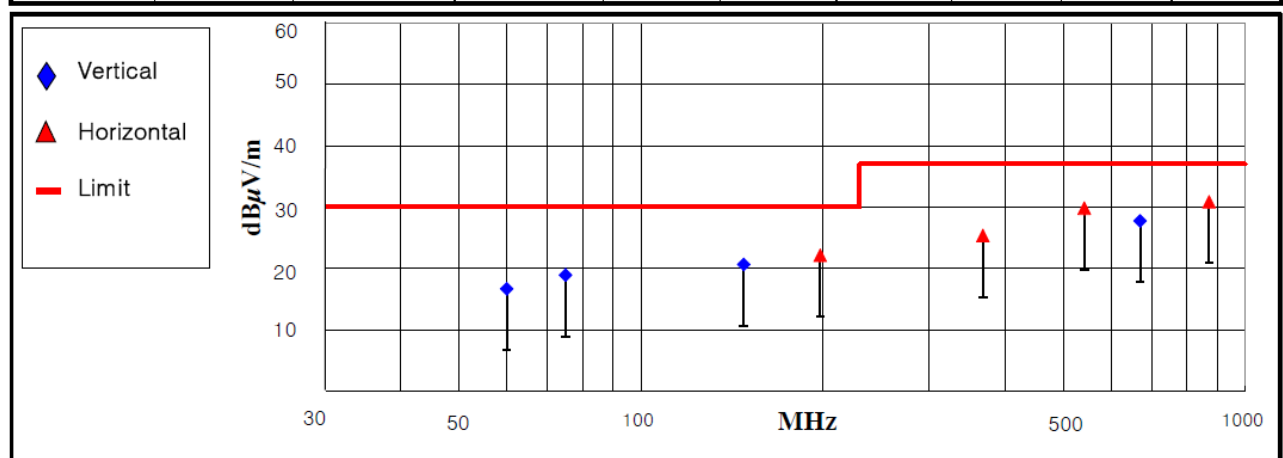


6.6 Test data for Radiated Emission

- Test Date : September 27 ~ 28, 2011
- Resolution Bandwidth : 120 kHz / 1 MHz
- Measurement Distance : 10 m / 3 m
- Frequency Range (Detector mode) : 30 MHz ~ 1 GHz (Quasi-peak detector mode)
1 GHz ~ 5 GHz (Average detector mode, Peak detector mode)
- 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)

Frequency (MHz)	Measurement Level				Limit (dBμV/m)	Margin (dB)	Positioning System		
	Reading Value(dBμV)	Antenna Factor(dB/m)	Cable Loss(dB)	Test Result (dBμV/m)			Pol. (H/V)	Height (cm)	Angle (°)
59.94	6.68	8.05	1.91	16.64	30.00	13.36	V	100	115
74.99	8.14	8.58	2.16	18.88	30.00	11.12	V	112	154
147.95	5.54	11.94	3.14	20.62	30.00	9.38	V	100	4
198.04	3.98	14.42	3.74	22.14	30.00	7.86	H	119	86
368.12	4.90	15.16	5.29	25.35	37.00	11.65	H	104	350
541.64	5.05	18.15	6.61	29.81	37.00	7.19	H	200	74
669.78	0.38	19.84	7.52	27.74	37.00	9.26	V	100	355
871.62	0.18	21.84	8.82	30.84	37.00	6.16	H	100	249

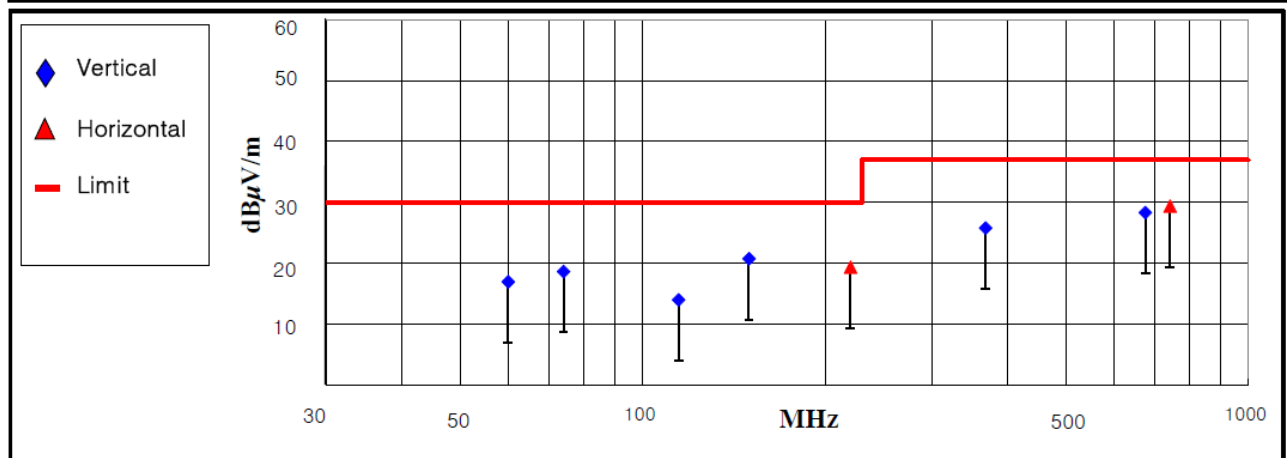


< Fig 16. Radiated emission result (30 MHz ~ 1 000 MHz) >



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

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)	(°)
59.94	6.99	8.05	1.91	16.95	30.00	13.05	V	100	94
73.95	7.90	8.60	2.14	18.64	30.00	11.36	V	114	145
114.56	0.51	10.75	2.72	13.98	30.00	16.02	V	100	320
149.68	5.61	11.96	3.17	20.74	30.00	9.26	V	110	16
220.28	1.36	14.03	3.97	19.36	30.00	10.64	H	149	358
368.14	5.32	15.16	5.29	25.77	37.00	11.23	V	100	7
675.63	0.83	19.91	7.56	28.30	37.00	8.70	V	100	350
742.47	0.73	20.68	8.00	29.41	37.00	7.59	H	154	188

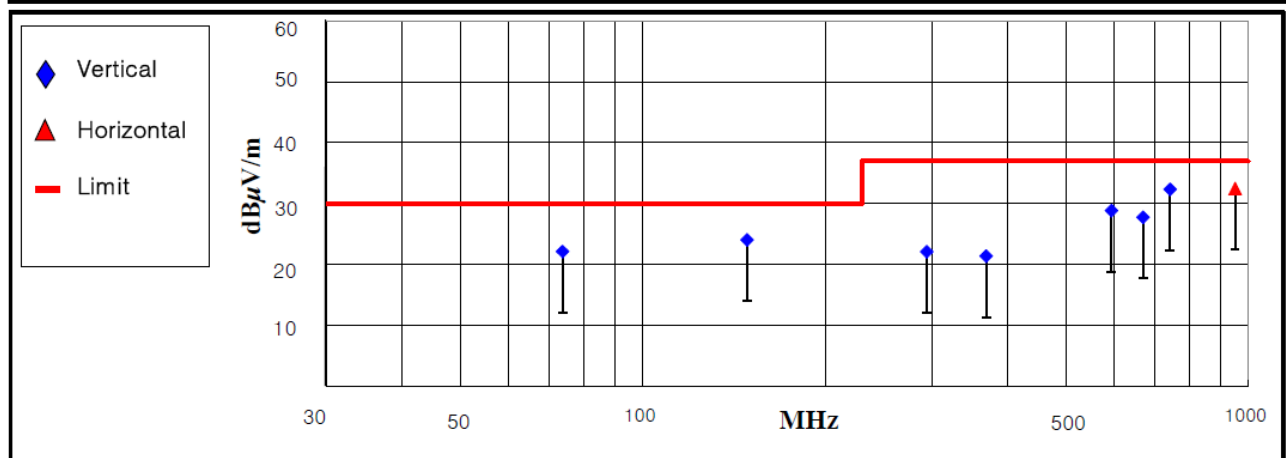


< Fig 17. Radiated emission result (30 MHz ~ 1 000 MHz) >



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

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)	(°)
73.71	11.36	8.61	2.14	22.11	30.00	7.89	V	100	124
148.65	8.95	11.94	3.15	24.04	30.00	5.96	V	100	283
294.39	0.22	17.19	4.67	22.08	37.00	14.92	V	105	301
368.96	0.88	15.19	5.29	21.36	37.00	15.64	V	118	354
593.99	2.95	18.92	6.98	28.85	37.00	8.15	V	103	355
669.81	0.38	19.84	7.52	27.74	37.00	9.26	V	102	346
742.56	3.67	20.68	8.00	32.35	37.00	4.65	V	100	358
950.44	0.25	22.89	9.32	32.46	37.00	4.54	H	111	201

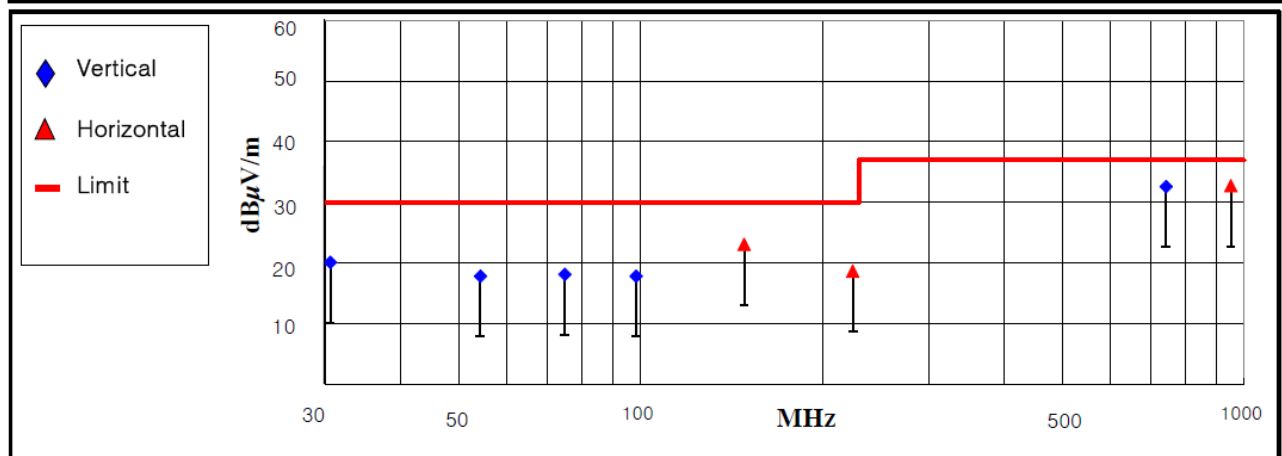


< Fig 18. Radiated emission result (30 MHz ~ 1 000 MHz) >



◆ Operating Condition: 1 920 × 1 080 / 60 Hz (DP: Digital)

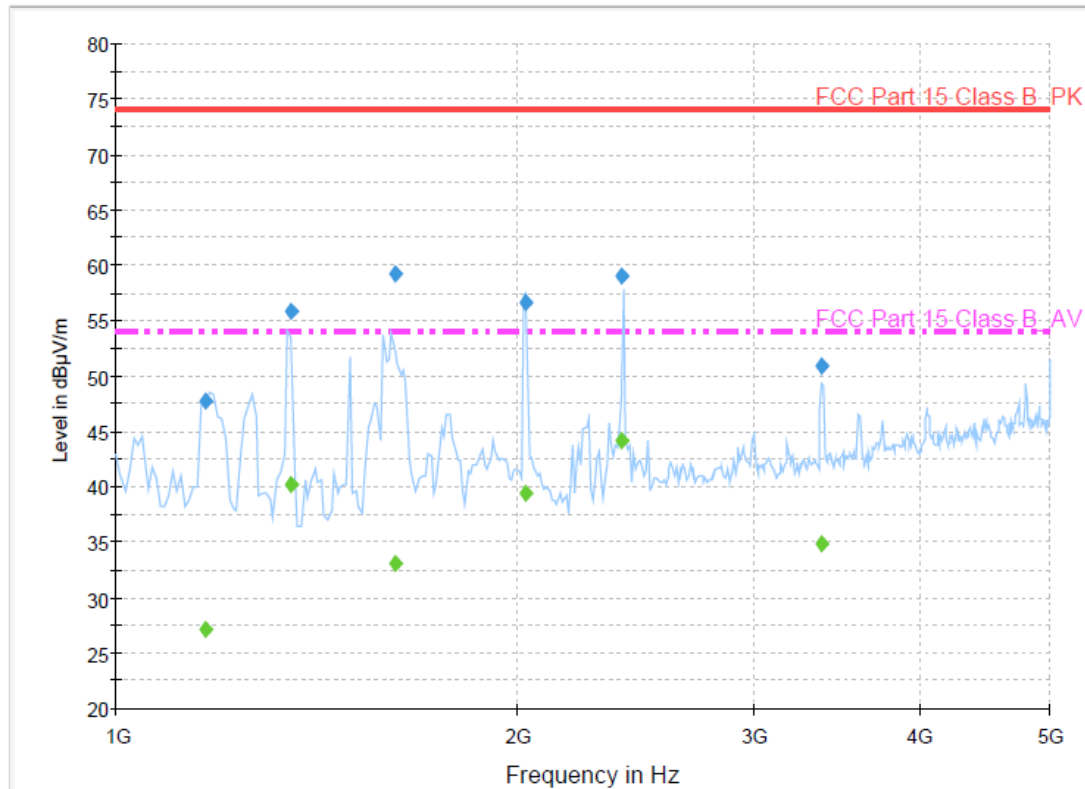
Frequency (MHz)	Measurement Level				Limit (dBμ V/m)	Margin (dB)	Positioning System		
	Reading	Antenna	Cable	Test Result			Pol.	Height	Angle
	Value(dBμ V)	Factor(dB/m)	Loss(dB)	(dBμ V/m)			(H/V)	(cm)	(°)
30.58	5.28	13.53	1.33	20.14	30.00	9.86	V	100	161
54.21	7.25	8.79	1.80	17.84	30.00	12.16	V	100	324
74.85	7.41	8.58	2.16	18.15	30.00	11.85	V	104	100
98.26	6.00	9.33	2.51	17.84	30.00	12.16	V	105	336
148.38	7.99	11.94	3.15	23.08	30.00	6.92	H	200	301
224.56	0.72	13.93	4.01	18.66	30.00	11.34	H	145	334
742.48	3.91	20.68	8.00	32.59	37.00	4.41	V	100	358
950.43	0.55	22.89	9.32	32.76	37.00	4.24	H	100	132



< Fig 19. Radiated emission result (30 MHz ~ 1 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)
Green marker: Average detector, Blue marker: 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)
1167.320641	47.6	1000.0	1000.000	100.0	V	342.0	-14.2	26.4	74.0
1350.489379	55.9	1000.0	1000.000	100.0	V	17.0	-13.4	18.1	74.0
1616.218437	59.3	1000.0	1000.000	100.0	H	151.0	-12.6	14.7	74.0
2026.652104	56.5	1000.0	1000.000	198.0	H	305.0	-11.3	17.5	74.0
2394.605611	59.0	1000.0	1000.000	100.0	V	132.0	-9.4	15.0	74.0
3378.145491	50.8	1000.0	1000.000	100.0	V	354.0	-5.4	23.2	74.0

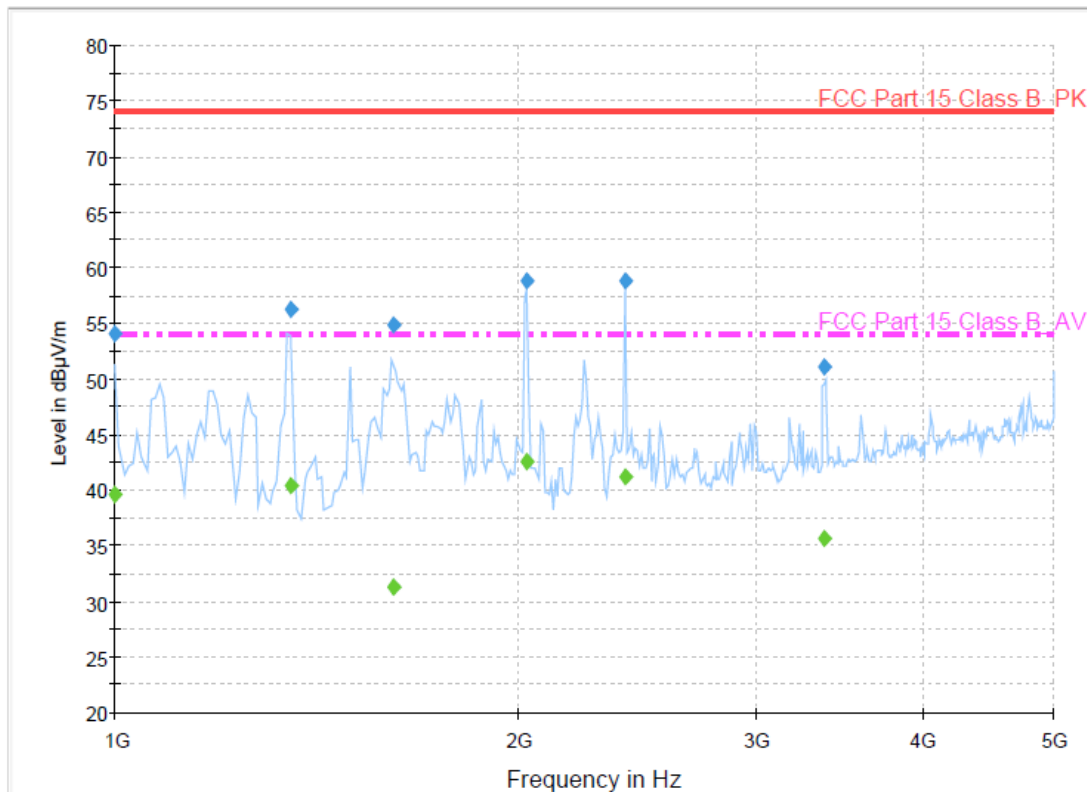
Final Result 2

Frequency (MHz)	CAverage (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1167.320641	27.1	1000.0	1000.000	100.0	V	342.0	-14.2	26.9	54.0
1350.489379	40.2	1000.0	1000.000	100.0	V	17.0	-13.4	13.8	54.0
1616.218437	33.1	1000.0	1000.000	100.0	H	151.0	-12.6	20.9	54.0
2026.652104	39.4	1000.0	1000.000	198.0	H	305.0	-11.3	14.6	54.0
2394.605611	44.1	1000.0	1000.000	100.0	V	132.0	-9.4	9.9	54.0
3378.145491	34.9	1000.0	1000.000	100.0	V	354.0	-5.4	19.1	54.0

< Fig 20. Radiated emission result (1 000 MHz ~ 5 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (DVI: Digital)
Green marker: Average detector, Blue marker: 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	54.1	1000.0	1000.000	100.0	V	141.0	-14.5	19.9	74.0
1350.489379	56.2	1000.0	1000.000	100.0	V	22.0	-13.4	17.8	74.0
1613.418437	54.8	1000.0	1000.000	100.0	H	152.0	-12.6	19.2	74.0
2024.652104	58.9	1000.0	1000.000	166.0	H	307.0	-11.3	15.1	74.0
2400.189579	58.7	1000.0	1000.000	100.0	V	138.0	-9.4	15.3	74.0
3372.561523	51.2	1000.0	1000.000	100.0	V	346.0	-5.4	22.8	74.0

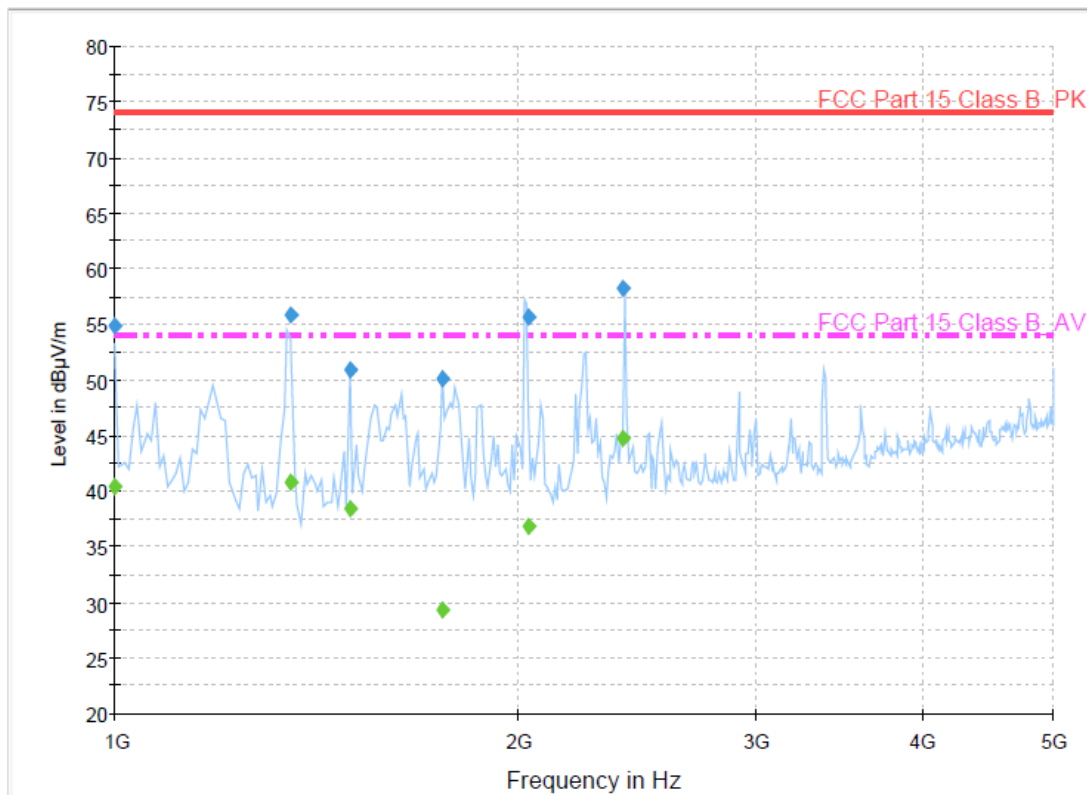
Final Result 2

Frequency (MHz)	CAverage (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.000000	39.6	1000.0	1000.000	100.0	V	141.0	-14.5	14.4	54.0
1350.489379	40.4	1000.0	1000.000	100.0	V	22.0	-13.4	13.6	54.0
1613.418437	31.3	1000.0	1000.000	100.0	H	152.0	-12.6	22.7	54.0
2024.652104	42.7	1000.0	1000.000	166.0	H	307.0	-11.3	11.3	54.0
2400.189579	41.1	1000.0	1000.000	100.0	V	138.0	-9.4	12.9	54.0
3372.561523	35.7	1000.0	1000.000	100.0	V	346.0	-5.4	18.3	54.0

< Fig 21. Radiated emission result (1 000 MHz ~ 5 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI: Digital)
Green marker: Average detector, Blue marker: 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	54.8	1000.0	1000.000	100.0	V	124.0	-14.5	19.2	74.0
1350.489379	55.9	1000.0	1000.000	100.0	V	17.0	-13.4	18.1	74.0
1500.393988	50.9	1000.0	1000.000	199.0	V	0.0	-13.2	23.1	74.0
1754.907014	50.2	1000.0	1000.000	100.0	V	22.0	-12.2	23.8	74.0
2030.636072	55.7	1000.0	1000.000	199.0	H	303.0	-11.3	18.3	74.0
2394.589579	58.1	1000.0	1000.000	100.0	V	135.0	-9.4	15.9	74.0

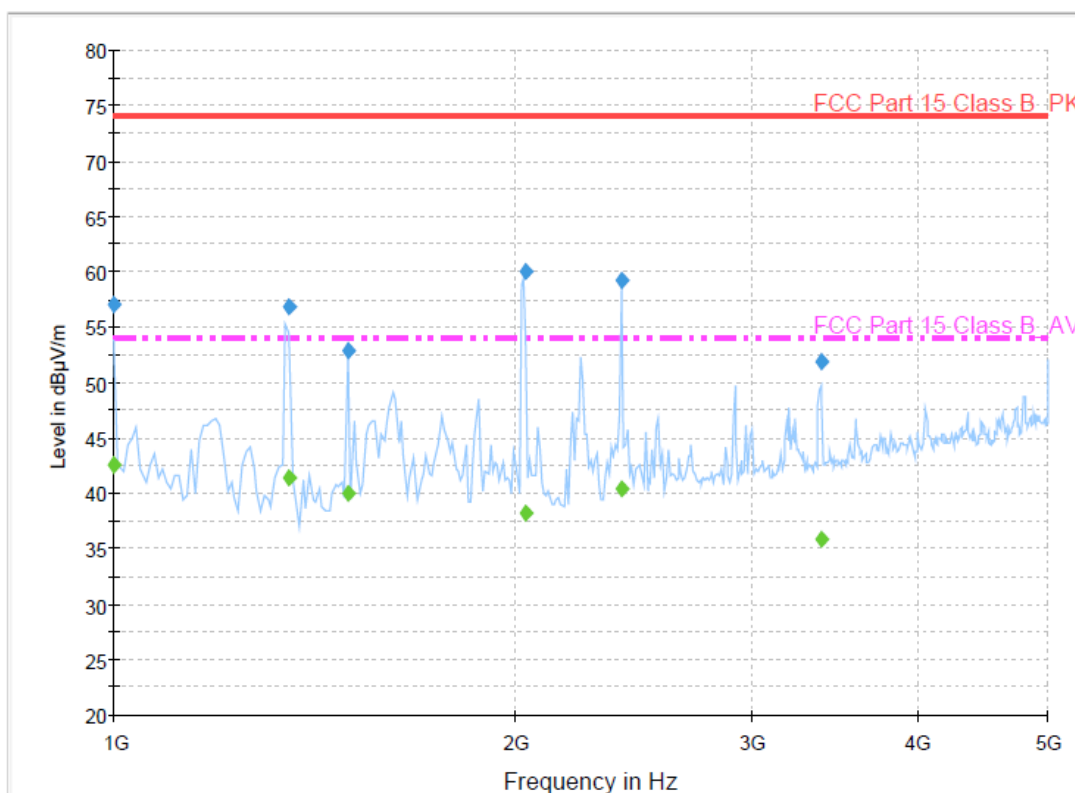
Final Result 2

Frequency (MHz)	CAverage (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.000000	40.4	1000.0	1000.000	100.0	V	124.0	-14.5	13.6	54.0
1350.489379	40.8	1000.0	1000.000	100.0	V	17.0	-13.4	13.2	54.0
1500.393988	38.5	1000.0	1000.000	199.0	V	0.0	-13.2	15.5	54.0
1754.907014	29.2	1000.0	1000.000	100.0	V	22.0	-12.2	24.8	54.0
2030.636072	36.9	1000.0	1000.000	199.0	H	303.0	-11.3	17.1	54.0
2394.589579	44.8	1000.0	1000.000	100.0	V	135.0	-9.4	9.2	54.0

< Fig 22. Radiated emission result (1 000 MHz ~ 5 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (DP: Digital)
Green marker: Average detector, Blue marker: 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	56.9	1000.0	1000.000	100.0	V	143.0	-14.5	17.1	74.0
1351.689379	56.9	1000.0	1000.000	100.0	V	16.0	-13.4	17.1	74.0
1500.393988	52.8	1000.0	1000.000	100.0	V	354.0	-13.2	21.2	74.0
2031.052104	60.1	1000.0	1000.000	126.0	V	5.0	-11.3	13.9	74.0
2400.189579	59.1	1000.0	1000.000	115.0	V	129.0	-9.4	14.9	74.0
3382.961523	51.8	1000.0	1000.000	100.0	V	354.0	-5.4	22.2	74.0

Final Result 2

Frequency (MHz)	CAverage (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1000.000000	42.5	1000.0	1000.000	100.0	V	143.0	-14.5	11.5	54.0
1351.689379	41.3	1000.0	1000.000	100.0	V	16.0	-13.4	12.7	54.0
1500.393988	39.9	1000.0	1000.000	100.0	V	354.0	-13.2	14.1	54.0
2031.052104	38.3	1000.0	1000.000	126.0	V	5.0	-11.3	15.7	54.0
2400.189579	40.4	1000.0	1000.000	115.0	V	129.0	-9.4	13.6	54.0
3382.961523	35.8	1000.0	1000.000	100.0	V	354.0	-5.4	18.2	54.0

< Fig 23. 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 Monitor (Model Name: 55WS10)** was complies with §15.107 and 15.109 of the FCC Rules.