

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: July 28, 2011

Order Number: GETEC-C1-11-180

Test Report Number: GETEC-E3-11-081

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID. : BEJ42LK450UH

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	: 42LK450-UH
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.** BEJ42LK450UH
- **EUT Type** LCD TV/Monitor
- **Model Name** 42LK450-UH
- **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** July 24 ~ 26, 2011
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-11-081
- **Dates of Issue** July 28, 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. LCD TV/Monitor (Model Name: 42LK450-UH)**

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: 42LK450-UH)**
FCC ID.: BEJ42LK450UH

MODELS		42LK450 (42LK450-UB)	47LK450 (47LK450-UB)
		42LK450 (42LK450-UH)	47LK451C (47LK451C-UB)
		42LK451C (42LK451C-UB)	47LK450 (47LK450-UH)
Dimensions (W x H x D)	With stand	1019.0 mm x 698.0 mm x 265.0 mm (40.1 inch x 27.4 inch x 10.4 inch)	1132.0 mm x 762.0 mm x 265.0 mm (44.5 inch x 30.0 inch x 10.4 inch)
	Without stand	1019.0 mm x 631.0 mm x 76.5 mm (40.1 inch x 24.8 inch x 3.0 inch)	1132.0 mm x 695.0 mm x 76.5 mm (44.5 inch x 27.3 inch x 3.0 inch)
Weight	With stand	15.1 kg (33.2 lbs)	19.0 kg (41.8 lbs)
	Without stand	13.4 kg (29.5 lbs)	17.3 kg (38.1 lbs)
Current Value / Power consumption		1.8 A / 180 W	2.3 A / 230 W
Power requirement		AC100 - 240 V ~ 50/60 Hz	
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 Ω	
Environment condition	Operating Temperature	0 - 40 °C	
	Operating Humidity	Less than 80 %	
	Storage Temperature	-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	ATI RV360(9600)	S/N: SN0402017176 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
DVD player	LG Electronics Inc.	LC-954	S/N: 3850R-Z674K FCC ID.: Verification
USB memory stick	SAMSUNG	SUM-PSB4	S/N: TBBB202478F FCC ID.: DoC
TV signal generator	FLUKE	54200M01	S/N: 831011 FCC ID.: Verification
Headset	PHILIPS	SBC HL140	S/N: None. 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
RGB(Analog) cable	Connected to the EUT and PC	1.80 m shielded with two ferrite cores
HDMI/DVI(Digital) cable	Connected to the EUT and PC	2.00 m shielded
RS-232C (Control & service) cable	Connected to the EUT and PC	1.80 m shielded
Audio(RGB/DVI) in cable	Connected to the EUT and PC	1.50 m shielded
AV cable	Connected to the EUT and DVD player	3.00 m shielded
Component cable	Connected to the EUT and DVD player	3.00 m shielded
Headset cable	Connected to the EUT and headset	1.20 m shielded
Antenna cable	Connected to the EUT and TV signal generator	10.00 m shielded with two ferrite cores

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, HDMI/DVI: Digital)

Conducted emission: 1 920 × 1 080 / 60 Hz (RGB: Analog, 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
- Continuous playback of 1 kHz audio file with winamp player
- USB memory stick was connected to the USB port

- Alternate panel and power board

Case #1, Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)

Case #2, Panel: T420HW09 (AU Optronis) / Power board: LGP42-11P (LG Electronics Inc.)

“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

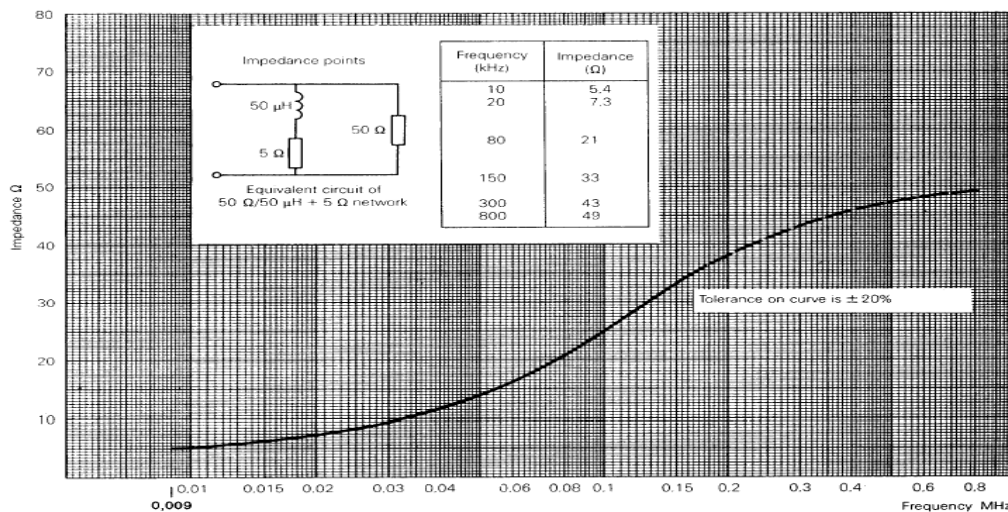


Fig 2. Impedance of LISN



4.3 Radiated Emission

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 : 24 °C
Relative Humidity : 50 % 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

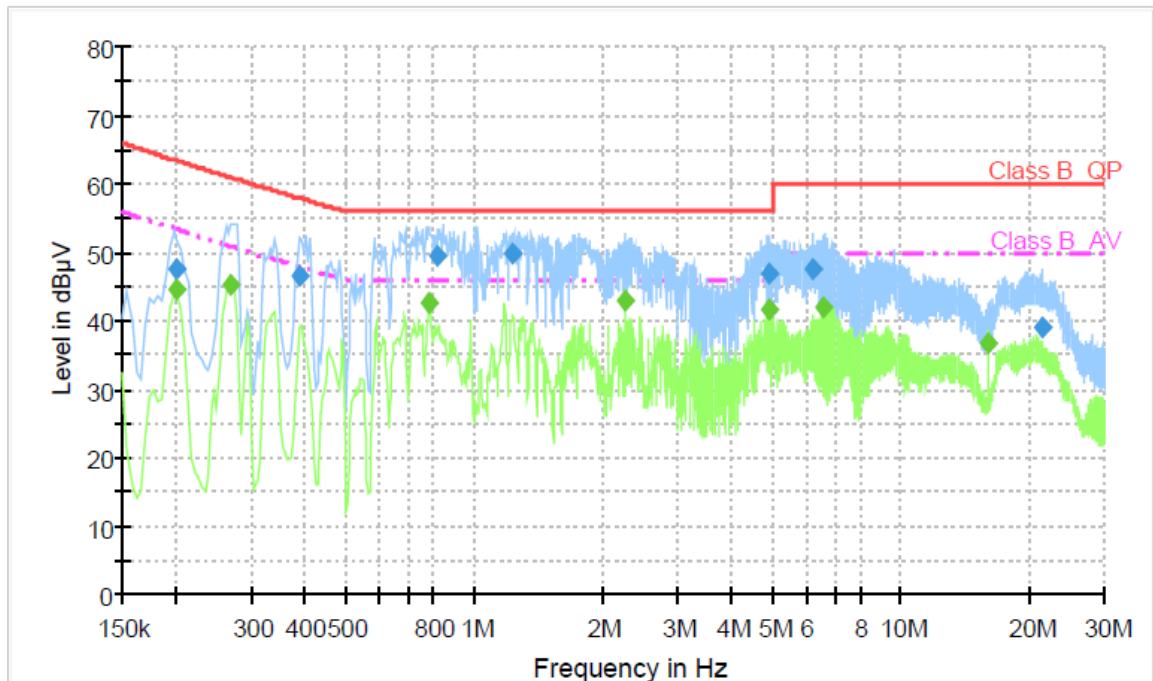
5.6 Test data for Conducted Emission

-. Test Date : July 26, 2011
-. Resolution Bandwidth : 9 kHz
-. Frequency Range : 0.15 MHz ~ 30 MHz



- ◆ Operating condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)
Test case #1: Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)

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
0.202000	47.5	1000.000	9.000	GND	L1	10.1	15.9	63.4	
0.392000	46.7	1000.000	9.000	GND	L1	10.1	11.2	57.9	
0.820000	49.6	1000.000	9.000	GND	L1	10.1	6.4	56.0	
1.232000	49.8	1000.000	9.000	GND	L1	10.1	6.2	56.0	
4.908000	47.0	1000.000	9.000	GND	L1	10.3	9.0	56.0	
6.232000	47.5	1000.000	9.000	GND	L1	10.4	12.5	60.0	
21.312000	39.0	1000.000	9.000	GND	L1	11.1	21.0	60.0	

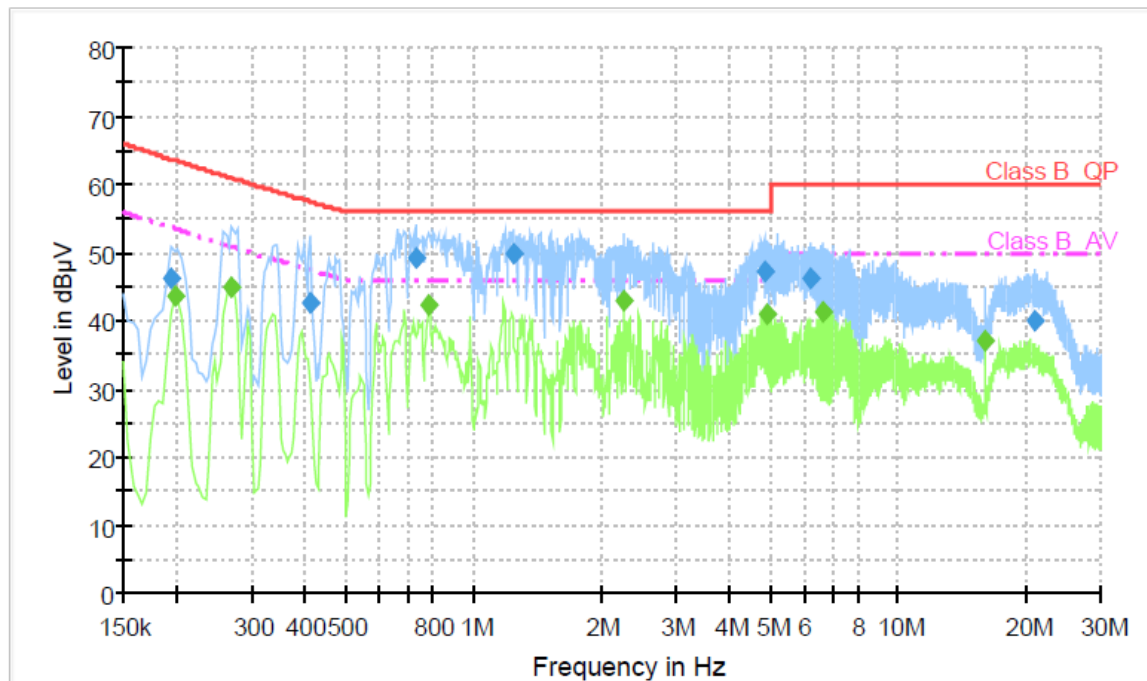
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.200000	44.6	1000.000	9.000	GND	L1	10.1	8.8	53.4	
0.268000	45.3	1000.000	9.000	GND	L1	10.1	5.6	50.9	
0.784000	42.6	1000.000	9.000	GND	L1	10.1	3.4	46.0	
2.256000	43.0	1000.000	9.000	GND	L1	10.2	3.0	46.0	
4.904000	41.5	1000.000	9.000	GND	L1	10.3	4.5	46.0	
6.572000	42.0	1000.000	9.000	GND	L1	10.4	8.0	50.0	
16.008000	36.9	1000.000	9.000	GND	L1	10.9	13.1	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	46.3	1000.000	9.000	GND	N	10.1	17.4	63.7	
0.414000	42.7	1000.000	9.000	GND	N	10.1	14.8	57.5	
0.730000	49.1	1000.000	9.000	GND	N	10.1	6.9	56.0	
1.242000	49.7	1000.000	9.000	GND	N	10.1	6.3	56.0	
4.826000	47.1	1000.000	9.000	GND	N	10.3	8.9	56.0	
6.230000	46.3	1000.000	9.000	GND	N	10.4	13.7	60.0	
20.966000	39.9	1000.000	9.000	GND	N	10.9	20.1	60.0	

Final Measurement Detector 2

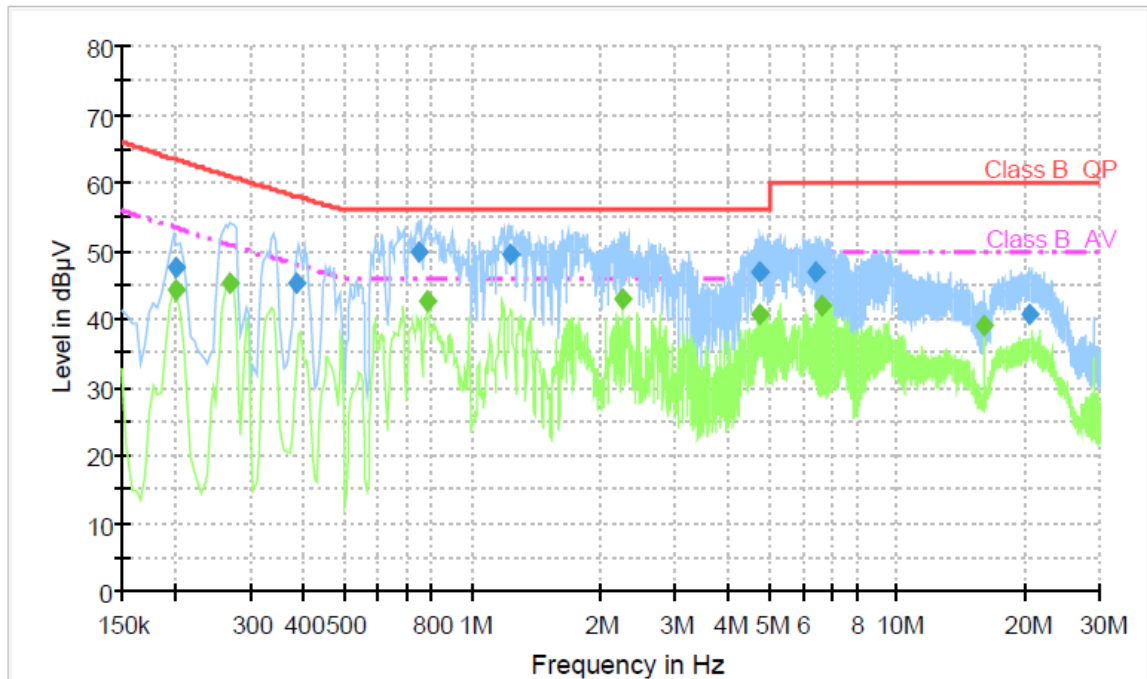
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	43.7	1000.000	9.000	GND	N	10.1	9.8	53.5	
0.270000	45.0	1000.000	9.000	GND	N	10.1	5.9	50.9	
0.786000	42.3	1000.000	9.000	GND	N	10.1	3.7	46.0	
2.258000	43.0	1000.000	9.000	GND	N	10.2	3.0	46.0	
4.898000	41.1	1000.000	9.000	GND	N	10.3	4.9	46.0	
6.634000	41.3	1000.000	9.000	GND	N	10.4	8.7	50.0	
16.006000	37.0	1000.000	9.000	GND	N	10.8	13.0	50.0	

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



- ◆ Operating condition: 1 024 × 768 / 60 Hz (RGB: Analog)
Test case #1: Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)

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
0.202000	47.5	1000.000	9.000	GND	L1	10.1	15.9	63.4	
0.388000	45.3	1000.000	9.000	GND	L1	10.1	12.7	58.0	
0.752000	50.0	1000.000	9.000	GND	L1	10.1	6.0	56.0	
1.232000	49.6	1000.000	9.000	GND	L1	10.1	6.4	56.0	
4.756000	46.7	1000.000	9.000	GND	L1	10.3	9.3	56.0	
6.424000	47.0	1000.000	9.000	GND	L1	10.4	13.0	60.0	
20.424000	40.7	1000.000	9.000	GND	L1	11.2	19.3	60.0	

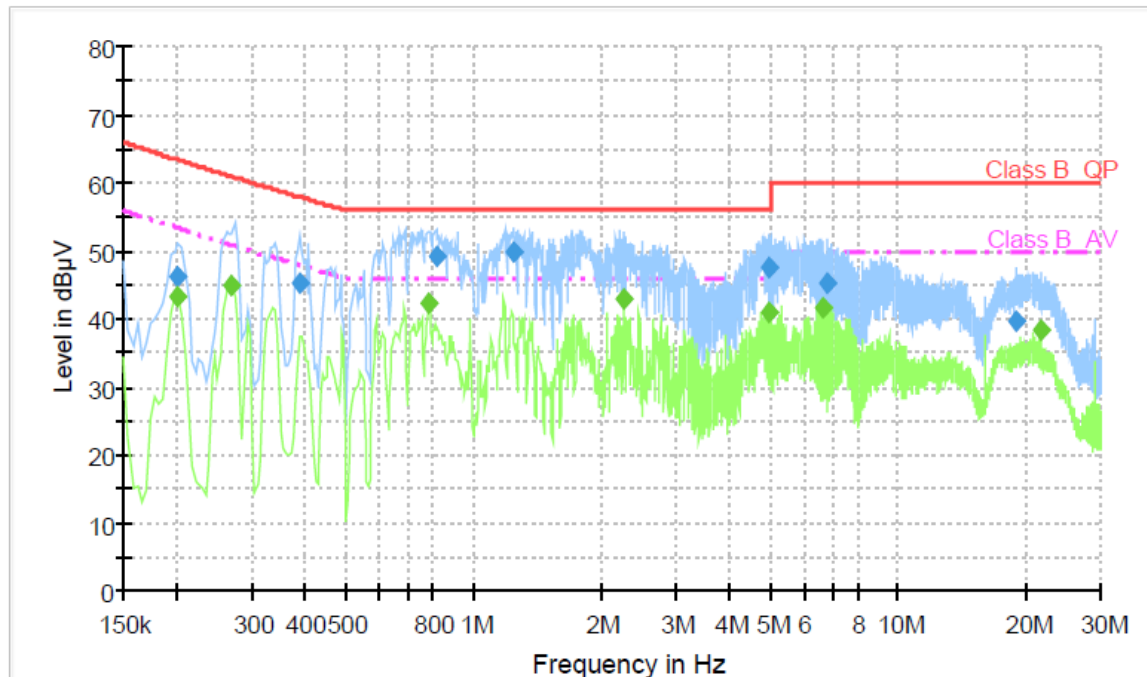
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.202000	44.1	1000.000	9.000	GND	L1	10.1	9.2	53.3	
0.268000	45.3	1000.000	9.000	GND	L1	10.1	5.6	50.9	
0.784000	42.5	1000.000	9.000	GND	L1	10.1	3.5	46.0	
2.256000	43.0	1000.000	9.000	GND	L1	10.2	3.0	46.0	
4.764000	40.8	1000.000	9.000	GND	L1	10.3	5.2	46.0	
6.628000	41.9	1000.000	9.000	GND	L1	10.4	8.1	50.0	
16.008000	39.1	1000.000	9.000	GND	L1	10.9	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
0.202000	46.2	1000.000	9.000	GND	N	10.1	17.2	63.4	
0.390000	45.2	1000.000	9.000	GND	N	10.1	12.7	57.9	
0.818000	49.1	1000.000	9.000	GND	N	10.1	6.9	56.0	
1.242000	49.7	1000.000	9.000	GND	N	10.1	6.3	56.0	
4.962000	47.5	1000.000	9.000	GND	N	10.3	8.5	56.0	
6.762000	45.1	1000.000	9.000	GND	N	10.4	14.9	60.0	
18.998000	39.7	1000.000	9.000	GND	N	10.9	20.4	60.0	

Final Measurement Detector 2

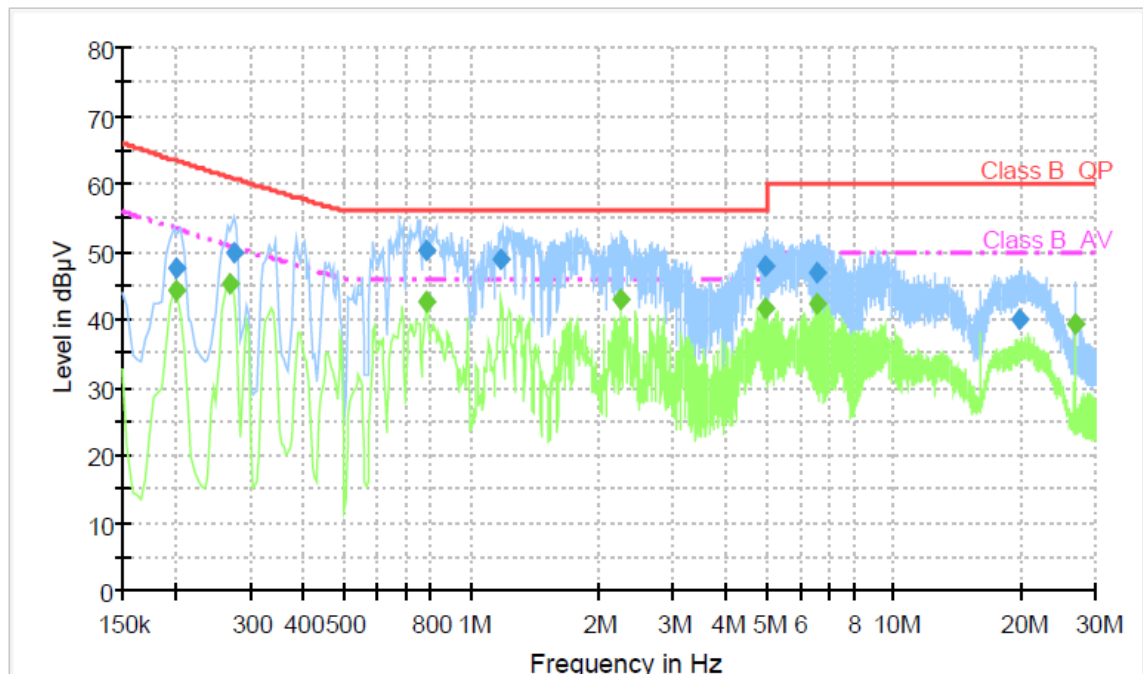
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.202000	43.4	1000.000	9.000	GND	N	10.1	9.9	53.3	
0.270000	45.0	1000.000	9.000	GND	N	10.1	5.9	50.9	
0.786000	42.3	1000.000	9.000	GND	N	10.1	3.7	46.0	
2.254000	43.0	1000.000	9.000	GND	N	10.2	3.0	46.0	
4.962000	41.0	1000.000	9.000	GND	N	10.3	5.0	46.0	
6.630000	41.7	1000.000	9.000	GND	N	10.4	8.3	50.0	
21.666000	38.3	1000.000	9.000	GND	N	10.8	11.8	50.0	

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



- ◆ Operating condition: 640 × 480 / 60 Hz (RGB: Analog)
Test case #1: Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.200000	47.5	1000.000	9.000	GND	L1	10.1	16.0	63.5	
0.276000	49.8	1000.000	9.000	GND	L1	10.1	10.9	60.7	
0.788000	50.1	1000.000	9.000	GND	L1	10.1	5.9	56.0	
1.172000	48.9	1000.000	9.000	GND	L1	10.1	7.1	56.0	
4.940000	47.9	1000.000	9.000	GND	L1	10.3	8.1	56.0	
6.576000	46.9	1000.000	9.000	GND	L1	10.4	13.1	60.0	
19.892000	40.0	1000.000	9.000	GND	L1	11.2	20.0	60.0	

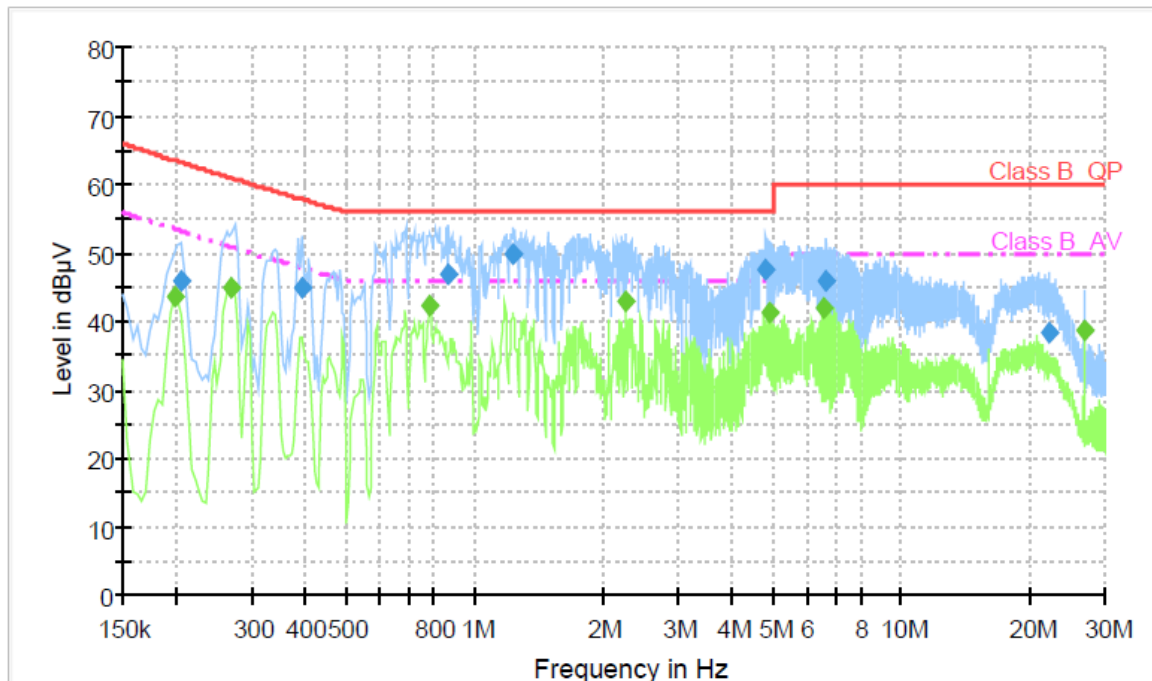
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.202000	44.1	1000.000	9.000	GND	L1	10.1	9.2	53.3	
0.268000	45.3	1000.000	9.000	GND	L1	10.1	5.6	50.9	
0.784000	42.5	1000.000	9.000	GND	L1	10.1	3.5	46.0	
2.256000	43.0	1000.000	9.000	GND	L1	10.2	3.0	46.0	
4.964000	41.6	1000.000	9.000	GND	L1	10.3	4.4	46.0	
6.564000	42.2	1000.000	9.000	GND	L1	10.4	7.8	50.0	
26.664000	39.4	1000.000	9.000	GND	L1	11.1	10.6	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
0.206000	46.0	1000.000	9.000	GND	N	10.1	17.2	63.2	
0.394000	45.0	1000.000	9.000	GND	N	10.1	12.9	57.9	
0.870000	46.8	1000.000	9.000	GND	N	10.1	9.2	56.0	
1.230000	49.9	1000.000	9.000	GND	N	10.1	6.1	56.0	
4.822000	47.5	1000.000	9.000	GND	N	10.3	8.5	56.0	
6.682000	46.0	1000.000	9.000	GND	N	10.4	14.0	60.0	
22.230000	38.4	1000.000	9.000	GND	N	10.8	21.6	60.0	

Final Measurement Detector 2

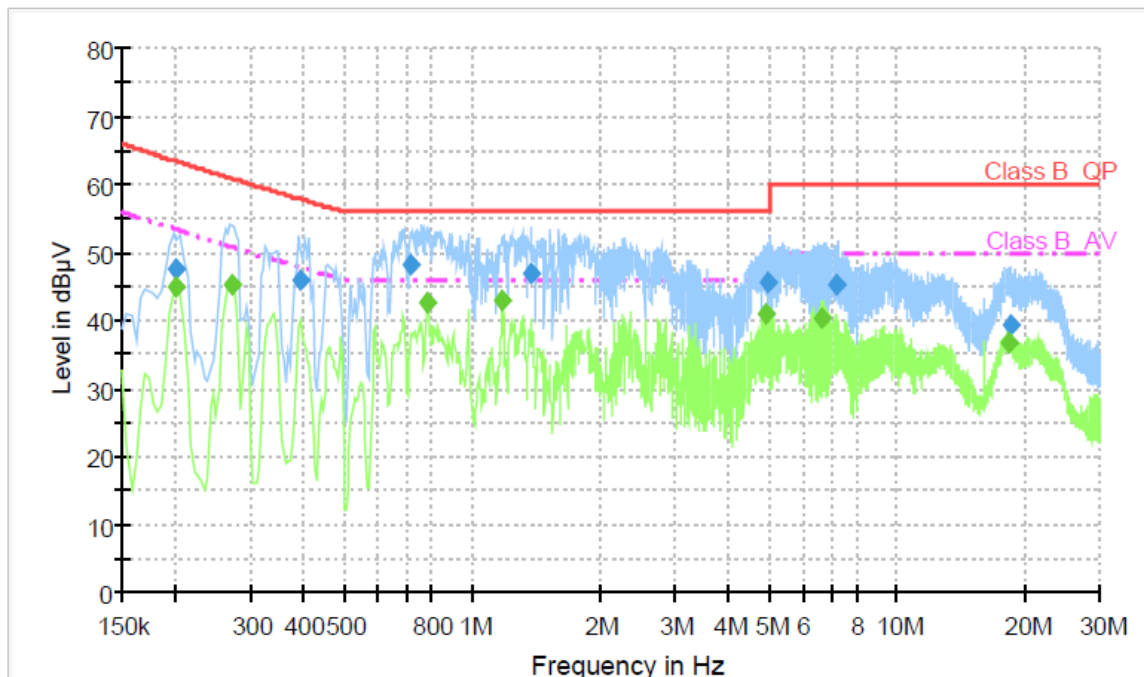
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.198000	43.7	1000.000	9.000	GND	N	10.1	9.8	53.5	
0.270000	45.0	1000.000	9.000	GND	N	10.1	5.9	50.9	
0.786000	42.3	1000.000	9.000	GND	N	10.1	3.7	46.0	
2.258000	43.0	1000.000	9.000	GND	N	10.2	3.0	46.0	
4.898000	41.2	1000.000	9.000	GND	N	10.3	4.8	46.0	
6.562000	41.9	1000.000	9.000	GND	N	10.4	8.1	50.0	
26.666000	38.7	1000.000	9.000	GND	N	10.7	11.3	50.0	

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



- ◆ Operating condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Test case #1: Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)

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
0.202000	47.7	1000.000	9.000	GND	L1	10.1	15.7	63.4	
0.396000	45.9	1000.000	9.000	GND	L1	10.1	11.9	57.8	
0.720000	48.1	1000.000	9.000	GND	L1	10.1	7.9	56.0	
1.376000	47.0	1000.000	9.000	GND	L1	10.1	9.0	56.0	
4.948000	45.5	1000.000	9.000	GND	L1	10.3	10.5	56.0	
7.208000	45.3	1000.000	9.000	GND	L1	10.4	14.7	60.0	
18.440000	39.4	1000.000	9.000	GND	L1	11.1	20.6	60.0	

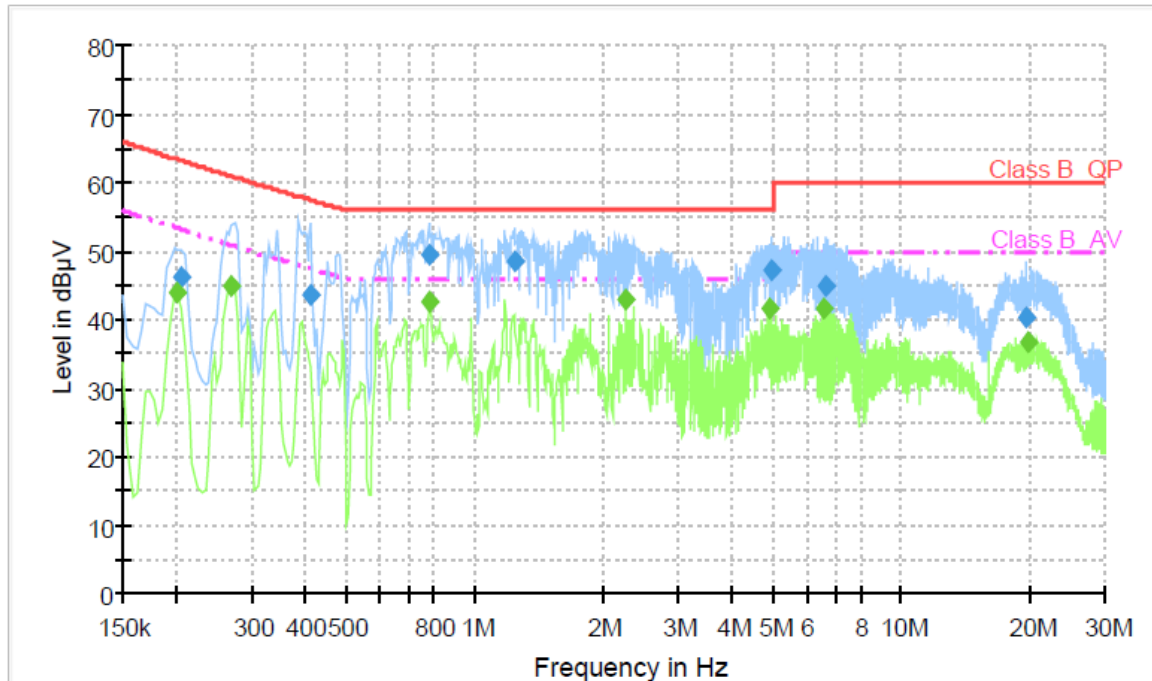
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.200000	44.9	1000.000	9.000	GND	L1	10.1	8.5	53.4	
0.272000	45.2	1000.000	9.000	GND	L1	10.1	5.6	50.8	
0.784000	42.6	1000.000	9.000	GND	L1	10.1	3.4	46.0	
1.176000	43.0	1000.000	9.000	GND	L1	10.1	3.0	46.0	
4.920000	41.1	1000.000	9.000	GND	L1	10.3	4.9	46.0	
6.664000	40.4	1000.000	9.000	GND	L1	10.4	9.6	50.0	
18.252000	36.7	1000.000	9.000	GND	L1	11.1	13.3	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
0.206000	46.3	1000.000	9.000	GND	N	10.1	16.9	63.2	
0.414000	43.6	1000.000	9.000	GND	N	10.1	13.9	57.5	
0.782000	49.7	1000.000	9.000	GND	N	10.1	6.3	56.0	
1.246000	48.7	1000.000	9.000	GND	N	10.1	7.3	56.0	
4.978000	47.2	1000.000	9.000	GND	N	10.3	8.8	56.0	
6.634000	45.1	1000.000	9.000	GND	N	10.4	14.9	60.0	
19.534000	40.4	1000.000	9.000	GND	N	10.9	19.6	60.0	

Final Measurement Detector 2

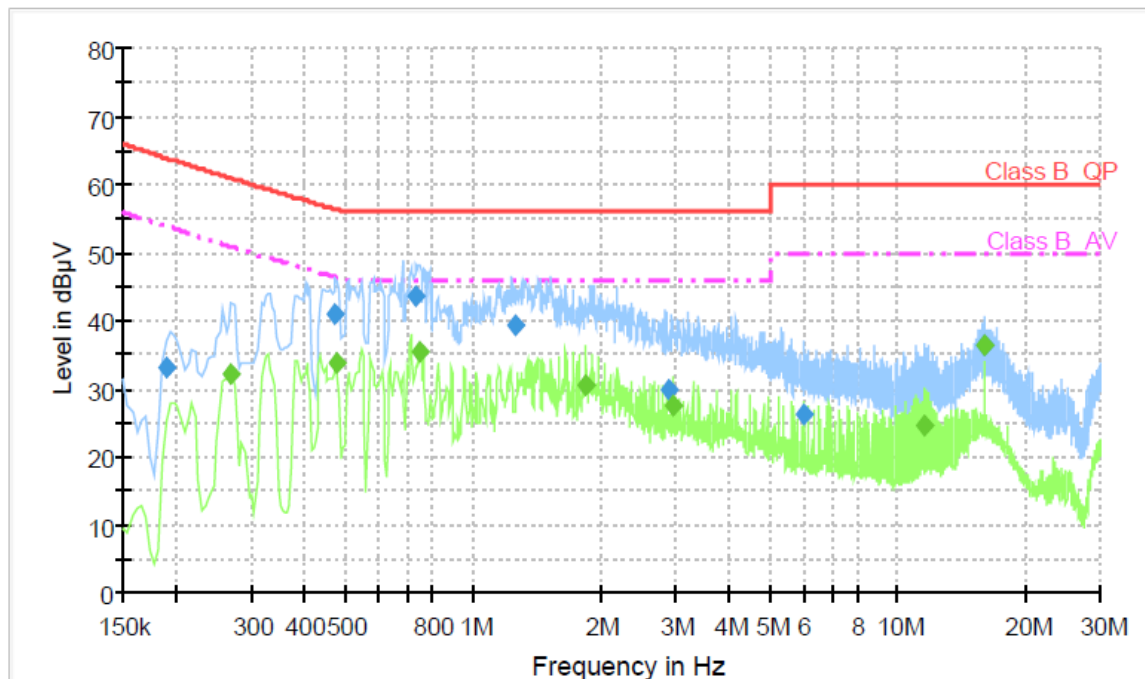
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.202000	43.8	1000.000	9.000	GND	N	10.1	9.5	53.3	
0.270000	45.0	1000.000	9.000	GND	N	10.1	5.9	50.9	
0.786000	42.7	1000.000	9.000	GND	N	10.1	3.3	46.0	
2.258000	43.0	1000.000	9.000	GND	N	10.2	3.0	46.0	
4.910000	41.6	1000.000	9.000	GND	N	10.3	4.4	46.0	
6.582000	41.6	1000.000	9.000	GND	N	10.4	8.4	50.0	
19.730000	36.8	1000.000	9.000	GND	N	10.9	13.2	50.0	

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



- ◆ Operating condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)
Test case #2, Panel: T420HW09 (AU Optonics) / Power board: LGP42-11P (LG Electronics Inc.)

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	33.3	1000.000	9.000	GND	L1	10.1	30.6	63.9	
0.472000	40.9	1000.000	9.000	GND	L1	10.1	15.5	56.4	
0.732000	43.6	1000.000	9.000	GND	L1	10.1	12.4	56.0	
1.264000	39.3	1000.000	9.000	GND	L1	10.1	16.7	56.0	
2.884000	29.7	1000.000	9.000	GND	L1	10.2	26.3	56.0	
6.032000	26.1	1000.000	9.000	GND	L1	10.4	33.9	60.0	
16.008000	36.5	1000.000	9.000	GND	L1	10.9	23.5	60.0	

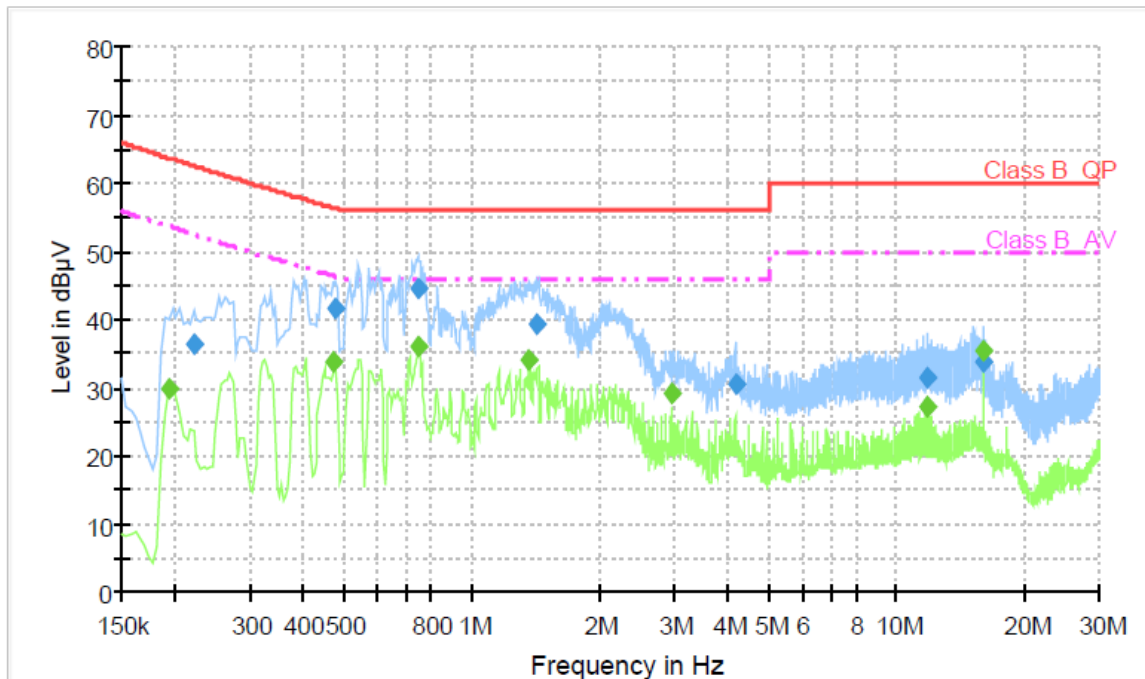
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.268000	32.1	1000.000	9.000	GND	L1	10.1	18.8	50.9	
0.476000	33.7	1000.000	9.000	GND	L1	10.1	12.7	46.4	
0.748000	35.4	1000.000	9.000	GND	L1	10.1	10.6	46.0	
1.848000	30.6	1000.000	9.000	GND	L1	10.1	15.4	46.0	
2.960000	27.7	1000.000	9.000	GND	L1	10.2	18.3	46.0	
11.576000	24.5	1000.000	9.000	GND	L1	10.6	25.5	50.0	
16.008000	36.3	1000.000	9.000	GND	L1	10.9	13.7	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
0.222000	36.4	1000.000	9.000	GND	N	10.1	26.2	62.6	
0.478000	41.8	1000.000	9.000	GND	N	10.1	14.5	56.3	
0.746000	44.5	1000.000	9.000	GND	N	10.1	11.5	56.0	
1.418000	39.3	1000.000	9.000	GND	N	10.1	16.7	56.0	
4.170000	30.3	1000.000	9.000	GND	N	10.3	25.7	56.0	
11.850000	31.4	1000.000	9.000	GND	N	10.6	28.6	60.0	
16.010000	33.9	1000.000	9.000	GND	N	10.8	26.1	60.0	

Final Measurement Detector 2

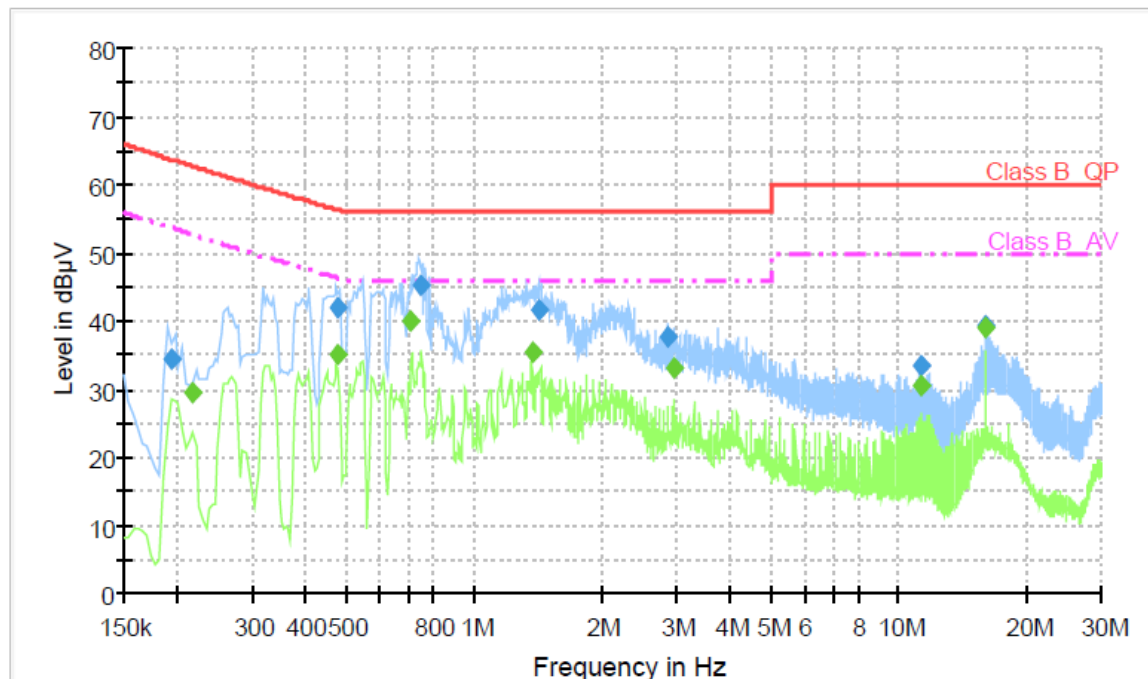
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.194000	29.9	1000.000	9.000	GND	N	10.1	23.8	53.7	
0.474000	33.8	1000.000	9.000	GND	N	10.1	12.6	46.4	
0.750000	36.1	1000.000	9.000	GND	N	10.1	9.9	46.0	
1.366000	34.2	1000.000	9.000	GND	N	10.1	11.8	46.0	
2.962000	29.3	1000.000	9.000	GND	N	10.2	16.7	46.0	
11.850000	27.4	1000.000	9.000	GND	N	10.6	22.6	50.0	
16.006000	35.4	1000.000	9.000	GND	N	10.8	14.6	50.0	

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



- ◆ Operating condition: 1 024 × 768 / 60 Hz (RGB: Analog)
Test case #2, Panel: T420HW09 (AU Optonics) / Power board: LGP42-11P (LG Electronics Inc.)

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	34.4	1000.000	9.000	GND	L1	10.1	29.3	63.7	
0.480000	42.1	1000.000	9.000	GND	L1	10.1	14.2	56.3	
0.748000	45.2	1000.000	9.000	GND	L1	10.1	10.8	56.0	
1.428000	41.7	1000.000	9.000	GND	L1	10.1	14.3	56.0	
2.852000	37.6	1000.000	9.000	GND	L1	10.2	18.4	56.0	
11.304000	33.4	1000.000	9.000	GND	L1	10.6	26.6	60.0	
16.008000	39.2	1000.000	9.000	GND	L1	10.9	20.8	60.0	

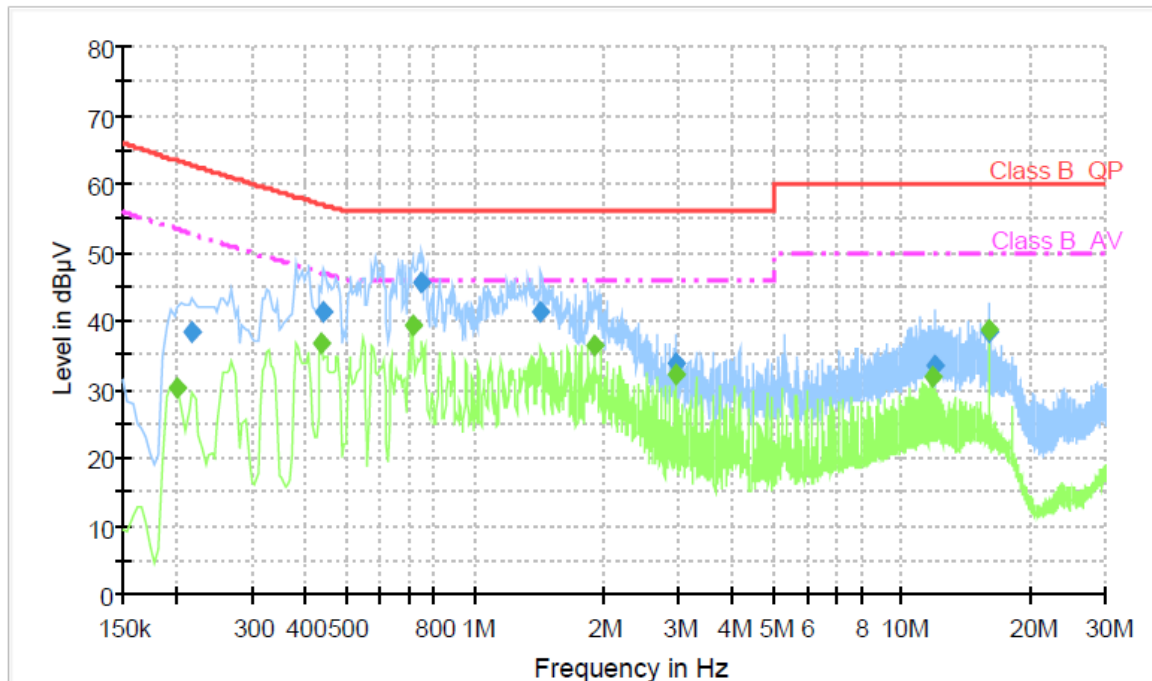
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.218000	29.4	1000.000	9.000	GND	L1	10.1	23.3	52.7	
0.476000	35.1	1000.000	9.000	GND	L1	10.1	11.3	46.4	
0.712000	39.9	1000.000	9.000	GND	L1	10.1	6.1	46.0	
1.368000	35.3	1000.000	9.000	GND	L1	10.1	10.7	46.0	
2.960000	33.0	1000.000	9.000	GND	L1	10.2	13.0	46.0	
11.304000	30.5	1000.000	9.000	GND	L1	10.6	19.5	50.0	
16.008000	39.1	1000.000	9.000	GND	L1	10.9	10.9	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
0.218000	38.2	1000.000	9.000	GND	N	10.1	24.5	62.7	
0.442000	41.2	1000.000	9.000	GND	N	10.1	15.8	57.0	
0.750000	45.7	1000.000	9.000	GND	N	10.1	10.3	56.0	
1.430000	41.3	1000.000	9.000	GND	N	10.1	14.7	56.0	
2.962000	33.7	1000.000	9.000	GND	N	10.2	22.3	56.0	
11.986000	33.3	1000.000	9.000	GND	N	10.6	26.7	60.0	
16.006000	38.4	1000.000	9.000	GND	N	10.8	21.6	60.0	

Final Measurement Detector 2

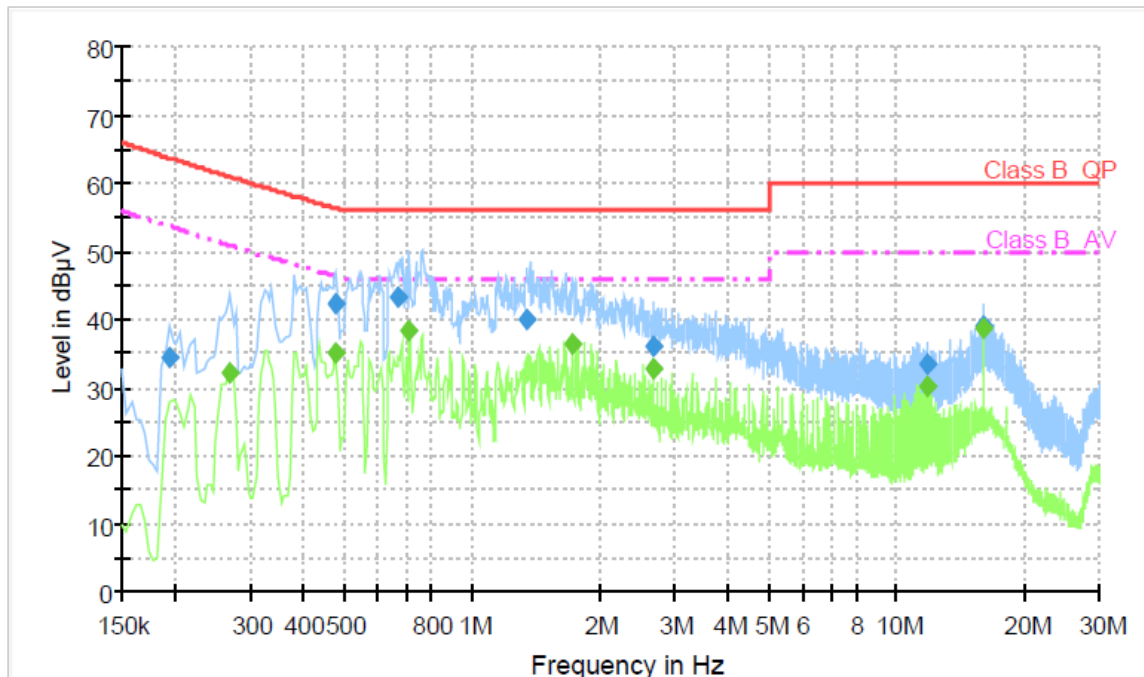
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.202000	30.2	1000.000	9.000	GND	N	10.1	23.1	53.3	
0.438000	36.6	1000.000	9.000	GND	N	10.1	10.4	47.0	
0.714000	39.5	1000.000	9.000	GND	N	10.1	6.5	46.0	
1.910000	36.4	1000.000	9.000	GND	N	10.2	9.6	46.0	
2.962000	32.3	1000.000	9.000	GND	N	10.2	13.7	46.0	
11.850000	31.7	1000.000	9.000	GND	N	10.6	18.3	50.0	
16.010000	38.7	1000.000	9.000	GND	N	10.8	11.4	50.0	

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



- ◆ Operating condition: 640 × 480 / 60 Hz (RGB: Analog)
Test case #2, Panel: T420HW09 (AU Optonics) / Power board: LGP42-11P (LG Electronics Inc.)

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	34.5	1000.000	9.000	GND	L1	10.1	29.2	63.7	
0.480000	42.4	1000.000	9.000	GND	L1	10.1	13.9	56.3	
0.668000	43.2	1000.000	9.000	GND	L1	10.1	12.8	56.0	
1.348000	39.9	1000.000	9.000	GND	L1	10.1	16.1	56.0	
2.672000	36.1	1000.000	9.000	GND	L1	10.2	19.9	56.0	
11.848000	33.5	1000.000	9.000	GND	L1	10.6	26.5	60.0	
16.008000	39.1	1000.000	9.000	GND	L1	10.9	20.9	60.0	

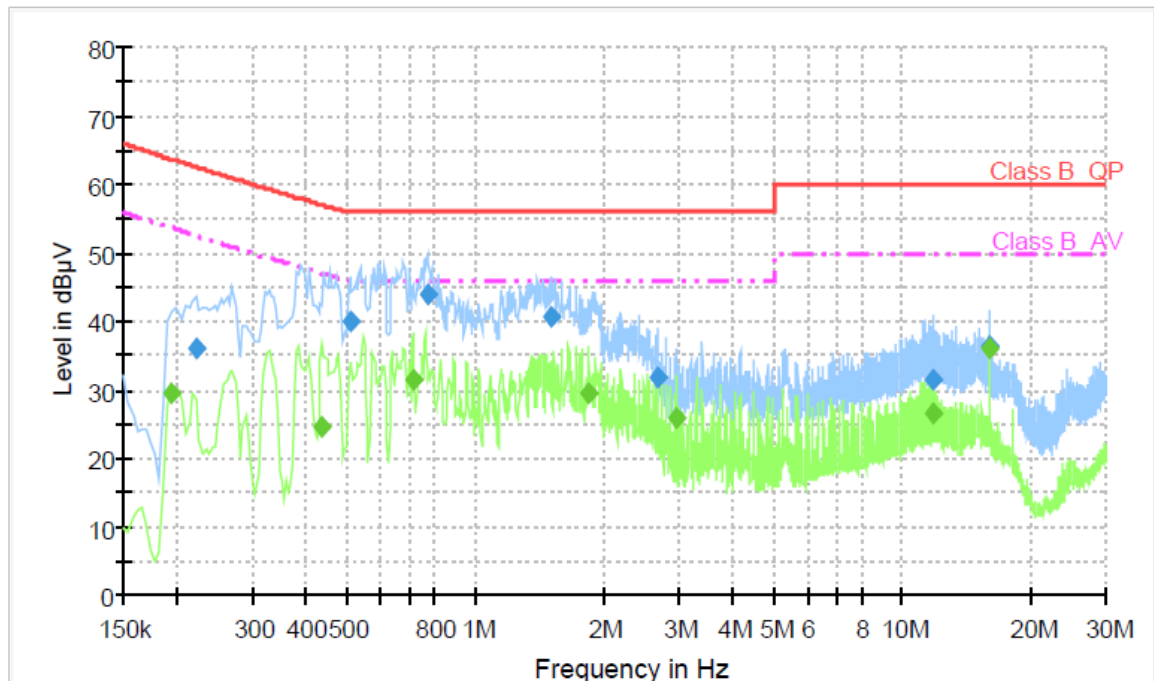
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.268000	32.1	1000.000	9.000	GND	L1	10.1	18.8	50.9	
0.476000	35.0	1000.000	9.000	GND	L1	10.1	11.4	46.4	
0.712000	38.3	1000.000	9.000	GND	L1	10.1	7.7	46.0	
1.720000	36.4	1000.000	9.000	GND	L1	10.1	9.6	46.0	
2.676000	32.9	1000.000	9.000	GND	L1	10.2	13.1	46.0	
11.848000	30.2	1000.000	9.000	GND	L1	10.6	19.8	50.0	
16.008000	38.7	1000.000	9.000	GND	L1	10.9	11.3	50.0	

< Fig 16. 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
0.222000	36.1	1000.000	9.000	GND	N	10.1	26.5	62.6	
0.510000	40.1	1000.000	9.000	GND	N	10.1	15.9	56.0	
0.774000	43.8	1000.000	9.000	GND	N	10.1	12.2	56.0	
1.498000	40.8	1000.000	9.000	GND	N	10.1	15.2	56.0	
2.678000	31.8	1000.000	9.000	GND	N	10.2	24.2	56.0	
11.854000	31.4	1000.000	9.000	GND	N	10.6	28.6	60.0	
16.006000	36.3	1000.000	9.000	GND	N	10.8	23.7	60.0	

Final Measurement Detector 2

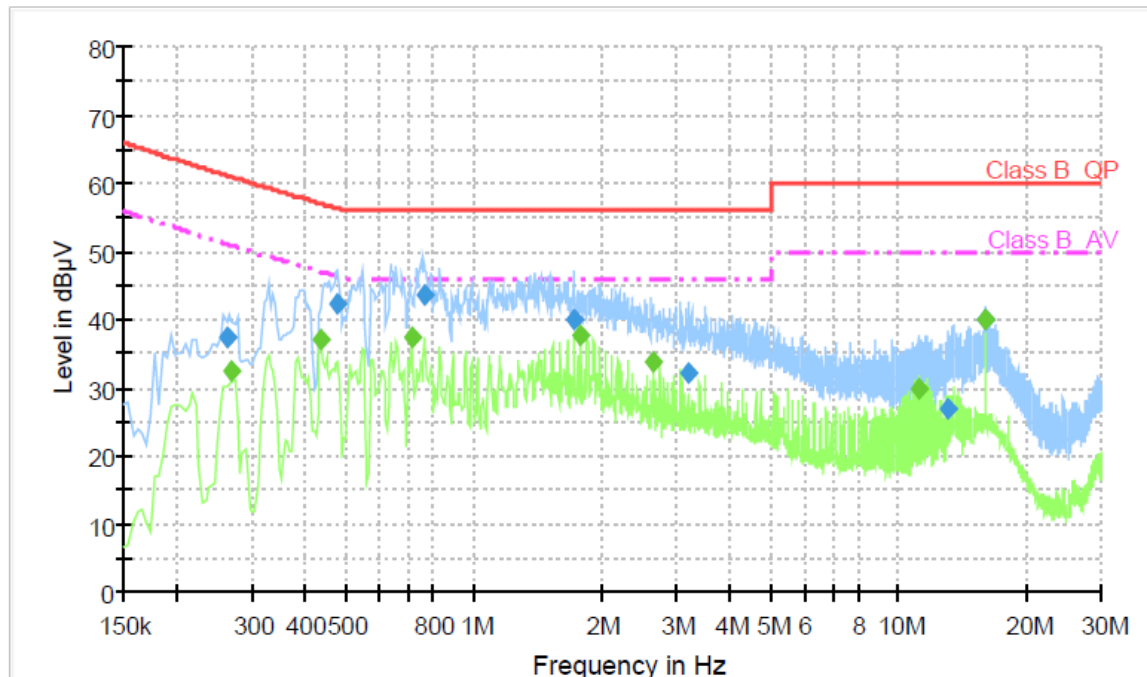
Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.194000	29.5	1000.000	9.000	GND	N	10.1	24.2	53.7	
0.438000	24.6	1000.000	9.000	GND	N	10.1	22.4	47.0	
0.714000	31.5	1000.000	9.000	GND	N	10.1	14.5	46.0	
1.846000	29.6	1000.000	9.000	GND	N	10.2	16.4	46.0	
2.962000	25.8	1000.000	9.000	GND	N	10.2	20.2	46.0	
11.778000	26.6	1000.000	9.000	GND	N	10.6	23.4	50.0	
16.010000	36.2	1000.000	9.000	GND	N	10.8	13.8	50.0	

< Fig 17. Conducted emission result (Neutral line) >



- ◆ Operating condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Test case #2, Panel: T420HW09 (AU Optonics) / Power board: LGP42-11P (LG Electronics Inc.)

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
0.264000	37.3	1000.000	9.000	GND	L1	10.1	23.8	61.1	
0.480000	42.2	1000.000	9.000	GND	L1	10.1	14.1	56.3	
0.768000	43.6	1000.000	9.000	GND	L1	10.1	12.4	56.0	
1.720000	40.0	1000.000	9.000	GND	L1	10.1	16.0	56.0	
3.212000	32.1	1000.000	9.000	GND	L1	10.2	23.9	56.0	
13.040000	26.9	1000.000	9.000	GND	L1	10.7	33.1	60.0	
16.008000	40.1	1000.000	9.000	GND	L1	10.9	19.9	60.0	

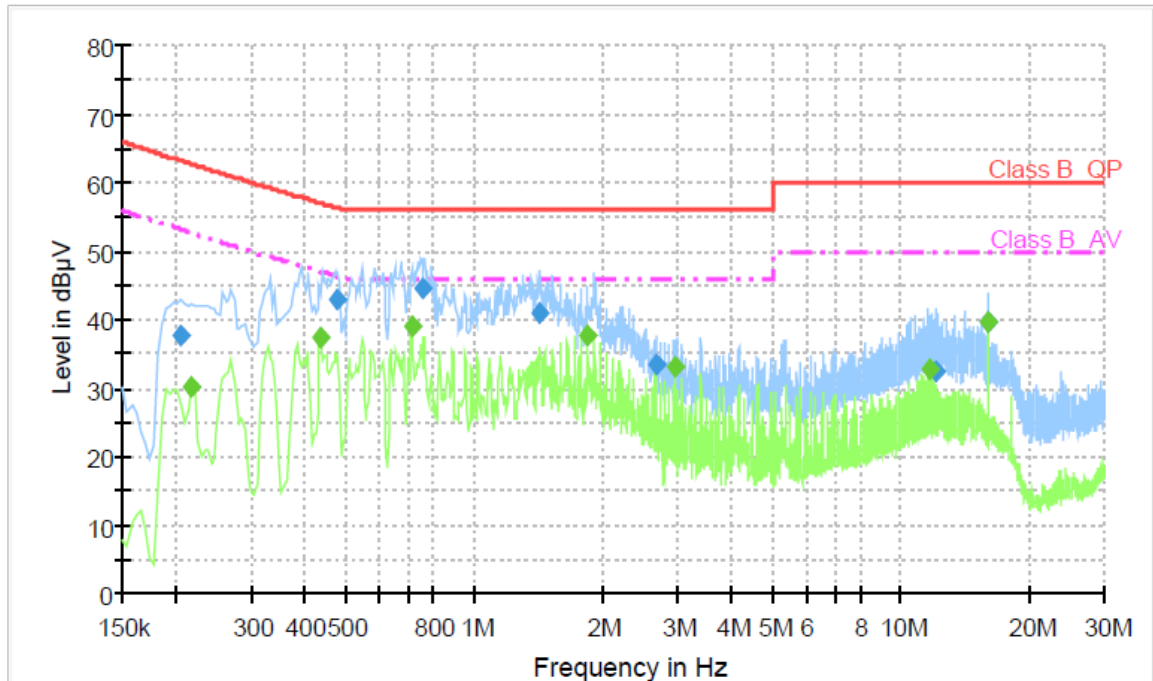
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.268000	32.4	1000.000	9.000	GND	L1	10.1	18.5	50.9	
0.436000	37.2	1000.000	9.000	GND	L1	10.1	9.8	47.0	
0.716000	37.3	1000.000	9.000	GND	L1	10.1	8.7	46.0	
1.784000	37.6	1000.000	9.000	GND	L1	10.1	8.4	46.0	
2.632000	33.8	1000.000	9.000	GND	L1	10.2	12.2	46.0	
11.096000	29.7	1000.000	9.000	GND	L1	10.6	20.3	50.0	
16.008000	39.9	1000.000	9.000	GND	L1	10.9	10.1	50.0	

< Fig 18. 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
0.206000	37.6	1000.000	9.000	GND	N	10.1	25.6	63.2	
0.478000	43.0	1000.000	9.000	GND	N	10.1	13.3	56.3	
0.762000	44.5	1000.000	9.000	GND	N	10.1	11.5	56.0	
1.430000	41.0	1000.000	9.000	GND	N	10.1	15.0	56.0	
2.678000	33.3	1000.000	9.000	GND	N	10.2	22.7	56.0	
12.066000	32.5	1000.000	9.000	GND	N	10.6	27.5	60.0	
16.010000	39.5	1000.000	9.000	GND	N	10.8	20.5	60.0	

Final Measurement Detector 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.218000	30.2	1000.000	9.000	GND	N	10.1	22.5	52.7	
0.438000	37.4	1000.000	9.000	GND	N	10.1	9.6	47.0	
0.714000	39.0	1000.000	9.000	GND	N	10.1	7.0	46.0	
1.846000	37.7	1000.000	9.000	GND	N	10.2	8.3	46.0	
2.962000	33.0	1000.000	9.000	GND	N	10.2	13.0	46.0	
11.714000	32.8	1000.000	9.000	GND	N	10.6	17.2	50.0	
16.006000	39.6	1000.000	9.000	GND	N	10.8	10.4	50.0	

< Fig 19. Conducted emission result (Neutral line) >



6. Radiated Emission

6.1 Operating Environment

Temperature : 23 °C
Relative Humidity : 46 % R.H.

6.2 Test Set-up

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

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

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

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

6.3 Measurement Uncertainty

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

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

Test Items(Anechoic Chamber)	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 3 m, Vertical)	± 4.38 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	± 3.50 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	± 3.75 dB	Confidence levels of 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	± 3.59 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. 2011
■ - 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	1258942	11. 12. 2011

6.6 Test data for Radiated Emission

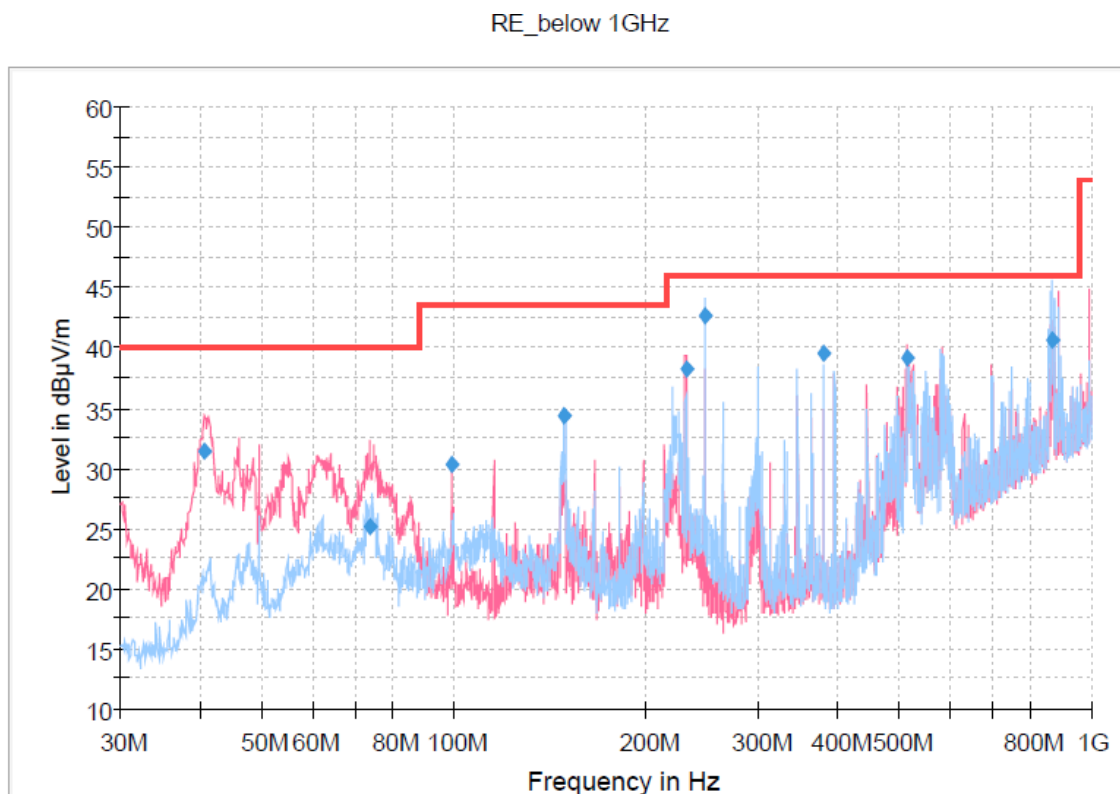
- Test Date : July 24, 2011
- Resolution Bandwidth : 120 kHz/1 MHz
- Frequency Range : 30 MHz ~ 5 000 MHz
- Measurement Distance : 3 m
- Note : The highest frequency of the internal source of the EUT is between 500 MHz and 1 000 MHz (667 MHz). The measurement was made up to 5 000 MHz



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

Test case #1: Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)

Red trace: Vertical polarization, Blue trace: Horizontal polarization



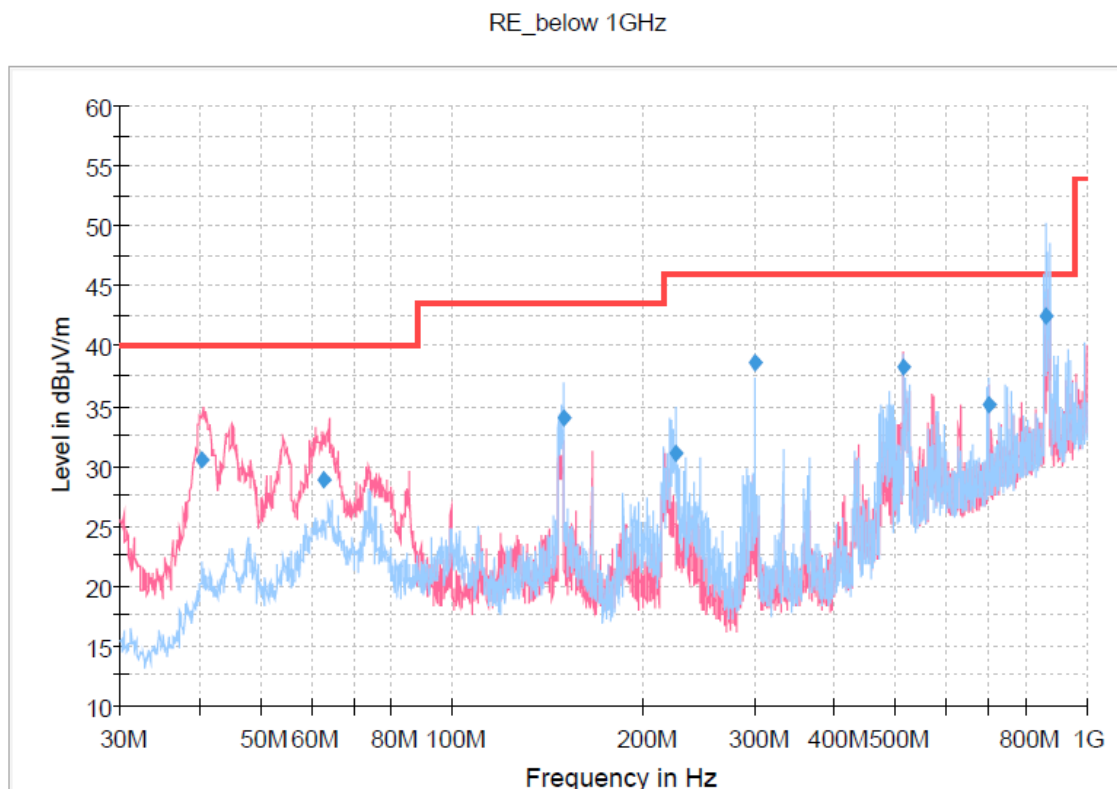
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
40.568750	31.4	500.0	120.000	100.0	V	356.0	12.6	8.60	40.00
73.831250	25.1	500.0	120.000	100.0	V	0.0	10.6	14.90	40.00
99.011250	30.2	500.0	120.000	100.0	V	285.0	11.1	13.30	43.50
148.481250	34.4	500.0	120.000	100.0	V	47.0	14.9	9.10	43.50
231.011250	38.2	500.0	120.000	100.0	V	70.0	13.4	7.80	46.00
247.502500	42.6	500.0	120.000	200.0	H	151.0	14.3	3.40	46.00
379.502500	39.5	500.0	120.000	100.0	H	133.0	17.6	6.50	46.00
515.142500	39.1	500.0	120.000	100.0	V	161.0	22.6	6.90	46.00
866.603750	40.6	500.0	120.000	200.0	H	198.0	29.5	5.40	46.00

< Fig 20. Radiated emission result (30 MHz ~ 1 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Test case #1: Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)
Red trace: Vertical polarization, Blue trace: Horizontal polarization



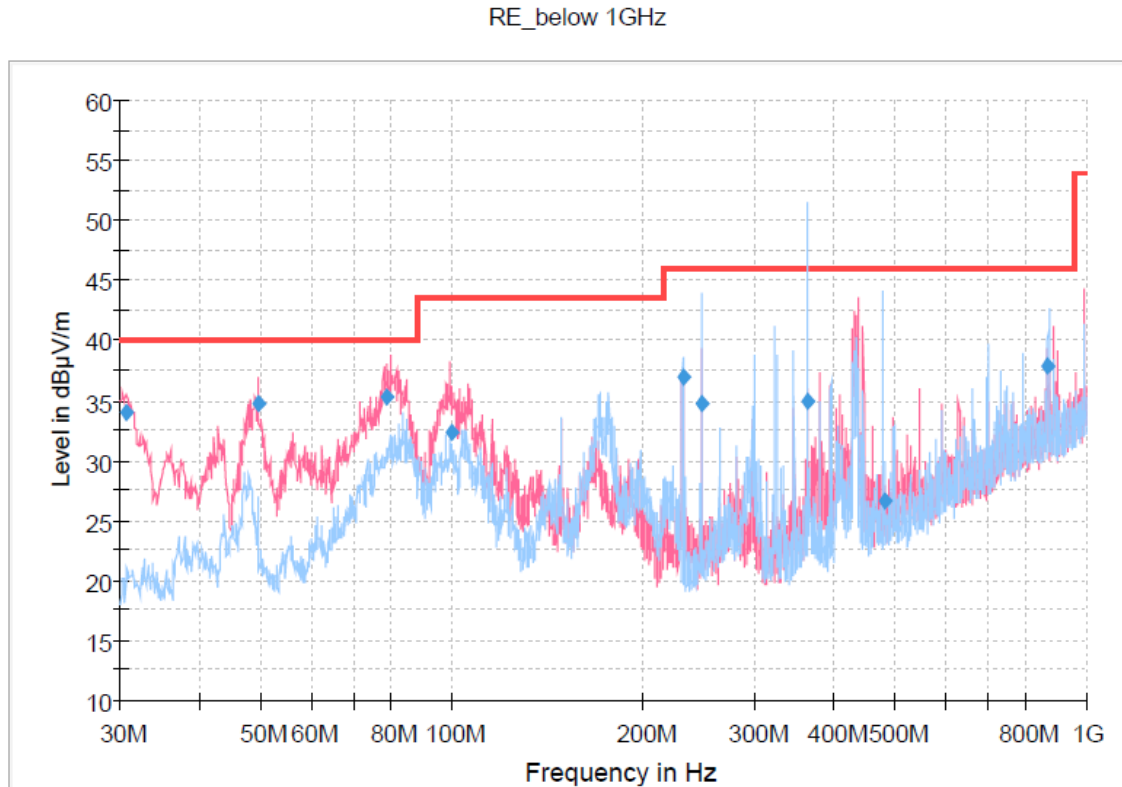
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
40.448750	30.4	500.0	120.000	100.0	V	324.0	12.6	9.60	40.00
62.770000	28.7	500.0	120.000	100.0	V	0.0	12.4	11.30	40.00
150.017500	34.0	500.0	120.000	200.0	H	186.0	15.0	9.50	43.50
225.027500	31.0	500.0	120.000	100.0	H	137.0	13.1	15.00	46.00
300.691250	38.6	500.0	120.000	100.0	H	224.0	16.9	7.40	46.00
515.181250	38.2	500.0	120.000	100.0	V	161.0	22.6	7.80	46.00
699.841250	35.2	500.0	120.000	200.0	H	137.0	26.6	10.80	46.00
863.478750	42.5	500.0	120.000	100.0	H	126.0	29.5	3.50	46.00

< Fig 21. Radiated emission result (30 MHz ~ 1 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)
Test case #2: Panel: T420HW09 (AU Optronics) / Power board: LGP42-11P (LG Electronics Inc.)
Red trace: Vertical polarization, Blue trace: Horizontal polarization



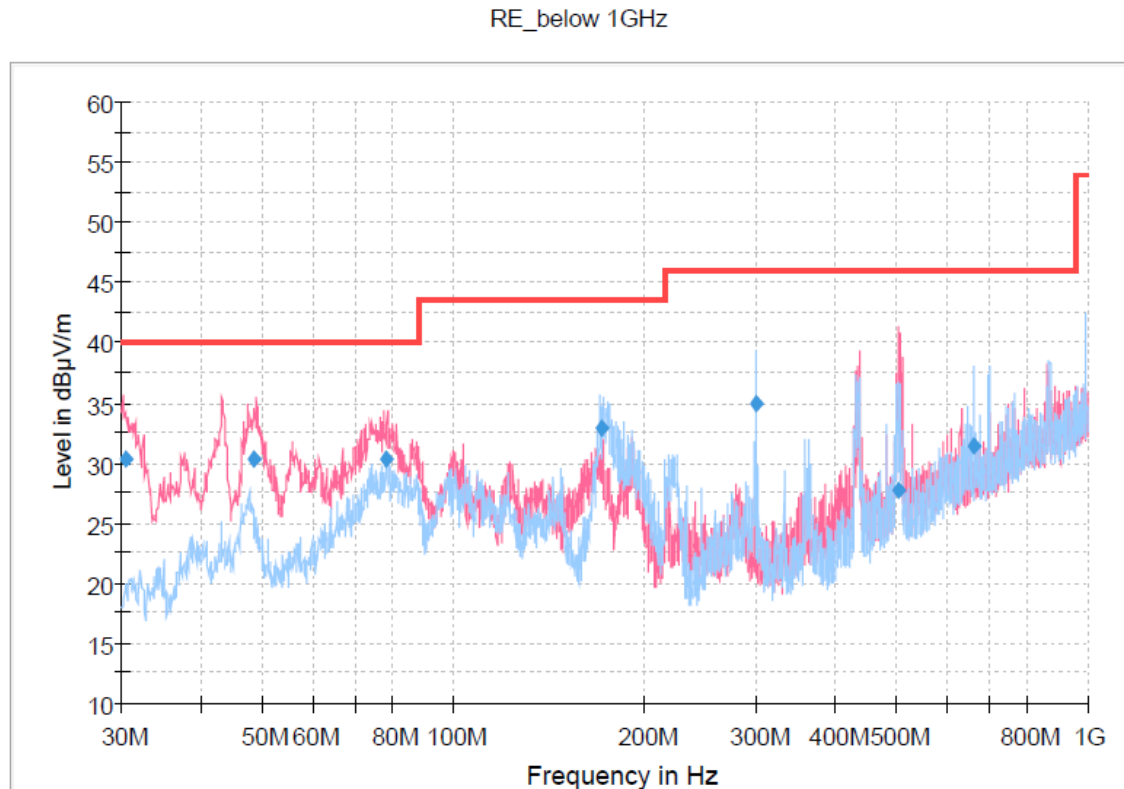
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
30.760000	34.1	500.0	120.000	100.0	V	0.0	11.3	5.90	40.00
49.501250	34.8	500.0	120.000	100.0	V	334.0	13.2	5.20	40.00
79.175000	35.3	500.0	120.000	200.0	V	34.0	9.3	4.70	40.00
99.692500	32.3	500.0	120.000	200.0	V	334.0	11.2	11.20	43.50
231.012500	37.0	500.0	120.000	200.0	H	39.0	13.4	9.00	46.00
247.502500	34.7	500.0	120.000	100.0	H	0.0	14.3	11.30	46.00
362.977500	35.0	500.0	120.000	200.0	H	356.0	17.6	11.00	46.00
480.006250	26.6	500.0	120.000	200.0	H	356.0	21.3	19.40	46.00
872.306250	37.9	500.0	120.000	200.0	H	39.0	29.5	8.10	46.00

< Fig 22. Radiated emission result (30 MHz ~ 1 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Test case #2: Panel: T420HW09 (AU Optonics) / Power board: LGP42-11P (LG Electronics Inc.)
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)
30.480000	30.4	500.0	120.000	100.0	V	0.0	11.3	9.60	40.00
48.535000	30.3	500.0	120.000	100.0	V	0.0	13.1	9.70	40.00
78.441250	30.3	500.0	120.000	200.0	V	224.0	9.5	9.70	40.00
171.827500	32.8	500.0	120.000	200.0	H	319.0	14.2	10.70	43.50
300.691250	34.9	500.0	120.000	100.0	H	161.0	16.9	11.10	46.00
501.847500	27.7	500.0	120.000	100.0	V	11.0	22.3	18.30	46.00
662.258750	31.4	500.0	120.000	100.0	H	9.0	25.9	14.60	46.00

< Fig 23. Radiated emission result (30 MHz ~ 1 000 MHz) >

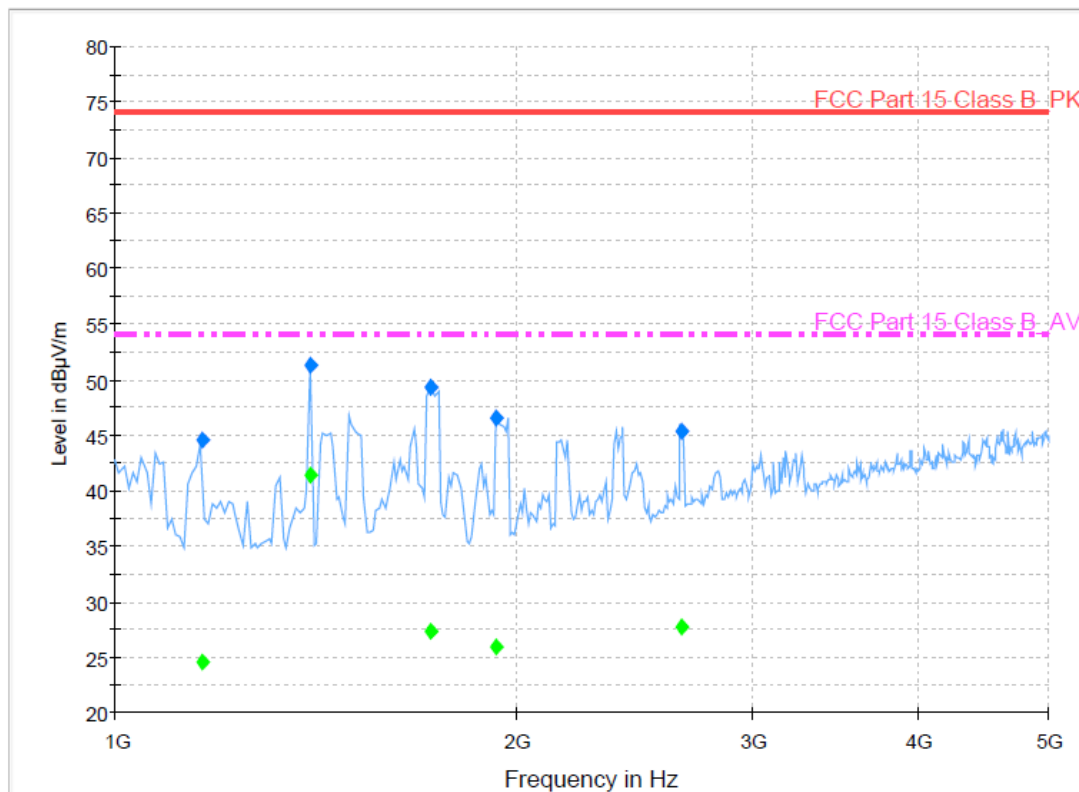


◆ Operating Condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)

Test case #1: Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)

Green market: Average detector, Blue market: 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)
1164.520641	44.6	1000.0	1000.000	196.0	V	178.0	-13.8	29.4	74.0
1401.401603	51.3	1000.0	1000.000	100.0	V	219.0	-13.2	22.7	74.0
1722.442886	49.3	1000.0	1000.000	100.0	V	210.0	-12.4	24.7	74.0
1930.859720	46.6	1000.0	1000.000	100.0	V	220.0	-12.0	27.4	74.0
2654.302605	45.3	1000.0	1000.000	100.0	V	196.0	-8.7	28.7	74.0

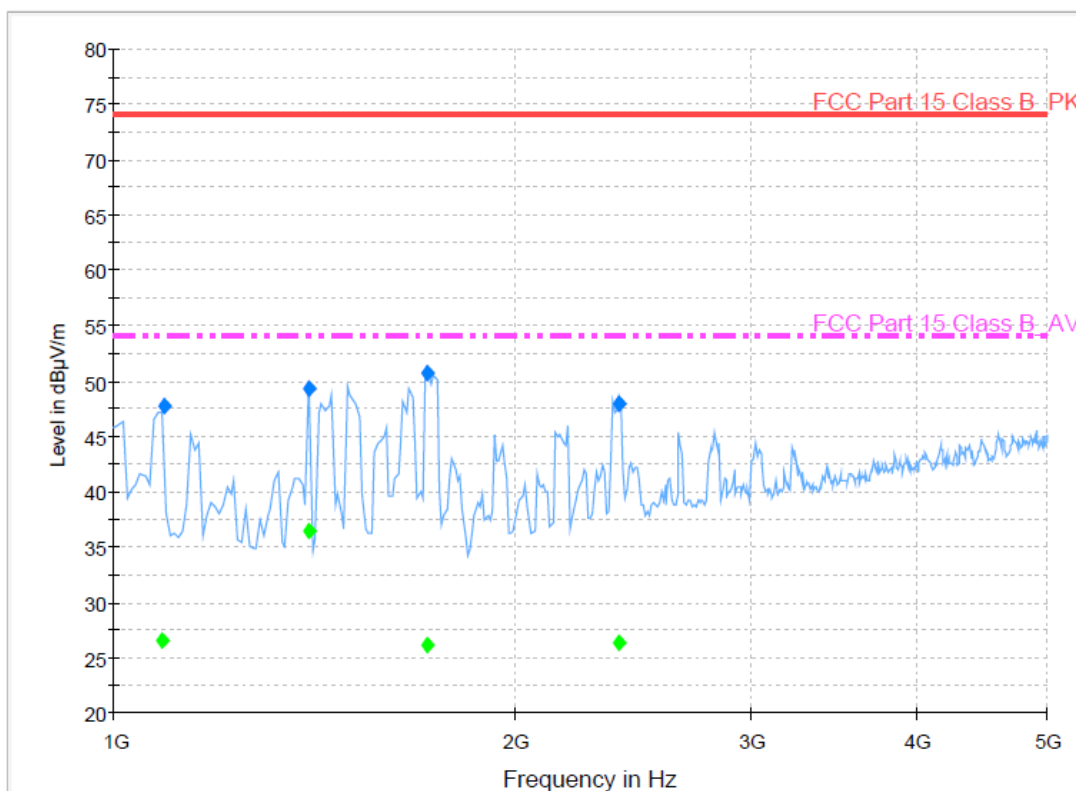
Final Result 2

Frequency (MHz)	CAverage (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1164.920641	24.5	1000.0	1000.000	200.0	V	181.0	-13.8	29.5	54.0
1401.401603	41.4	1000.0	1000.000	100.0	V	225.0	-13.2	12.6	54.0
1722.442886	27.2	1000.0	1000.000	100.0	V	216.0	-12.4	26.8	54.0
1931.259720	26.0	1000.0	1000.000	100.0	V	215.0	-12.0	28.0	54.0
2654.702605	27.7	1000.0	1000.000	100.0	V	199.0	-8.7	26.3	54.0

< Fig 24. Radiated emission result (1 000 MHz ~ 5 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Test case #1: Panel: LC420WUE (LG Display) / Power board: LGP42-10LF (LG Electronics Inc.)
Green marker: Average detector, Blue marker: 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)
1092.776353	47.7	1000.0	1000.000	204.0	H	129.0	-14.1	26.3	74.0
1401.401603	49.2	1000.0	1000.000	113.0	V	188.0	-13.2	24.8	74.0
1718.026854	50.7	1000.0	1000.000	100.0	V	195.0	-12.5	23.3	74.0
2388.173547	47.9	1000.0	1000.000	100.0	V	212.0	-9.9	26.1	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)
1087.976353	26.6	1000.0	1000.000	200.0	H	124.0	-14.1	27.4	54.0
1401.401603	36.5	1000.0	1000.000	150.0	V	192.0	-13.2	17.5	54.0
1718.426854	26.1	1000.0	1000.000	100.0	V	198.0	-12.5	27.9	54.0
2386.573547	26.4	1000.0	1000.000	121.0	V	214.0	-9.9	27.6	54.0

< Fig 25. Radiated emission result (1 000 MHz ~ 5 000 MHz) >

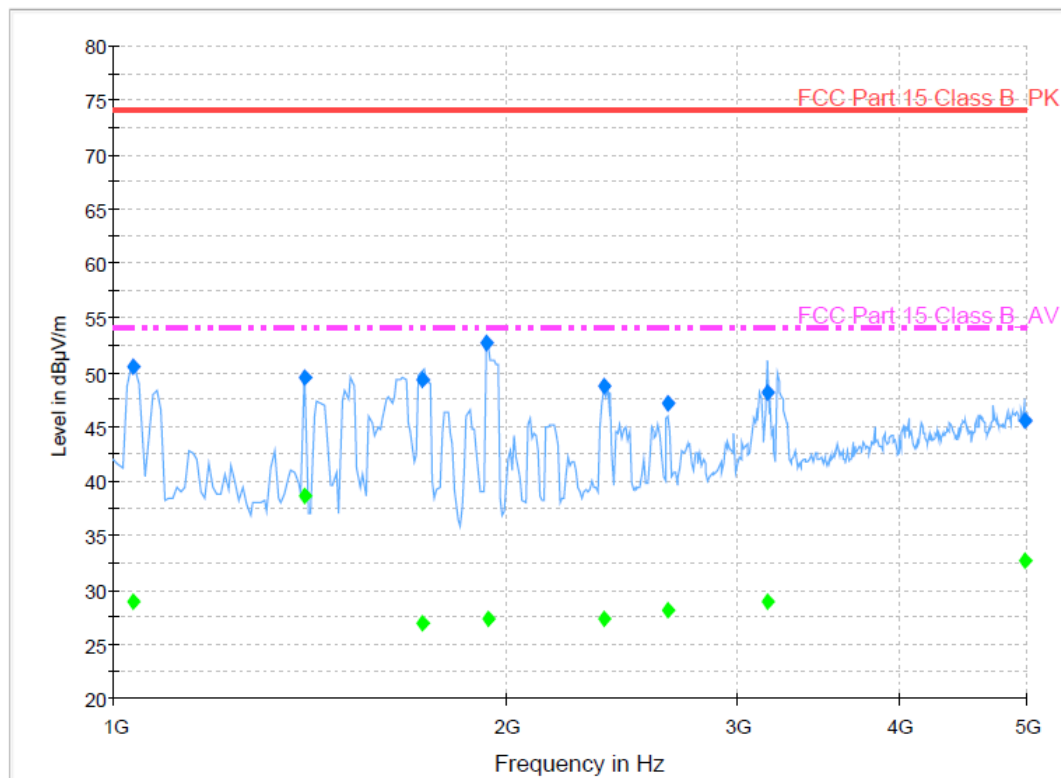


◆ Operating Condition: 1 920 × 1 080 / 60 Hz (RGB: Analog)

Test case #2: Panel: T420HW09 (AU Optronics) / Power board: LGP42-11P (LG Electronics Inc.)

Green market: Average detector, Blue market: 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)
1036.664128	50.6	1000.0	1000.000	150.0	H	130.0	-14.3	23.4	74.0
1401.401603	49.5	1000.0	1000.000	100.0	V	222.0	-13.2	24.5	74.0
1726.858918	49.4	1000.0	1000.000	100.0	V	220.0	-12.4	24.6	74.0
1930.859720	52.7	1000.0	1000.000	100.0	V	197.0	-12.0	21.3	74.0
2369.741483	48.8	1000.0	1000.000	100.0	V	182.0	-9.9	25.2	74.0
2655.118637	47.1	1000.0	1000.000	100.0	V	197.0	-8.7	26.9	74.0
3165.328657	48.0	1000.0	1000.000	200.0	V	194.0	-6.7	26.0	74.0
4976.551904	45.5	1000.0	1000.000	212.0	H	10.0	-1.2	28.5	74.0

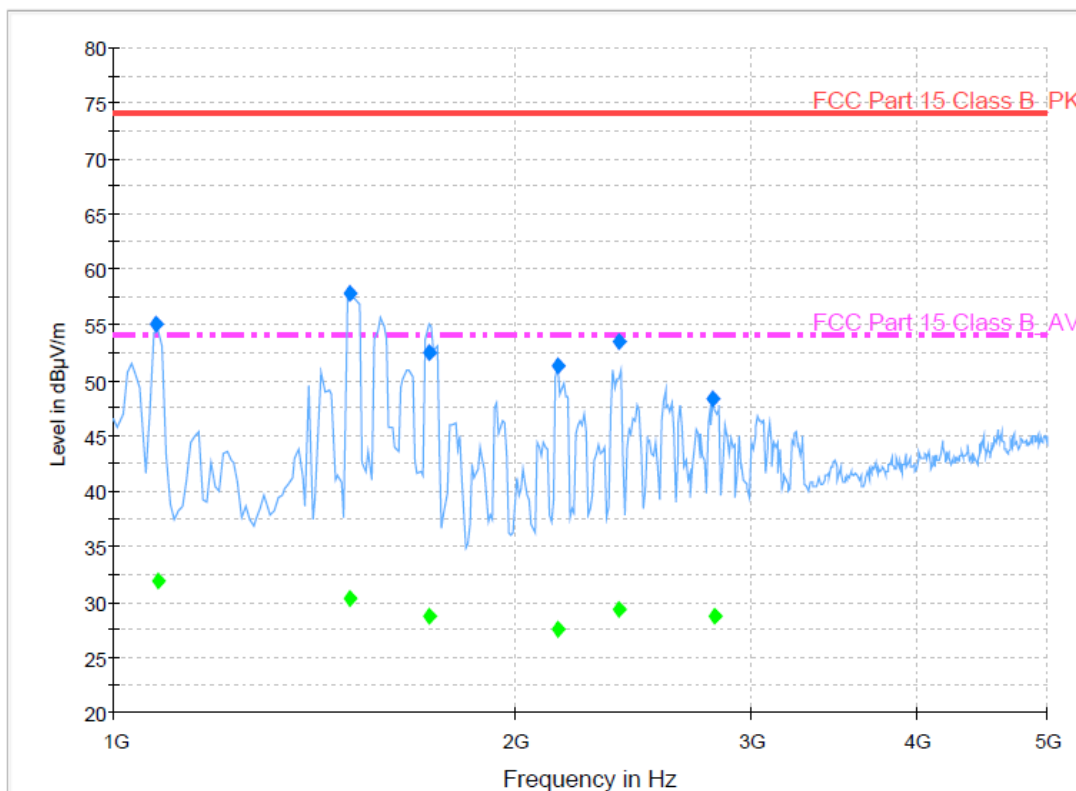
Final Result 2

Frequency (MHz)	CAverage (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1037.064128	28.9	1000.0	1000.000	150.0	H	130.0	-14.3	25.1	54.0
1401.401603	38.6	1000.0	1000.000	100.0	V	224.0	-13.2	15.4	54.0
1724.458918	27.0	1000.0	1000.000	100.0	V	226.0	-12.4	27.0	54.0
1932.859720	27.3	1000.0	1000.000	100.0	V	199.0	-12.0	26.7	54.0
2370.141483	27.4	1000.0	1000.000	100.0	V	183.0	-9.9	26.6	54.0
2655.118637	28.0	1000.0	1000.000	100.0	V	202.0	-8.7	26.0	54.0
3167.328657	28.9	1000.0	1000.000	200.0	V	198.0	-6.7	25.1	54.0
4978.551904	32.6	1000.0	1000.000	171.0	H	0.0	-1.2	21.4	54.0

< Fig 26. Radiated emission result (1 000 MHz ~ 5 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 60 Hz (HDMI/DVI: Digital)
Test case #2: Panel: T420HW09 (AU Optronics) / Power board: LGP42-11P (LG Electronics Inc.)
Green marker: Average detector, Blue marker: 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)
1076.360321	55.0	1000.0	1000.000	150.0	V	202.0	-14.1	19.0	74.0
1501.993988	57.8	1000.0	1000.000	100.0	V	215.0	-13.0	16.2	74.0
1722.042886	52.5	1000.0	1000.000	137.0	V	157.0	-12.4	21.5	74.0
2153.708617	51.2	1000.0	1000.000	100.0	V	182.0	-10.9	22.8	74.0
2390.989579	53.6	1000.0	1000.000	112.0	V	190.0	-9.8	20.4	74.0
2808.623247	48.4	1000.0	1000.000	100.0	H	141.0	-8.1	25.6	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)
1081.560321	31.9	1000.0	1000.000	150.0	V	202.0	-14.1	22.1	54.0
1501.993988	30.3	1000.0	1000.000	100.0	V	217.0	-13.0	23.7	54.0
1721.642886	28.6	1000.0	1000.000	137.0	V	159.0	-12.4	25.4	54.0
2152.508617	27.5	1000.0	1000.000	150.0	V	185.0	-10.9	26.5	54.0
2392.989579	29.3	1000.0	1000.000	137.0	V	193.0	-9.8	24.7	54.0
2815.023247	28.7	1000.0	1000.000	100.0	H	137.0	-8.1	25.3	54.0

< Fig 27. 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: 42LK450-UH)** was complies with §15.107 and 15.109 of the FCC Rules.