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: August 1, 2011

Order Number: GETEC-C1-11-183

Test Report Number: GETEC-E3-11-084

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID. : BEJ32LK330UH

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	**: 32LK330-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 vest 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,

Hyoung-Seop, Kim, Senior Engineer
GUMI College EMC center

Reviewed by,

Tae-Sig Park, General Manager
GUMI College EMC center

This test report only contains the result of a specific sample supplied for the examination.
It is not allowed to copy this report even partly without the approval of 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

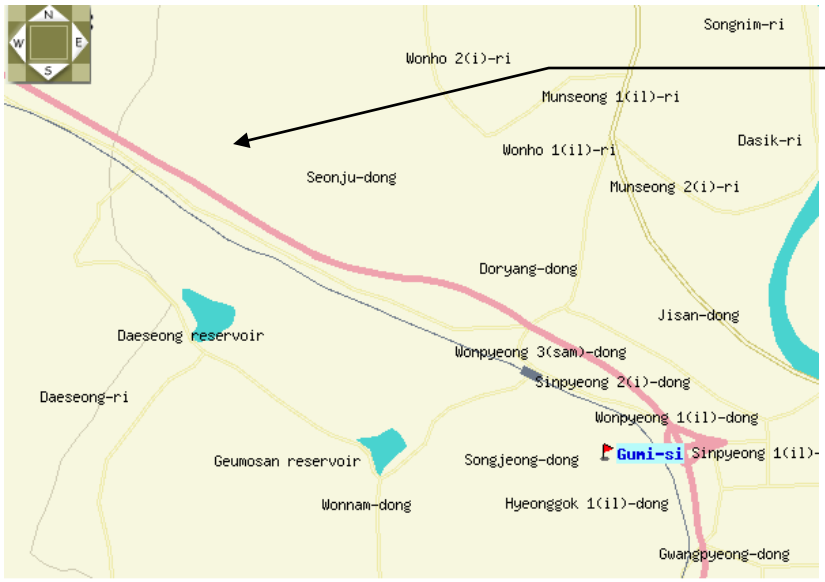
Applicant: LG Electronics Inc.
Applicant Address: 19-1, Cheongho-ri, Jinwi-myeon, Pyeongteak-si, Gyeonggi-do, Korea.
Manufacturer: LG Electronics Inc.
Manufacturer Address: 19-1, Cheongho-ri, Jinwi-myeon, Pyeongteak-si, Gyeonggi-do, Korea.
Contact Person: Mr. Do-Hyung Kim, Chief research engineer
Tel Number: +82-31-610-9623

- **FCC ID.** BEJ32LK330UH
- **EUT Type** LCD TV/Monitor
- **Model Name** 32LK330-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 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-E3-11-084
- **Dates of Issue** August 1, 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: 32LK330-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)



GUMI COLLEGE EMC CENTER
407, Bugok-dong, Gumi-si,
Gyeongbuk 730-711, Korea.
Tel: +82-54-440-1195
Fax: +82-54-440-1199

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: 32LK330-UH) FCC ID.: BEJ32LK330UH**

MODELS		26LK330 (26LK330-UB) 26LK330 (26LK330-UH)	32LK330 (32LK330-UB) 32LK330 (32LK330-UH)
Dimensions (W x H x D)	With stand	663.0 mm x 484.0 mm x 206.8 mm (26.1 inch x 19.0 inch x 8.1 inch)	800.0 mm x 565.0 mm x 206.8 mm (31.4 inch x 22.2 inch x 8.1 inch)
	Without stand	663.0 mm x 423.0 mm x 79.9 mm (26.1 inch x 16.6 inch x 3.1 inch)	800.0 mm x 509.0 mm x 73.8 mm (31.4 inch x 20.0 inch x 2.9 inch)
Weight	With stand	7.3 kg (16.0 lbs)	9.2 kg (20.2 lbs)
	Without stand	6.2 kg (13.6 lbs)	8.2 kg (18.0 lbs)
Current Value / Power consumption		1.0 A / 100 W	1.2 A / 120 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 in 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: 1 360 × 768 / 60 Hz (RGB: Analog, HDMI/DVI: Digital)
Conducted emission: 1 360 × 768 / 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

"***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

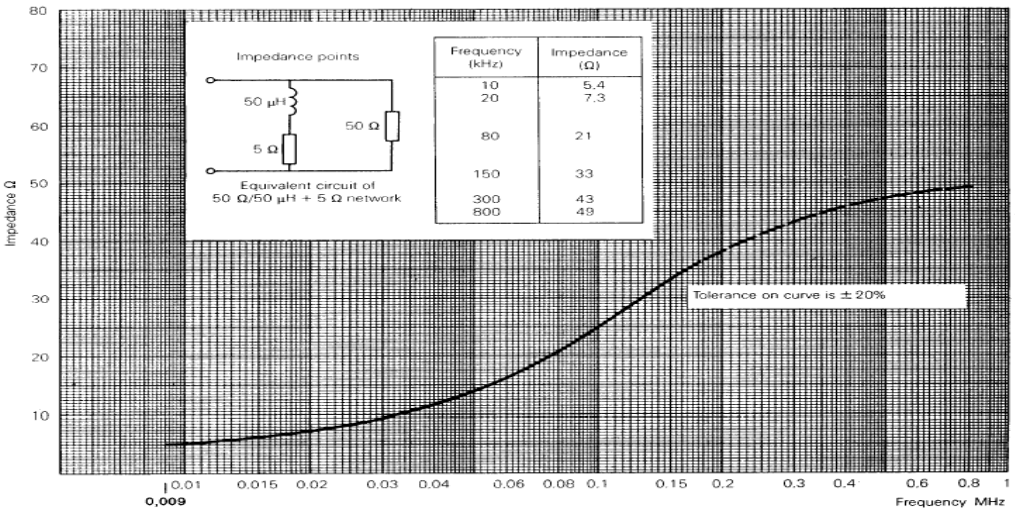


Fig 2. Impedance of LISN

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

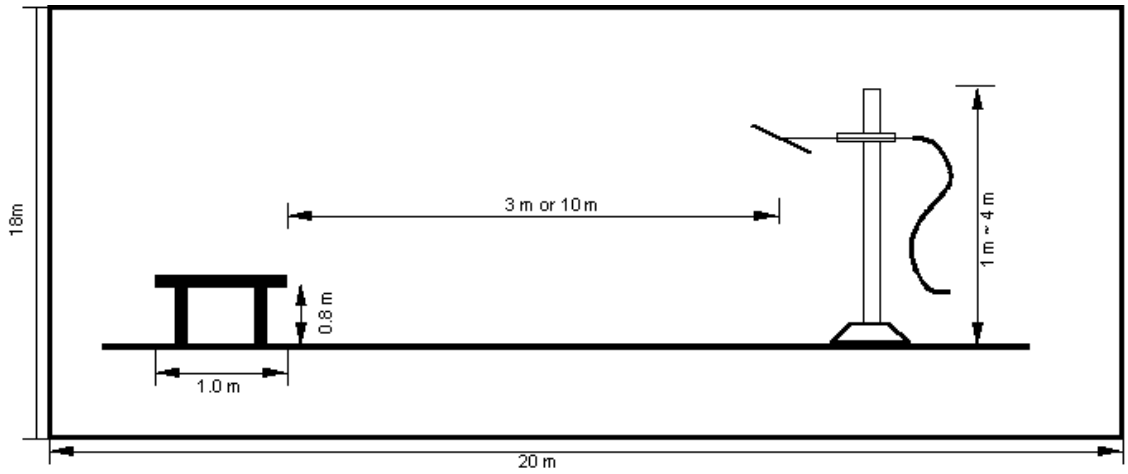


Fig 3. Dimensions of test site

5. Conducted Emission

5.1 Operating Environment

Temperature : 26 ℃
Relative Humidity : 52 % 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 μV/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

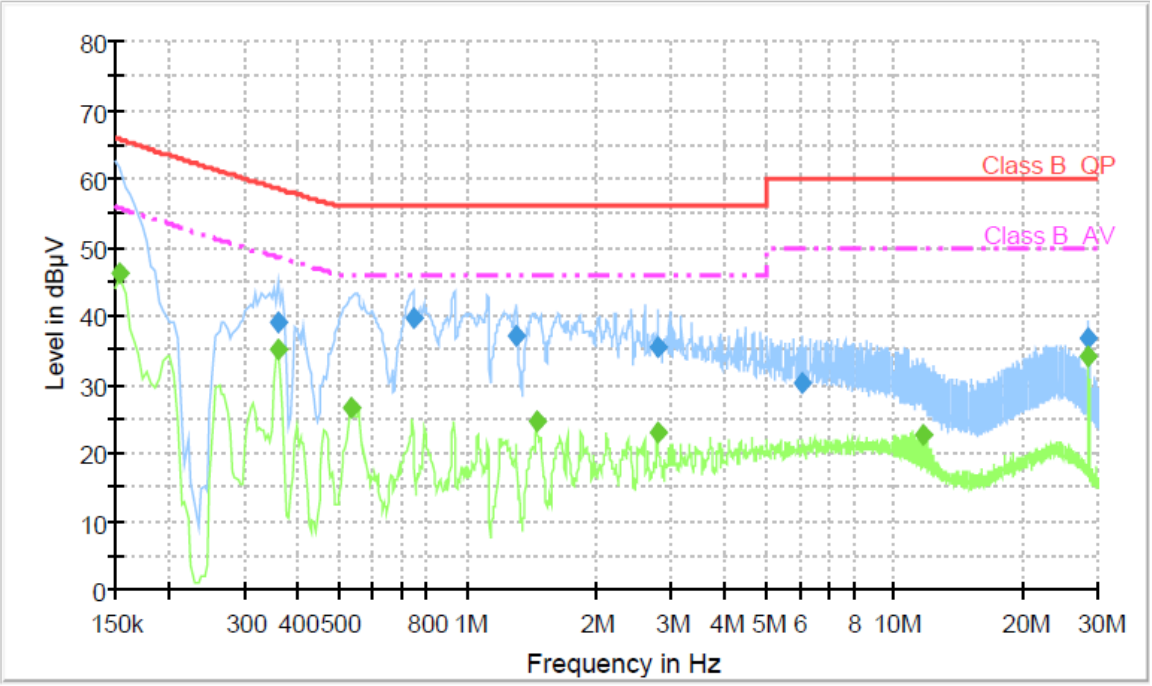
	Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ -	ESCS30	Rohde & Schwarz	EMI Test Receiver	839809/003	12. 10. 2011
■ -	ESH3-Z5	Rohde & Schwarz	LISN	838979/020	12. 10. 2011
■ -	ESH2-Z5	Rohde & Schwarz	LISN	829991/009	12. 10. 2011
☐ -	ISN T8	TESEQ. GmbH	ISN	24568	11. 09. 2011

5.6 Test data for Conducted Emission

-. Test Date : July 28, 2011
-. Resolution Bandwidth : 9 kHz
-. Frequency Range : 0.15 MHz ~ 30 MHz

♦ Operating condition: 1 360 × 768 / 60 Hz (RGB: Analog)

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

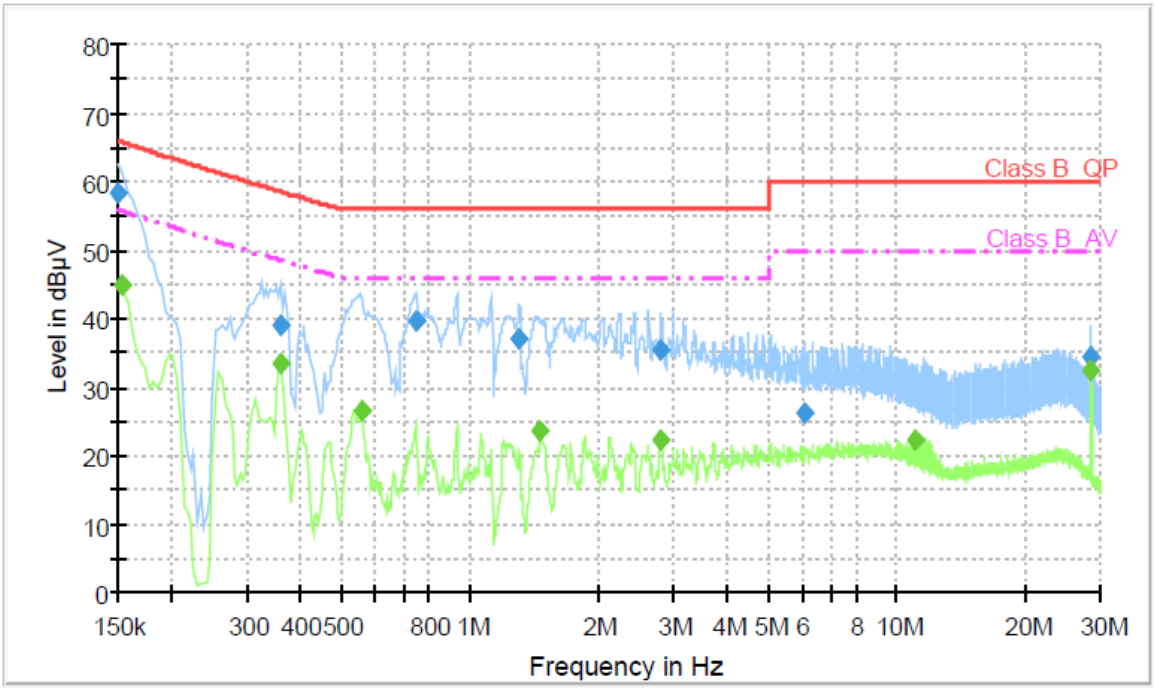
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.360000	38.9	1000.000	9.000	GND	L1	10.1	19.7	58.6	
0.748000	39.7	1000.000	9.000	GND	L1	10.1	16.3	56.0	
1.304000	37.2	1000.000	9.000	GND	L1	10.1	18.8	56.0	
2.808000	35.3	1000.000	9.000	GND	L1	10.2	20.7	56.0	
6.080000	30.0	1000.000	9.000	GND	L1	10.4	30.0	60.0	
28.476000	36.6	1000.000	9.000	GND	L1	11.2	23.4	60.0	

Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154000	46.3	1000.000	9.000	GND	L1	10.1	9.5	55.8	
0.360000	35.1	1000.000	9.000	GND	L1	10.1	13.4	48.5	
0.532000	26.6	1000.000	9.000	GND	L1	10.1	19.4	46.0	
1.460000	24.5	1000.000	9.000	GND	L1	10.1	21.5	46.0	
2.800000	22.9	1000.000	9.000	GND	L1	10.2	23.1	46.0	
11.644000	22.8	1000.000	9.000	GND	L1	10.6	27.2	50.0	
28.476000	34.0	1000.000	9.000	GND	L1	11.2	16.0	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
0.150000	58.3	1000.000	9.000	GND	N	10.1	7.7	66.0	
0.362000	39.1	1000.000	9.000	GND	N	10.1	19.4	58.5	
0.750000	39.7	1000.000	9.000	GND	N	10.1	16.3	56.0	
1.306000	37.1	1000.000	9.000	GND	N	10.1	18.9	56.0	
2.802000	35.5	1000.000	9.000	GND	N	10.2	20.5	56.0	
6.090000	26.2	1000.000	9.000	GND	N	10.4	33.8	60.0	
28.478000	34.4	1000.000	9.000	GND	N	10.7	25.6	60.0	

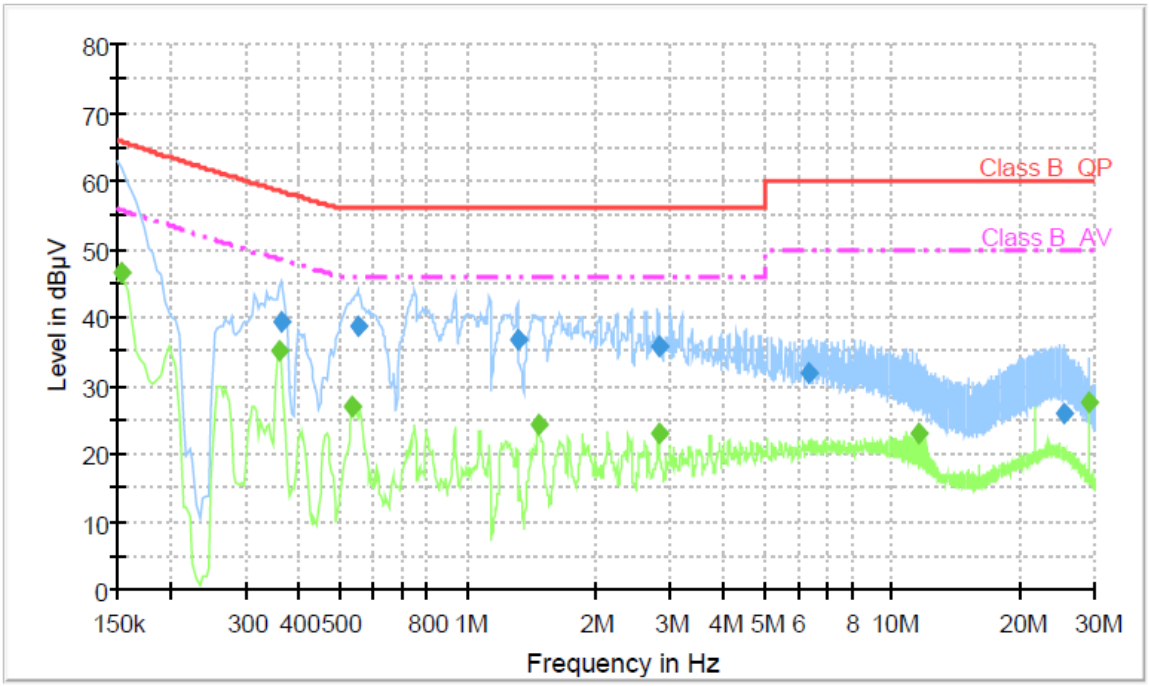
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154000	44.9	1000.000	9.000	GND	N	10.1	10.9	55.8	
0.362000	33.5	1000.000	9.000	GND	N	10.1	15.0	48.5	
0.558000	26.5	1000.000	9.000	GND	N	10.1	19.5	46.0	
1.458000	23.7	1000.000	9.000	GND	N	10.1	22.3	46.0	
2.798000	22.3	1000.000	9.000	GND	N	10.2	23.7	46.0	
11.034000	22.2	1000.000	9.000	GND	N	10.5	27.8	50.0	
28.478000	32.5	1000.000	9.000	GND	N	10.7	17.5	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

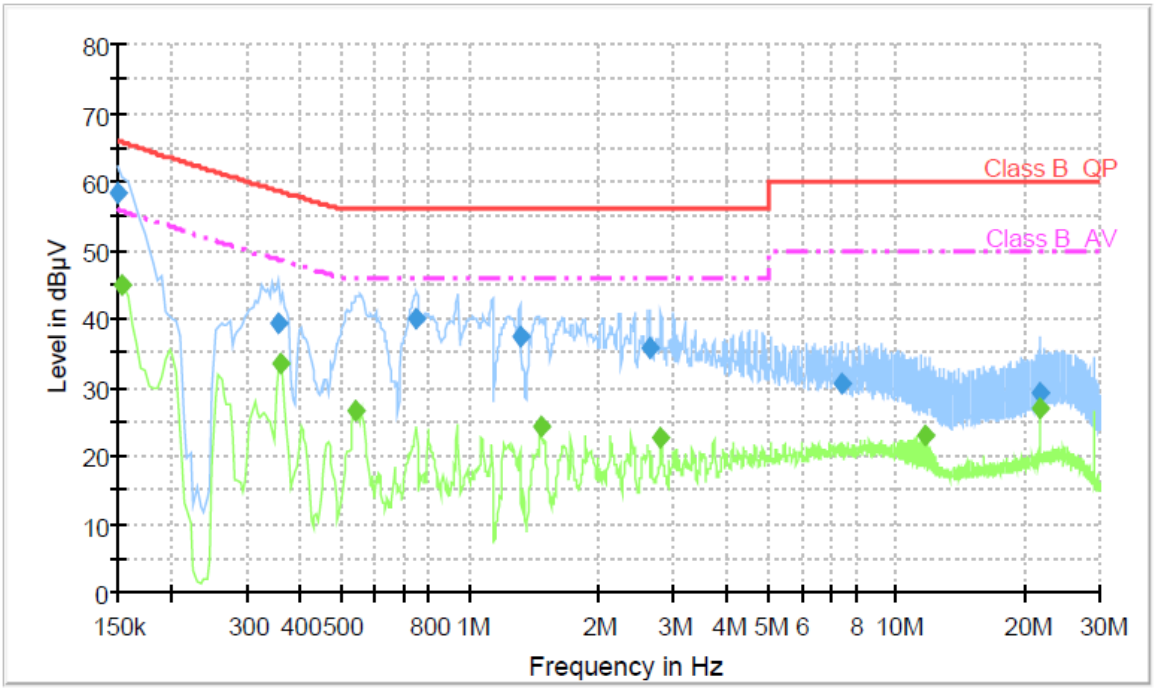
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.364000	39.3	1000.000	9.000	GND	L1	10.1	19.2	58.5	
0.552000	38.6	1000.000	9.000	GND	L1	10.1	17.4	56.0	
1.308000	36.7	1000.000	9.000	GND	L1	10.1	19.3	56.0	
2.812000	35.6	1000.000	9.000	GND	L1	10.2	20.4	56.0	
6.388000	31.9	1000.000	9.000	GND	L1	10.4	28.1	60.0	
25.416000	26.0	1000.000	9.000	GND	L1	11.1	34.0	60.0	

Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154000	46.4	1000.000	9.000	GND	L1	10.1	9.4	55.8	
0.360000	35.0	1000.000	9.000	GND	L1	10.1	13.5	48.5	
0.536000	26.7	1000.000	9.000	GND	L1	10.1	19.3	46.0	
1.464000	24.4	1000.000	9.000	GND	L1	10.1	21.6	46.0	
2.812000	22.8	1000.000	9.000	GND	L1	10.2	23.2	46.0	
11.512000	23.0	1000.000	9.000	GND	L1	10.6	27.0	50.0	
28.872000	27.7	1000.000	9.000	GND	L1	11.2	22.3	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	58.4	1000.000	9.000	GND	N	10.1	7.6	66.0	
0.358000	39.3	1000.000	9.000	GND	N	10.1	19.3	58.6	
0.750000	40.0	1000.000	9.000	GND	N	10.1	16.0	56.0	
1.310000	37.2	1000.000	9.000	GND	N	10.1	18.8	56.0	
2.634000	35.7	1000.000	9.000	GND	N	10.2	20.3	56.0	
7.446000	30.5	1000.000	9.000	GND	N	10.4	29.5	60.0	
21.670000	29.1	1000.000	9.000	GND	N	10.8	30.9	60.0	

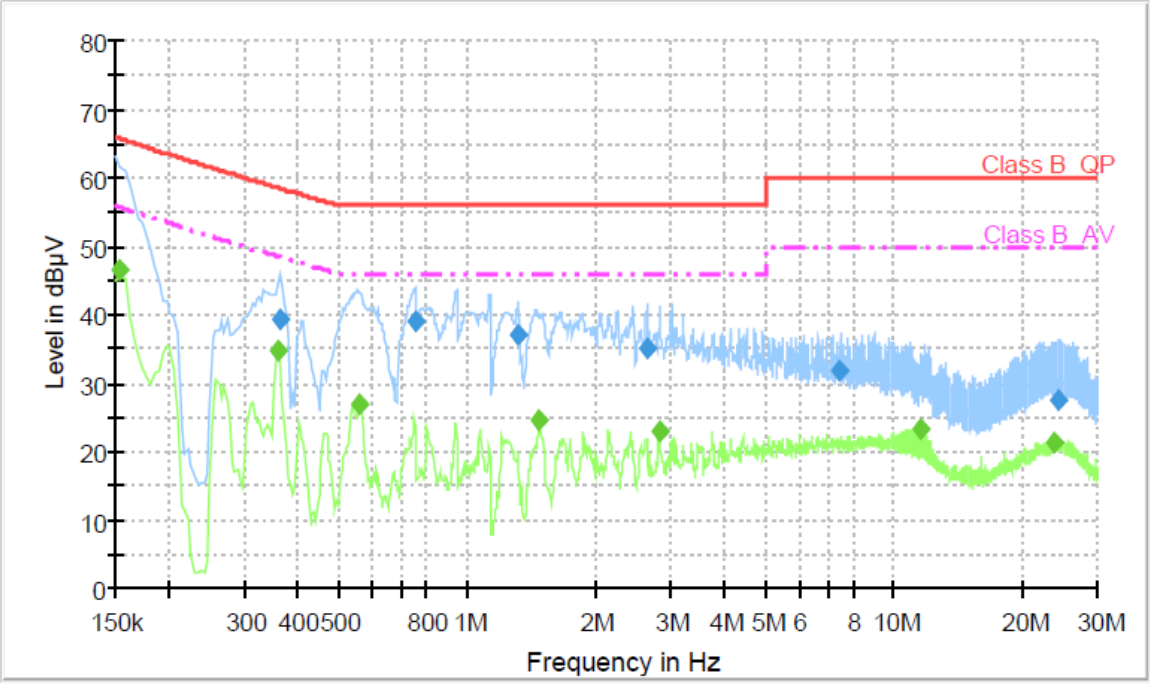
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154000	45.0	1000.000	9.000	GND	N	10.1	10.8	55.8	
0.362000	33.6	1000.000	9.000	GND	N	10.1	14.9	48.5	
0.538000	26.5	1000.000	9.000	GND	N	10.1	19.5	46.0	
1.466000	24.4	1000.000	9.000	GND	N	10.1	21.6	46.0	
2.810000	22.8	1000.000	9.000	GND	N	10.2	23.2	46.0	
11.650000	23.0	1000.000	9.000	GND	N	10.6	27.0	50.0	
21.666000	26.8	1000.000	9.000	GND	N	10.8	23.2	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

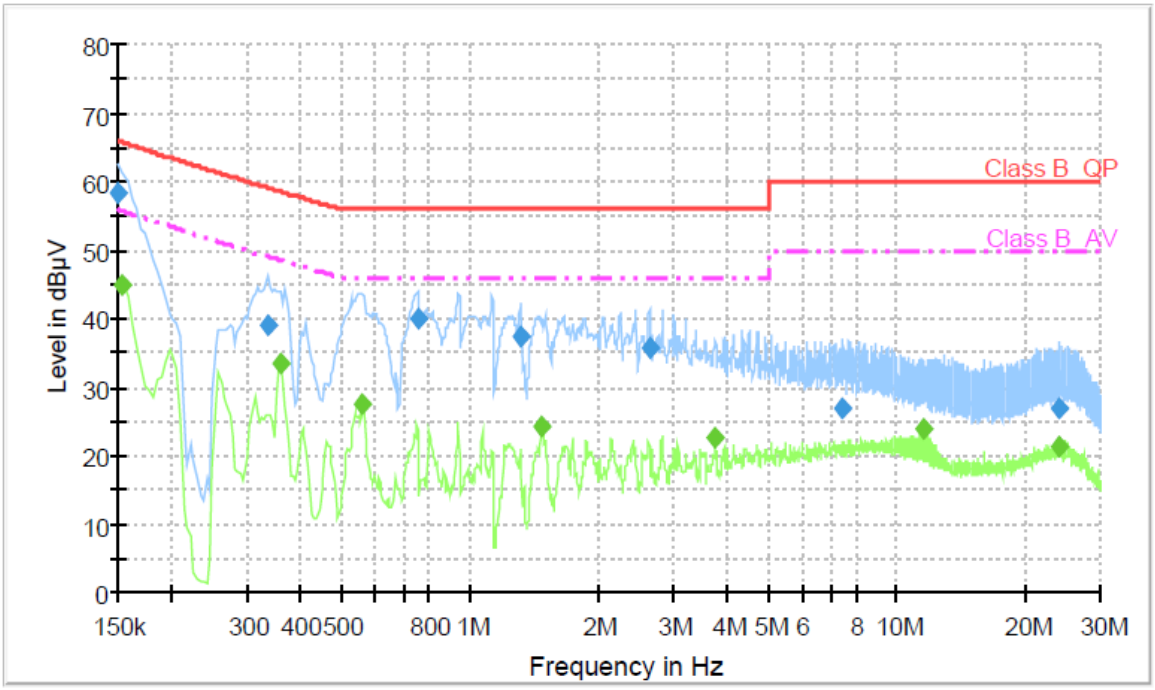
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.364000	39.4	1000.000	9.000	GND	L1	10.1	19.1	58.5	
0.756000	38.9	1000.000	9.000	GND	L1	10.1	17.1	56.0	
1.316000	37.2	1000.000	9.000	GND	L1	10.1	18.8	56.0	
2.644000	35.1	1000.000	9.000	GND	L1	10.2	20.9	56.0	
7.476000	31.9	1000.000	9.000	GND	L1	10.4	28.1	60.0	
24.164000	27.5	1000.000	9.000	GND	L1	11.1	32.5	60.0	

Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154000	46.4	1000.000	9.000	GND	L1	10.1	9.4	55.8	
0.360000	34.9	1000.000	9.000	GND	L1	10.1	13.6	48.5	
0.560000	27.0	1000.000	9.000	GND	L1	10.1	19.0	46.0	
1.472000	24.6	1000.000	9.000	GND	L1	10.1	21.4	46.0	
2.820000	23.0	1000.000	9.000	GND	L1	10.2	23.0	46.0	
11.508000	23.2	1000.000	9.000	GND	L1	10.6	26.8	50.0	
23.776000	21.3	1000.000	9.000	GND	L1	11.1	28.7	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
0.150000	58.4	1000.000	9.000	GND	N	10.1	7.6	66.0	
0.338000	38.9	1000.000	9.000	GND	N	10.1	20.2	59.1	
0.754000	39.8	1000.000	9.000	GND	N	10.1	16.2	56.0	
1.314000	37.3	1000.000	9.000	GND	N	10.1	18.7	56.0	
2.642000	35.7	1000.000	9.000	GND	N	10.2	20.3	56.0	
7.462000	27.0	1000.000	9.000	GND	N	10.4	33.0	60.0	
24.006000	26.8	1000.000	9.000	GND	N	10.7	33.2	60.0	

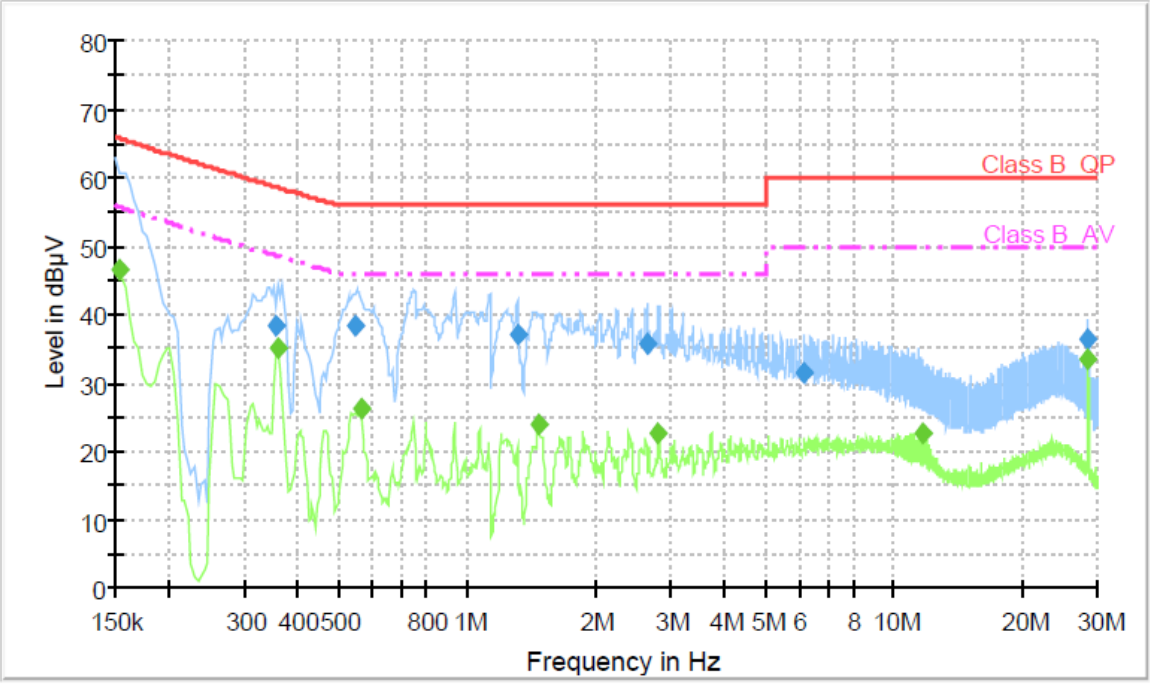
Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154000	44.8	1000.000	9.000	GND	N	10.1	11.0	55.8	
0.362000	33.6	1000.000	9.000	GND	N	10.1	14.9	48.5	
0.562000	27.4	1000.000	9.000	GND	N	10.1	18.6	46.0	
1.470000	24.4	1000.000	9.000	GND	N	10.1	21.6	46.0	
3.738000	22.5	1000.000	9.000	GND	N	10.3	23.5	46.0	
11.510000	23.8	1000.000	9.000	GND	N	10.6	26.2	50.0	
24.010000	21.5	1000.000	9.000	GND	N	10.7	28.5	50.0	

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

♦ Operating condition: 1 360 × 768 / 60 Hz (HDMI/DVI: Digital)

Voltage with 4-Line-LISN_L1



Final Measurement Detector 1

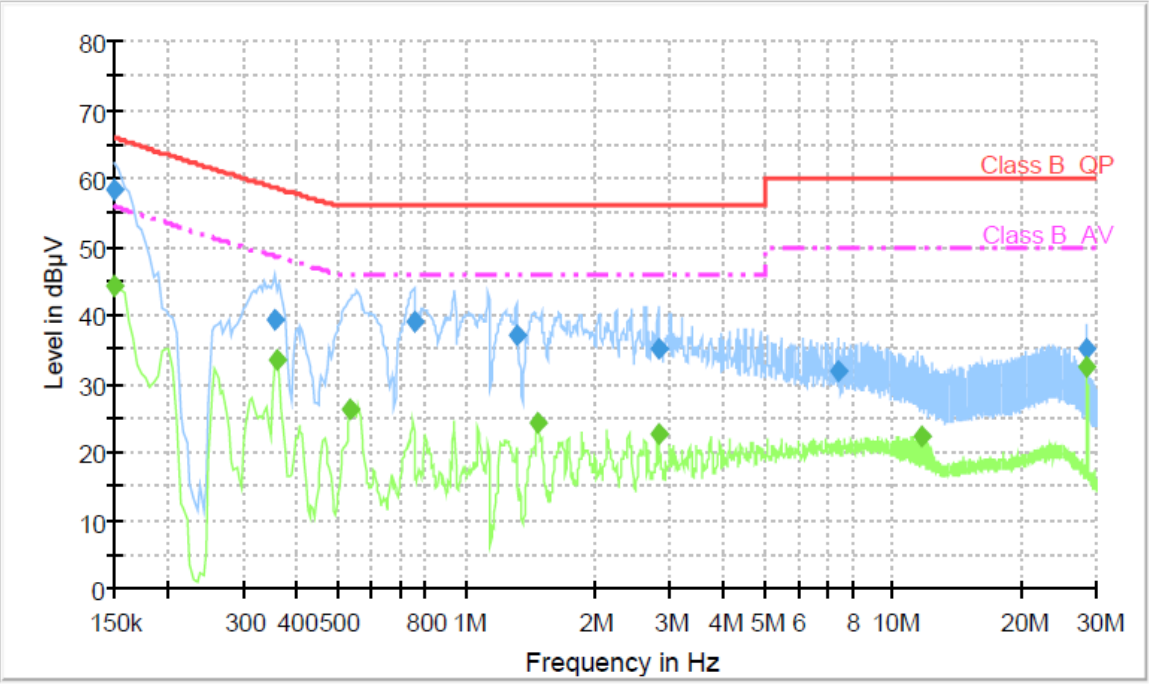
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.356000	38.4	1000.000	9.000	GND	L1	10.1	20.3	58.7	
0.548000	38.5	1000.000	9.000	GND	L1	10.1	17.5	56.0	
1.312000	37.2	1000.000	9.000	GND	L1	10.1	18.8	56.0	
2.636000	35.6	1000.000	9.000	GND	L1	10.2	20.4	56.0	
6.120000	31.5	1000.000	9.000	GND	L1	10.4	28.5	60.0	
28.476000	36.4	1000.000	9.000	GND	L1	11.2	23.6	60.0	

Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154000	46.4	1000.000	9.000	GND	L1	10.1	9.4	55.8	
0.360000	34.9	1000.000	9.000	GND	L1	10.1	13.6	48.5	
0.564000	26.4	1000.000	9.000	GND	L1	10.1	19.6	46.0	
1.464000	24.1	1000.000	9.000	GND	L1	10.1	21.9	46.0	
2.808000	22.7	1000.000	9.000	GND	L1	10.2	23.3	46.0	
11.720000	22.7	1000.000	9.000	GND	L1	10.6	27.3	50.0	
28.476000	33.6	1000.000	9.000	GND	L1	11.2	16.4	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
0.150000	58.3	1000.000	9.000	GND	N	10.1	7.7	66.0	
0.358000	39.2	1000.000	9.000	GND	N	10.1	19.4	58.6	
0.754000	39.0	1000.000	9.000	GND	N	10.1	17.0	56.0	
1.314000	36.9	1000.000	9.000	GND	N	10.1	19.1	56.0	
2.826000	35.1	1000.000	9.000	GND	N	10.2	20.9	56.0	
7.462000	31.8	1000.000	9.000	GND	N	10.4	28.2	60.0	
28.474000	35.2	1000.000	9.000	GND	N	10.7	24.8	60.0	

Final Measurement Detector 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	44.4	1000.000	9.000	GND	N	10.1	11.6	56.0	
0.362000	33.6	1000.000	9.000	GND	N	10.1	14.9	48.5	
0.534000	26.2	1000.000	9.000	GND	N	10.1	19.8	46.0	
1.470000	24.3	1000.000	9.000	GND	N	10.1	21.7	46.0	
2.814000	22.7	1000.000	9.000	GND	N	10.2	23.3	46.0	
11.646000	22.4	1000.000	9.000	GND	N	10.6	27.6	50.0	
28.474000	32.6	1000.000	9.000	GND	N	10.7	17.4	50.0	

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

6. Radiated Emission

6.1 Operating Environment

Temperature : 24 ℃
Relative Humidity : 44 % R.H.

6.2 Test Set-up

A preliminary and final measurement was at 3 m anechoic chamber.
The EUT was placed on a non-conductive turntable approximately 0.8 m above the ground plane.
The turntable with EUT was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels.
This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

6.3 Measurement Uncertainty

The measurement uncertainty was calculated in accordance with ISO “Guide to the expression of uncertainty in measurement”.
The measurement uncertainty was given with a confidence of 95 %.

Test Items(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 μV/m	CISPR Limit @ 10 m. dB μV/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

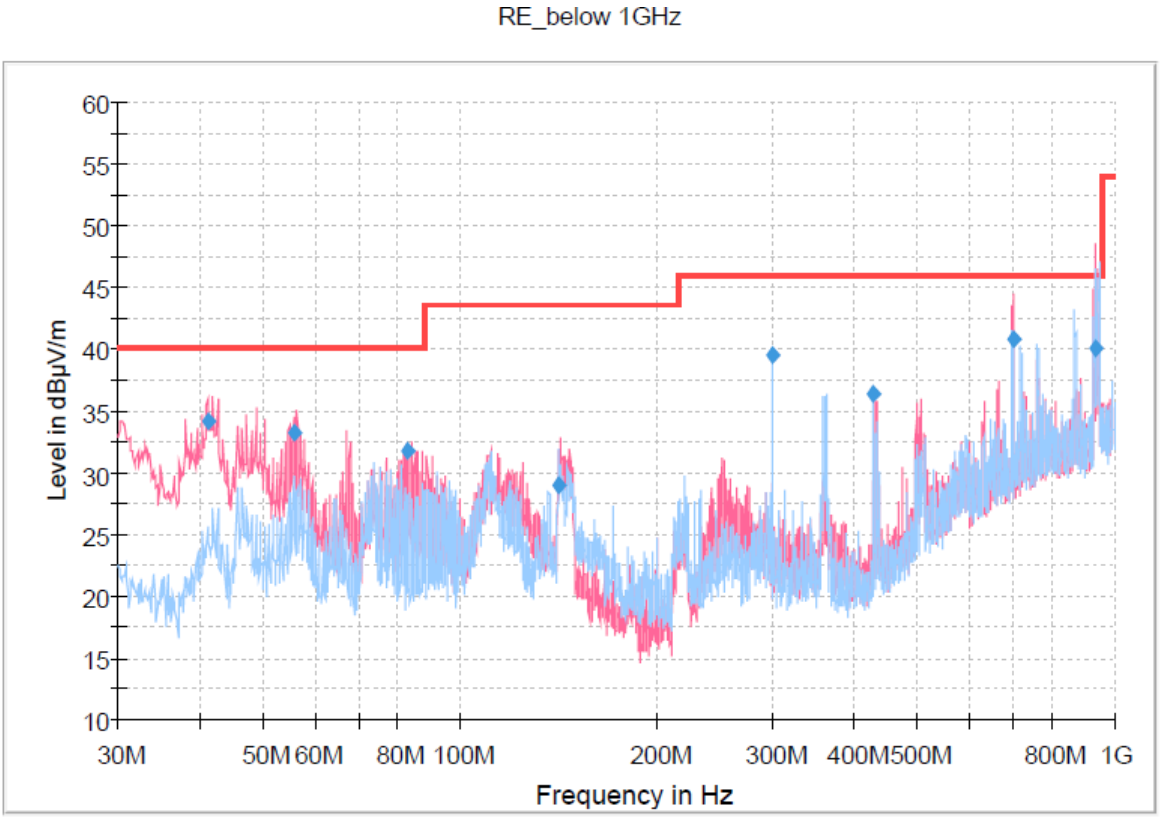
6.5 Test Equipment used

	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 28, 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: 1 360 × 768 / 60 Hz (RGB: Analog)
Red trace: Vertical polarization, Blue trace: Horizontal polarization

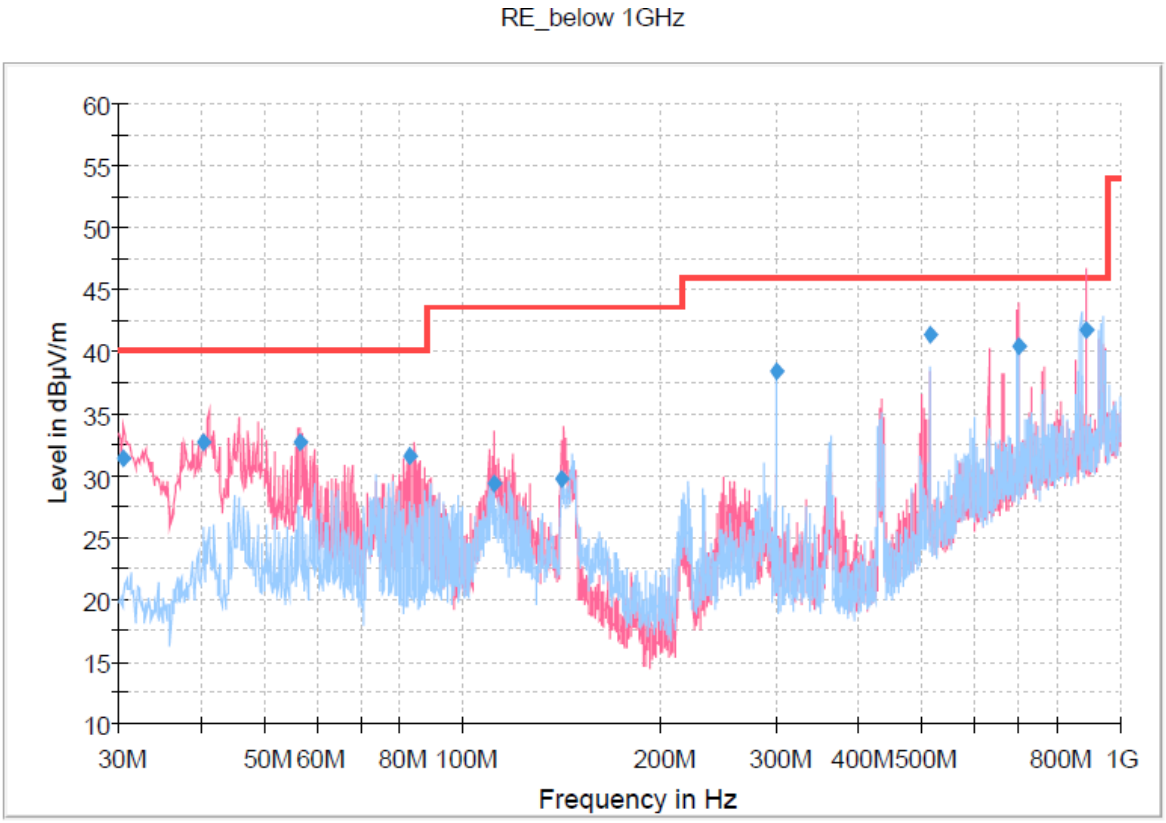


Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
41.142500	34.1	500.0	120.000	100.0	V	0.0	12.6	5.90	40.00
55.611250	33.2	500.0	120.000	100.0	V	0.0	13.0	6.80	40.00
83.062500	31.8	500.0	120.000	200.0	V	0.0	9.2	8.20	40.00
141.695000	29.0	500.0	120.000	100.0	V	0.0	14.5	14.50	43.50
300.690000	39.6	500.0	120.000	100.0	H	278.0	16.9	6.40	46.00
427.477500	36.3	500.0	120.000	100.0	H	166.0	18.9	9.70	46.00
699.685000	40.9	500.0	120.000	100.0	V	193.0	26.6	5.10	46.00
934.195000	40.1	500.0	120.000	200.0	V	182.0	30.4	5.90	46.00

< Fig 12. Radiated emission result (30 MHz ~ 1 000 MHz) >

♦ Operating Condition: 1 360 × 768 / 60 Hz (HDMI/DVI: Digital)
Red trace: Vertical polarization, Blue trace: Horizontal polarization

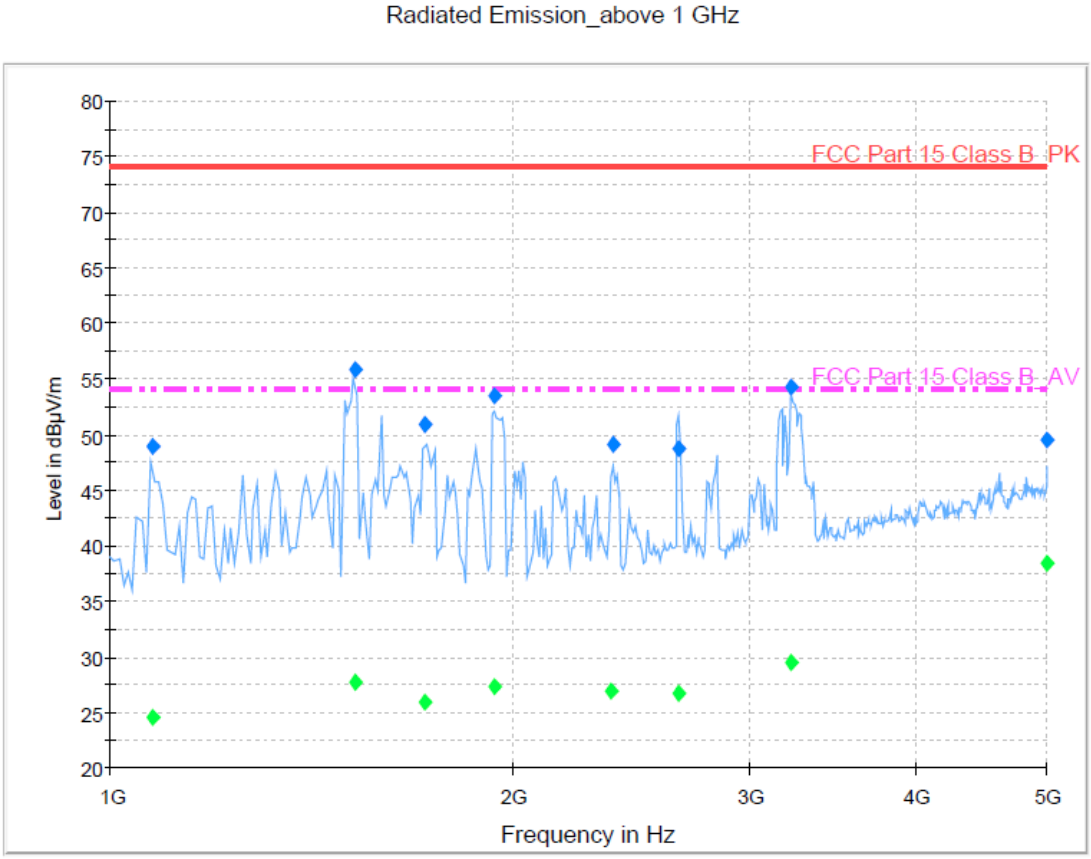


Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.520000	31.4	500.0	120.000	100.0	V	51.0	11.3	8.60	40.00
40.375000	32.7	500.0	120.000	100.0	V	133.0	12.6	7.30	40.00
56.411250	32.7	500.0	120.000	100.0	V	351.0	13.0	7.30	40.00
83.062500	31.6	500.0	120.000	200.0	V	0.0	9.2	8.40	40.00
111.298750	29.3	500.0	120.000	100.0	V	110.0	12.7	14.20	43.50
141.703750	29.7	500.0	120.000	100.0	H	0.0	14.5	13.80	43.50
300.731250	38.4	500.0	120.000	100.0	H	253.0	16.9	7.60	46.00
513.000000	41.4	500.0	120.000	100.0	H	185.0	22.5	4.60	46.00
699.683750	40.5	500.0	120.000	100.0	V	197.0	26.6	5.50	46.00
890.977500	41.7	500.0	120.000	100.0	V	351.0	29.6	4.30	46.00

< Fig 13. Radiated emission result (30 MHz ~ 1 000 MHz) >

♦ Operating Condition: 1 360 × 768 / 60 Hz (RGB: Analog)
Green market: Average detector, Blue market: Peak detector



Final Result 1

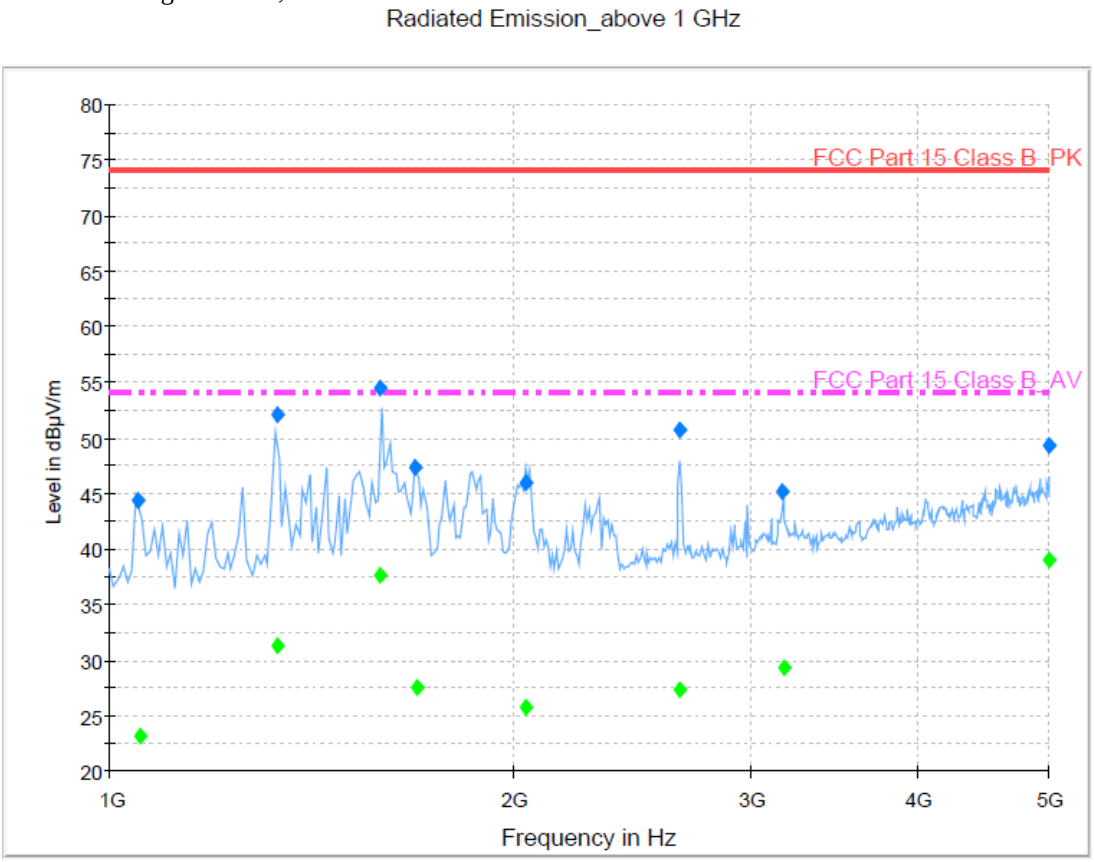
Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1076.744289	48.9	1000.0	1000.000	100.0	V	164.0	-14.1	25.1	74.0
1522.442084	55.8	1000.0	1000.000	100.0	V	218.0	-12.9	18.2	74.0
1716.442886	50.9	1000.0	1000.000	113.0	V	179.0	-12.5	23.1	74.0
1932.875752	53.4	1000.0	1000.000	100.0	V	212.0	-12.0	20.6	74.0
2370.541483	49.0	1000.0	1000.000	100.0	V	200.0	-9.9	25.0	74.0
2657.918637	48.7	1000.0	1000.000	204.0	H	169.0	-8.7	25.3	74.0
3218.640882	54.2	1000.0	1000.000	100.0	V	219.0	-6.5	19.8	74.0
5000.000000	49.5	1000.0	1000.000	100.0	V	218.0	-1.1	24.5	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)
1075.944289	24.5	1000.0	1000.000	100.0	V	184.0	-14.1	29.5	54.0
1526.042084	27.8	1000.0	1000.000	100.0	V	224.0	-12.9	26.2	54.0
1716.442886	25.9	1000.0	1000.000	112.0	V	182.0	-12.5	28.1	54.0
1932.875752	27.4	1000.0	1000.000	100.0	V	217.0	-12.0	26.6	54.0
2367.741483	26.9	1000.0	1000.000	100.0	V	185.0	-9.9	27.1	54.0
2659.918637	26.8	1000.0	1000.000	179.0	H	184.0	-8.7	27.2	54.0
3225.040882	29.4	1000.0	1000.000	100.0	V	224.0	-6.5	24.6	54.0
5000.000000	38.5	1000.0	1000.000	146.0	V	224.0	-1.1	15.5	54.0

< Fig 14. Radiated emission result (1 000 MHz ~ 5 000 MHz) >

♦ Operating Condition: 1 360 × 768 / 60 Hz (HDMI/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)
1051.096192	44.4	1000.0	1000.000	100.0	V	47.0	-14.2	29.6	74.0
1333.657315	52.2	1000.0	1000.000	121.0	V	201.0	-13.4	21.8	74.0
1592.986373	54.4	1000.0	1000.000	100.0	V	245.0	-12.7	19.6	74.0
1689.578758	47.3	1000.0	1000.000	113.0	V	162.0	-12.5	26.7	74.0
2040.284168	46.0	1000.0	1000.000	100.0	V	154.0	-11.5	28.0	74.0
2655.118637	50.8	1000.0	1000.000	100.0	H	43.0	-8.7	23.2	74.0
3168.144689	45.2	1000.0	1000.000	100.0	V	213.0	-6.7	28.8	74.0
5000.000000	49.3	1000.0	1000.000	100.0	V	218.0	-1.1	24.7	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)
1052.296192	23.2	1000.0	1000.000	100.0	V	43.0	-14.2	30.8	54.0
1332.057315	31.3	1000.0	1000.000	121.0	V	201.0	-13.4	22.7	54.0
1592.986373	37.6	1000.0	1000.000	100.0	V	242.0	-12.7	16.4	54.0
1694.378758	27.4	1000.0	1000.000	124.0	V	158.0	-12.5	26.6	54.0
2037.484168	25.7	1000.0	1000.000	113.0	V	159.0	-11.5	28.3	54.0
2654.718637	27.4	1000.0	1000.000	131.0	H	63.0	-8.7	26.6	54.0
3173.344689	29.3	1000.0	1000.000	100.0	V	225.0	-6.7	24.7	54.0
5000.000000	39.0	1000.0	1000.000	139.0	V	224.0	-1.1	15.0	54.0

< Fig 15. Radiated emission result (1 000 MHz ~ 5 000 MHz) >

7. Sample Calculations

$$dB\mu V = 20 \text{ Log }_{10}(\mu V/m)$$
$$dB\mu V = dBm + 107$$
$$\mu V = 10^{(dB\mu V/20)}$$

7.1 Example 1 :

■ **20.3 MHz**

Class B Limit = 250 μV = 48 dBμV

Reading = 39.2 dBμV

$10^{(39.2dB\mu V/20)}$ = 91.2 μV

Margin = 48 dBμV - 39.2 dBμV

= 8.8 dB

7.2 Example 2 :

■ **66.7 MHz**

Class B Limit = 100 μV/m = 40.0 dBμV/m

Reading = 31.0 dBμV

Antenna Factor + Cable Loss = 5.8 dB

Total = 36.8 dBμV/m

Margin = 40.0 dBμV/m – 36.8 dBμV/m

= 3.2 dB

8. Recommendation & Conclusion

The data collected shows that the **LG Electronics Inc. LCD TV/Monitor (Model Name: 32LK330-UH)** was complies with §15.107 and 15.109 of the FCC Rules.