

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: January 30, 2012

Order Number: GETEC-C1-12-015

Test Report Number: GETEC-E3-12-006

Test Site: GUMI COLLEGE EMC CENTER

FCC Registration Number: (100749, 443957)

FCC ID. : BEJ47LM5850UF

Applicant : LG Electronics Inc.

Rule Part(s)	: FCC Part 15 Subpart B
Equipment Class	: Class B computing device peripheral (JBP)
EUT Type	: LED LCD TV/Monitor
Type of Authority	: Certification
Model Name	: 47LM5850-UF
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.** BEJ47LM5850UF
- **EUT Type** LED LCD TV/Monitor
- **Model Name** 47LM5850-UF
- **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** January 13 ~ 17, 2012
- **Place of Test** **GUMI COLLEGE EMC CENTER** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongsangbuk-do, Korea.
- **Test Report Number** GETEC-E3-12-006
- **Dates of Issue** January 30, 2012



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 TV/Monitor (Model Name: 47LM5850-UF)

These measurement tests were conducted at **GUMI COLLEGE EMC CENTER**

The site address is 407, Bugok-dong, Gumi-si, Gyeongsangbuk-do, 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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Gyeongsangbuk-do, Korea.
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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 TV/Monitor (Model Name: 47LM5850-UF) FCC ID.: BEJ47LM5850UF

MODELS		42LM5850 (42LM5850-UF)	47LM5850 (47LM5850-UF)
Dimensions (W x H x D)	With stand	1089.0 mm x 722.0 mm x 269.0 mm (42.8 inch x 28.4 inch x 10.5 inch)	1089.0 mm x 730.0 mm x 263.0 mm (42.8 inch x 28.7 inch x 10.3 inch)
	Without stand	1089.0 mm x 655.0 mm x 35.5 mm (42.8 inch x 25.7 inch x 1.3 inch)	1089.0 mm x 655.0 mm x 35.5 mm (42.8 inch x 25.7 inch x 1.3 inch)
Weight	With stand	18.1 kg (39.9 lbs)	17.8 kg (39.2 lbs)
	Without stand	15.6 kg (34.3 lbs)	15.6 kg (34.3 lbs)
Current Value / Power consumption		1.2 A / 120 W	1.5 A / 150 W
Power requirement		AC 100 - 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(Main board)	ASLOCK	770iCafe	S/N: 0AM0X3097310 FCC ID.: DoC
Video card	Rextechnology Co., Ltd.	HD4850	S/N: L5H401947 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.	DV492H	S/N: 004INLV013640 FCC ID.: Verification
USB memory stick	SAMSUNG	SUM-PSB4	S/N: TBBB202478F FCC ID.: DoC
Digital TV pattern generator	Teleview	TPG430B	S/N: 93.01.20.05.09.00.00.02 FCC ID.: Verification
8-VSB modulator	Ktech	VSB-ENC-150E	S/N: 2005-726 FCC ID.: Verification

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	LG Electronics Inc.	AKB73615379	S/N: None. FCC ID.: N/A
BD player	LG Electronics Inc.	BP420	S/N: None. FCC ID.: Verification



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	1.80 m shielded with two ferrite cores
HDMI/DVI (Digital) in cable	Connected to the EUT and PC	2.00 m shielded
Audio(RGB/DVI) in cable	Connected to the EUT and PC	1.50 m shielded
HDMI cable	Connected to the EUT and BD player	2.00 m shielded
AV in cable	Connected to the EUT and BD player	1.50 m shielded
Component in cable	Connected to the EUT and DVD player	3.00 m shielded
Antenna cable	Connected to the EUT and digital TV pattern generator	10.00 m shielded

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

"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

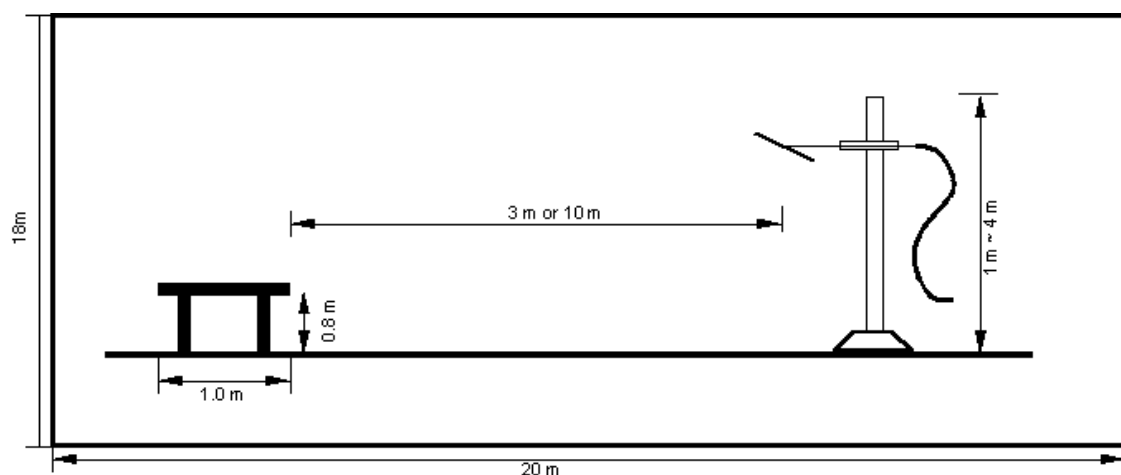


Fig 3. Dimensions of test site



5. Conducted Emission

5.1 Operating Environment

Temperature : 24.0 °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 level of approximately 95 % ($k = 2$)
Conducted emission (150 kHz ~ 30 MHz)	± 3.34 dB	Confidence level of approximately 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

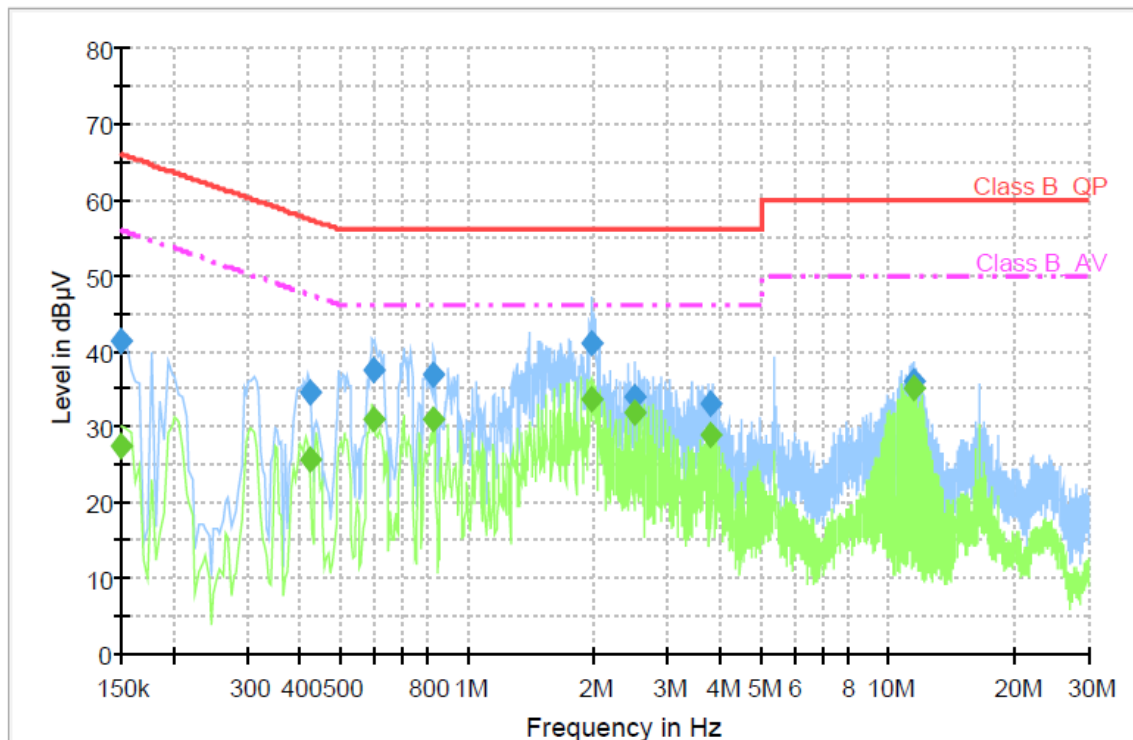
Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESCS30	Rohde & Schwarz	EMI Test Receiver	839809/003	12. 05. 2012
■ - ESH3-Z5	Rohde & Schwarz	LISN	838979/020	12. 07. 2012
■ - ENV216	Rohde & Schwarz	LISN	100173	12. 07. 2012
□ - ENY81-CA6	Rohde & Schwarz	ISN	101573	10. 19. 2012

5.6 Test data for Conducted Emission

- . Test Date : January 16, 2012
- . Resolution Bandwidth : 9 kHz
- . Frequency Range : 0.15 MHz ~ 30 MHz
- . Line : L1: Live, N: Neutral



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



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	41.3	1000.0	9.000	On	N	9.7	24.7	66.0	
0.420000	34.5	1000.0	9.000	On	N	9.7	22.9	57.4	
0.596000	37.5	1000.0	9.000	On	L1	9.7	18.5	56.0	
0.832000	36.8	1000.0	9.000	On	N	9.7	19.2	56.0	
1.972000	41.0	1000.0	9.000	On	N	9.7	15.0	56.0	
2.504000	33.9	1000.0	9.000	On	L1	9.7	22.1	56.0	
3.788000	32.9	1000.0	9.000	On	N	9.7	23.1	56.0	
11.512000	36.0	1000.0	9.000	On	N	9.9	24.0	60.0	

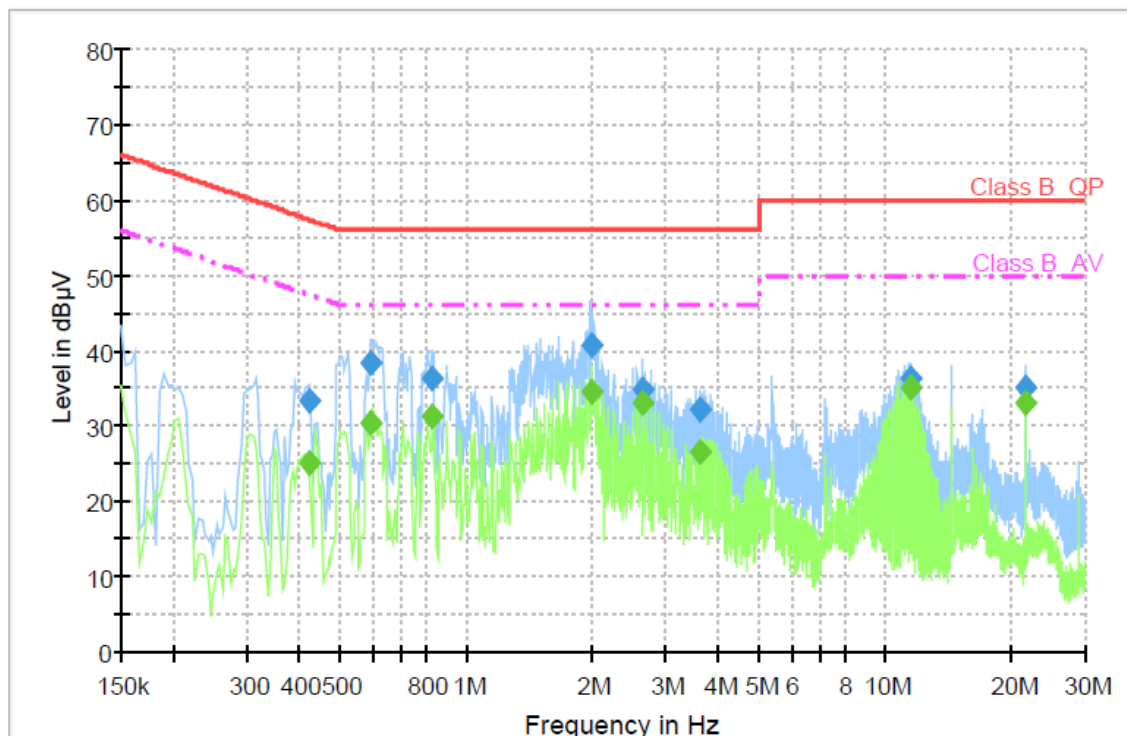
Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	27.5	1000.0	9.000	On	N	9.7	28.5	56.0	
0.420000	25.7	1000.0	9.000	On	N	9.7	21.7	47.4	
0.596000	30.9	1000.0	9.000	On	L1	9.7	15.1	46.0	
0.832000	31.1	1000.0	9.000	On	N	9.7	14.9	46.0	
1.972000	33.8	1000.0	9.000	On	N	9.7	12.2	46.0	
2.504000	31.9	1000.0	9.000	On	L1	9.7	14.1	46.0	
3.788000	29.0	1000.0	9.000	On	N	9.7	17.0	46.0	
11.512000	35.2	1000.0	9.000	On	N	9.9	14.8	50.0	

< Fig 4. Conducted emission result >



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



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.420000	33.3	1000.0	9.000	On	N	9.7	24.2	57.4	
0.592000	38.3	1000.0	9.000	On	N	9.7	17.7	56.0	
0.832000	36.3	1000.0	9.000	On	L1	9.7	19.7	56.0	
1.996000	40.7	1000.0	9.000	On	N	9.7	15.3	56.0	
2.632000	34.7	1000.0	9.000	On	L1	9.7	21.3	56.0	
3.612000	32.2	1000.0	9.000	On	N	9.7	23.8	56.0	
11.512000	36.2	1000.0	9.000	On	N	9.9	23.8	60.0	
21.664000	35.2	1000.0	9.000	On	N	10.2	24.8	60.0	

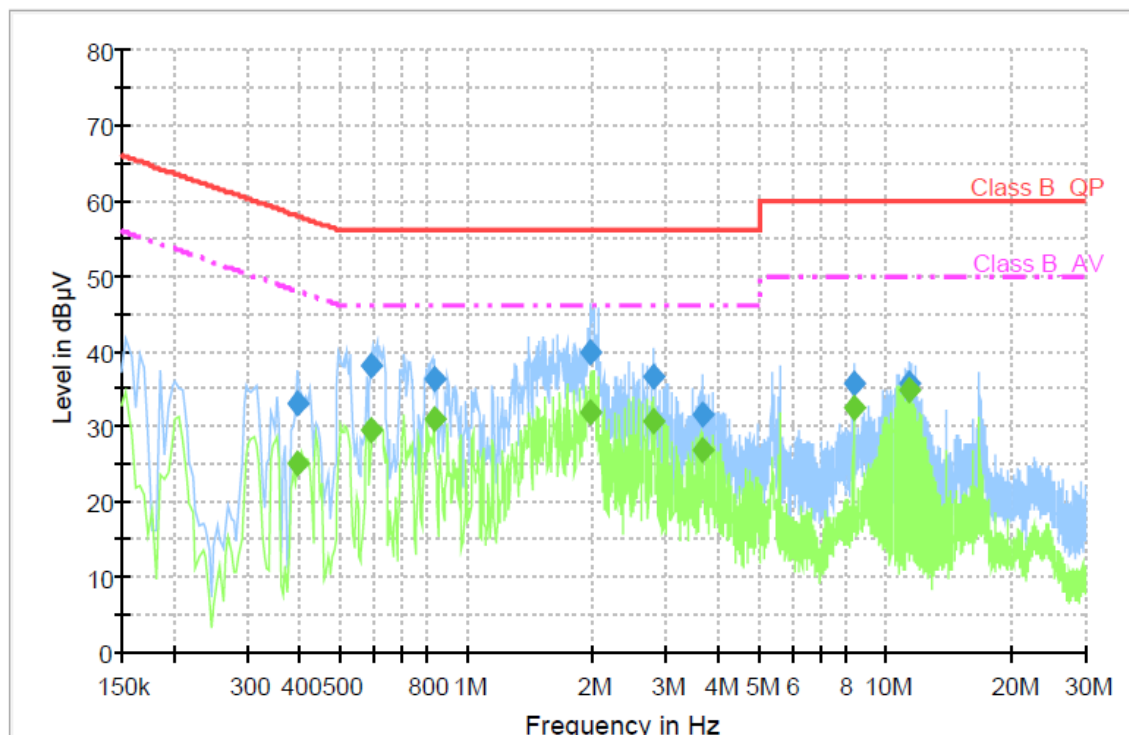
Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.420000	25.0	1000.0	9.000	On	N	9.7	22.5	47.4	
0.592000	30.3	1000.0	9.000	On	N	9.7	15.7	46.0	
0.832000	31.2	1000.0	9.000	On	L1	9.7	14.8	46.0	
1.996000	34.6	1000.0	9.000	On	N	9.7	11.4	46.0	
2.632000	32.9	1000.0	9.000	On	L1	9.7	13.1	46.0	
3.612000	26.5	1000.0	9.000	On	N	9.7	19.5	46.0	
11.512000	35.2	1000.0	9.000	On	N	9.9	14.8	50.0	
21.664000	33.1	1000.0	9.000	On	N	10.2	16.9	50.0	

< Fig 5. Conducted emission result >



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



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.396000	33.0	1000.0	9.000	On	N	9.6	25.0	57.9	
0.592000	38.1	1000.0	9.000	On	N	9.7	17.9	56.0	
0.836000	36.2	1000.0	9.000	On	L1	9.7	19.8	56.0	
1.972000	39.9	1000.0	9.000	On	L1	9.7	16.1	56.0	
2.792000	36.7	1000.0	9.000	On	L1	9.7	19.3	56.0	
3.656000	31.7	1000.0	9.000	On	N	9.7	24.3	56.0	
8.404000	35.7	1000.0	9.000	On	L1	9.8	24.3	60.0	
11.368000	35.6	1000.0	9.000	On	L1	9.9	24.4	60.0	

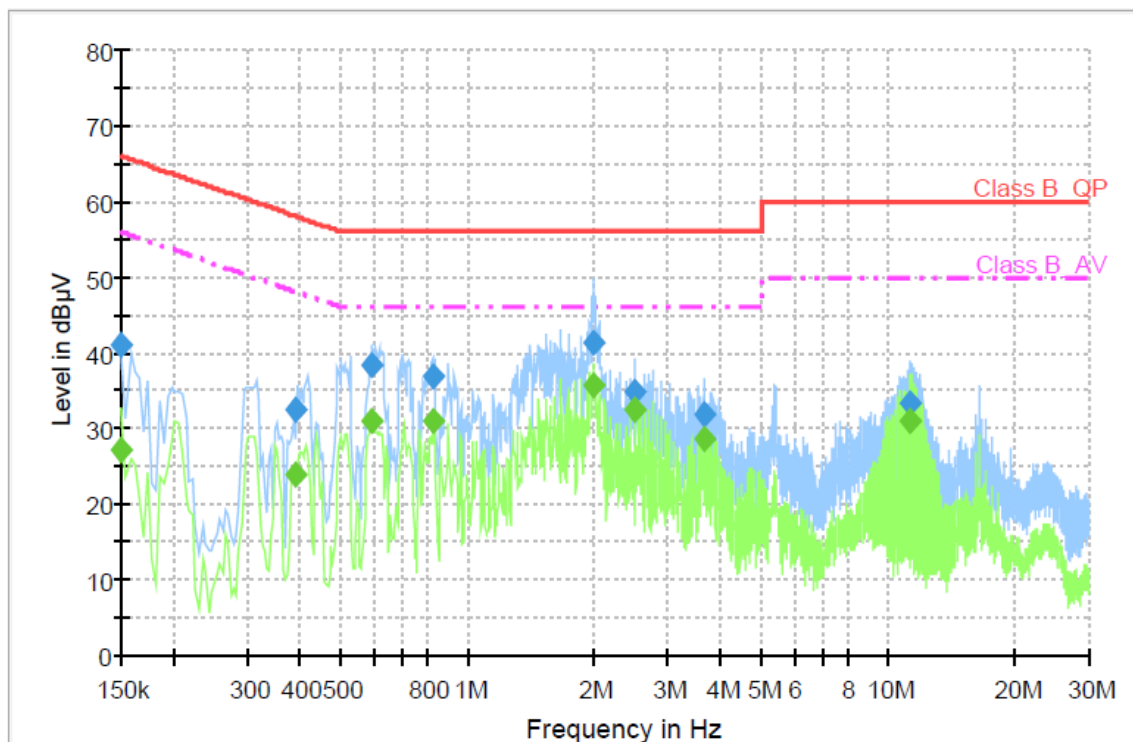
Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.396000	25.2	1000.0	9.000	On	N	9.6	22.8	47.9	
0.592000	29.5	1000.0	9.000	On	N	9.7	16.5	46.0	
0.836000	31.1	1000.0	9.000	On	L1	9.7	14.9	46.0	
1.972000	32.0	1000.0	9.000	On	L1	9.7	14.0	46.0	
2.792000	30.8	1000.0	9.000	On	L1	9.7	15.2	46.0	
3.656000	27.0	1000.0	9.000	On	N	9.7	19.0	46.0	
8.404000	32.6	1000.0	9.000	On	L1	9.8	17.4	50.0	
11.368000	34.9	1000.0	9.000	On	L1	9.9	15.1	50.0	

< Fig 6. Conducted emission result >



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



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	41.2	1000.0	9.000	On	N	9.7	24.8	66.0	
0.392000	32.4	1000.0	9.000	On	N	9.6	25.6	58.0	
0.592000	38.2	1000.0	9.000	On	N	9.7	17.8	56.0	
0.832000	36.8	1000.0	9.000	On	N	9.7	19.2	56.0	
1.996000	41.2	1000.0	9.000	On	N	9.7	14.8	56.0	
2.504000	34.9	1000.0	9.000	On	L1	9.7	21.2	56.0	
3.664000	31.9	1000.0	9.000	On	N	9.7	24.1	56.0	
11.300000	33.3	1000.0	9.000	On	N	9.9	26.7	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	27.3	1000.0	9.000	On	N	9.7	28.7	56.0	
0.392000	23.9	1000.0	9.000	On	N	9.6	24.1	48.0	
0.592000	31.1	1000.0	9.000	On	N	9.7	14.9	46.0	
0.832000	30.9	1000.0	9.000	On	N	9.7	15.1	46.0	
1.996000	35.6	1000.0	9.000	On	N	9.7	10.4	46.0	
2.504000	32.6	1000.0	9.000	On	L1	9.7	13.4	46.0	
3.664000	28.5	1000.0	9.000	On	N	9.7	17.5	46.0	
11.300000	30.9	1000.0	9.000	On	N	9.9	19.1	50.0	

< Fig 7. Conducted emission result >



6. Radiated Emission

6.1 Operating Environment

Temperature : 24.0 °C
Relative Humidity : 40.0 % 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 level of approximately 95 % ($k = 2$)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	± 3.50 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	± 3.75 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	± 3.59 dB	Confidence level of approximately 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. 05. 2012
■ - VULB9160	Schwarzbeck	Broadband Test Antenna	3193	03. 15. 2012
■ - BBHA9120D	Schwarzbeck	Horn ANT	597	01. 23. 2013
■ - MCU066	maturo GmbH	Position Controller	1390306	N/A
■ - TT2.5SI	maturo GmbH	Turntable	1390307	N/A
■ - AM 4.0	maturo GmbH	Antenna Mast	1390308	N/A
■ - AFS 44 00101800-25-10P-44	MITEQ	Preamplifier	1258943	11. 12. 2012

6.6 Test data for Radiated Emission

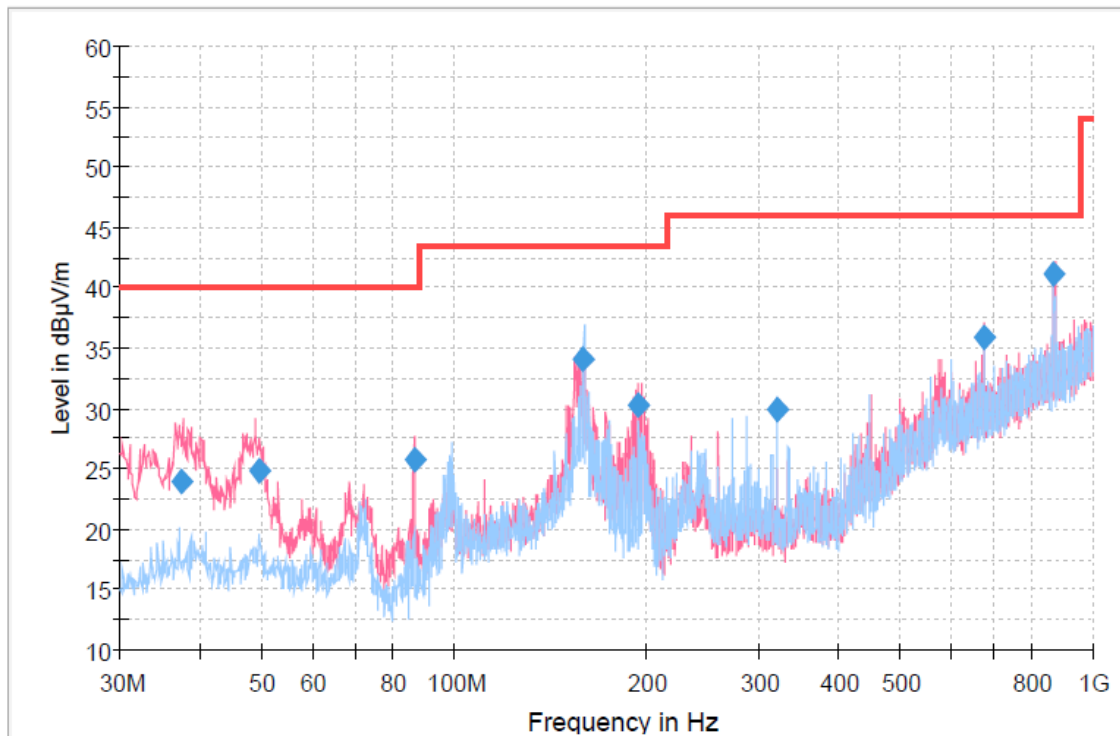
- . Test Date : January 13 ~ 17, 2011
-. Measurement Distance : 3 m
-. Note : The highest frequency of the internal source of the EUT is between 500 MHz and 1 000 MHz (800 MHz). The measurement was made up to 5 000 MHz

-. Measurement

Frequency range	30 MHz ~ 1 GHz	Above 1 GHz
Detector mode	Quasi peak	Peak / Average
Resolution bandwidth	120 kHz	1 MHz



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



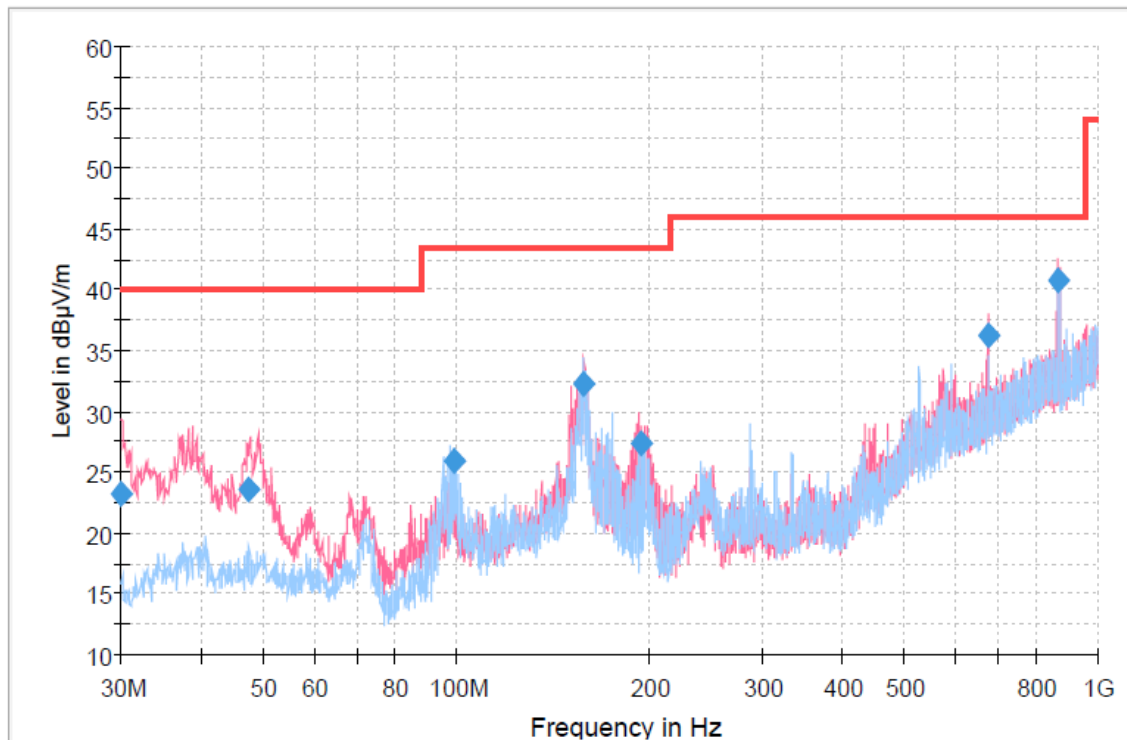
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
37.338750	24.0	500.0	120.000	114.0	V	163.0	12.1	16.00	40.00
49.453750	24.8	500.0	120.000	104.0	V	166.0	13.2	15.20	40.00
86.603750	25.7	500.0	120.000	136.0	V	226.0	9.2	14.30	40.00
159.117500	34.0	500.0	120.000	185.0	H	205.0	15.5	9.50	43.50
194.417500	30.2	500.0	120.000	100.0	V	54.0	12.2	13.30	43.50
321.747500	29.8	500.0	120.000	100.0	H	278.0	17.2	16.20	46.00
674.166250	36.0	500.0	120.000	105.0	V	215.0	26.2	10.00	46.00
872.111250	41.2	500.0	120.000	100.0	V	195.0	29.5	4.80	46.00

< Fig 8. Radiated emission result (30 MHz ~ 1 000 MHz) >



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



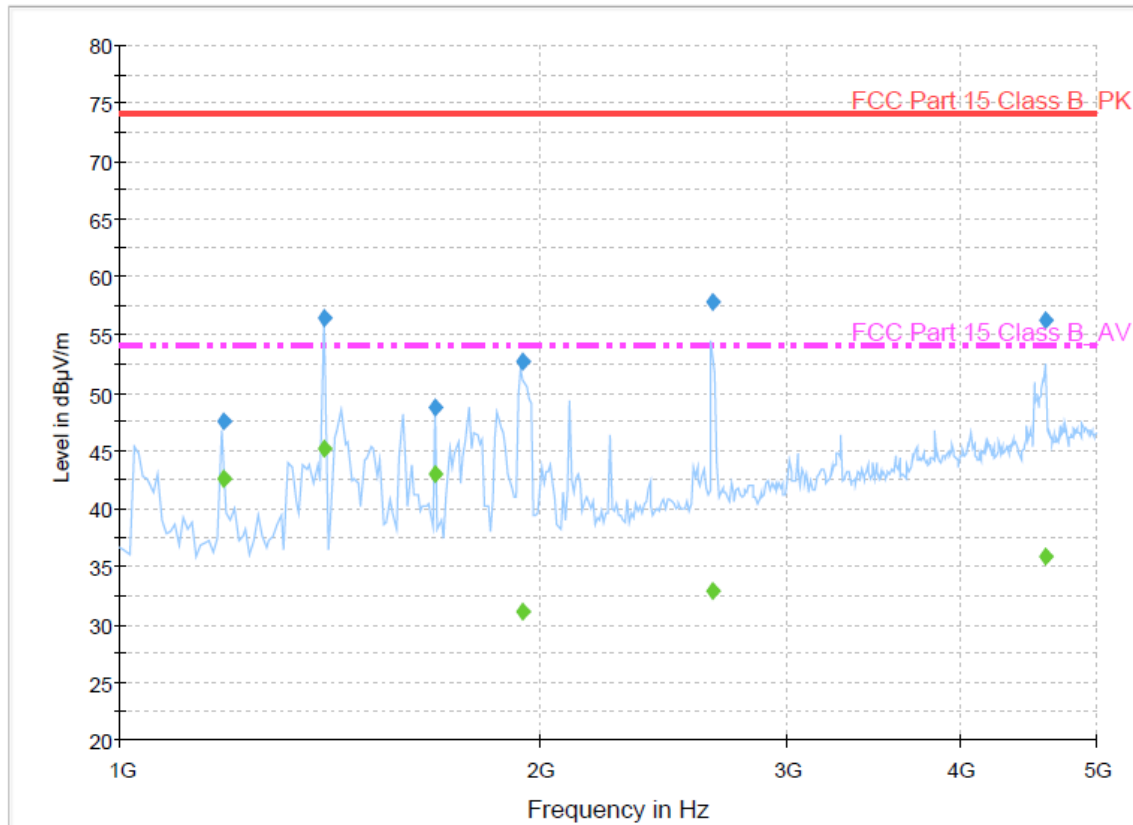
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
30.000000	23.3	500.0	120.000	100.0	V	202.0	11.2	16.70	40.00
47.416250	23.6	500.0	120.000	105.0	V	150.0	12.9	16.40	40.00
98.997500	25.9	500.0	120.000	200.0	H	252.0	11.1	17.60	43.50
158.020000	32.3	500.0	120.000	150.0	H	189.0	15.4	11.20	43.50
194.537500	27.4	500.0	120.000	100.0	V	54.0	12.2	16.10	43.50
676.647500	36.3	500.0	120.000	105.0	V	218.0	26.2	9.70	46.00
870.877500	40.8	500.0	120.000	100.0	V	191.0	29.5	5.20	46.00

< Fig 9. 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)
1187.768738	47.4	1000.0	1000.000	116.0	H	212.0	-13.5	26.6	74.0
1401.401603	56.5	1000.0	1000.000	100.0	V	210.0	-12.8	7.5	74.0
1681.962726	48.7	1000.0	1000.000	150.0	V	180.0	-12.1	25.3	74.0
1941.675752	52.6	1000.0	1000.000	100.0	H	212.0	-11.5	21.4	74.0
2655.102605	57.8	1000.0	1000.000	100.0	V	202.0	-7.8	16.2	74.0
4594.598397	56.2	1000.0	1000.000	100.0	H	94.0	-1.3	17.8	74.0

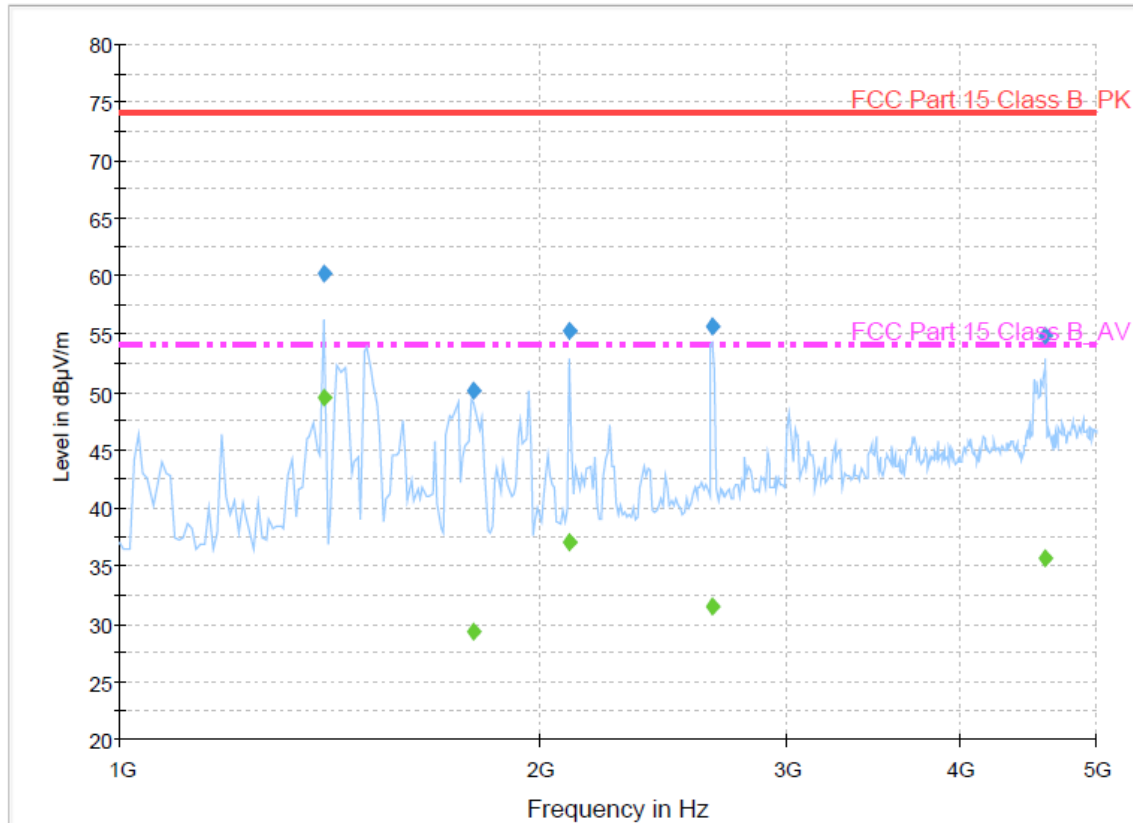
Final Result 2

Frequency (MHz)	CAverage (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1187.768738	42.6	1000.0	1000.000	116.0	H	212.0	-13.5	11.4	54.0
1401.401603	45.2	1000.0	1000.000	100.0	V	210.0	-12.8	8.8	54.0
1681.962726	43.1	1000.0	1000.000	150.0	V	180.0	-12.1	11.0	54.0
1941.675752	31.0	1000.0	1000.000	100.0	H	212.0	-11.5	23.0	54.0
2655.102605	32.9	1000.0	1000.000	100.0	V	202.0	-7.8	21.1	54.0
4594.598397	35.8	1000.0	1000.000	100.0	H	94.0	-1.3	18.2	54.0

< Fig 10. Radiated emission result (1 000 MHz ~ 5 000 MHz) >



- ◆ Operating Condition: 1 920 × 1 080 / 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)
1401.401603	60.2	1000.0	1000.000	100.0	V	234.0	-12.8	13.8	74.0
1790.971142	50.1	1000.0	1000.000	100.0	V	190.0	-11.6	23.9	74.0
2101.996393	55.3	1000.0	1000.000	126.0	V	190.0	-10.7	18.7	74.0
2657.518637	55.7	1000.0	1000.000	100.0	H	190.0	-7.8	18.3	74.0
4594.998397	54.9	1000.0	1000.000	100.0	H	97.0	-1.3	19.1	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)
1401.401603	49.6	1000.0	1000.000	100.0	V	234.0	-12.8	4.4	54.0
1790.971142	29.2	1000.0	1000.000	100.0	V	190.0	-11.6	24.8	54.0
2101.996393	37.1	1000.0	1000.000	126.0	V	190.0	-10.7	16.9	54.0
2657.518637	31.5	1000.0	1000.000	100.0	H	190.0	-7.8	22.5	54.0
4594.998397	35.7	1000.0	1000.000	100.0	H	97.0	-1.3	18.3	54.0

< Fig 11. 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 TV/Monitor (Model Name: 47LM5850-UF)** was complies with §15.107 and 15.109 of the FCC Rules.

- The end -