



## FCC EVALUATION REPORT FOR CERTIFICATION

Applicant : LG Electronics Inc.

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

Pyeongteak-si, Gyeonggi-do, Korea.

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

Date of Issue : October 19, 2010

Order Number: GETEC-C1-10-191

Test Report Number: GETEC-E3-10-100

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

**FCC ID.: BEJM5520CJ**

**Applicant: LG Electronics Inc.**

Rule Part(s)	: FCC Part 15 Subpart B
Equipment Class	: Class B computing device peripheral (JBP)
EUT Type	: LCD Monitor
Type of Authority	: Certification
Model Name	: M5520CJ
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,

Hyoung-Seop Kim, Associate Engineer  
GUMI College EMC center

Jae-Hoon Jeong, Senior Engineer  
GUMI College EMC center



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

## 1. General Information

**Applicant: LG Electronics Inc.**

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

**Manufacturer: LG Electronics Inc.**

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

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

**Tel Number: +82-31-610-9623**

- **FCC ID.** BEJM5520CJ
- **EUT Type** LCD Monitor
- **Model Name** M5520CJ
- **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** October 12 ~ 15, 2010
- **Place of Test** **Gumi College EMC Center** ( FCC Registration Number: 100749, 443957)  
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-10-100
- **Dates of Issue** October 19, 2010

**EUT Type: LCD Monitor**

**FCC ID.: BEJM5520CJ**



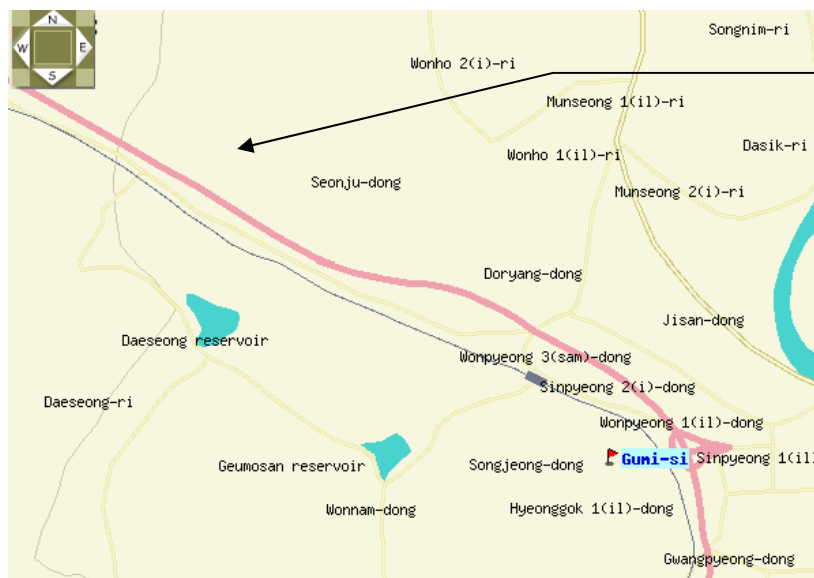
## 2. Introduction

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Nose Emissions From Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ASNI C63.4-2003) was used in determining radiated and conducted emissions emanating from **LG Electronics Inc. LCD Monitor (Model Name: M5520CJ)**

These measurement tests were conducted at **Gumi College EMC Center**.

The site address is 407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.

This test site is one of the highest point of Gumi 1 college at about 200 km away from Seoul city and 40 km away from Daegu city. It is located in the valley surrounded by mountains in all directions where ambient radio signal conditions are quiet and a favorable area to measure the radio frequency interference on open field test site for the computing and ISM devices manufactures. The detailed description of the measurement facility was found to be in compliance with the requirements of §2.948 according to ANSI C63.4 (2003)



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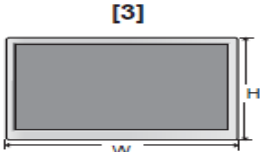
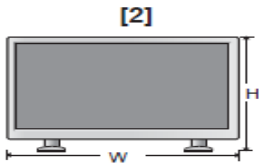
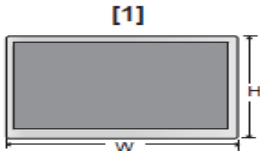
Fig 1. The map above shows the Gumi College in vicinity area.



### 3. Product Information

#### 3.1 Description of EUT

The Equipment under Test (EUT) is the **LG Electronics Inc. LCD Monitor (Model Name: M5520CJ) FCC ID.: BEJM5520CJ**

<b>LCD Panel</b>	138.78 cm ( 54.64 inch) TFT (Thin Film Transistor) LCD (Liquid Crystal Display) Panel Visible diagonal size : 138.78 cm 0.630 mm x 0.630 mm X RGB (Pixel Pitch)	
<b>Power</b>	<b>Rated Voltage</b>	AC 100-240 V~ 50/60 Hz 6A
	<b>Power Consumption</b>	On Mode : 320 W Typ. Sleep Mode : ≤ 1 W (RGB) / 2 W (HDMI/DVI) (If LAN OFF is selected) Off Mode : ≤ 0.5 W
<b>Dimensions &amp; Weight</b>	<div></div> <p><b>Width x Height x Depth</b> [1] 125.1 cm (49.3 inch) x 72.2 cm (28.4 inch) x 10.4 cm (4.1 inch) [2] 125.1 cm (49.3 inch) x 79.5 cm (31.3 inch) x 29.8 cm (11.7 inch) [3] 125.1 cm (49.3 inch) x 72.2 cm (28.4 inch) x 10.4 cm (4.1 inch) [4] 125.1 cm (49.3 inch) x 79.5 cm (31.3 inch) x 29.8 cm (11.7 inch)</p> <p><b>Net</b> [1] 34.5 kg (76.05 lb)      [2] 35.9 kg (79.14 lb) [3] 35.2 kg (77.60 lb)      [4] 36.6 kg (80.68 lb)</p>	
<b>Video Signal</b>	<b>Max. Resolution</b>	RGB : 1920 x 1080 @ 60 Hz HDMI/DVI : 1920 x 1080 @ 60 Hz - It may not be supported depending on the OS or video card type.
	<b>Recommended Resolution</b>	RGB : 1920 x 1080 @ 60 Hz HDMI/DVI : 1920 x 1080 @ 60 Hz - It may not be supported depending on the OS or video card type.
	<b>Horizontal Frequency</b>	RGB : 30 kHz to 83 kHz HDMI/DVI : 30 kHz to 83 kHz
	<b>Vertical Frequency</b>	RGB : 56 Hz to 75 Hz HDMI/DVI : 56 Hz to 60 Hz
	<b>Synchronization Type</b>	Composite/Separate/Digital
<b>Input Connector</b>	15-pin D-Sub type, HDMI/DVI(digital) Composite Video, Component, RS-232C, LAN, USB	

- Maximum Frequency Range : 800 MHz

EUT Type: LCD Monitor

FCC ID.: BEJM5520CJ



### 3.2 Support Equipment / Cables used

#### 3.2.1 Used Support Equipment

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

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

#### 3.2.2 System configuration

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



### 3.2.3 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the EUT	1.80 m unshielded
RS-232C in cable	Connected to the EUT and PC	2.40 m shielded
RS-232C out cable	Connected to the EUT and monitor	1.80 m shielded
RGB(Analog) in cable	Connected to the EUT and PC	1.80 m shielded with two ferrite cores
RGB(Analog) out cable	Connected to the EUT and monitor	1.80 m shielded with two ferrite cores
HDMI/DVI in cable	Connected to the EUT and PC	2.00 m shielded
Audio(RGB/DVI) in cable	Connected to the EUT and PC	1.80 m shielded with a ferrite core
Component in cable	Connected to the EUT and DVD player	1.60 m shielded
Component sound in cable	Connected to the EUT and DVD player	1.50 m shielded
AV in cable	Connected to the EUT and DVD player	1.80 m shielded
AV out cable	Connected to the EUT and monitor	2.10 m shielded
LAN cable	Connected to the EUT and PC	1.40 m unshielded
Speaker cable	Connected to the EUT and speaker	0.90 m unshielded

### 3.3 Modification Item(s)

- None



## 4. Description of tests

### 4.1 Test Condition

The EUT was installed, arranged and operated in a manner that is most representative of equipment as typically used. The measurements were carried out while varying operating modes and cable positions within typically arrangement to determine maximum emission level.

The representative and worst test mode(s) were noted in the test report.

- Test Voltage / Frequency : AC 120 V / 60 Hz

- Test Mode(s)

-. Monitor mode

Radiated emission: 1 920 × 1 080 / 60 Hz (RGB: Analog, 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
- . Operated DDC function with the eZ manager software

\* DDC is a communication channel over which the monitor automatically informs the host system (PC) about its capabilities

-. USB memory stick play mode

- ◆ Operating test pattern

- . Continuous playback mode with video files





## 4.2 Conducted Emission

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

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

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

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

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

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

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

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

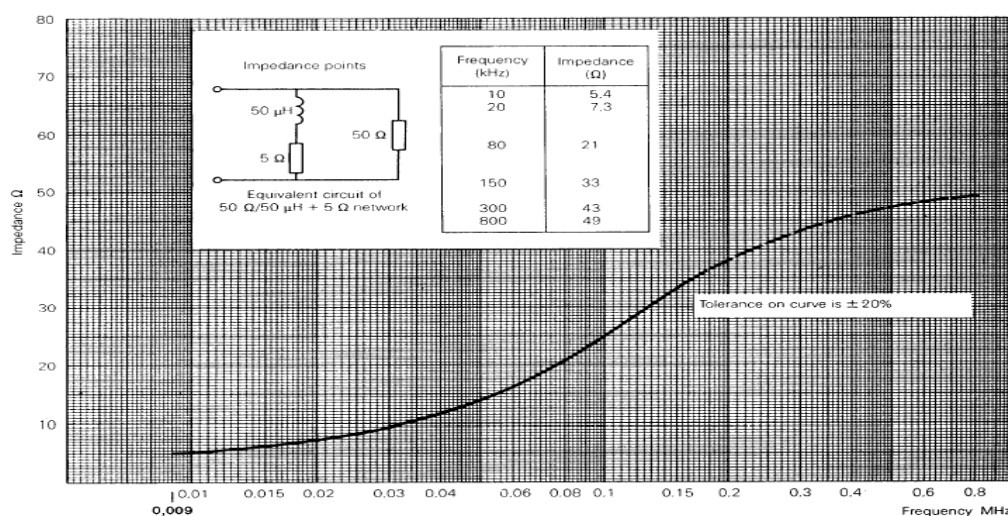


Fig 2. Impedance of LISN



### 4.3 Radiated Emission

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

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

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

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

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

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

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

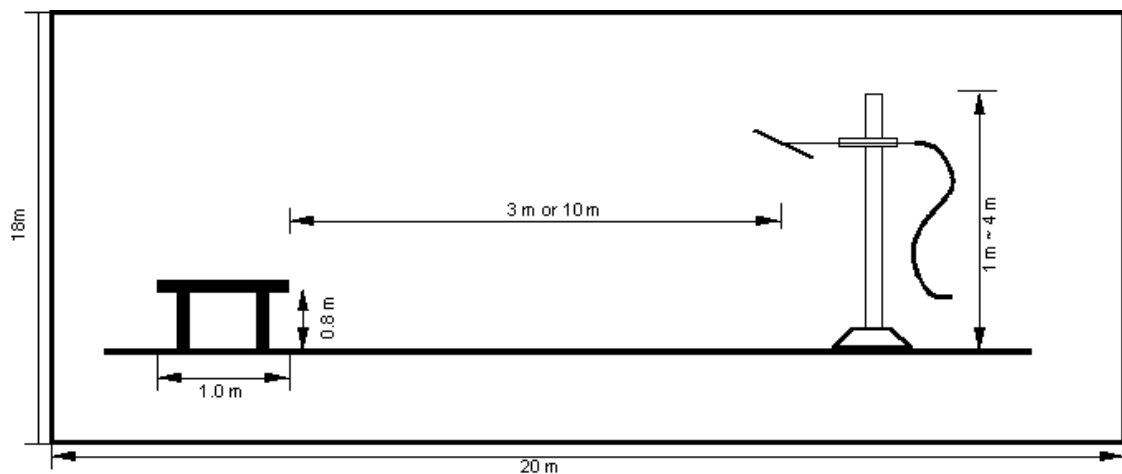


Fig 3. Dimensions of test site.



## 5. Conducted Emission

### 5.1 Operating Environment

Temperature : 27 °C  
Relative Humidity : 49 % 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)	$\pm 2.69$ dB	Confidence levels of 95 % ( $k = 2$ )
Conducted emission (150 kHz ~ 30 MHz)	$\pm 4.16$ dB	Confidence levels of 95 % ( $k = 2$ )



#### 5.4 Limit

RFI Conducted	FCC Limit(dB $\mu$ V/m) Class B	
Freq. Range	Quasi-Peak	Average
150 kHz ~ 0.5 MHz	66 ~ 56*	56 ~ 46*
0.5 MHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50
*Limits decreases linearly with the logarithm of frequency.		

#### 5.5 Test Equipment used

Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESCS30	Rohde & Schwarz	EMI Test Receiver	839809/003	12. 10. 2010
■ - ESH3-Z5	Rohde & Schwarz	LISN	838979/020	12. 10. 2010
■ - ESH2-Z5	Rohde & Schwarz	LISN	829991/009	12. 10. 2010
■ - ISN T8	TESEQ. GmbH	Impedance Network	24568	10. 16. 2010

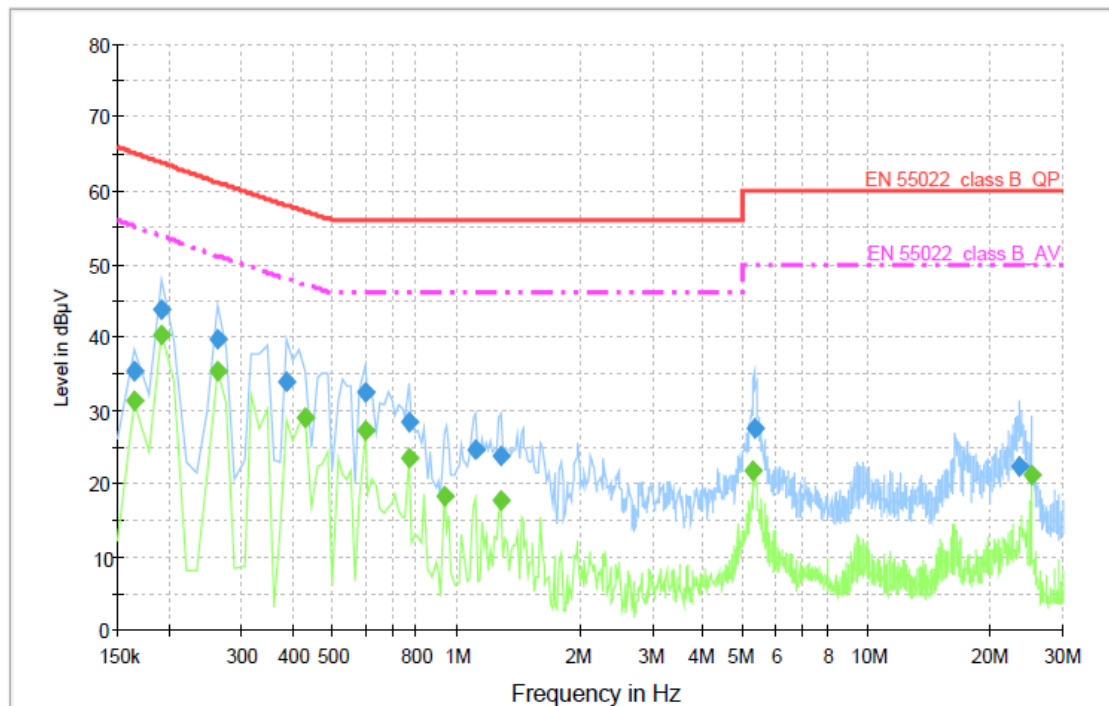
#### 5.6 Test data for Conducted Emission

-. Test Date : October 12, 2010  
-. Resolution Bandwidth : 9 kHz  
-. Frequency Range : 0.15 MHz ~ 30 MHz



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

## Voltage with 4-Line-LISN\_L1



## Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	35.5	1000.000	9.000	GND	L1	10.0	29.7	65.2	
0.192000	43.8	1000.000	9.000	GND	L1	10.0	20.0	63.8	
0.262000	39.7	1000.000	9.000	GND	L1	10.0	21.5	61.2	
0.388000	33.9	1000.000	9.000	GND	L1	10.0	24.1	58.0	
0.598000	32.4	1000.000	9.000	GND	L1	10.0	23.6	56.0	
0.766000	28.5	1000.000	9.000	GND	L1	10.0	27.5	56.0	
1.116000	24.6	1000.000	9.000	GND	L1	10.0	31.4	56.0	
1.284000	23.8	1000.000	9.000	GND	L1	10.1	32.2	56.0	
5.316000	27.7	1000.000	9.000	GND	L1	10.2	32.3	60.0	
23.390000	22.2	1000.000	9.000	GND	L1	11.2	37.8	60.0	

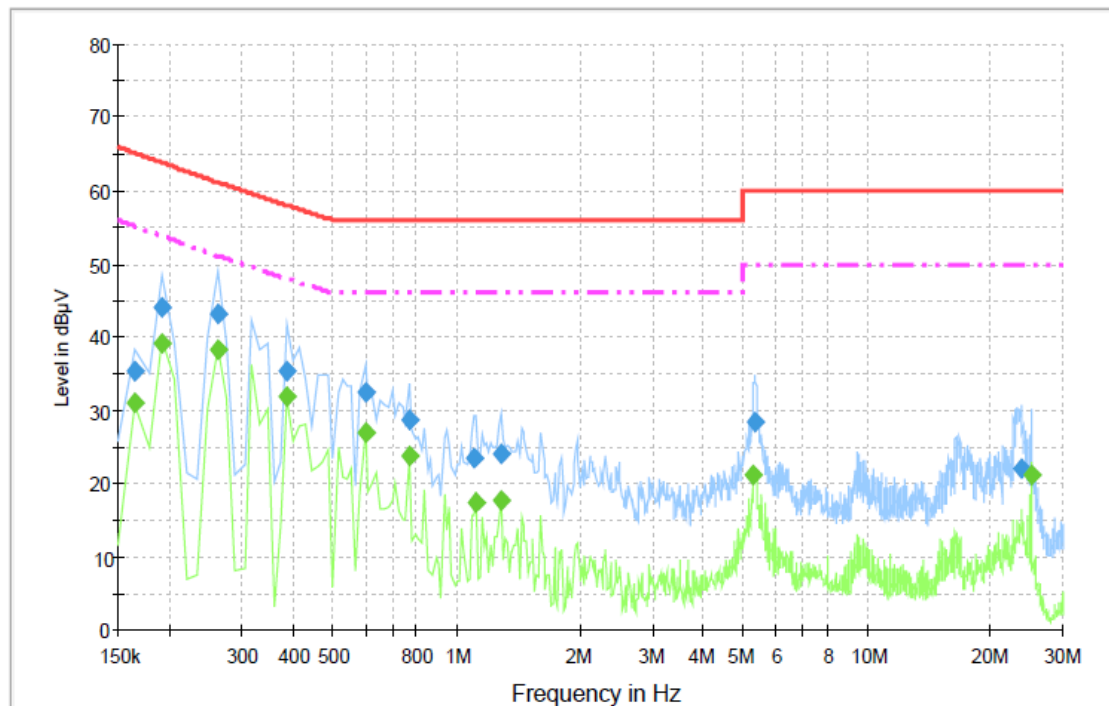
## Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	31.2	1000.000	9.000	GND	L1	10.0	24.0	55.2	
0.192000	40.3	1000.000	9.000	GND	L1	10.0	13.5	53.8	
0.262000	35.3	1000.000	9.000	GND	L1	10.0	15.8	51.1	
0.430000	28.9	1000.000	9.000	GND	L1	10.0	18.2	47.1	
0.598000	27.2	1000.000	9.000	GND	L1	10.0	18.8	46.0	
0.766000	23.5	1000.000	9.000	GND	L1	10.0	22.5	46.0	
0.934000	18.1	1000.000	9.000	GND	L1	10.0	27.9	46.0	
1.284000	17.6	1000.000	9.000	GND	L1	10.1	28.4	46.0	
5.288000	21.7	1000.000	9.000	GND	L1	10.2	28.3	50.0	
25.252000	21.0	1000.000	9.000	GND	L1	11.3	29.0	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
0.164000	35.3	1000.000	9.000	GND	N	10.0	29.9	65.2	
0.192000	44.1	1000.000	9.000	GND	N	10.0	19.7	63.8	
0.262000	43.2	1000.000	9.000	GND	N	10.0	18.0	61.2	
0.388000	35.5	1000.000	9.000	GND	N	10.0	22.5	58.0	
0.598000	32.3	1000.000	9.000	GND	N	10.0	23.7	56.0	
0.766000	28.7	1000.000	9.000	GND	N	10.0	27.3	56.0	
1.102000	23.6	1000.000	9.000	GND	N	10.1	32.4	56.0	
1.284000	24.1	1000.000	9.000	GND	N	10.1	31.9	56.0	
5.330000	28.3	1000.000	9.000	GND	N	10.2	31.7	60.0	
23.656000	22.1	1000.000	9.000	GND	N	10.8	37.9	60.0	

### Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	31.0	1000.000	9.000	GND	N	10.0	24.2	55.2	
0.192000	39.1	1000.000	9.000	GND	N	10.0	14.7	53.8	
0.262000	38.3	1000.000	9.000	GND	N	10.0	12.8	51.1	
0.388000	31.8	1000.000	9.000	GND	N	10.0	16.1	47.9	
0.598000	27.0	1000.000	9.000	GND	N	10.0	19.0	46.0	
0.766000	23.9	1000.000	9.000	GND	N	10.0	22.1	46.0	
1.116000	17.3	1000.000	9.000	GND	N	10.1	28.7	46.0	
1.284000	17.8	1000.000	9.000	GND	N	10.1	28.2	46.0	
5.288000	21.2	1000.000	9.000	GND	N	10.2	28.8	50.0	
25.252000	21.2	1000.000	9.000	GND	N	10.8	28.8	50.0	

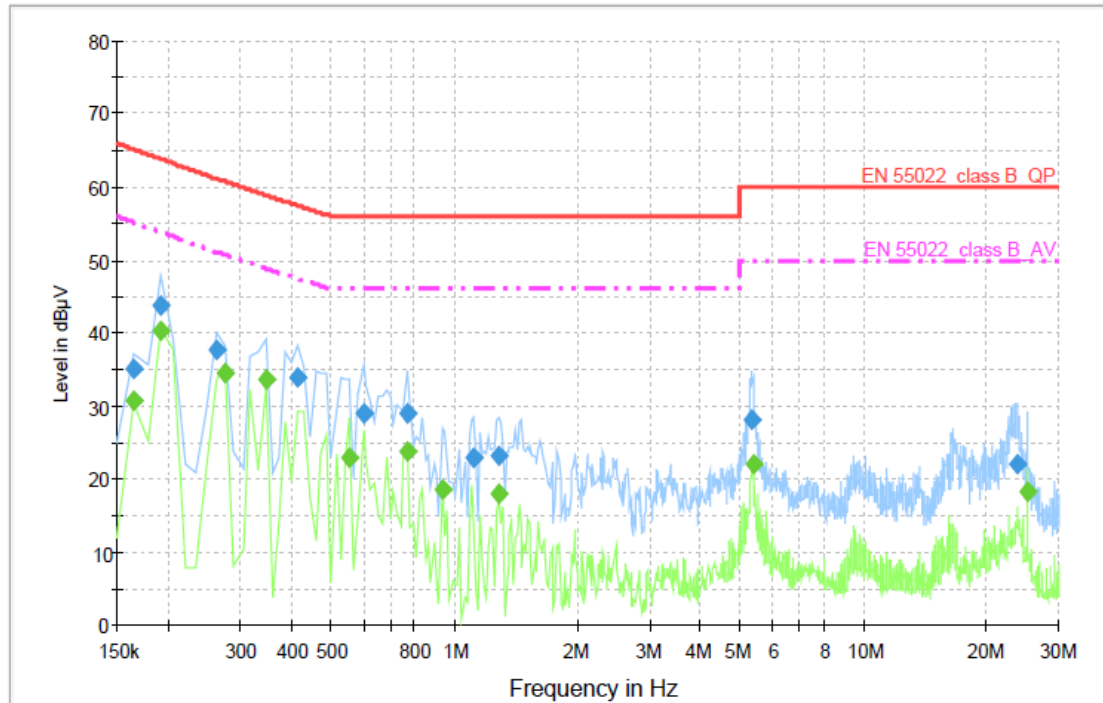
< Fig 5. Conducted emission result (Neutral line) >





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

## Voltage with 4-Line-LISN\_L1



### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	35.2	1000.000	9.000	GND	L1	10.0	30.0	65.2	
0.192000	43.7	1000.000	9.000	GND	L1	10.0	20.2	63.8	
0.262000	37.6	1000.000	9.000	GND	L1	10.0	23.6	61.2	
0.416000	34.0	1000.000	9.000	GND	L1	10.0	23.4	57.4	
0.598000	29.1	1000.000	9.000	GND	L1	10.0	26.9	56.0	
0.766000	28.9	1000.000	9.000	GND	L1	10.0	27.1	56.0	
1.116000	23.0	1000.000	9.000	GND	L1	10.0	33.0	56.0	
1.284000	23.3	1000.000	9.000	GND	L1	10.1	32.7	56.0	
5.330000	28.1	1000.000	9.000	GND	L1	10.2	31.9	60.0	
23.726000	21.9	1000.000	9.000	GND	L1	11.2	38.1	60.0	

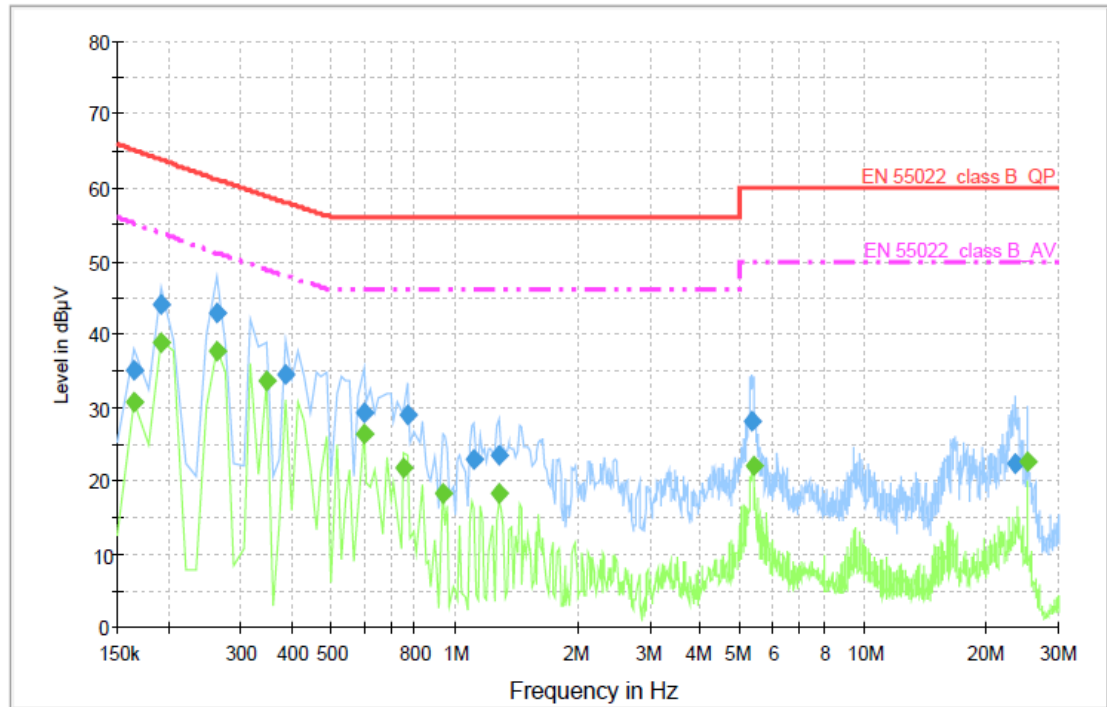
### Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	30.7	1000.000	9.000	GND	L1	10.0	24.5	55.2	
0.192000	40.2	1000.000	9.000	GND	L1	10.0	13.6	53.8	
0.276000	34.6	1000.000	9.000	GND	L1	10.0	16.1	50.7	
0.346000	33.5	1000.000	9.000	GND	L1	10.0	15.4	48.9	
0.556000	23.0	1000.000	9.000	GND	L1	10.0	23.0	46.0	
0.766000	23.6	1000.000	9.000	GND	L1	10.0	22.4	46.0	
0.934000	18.4	1000.000	9.000	GND	L1	10.0	27.6	46.0	
1.284000	17.9	1000.000	9.000	GND	L1	10.1	28.2	46.0	
5.372000	22.0	1000.000	9.000	GND	L1	10.2	28.0	50.0	
25.252000	18.4	1000.000	9.000	GND	L1	11.3	31.6	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
0.164000	35.1	1000.000	9.000	GND	N	10.0	30.1	65.2	
0.192000	44.0	1000.000	9.000	GND	N	10.0	19.8	63.8	
0.262000	42.8	1000.000	9.000	GND	N	10.0	18.4	61.2	
0.388000	34.5	1000.000	9.000	GND	N	10.0	23.5	58.0	
0.598000	29.1	1000.000	9.000	GND	N	10.0	26.9	56.0	
0.766000	29.0	1000.000	9.000	GND	N	10.0	27.0	56.0	
1.116000	22.8	1000.000	9.000	GND	N	10.1	33.2	56.0	
1.284000	23.6	1000.000	9.000	GND	N	10.1	32.4	56.0	
5.330000	28.2	1000.000	9.000	GND	N	10.2	31.8	60.0	
23.446000	22.4	1000.000	9.000	GND	N	10.8	37.6	60.0	

### Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	30.7	1000.000	9.000	GND	N	10.0	24.5	55.2	
0.192000	38.9	1000.000	9.000	GND	N	10.0	14.9	53.8	
0.262000	37.8	1000.000	9.000	GND	N	10.0	13.3	51.1	
0.346000	33.6	1000.000	9.000	GND	N	10.0	15.3	48.9	
0.598000	26.3	1000.000	9.000	GND	N	10.0	19.7	46.0	
0.752000	21.8	1000.000	9.000	GND	N	10.0	24.2	46.0	
0.934000	18.3	1000.000	9.000	GND	N	10.0	27.7	46.0	
1.284000	18.1	1000.000	9.000	GND	N	10.1	27.9	46.0	
5.372000	22.0	1000.000	9.000	GND	N	10.2	28.0	50.0	
25.252000	22.7	1000.000	9.000	GND	N	10.8	27.3	50.0	

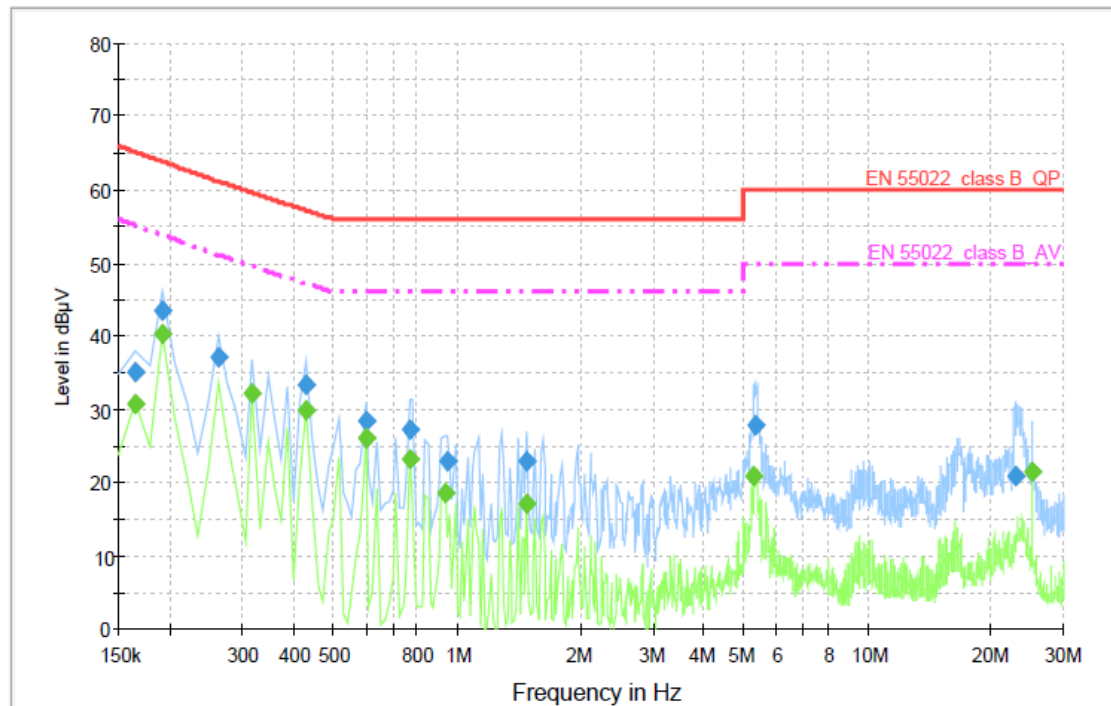
< Fig 7. Conducted emission result (Neutral line) >





◆ 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
0.164000	35.1	1000.000	9.000	GND	L1	10.0	30.1	65.2	
0.192000	43.6	1000.000	9.000	GND	L1	10.0	20.2	63.8	
0.262000	37.0	1000.000	9.000	GND	L1	10.0	24.2	61.2	
0.430000	33.3	1000.000	9.000	GND	L1	10.0	24.0	57.2	
0.598000	28.5	1000.000	9.000	GND	L1	10.0	27.5	56.0	
0.766000	27.1	1000.000	9.000	GND	L1	10.0	28.9	56.0	
0.948000	22.9	1000.000	9.000	GND	L1	10.0	33.1	56.0	
1.480000	22.9	1000.000	9.000	GND	L1	10.1	33.1	56.0	
5.316000	27.9	1000.000	9.000	GND	L1	10.2	32.1	60.0	
22.984000	21.0	1000.000	9.000	GND	L1	11.2	39.0	60.0	

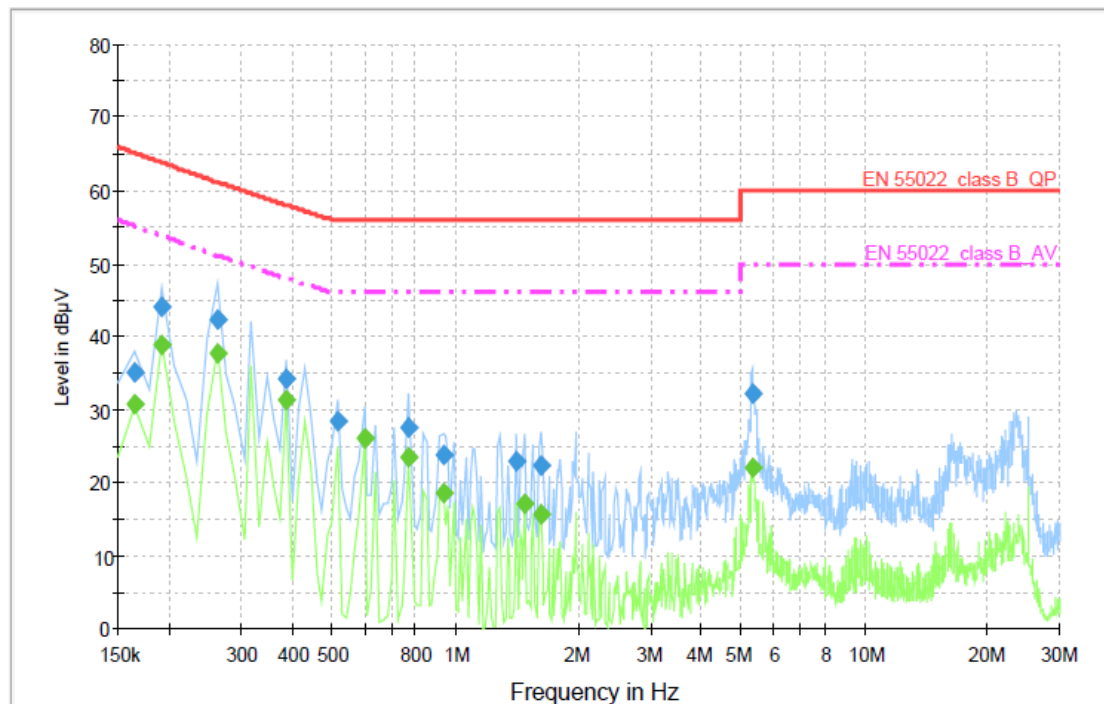
## Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	30.7	1000.000	9.000	GND	L1	10.0	24.5	55.2	
0.192000	40.2	1000.000	9.000	GND	L1	10.0	13.6	53.8	
0.318000	32.3	1000.000	9.000	GND	L1	10.0	17.2	49.5	
0.430000	29.7	1000.000	9.000	GND	L1	10.0	17.4	47.1	
0.598000	26.2	1000.000	9.000	GND	L1	10.0	19.8	46.0	
0.766000	23.2	1000.000	9.000	GND	L1	10.0	22.8	46.0	
0.934000	18.6	1000.000	9.000	GND	L1	10.0	27.4	46.0	
1.480000	17.1	1000.000	9.000	GND	L1	10.1	28.9	46.0	
5.274000	20.8	1000.000	9.000	GND	L1	10.2	29.2	50.0	
25.252000	21.6	1000.000	9.000	GND	L1	11.3	28.4	50.0	

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



## Voltage with 4-Line-LISN\_N



### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	35.0	1000.000	9.000	GND	N	10.0	30.2	65.2	
0.192000	43.9	1000.000	9.000	GND	N	10.0	19.9	63.8	
0.262000	42.5	1000.000	9.000	GND	N	10.0	18.7	61.2	
0.388000	34.3	1000.000	9.000	GND	N	10.0	23.7	58.0	
0.514000	28.5	1000.000	9.000	GND	N	10.0	27.5	56.0	
0.766000	27.6	1000.000	9.000	GND	N	10.0	28.4	56.0	
0.934000	23.8	1000.000	9.000	GND	N	10.0	32.2	56.0	
1.410000	22.8	1000.000	9.000	GND	N	10.1	33.2	56.0	
1.620000	22.3	1000.000	9.000	GND	N	10.1	33.7	56.0	
5.330000	32.1	1000.000	9.000	GND	N	10.2	27.9	60.0	

### Final Measurement Detector 2

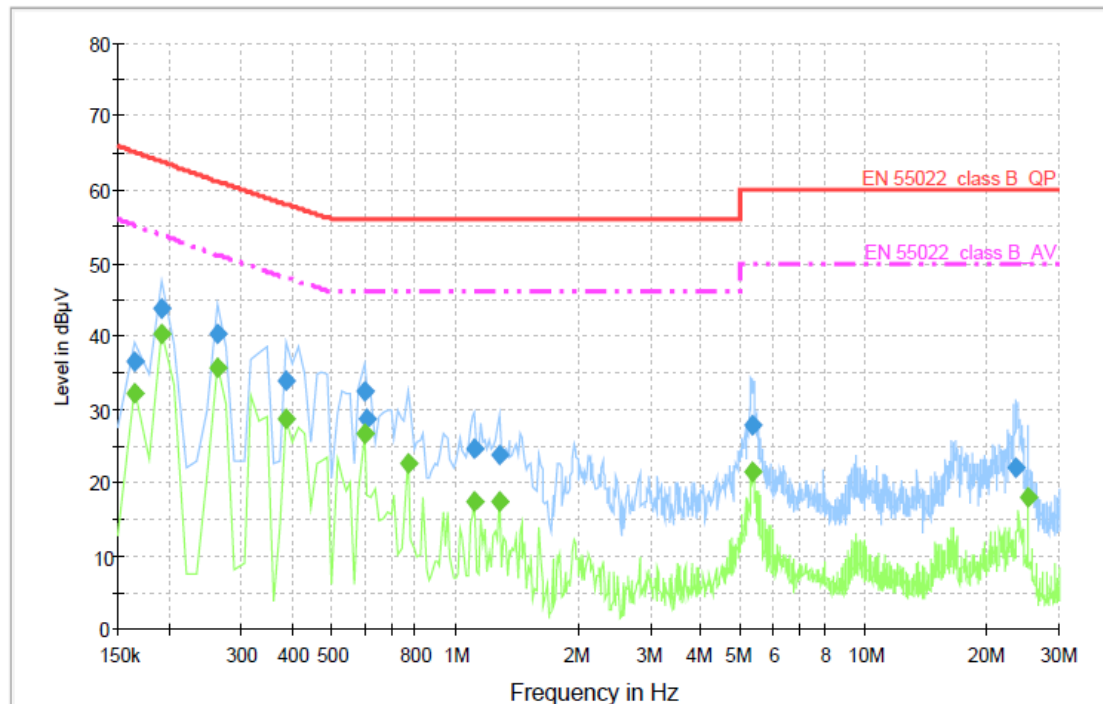
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	30.7	1000.000	9.000	GND	N	10.0	24.5	55.2	
0.192000	38.9	1000.000	9.000	GND	N	10.0	14.9	53.8	
0.262000	37.7	1000.000	9.000	GND	N	10.0	13.4	51.1	
0.388000	31.2	1000.000	9.000	GND	N	10.0	16.7	47.9	
0.598000	26.0	1000.000	9.000	GND	N	10.0	20.0	46.0	
0.766000	23.4	1000.000	9.000	GND	N	10.0	22.6	46.0	
0.934000	18.5	1000.000	9.000	GND	N	10.0	27.5	46.0	
1.480000	17.2	1000.000	9.000	GND	N	10.1	28.8	46.0	
1.620000	15.8	1000.000	9.000	GND	N	10.1	30.2	46.0	
5.316000	22.0	1000.000	9.000	GND	N	10.2	28.0	50.0	

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



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

## Voltage with 4-Line-LISN\_L1



## Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	36.4	1000.000	9.000	GND	L1	10.0	28.8	65.2	
0.192000	43.7	1000.000	9.000	GND	L1	10.0	20.1	63.8	
0.262000	40.3	1000.000	9.000	GND	L1	10.0	20.9	61.2	
0.388000	33.9	1000.000	9.000	GND	L1	10.0	24.1	58.0	
0.598000	32.5	1000.000	9.000	GND	L1	10.0	23.5	56.0	
0.612000	28.7	1000.000	9.000	GND	L1	10.0	27.3	56.0	
1.116000	24.8	1000.000	9.000	GND	L1	10.0	31.2	56.0	
1.284000	23.6	1000.000	9.000	GND	L1	10.1	32.4	56.0	
5.344000	27.7	1000.000	9.000	GND	L1	10.2	32.3	60.0	
23.404000	22.0	1000.000	9.000	GND	L1	11.2	38.0	60.0	

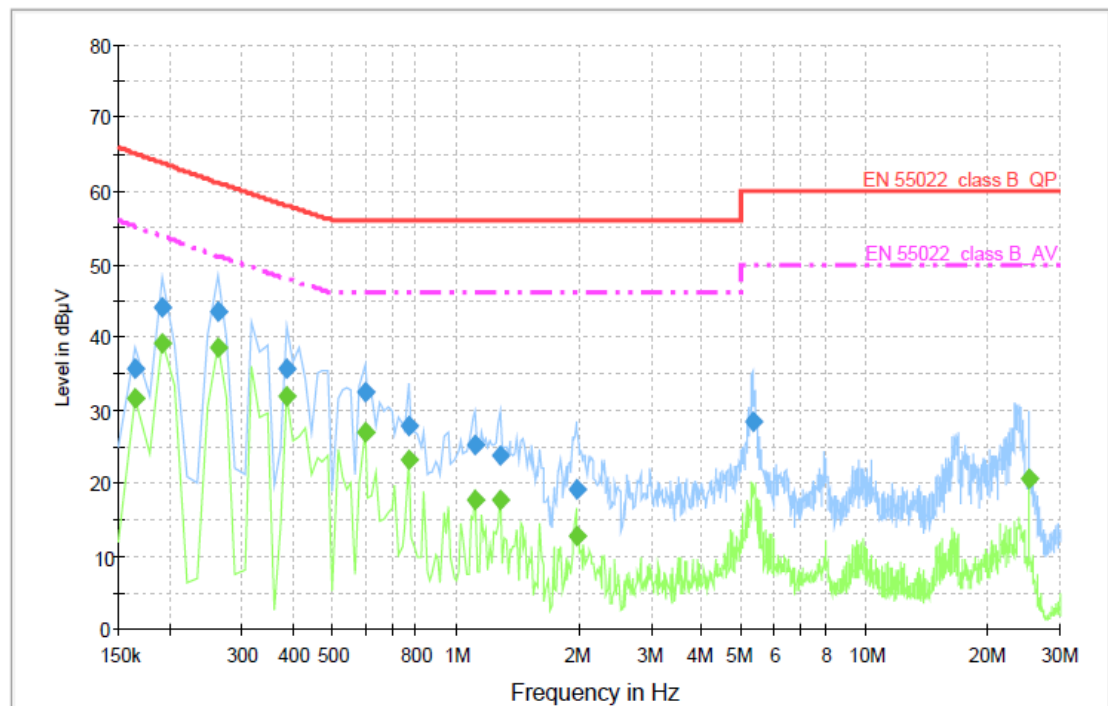
## Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	32.2	1000.000	9.000	GND	L1	10.0	23.0	55.2	
0.192000	40.3	1000.000	9.000	GND	L1	10.0	13.5	53.8	
0.262000	35.8	1000.000	9.000	GND	L1	10.0	15.3	51.1	
0.388000	28.7	1000.000	9.000	GND	L1	10.0	19.2	47.9	
0.598000	26.8	1000.000	9.000	GND	L1	10.0	19.2	46.0	
0.766000	22.8	1000.000	9.000	GND	L1	10.0	23.2	46.0	
1.116000	17.3	1000.000	9.000	GND	L1	10.0	28.7	46.0	
1.284000	17.3	1000.000	9.000	GND	L1	10.1	28.7	46.0	
5.316000	21.5	1000.000	9.000	GND	L1	10.2	28.5	50.0	
25.252000	17.9	1000.000	9.000	GND	L1	11.3	32.1	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
0.164000	35.8	1000.000	9.000	GND	N	10.0	29.4	65.2	
0.192000	44.1	1000.000	9.000	GND	N	10.0	19.7	63.8	
0.262000	43.5	1000.000	9.000	GND	N	10.0	17.7	61.2	
0.388000	35.8	1000.000	9.000	GND	N	10.0	22.2	58.0	
0.598000	32.5	1000.000	9.000	GND	N	10.0	23.5	56.0	
0.766000	27.9	1000.000	9.000	GND	N	10.0	28.1	56.0	
1.116000	25.1	1000.000	9.000	GND	N	10.1	30.9	56.0	
1.284000	23.8	1000.000	9.000	GND	N	10.1	32.2	56.0	
1.970000	19.2	1000.000	9.000	GND	N	10.1	36.8	56.0	
5.316000	28.4	1000.000	9.000	GND	N	10.2	31.6	60.0	

## Final Measurement Detector 2

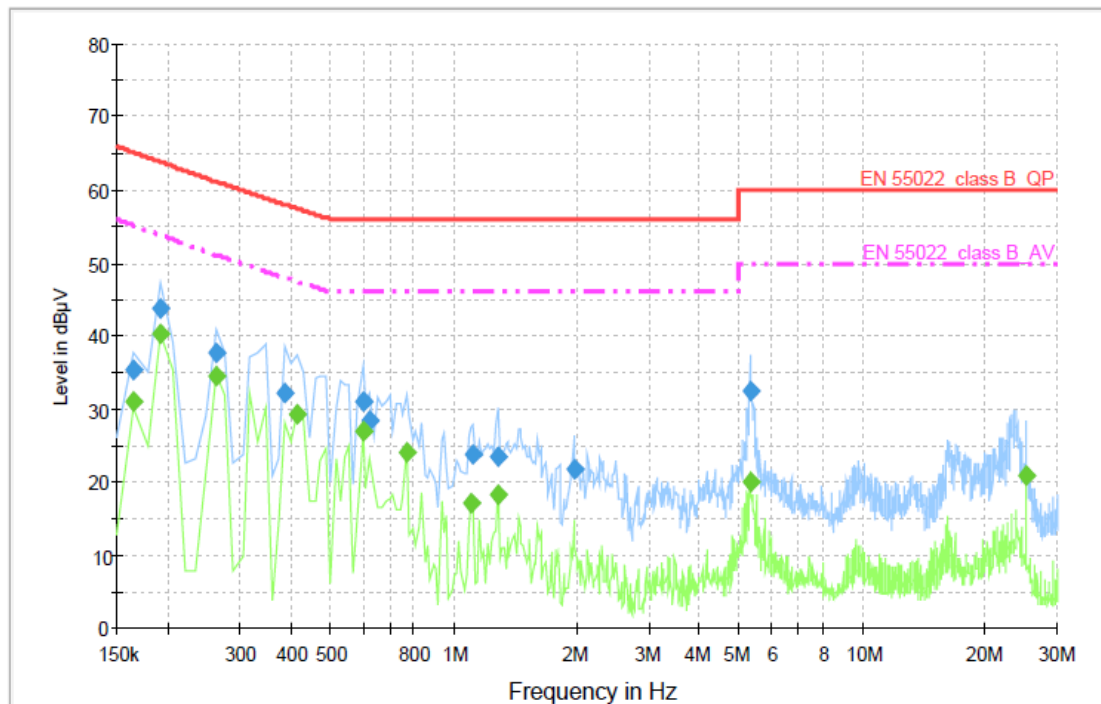
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	31.5	1000.000	9.000	GND	N	10.0	23.7	55.2	
0.192000	39.2	1000.000	9.000	GND	N	10.0	14.6	53.8	
0.262000	38.6	1000.000	9.000	GND	N	10.0	12.5	51.1	
0.388000	31.9	1000.000	9.000	GND	N	10.0	16.0	47.9	
0.598000	27.0	1000.000	9.000	GND	N	10.0	19.0	46.0	
0.766000	23.3	1000.000	9.000	GND	N	10.0	22.7	46.0	
1.116000	17.8	1000.000	9.000	GND	N	10.1	28.2	46.0	
1.284000	17.8	1000.000	9.000	GND	N	10.1	28.2	46.0	
1.970000	12.8	1000.000	9.000	GND	N	10.1	33.2	46.0	
25.252000	20.6	1000.000	9.000	GND	N	10.8	29.4	50.0	

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



◆ Operating condition: USB memory stick play mode

## Voltage with 4-Line-LISN\_L1



### Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	35.2	1000.000	9.000	GND	L1	10.0	30.0	65.2	
0.192000	43.7	1000.000	9.000	GND	L1	10.0	20.2	63.8	
0.262000	37.7	1000.000	9.000	GND	L1	10.0	23.5	61.2	
0.388000	32.1	1000.000	9.000	GND	L1	10.0	25.9	58.0	
0.598000	31.1	1000.000	9.000	GND	L1	10.0	24.9	56.0	
0.626000	28.4	1000.000	9.000	GND	L1	10.0	27.6	56.0	
1.116000	23.9	1000.000	9.000	GND	L1	10.0	32.1	56.0	
1.284000	23.5	1000.000	9.000	GND	L1	10.1	32.5	56.0	
1.970000	21.6	1000.000	9.000	GND	L1	10.1	34.4	56.0	
5.330000	32.5	1000.000	9.000	GND	L1	10.2	27.5	60.0	

### Final Measurement Detector 2

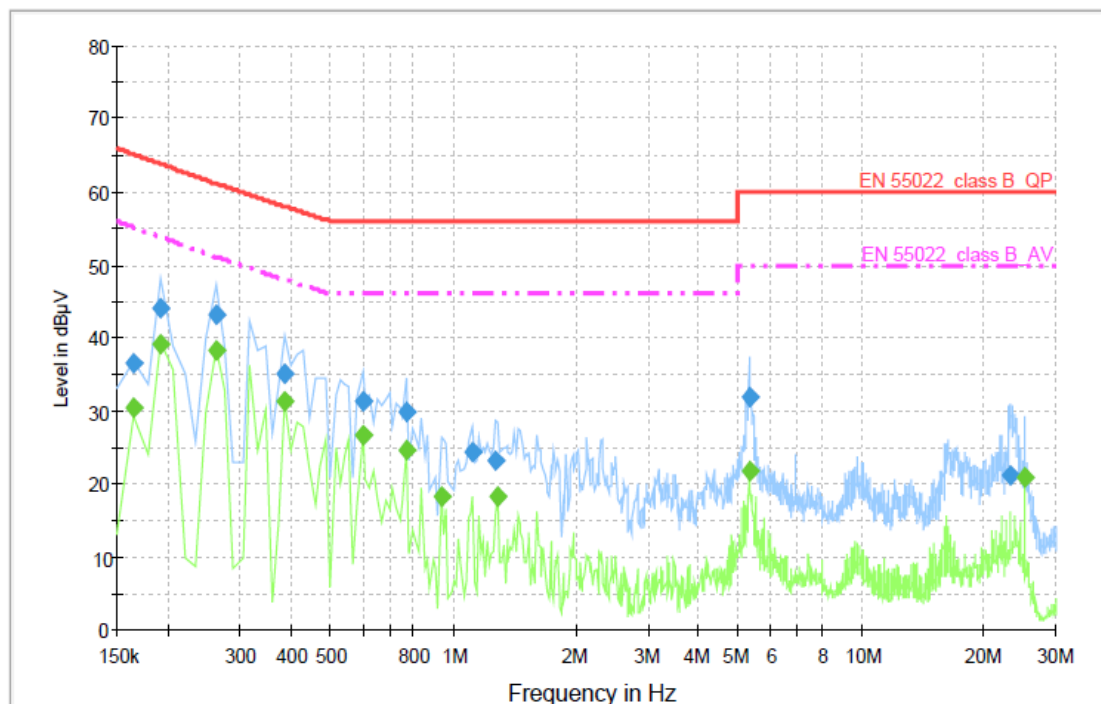
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	31.0	1000.000	9.000	GND	L1	10.0	24.2	55.2	
0.192000	40.2	1000.000	9.000	GND	L1	10.0	13.6	53.8	
0.262000	34.6	1000.000	9.000	GND	L1	10.0	16.5	51.1	
0.416000	29.2	1000.000	9.000	GND	L1	10.0	18.2	47.4	
0.598000	27.0	1000.000	9.000	GND	L1	10.0	19.0	46.0	
0.766000	24.1	1000.000	9.000	GND	L1	10.0	21.9	46.0	
1.102000	17.0	1000.000	9.000	GND	L1	10.0	29.0	46.0	
1.284000	18.3	1000.000	9.000	GND	L1	10.1	27.7	46.0	
5.330000	20.1	1000.000	9.000	GND	L1	10.2	29.9	50.0	
25.266000	20.9	1000.000	9.000	GND	L1	11.3	29.1	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
0.164000	36.4	1000.000	9.000	GND	N	10.0	28.8	65.2	
0.192000	44.1	1000.000	9.000	GND	N	10.0	19.7	63.8	
0.262000	43.2	1000.000	9.000	GND	N	10.0	18.0	61.2	
0.388000	35.1	1000.000	9.000	GND	N	10.0	22.9	58.0	
0.598000	31.2	1000.000	9.000	GND	N	10.0	24.8	56.0	
0.766000	29.8	1000.000	9.000	GND	N	10.0	26.2	56.0	
1.116000	24.4	1000.000	9.000	GND	N	10.1	31.6	56.0	
1.270000	23.3	1000.000	9.000	GND	N	10.1	32.7	56.0	
5.330000	32.0	1000.000	9.000	GND	N	10.2	28.0	60.0	
23.166000	21.1	1000.000	9.000	GND	N	10.8	38.9	60.0	

### Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.164000	30.3	1000.000	9.000	GND	N	10.0	24.9	55.2	
0.192000	39.0	1000.000	9.000	GND	N	10.0	14.8	53.8	
0.262000	38.2	1000.000	9.000	GND	N	10.0	12.9	51.1	
0.388000	31.4	1000.000	9.000	GND	N	10.0	16.5	47.9	
0.598000	26.7	1000.000	9.000	GND	N	10.0	19.3	46.0	
0.766000	24.7	1000.000	9.000	GND	N	10.0	21.3	46.0	
0.934000	18.4	1000.000	9.000	GND	N	10.0	27.6	46.0	
1.284000	18.4	1000.000	9.000	GND	N	10.1	27.6	46.0	
5.316000	21.6	1000.000	9.000	GND	N	10.2	28.4	50.0	
25.266000	21.0	1000.000	9.000	GND	N	10.8	29.0	50.0	

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



## 6. Radiated Emission

### 6.1 Operating Environment

Temperature : 24 °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)	± 4.32 dB	Confidence levels of 95 % ( $k = 2$ )
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	± 4.21 dB	Confidence levels of 95 % ( $k = 2$ )
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	± 3.96 dB	Confidence levels of 95 % ( $k = 2$ )
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	± 3.97 dB	Confidence levels of 95 % ( $k = 2$ )



#### 6.4 Limit

Frequency (MHz)	FCC Limit @ 3 m. dB $\mu$ V/m	CISPR Limit @ 10 m. dB $\mu$ V/m
30 ~ 88	40.0	30.0
88 ~ 216	43.5	30.0
216 ~ 230	46.0	30.0
230 ~ 960	46.0	37.0
960 ~ 1 000	54.0	37.0
> 1 000	54.0	No Specified limit

#### 6.5 Test Equipment used

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

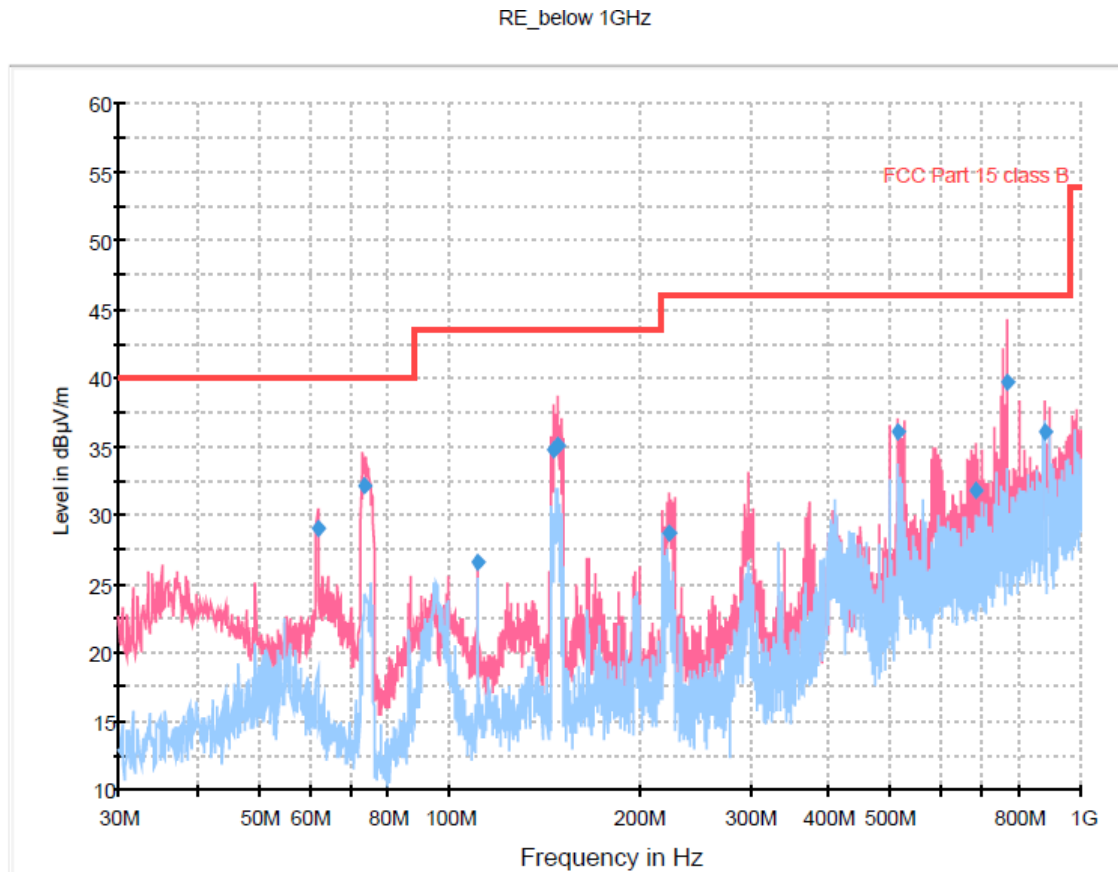
#### 6.6 Test data for Radiated Emission

- Test Date : October 15, 2010
- 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 (800 MHz). The measurement was made up to 5 000 MHz





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



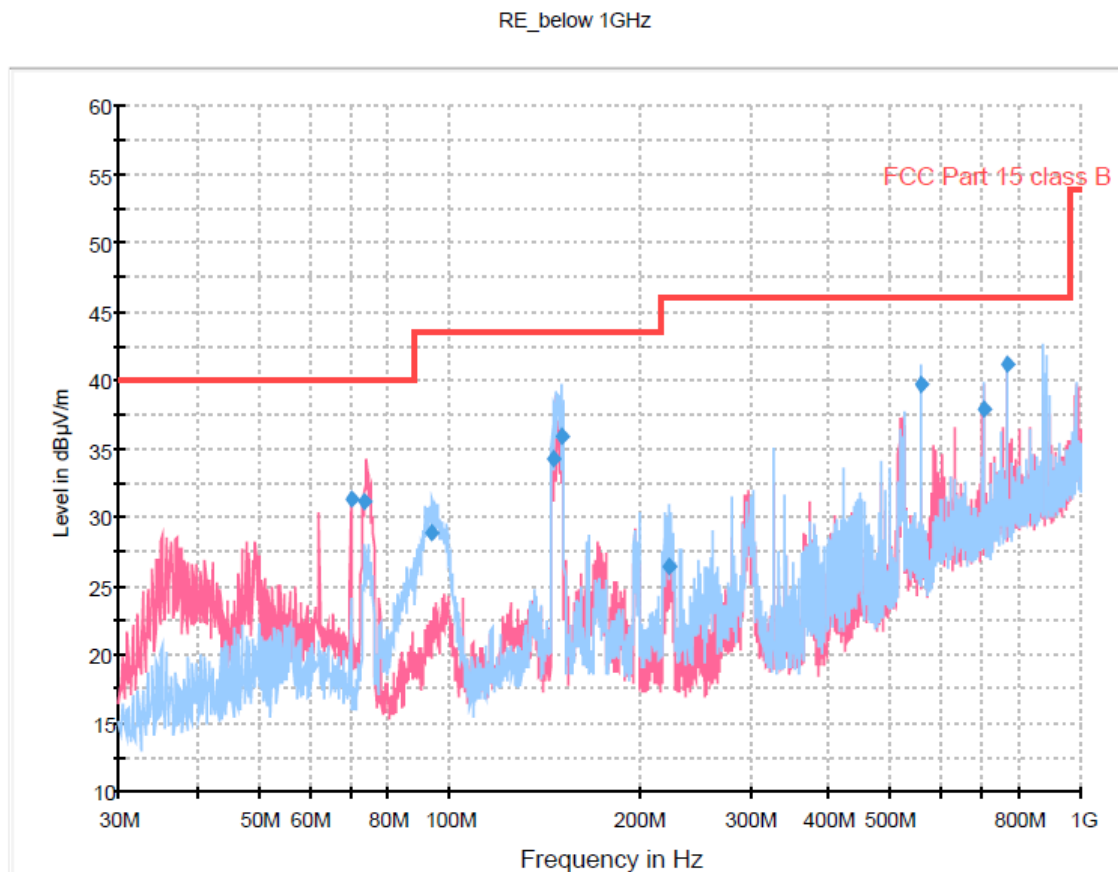
### Final Result [1]

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
61.868750	29.1	1000.0	120.000	100.0	V	212.0	12.5	10.90	40.00
73.545000	32.2	1000.0	120.000	100.0	V	201.0	10.6	7.80	40.00
111.378750	26.6	1000.0	120.000	100.0	V	223.0	12.7	16.90	43.50
146.768750	34.7	1000.0	120.000	100.0	V	233.0	14.8	8.80	43.50
148.158750	35.1	1000.0	120.000	100.0	V	233.0	14.9	8.40	43.50
223.443750	28.7	1000.0	120.000	200.0	V	255.0	13.0	17.30	46.00
515.218750	36.0	1000.0	120.000	200.0	V	33.0	22.6	10.00	46.00
681.577500	31.7	1000.0	120.000	100.0	V	145.0	26.3	14.30	46.00
766.251250	39.7	1000.0	120.000	100.0	V	49.0	28.1	6.30	46.00
880.953750	36.0	1000.0	120.000	100.0	V	190.0	29.6	10.00	46.00

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



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



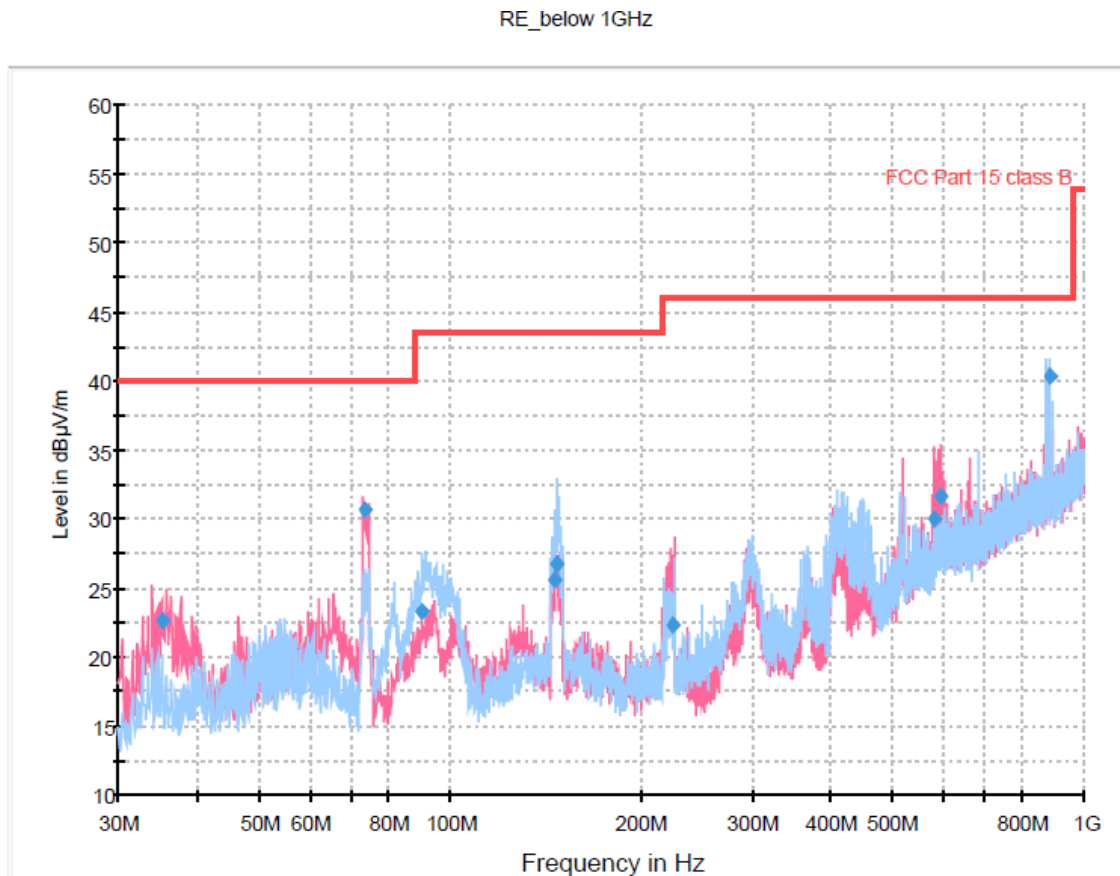
### Final Result [1]

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
70.072500	31.2	1000.0	120.000	100.0	V	291.0	11.5	8.80	40.00
73.716250	31.2	1000.0	120.000	100.0	V	180.0	10.6	8.80	40.00
94.200000	28.9	1000.0	120.000	200.0	H	175.0	10.1	14.60	43.50
146.647500	34.3	1000.0	120.000	200.0	H	236.0	14.8	9.20	43.50
150.502500	35.9	1000.0	120.000	100.0	H	129.0	15.0	7.60	43.50
223.251250	26.5	1000.0	120.000	100.0	H	326.0	13.0	19.50	46.00
560.570000	39.6	1000.0	120.000	100.0	H	340.0	23.8	6.40	46.00
700.695000	37.8	1000.0	120.000	200.0	H	94.0	26.6	8.20	46.00
766.248750	41.1	1000.0	120.000	100.0	V	63.0	28.1	4.90	46.00

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



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



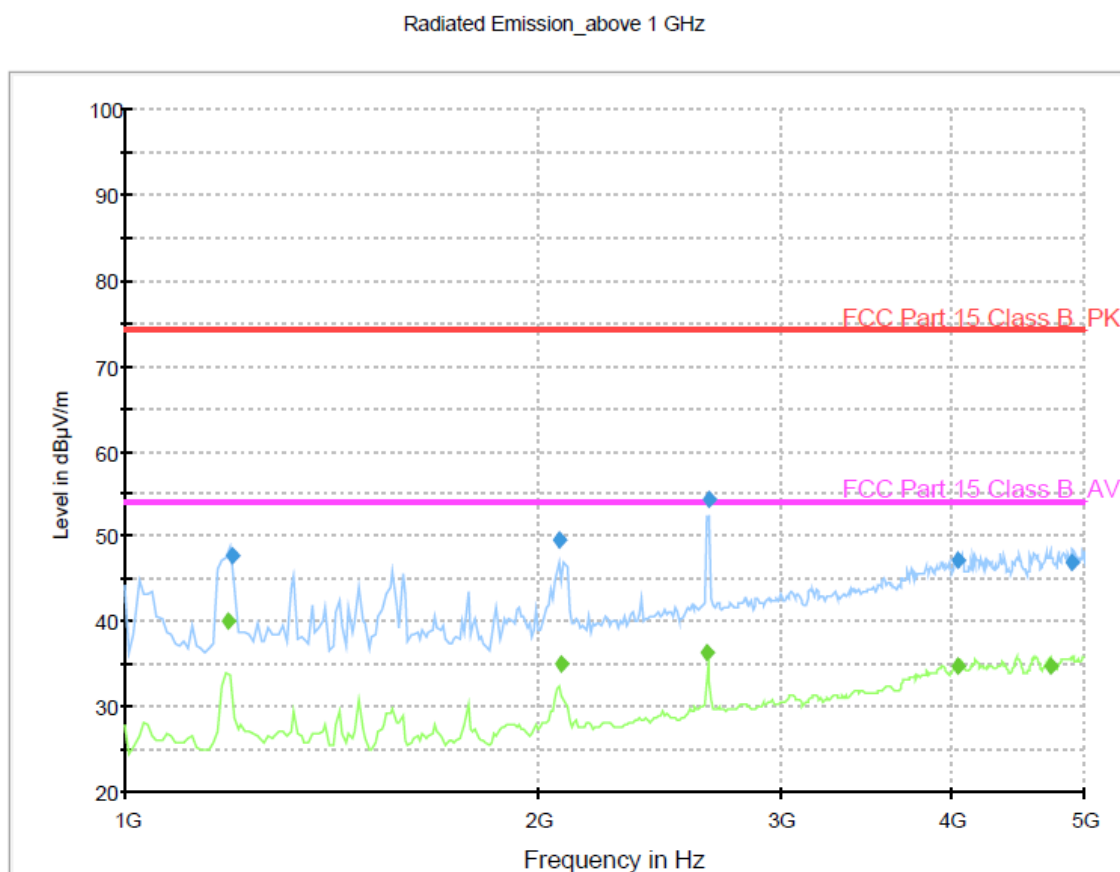
### Final Result [1]

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
35.221250	22.7	1000.0	120.000	100.0	V	264.0	11.7	17.30	40.00
73.265000	30.6	1000.0	120.000	100.0	V	155.0	10.7	9.40	40.00
90.336250	23.3	1000.0	120.000	200.0	H	184.0	9.3	20.20	43.50
146.041250	25.6	1000.0	120.000	200.0	H	129.0	14.7	17.40	43.00
147.915000	26.7	1000.0	120.000	100.0	H	133.0	14.8	16.80	43.50
224.838750	22.3	1000.0	120.000	100.0	V	232.0	13.1	23.70	46.00
579.925000	30.0	1000.0	120.000	200.0	V	215.0	24.4	16.00	46.00
592.632500	31.7	1000.0	120.000	200.0	V	226.0	24.8	14.30	46.00
881.358750	40.3	1000.0	120.000	200.0	H	73.0	29.6	5.70	46.00

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



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



## 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)
1196.984770	47.6	100.0	1000.000	100.0	V	237.0	-15.0	26.4	74.0
2073.948297	49.6	100.0	1000.000	131.0	V	196.0	-12.4	24.4	74.0
2664.334669	54.3	100.0	1000.000	100.0	H	168.0	-9.7	19.7	74.0
4038.676152	47.2	100.0	1000.000	319.0	H	0.0	-3.1	26.8	74.0
4897.191583	46.8	100.0	1000.000	192.0	V	72.0	-2.6	27.2	74.0

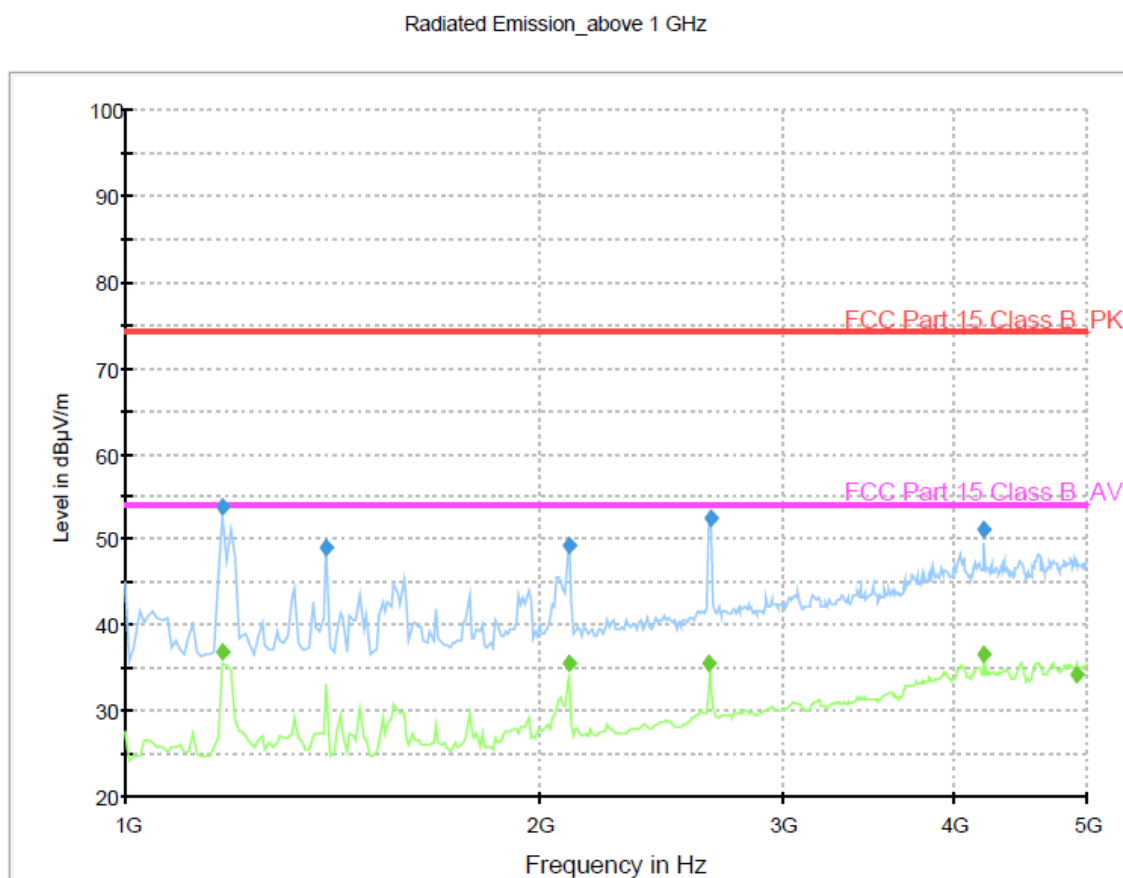
## Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1188.168738	40.0	100.0	1000.000	192.0	V	230.0	-15.1	14.0	54.0
2079.148297	35.2	100.0	1000.000	122.0	V	196.0	-12.3	18.8	54.0
2655.118637	36.3	100.0	1000.000	150.0	H	150.0	-9.7	17.7	54.0
4049.108216	34.7	100.0	1000.000	150.0	V	0.0	-3.1	19.3	54.0
4718.438878	34.8	100.0	1000.000	319.0	V	205.0	-2.9	19.2	54.0

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



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



## 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)
1177.352706	53.9	100.0	1000.000	100.0	V	161.0	-15.1	20.1	74.0
1401.401603	49.0	100.0	1000.000	140.0	H	159.0	-14.5	25.0	74.0
2101.996393	49.3	100.0	1000.000	114.0	V	237.0	-12.2	24.7	74.0
2663.934669	52.5	100.0	1000.000	100.0	H	172.0	-9.7	21.5	74.0
4204.212826	51.3	100.0	1000.000	113.0	V	140.0	-3.2	22.7	74.0

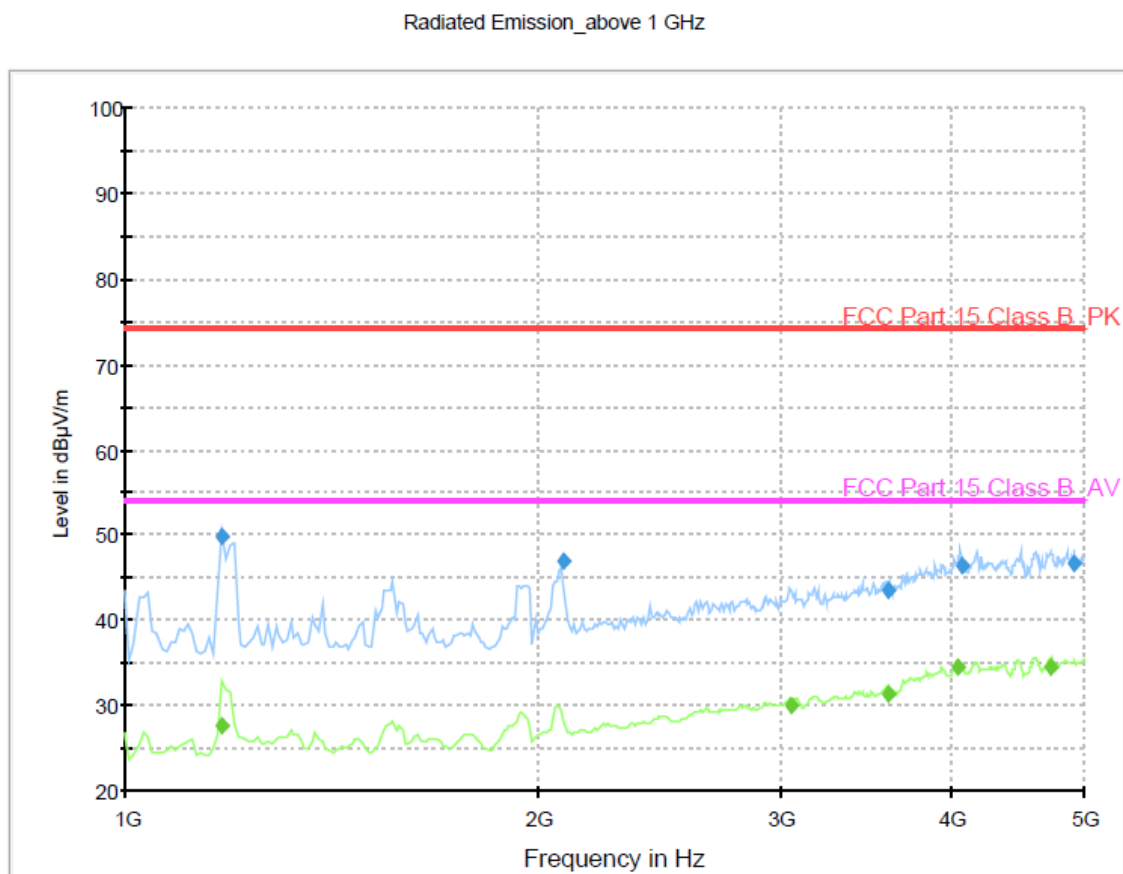
## Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1177.352706	37.0	100.0	1000.000	100.0	V	161.0	-15.1	17.0	54.0
2101.996393	35.5	100.0	1000.000	113.0	V	237.0	-12.2	18.5	54.0
2654.718637	35.5	100.0	1000.000	114.0	H	145.0	-9.7	18.5	54.0
4204.212826	36.5	100.0	1000.000	113.0	V	140.0	-3.2	17.5	54.0
4915.223647	34.3	100.0	1000.000	166.0	H	119.0	-2.6	19.7	54.0

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



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



## Final Result 1

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1177.352706	49.7	100.0	1000.000	100.0	V	226.0	-15.1	24.3	74.0
2087.164329	47.0	100.0	1000.000	100.0	V	206.0	-12.3	27.0	74.0
3593.378357	43.5	100.0	1000.000	199.0	H	99.0	-5.6	30.5	74.0
4065.924249	46.3	100.0	1000.000	100.0	V	350.0	-3.1	27.7	74.0
4907.223647	46.6	100.0	1000.000	281.0	V	0.0	-2.6	27.4	74.0

## Final Result 2

Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1177.352706	27.6	100.0	1000.000	100.0	V	226.0	-15.1	26.4	54.0
3058.320241	30.1	100.0	1000.000	150.0	H	307.0	-8.0	23.9	54.0
3592.194389	31.4	100.0	1000.000	100.0	V	194.0	-5.6	22.6	54.0
4047.892184	34.5	100.0	1000.000	199.0	H	122.0	-3.1	19.5	54.0
4718.438878	34.7	100.0	1000.000	100.0	V	187.0	-2.9	19.3	54.0

< Fig 19. Radiated emission result (1 000 MHz ~ 2 000 MHz) >



## 7. Sample Calculations

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

### 7.1 Example 1 :

#### ■ 20.3 MHz

Class B Limit	= 250 $\mu\text{V}$ = 48 dB $\mu\text{V}$
Reading	= 39.2 dB $\mu\text{V}$
$10^{(39.2\text{dB}\mu\text{V}/20)}$	= 91.2 $\mu\text{V}$
Margin	= 48 dB $\mu\text{V}$ - 39.2 dB $\mu\text{V}$ = 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 $\mu\text{V}$
Antenna Factor + Cable Loss = 5.8 dB	
Total	= 36.8 dB $\mu\text{V}/\text{m}$
Margin	= 40.0 dB $\mu\text{V}/\text{m}$ - 36.8 dB $\mu\text{V}/\text{m}$ = 3.2 dB



## 8. Recommendation & Conclusion

The data collected shows that the **LG Electronics Inc. LCD Monitor (Model Name: M5520CJ)** was complies with §15.107 and 15.109 of the FCC Rules.