



FCC EVALUATION REPORT FOR CERTIFICATION

Applicant : LG Electronics Inc.

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

Pyeongteak-si, Gyeonggi-do, Korea.

Attn: Myoung-Kyu Lee, Chief research engineer

Date of Issue : October 8, 2009

Order Number: GETEC-C1-09-204

Test Report Number: GETEC-E3-09-117

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID.: BEJM2262DL

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	: M2262DL
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

Tae-Sig Park, Technical Manager
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: 299, Gongdan-dong, Gumi-si, Gyeongbuk, Korea.

Contact Person: Myoung-Kyu Lee, Chief research engineer

Tel Number: +82-54-460-7314

- **FCC ID.** BEJM2262DL
- **EUT Type** LCD TV/Monitor
- **Model Name** M2262DL
- **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 5, 2009
- **Place of Test** **Gumi College EMC Center** (FCC Registration Number: 100749, 443957)
407, Bugok-dong, Gumi-si, Gyeongbuk, Korea.
- **Test Report Number** GETEC-E3-09-117
- **Dates of Issue** October 8, 2009



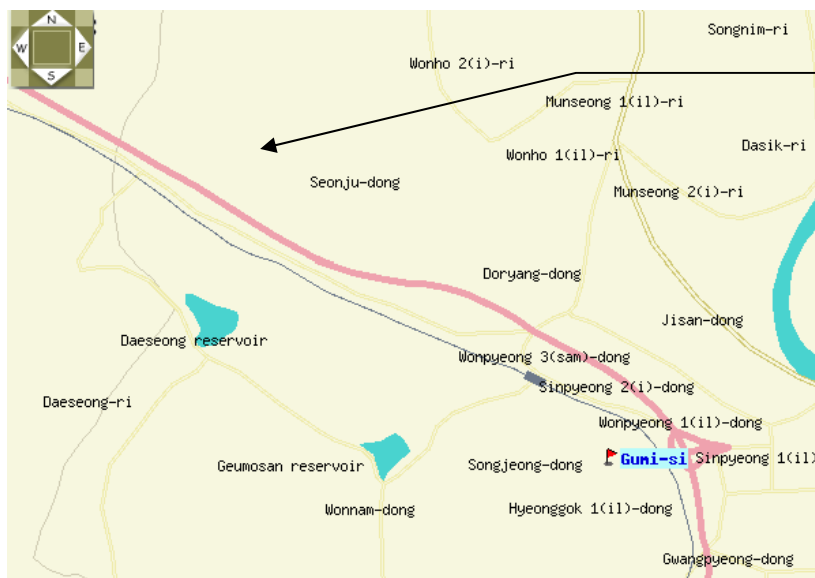
2. Introduction

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: M2262DL)**

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 on October 19, 1992



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: M2262DL) FCC ID.: BEJM2262DL**

LCD Panel	Screen Type	21.53 inches Wide (546.86 mm) TFT (Thin Film Transistor) LCD (Liquid Crystal Display) Panel Visible diagonal size : 546.86 mm
	Pixel Pitch	0.248 (H) x 0.248 (V) mm
Video Signal	Max. Resolution	1920 X 1080 @ 60 Hz
	Recommended Resolution	1920 X 1080 @ 60 Hz
	Horizontal Frequency	30 - 83 kHz
	Vertical Frequency	56 - 75 Hz
	Synchronization Type	Separate Sync, Digital
Input Connector		TV, D-Sub Analog, PC Audio In, component, DVI-D, HDMI*2, CVBS, S-VIDEO
Power	Rated Voltage	AC 100-240V ~ 50/60 Hz 0.9A
	Power Consumption	On Mode : 53W (typ.) Sleep Mode ≤ 1W Off Mode ≤ 0.5W
Tilt	Tilt Range	-5 ~ 15°
Dimensions (Width x Height x Depth) Weight		517.2 x 399.8 x 221.6 mm (20.36 x 15.74 x 8.72 inches) 4.7 kg / 10.4 lbs
Environmental conditions	Operating Temperature	10 ~ 35°C
	Operating Humidity	20 ~ 80%
	Storage Temperature	-10 ~ 60°C
	Storage Humidity	5 ~ 90%

Maximum Frequency range:	210 MHz
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3.2 Support Equipment / Cables used

3.2.1 Used Support Equipment

Description	Manufacturer	Model Name	S/N & FCC ID
PC	SAMSUNG	DB-P60	S/N: 729W97AP500001M FCC ID: DoC
Video card	SUMA	Geforce FX 7600GT	S/N: NE/7600GXTD21V407003711 FCC ID: DoC
Key-board	COMPAQ	166516-AD6	S/N: B13BBOR391006D FCC ID: AQ6-23K15
PS2 mouse	LOGITECH	M-S69	S/N: 334684-108 FCC ID: JNZ211443
Joystick	Microsoft	X05-92626	S/N: 9262600296169 FCC ID: DoC
DVD player	LG Electronics Inc	LC-954	S/N: 3850R-Z674K FCC ID: DoC
Headset	GOWOONSORI	GW-500M	S/N: N/A FCC ID: DoC
Printer	Hewlett Packard	970CXI	S/N: MY9B01F1FG FCC ID: DoC
TV signal generator	FLUKE	54200	S/N: 831011 FCC ID: DoC

See "Appendix D – Test Setup Photographs" for actual system test set-up



3.2.2 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the EUT	1.8 m unshielded
Video(RGB) input cable	Connected to the EUT and PC	1.8 m shielded with two ferrite cores
Video(DVI-D) input cable	Connected to the EUT and PC	2.0 m shielded with two ferrite cores
RGB/DVI-D Audio input cable	Connected to the EUT and PC	1.8 m shielded
RS-232C input cable (Control & service)	Connected to the EUT and PC	1.0 m shielded with two ferrite cores
S-Video input cable	Connected to the EUT and DVD Player	1.6 m shielded
Component input cable	Connected to the EUT and DVD Player	1.8 m shielded
Component sound input cable	Connected to the EUT and DVD Player	3.0 m shielded
Audio/Video input cable	Connected to the EUT and DVD Player	3.0 m shielded
HDMI input cable	Connected to the EUT and DVD Player	2.0 m shielded
Headphone cable	Connected to the EUT	2.75 m shielded
Antenna input cable	Connected to the EUT and TV signal generator	10.0 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), 1 920 * 1 080 / 60 Hz (DVI-D: Digital)
 - . Conducted emission: 1 920 * 1 080 / 60 Hz (RGB: Analog), 1 920 * 1 080 / 60 Hz (DVI-D: 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
 - . 1 kHz sound tone with winamp player

"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.

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

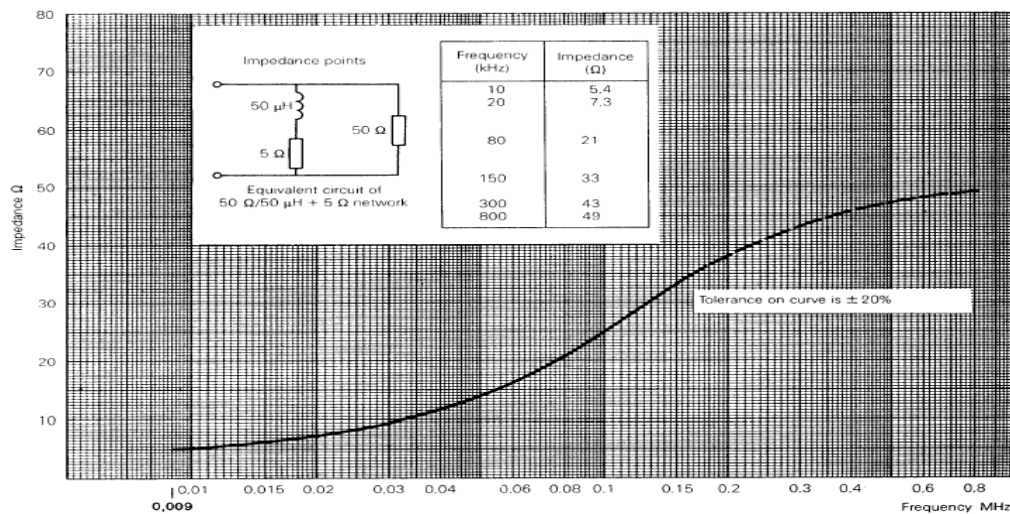


Fig 2. Impedance of LISN



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.

The spectrum was scanned from 30 MHz to 1 000 MHz using bicornical log antenna (Schwarzbeck, VULB9160). Above 1 GHz, horn antenna (Schwarzbeck, BBHA9120D) was used.

Final measurements were made outdoors at 3 m /10 m test range.

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

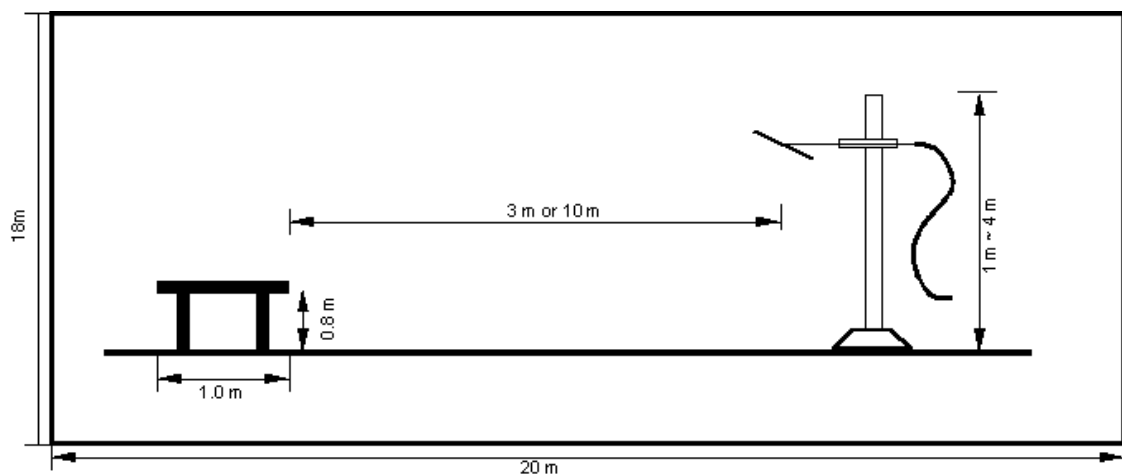


Fig 3. Dimensions of Open Site Test Area



5. Conducted Emission

5.1 Operating Environment

Temperature : 23 °C
Relative Humidity : 42 % 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.

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)	± 2.97 dB	Confidence levels of 95 % (k=2)
Conducted emission (150 kHz ~ 30 MHz)	± 4.05 dB	Confidence levels of 95 % (k=2)



5.4 Limit

RFI Conducted	FCC Limit(dB) 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. 13. 2009
■ - ESH3-Z5	Rohde & Schwarz	LISN	838979/020	12. 12. 2009
■ - ESH2-Z5	Rohde & Schwarz	LISN	829991/009	12. 12. 2009
□ - ISN T8	TESEQ. GmbH	ISN	24568	10. 16. 2009

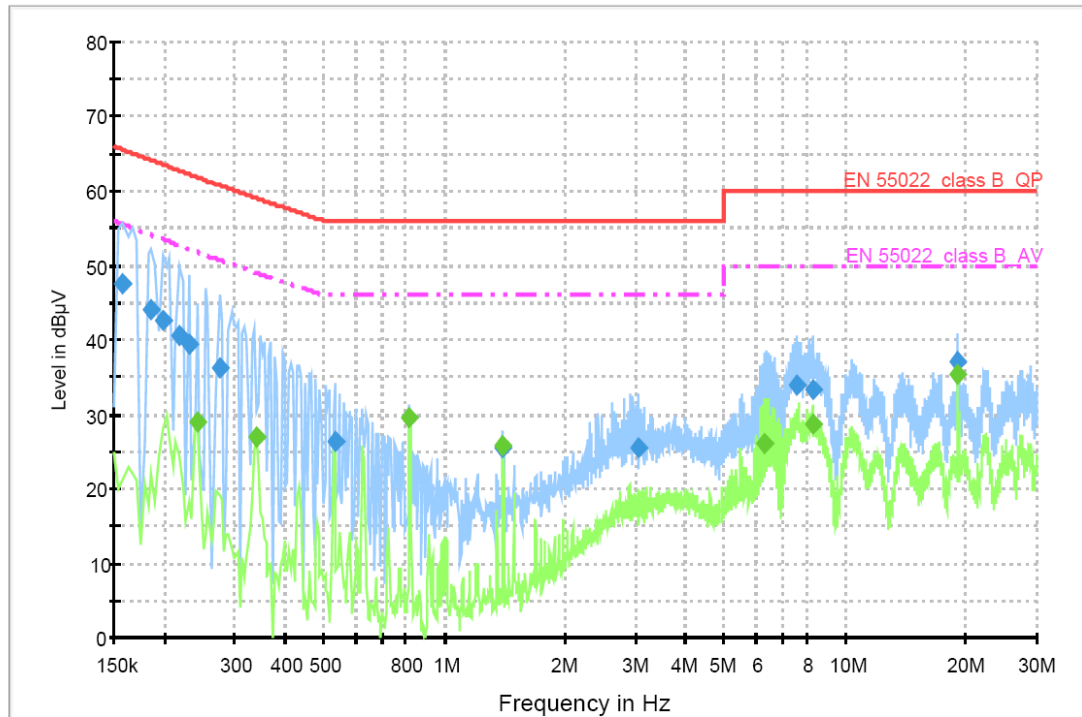
5.6 Test data for Conducted Emission

- . Test Date : October 5, 2009
- . Resolution Bandwidth : 9 kHz
- . Frequency Range : 0.15 MHz ~ 30 MHz



◆ Test resolution: 1 920 * 1 080 / 60 Hz (RGB: Analog 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
0.158000	47.4	1000.000	9.000	GND	L1	9.9	18.1	65.5	
0.186000	43.9	1000.000	9.000	GND	L1	9.9	20.2	64.1	
0.198000	42.7	1000.000	9.000	GND	L1	9.9	20.8	63.5	
0.218000	40.7	1000.000	9.000	GND	L1	9.9	22.0	62.7	
0.230000	39.5	1000.000	9.000	GND	L1	9.9	22.8	62.3	
0.274000	36.2	1000.000	9.000	GND	L1	10.0	24.6	60.8	
0.534000	26.5	1000.000	9.000	GND	L1	10.0	29.5	56.0	
1.398000	25.5	1000.000	9.000	GND	L1	10.0	30.5	56.0	
3.034000	25.5	1000.000	9.000	GND	L1	10.1	30.5	56.0	
7.582000	33.9	1000.000	9.000	GND	L1	10.3	26.1	60.0	
8.262000	33.4	1000.000	9.000	GND	L1	10.3	26.6	60.0	
19.110000	37.1	1000.000	9.000	GND	L1	10.8	22.9	60.0	

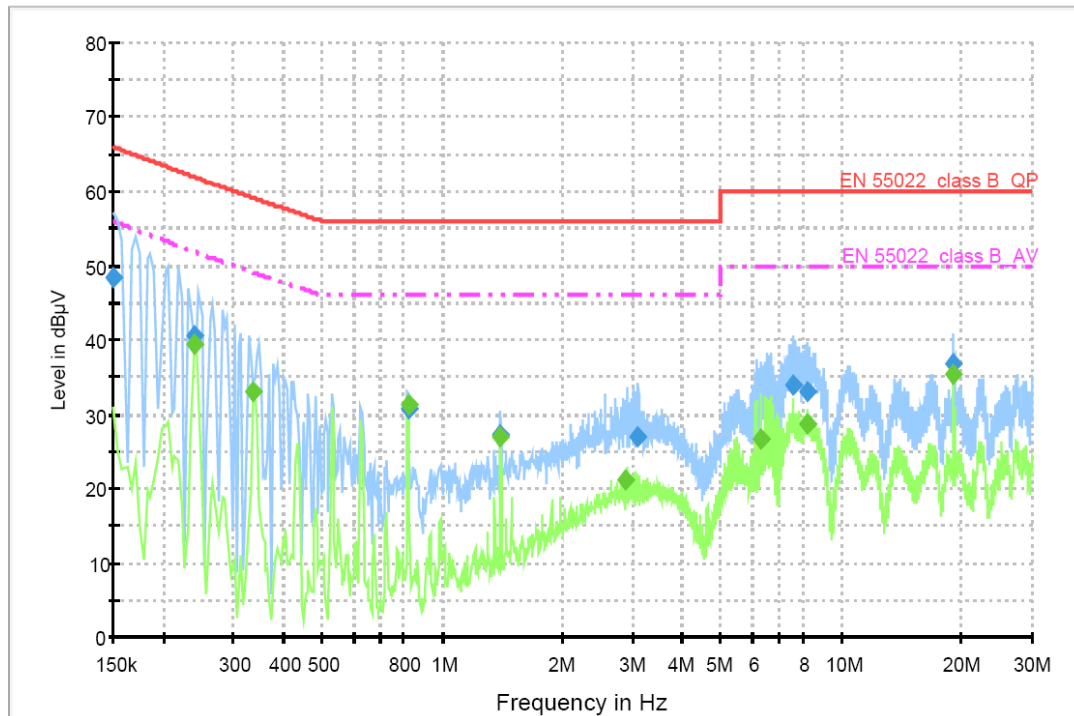
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.242000	29.1	1000.000	9.000	GND	L1	10.0	22.7	51.8	
0.338000	26.9	1000.000	9.000	GND	L1	10.0	22.1	49.0	
0.818000	29.7	1000.000	9.000	GND	L1	10.0	16.3	46.0	
1.398000	25.9	1000.000	9.000	GND	L1	10.0	20.1	46.0	
6.262000	26.0	1000.000	9.000	GND	L1	10.2	24.0	50.0	
8.262000	28.6	1000.000	9.000	GND	L1	10.3	21.4	50.0	
19.110000	35.3	1000.000	9.000	GND	L1	10.8	14.7	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	48.4	1000.000	9.000	GND	N	9.9	17.6	66.0	
0.240000	40.5	1000.000	9.000	GND	N	10.0	21.4	61.9	
0.820000	30.8	1000.000	9.000	GND	N	10.0	25.2	56.0	
1.396000	27.3	1000.000	9.000	GND	N	10.1	28.7	56.0	
3.080000	26.9	1000.000	9.000	GND	N	10.1	29.1	56.0	
7.556000	33.9	1000.000	9.000	GND	N	10.3	26.1	60.0	
8.204000	33.1	1000.000	9.000	GND	N	10.3	26.9	60.0	
19.112000	36.9	1000.000	9.000	GND	N	10.7	23.1	60.0	

Final Measurement Detector 2

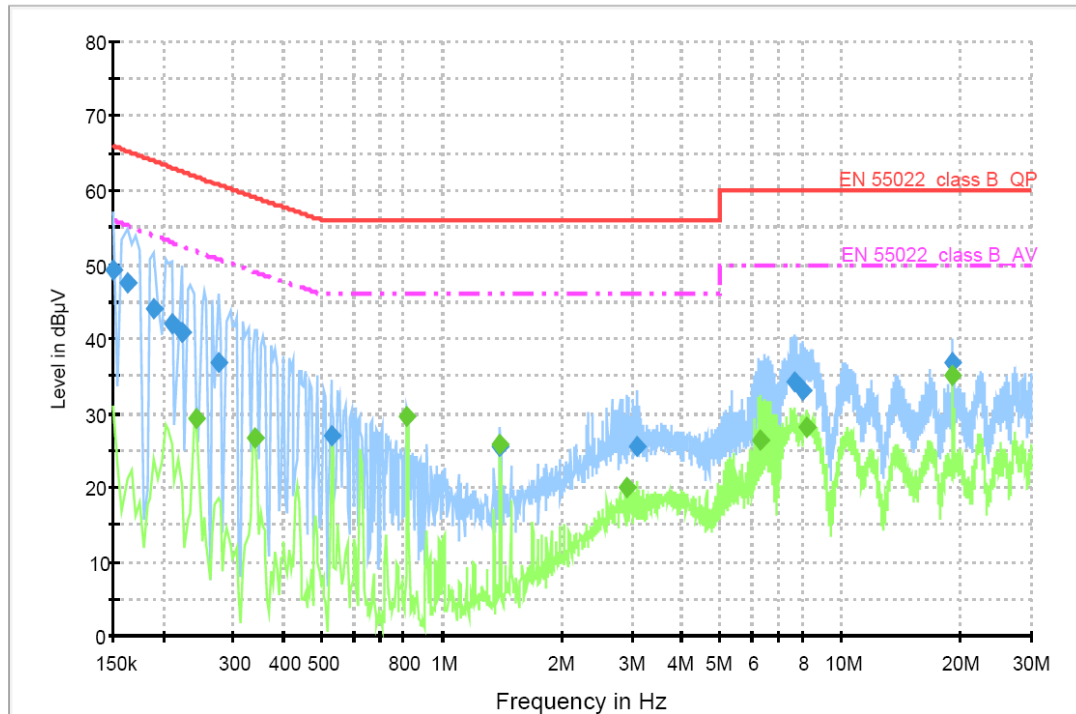
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.240000	39.5	1000.000	9.000	GND	N	10.0	12.4	51.9	
0.336000	33.2	1000.000	9.000	GND	N	10.0	15.9	49.1	
0.820000	31.4	1000.000	9.000	GND	N	10.0	14.6	46.0	
1.396000	26.9	1000.000	9.000	GND	N	10.1	19.1	46.0	
2.888000	21.2	1000.000	9.000	GND	N	10.1	24.8	46.0	
6.264000	26.6	1000.000	9.000	GND	N	10.2	23.4	50.0	
8.212000	28.8	1000.000	9.000	GND	N	10.3	21.2	50.0	
19.108000	35.5	1000.000	9.000	GND	N	10.7	14.5	50.0	

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



◆ Test resolution: 1 920 * 1 080 / 60 Hz (DVI-D: Digital 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
0.150000	49.2	1000.000	9.000	GND	L1	9.9	16.8	66.0	
0.162000	47.5	1000.000	9.000	GND	L1	9.9	17.8	65.3	
0.190000	44.1	1000.000	9.000	GND	L1	9.9	19.8	63.9	
0.210000	42.1	1000.000	9.000	GND	L1	9.9	20.9	63.0	
0.222000	41.0	1000.000	9.000	GND	L1	9.9	21.6	62.6	
0.274000	36.8	1000.000	9.000	GND	L1	10.0	24.0	60.8	
0.526000	26.9	1000.000	9.000	GND	L1	10.0	29.1	56.0	
1.398000	25.5	1000.000	9.000	GND	L1	10.0	30.5	56.0	
3.074000	25.5	1000.000	9.000	GND	L1	10.1	30.5	56.0	
7.614000	34.1	1000.000	9.000	GND	L1	10.3	25.9	60.0	
8.026000	33.2	1000.000	9.000	GND	L1	10.3	26.8	60.0	
19.110000	36.9	1000.000	9.000	GND	L1	10.8	23.1	60.0	

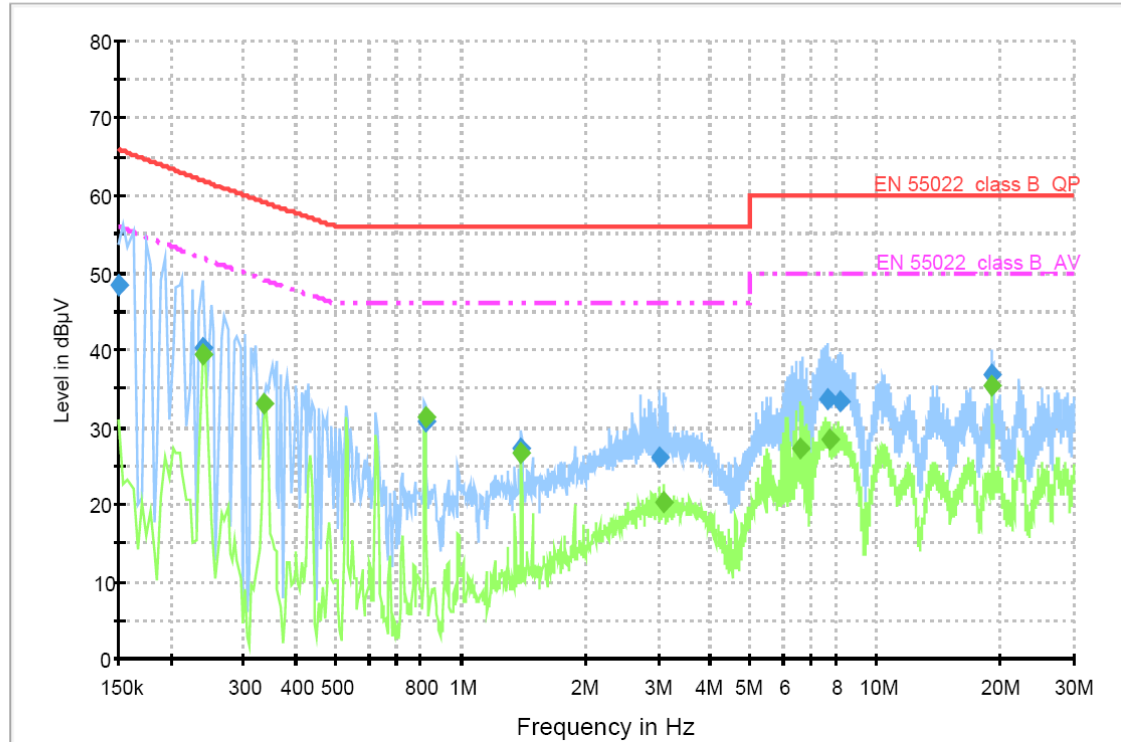
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.242000	29.2	1000.000	9.000	GND	L1	10.0	22.6	51.8	
0.338000	26.8	1000.000	9.000	GND	L1	10.0	22.2	49.0	
0.818000	29.6	1000.000	9.000	GND	L1	10.0	16.4	46.0	
1.398000	25.8	1000.000	9.000	GND	L1	10.0	20.2	46.0	
2.894000	20.0	1000.000	9.000	GND	L1	10.1	26.0	46.0	
6.266000	26.3	1000.000	9.000	GND	L1	10.2	23.7	50.0	
8.166000	28.2	1000.000	9.000	GND	L1	10.3	21.8	50.0	
19.110000	35.1	1000.000	9.000	GND	L1	10.8	14.9	50.0	

< Fig 6. Conducted emission result (Live line)>



Voltage with 4-Line-LISN_N



Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	48.4	1000.000	9.000	GND	N	9.9	17.6	66.0	
0.240000	40.2	1000.000	9.000	GND	N	10.0	21.7	61.9	
0.820000	30.8	1000.000	9.000	GND	N	10.0	25.2	56.0	
1.396000	27.3	1000.000	9.000	GND	N	10.1	28.7	56.0	
3.004000	26.2	1000.000	9.000	GND	N	10.1	29.8	56.0	
7.688000	33.6	1000.000	9.000	GND	N	10.3	26.4	60.0	
8.204000	33.2	1000.000	9.000	GND	N	10.3	26.8	60.0	
19.112000	36.8	1000.000	9.000	GND	N	10.7	23.2	60.0	

Final Measurement Detector 2

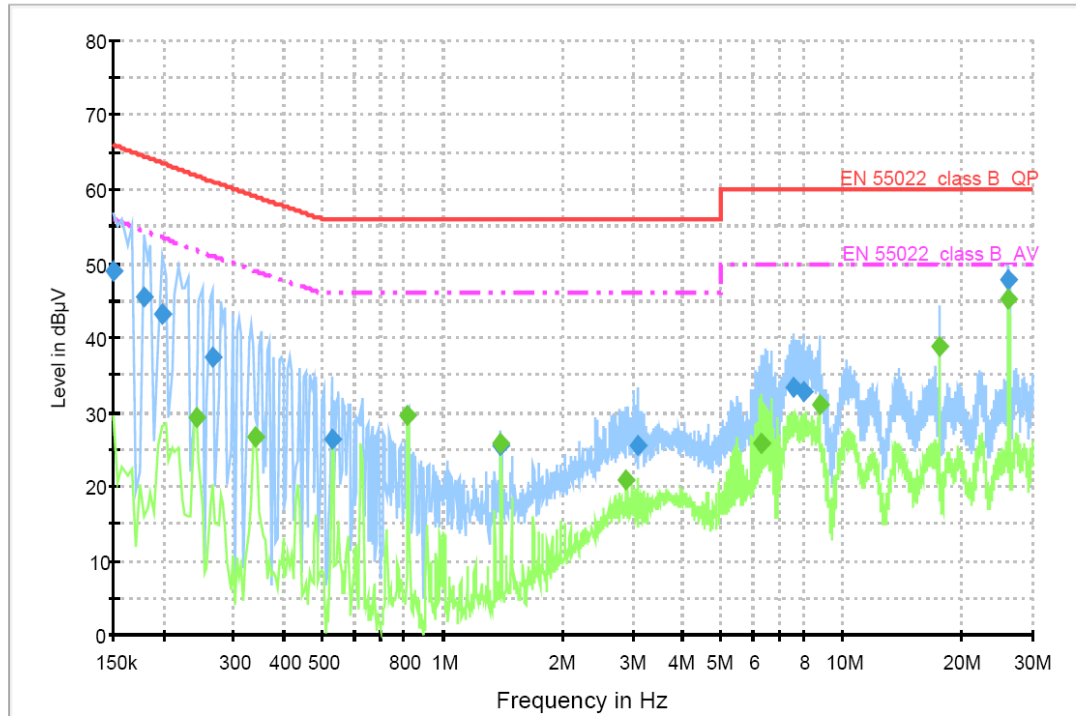
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.240000	39.5	1000.000	9.000	GND	N	10.0	12.4	51.9	
0.336000	33.1	1000.000	9.000	GND	N	10.0	16.0	49.1	
0.820000	31.3	1000.000	9.000	GND	N	10.0	14.7	46.0	
1.396000	26.8	1000.000	9.000	GND	N	10.1	19.2	46.0	
3.080000	20.3	1000.000	9.000	GND	N	10.1	25.7	46.0	
6.568000	27.3	1000.000	9.000	GND	N	10.2	22.7	50.0	
7.740000	28.3	1000.000	9.000	GND	N	10.3	21.7	50.0	
19.108000	35.5	1000.000	9.000	GND	N	10.7	14.5	50.0	

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



◆ Test resolution: 1 024 * 768 / 60 Hz (RGB: Analog 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
0.150000	49.0	1000.000	9.000	GND	L1	9.9	17.0	66.0	
0.178000	45.5	1000.000	9.000	GND	L1	9.9	19.0	64.5	
0.198000	43.1	1000.000	9.000	GND	L1	9.9	20.4	63.5	
0.266000	37.3	1000.000	9.000	GND	L1	10.0	23.7	61.0	
0.526000	26.5	1000.000	9.000	GND	L1	10.0	29.5	56.0	
1.398000	25.5	1000.000	9.000	GND	L1	10.0	30.5	56.0	
3.070000	25.4	1000.000	9.000	GND	L1	10.1	30.6	56.0	
7.566000	33.4	1000.000	9.000	GND	L1	10.3	26.6	60.0	
8.038000	32.7	1000.000	9.000	GND	L1	10.3	27.3	60.0	
26.230000	47.9	1000.000	9.000	GND	L1	11.0	12.1	60.0	

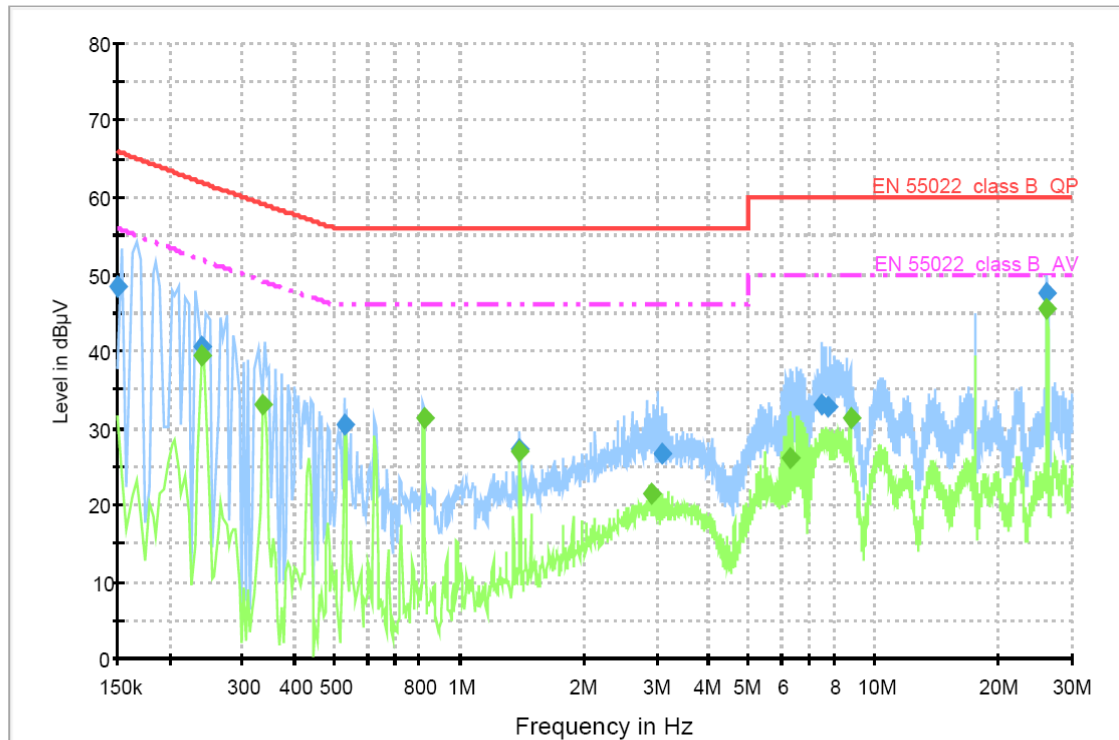
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.242000	29.1	1000.000	9.000	GND	L1	10.0	22.7	51.8	
0.338000	26.8	1000.000	9.000	GND	L1	10.0	22.2	49.0	
0.818000	29.5	1000.000	9.000	GND	L1	10.0	16.5	46.0	
1.398000	25.9	1000.000	9.000	GND	L1	10.0	20.1	46.0	
2.890000	20.8	1000.000	9.000	GND	L1	10.1	25.2	46.0	
6.262000	25.9	1000.000	9.000	GND	L1	10.2	24.1	50.0	
8.762000	30.9	1000.000	9.000	GND	L1	10.3	19.1	50.0	
17.526000	38.7	1000.000	9.000	GND	L1	10.7	11.3	50.0	
26.230000	45.2	1000.000	9.000	GND	L1	11.0	4.8	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	48.3	1000.000	9.000	GND	N	9.9	17.7	66.0	
0.240000	40.6	1000.000	9.000	GND	N	10.0	21.3	61.9	
0.532000	30.5	1000.000	9.000	GND	N	10.0	25.5	56.0	
1.396000	27.3	1000.000	9.000	GND	N	10.1	28.7	56.0	
3.072000	26.7	1000.000	9.000	GND	N	10.1	29.3	56.0	
7.476000	33.1	1000.000	9.000	GND	N	10.3	26.9	60.0	
7.772000	32.8	1000.000	9.000	GND	N	10.3	27.2	60.0	
26.228000	47.6	1000.000	9.000	GND	N	10.8	12.4	60.0	

Final Measurement Detector 2

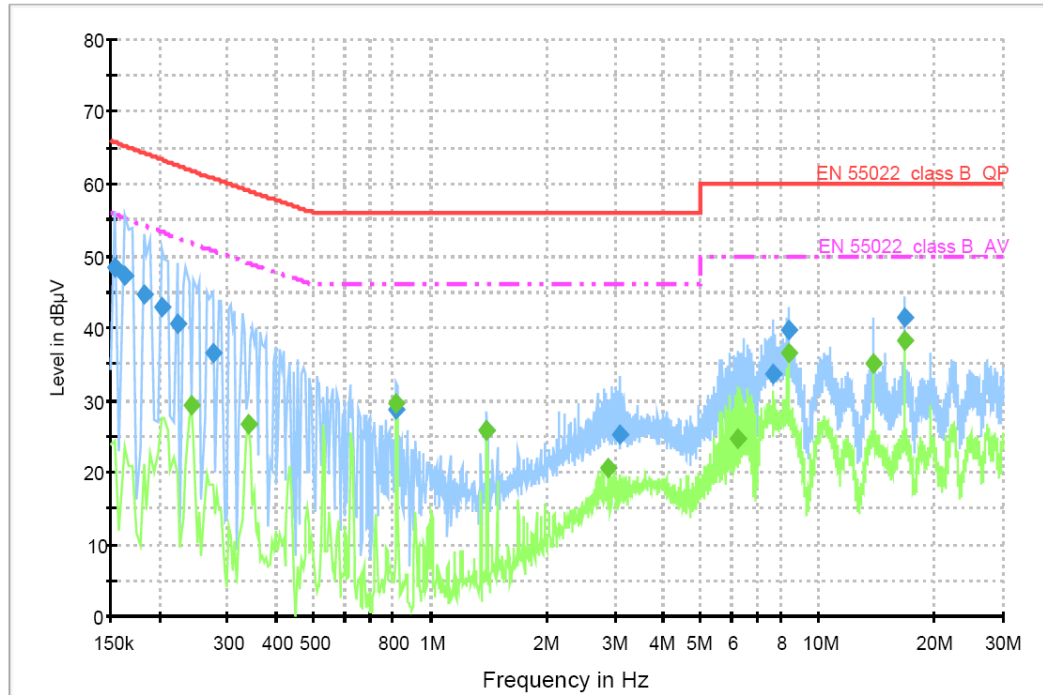
Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.240000	39.5	1000.000	9.000	GND	N	10.0	12.4	51.9	
0.336000	33.1	1000.000	9.000	GND	N	10.0	16.0	49.1	
0.820000	31.2	1000.000	9.000	GND	N	10.0	14.8	46.0	
1.396000	26.9	1000.000	9.000	GND	N	10.1	19.1	46.0	
2.892000	21.3	1000.000	9.000	GND	N	10.1	24.7	46.0	
6.264000	26.0	1000.000	9.000	GND	N	10.2	24.0	50.0	
8.764000	31.3	1000.000	9.000	GND	N	10.3	18.7	50.0	
26.228000	45.4	1000.000	9.000	GND	N	10.8	4.6	50.0	

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



◆ Test resolution: 640 * 480 / 60 Hz (RGB: Analog 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
0.154000	48.5	1000.000	9.000	GND	L1	9.9	17.3	65.8	
0.162000	47.1	1000.000	9.000	GND	L1	9.9	18.2	65.3	
0.182000	44.8	1000.000	9.000	GND	L1	9.9	19.5	64.3	
0.202000	42.8	1000.000	9.000	GND	L1	9.9	20.6	63.4	
0.222000	40.7	1000.000	9.000	GND	L1	9.9	21.9	62.6	
0.274000	36.5	1000.000	9.000	GND	L1	10.0	24.3	60.8	
0.818000	28.8	1000.000	9.000	GND	L1	10.0	27.2	56.0	
1.398000	25.7	1000.000	9.000	GND	L1	10.0	30.3	56.0	
3.070000	25.1	1000.000	9.000	GND	L1	10.1	30.9	56.0	
7.622000	33.7	1000.000	9.000	GND	L1	10.3	26.3	60.0	
8.370000	39.8	1000.000	9.000	GND	L1	10.3	20.2	60.0	
16.706000	41.4	1000.000	9.000	GND	L1	10.7	18.6	60.0	

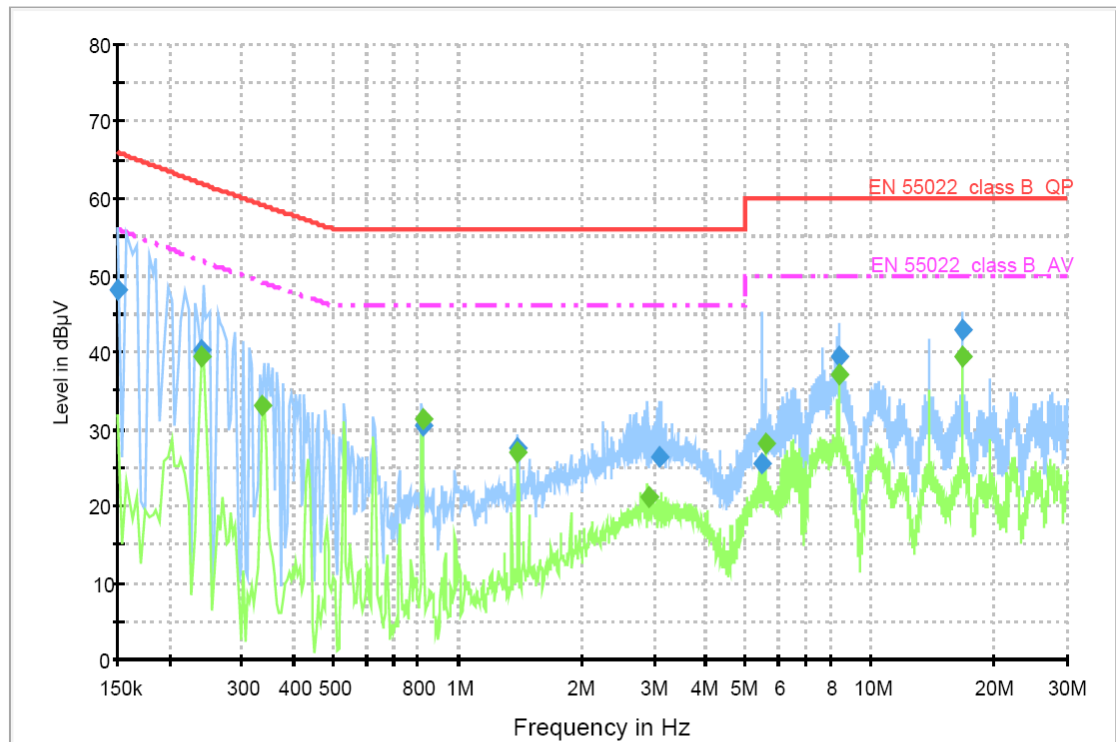
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.242000	29.1	1000.000	9.000	GND	L1	10.0	22.7	51.8	
0.338000	26.8	1000.000	9.000	GND	L1	10.0	22.2	49.0	
0.818000	29.5	1000.000	9.000	GND	L1	10.0	16.5	46.0	
1.398000	25.9	1000.000	9.000	GND	L1	10.0	20.1	46.0	
2.890000	20.7	1000.000	9.000	GND	L1	10.1	25.3	46.0	
6.198000	24.5	1000.000	9.000	GND	L1	10.2	25.5	50.0	
8.366000	36.6	1000.000	9.000	GND	L1	10.3	13.4	50.0	
13.914000	35.0	1000.000	9.000	GND	L1	10.5	15.0	50.0	
16.706000	38.2	1000.000	9.000	GND	L1	10.7	11.8	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	48.1	1000.000	9.000	GND	N	9.9	17.9	66.0	
0.240000	40.2	1000.000	9.000	GND	N	10.0	21.7	61.9	
0.820000	30.6	1000.000	9.000	GND	N	10.0	25.4	56.0	
1.396000	27.4	1000.000	9.000	GND	N	10.1	28.6	56.0	
3.084000	26.4	1000.000	9.000	GND	N	10.1	29.6	56.0	
5.468000	25.6	1000.000	9.000	GND	N	10.2	34.4	60.0	
8.364000	39.4	1000.000	9.000	GND	N	10.3	20.6	60.0	
16.704000	42.8	1000.000	9.000	GND	N	10.6	17.2	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.240000	39.5	1000.000	9.000	GND	N	10.0	12.4	51.9	
0.336000	33.1	1000.000	9.000	GND	N	10.0	16.0	49.1	
0.820000	31.2	1000.000	9.000	GND	N	10.0	14.8	46.0	
1.396000	26.9	1000.000	9.000	GND	N	10.1	19.1	46.0	
2.892000	21.2	1000.000	9.000	GND	N	10.1	24.8	46.0	
5.580000	28.2	1000.000	9.000	GND	N	10.2	21.8	50.0	
8.368000	37.2	1000.000	9.000	GND	N	10.3	12.8	50.0	
16.704000	39.3	1000.000	9.000	GND	N	10.6	10.7	50.0	

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



6. Radiated Emission

6.1 Operating Environment

Temperature : 22 °C
Relative Humidity : 46 % R.H.

6.2 Test Set-up

A preliminary scan with peak mode was performed in the semi anechoic chamber and found frequency for open area test site.

The formal radiated emission was measured at 3 m / 10 m distance open area test site.

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	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 3 m, Vertical)	± 3.54 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	± 3.49 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	± 3.85 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	± 3.76 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 10 m, Vertical)	± 3.21 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 10 m, Horizontal)	± 3.32 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 10 m, Vertical)	± 3.77 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 10 m, Horizontal)	± 3.84 dB	Confidence levels of 95 % (k=2)



6.4 Limit

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

6.5 Test Equipment used

Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESI	Rohde & Schwarz	EMI test receiver	830482/010	12. 14. 2009
■ - VULB9160	Schwarzbeck	Broadband Test Antenna	3193	12. 11. 2009
■ - BBHA9120D	Schwarzbeck	Horn ANT	207	12. 26. 2009
■ - MCU066	maturo GmbH	MCU066	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. 11. 2009

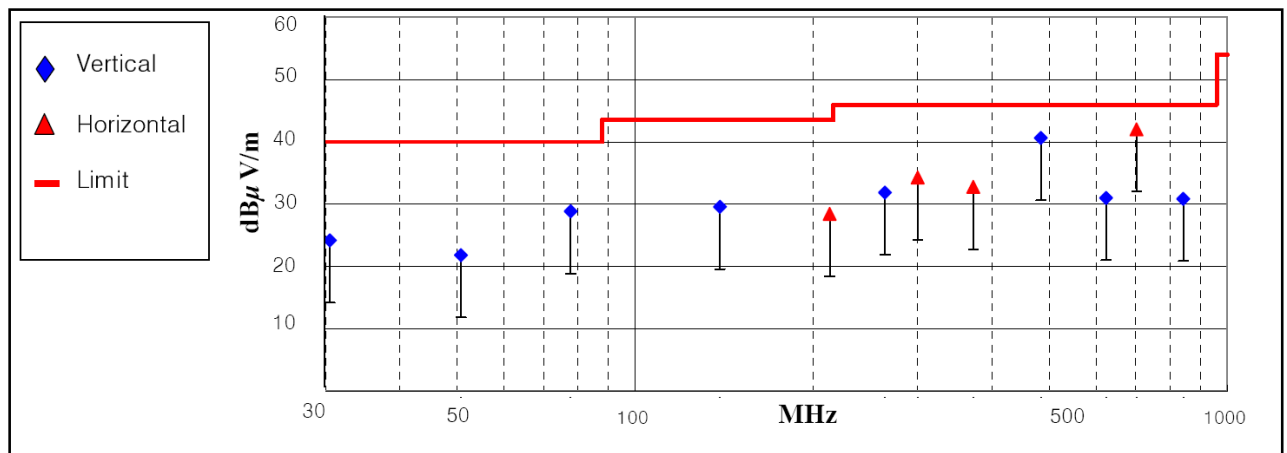


6.6 Test data for Radiated Emission

- Test Date : October 5, 2009
- Resolution Bandwidth : 120 kHz/ 1 MHz
- Frequency Range : 30 MHz ~ 2 000 MHz
- Measurement Distance : 3 m

◆ Operating Condition: 1 920 * 1 080 / 60 Hz (RGB: Analog mode)
Detector mode: Quasi- peak detector mode

Frequency (MHz)	Measurement Level				Limit (dBμ V/m)	Margin (dB)	Positioning System		
	Reading	Antenna	Cable	Test Result			Pol.	Height	Angle
	Value(dBμ V)	Factor(dB/m)	Loss(dB)	(dBμ V/m)			(H/V)	(cm)	(°)
30.52	12.16	11.01	1.01	24.18	40.00	15.82	V	100	182
50.80	8.18	12.27	1.38	21.83	40.00	18.17	V	117	276
77.77	18.90	8.23	1.75	28.88	40.00	11.12	V	105	0
139.10	15.18	12.57	1.84	29.59	43.50	13.91	V	110	91
212.92	16.14	9.82	2.50	28.46	43.50	15.04	H	241	90
264.00	17.41	11.61	2.83	31.85	46.00	14.15	V	106	213
300.00	18.57	12.73	3.01	34.31	46.00	11.69	H	211	211
372.31	15.30	14.25	3.25	32.80	46.00	13.20	H	169	191
484.25	20.41	16.59	3.62	40.62	46.00	5.38	V	100	173
623.72	7.40	19.35	4.24	30.99	46.00	15.01	V	100	0
702.00	17.32	20.01	4.67	42.00	46.00	4.00	H	271	90
842.36	3.55	22.11	5.22	30.88	46.00	15.12	V	104	175

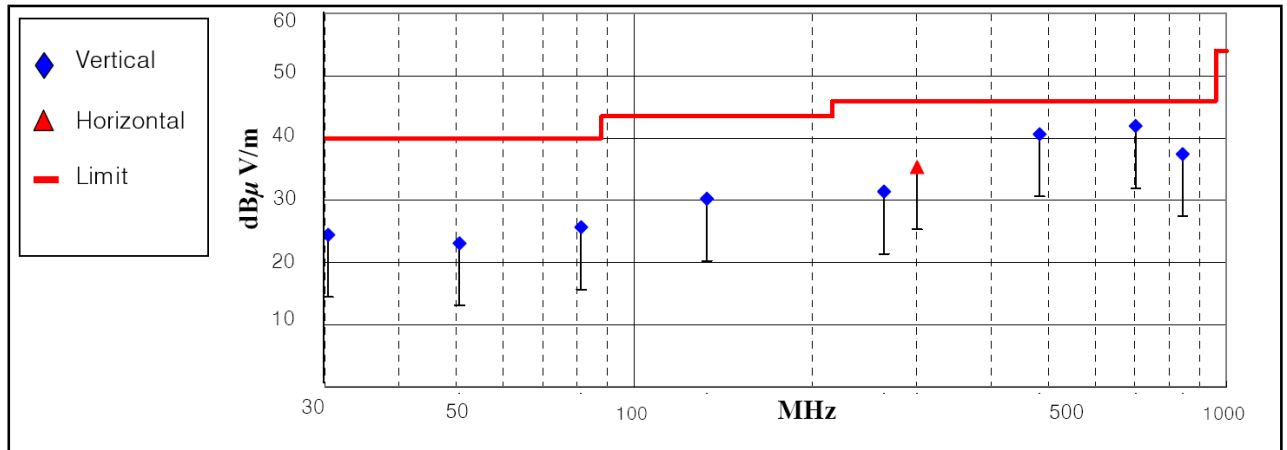


< Fig 12. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ Operating Condition: 1 920 * 1 080 / 60 Hz (DVI-D: Digital mode)
Detector mode: Quasi- peak detector mode

Frequency (MHz)	Measurement Level				Limit (dBμ V/m)	Margin (dB)	Positioning System		
	Reading	Antenna	Cable	Test Result			Pol.	Height	Angle
	Value(dBμ V)	Factor(dB/m)	Loss(dB)	(dBμ V/m)			(H/V)	(cm)	(°)
30.40	12.44	11.01	1.01	24.46	40.00	15.54	V	100	185
50.69	9.44	12.28	1.38	23.10	40.00	16.90	V	104	276
81.37	16.12	7.81	1.77	25.70	40.00	14.30	V	110	343
132.54	16.37	12.10	1.81	30.28	43.50	13.22	V	200	173
264.00	16.98	11.61	2.83	31.42	46.00	14.58	V	100	185
300.12	19.59	12.73	3.01	35.33	46.00	10.67	H	233	195
483.32	20.42	16.58	3.62	40.62	46.00	5.38	V	100	180
702.10	17.29	20.01	4.67	41.97	46.00	4.03	V	107	103
843.20	10.09	22.12	5.22	37.43	46.00	8.57	V	103	5

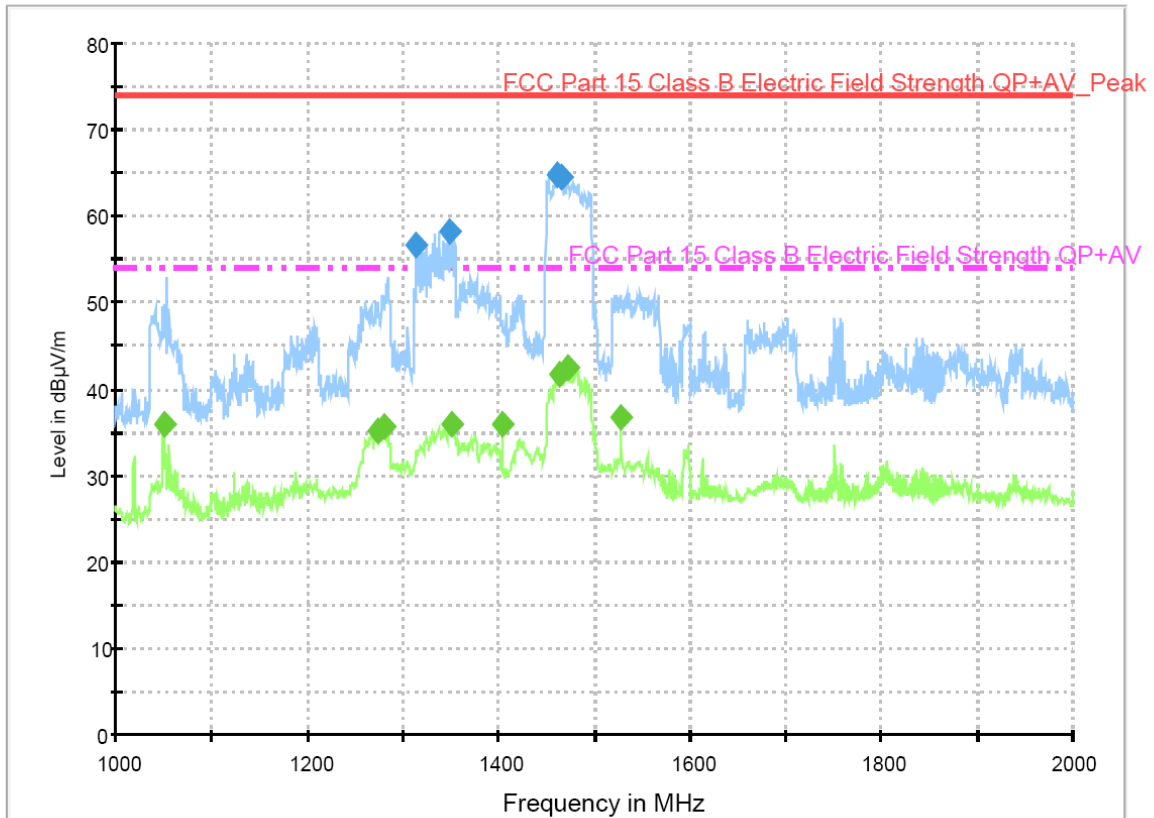


< Fig 13. Radiated emission result (30 MHz ~ 1 000 MHz)>



- ◆ Operating Condition: 1 920 * 1 080 / 60 Hz (RGB: Analog mode)
Detector mode: Peak detector mode / Average detector mode

FCC_ESIB_Preamplifier with Scans



Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1314.400000	56.6	100.0	V	180.0	-14.4	17.4	74.0	
1349.600000	58.1	100.0	V	180.0	-14.4	15.9	74.0	
1461.600000	64.9	200.0	V	180.0	-14.2	9.1	74.0	
1465.200000	64.6	200.0	V	180.0	-14.2	9.4	74.0	

Final Result 2

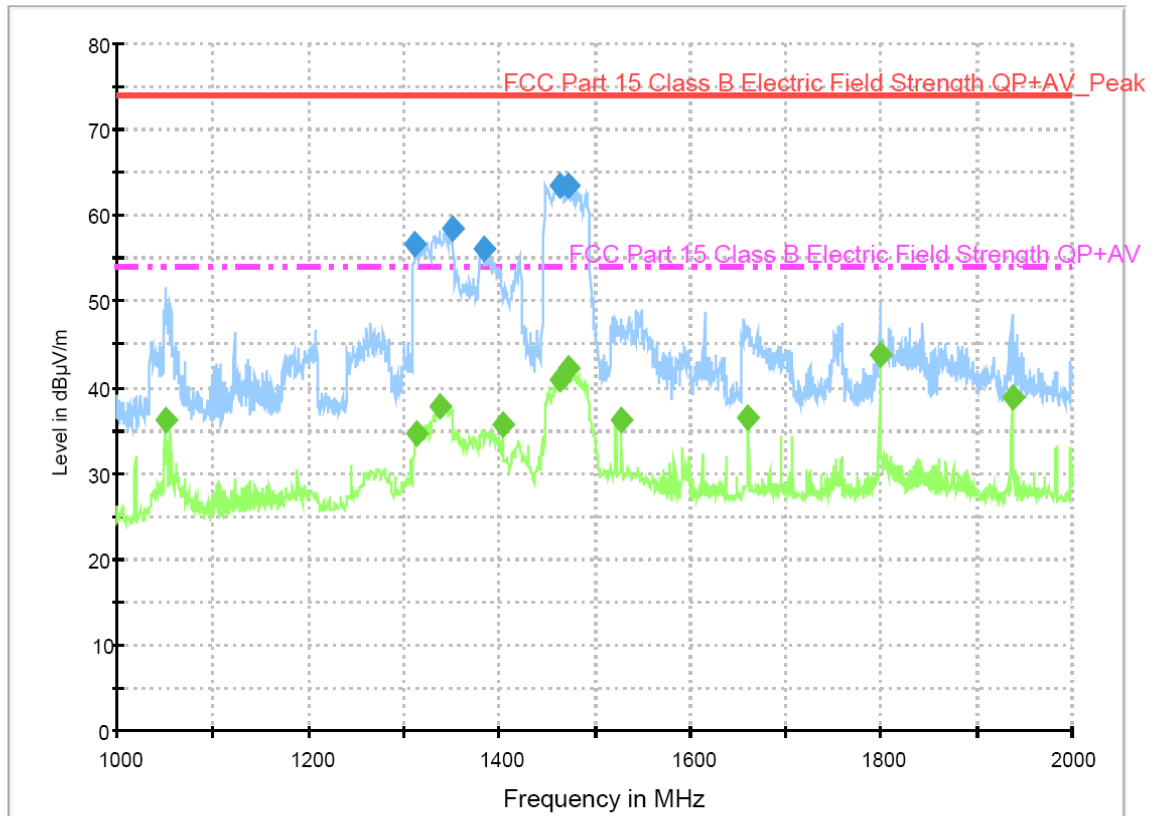
Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1050.000000	36.0	150.0	V	0.0	-15.7	18.0	54.0	
1273.200000	35.2	100.0	V	180.0	-14.7	18.8	54.0	
1280.400000	35.6	100.0	V	180.0	-14.6	18.4	54.0	
1350.000000	35.8	100.0	V	180.0	-14.4	18.2	54.0	
1404.000000	35.9	150.0	V	0.0	-14.4	18.1	54.0	
1464.000000	41.7	200.0	V	180.0	-14.2	12.3	54.0	
1472.000000	42.4	200.0	V	180.0	-14.2	11.6	54.0	
1528.000000	36.6	100.0	V	0.0	-14.0	17.4	54.0	

< Fig 14. Radiated emission result (1 000 MHz ~ 2 000 MHz)>



- ◆ Operating Condition: 1 920 * 1 080 / 60 Hz (DVI-D: Digital mode)
Detector mode: Peak detector mode / Average detector mode

FCC_ESIB_Preamplifier with Scans



Final Result 1

Frequency (MHz)	MaxPeak-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1311.200000	56.7	100.0	V	180.0	-14.4	17.3	74.0	
1350.800000	58.6	100.0	V	180.0	-14.4	15.4	74.0	
1384.000000	56.1	100.0	V	180.0	-14.4	17.9	74.0	
1463.600000	63.5	200.0	V	180.0	-14.2	10.5	74.0	
1471.600000	63.5	200.0	V	180.0	-14.2	10.5	74.0	

Final Result 2

Frequency (MHz)	Average-MaxHold (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
1050.000000	36.1	150.0	V	0.0	-15.7	17.9	54.0	
1314.400000	34.5	100.0	V	180.0	-14.4	19.5	54.0	
1337.600000	37.8	100.0	V	180.0	-14.4	16.2	54.0	
1404.000000	35.7	100.0	V	0.0	-14.4	18.3	54.0	
1464.000000	41.0	200.0	V	180.0	-14.2	13.0	54.0	
1471.600000	42.1	200.0	V	180.0	-14.2	11.9	54.0	
1528.000000	36.3	100.0	V	0.0	-14.0	17.7	54.0	
1660.400000	36.5	100.0	V	180.0	-13.6	17.5	54.0	
1798.800000	43.8	200.0	V	180.0	-13.1	10.2	54.0	
1937.200000	38.8	150.0	V	180.0	-12.8	15.2	54.0	

< Fig 15. 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 μV = 48 dB μV
Reading	= 39.2 dB μV
$10^{(39.2\text{dB}\mu\text{V}/20)}$	= 91.2 μV
Margin	= 48 dB μV - 39.2 dB μV = 8.8 dB

7.2 Example 2 :

■ 66.7 MHz

Class B Limit	= 100 $\mu\text{V}/\text{m}$ = 40.0 dB $\mu\text{V}/\text{m}$
Reading	= 31.0 dB μV
Antenna Factor + Cable Loss = 5.8 dB	
Total	= 36.8 dB $\mu\text{V}/\text{m}$
Margin	= 40.0 dB $\mu\text{V}/\text{m}$ – 36.8 dB $\mu\text{V}/\text{m}$ = 3.2 dB



8. Recommendation & Conclusion

The data collected shows that the **LG Electronics Inc. LCD TV/Monitor (Model Name: M2262DL)** was complies with §15.107 and 15.109 of the FCC Rules.