

FCC EVALUATION REPORT FOR CERTIFICATION

Manufacturer : LG Electronics Inc.

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

Pyeongteak-si, Gyeonggi-do, Korea.

Attn: Mr. Sang-Wook Lee, Chief research engineer

Date of Issue : November 19, 2009

Order Number: GETEC-C1-09-199

Test Report Number: GETEC-E3-09-110

Test Site: Gumi College EMC Center

FCC Registration Number: (100749, 443957)

FCC ID.: BEJHS200

Applicant: LG Electronics Inc.

Rule Part(s)	: FCC Part 15 Subpart C-Intentional Radiator § 15.239
Equipment Class	: Lower Power Communication Device Transmitter (DXX)
EUT Type	: DLP projector with FM transmitter
Type of Authority	: Certification
Model Name	: HS200-JE, HS200G-JE, HS201-JE, HS201G-JE
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

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,


Jae-Hoon Jeong, Senior Engineer
GUMI College EMC center

Reviewed by,


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

Contact Person: Mr. Sang-Wook Lee, Chief research engineer

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- **FCC ID.** BEJHS200
- **Equipment Class** Lower Power Communication Device Transmitter (DXX)
- **EUT Type** DLP projector with FM transmitter
- **Power Source** 120 V / 60 Hz
- **Model Name** HS200-JE, HS200G-JE, HS201-JE, HS201G-JE
- **Trade Name** LG
- **Rule Part(s)** FCC Part 15, Subpart C-Intentional Radiator § 15.239
- **Type of Authority** Certification
- **Test Procedure(s)** ANSI C63.4 (2003)
- **Dates of Test** November 11 ~ 13, 2009
- **Place of Test** **Gumi College EMC Center** (FCC Registration No.: 100749, 443957)
407, Bugok-Dong, Gumi-si, Gyeongsangbuk-Do, Korea.
- **Test Report Number** GETEC-E3-09-110
- **Dates of Issue** November 19, 2009

EUT Type: DLP projector with FM transmitter

FCC ID.: BEJHS200



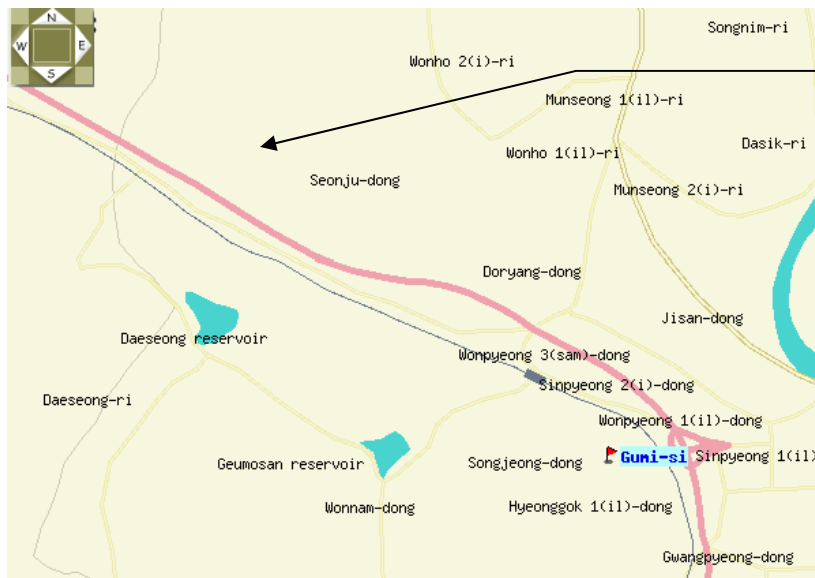
2. Introduction

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. DLP projector with FM transmitter (Model Name: HS200-JE)**

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 kilometers away from Seoul city and 40 kilometers 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 FCC §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. DLP projector with FM transmitter (Model Name: HS200-JE) FCC ID.: BEJHS200**

**This device is certified pursuant to two different Part 15 rules sections.*

This is for FM transmitter. The certification report for DLP projector will be submitted with a separate report.

The FM transmitter is installed permanently to the PCB board in the DLP projector. The DLP projector can be used in home and office. The EUT does not use in a car.

Power source of the FM transmitter board	: DC 3.3 V supplied from the Main unit (used AC/DC adapter)
AC/DC Adapter	: PA-1900-08 (Dongguang Lite Power 2nd Plant) Input : AC(100 ~ 240) V, (50 ~ 60) Hz, 1.5 A Output : DC 19 V, 4.74 A, 90 W Max Serial Number : 8Y00014602
Frequency range	: 88.5 MHz ~ 95.5 MHz
Channel step	: 200 kHz
Dimensions	: 60 mm(H) * 183 mm(B) * 122 mm(L)
Weight	: 798 g

The tuning controls were manually adjusted to verify the maximum tuning range as below

***Channel frequency**

Channel number	Frequency [MHz]	Channel number	Frequency [MHz]	Channel number	Frequency [MHz]	Channel number	Frequency [MHz]
1	88.5	10	90.3	19	92.1	28	93.9
2	88.7	11	90.5	20	92.3	29	94.1
3	88.9	12	90.7	21	92.5	30	94.3
4	89.1	13	90.9	22	92.7	31	94.5
5	89.3	14	91.1	23	92.9	32	94.7
6	89.5	15	91.3	24	93.1	33	94.9
7	89.7	16	91.5	25	93.3	34	95.1
8	89.9	17	91.7	26	93.5	35	95.3
9	90.1	18	91.9	27	93.7	36	95.5



3.2 Support Equipment / Cables used

3.2.1 Used Support Equipment

Description	Manufacturer	Model Name	S/N & FCC ID
USB memory stick	SM Electronics	UDD-32M	S/N: N/A FCC ID: DoC

3.2.2 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the Adapter	1.8 m unshielded
Adapter cable	Connected to the EUT and Adapter	1.7 m shielded with a ferrite core

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

3.3 Modification Item(s)

-. None

4. Antenna Requirement - §15.203

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the applicant can be used with the device. The use of permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with this requirement.

4.1 Description of Antenna

The **LG Electronics Inc. DLP projector with FM transmitter** comply with the requirement of §15.203 with a built-in PCB pattern antenna permanently attached to the transmitter. (Refer to the internal photographs. Page 9 of 14)

5. Description of tests

5.1 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: 120 V / 60 Hz

- Test Mode(s)
 - . Continuous RF transmitting mode
 - : The RF transmitting signal is MP3 audio signal with maximum input level supplied from the USB memory stick.



5.2 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

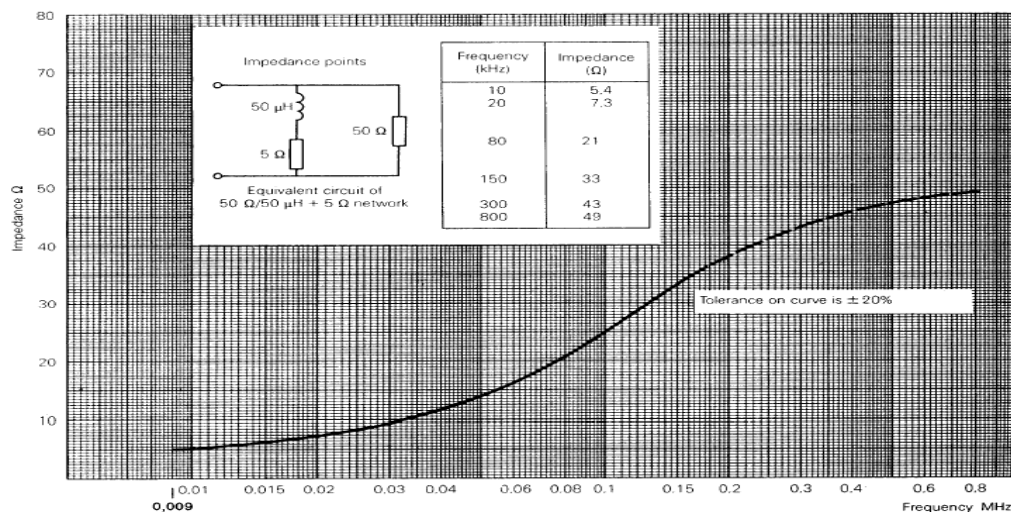


Fig 2. Impedance of LISN



5.3 Radiated Emission

The measurements were conducted 3 m anechoic chamber (FCC Registration No.: 443957) 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 to 1 000 MHz, using bicornical log antenna (Schwarzbeck, VULB9160).

Above 1 GHz, horn antenna (Schwarzbeck, BBHA9120D / EMCO 3160) was used.

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 1MHz 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 m to 4 m and stopped at the azimuth or height producing the maximum emission.

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

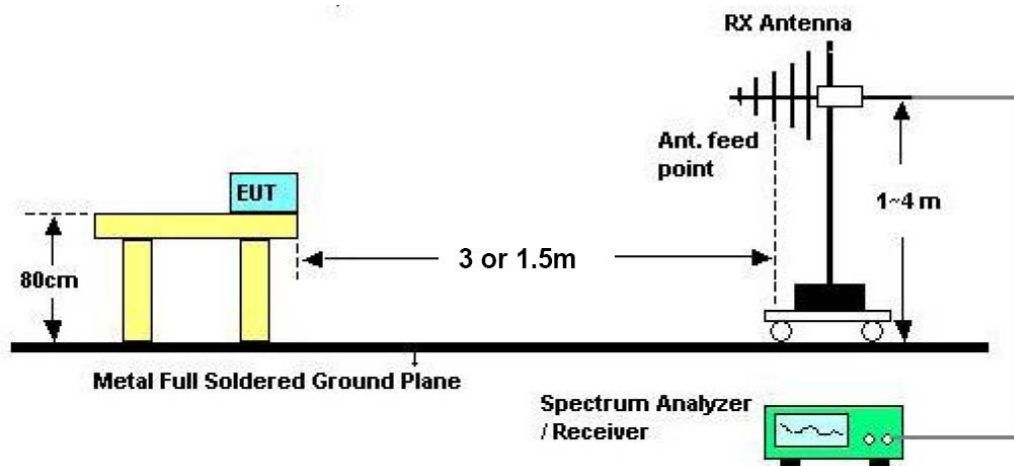


Fig 3. Dimensions of test site.



6. Conducted Emission

6.1 Operating Environment

Temperature : 20 °C
Relative Humidity : 45 % R.H.

6.2 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.

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
Conducted emission (9 kHz ~ 150 kHz)	± 2.69 dB	Confidence levels of 95 % (k=2)
Conducted emission (150 kHz ~ 30 MHz)	± 4.16 dB	Confidence levels of 95 % (k=2)



6.4 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.		

6.5 Test Equipment used

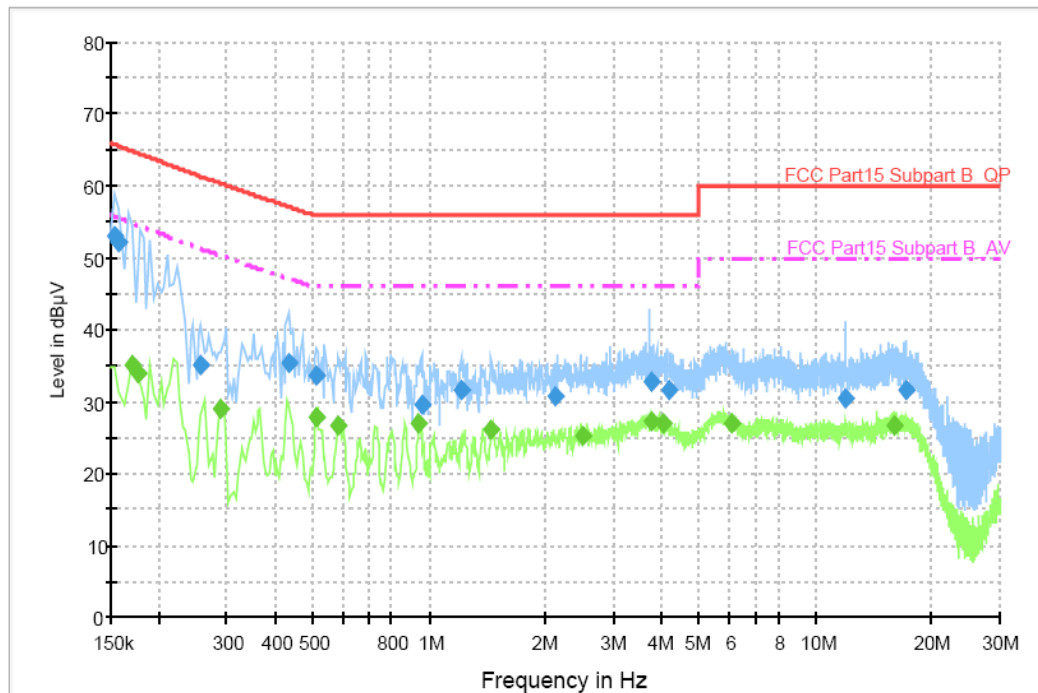
Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESCS30	Rohde & Schwarz	EMI test receiver	839809/003	12. 13. 2009
□ - ESH3-Z5	Rohde & Schwarz	LISN	838979/020	12. 12. 2009
■ - ESH2-Z5	Rohde & Schwarz	LISN	829991/009	12. 12. 2009
□ - ISN T8	TESEQ. GmbH	ISN	24568	10. 16. 2010

6.6 Test data for Conducted Emission

- . Test Date : November 03, 2009
- . Resolution Bandwidth : 9 kHz
- . Frequency Range : 0.15 MHz ~ 30 MHz



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	53.0	1000.000	9.000	GND	L1	9.9	12.8	65.8	
0.158000	52.1	1000.000	9.000	GND	L1	9.9	13.4	65.5	
0.256000	34.9	1000.000	9.000	GND	L1	10.0	26.5	61.4	
0.432000	35.4	1000.000	9.000	GND	L1	10.0	21.7	57.1	
0.512000	33.6	1000.000	9.000	GND	L1	10.0	22.4	56.0	
0.964000	29.5	1000.000	9.000	GND	L1	10.0	26.5	56.0	
1.216000	31.5	1000.000	9.000	GND	L1	10.0	24.5	56.0	
2.120000	30.8	1000.000	9.000	GND	L1	10.1	25.2	56.0	
3.744000	32.6	1000.000	9.000	GND	L1	10.2	23.4	56.0	
4.180000	31.7	1000.000	9.000	GND	L1	10.2	24.3	56.0	
11.944000	30.5	1000.000	9.000	GND	L1	10.4	29.5	60.0	
17.104000	31.6	1000.000	9.000	GND	L1	10.7	28.4	60.0	

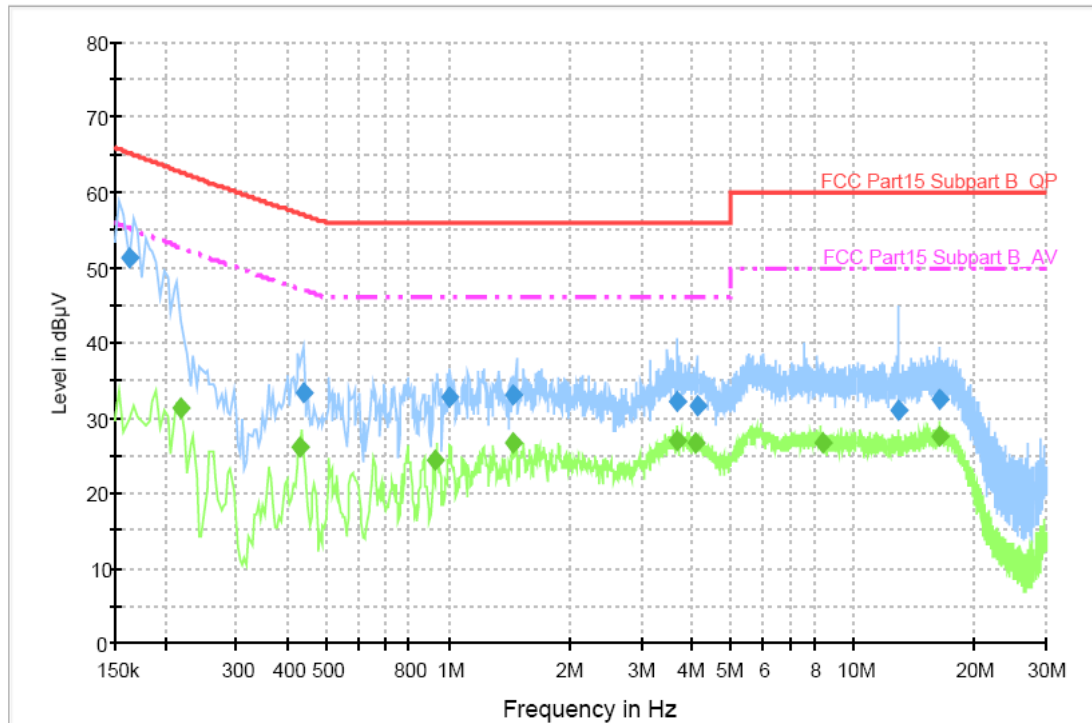
Final Measurement Detector 2

Frequency (MHz)	Average (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.170000	35.0	1000.000	9.000	GND	L1	9.9	19.9	54.9	
0.176000	34.0	1000.000	9.000	GND	L1	9.9	20.6	54.6	
0.288000	29.0	1000.000	9.000	GND	L1	10.0	21.3	50.3	
0.512000	27.8	1000.000	9.000	GND	L1	10.0	18.2	46.0	
0.584000	26.5	1000.000	9.000	GND	L1	10.0	19.5	46.0	
0.936000	27.0	1000.000	9.000	GND	L1	10.0	19.0	46.0	
1.448000	26.2	1000.000	9.000	GND	L1	10.1	19.8	46.0	
2.504000	25.3	1000.000	9.000	GND	L1	10.1	20.7	46.0	
3.760000	27.4	1000.000	9.000	GND	L1	10.2	18.6	46.0	
4.040000	27.0	1000.000	9.000	GND	L1	10.2	19.0	46.0	
6.044000	27.1	1000.000	9.000	GND	L1	10.2	22.9	50.0	
15.964000	26.7	1000.000	9.000	GND	L1	10.7	23.3	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
0.162000	51.3	1000.000	9.000	GND	N	9.9	14.0	65.3	
0.440000	33.5	1000.000	9.000	GND	N	10.0	23.5	57.0	
1.004000	32.7	1000.000	9.000	GND	N	10.0	23.3	56.0	
1.436000	32.9	1000.000	9.000	GND	N	10.1	23.1	56.0	
3.668000	32.3	1000.000	9.000	GND	N	10.2	23.7	56.0	
4.116000	31.6	1000.000	9.000	GND	N	10.2	24.4	56.0	
12.904000	30.9	1000.000	9.000	GND	N	10.5	29.1	60.0	
16.360000	32.4	1000.000	9.000	GND	N	10.6	27.6	60.0	

Final Measurement Detector 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.218000	31.2	1000.000	9.000	GND	N	9.9	21.5	52.7	
0.428000	26.0	1000.000	9.000	GND	N	10.0	21.2	47.2	
0.928000	24.5	1000.000	9.000	GND	N	10.0	21.5	46.0	
1.440000	26.6	1000.000	9.000	GND	N	10.1	19.4	46.0	
3.688000	27.0	1000.000	9.000	GND	N	10.2	19.0	46.0	
4.080000	26.7	1000.000	9.000	GND	N	10.2	19.3	46.0	
8.372000	26.8	1000.000	9.000	GND	N	10.3	23.2	50.0	
16.312000	27.6	1000.000	9.000	GND	N	10.6	22.4	50.0	

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



7. Radiated Emission

7.1 Operating environment

Temperature : 21 °C
Relative humidity : 45 % R.H.

7.2 Test set-up

A preliminary and final measured at 3 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.

7.3 Measurement uncertainty

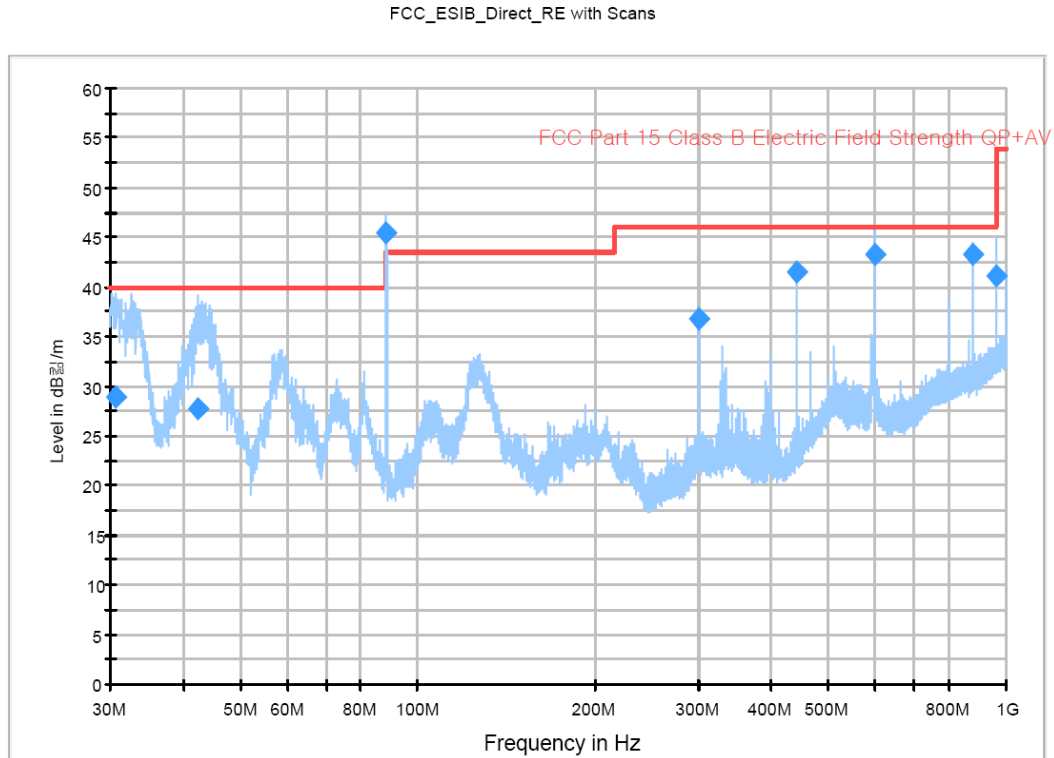
The measurement uncertainty was calculated in accordance with ISO “Guide to the expression of uncertainty in measurement”.

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

Test items	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 3m, Vertical)	± 3.54 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 3m, Horizontal)	± 3.49 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 3m, Vertical)	± 3.70 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 3m, Horizontal)	± 3.61 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 10m, Vertical)	± 3.21 dB	Confidence levels of 95 % (k=2)
Radiated emission (30 MHz ~ 300 MHz, 10m, Horizontal)	± 3.32 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 10m, Vertical)	± 3.63 dB	Confidence levels of 95 % (k=2)
Radiated emission (300 MHz ~ 1 000 MHz, 10m, Horizontal)	± 3.69 dB	Confidence levels of 95 % (k=2)



◆ Test frequency: 88.5 MHz



Final Measurement Result 1

Frequency (MHz)	MaxPeak- MaxHold (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit / Peak (dB μ V/m)	Limit / Average (dB μ V/m)	Margin/ Peak (dB)	Margin/ Average (dB)
88.500000	47.3	45.5	110.0	V	125.0	9.6	67.95	47.95	20.65	2.45

Final Measurement Result 2

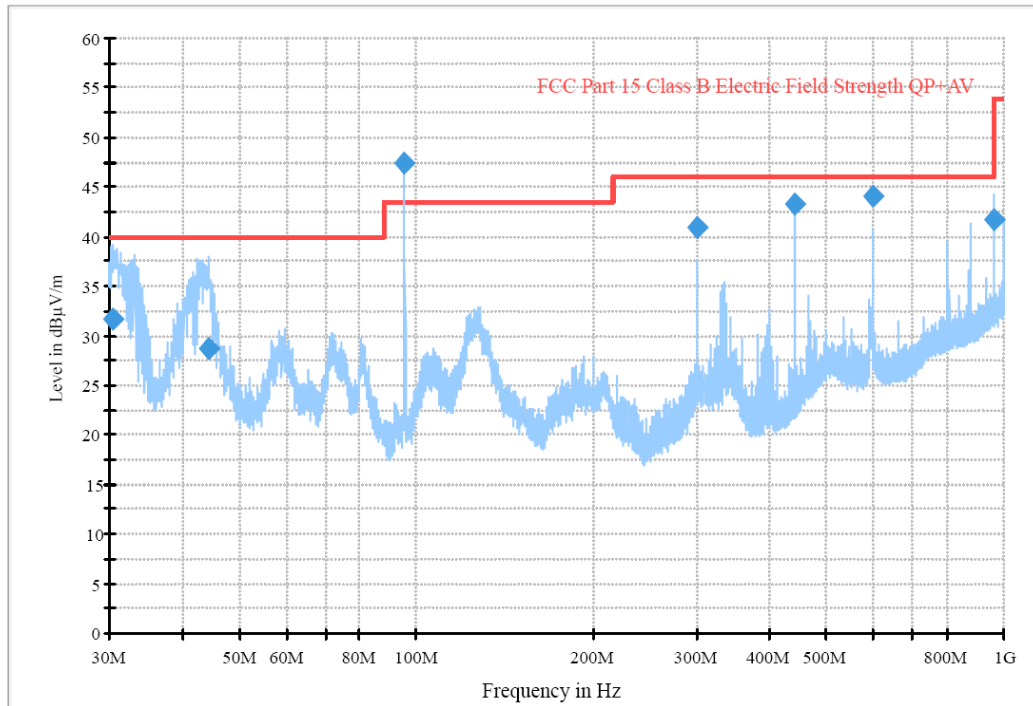
Frequency (MHz)	MaxPeak- MaxHold (dB μ V/m)	QuasiPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.680000	35.1	28.87	27.69	100.0	V	180.0	12.0	11.13	40.0
42.340000	38.9	27.80	26.84	100.0	V	350.0	13.0	12.2	40.0
300.000000	37.2	36.70	35.43	136.0	H	61.0	15.7	9.3	46.0
439.960000	42.4	41.47	40.27	121.0	H	12.0	19.5	4.53	46.0
599.960000	45.6	43.20	42.09	160.0	H	22.0	23.4	2.8	46.0
879.960000	44.5	43.31	42.61	100.0	H	180.0	27.7	2.69	46.0
959.960000	46.6	41.19	39.98	136.0	V	29.0	28.9	4.81	46.0

< Fig 6. Radiated emission test data >



◆ Test frequency: 95.5 MHz

FCC_ESIB_Direct_RE with Scans



Final Measurement Result 1

Frequency (MHz)	MaxPeak- MaxHold (dBuV/m)	Average (dBuV/m)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit / Peak (dBuV/m)	Limit / Average (dBuV/m)	Margin/ Peak (dB)	Margin/ Average (dB)
95.440000	47.8	47.38	126.0	V	205.0	10.2	67.95	47.95	20.15	0.57

Final Measurement Result 2

Frequency (MHz)	MaxPeak- MaxHold (dBuV/m)	QuasiPeak (dBuV/m)	Average (dBuV/m)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBuV/m)
30.480000	39.8	31.58	30.11	100.0	V	167.0	12.0	8.42	40.0
44.240000	38.5	28.64	27.58	100.0	V	164.0	13.2	11.36	40.0
299.960000	42.1	40.83	40.00	130.0	H	23.0	15.7	5.17	46.0
439.960000	44.0	43.36	42.43	200.0	H	199.0	19.5	2.64	46.0
599.960000	45.9	44.15	43.07	146.0	V	170.0	23.4	1.85	46.0
960.040000	46.6	41.68	40.00	100.0	V	41.8	28.9	4.32	46.0

< Fig 7. Radiated emission test data >



7.4 Limit

Measurement Items Frequency (MHz)	Fundamental Frequency (Within the permitted 200 kHz band) Peak & Average detector mode / dB μ V/m (3 m)	Spurious Frequency(Outside of the specified 200 kHz) & Others Quasi-peak detector mode / dB μ V/m (3 m)
30 – 88	47.95 (Average limit) 67.95 (Peak limit)	40
88 – 216		43.5
216 – 960		46
> 960		54

*Peak limit (67.95 dB μ V/m) = Fundamental limit value (47.95 dB μ V/m) + 20 dB

7.5 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	Bi-log antenna	3193	12. 11. 2009
■ - MCU066	matur GmbH	Position Controller	1390306	N/A
■ - AM4.0	matur GmbH	Antenna Mast	1390308	N/A
■ - TT2.5SI	matur GmbH	Turntable	1390307	N/A

7.6 Radiated emission test data

- Test date : November 11, 2009
- Reference standard : Part 15 subpart C, Sec. 15.239 (b) / 15.209
- Measuring distance : 3 m
- Detector mode : Fundamental frequency (Peak detector mode / Average detector mode)
Spurious & other frequency (Quasi peak detector mode)
- Note : 1) The highest frequency of the internal source of the EUT is less than 108 MHz
(FM band: 85.5 MHz to 95.5 MHz). The measurement was made up to 1 GHz
2) Measurements were performed 1 near top and 1 near bottom location in the frequency range operator. according to ANSI C 63.4(2003). Sec 13.1.1



8. Occupied Bandwidth Measurement

8.1 Operating Environment

Temperature : 21 °C
Relative humidity : 45 % R.H.

8.2 Test Set-up

This measurement is performed with the antenna located close enough to give a full-scale deflection of the modulated carrier on the spectrum analyzer. The plot is taken at 200 kHz/division frequency span, 100 kHz 3 dB resolution bandwidth and 5 dB/division logarithmic displays from a spectrum analyzer.

8.3 Limit

Within 200 kHz wide centered on the operating frequency.
The 200 kHz band shall lie wholly within the frequency range of 88 MHz to 108 MHz

8.4 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	Bi-log antenna	3193	12. 11. 2009

8.5 Test result of occupied bandwidth

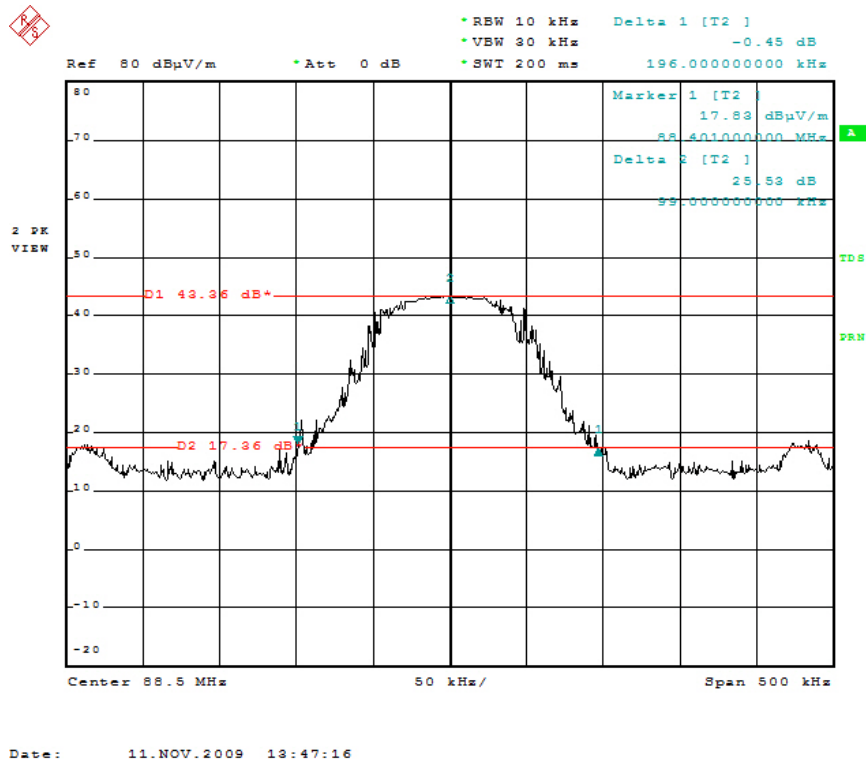
-. Test Date : November 11, 2009
-. Reference standard : Part 15 Subpart C, Sec. 15.239 (a)
-. Receiver setup : RBW: 10 kHz, VBW: 30 kHz, span: 500 kHz, sweep time: auto
-. Note : The bandwidth at -26 dB with respect to the reference level.

8.5.1 Test data

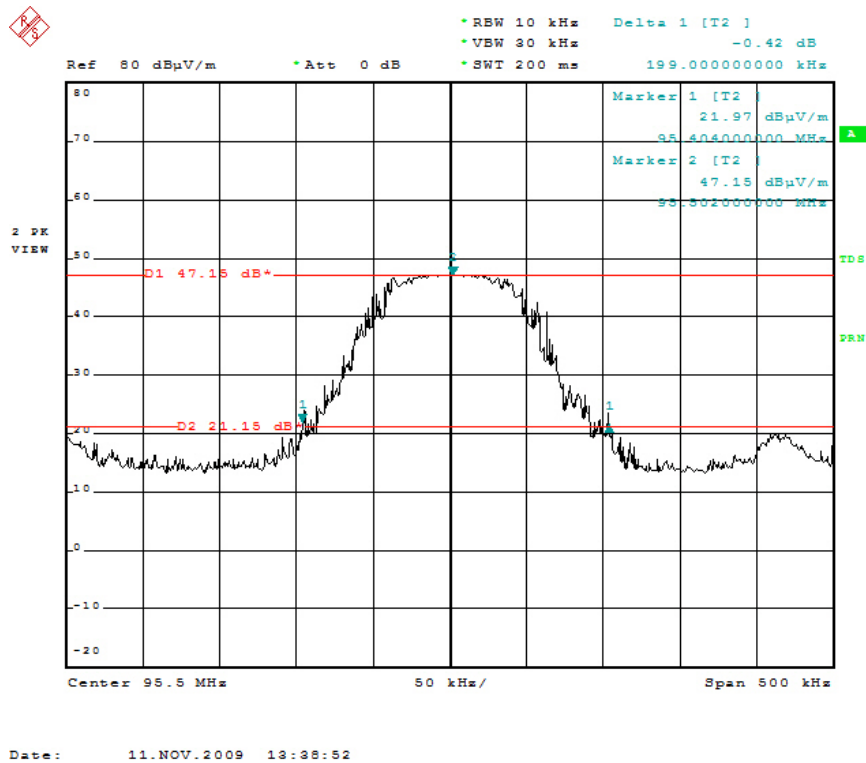
Fundamental Frequency [MHz]	Measured [kHz]	Limit [kHz]	Result
88.5	196	200	Pass
95.5	199	200	Pass



Occupied bandwidth used Plot on configuration: 88.5 MHz



Occupied bandwidth used Plot on configuration: 95.5 MHz





9. Sample Calculations

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

9.1 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

9.2 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



10. Recommendation & conclusion

The data collected shows that the Gumi College EMC Center.

LG Electronics Inc. DLP projector with FM transmitter (Model Name: HS200-JE) was complies with §15.239 of the FCC Rules.