

FCC EVALUATION REPORT FOR CERTIFICATION

FCC Class B (Class II Permissive Change)

Applicant: LG Electronics Inc.

222, LG-ro, Jinwi-myeon, Pyeongtaek-si,

Gyeonggi-do, 451-713, Korea

Attn: Mr. Sung-Wook Yoon / Chief research engineer

Date of Issue: February 24, 2014

Order Number: GETEC-C1-14-083

Test Report Number: GETEC-E3-14-016

Test Site: GUMI COLLEGE EMC CENTER

FCC Registration Number: (100749, 443957)

FCC ID. : BEJPB63UJE

Applicant : LG Electronics Inc.

Rule Part(s) : FCC Part 15 Subpart B
Equipment Class : Class B computing device peripheral (JBP)
EUT Type : DLP PROJECTOR
Type of Authority : Certification(Class II Permissive change)
Model Name : PB63U-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 (2009) / Canadian standard ICES-003

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the vest of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested by,

Reviewed by,



Young-Jib Park, Engineer
GUMI COLLEGE EMC CENTER



Jae-Hoon Jeong, 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: 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea

Manufacturer: LG Electronics Inc.

Manufacturer Address: 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea

Contact Person: Mr. Sung-Wook Yoon, Chief research engineer

Tel Number: +82-31-610-9623

● FCC ID.	BEJPB63UJE
● EUT Type	DLP PROJECTOR
● Model Name	PB63U-JE
● Trade Name	LG
● Serial Number	Prototype
● Rule Part(s)	FCC Part 15 Subpart B
● Type of Authority	Certification(Class II Permissive change)
● Test Procedure(s)	ANSI C63.4 (2009) / Canadian standard ICES-003
● Dates of Test	February 10 ~ 18, 2014
● Place of Test	GUMI COLLEGE EMC CENTER (FCC Registration Number: 100749, 443957) 37 Yaeun-ro, Gumi-si, Gyeongsangbuk-do, 730-711, Republic of Korea.
● Test Report Number	GETEC-E3-14-016
● Date of Issue	February 24, 2014

EUT Type: DLP PROJECTOR

FCC ID.: BEJPB63UJE





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 (ANSI C63.4-2009) was used in determining radiated and conducted emissions emanating from **LG Electronics Inc.**

DLP PROJECTOR (Model Name: PB63U-JE)

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

The site address is 37 Yaeun-ro, Gumi-si, Gyeongsangbuk-do, 730-711, Republic of Korea.

This test site is one of the highest point of Gumi 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 (2009)



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 (Model Name: PB63U-JE) FCC ID.: BEJPB63UJE

MODELOS	PB63U (PB63U-JE)	
Resolución (píxeles)	1280 (horizontal) × 800 (vertical)	
Relación de aspecto	16:10 (horizontal:vertical)	
Tamaño del panel (mm)	11,623	
Distancia de proyección (tamaño del video)	0,80 m - 3,25 m (63,5 cm - 254,0 cm)	
Proporción de proyección hacia arriba	100 %	
Rango de funcionamiento del control remoto	3 m	
Entrada de video	NTSC M / PAL-B, D, G, H, I / PAL M / PAL N / PAL 60 / SECAM	
Adaptador de CC/CA	19.5 V $\overline{\text{---}}$ 4.62 A / 19.0 V $\overline{\text{---}}$ 3.42 A (potencia del adaptador 100 ~ 240 a 50 Hz/ 60 Hz)	
Salida de audio	1 W + 1 W	
Sistema de televisión	DTV-ATSC / TV-NTSC	
Cobertura de programas	VHF 2 - 13, UHF 14 - 69, CATV 01 - 135, DTV 2 - 69, DTV 1 - 135	
Antena externa Impedancia	75 Ω (VHF/ UHF)	
Alto (mm)	33,8 (sin pie), 38,3 (con pie)	
Ancho (mm)	158	
Profundidad (mm)	101.5	
Peso (g)	445	
Dispositivo USB	5 V: 0,5 A (máx.)	
Entorno operativo	Temperatura	
	Funcionamiento	0 °C a 40 °C
	Almacenamiento	-20 °C a 60 °C
	Humedad relativa	
	Funcionamiento	0 % a 80 %
	Almacenamiento	0 % a 85 %

-. Maximum Frequency Range : 667 MHz

EUT Type: DLP PROJECTOR

FCC ID.: BEJPB63UJE





3.2 Support Equipment / Cables used

3.2.1 Used Support Equipment

Description	Manufacturer	Model Name	S/N & FCC ID.
PC(Main board)	ASROCK Inc.	770iCafe	S/N: 0AM0X3097310 FCC ID.: DoC
Graphic card	ASUSTEK COMPUTER Inc.	GTX660-DC2O-2GD5	S/N: CBC0YZ100131 FCC ID.: DoC
PS2 keyboard	COMPAQ	166516-AD6	S/N: B13BBOR391006D FCC ID.: AQ6-23K15
USB mouse	Microsoft Corporation	1484	S/N: 0352700289761 FCC ID: DoC
DVD player	ILIKE ELECTRONICS CO., LTD.	CVX-3800 Full-HD	S/N: CVX380020110110493 FCC ID.: Verification
Headphone	PHILIPS	SBC HL140	S/N: None FCC ID.: N/A
TV Signal generator	Rohde & schwarz	SFQ	S/N: 100563 FCC ID.: Verification

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

3.2.2 System configuration

Description	Manufacturer	Model Name	S/N & FCC ID.
Adapter ¹⁾	APD	DA-65G19	S/N; None. FCC ID.: Verification
USB Dongle	Arcadyan	AN-WF100	S/N: None. FCC ID.: BEJWF100
IR Remote controller	OHSUNG ELECTRONICS	MKJ50025110	S/N; None. FCC ID.: N/A

1) Input rating: AC (100 – 240) V ~, (50/60) Hz, 1.6 A / Output rating: DC 19 V, 3.42 A





3.2.3 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the EUT(Adapter)	1.00 m unshielded
Adaptor cable	Connected to the EUT(Adapter) and EUT	1.50 m shielded with a ferrite core
HDMI (Digital) in cable	Connected to the EUT and PC	1.80 m shielded
RGB(Analog) in cable	Connected to the EUT and PC	1.50 m shielded
AV in cable	Connected to the EUT and DVD player	3.00 m shielded
Headphone cable	Connected to the EUT and headphone	1.20 m shielded
USB	Connected to the EUT and USB dongle	-
Antenna cable	Connected to the EUT and Digital TV Test Transmitter	10.00 m shielded with two ferrite cores

3.3 Modification Item(s)

- None





4. Description of tests

4.1 Test Condition

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

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

The test conditions of the noted test mode(s) in this test report are;

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

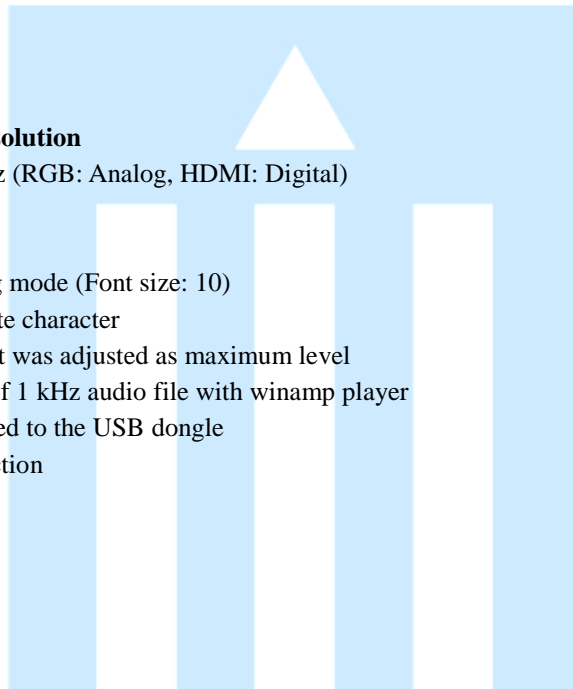
- Test Mode(s)

- **Monitor mode test resolution**

- 1 680 × 1 050 / 60 Hz (RGB: Analog, HDMI: Digital)

- **Operating test pattern**

- "H" character scrolling mode (Font size: 10)
- Black background white character
- Brightness and contrast was adjusted as maximum level
- Continuous playback of 1 kHz audio file with winamp player
- USB port was connected to the USB dongle
- Deactivate the RF function





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, ESCI).

Exploratory measurements were conducted to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.

Based on exploratory measurements, the final measurements were conducted at the worst test conditions.

Exploratory measurements were scanned using Peak mode of EMI Test receiver from 150 kHz to 30 MHz with 20 ms sweep time. The final measurements were measured with Quasi-Peak and Average mode.

The bandwidth of EMI Test Receiver was set to 9 kHz. Interface cables were connected to the available interface ports of the test unit. Excess cable lengths were bundled at center with 30 cm ~ 40 cm.

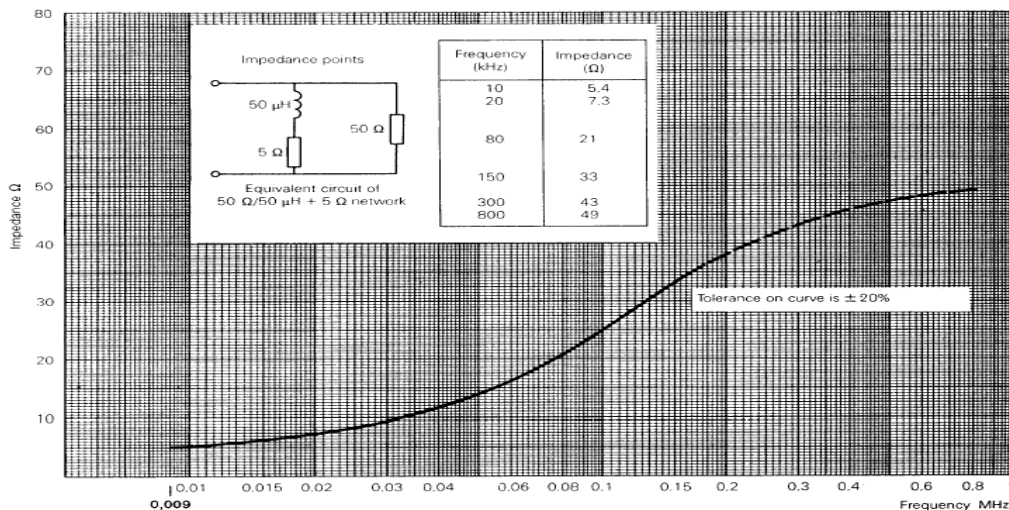


Fig 2. Impedance of LISN





4.3 Radiated Emission

Exploratory Radiated measurements were conducted at the 3m semi anechoic chamber in order to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.

Based on exploratory measurements, the final measurements were conducted at the worst test conditions.

Final measurements of below 1GHz were made at 3m Chamber (FCC Registration No.: 443957) or Open area test site (FCC Registration No.: 100749) that complies with CISPR 16/ANSI C63.4.

Above 1GHz final measurements were conducted at the 3m Chamber (FCC Registration No.: 443957) only.

For measurements above 1GHz, the bottom side of 3m chamber was installed with absorbers in order to meet SVSWR Limit.

Exploratory measurements were scanned using Peak mode of EMI Test receiver and final measurements were measured with Quasi-Peak mode (Below 1GHz) and Peak & Average mode (Above 1GHz).

The measurements were performed by rotating the EUT 360° and adjusting the receive antenna height from 1.0 m to 4.0 m. All frequencies were investigated in both horizontal and vertical antenna polarity.

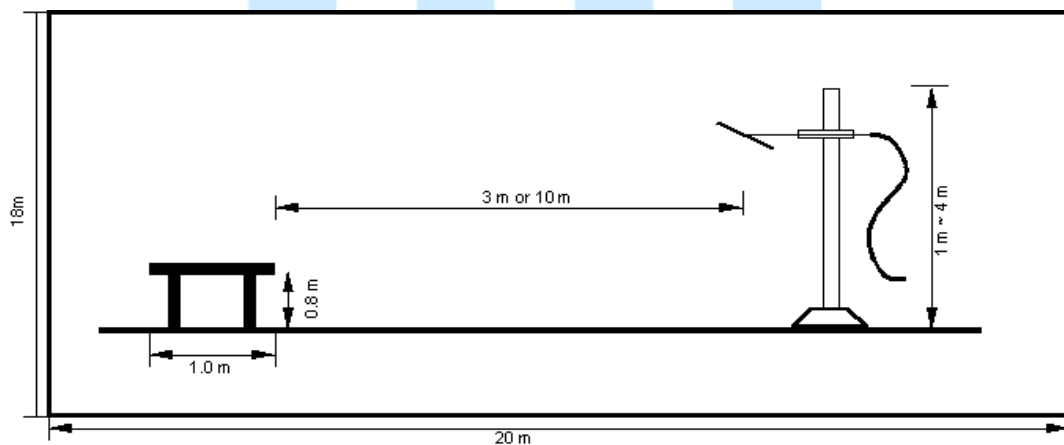


Fig 3. Dimensions of test site (Below 1GHz)

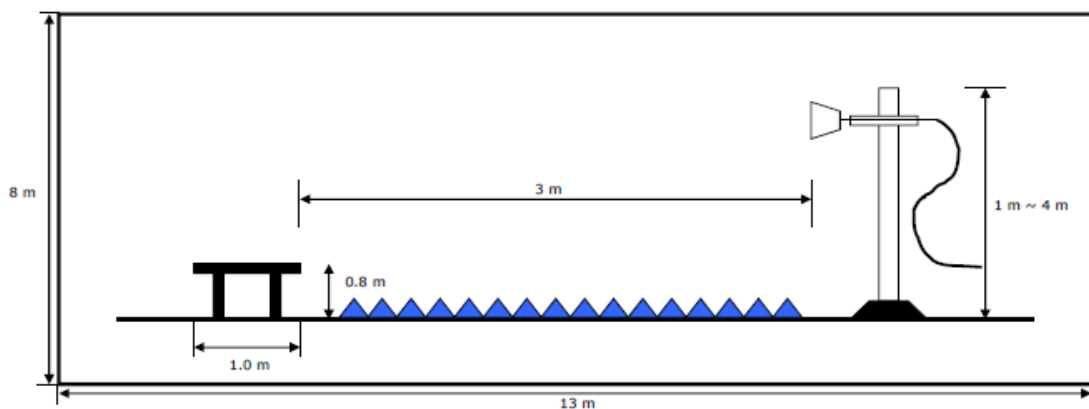


Fig 4. Dimensions of test site (Above 1GHz)

EUT Type: DLP PROJECTOR

FCC ID.: BEJPB63UJE





5. Conducted Emission

5.1 Operating Environment

Temperature : 21.0 °C
Relative Humidity : 40.6 % R.H.

5.2 Test Set-up

The conducted emission measurements were performed in the shielded room.

The EUT was placed on wooden table, 0.8 m heights above the floor, 0.4 m from the reference ground plane (GRP) wall and 0.8 m from AMN & ISN.

AMN is bonded on horizontal reference ground plane.

The ground plane, which was electrically bonded to the shield room, ground system and all power lines entering the shield room, were filtered.

5.3 Measurement Uncertainty

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

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

Test Items	Uncertainty	Remark
Conducted emission (9 kHz ~ 150 kHz)	± 2.74 dB	Confidence level of approximately 95 % ($k = 2$)
Conducted emission (150 kHz ~ 30 MHz)	± 4.25 dB	Confidence level of approximately 95 % ($k = 2$)





5.4 Limit

RFI Conducted	FCC Limit(dB μ V/m) Class B	
	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
■ - ESCI	Rohde & Schwarz	EMI Test Receiver	100237	May 3. 2014
■ - ESH3-Z5	Rohde & Schwarz	LISN	838979/020	May 3. 2014
■ - ESH2-Z5	Rohde & Schwarz	LISN	829991/009	May 3. 2014
□ - ISN T8	TESEQ. GmbH	ISN	24568	Jul 10. 2014

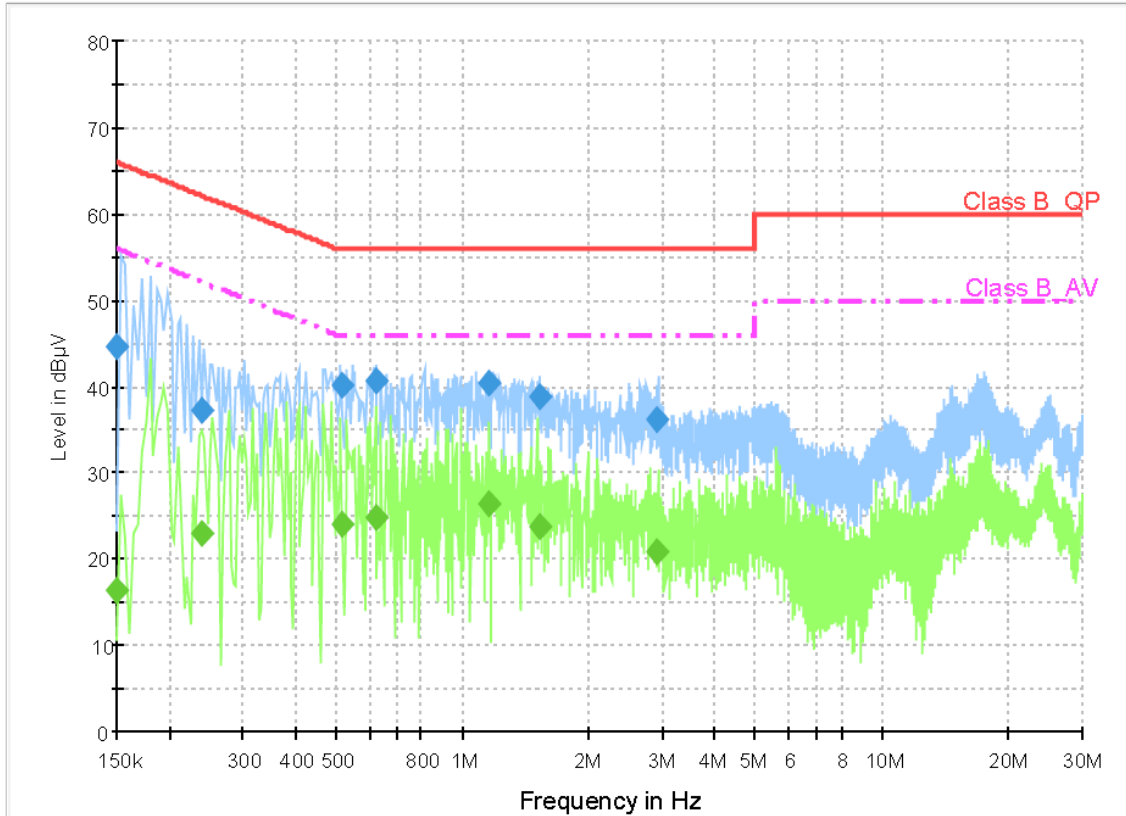
5.6 Test data for Conducted Emission

- Test Date : February 10. 2014
- Resolution Bandwidth : 9 kHz
- Frequency Range : 0.15 MHz ~ 30 MHz
- Line : L1: Live, N: Neutral





- Operating condition: 1 680 × 1 080 / 60 Hz (RGB: Analog)



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	44.5	1000.0	9.000	GND	N	10.0	21.5	66.0	
0.237924	37.4	1000.0	9.000	GND	L1	10.0	24.8	62.2	
0.519132	40.2	1000.0	9.000	GND	L1	10.0	15.8	56.0	
0.624634	40.6	1000.0	9.000	GND	L1	10.0	15.4	56.0	
1.157606	40.4	1000.0	9.000	GND	L1	10.1	15.6	56.0	
1.535936	38.9	1000.0	9.000	GND	L1	10.1	17.1	56.0	
2.904899	36.2	1000.0	9.000	GND	L1	10.0	19.8	56.0	

Final Result 2

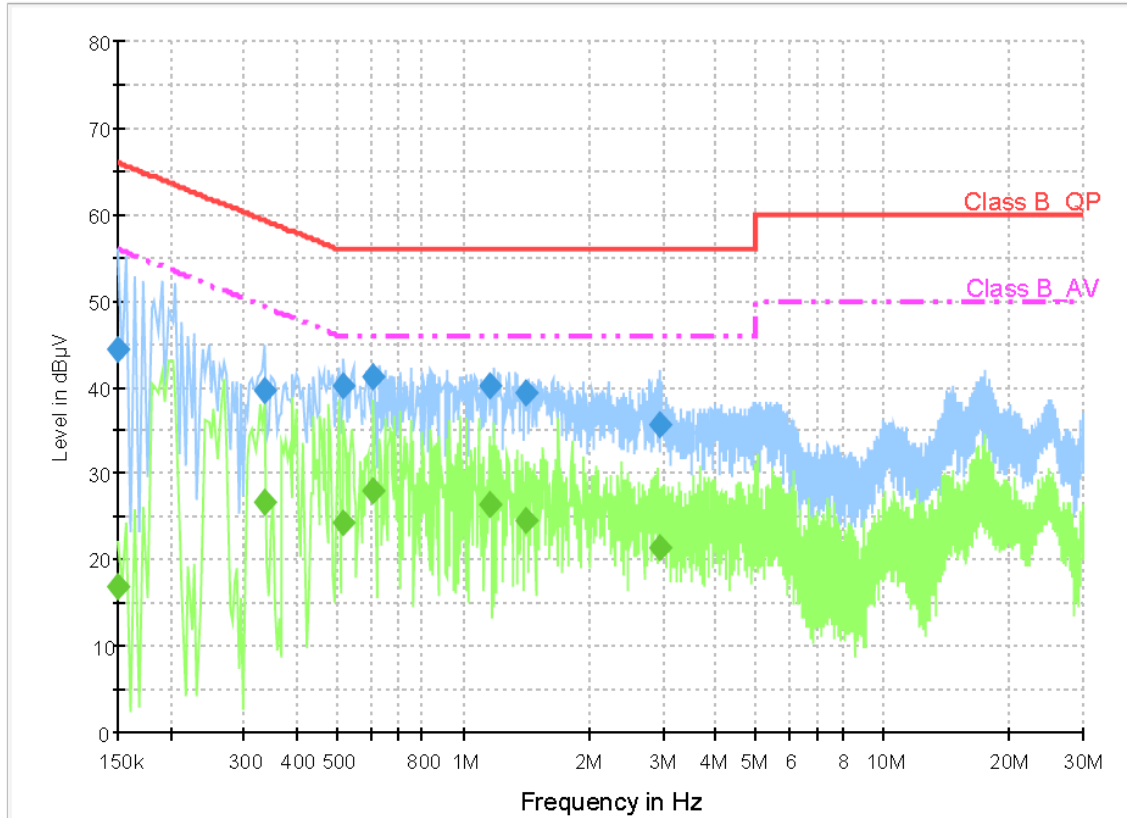
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	16.4	1000.0	9.000	GND	N	10.0	39.6	56.0	
0.237924	22.9	1000.0	9.000	GND	L1	10.0	29.3	52.2	
0.519132	24.1	1000.0	9.000	GND	L1	10.0	21.9	46.0	
0.624634	24.8	1000.0	9.000	GND	L1	10.0	21.2	46.0	
1.157606	26.3	1000.0	9.000	GND	L1	10.1	19.7	46.0	
1.535936	23.8	1000.0	9.000	GND	L1	10.1	22.2	46.0	
2.904899	21.0	1000.0	9.000	GND	L1	10.0	25.0	46.0	

< Fig 5. Conducted emission result >





- Operating condition: 1 680 × 1 080 / 60 Hz (HDMI: Digital)



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	44.5	1000.0	9.000	GND	N	10.0	21.5	66.0	
0.336148	39.6	1000.0	9.000	GND	L1	10.0	19.7	59.3	
0.518409	40.2	1000.0	9.000	GND	L1	10.0	15.8	56.0	
0.609720	41.1	1000.0	9.000	GND	L1	10.0	14.9	56.0	
1.157606	40.1	1000.0	9.000	GND	L1	10.1	15.9	56.0	
1.414436	39.4	1000.0	9.000	GND	L1	10.1	16.6	56.0	
2.950727	35.6	1000.0	9.000	GND	L1	10.0	20.4	56.0	

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	17.0	1000.0	9.000	GND	N	10.0	39.0	56.0	
0.336148	26.7	1000.0	9.000	GND	L1	10.0	22.6	49.3	
0.518409	24.3	1000.0	9.000	GND	L1	10.0	21.7	46.0	
0.609720	27.9	1000.0	9.000	GND	L1	10.0	18.1	46.0	
1.157606	26.4	1000.0	9.000	GND	L1	10.1	19.6	46.0	
1.414436	24.5	1000.0	9.000	GND	L1	10.1	21.5	46.0	
2.950727	21.4	1000.0	9.000	GND	L1	10.0	24.6	46.0	

< Fig 6. Conducted emission result >





6. Radiated Emission

6.1 Operating Environment

Temperature : 22.1 °C
 Relative Humidity : 33.6 % 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)	± 4.66 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	± 4.44 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	± 4.73 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	± 4.77 dB	Confidence level of approximately 95 % ($k = 2$)
Test Items(Anechoic Chamber)	Uncertainty	Remark
Radiated emission (1 000 MHz ~ 6 000 MHz, 3 m)	± 4.89 dB	Confidence level of approximately 95 % ($k = 2$)





6.4 Limit

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

6.5 Test Equipment used

Model Name	Manufacturer	Description	Serial Number	Due to Calibration
■ - ESCS30	Rohde & Schwarz	EMI Test Receiver	839809/003	May 03. 2014
■ - VULB9160	Schwarzbeck	Broadband Test Antenna	3193	Mar. 15. 2014
■ - HD100	HD GmbH	Position Controller	100/692/01	N/A
■ - DS415S	HD GmbH	Turntable	415/657/01	N/A
■ - MA240	HD GmbH	Antenna Mast	240/565/01	N/A
■ - ESIB26	Rohde & Schwarz	EMI Test Receiver	830482/010	May 2. 2014
■ - BBHA9120D	Schwarzbeck	Horn Antenna	597	Feb 28. 2015
■ - MCU066	matur GmbH	Position Controller	1390306	N/A
■ - TT2.5SI	matur GmbH	Turntable	1390307	N/A
■ - AM 4.0	matur GmbH	Antenna Mast	1390308	N/A
■ - AFS 44 00101800-25-10P-44	MITEQ	Preamplifier	1258943	Jan 15. 2015

6.6 Test data for Radiated Emission

- Test Date : February 18. 2014
- Measurement Distance : 3 m
- Note : The EUT was tested made up 18 GHz, because, it was required from the client

- Measurement

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

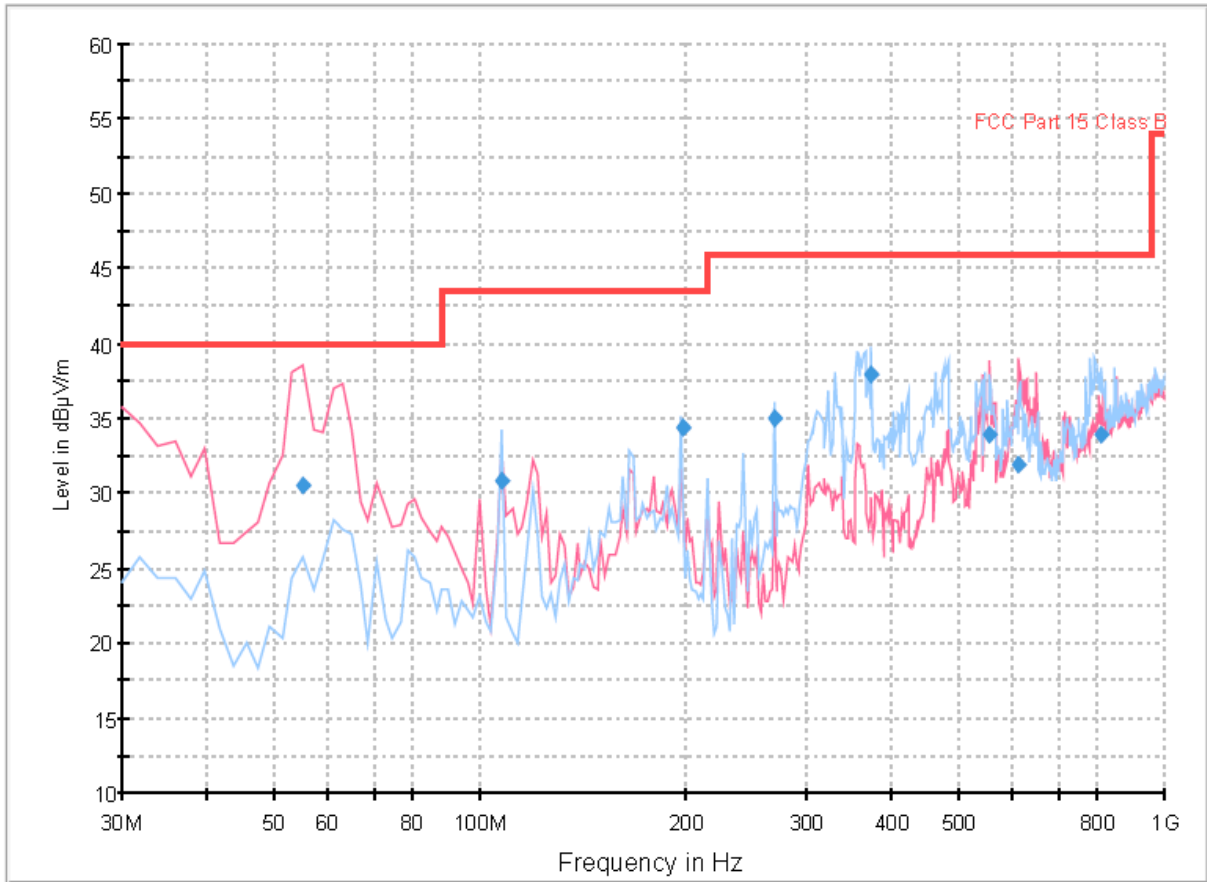
EUT Type: DLP PROJECTOR

FCC ID.: BEJPB63UJE





- Operating condition: 1 680 × 1 050 / 60 Hz (RGB: Analog)



Final Result 1

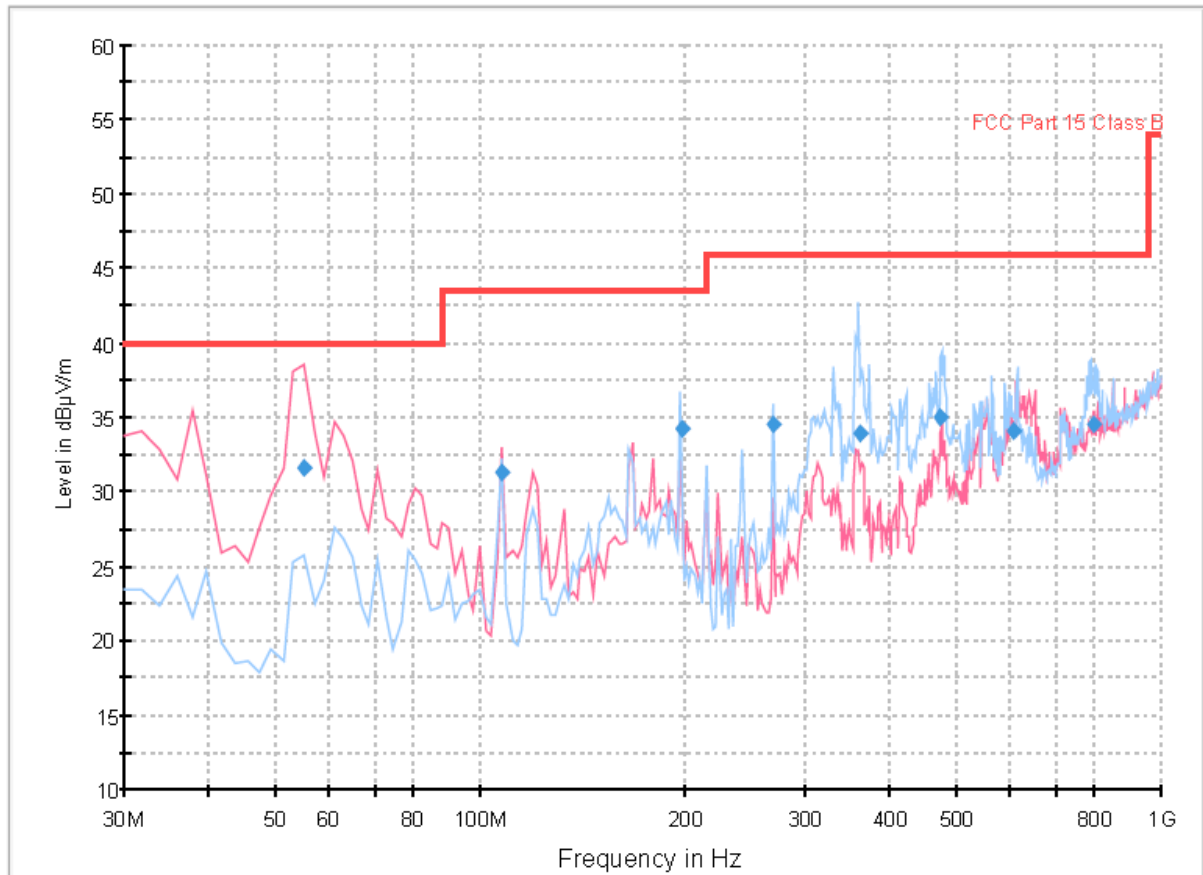
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
55.248541	30.5	1000.0	100.000	100.0	V	0.0	12.7	9.5	40.0
107.941511	30.8	1000.0	100.000	200.0	H	262.0	11.3	12.7	43.5
197.884849	34.4	1000.0	100.000	200.0	H	103.0	12.1	9.1	43.5
269.850696	35.0	1000.0	100.000	100.0	H	252.0	15.7	11.0	46.0
373.316636	37.9	1000.0	100.000	100.0	H	67.0	19.1	8.1	46.0
556.913587	33.9	1000.0	100.000	100.0	V	52.0	23.7	12.1	46.0
615.172220	32.0	1000.0	100.000	100.0	V	-3.0	25.1	14.0	46.0
810.619396	34.0	1000.0	100.000	100.0	H	89.0	28.5	12.0	46.0

< Fig 7. Radiated emission result (30 MHz ~ 1 000 MHz) >





- Operating condition: 1 680 × 1 050 / 60 Hz (HDMI: Digital)



Final Result 1

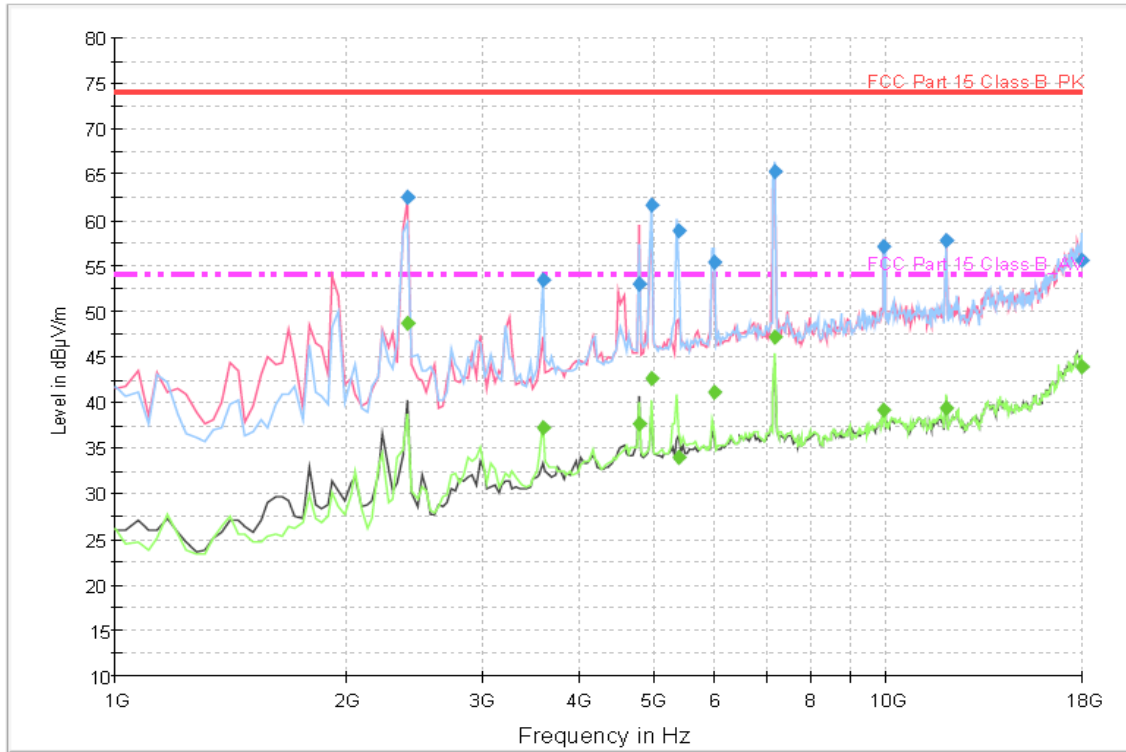
Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
55.288541	31.6	1000.0	100.000	100.0	V	29.0	12.7	8.4	40.0
107.941511	31.3	1000.0	100.000	100.0	V	222.0	11.3	12.2	43.5
197.884849	34.3	1000.0	100.000	200.0	H	106.0	12.1	9.2	43.5
269.850696	34.6	1000.0	100.000	100.0	H	251.0	15.7	11.4	46.0
362.009422	33.8	1000.0	100.000	100.0	H	81.0	18.7	12.2	46.0
476.126688	35.0	1000.0	100.000	100.0	H	8.0	21.7	11.0	46.0
608.787608	34.1	1000.0	100.000	100.0	H	350.0	25.0	11.9	46.0
794.948620	34.5	1000.0	100.000	100.0	H	78.0	28.3	11.5	46.0

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





- Operating condition: 1 680 × 1 050 / 60 Hz (RGB: Analog)
- Green marker: Average detector (trace: green, black), Blue marker: Peak detector (trace: red, blue)



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)
2397.9936	62.4	1000.0	1000.000	100.0	V	220.0	-7.4	11.6	74.0
3596.7784	53.5	1000.0	1000.000	100.0	H	62.0	-2.1	20.5	74.0
4797.9631	53.0	1000.0	1000.000	100.0	V	270.0	1.0	21.0	74.0
4979.1719	61.6	1000.0	1000.000	100.0	H	218.0	1.3	12.4	74.0
5389.5214	58.7	1000.0	1000.000	100.0	H	208.0	1.8	15.3	74.0
5990.8160	55.4	1000.0	1000.000	100.0	H	210.0	2.9	18.6	74.0
7192.0008	65.3	1000.0	1000.000	200.0	H	250.0	6.1	8.7	74.0
9977.5880	57.1	1000.0	1000.000	100.0	H	224.0	11.9	16.9	74.0
11993.2080	57.8	1000.0	1000.000	100.0	V	186.0	12.2	16.2	74.0
17993.6000	55.6	1000.0	1000.000	200.0	H	258.0	19.6	18.4	74.0

Final Result 2

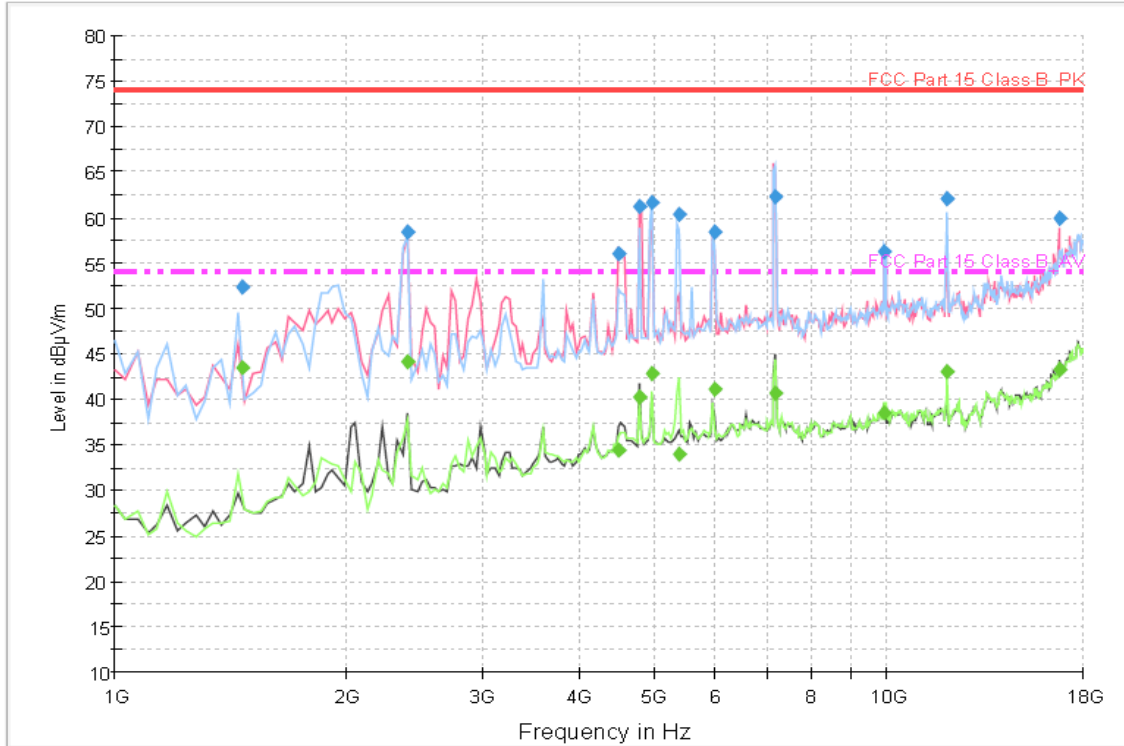
Frequency (MHz)	CAverage (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
2397.9936	48.8	1000.0	1000.000	100.0	V	220.0	-7.4	5.2	54.0
3596.7784	37.1	1000.0	1000.000	100.0	H	62.0	-2.1	16.9	54.0
4797.9631	37.7	1000.0	1000.000	100.0	V	270.0	1.0	16.3	54.0
4979.1719	42.5	1000.0	1000.000	100.0	H	218.0	1.3	11.5	54.0
5389.5214	34.0	1000.0	1000.000	100.0	H	208.0	1.8	20.0	54.0
5990.8160	41.2	1000.0	1000.000	100.0	H	210.0	2.9	12.8	54.0
7192.0008	47.2	1000.0	1000.000	200.0	H	250.0	6.1	6.8	54.0
9977.5880	39.2	1000.0	1000.000	100.0	H	224.0	11.9	14.8	54.0
11993.2080	39.3	1000.0	1000.000	100.0	V	186.0	12.2	14.7	54.0
17993.6000	43.9	1000.0	1000.000	200.0	H	258.0	19.6	10.1	54.0

< Fig 9. Radiated emission result (1 000 MHz ~ 18 000 MHz) >





- Operating condition: 1 680 × 1 050 / 60 Hz (HDMI: Digital)
- Green marker: Average detector (trace: green, black), Blue marker: Peak detector (trace: red, blue)



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)
1462.4858	52.2	1000.0	1000.000	100.0	H	198.0	-12.1	21.8	74.0
2397.1936	58.4	1000.0	1000.000	100.0	V	221.0	-7.5	15.6	74.0
4505.8180	56.1	1000.0	1000.000	100.0	V	142.0	0.6	17.9	74.0
4800.4313	61.2	1000.0	1000.000	100.0	V	263.0	1.0	12.8	74.0
4979.1719	61.6	1000.0	1000.000	100.0	H	218.0	1.3	12.4	74.0
5385.5214	60.4	1000.0	1000.000	100.0	H	208.0	1.8	13.6	74.0
5991.5479	58.3	1000.0	1000.000	100.0	H	212.0	2.9	15.7	74.0
7179.9327	62.3	1000.0	1000.000	100.0	V	247.0	6.1	11.7	74.0
9955.9198	56.2	1000.0	1000.000	100.0	H	124.0	11.9	17.8	74.0
11978.8080	62.0	1000.0	1000.000	100.0	H	205.0	12.2	12.0	74.0
16783.5471	59.9	1000.0	1000.000	100.0	V	202.0	17.4	14.1	74.0

Final Result 2

Frequency (MHz)	CAverage (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1462.4858	43.5	1000.0	1000.000	100.0	H	198.0	-12.1	10.5	54.0
2397.1936	44.1	1000.0	1000.000	100.0	V	221.0	-7.5	9.9	54.0
4505.8180	34.4	1000.0	1000.000	100.0	V	142.0	0.6	19.6	54.0
4800.4313	40.3	1000.0	1000.000	100.0	V	263.0	1.0	13.7	54.0
4979.1719	42.7	1000.0	1000.000	100.0	H	218.0	1.3	11.3	54.0
5385.5214	34.0	1000.0	1000.000	100.0	H	208.0	1.8	20.0	54.0
5991.5479	41.0	1000.0	1000.000	100.0	H	212.0	2.9	13.0	54.0
7179.9327	40.8	1000.0	1000.000	100.0	V	247.0	6.1	13.2	54.0
9955.9198	38.5	1000.0	1000.000	100.0	H	124.0	11.9	15.5	54.0
11978.8080	43.0	1000.0	1000.000	100.0	H	205.0	12.2	11.0	54.0
16783.5471	43.4	1000.0	1000.000	100.0	V	202.0	17.4	10.6	54.0

< Fig 10. Radiated emission result (1 000 MHz ~ 18 000 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 $\text{dB}\mu\text{V}$

Reading = 39.2 $\text{dB}\mu\text{V}$

$10^{(39.2\text{dB}\mu\text{V}/20)}$ = 91.2 μV

Margin = 48 $\text{dB}\mu\text{V}$ - 39.2 $\text{dB}\mu\text{V}$
 = 8.8 dB

7.2 Example 2 :

■ 66.7 MHz

Class B Limit = 100 $\mu\text{V}/\text{m}$ = 40.0 $\text{dB}\mu\text{V}/\text{m}$

Reading = 31.0 $\text{dB}\mu\text{V}$

Antenna Factor + Cable Loss = 5.8 dB

Total = 36.8 $\text{dB}\mu\text{V}/\text{m}$

Margin = 40.0 $\text{dB}\mu\text{V}/\text{m}$ - 36.8 $\text{dB}\mu\text{V}/\text{m}$
 = 3.2 dB





8. Recommendation & Conclusion

The data collected shows that the **LG Electronics Inc. DLP PROJECTOR (Model Name: PB63U-JE)** was complies with §15.107 and 15.109 of the FCC Rules.

- The end -

