

Electromagnetic Emission Compliance Report for FCC Class B Certification

Test Report No. : E132R-009
AGR No. : A131A-100
Applicant : LG Electronics USA
Address : 1000 Sylvan Avenue Englewood Cliffs, NJ 07632, United States
Manufacturer : LG Electronics Inc.
Address : 19-1 Cheongho-ri, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea.
Type of Equipment : PLASMA TV/MONITOR (Part 15 Class B Computing Device Peripheral)
Model Name : 60PN5700-UA
FCC ID. : BEJ60PN5700UA
Serial number : N/A
Total page of Report : 16 pages (including this page)
Date of Incoming : January 15, 2013
Date of Issuing : February 05, 2013

SUMMARY

The equipment complies with the requirement of *FCC CFR 47 PART 15 SUBPART B, Section 15.101*.

This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

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Approved by: 
Gea-Won, Lee / Managing Director
ONETECH Corp.

CONTENTS

Page

1. VERIFICATION OF COMPLIANCE	4
2. GENERAL INFORMATION.....	5
2.1 PRODUCT DESCRIPTION.....	5
2.2 MODEL DIFFERENCES.....	5
2.3 RELATED SUBMITTAL(S) / GRANT(S)	5
2.4 TEST SYSTEM DETAILS	5
2.5 TEST METHODOLOGY	6
2.6 TEST FACILITY.....	6
3. SYSTEM TEST CONFIGURATION.....	6
3.1 MODE OF OPERATION DURING THE TEST.....	6
3.2 CABLE DESCRIPTION FOR THE EUT	6
3.3 EQUIPMENT MODIFICATIONS	6
3.4 CONFIGURATION OF TEST SYSTEM	6
4. PRELIMINARY TEST	7
4.1 AC POWER LINE CONDUCTED EMISSION TEST	7
4.2 RADIATED EMISSION TEST	7
5. FINAL RESULT OF MEASUREMENT	8
5.1 CONDUCTED EMISSION TEST.....	8
5.1.1 Test data for H scroll and ping test mode.....	8
5.1.2 Test data for USB playing and ping test mode	10
5.2 RADIATED EMISSION TESTS	12
5.2.1 Test Data for Below 1 GHz.....	12
5.2.2 Test Data for Above 1 GHz (Average detector mode).....	14
6. LIST OF TEST EQUIPMENT.....	16

Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
E132R-009	February 05, 2013	Initial Issue	All

1. VERIFICATION OF COMPLIANCE

APPLICANT : LG Electronics USA
ADDRESS : 1000 Sylvan Avenue Englewood Cliffs, NJ 07632, United States
CONTACT PERSON : Jacob Cho/Director
TELEPHONE NO : 201-266-2534
FCC ID : BEJ60PN5700UA
MODEL NO/NAME : 60PN5700-UA
SERIAL NUMBER : N/A
DATE : February 05, 2013

EQUIPMENT CLASS	JBP - Part 15 Class B Computing Device Peripheral
E.U.T. DESCRIPTION	PLASMA TV/MONITOR - Unintentional Radiator
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4: 2009
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15, SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	Semi anechoic chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. GENERAL INFORMATION

2.1 Product Description

The LG Electronics USA, Model 60PN5700-UA (referred to as the EUT in this report) is a PLASMA TV/MONITOR. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Metal & Plastic
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1 MHz)	X-TAL: 27 MHz DDR3: 800 MHz
Electrical Rating	AC 100 - 240 V~, 50/60 Hz 3.9 A
EXTERNAL CONNECTOR	RJ45 Jack, USB IN1, USB IN2, COMPONENT IN, AUDIO IN, OPTICAL DIGITAL AUDIO OUT, ANTENNA/CABLE IN, HDMI IN1(ARC), HDMI IN2(PC), HDMI IN3(MHL)

2.2 Model Differences

-. None

2.3 Related Submittal(s) / Grant(s)

-. Original submittal only

2.4 Test System Details

The model numbers for all the equipments that were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
60PN5700-UA	LG Electronics Inc.	BEJ60PN5700UA	PLASMA TV/MONITOR (EUT)	-
P7-1010KR	HP	N/A	Desktop PC	EUT
KB38211	HP	N/A	USB Keyboard	Desktop PC
MODGUO	HP	N/A	USB Mouse	Desktop PC
N/A	N/A	N/A	Remote Control	
Xtick	LG	N/A	USB Memory	EUT
DVP-NS92V	SONY	N/A	DVD Player	-

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2009. Radiated testing was performed at a distance of 3 m from EUT to the antenna up to 6 GHz.

2.6 Test Facility

The Electromagnetic compatibility measurement facilities are located on at 301-14, Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-862, Korea. The Onetech Corp. has been accredited as a Conformity Assessment Body (CAB) with designation Number, KR0013.

3. SYSTEM TEST CONFIGURATION

3.1 Mode of operation during the test

-. The EUT was operated with RGB + Ping test and HDMI + Ping test mode continuously during the testing.

3.2 Cable Description for the EUT

Cable	Shielded	Ferrite Bead	Metal Shell	Length (m)	Connected to
POWER	N	Both End	N/A	1.5	EUT
USB IN_1	N	N/A	Both End	-	EUT
USB IN_2	N	N/A	Both End	1.5	LINE
COMPONENT IN	N	EUT End	Both End	1.5	DVD PLAYER
AUDIO IN	N	EUT End	Both End	1.5	DVD PLAYER
RJ45 JACK	N	EUT End	N/A	3.0	DESKTOP PC
HDMI IN_1(ARC)	Y	N	Both End	1.5	LINE
HDMI IN_2(PC)	Y	N	Both End	1.5	DESKTOP PC
HDMI IN_3(MHL)	Y	N	Both End	1.5	LINE

3.3 Equipment Modifications

-. None

3.4 Configuration of Test System

Line Conducted Test : The EUT was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4: 2009 7.3.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary radiated emission test was conducted using the procedure in ANSI C63.4: 2009 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 m semi anechoic chamber.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
“H” Scrolling + Ping test for Ethernet	X
USB play + Ping test for Ethernet	X

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
“H” Scrolling + Ping test for Ethernet	X
USB play + Ping test for Ethernet	X

5. FINAL RESULT OF MEASUREMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level.

5.1 Conducted Emission Test

5.1.1 Test data for H scroll and ping test mode

Humidity Level : 40 % R.H. Temperature: 20 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107(a)
 Type of Test : CLASS B
 Result : PASSED BY 9.56 dB at 1.40 MHz under peak detector mode

EUT : PLASMA TV/MONITOR Date: January 16, 2013
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Peak (dBμV)		Margin (dB)
		Emission level	Q.P Limits	
1.21	H	45.23	56.00	10.77
1.40	H	46.44	56.00	9.56
1.58	N	44.44	56.00	11.56
6.85	H	48.04	60.00	11.96
7.54	H	49.43	60.00	10.57
8.14	H	49.30	60.00	10.70
Frequency (MHz)	Line	Average (dBμV)		Margin (dB)
		Emission level	Limits	
1.21	H	25.27	46.00	20.73
1.40	H	24.56	46.00	21.44
6.85	H	27.68	50.00	22.32
7.54	H	28.09	50.00	21.91

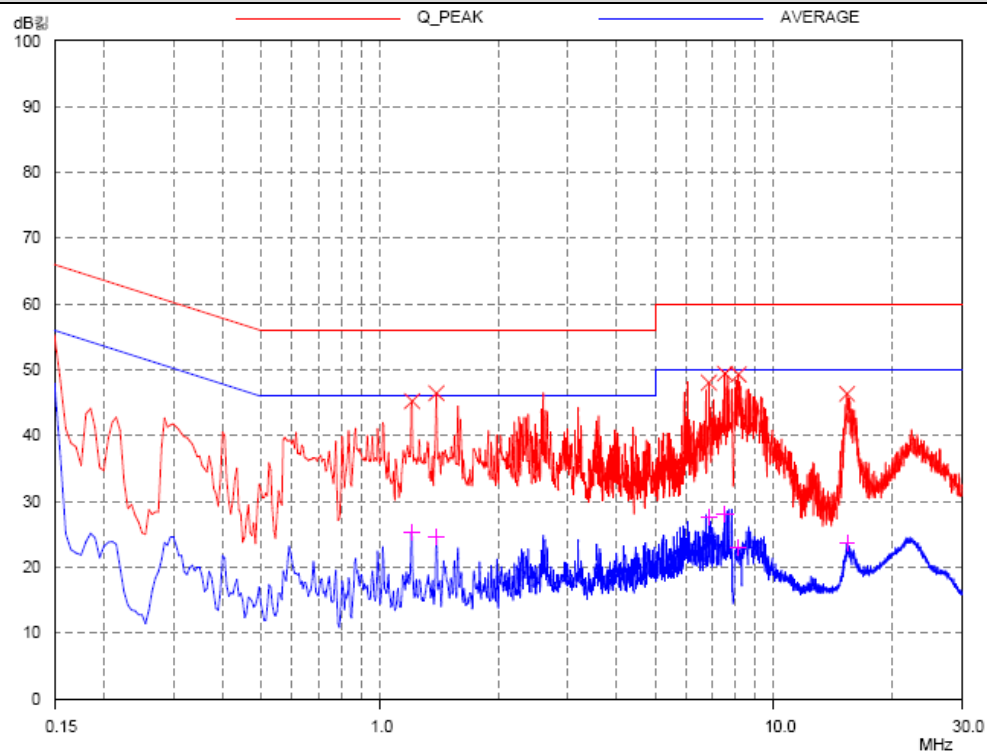
Line Conducted Emissions Tabulated Data

Remark: "H": Hot Line, "N": Neutral Line.

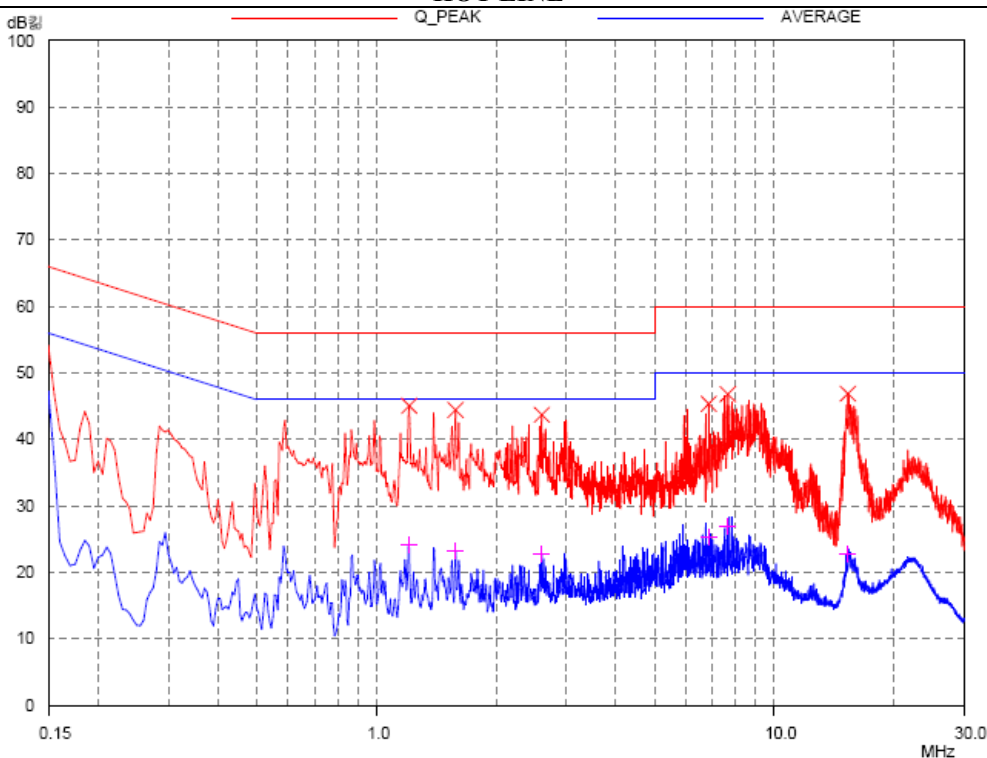
See next page for an overview sweep performed with peak and average detector.


 Tested by: Seung-Hyun, Park / Project Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

5.1.2 Test data for USB playing and ping test mode

Humidity Level : 40 % R.H.

Temperature: 20 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107(a)

Type of Test : CLASS B

Result : PASSED BY 6.75 dB at 8.49 MHz under peak detector mode

EUT : PLASMA TV/MONITOR

Date: January 16, 2013

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Peak (dBμV)		Margin (dB)
		Emission level	Q.P Limits	
2.11	H	48.88	56.00	7.12
2.31	N	47.51	56.00	8.49
2.52	H	48.05	56.00	7.95
7.46	H	51.08	60.00	8.92
8.49	H	53.25	60.00	6.75
8.99	H	51.43	60.00	8.57
Frequency (MHz)	Line	Average (dBμV)		Margin (dB)
		Emission level	Limits	
2.31	N	29.69	46.00	16.31
2.52	H	30.97	46.00	15.03
8.49	H	35.44	50.00	14.56
8.99	H	34.31	50.00	15.69

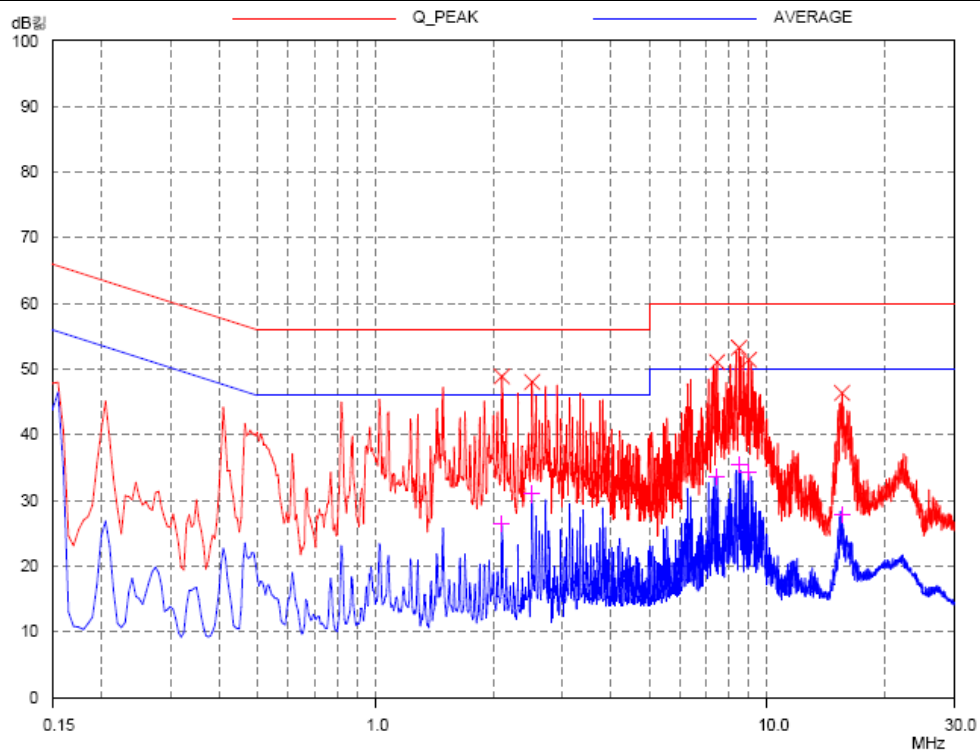
Line Conducted Emissions Tabulated Data

Remark: "H": Hot Line, "N": Neutral Line.

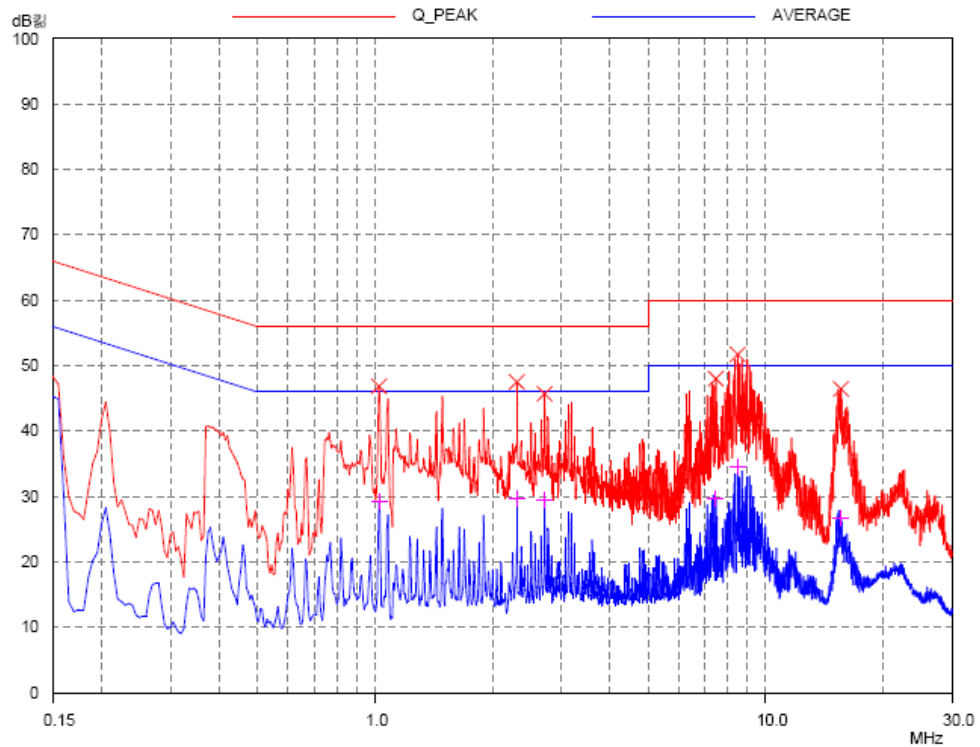
See next page for an overview sweep performed with peak and average detector.


Tested by: Seung-Hyun, Park / Project Engineer

Graphical representation of Conducted Emission



HOT LINE



NEUTRAL LINE

5.2 Radiated Emission Tests

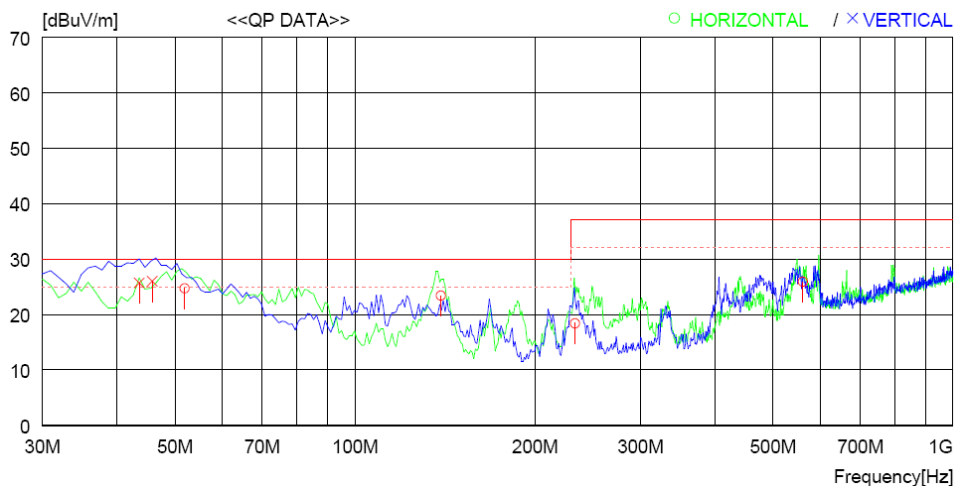
5.2.1 Test Data for Below 1 GHz

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

5.2.1.1 Test data for H scroll and ping test mode

Humidity Level	: 41 % R.H	Temperature: 20 °C
Limits apply to	: FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)	
Type of Test	: CLASS B	
Result	: PASSED BY 4.0 dB at 45.810 MHz under quasi-peak detector mode	
EUT	: PLASMA TV/MONITOR	Date: February 01, 2013
Detector	: CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)	
Distance	: 10 Meter	

Graphical representation of Radiated Emission



Tabulated Results for Radiated Emission

No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	51.905	42.3	13.8	1.7	33.1	24.7	30.0	5.3	400	354
2	139.190	45.0	8.6	2.8	33.0	23.4	30.0	6.6	350	43
3	233.340	36.0	11.9	3.5	33.0	18.4	37.0	18.6	200	359
4	561.310	35.0	18.5	5.5	33.1	25.9	37.0	11.1	400	0
----- Vertical -----										
5	43.580	42.8	13.8	1.8	32.7	25.7	30.0	4.3	300	0
6	45.810	43.0	13.8	1.8	32.6	26.0	30.0	4.0	200	359

Remark: Margin (dB) = Limit – Result and Result = Reading Quasi-peak + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

Tested by: Seung-Hyun, Park / Project Engineer

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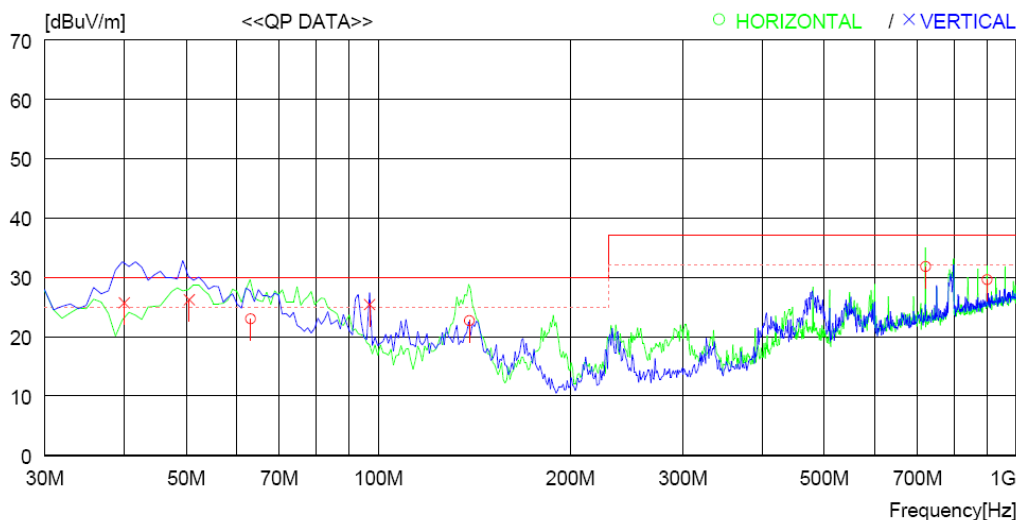
HEAD OFFICE : 301-14 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

EMC Testing Div. : 307-51 Daessangnyeong-ri, Chowol-eup, Gwangju-si, Gyeonggi-do 464-862 Korea (TEL: 82-31-765-8289, FAX: 82-31-766-2904)

5.2.1.2 Test data for USB Playing and ping test mode

Humidity Level : 41 % R.H. Temperature: 20 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)
Type of Test : CLASS B
Result : PASSED BY 3.8 dB at 50.560 MHz under quasi-peak detector mode
EUT : PLASMA TV/MONITOR Date: February 01, 2013
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 10 Meter

Graphical representation of Radiated Emission



Tabulated Results for Radiated Emission

No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	63.080	42.0	12.1	1.9	33.0	23.0	30.0	7.0	400	0
2	138.985	44.3	8.6	2.8	33.0	22.7	30.0	7.3	380	220
3	721.554	38.0	20.2	6.3	32.7	31.8	37.0	5.2	400	359
4	901.049	32.3	22.4	7.0	32.1	29.6	37.0	7.4	300	135
----- Vertical -----										
5	40.000	43.0	13.6	1.8	32.7	25.7	30.0	4.3	300	187
6	50.560	43.5	13.4	1.9	32.6	26.2	30.0	3.8	200	145
7	96.930	44.0	11.4	2.6	32.6	25.4	30.0	4.6	300	359

Remark: Margin (dB) = Limit – Result and Result = Reading Quasi-peak + Antenna Factor + Loss – Gain
Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

Tested by: Seung-Hyun, Park / Project Engineer

5.2.2 Test Data for Above 1 GHz (Average detector mode)

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

5.2.2.1 Test data for H scroll and ping test mode

Humidity Level : 41 % R.H. Temperature: 20 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)

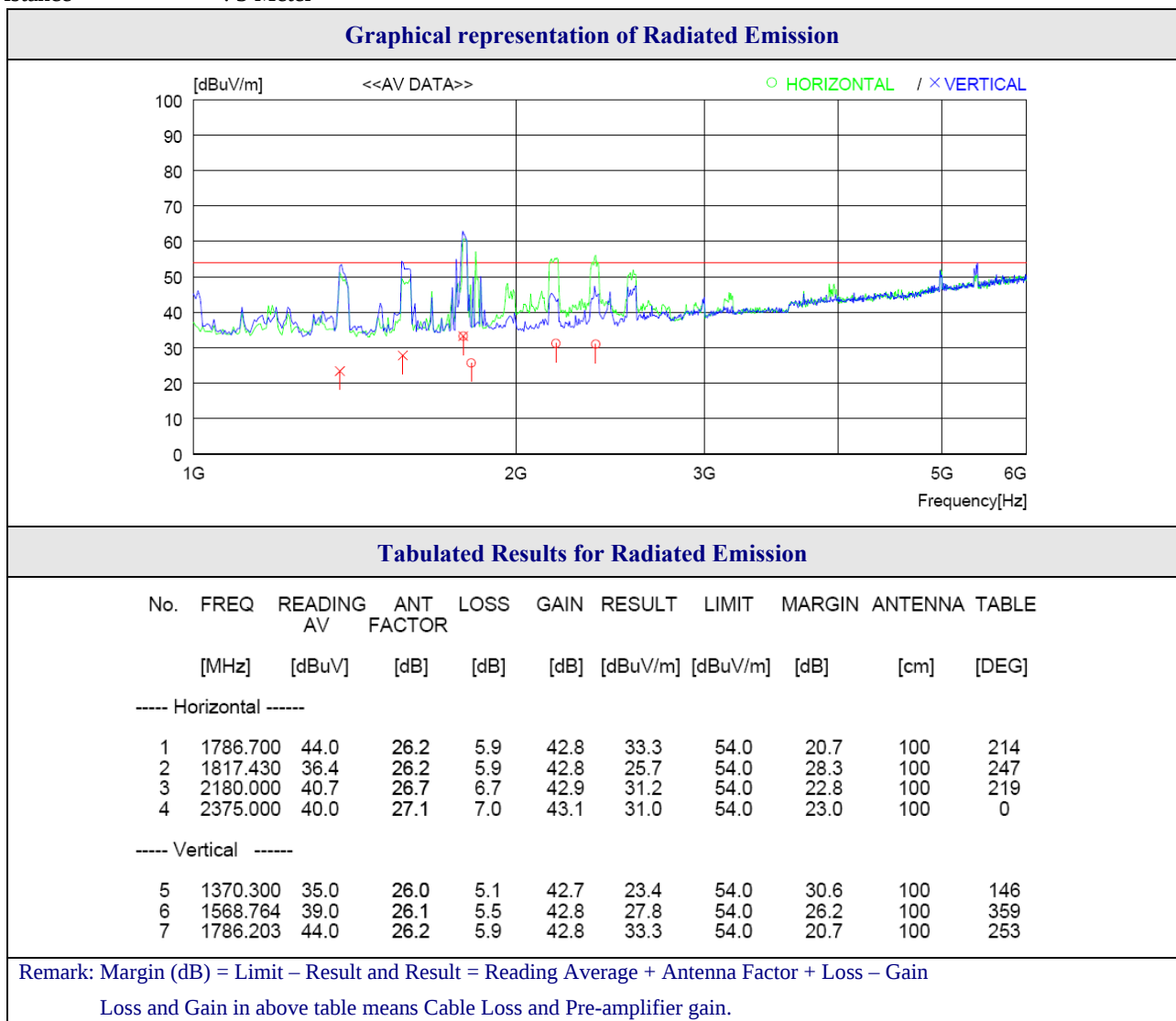
Type of Test : CLASS B

Result : PASSED BY 20.7 dB at 1 786.700 MHz under average detector mode

EUT : PLASMA TV/MONITOR Date: February 01, 2013

Detector : CISPR Average (6 dB Bandwidth: 1 MHz)

Distance : 3 Meter

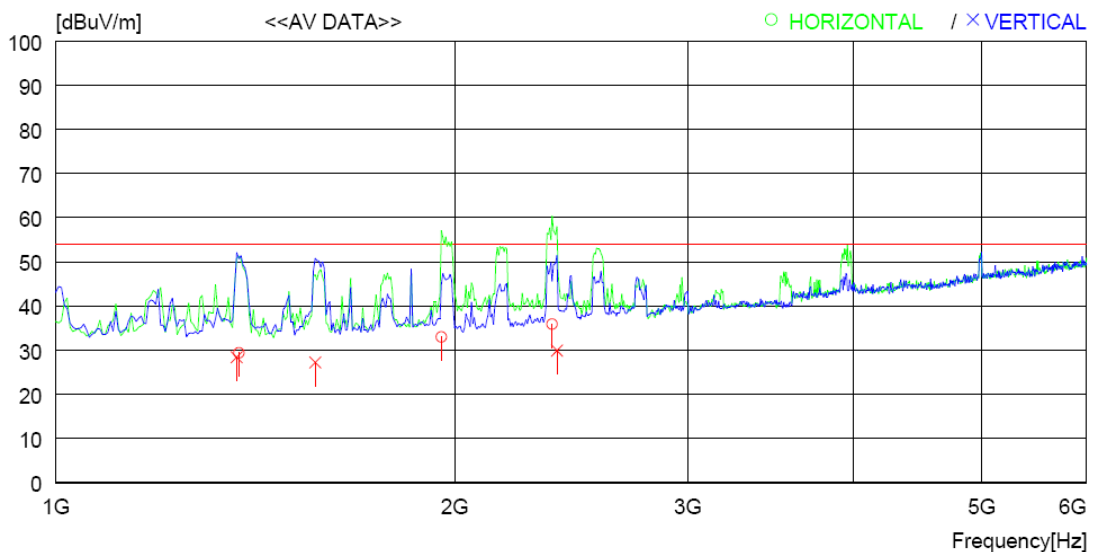


Tested by: Seung-Hyun, Park / Project Engineer

5.2.2.2 Test data for USB playing and ping test mode

Humidity Level : 41 % R.H. Temperature: 20 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)
 Type of Test : CLASS B
 Result : PASSED BY 18.1 dB at 2 370.000 MHz under average detector mode
 EUT : PLASMA TV/MONITOR Date: February 01, 2013
 Detector : CISPR Average (6 dB Bandwidth: 1 MHz)
 Distance : 3 Meter

Graphical representation of Radiated Emission



Tabulated Results for Radiated Emission

No.	FREQ [MHz]	READING AV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	1375.000	41.0	26.0	5.1	42.7	29.4	54.0	24.6	100	105
2	1955.000	43.3	26.3	6.2	42.8	33.0	54.0	21.0	100	220
3	2370.000	45.0	27.1	6.9	43.1	35.9	54.0	18.1	100	220
----- Vertical -----										
4	1370.000	40.0	26.0	5.1	42.7	28.4	54.0	25.6	100	0
5	1570.000	38.4	26.1	5.5	42.8	27.2	54.0	26.8	100	145
6	2390.000	38.9	27.1	7.0	43.1	29.9	54.0	24.1	100	157

Remark: Margin (dB) = Limit – Result and Result = Reading Average + Antenna Factor + Loss – Gain

Loss and Gain in above table means Cable Loss and Pre-amplifier gain.

Tested by: Seung-Hyun, Park / Engineer

6. LIST OF TEST EQUIPMENT

No.	Equipment	Manufacturer	Model Name	Serial No.	Last Cal.	Interval Cal.	Used
1.	Test receiver	Rohde & Schwarz	ESCI	101013	Oct. 14, 2012	1 Year	■
2.			ESU	100261	Sep. 24, 2012	1 Year	■
3.			ESiB26	100296	Apr. 13, 2012	1 Year	
4.			ESHS 10	834467/007	Jun. 21, 2012	1 Year	■
5.	Amplifier	Sonoma Instrument	310N	312544	May 30, 2012	1 Year	■
6.			310N	312545	May 30, 2012	1 Year	■
7.		Rohde & Schwarz	SCU 18	10041	Jan. 25, 2012	1 Year	■
8.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-255	Apr. 24, 2012	2 years	■
9.			VULB9163	9163-420	Mar. 27, 2012	2 years	■
10.	Horn Antenna	Schwarzbeck	BBHA9120D	BBHA9120D295	Aug. 23, 2011	2 years	■
11.	LISN	EMCO	3825/2	9109-1867	May 30, 2012	1 Year	■
12.				9109-1869	May 30, 2012	1 Year	
13.		Schwarzbeck	NSLK 8126	8126-404	Jun. 11, 2012	1 Year	■
14.			NSLK 8128	8128-216	Jun. 11, 2012	1 Year	
15.	Controller	Innco System	CO2000	619/27030611/L	N/A	N/A	■
16.	Turn Table	Innco System	DT3000	930611	N/A	N/A	■
17.	Antenna Master	Innco System	MA4000-EP	3320611	N/A	N/A	■
18.			MA4000-EP	3350611	N/A	N/A	■
19.	Tripod	EMCO	N/A	N/A	N/A	N/A	■

Remark: Mark ■ mean used equipment.