EMC TEST REPORT

Test item	: LED LCD TV monitor
Model No.	: 50LS4000-UA
Order No.	: 1207-01041
Date of receipt	: 2012-07-03
Test duration	: 2012-07-04 ~ 2012-07-09
Use of report	: FCC CoC Marking
Date of Issue	: 2012-07-09

Applicant : LG Electronics Inc.
19-1, Cheongho-ri, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea

Test laboratory : Digital EMC Co., Ltd.
683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, 449-080, Korea

Test specification : ANSI C 63.4:2003
FCC Part 15 Subpart B
(Type of Device : Class B Personal Computers and Peripherals (JBP))

Test environment : Temperature : (22 ~ 23) °C,
Humidity : (41 ~ 45) % R.H.

Test result : ☒ Comply ☐ Not Comply

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose.
This test report shall not be reproduced except in full, without the written approval of DIGITAL EMC CO., LTD.

Tested by:

Manager
M.J.SONG

Reviewed by:

General Manager
C.H.LEE

PRESIDENT OF DIGITAL EMC CO., LTD.

CONTENTS

1. General Remarks

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

Address : 683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Gyeonggi-Do, 449-080, Korea

http://www.digitalemc.com

Tel: +82-31-321-2664 Fax: +82-31-321-1664

2. Test Laboratory

Digital EMC Co., Ltd. has been accredited / filed / authorized by the agencies listed in the following table;

Certificate	Nation	Agency	Code	Mark
Accreditation	Korea	KOLAS	393	ISO/IEC 17025
Site Filing	USA	FCC	101842 678747	Test Facility list & NSA Data
	Canada	IC	5740A-1 5740A-2	Test Facility list & NSA Data
	Japan	VCCI	C-1427 R-1364, R-3385 T-1442, G-338	Test Facility list & NSA Data
Certification	Korea	KC	KR0034	Test Facility list & NSA Data
	Germany	TUV	ROK1124C	ISO/IEC 17025

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the “General requirements for the competent of calibration and testing laboratory”.

3. General Information of EUT

Model No.	50LS4000-UA
EUT Type	LED LCD TV monitor
Serial No	N/A
FCC ID	BEJ50LS4000UA
Type of Sample Tested	Pre-Production
High Frequency	650 MHz
Rating	AC100-240~, 50/60Hz
Supplied Power for Test	AC120V, 60Hz
Applicant	LG Electronics Inc. 19-1, Cheongho-ri, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea
Manufacturer	LG Electronics Inc. 19-1, Cheongho-ri, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, 451-713, Korea

Related Submittal(s) / Grant(s)

Original submittal only.

Resolution	Horizontal Frequency (KHz)	Vertical Frequency (Hz)
640 x 350	31.468	70.09
720 x 400	31.469	70.08
640 x 480	31.469	59.94
800 x 600	37.879	60.31
1024 x 768	48.363	60.00
1360 x 768	47.712	60.015
1152 x 864	54.348	60.053
1280 x 1024	63.981	60.02
1920 x 1080	67.50	60.00

4. Test Summary

4.1 Applied standards and test results

Test Items	Applied Standards	Results
Conducted Disturbance	ANSI C63.4:2003	**C**
Radiated Disturbance	ANSI C63.4:2003	**C**
C=Comply N/C=Not Comply N/T=Not Tested N/A=Not Applicable		

The data in this test report are traceable to the national or international standards.

4.2 Test environment and conditions

Test Items	Test date (MM-DD)	Temp (℃)	Humidity (% R.H.)
Conducted Disturbance	07-04	22	45
Radiated Disturbance	07-09	23	41

4.3 Test result Summary

(1) Conducted Emission (HDMI MODE)

Frequency [MHz]	Phase	Result [dBμV]	Detector	Limit [dBμV]	Margin [dB]
1.88550	**N**	**41.7**	Average	**46.0**	**4.3**

(2) Radiated Emission (DSUB MODE)

Frequency [MHz]	Pol.	Result [dB(μV/m)]	Detector	Limit [dB(μV/m)]	Margin [dB]
147.898	**H**	**38.7**	Quasi-Peak	**43.5**	**4.8**

5. Test Set-up and operation mode

5.1 Principle of Configuration Selection

Emission : The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

5.2 Test Operation Mode

- DSUB MODE – Resolution : 1920 x 1080 Resolution (Worst Case)
- HDMI MODE – Resolution : 1920 X 1080 Resolution (Worst Case)
- USB MODE

5.3 Support Equipment Used

Unit	Model No.	Serial No.	Manufacturer	CABLE			Backshell	FCC ID
				Connect type	Length (m)	shield		
PC	VOSTRO430	9K77SBX	DELL	POWER HDMI DSUB USB USB USB STEREO	1.8 1.8 1.8 1.8 1.8 1.8 1.2	Non-shield Shield Shield Shield Shield Shield Non-shield	Plastic	DOC
KEYBOARD	SKG-2000UB	TAKB401425B	MONITEREY INTERNATIONAL CORP	USB	1.8	Shield	Plastic	DOC
MOUSE	M-UAE96	LZ751AP01L3	LOGITECH Inc.	USB	1.8	Shield	Plastic	DOC
CD/DVD PLAYER	DVP-NS92V	2000407	SONY EMCS	POWER AV	1.8 1.6	Non-shield Non-shield	Plastic	VER
USB MEMORY	USM4GP	11725AGGNN	SONY Corporation	USB	-	-	-	DOC
SOUND BAR	N32020	N/A	LG	POWER OPTICAL	1.8 1.5	Non-shield Shield	Plastic	DOC
PRINTER	SRP-770	SRP77008060035	BICSOLON	POWER USB	1.8 1.8	Non-shield	Plastic	DOC
HEAD SET	COV903	N/A	㈜코시	STEREO	1.2	Non-shield	Plastic	DOC

(Configuration of Tested System)

6. Test Results : Emission

6.1 Conducted Disturbance

6.1.1 Measurement Procedure

In the range of 0.15 MHz to 30 MHz, the conducted disturbance was measured and set-up was made accordance with **ANSI C63.4.**

If the EUT is table top equipment, it was placed on a wooden table with a height of 0.8 m above the reference ground plane and 0.4 m from the conducting wall of the shielded room.

Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15 m above the reference ground plane.

Connect the EUT's power source lines to the appropriate power mains / peripherals through the LISN. All the other peripherals are connected to the 2nd LISN, if any.

Unused measuring port of the LISN was resistively terminated by 50 ohm terminator.

The measuring port of the LISN for EUT was connected to spectrum analyzer.

Using conducted emission test software, the emissions were scanned with peak detector mode.

After scanning over the frequency range, suspected emissions were selected to perform final measurement. When performing final measurement, the receiver was used which has Quasi-Peak detector and Average detector.

By varying the configuration of the test sample and the cable routing it was attempted to maximize the emission.

For further description of the configuration refer to the picture of the test set-up.

6.1.2 Limit for Conducted Disturbance

(1) Conducted disturbance at mains ports.

Frequency range (MHz)	Limits dB(μV)			
	Quasi-peak		Average	
	Class A	Class B	Class A	Class B
0.15 to 0.50	79	66 to 56	66	56 to 46
0.50 to 5	73	56	60	46
5 to 30		60		50
Note 1 The lower limit shall apply at the transition frequencies. Note 2 The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Note) 1. Emission Level = Reading Value + Correction Factor.
2. Correction Factor = Cable Loss + Insertion Loss of LISN
3. Margin = Limit - Emission level

Test Result

< DSUB MODE >

Digital EMC

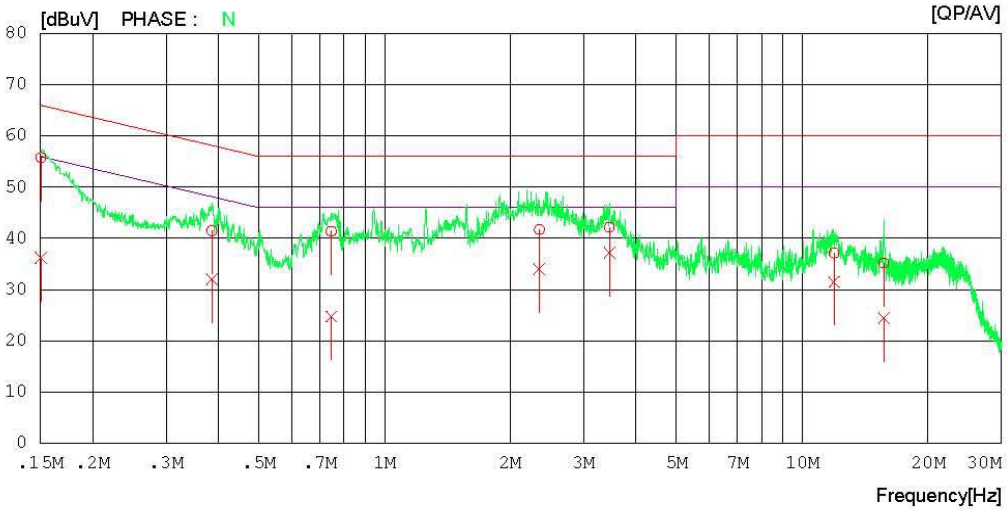
Results of Conducted Emission

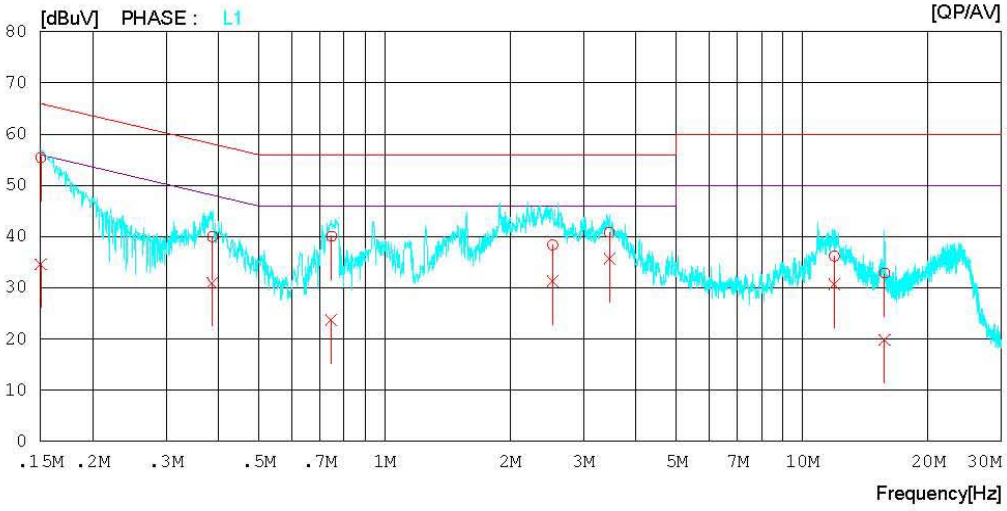
Digital EMC
Date : 2012-07-04

Model No.	:	50LS4000-UA	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	22 'C 45 % R.H.
Test Condition	:	DSUB	Operator	:	

Memo :

LIMIT : CISPR22_B QP
CISPR22_B AV





Results of Conducted Emission

Digital EMC
Date : 2012-07-04

Model No.	:	50LS4000-UA	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	22 'C 45 % R.H.
Test Condition	:	DSUB	Operator	:	

Memo :

LIMIT : CISPR22_B QP
CISPR22_B AV

NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15050	55.5	35.9	0.3	55.8	36.2	66.0	56.0	10.2	19.8	N
2	0.38644	41.2	31.7	0.3	41.5	32.0	58.1	48.1	16.6	16.1	N
3	0.74573	41.2	24.5	0.2	41.4	24.7	56.0	46.0	14.6	21.3	N
4	2.34900	41.4	33.7	0.3	41.7	34.0	56.0	46.0	14.3	12.0	N
5	3.45750	41.7	36.7	0.4	42.1	37.1	56.0	46.0	13.9	8.9	N
6	11.93750	36.3	30.7	0.8	37.1	31.5	60.0	50.0	22.9	18.5	N
7	15.68200	34.2	23.4	1.0	35.2	24.4	60.0	50.0	24.8	25.6	N
8	0.15050	55.2	34.2	0.3	55.5	34.5	66.0	56.0	10.5	21.5	L1
9	0.38703	39.7	30.7	0.3	40.0	31.0	58.1	48.1	18.1	17.1	L1
10	0.74673	39.9	23.5	0.2	40.1	23.7	56.0	46.0	15.9	22.3	L1
11	2.52800	38.1	31.0	0.3	38.4	31.3	56.0	46.0	17.6	14.7	L1
12	3.45750	40.4	35.3	0.4	40.8	35.7	56.0	46.0	15.2	10.3	L1
13	11.94200	35.4	29.9	0.8	36.2	30.7	60.0	50.0	23.8	19.3	L1
14	15.74150	31.9	18.8	1.0	32.9	19.8	60.0	50.0	27.1	30.2	L1

< HDMI MODE >

Digital EMC

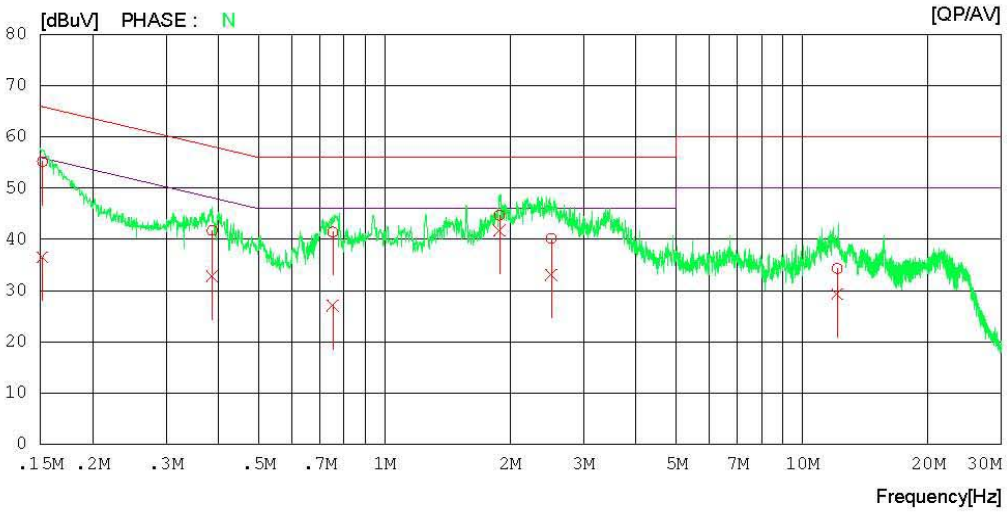
Results of Conducted Emission

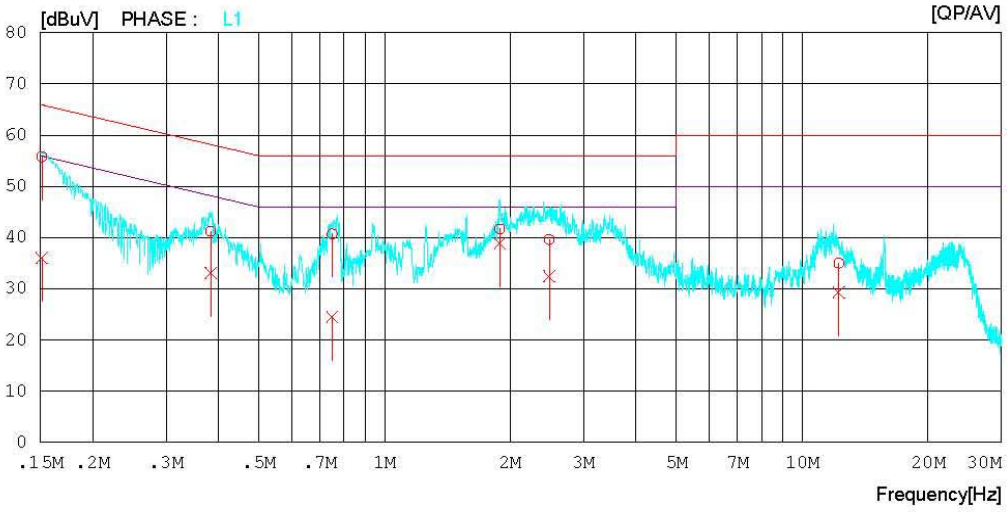
Digital EMC
Date : 2012-07-04

Model No.	:	50LS4000-UA	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	22 'C 45 % R.H.
Test Condition	:	HDMI	Operator	:	

Memo :

LIMIT : CISPR22_B QP
CISPR22_B AV





Results of Conducted Emission

Digital EMC
Date : 2012-07-04

Model No.	:	50LS4000-UA	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	22 'C 45 % R.H.
Test Condition	:	HDMI	Operator	:	

Memo :

LIMIT : CISPR22_B QP
CISPR22_B AV

NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15178	54.9	36.2	0.3	55.2	36.5	65.9	55.9	10.7	19.4	N
2	0.38681	41.4	32.5	0.3	41.7	32.8	58.1	48.1	16.4	15.3	N
3	0.75176	41.2	26.8	0.2	41.4	27.0	56.0	46.0	14.6	19.0	N
4	1.88550	44.4	41.4	0.3	44.7	41.7	56.0	46.0	11.3	4.3	N
5	2.50750	39.9	32.8	0.3	40.2	33.1	56.0	46.0	15.8	12.9	N
6	12.13500	33.5	28.5	0.8	34.3	29.3	60.0	50.0	25.7	20.7	N
7	0.15119	55.4	35.8	0.3	55.7	36.1	65.9	55.9	10.2	19.8	L1
8	0.38385	41.0	32.8	0.3	41.3	33.1	58.2	48.2	16.9	15.1	L1
9	0.74920	40.5	24.3	0.2	40.7	24.5	56.0	46.0	15.3	21.5	L1
10	1.88750	41.4	38.6	0.3	41.7	38.9	56.0	46.0	14.3	7.1	L1
11	2.47950	39.3	32.2	0.3	39.6	32.5	56.0	46.0	16.4	13.5	L1
12	12.24150	34.2	28.5	0.8	35.0	29.3	60.0	50.0	25.0	20.7	L1

< USB MODE >

Digital EMC

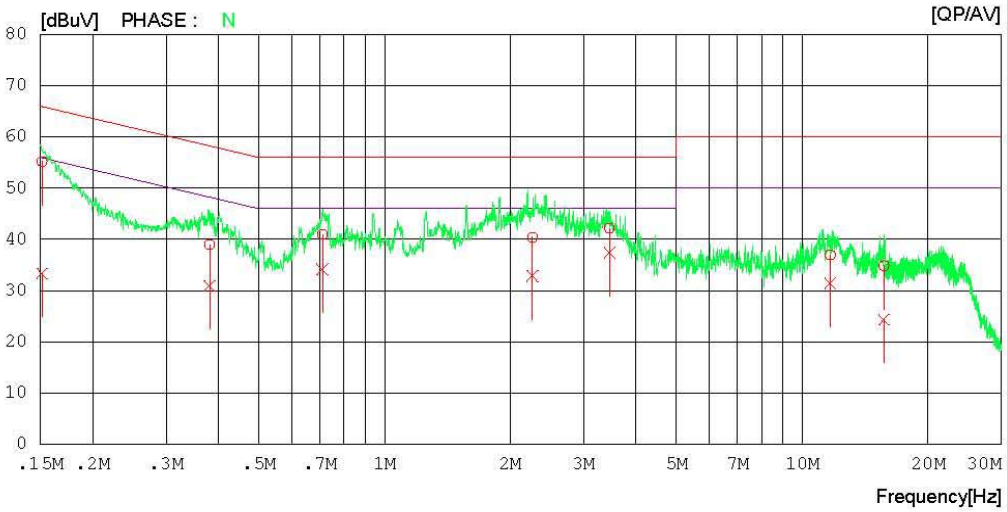
Results of Conducted Emission

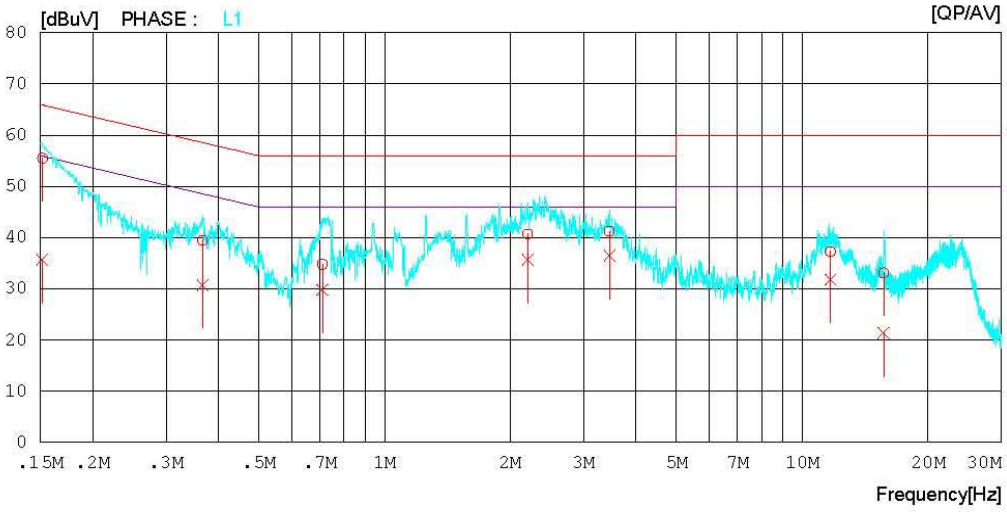
Digital EMC
Date : 2012-07-04

Model No.	:	50LS4000-UA	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	22 'C 45 % R.H.
Test Condition	:	USB	Operator	:	

Memo :

LIMIT : CISPR22_B QP
CISPR22_B AV





Results of Conducted Emission

Digital EMC
Date : 2012-07-04

Model No.	:	50LS4000-UA	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	22 'C 45 % R.H.
Test Condition	:	USB	Operator	:	

Memo :

LIMIT : CISPR22_B QP
CISPR22_B AV

NO	FREQ	READING QP	READING AV	C.FACTOR	RESULT QP	RESULT AV	LIMIT QP	LIMIT AV	MARGIN QP	MARGIN AV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.15150	54.9	33.0	0.3	55.2	33.3	65.9	55.9	10.7	22.6	N
2	0.38144	38.6	30.6	0.3	38.9	30.9	58.2	48.2	19.3	17.3	N
3	0.71001	40.8	34.0	0.2	41.0	34.2	56.0	46.0	15.0	11.8	N
4	2.26100	40.1	32.5	0.3	40.4	32.8	56.0	46.0	15.6	13.2	N
5	3.45700	41.8	37.0	0.4	42.2	37.4	56.0	46.0	13.8	8.6	N
6	11.68100	36.1	30.6	0.8	36.9	31.4	60.0	50.0	23.1	18.6	N
7	15.68900	33.8	23.3	1.0	34.8	24.3	60.0	50.0	25.2	25.7	N
8	0.15179	55.2	35.4	0.3	55.5	35.7	65.9	55.9	10.4	20.2	L1
9	0.36708	39.2	30.5	0.3	39.5	30.8	58.6	48.6	19.1	17.8	L1
10	0.71036	34.6	29.6	0.2	34.8	29.8	56.0	46.0	21.2	16.2	L1
11	2.20200	40.4	35.4	0.3	40.7	35.7	56.0	46.0	15.3	10.3	L1
12	3.45550	40.9	36.1	0.4	41.3	36.5	56.0	46.0	14.7	9.5	L1
13	11.68150	36.5	31.0	0.8	37.3	31.8	60.0	50.0	22.7	18.2	L1
14	15.66400	32.1	20.4	1.0	33.1	21.4	60.0	50.0	26.9	28.6	L1

6.2 Radiated Disturbance

6.2.1 Measurement Procedure

The radiated disturbance was measured and set-up was made accordance with **ANSI C63.4.**

If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 m above the reference ground plane and 3 m or 10m away from the interference receiving antenna in the **10m semi-anechoic chamber.**

Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15 m above the reference ground plane.

Rotate the EUT from (0 - 360)° and position the receiving antenna at heights from (1 - 4) m above the reference ground plane continuously to determine associated with higher emission levels and record them.

The measurement was made in both the vertical and horizontal polarization, and the maximum value is presented in the report.

For below 1 GHz frequency range, Quasi-Peak detector with 120 kHz RBW was used.

Also Peak and Average detector with 1 MHz RBW were used for above 1 GHz frequency range.

For further description of the configuration refer to the picture of the test set-up.

6.2.2 Limit for Radiated Disturbance

- The test frequency range of Radiated Disturbance measurements are listed below.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 108	1 000
108 – 500	2 000
500 – 1 000	5 000
Above 1 000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

(1) Limit for Radiated Emission below 1 000MHz

Frequency range (MHz)	Class A Equipment (10m distance)	Class B Equipment (3m distance)
	Quasi-peak (dBμV/m)	Quasi-peak (dBμV/m)
30 to 88	39.1	40
88 to 216	43.5	43.5
216 to 960	46.4	46
960 to 1 000	49.5	54
Note 1 The lower limit shall apply at the transition frequency. Note 2 Additional provisions may be required for cases where interference occurs. Note 3 According to 15.109(g), as an alternative to the radiated emission limit shown above, digital devices may be shown to comply with the standards(CISPR), Pub. 22 shown as below.		
Frequency range (MHz)	**Class A Equipment (10 m distance)**	**Class B Equipment (10 m distance)**
	Quasi-peak (dBμV/m)	**Quasi-peak (dBμV/m)**
30 to 230	40	30
230 to 1 000	47	37

(2) Limits for Radiated Emission above 1 000MHz at a measuring distance of 3 m

Frequency (GHz)	Class A Equipment		Class B Equipment	
	Peak (dBμV/m)	Average (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)
1 to 40	80	60	74	54

Note) 1. Emission Level = Reading Value + Correction Factor.
2. Correction Factor = Cable loss - Amp gain + Antenna Factor
3. Margin = Limit - Emission level

< DSUB MODE_30 MHz ~ 1 GHz >

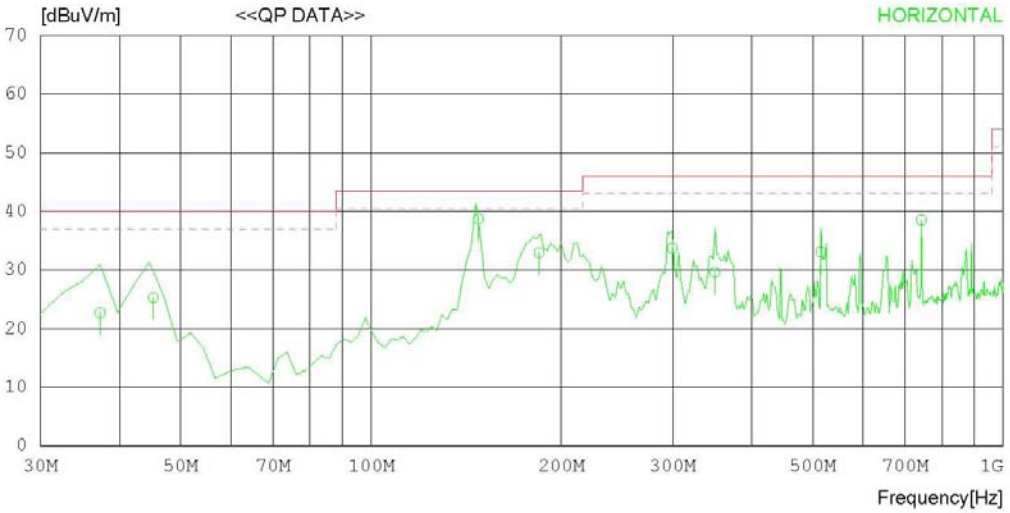
RADIATED EMISSION

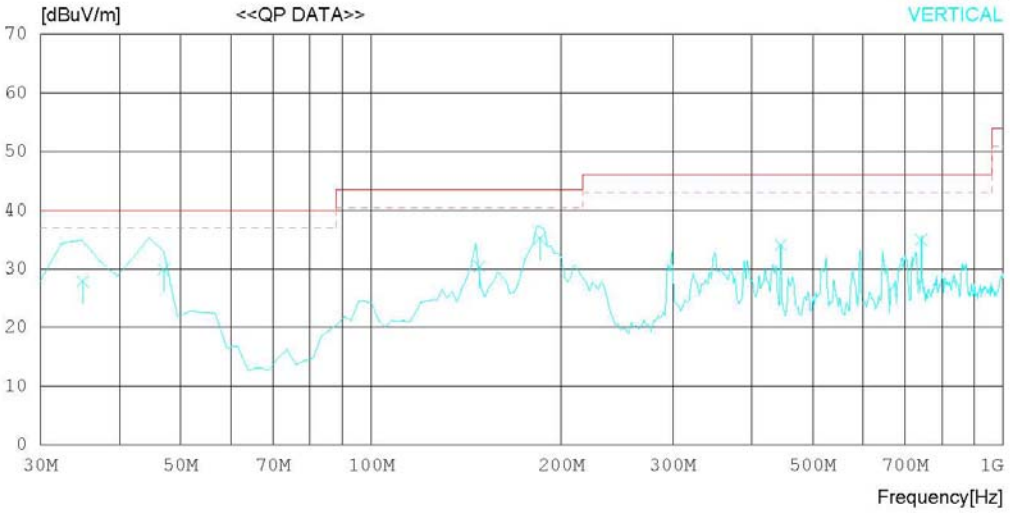
Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23'C 41 % R.H.
Test Condition	:	DSUB	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23'C 41 % R.H.
Test Condition	:	DSUB	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB

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	37.275	29.0	15.4	0.9	22.6	22.7	40.0	17.3	143	146
2	45.254	33.0	13.9	1.0	22.6	25.3	40.0	14.7	123	358
3	147.898	49.5	10.6	1.7	23.1	38.7	43.5	4.8	122	1
4	184.434	44.3	9.8	2.0	23.2	32.9	43.5	10.6	243	359
5	299.500	41.2	13.8	2.6	23.9	33.7	46.0	12.3	111	358
6	349.525	36.0	14.9	2.8	24.1	29.6	46.0	16.4	287	305
7	514.669	36.5	17.8	3.4	24.6	33.1	46.0	12.9	100	199
8	741.767	38.5	19.5	4.4	23.9	38.5	46.0	7.5	169	358
----- Vertical ------										
9	35.000	32.9	16.7	0.9	22.6	27.9	40.0	12.1	123	200
10	46.998	39.2	12.3	1.0	22.6	29.9	40.0	10.1	165	153
11	148.368	41.3	10.5	1.7	23.1	30.4	43.5	13.1	100	22
12	185.025	46.6	9.8	2.0	23.2	35.2	43.5	8.3	133	179
13	445.068	38.7	16.7	3.2	24.5	34.1	46.0	11.9	223	191
14	741.768	35.0	19.5	4.4	23.9	35.0	46.0	11.0	142	167

< DSUB MODE _ (1 ~ 6) GHz _ Peak >

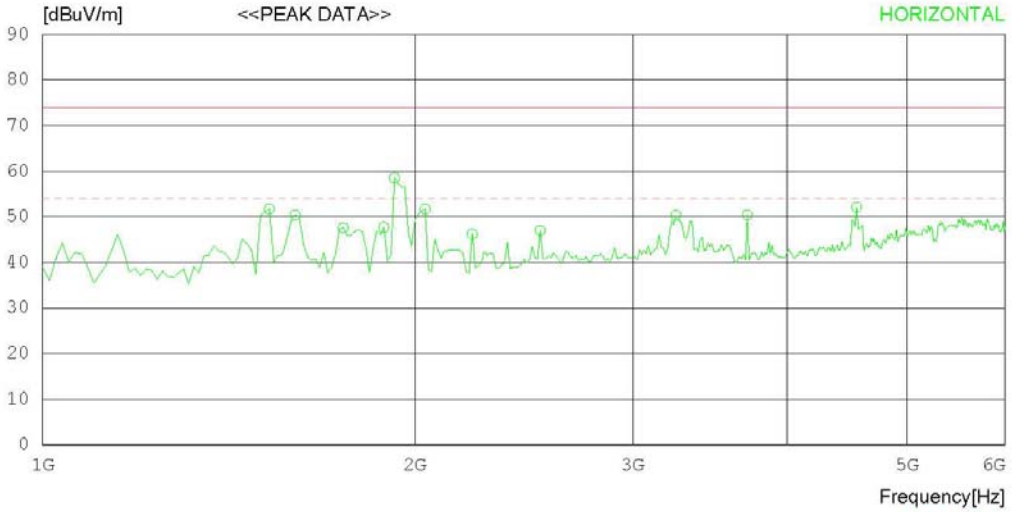
RADIATED EMISSION

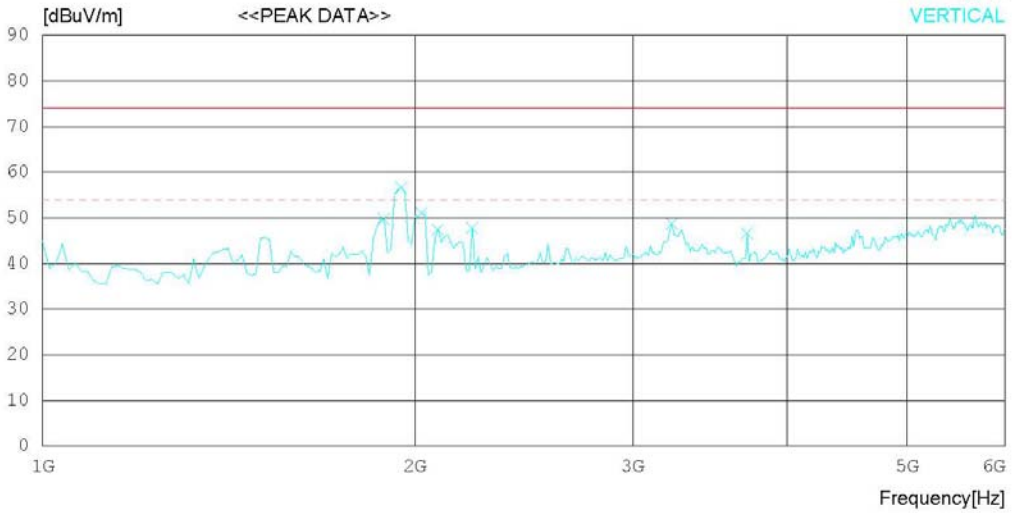
Date : 2012-07-09

Model Name	: 50LS4000-UA	Reference No.	:		
Model No.	:	Power Supply	:	120V	60Hz
Serial No.	:	Temp/Humi	:	23 'C	41 % R.H.
Test Condition	: DSUB	Operator	:		

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	DSUB	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	1525.000	62.5	25.1	6.0	41.9	51.7	74.0	22.3	100	1
2	1600.000	60.9	25.2	6.2	41.9	50.4	74.0	23.6	100	1
3	1750.000	57.9	25.2	6.5	42.0	47.6	74.0	26.4	100	230
4	1887.500	57.7	25.2	6.8	42.0	47.7	74.0	26.3	100	1
5	1925.000	68.4	25.2	6.9	42.0	58.5	74.0	15.5	100	1
6	2037.500	61.2	25.4	7.1	42.0	51.7	74.0	22.3	100	221
7	2225.000	54.7	26.2	7.3	42.0	46.2	74.0	27.8	100	228
8	2525.000	53.9	27.4	7.8	42.1	47.0	74.0	27	100	1
9	3250.000	54.2	29.0	9.1	42.0	50.3	74.0	23.7	100	1
10	3712.500	53.0	29.6	9.7	41.9	50.4	74.0	23.6	100	251
11	4550.000	51.9	30.9	10.7	41.4	52.1	74.0	21.9	100	1
----- Vertical ------										
12	1887.500	59.8	25.2	6.8	42.0	49.8	74.0	24.2	100	0
13	1950.000	66.5	25.2	6.9	42.0	56.6	74.0	17.4	100	358
14	2025.000	60.7	25.3	7.0	42.0	51.0	74.0	23	100	358
15	2087.500	56.7	25.6	7.1	42.0	47.4	74.0	26.6	100	358
16	2225.000	56.3	26.2	7.3	42.0	47.8	74.0	26.2	100	196
17	3225.000	52.6	29.0	9.1	42.0	48.7	74.0	25.3	100	358
18	3712.500	49.2	29.6	9.7	41.9	46.6	74.0	27.4	100	358

< DSUB MODE _ (1 ~ 6) GHz _ Average >

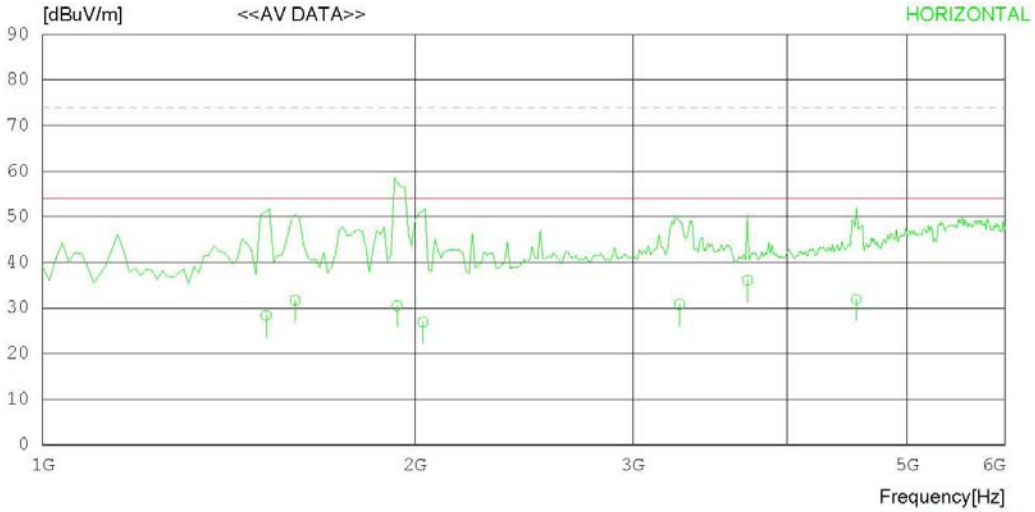
RADIATED EMISSION

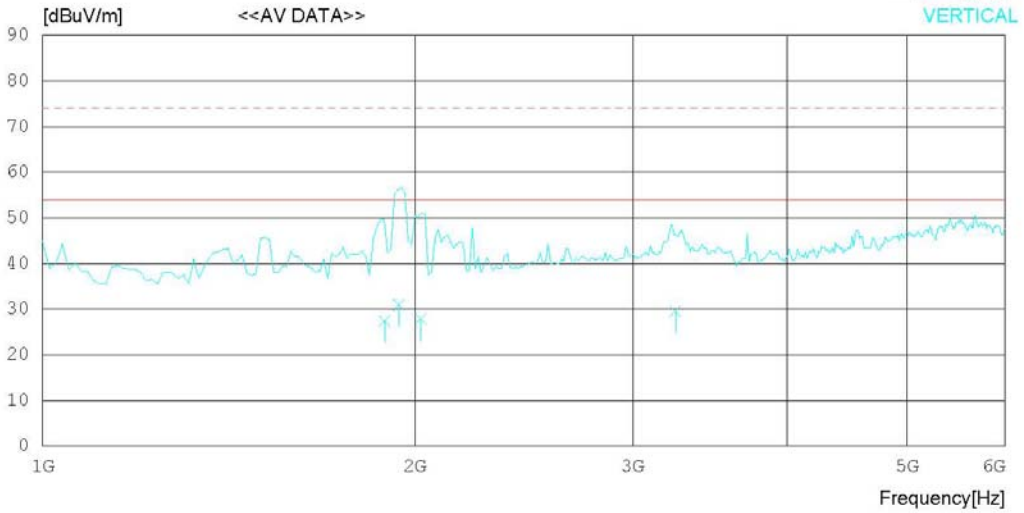
Date : 2012-07-09

Model Name	: 50LS4000-UA	Reference No.	:		
Model No.	:	Power Supply	:	120V	60Hz
Serial No.	:	Temp/Humi	:	23 'C	41 % R.H.
Test Condition	: DSUB	Operator	:		

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	DSUB	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)

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	1515.987	39.2	25.1	6.0	41.9	28.4	54.0	25.6	100	1
2	1600.000	42.2	25.2	6.2	41.9	31.7	54.0	22.3	100	34
3	1934.000	40.4	25.2	6.9	42.0	30.5	54.0	23.5	100	154
4	2030.250	36.5	25.3	7.1	42.0	26.9	54.0	27.1	100	221
5	3272.500	34.7	29.0	9.1	42.0	30.8	54.0	23.2	100	1
6	3712.698	38.7	29.6	9.7	41.9	36.1	54.0	17.9	100	251
7	4547.000	31.7	30.9	10.7	41.4	31.9	54.0	22.1	100	1
----- Vertical ------										
8	1891.250	37.4	25.2	6.8	42.0	27.4	54.0	26.6	100	44
9	1941.000	40.8	25.2	6.9	42.0	30.9	54.0	23.1	100	358
10	2022.000	37.5	25.3	7.0	42.0	27.8	54.0	26.2	100	194
11	3247.250	33.5	29.0	9.1	42.0	29.6	54.0	24.4	100	135

< HDMI MODE_30 MHz ~ 1 GHz >

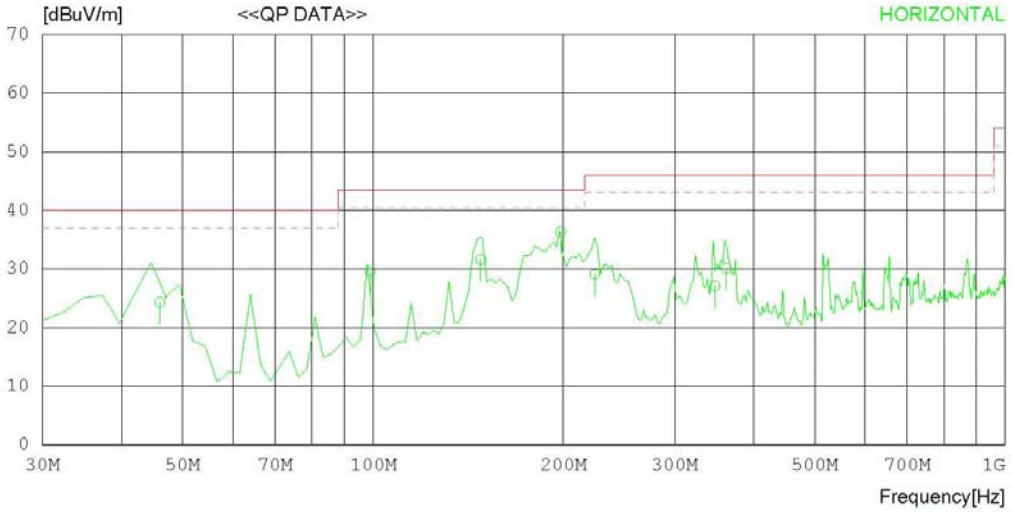
RADIATED EMISSION

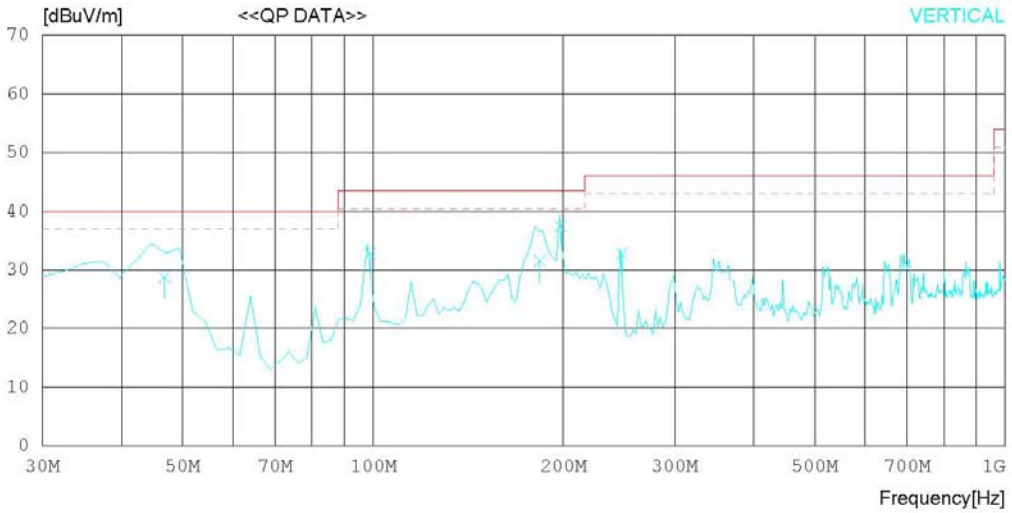
Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	HDMI	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	HDMI	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB

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	46.000	32.7	13.2	1.0	22.6	24.3	40.0	15.7	123	55
2	99.000	40.2	10.6	1.5	22.7	29.6	43.5	13.9	295	300
3	148.060	42.5	10.5	1.7	23.1	31.6	43.5	11.9	123	130
4	197.990	47.8	9.7	2.0	23.2	36.3	43.5	7.2	168	154
5	224.150	39.0	11.3	2.2	23.4	29.1	46.0	16.9	132	1
6	347.251	33.5	14.9	2.8	24.1	27.1	46.0	18.9	100	129
7	361.900	36.3	15.2	2.8	24.2	30.1	46.0	15.9	100	139

< HDMI MODE _ (1 ~ 6) GHz _ Peak >

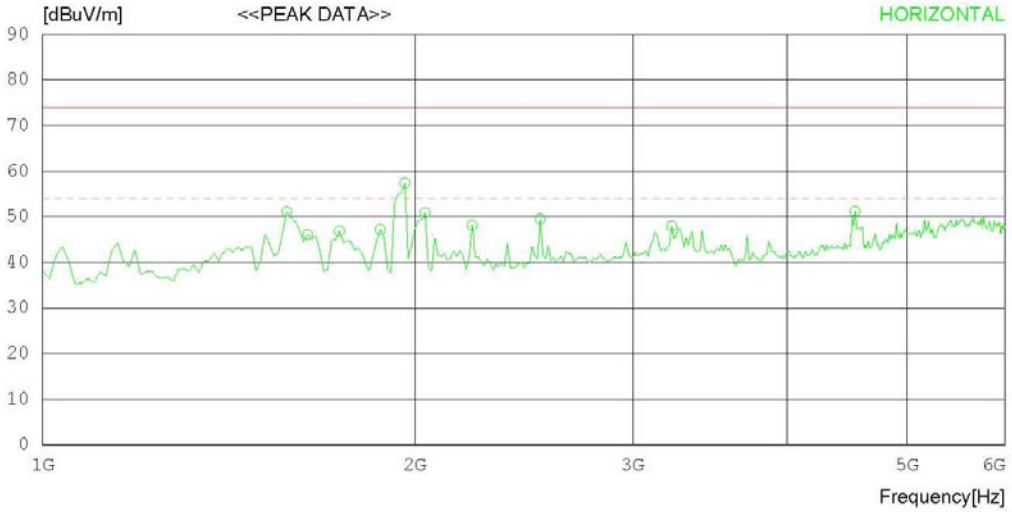
RADIATED EMISSION

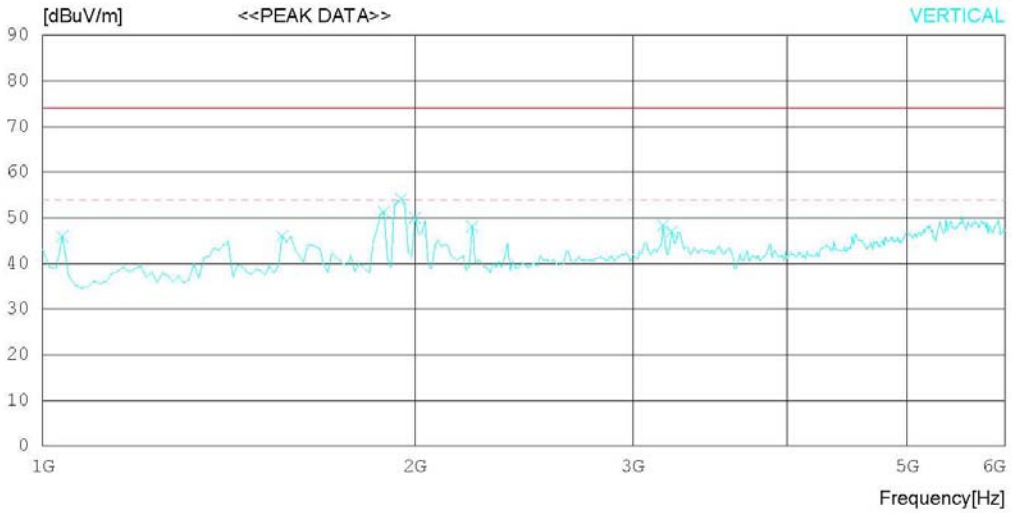
Date : 2012-07-09

Model Name	: 50LS4000-UA	Reference No.	:		
Model No.	:	Power Supply	:	120V	60Hz
Serial No.	:	Temp/Humi	:	23 'C	41 % R.H.
Test Condition	: HDMI	Operator	:		

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	HDMI	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	1575.000	61.8	25.1	6.1	41.9	51.1	74.0	22.9	100	138
2	1637.500	56.6	25.2	6.2	41.9	46.1	74.0	27.9	100	240
3	1737.500	57.1	25.2	6.5	41.9	46.9	74.0	27.1	100	358
4	1875.000	57.3	25.2	6.7	42.0	47.2	74.0	26.8	100	358
5	1962.500	67.3	25.2	6.9	42.0	57.4	74.0	16.6	100	231
6	2037.500	60.4	25.4	7.1	42.0	50.9	74.0	23.1	100	298
7	2225.000	56.6	26.2	7.3	42.0	48.1	74.0	25.9	100	181
8	2525.000	56.5	27.4	7.8	42.1	49.6	74.0	24.4	100	358
9	3225.000	51.9	29.0	9.1	42.0	48.0	74.0	26	100	234
10	4537.500	51.0	30.9	10.7	41.4	51.2	74.0	22.8	100	218
----- Vertical ------										
11	1037.500	59.1	23.7	4.9	41.8	45.9	74.0	28.1	100	1
12	1562.500	56.7	25.1	6.1	41.9	46.0	74.0	28	100	1
13	1887.500	61.3	25.2	6.8	42.0	51.3	74.0	22.7	100	2
14	1950.000	64.0	25.2	6.9	42.0	54.1	74.0	19.9	100	15
15	2000.000	59.8	25.2	7.0	42.0	50.0	74.0	24	100	1
16	2225.000	56.7	26.2	7.3	42.0	48.2	74.0	25.8	100	197
17	3175.000	52.5	28.9	9.0	42.0	48.4	74.0	25.6	100	345
18	3225.000	50.9	29.0	9.1	42.0	47.0	74.0	27	100	211

< HDMI MODE _ (1 ~ 6) GHz _ Average >

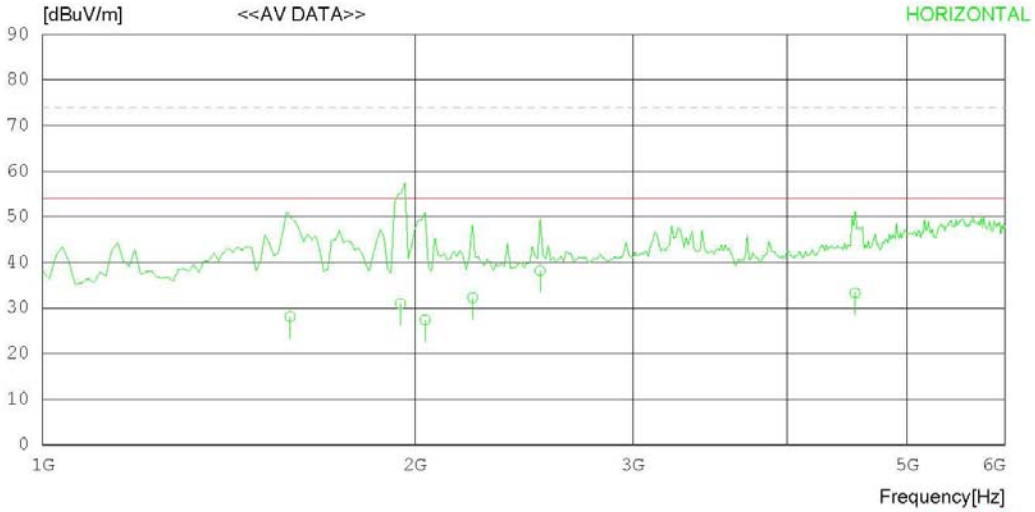
RADIATED EMISSION

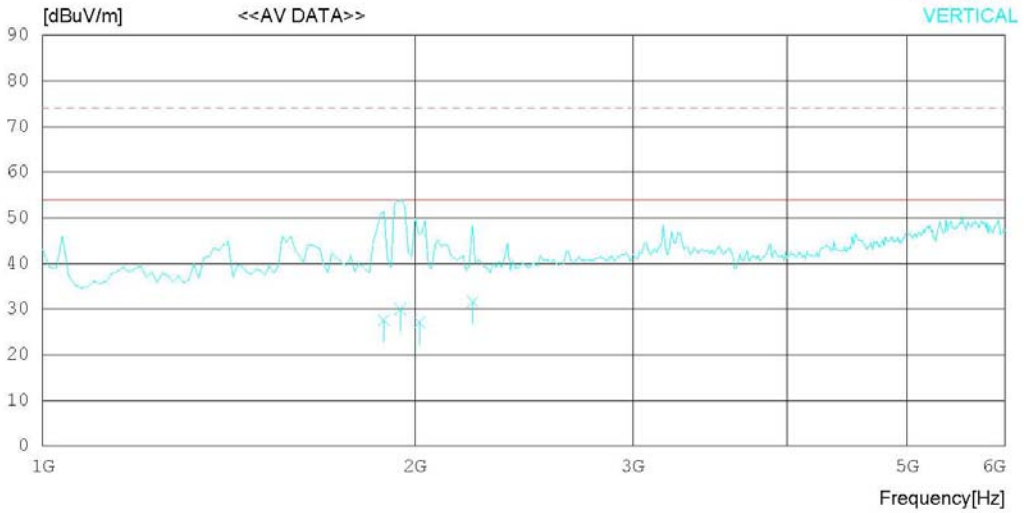
Date : 2012-07-09

Model Name	: 50LS4000-UA	Reference No.	:		
Model No.	:	Power Supply	:	120V	60Hz
Serial No.	:	Temp/Humi	:	23 'C	41 % R.H.
Test Condition	: HDMI	Operator	:		

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	HDMI	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)

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	1585.000	38.7	25.2	6.1	41.9	28.1	54.0	25.9	100	196
2	1946.019	40.8	25.2	6.9	42.0	30.9	54.0	23.1	100	231
3	2037.500	36.9	25.4	7.1	42.0	27.4	54.0	26.6	100	298
4	2227.000	40.7	26.2	7.3	42.0	32.2	54.0	21.8	100	181
5	2524.500	45.1	27.4	7.8	42.1	38.2	54.0	15.8	100	303
6	4537.500	33.1	30.9	10.7	41.4	33.3	54.0	20.7	100	218
----- Vertical ------										
7	1887.500	37.6	25.2	6.8	42.0	27.6	54.0	26.4	100	2
8	1946.019	39.9	25.2	6.9	42.0	30.0	54.0	24.0	100	15
9	2018.126	36.8	25.3	7.0	42.0	27.1	54.0	26.9	100	1
10	2227.000	40.1	26.2	7.3	42.0	31.6	54.0	22.4	100	197

< USB MODE_30 MHz ~ 1 GHz >

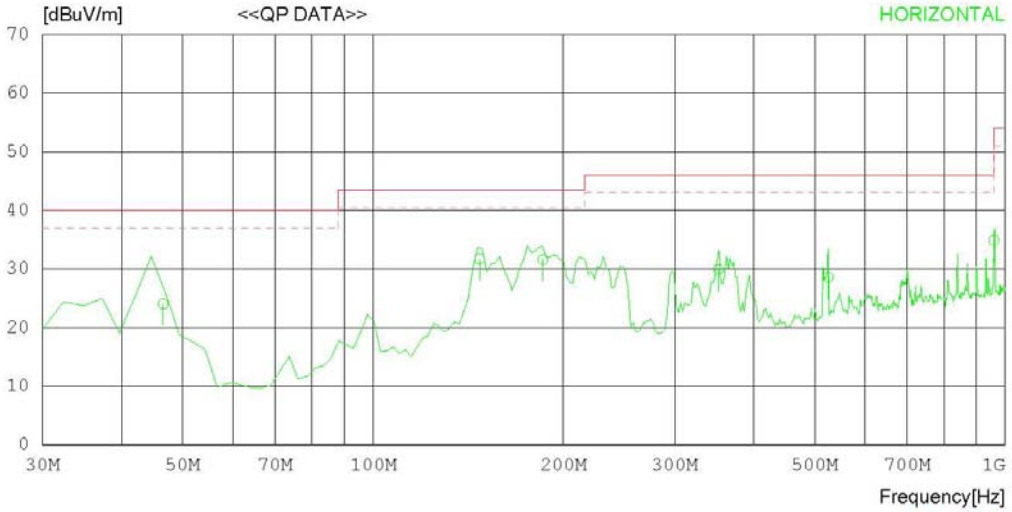
RADIATED EMISSION

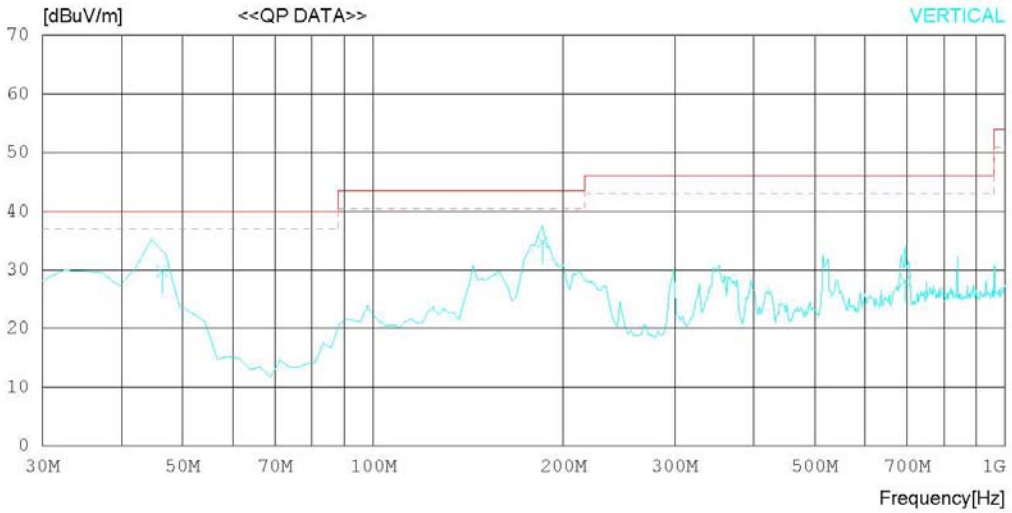
Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	USB	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	USB	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 3 dB

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	46.564	32.9	12.7	1.0	22.6	24.0	40.0	16.0	100	98
2	147.443	42.5	10.6	1.7	23.1	31.7	43.5	11.8	100	1
3	185.627	43.0	9.8	2.0	23.2	31.6	43.5	11.9	100	46
4	351.850	36.2	15.0	2.8	24.1	29.9	46.0	16.1	100	149
5	524.810	31.8	17.9	3.5	24.6	28.6	46.0	17.4	201	43
6	960.000	32.0	21.0	4.9	23.0	34.9	46.0	11.1	300	153
----- Vertical ------										
7	46.454	38.5	12.8	1.0	22.6	29.7	40.0	10.3	100	358
8	185.627	46.2	9.8	2.0	23.2	34.8	43.5	8.7	100	102
9	694.448	29.1	18.9	4.2	24.1	28.1	46.0	17.9	100	358

< USB MODE _ (1 ~ 6) GHz _ Peak >

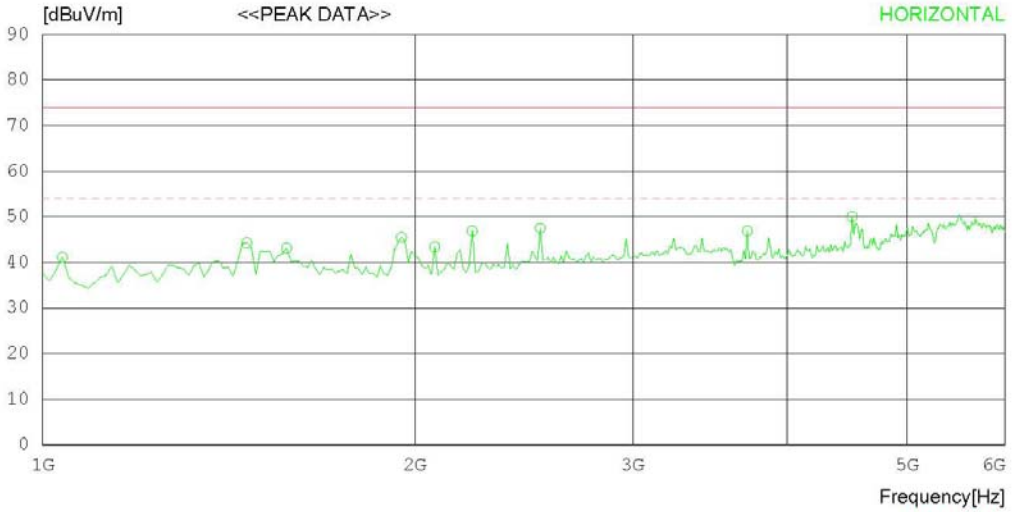
RADIATED EMISSION

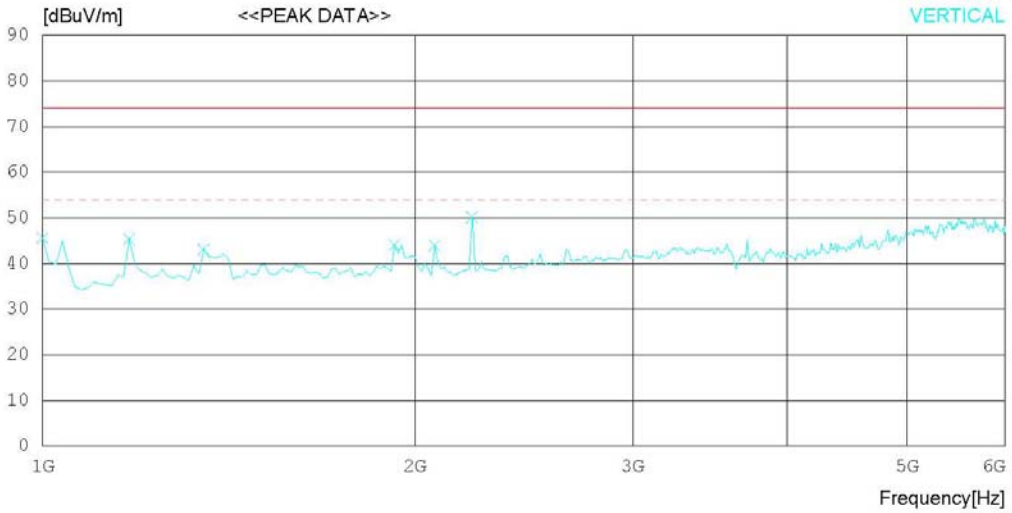
Date : 2012-07-09

Model Name	: 50LS4000-UA	Reference No.	:		
Model No.	:	Power Supply	:	120V	60Hz
Serial No.	:	Temp/Humi	:	23 'C	41 % R.H.
Test Condition	: USB	Operator	:		

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	USB	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal ------										
1	1037.500	54.3	23.7	4.9	41.8	41.1	74.0	32.9	100	107
2	1462.500	55.3	25.0	5.9	41.9	44.3	74.0	29.7	100	1
3	1575.000	53.8	25.1	6.1	41.9	43.1	74.0	30.9	100	1
4	1950.000	55.4	25.2	6.9	42.0	45.5	74.0	28.5	100	1
5	2075.000	52.8	25.5	7.1	42.0	43.4	74.0	30.6	100	1
6	2225.000	55.4	26.2	7.3	42.0	46.9	74.0	27.1	100	230
7	2525.000	54.4	27.4	7.8	42.1	47.5	74.0	26.5	100	138
8	3712.500	49.5	29.6	9.7	41.9	46.9	74.0	27.1	100	227
9	4512.500	49.9	30.8	10.7	41.4	50.0	74.0	24	100	1
----- Vertical ------										
10	1000.000	59.0	23.6	4.8	41.8	45.6	74.0	28.4	100	2
11	1175.000	57.8	24.2	5.2	41.8	45.4	74.0	28.6	100	358
12	1350.000	54.7	24.7	5.6	41.9	43.1	74.0	30.9	100	318
13	1925.000	54.0	25.2	6.9	42.0	44.1	74.0	29.9	100	169
14	2075.000	53.3	25.5	7.1	42.0	43.9	74.0	30.1	100	237
15	2225.000	58.7	26.2	7.3	42.0	50.2	74.0	23.8	100	358

< USB MODE _ (1 ~ 6) GHz _ Average >

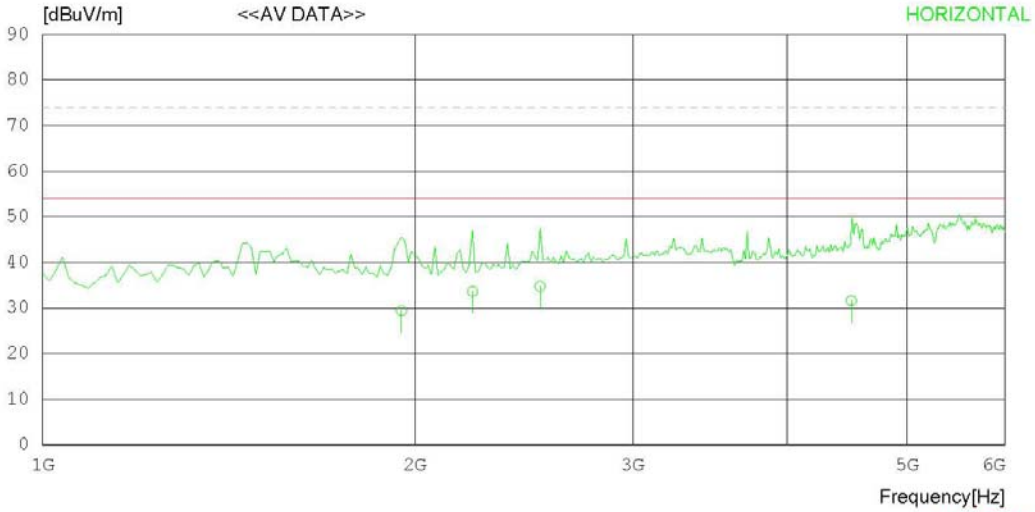
RADIATED EMISSION

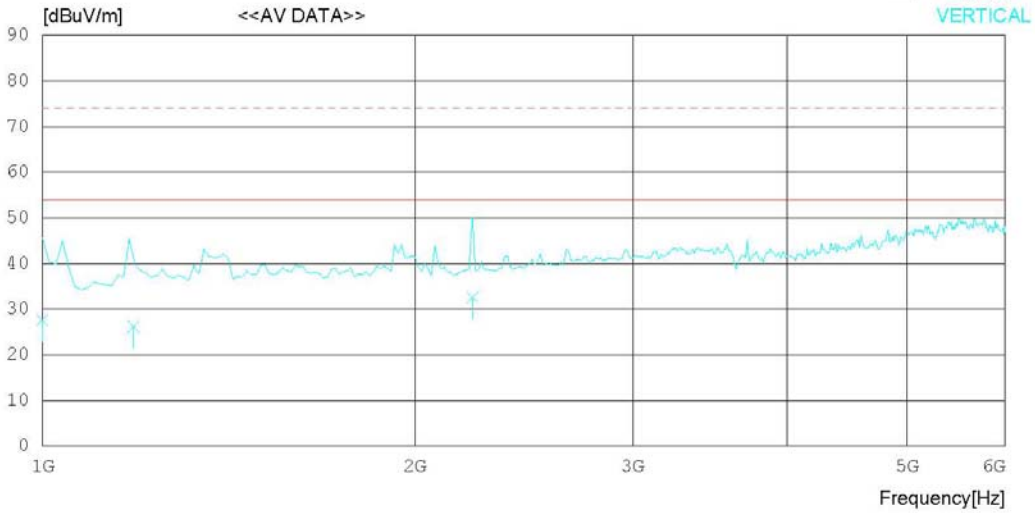
Date : 2012-07-09

Model Name	: 50LS4000-UA	Reference No.	:		
Model No.	:	Power Supply	:	120V	60Hz
Serial No.	:	Temp/Humi	:	23 'C	41 % R.H.
Test Condition	: USB	Operator	:		

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)





RADIATED EMISSION

Date : 2012-07-09

Model Name	:	50LS4000-UA	Reference No.	:	
Model No.	:		Power Supply	:	120V 60Hz
Serial No.	:		Temp/Humi	:	23 'C 41 % R.H.
Test Condition	:	USB	Operator	:	

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)

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	1950.000	39.3	25.2	6.9	42.0	29.4	54.0	24.6	100	164
2	2227.250	42.1	26.2	7.3	42.0	33.6	54.0	20.4	100	230
3	2524.800	41.7	27.4	7.8	42.1	34.8	54.0	19.2	100	138
4	4506.250	31.6	30.7	10.7	41.4	31.6	54.0	22.4	100	1
----- Vertical ------										
5	1000.000	41.0	23.6	4.8	41.8	27.6	54.0	26.4	100	2
6	1184.700	38.5	24.2	5.2	41.8	26.1	54.0	27.9	100	358
7	2227.250	41.1	26.2	7.3	42.0	32.6	54.0	21.4	100	358

Appendix 1

List of Test and Measurement Instruments

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment is identified by the Test Laboratory.

1. Conducted Disturbance

Name of Instrument		Model No.	Manufacturer	Serial No.	Cal. Date	Next Cal. Date
☐	SPECTRUM ANALYZER	8591E	H/P	3649A05889	2012.03.05	2013.03.05
☐	RFI/FIELD INTENSITY METER	KNM-2402	KYORITSU	4N-170-3	2012.07.02	2013.07.02
☐	LISN	KNW-407	KYORITSU	8-317-8	2012.01.09	2013.01.09
☐	LISN	PMM L2-16B	NARDA S.T.S. / PMM	000WX20305	2011.09.19	2012.09.19
☐	ATTENUATOR	CFA-10BPJ-10	TAMAGAWA ELECTRONICS	1760307E	N/A	N/A
☐	50 OHM TERMINATOR	CT-01	TME	N/A	2012.01.09	2013.01.09
☒	EMI TEST RECEIVER	ESCI	ROHDE & SCHWARZ	100364	2012.03.06	2013.03.06
☒	LISN	ESH2-Z5	ROHDE & SCHWARZ	828739/006	2011.09.30	2012.09.30
☒	LISN	LISN1600	TTI	197204	2012.07.02	2013.07.02
☒	50 OHM TERMINATOR	CT-01	TME	N/A	2012.01.09	2013.01.09

2. Radiated Disturbance

Name of Instrument		Model No.	Manufacturer	Serial No.	Cal. Date	Next Cal. Date
☒	EMI TEST RECEIVER	ESU	ROHDE & SCHWARZ	100014	2012.01.09	2013.01.09
☒	BILOG ANTENNA	CBL6112D	SCHAFFNER	22609	2010.12.21	2012.12.21
☒	HORN ANTENNA	BBHA9120A	SCHWARZBECK	322	2012.05.15	2014.05.15
☒	AMPLIFIER	8447E	H/P	2945A02865	2012.01.09	2013.01.09
☒	AMPLIFIER	MLA-00108-B02-36	TSJ	1518831	2012.01.09	2013.01.09
☐	SPECTRUM ANALYZER	E4411B	AGILENT	US41062735	2012.07.11	2013.07.11
☐	AMPLIFIER	8447D	AGILENT	2443A03690	2012.07.01	2013.07.01
☐	BILOG ANTENNA	VULB9160	SCHAFFNER	3151	2010.08.25	2012.08.25
☐	EMI TEST RECEIVER	ESCI	ROHDE & SCHWARZ	100364	2012.03.06	2013.03.06
☐	BICONICAL ANT.	VHA 9103	SCHWARZBECK	91032789	2010.11.29	2012.11.29
☐	LOG-PERIODIC ANT.	UHALP 9108A	SCHWARZBECK	590	2011.07.07	2013.07.07
☐	BICONICAL ANT.	VHA 9103	SCHWARZBECK	91031946	2010.12.21	2012.12.21
☐	LOG-PERIODIC ANT.	UHALP 9108-A1	SCHWARZBECK	1098	2010.11.29	2012.11.29
☐	AMPLIFIER	MLA-100K01-B01-26	TSJ	1252741	2012.03.05	2013.03.05