EMC TEST REPORT

Test item	: Mobile Handset
Model No.	: LG-D150g
Order No.	: DEMC1404-01246
Date of receipt	: 2014-04-07
Test duration	: 2014-04-11 ~ 2014-04-14
Use of report	: FCC CoC Marking
Date of Issue	: 2014-04-23

Applicant : LG Electronics MobileComm U.S.A., Inc.
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Test laboratory : Digital EMC Co., Ltd.
42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935

Test specification : ANSI C 63.4:2009
FCC Part 15 Subpart B
(Class B personal computers and peripherals)

Test environment : Temperature : (22 ~ 23) °C,
Humidity : (38 ~ 45) % R.H.

Test result : ☒ Comply ☐ Not Comply

Tested by:

Manager
HyunSuk Ko

Reviewed by:

Manager
YoungKyu Shin

PRESIDENT OF DIGITAL EMC CO., LTD.

CONTENTS

1. General Remarks 3

2. Test Laboratory 3

3. General Information of EUT 4

4. Test Summary 5

4.1 Applied standards and test results 5

4.2 Test environment and conditions 5

4.3 Test result Summary 5

5. Test Set-up and operation mode 6

5.1 Principle of Configuration Selection 6

5.2 Test Operation Mode 6

5.3 Support Equipment Used 6

6. Test Results : Emission 7

6.1 Conducted Disturbance 7

6.2 Radiated Disturbance 10

Appendix 1 18

List of Test and Measurement Instruments 18

Appendix 2 20

Report Revision History 20

1. General Remarks

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

Address : 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935

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 596748	Test Facility list & NSA Data
	Canada	IC	5740A-1 5740A-2	Test Facility list & NSA Data
	Japan	VCCI	C-1427 R-1364, R-3385, R-4076, T-1442, G-338, G754	Test Facility list & NSA Data
Certification	Korea	KC	KR0034	Test Facility list & NSA Data
	Germany	TUV	CARAT 13 11 86721 001	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.	LG-D150g
Serial No	NONE
FCC ID	ZNFD150G
Supplied Power for Test	AC 120 V, 60 Hz
Clock Frequency	1.2 GHz
Applicant	LG Electronics MobileComm U.S.A., Inc. 1000 Sylvan Avenue, Englewood Cliffs NJ 07632
Manufacturer	LG Electronics MobileComm U.S.A., Inc. 1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Related Submittal(s) / Grant(s)

Original submittal only.

4. Test Summary

4.1 Applied standards and test results

Test Items	Applied Standards	Results
Conducted Disturbance	ANSI C63.4:2009	**C**
Radiated Disturbance	ANSI C63.4:2009	**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 (YYYY-MM-DD)	Temp (℃)	Humidity (% R.H.)
Conducted Disturbance	2014-04-11	22	38
Radiated Disturbance	2014-04-14	23	45

4.3 Test result Summary

(1) Conducted Emission

Frequency [MHz]	Phase	Result [dBμV]	Detector	Limit [dBμV]	Margin [dB]
4.83050	**L1**	**42.7**	Average	**46.0**	**3.3**

(2) Radiated Emission

Frequency [MHz]	Pol.	Result [dB(μV/m)]	Detector	Limit [dB(μV/m)]	Margin [dB]
330.039	**V**	**31.4**	Quasi-Peak	**46.0**	**14.6**

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

- PC link mode (The measurement was made of the maximized by ; data exchange speed ; moving the cable.)

5.3 Support Equipment Used

Unit	Model No.	Serial No.	Manufacturer	CABLE			Backshell	FCC ID
				Connect type	Length (m)	shield		
PC	DC8M	D8FQFBX	DELL	POWER DVI USB USB USB PARALLEL RJ45 STEREO	1.8 1.7 1.6 1.5 1.0 2.0 10.0 2.1	Non-shield Shield Shield Shield Shield Shield Non-shield Non-shield	Plastic Plastic Plastic Plastic Plastic Plastic Plastic Plastic	DOC
LCD Monitor	M2450D-PN	202KCYQ8Q586	LG	POWER DVI	1.8 1.7	Non-shield Shield	Plastic Plastic	DOC
Printer	SRP-770	NONE	BIXOLON	PARALLEL POWER	2.0 1.7	Shield Non-shield	Plastic Plastic	DOC
Keyboard	SKG-2100UB	TAKC119482T	MONTEREY INTERNATIONAL CORP.	USB	1.6	Shield	Plastic	DOC
MOUSE	1094	X817158-002	MICROSOFT CORPORATION	USB	1.5	Shield	Plastic	DOC
External HDD	9ZR8N1-500	NA0H2L7Z	Seagate	USB	1.0	Shield	Plastic	DOC
HEADSET	COV903	NONE	COSY	STEREO	2.1	Non-shield	Plastic	-

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

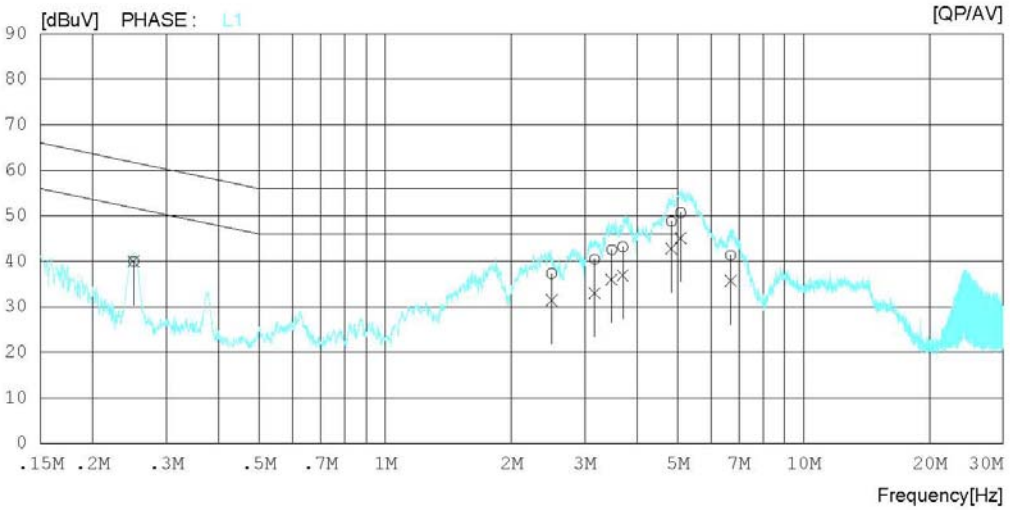
Results of Conducted Emission

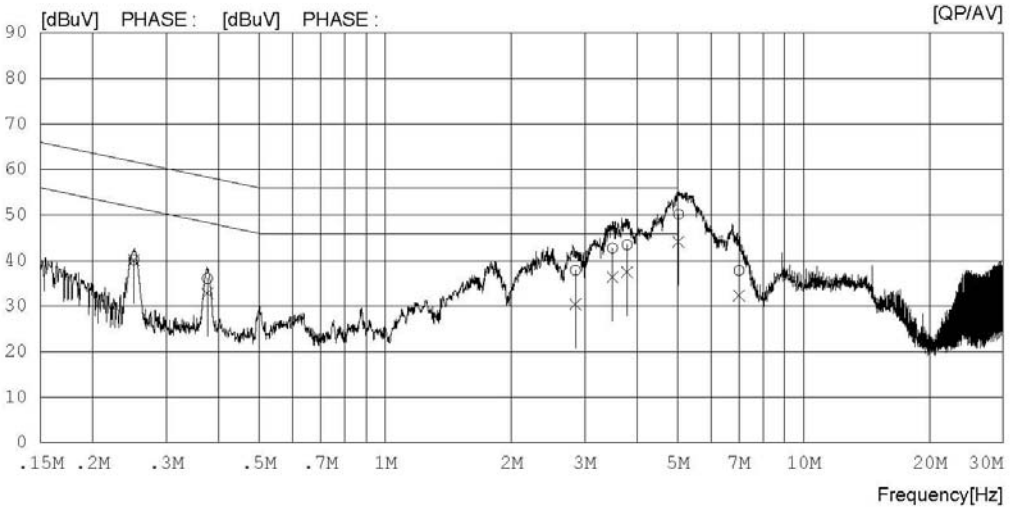
Digital EMC
Date : 2014-04-11

Model No.	:	LG-D150g	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	22 'C 38 % R.H.
Test Condition	:		Operator	:	H.S KO

Memo :

LIMIT : CISPR22_B QP
CISPR22_B AV





Results of Conducted Emission

Digital EMC
Date : 2014-04-11

Model No.	:	LG-D150g	Referrence No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi.	:	22 'C 38 % R.H.
Test Condition	:		Operator	:	H.S KO

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	0.25043	29.7	29.7	10.3	40.0	40.0	61.7	51.7	21.7	11.7	L1
2	2.49800	27.0	21.2	10.3	37.3	31.5	56.0	46.0	18.7	14.5	L1
3	3.16650	30.1	22.7	10.3	40.4	33.0	56.0	46.0	15.6	13.0	L1
4	3.47850	32.3	25.7	10.3	42.6	36.0	56.0	46.0	13.4	10.0	L1
5	3.69600	32.9	26.6	10.3	43.2	36.9	56.0	46.0	12.8	9.1	L1
6	4.83050	38.5	32.4	10.3	48.8	42.7	56.0	46.0	7.2	3.3	L1
7	5.08350	40.4	34.8	10.3	50.7	45.1	60.0	50.0	9.3	4.9	L1
8	6.69350	30.9	25.3	10.4	41.3	35.7	60.0	50.0	18.7	14.3	L1
9	0.25066	29.9	29.8	10.3	40.2	40.1	61.7	51.7	21.5	11.6	N
10	0.37571	25.8	22.5	10.3	36.1	32.8	58.4	48.4	22.3	15.6	N
11	2.84850	27.5	20.0	10.3	37.8	30.3	56.0	46.0	18.2	15.7	N
12	3.49500	32.4	26.1	10.3	42.7	36.4	56.0	46.0	13.3	9.6	N
13	3.78500	33.2	27.1	10.3	43.5	37.4	56.0	46.0	12.5	8.6	N
14	5.02350	39.9	33.8	10.3	50.2	44.1	60.0	50.0	9.8	5.9	N
15	7.01100	27.4	21.9	10.4	37.8	32.3	60.0	50.0	22.2	17.7	N

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 10 m 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.

Peak detector with 1 MHz RBW and 1 MHz VBW were used for above 1 GHz frequency range, also used linear average detector with defined in CISPR 16-1-1.

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 (10 m distance)	Class B Equipment (3 m 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

Test Result

< 30 MHz ~ 1 GHz >

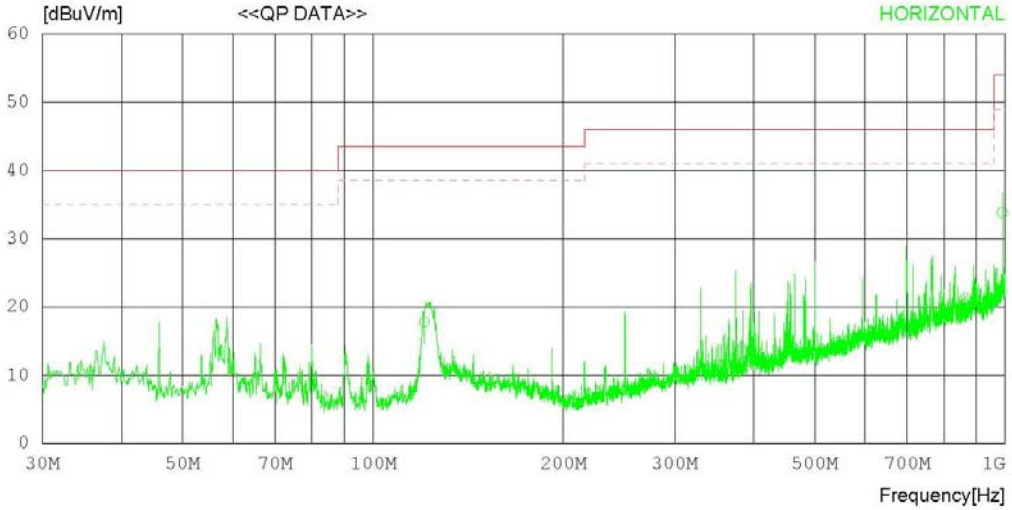
Results of Radiated Emissions

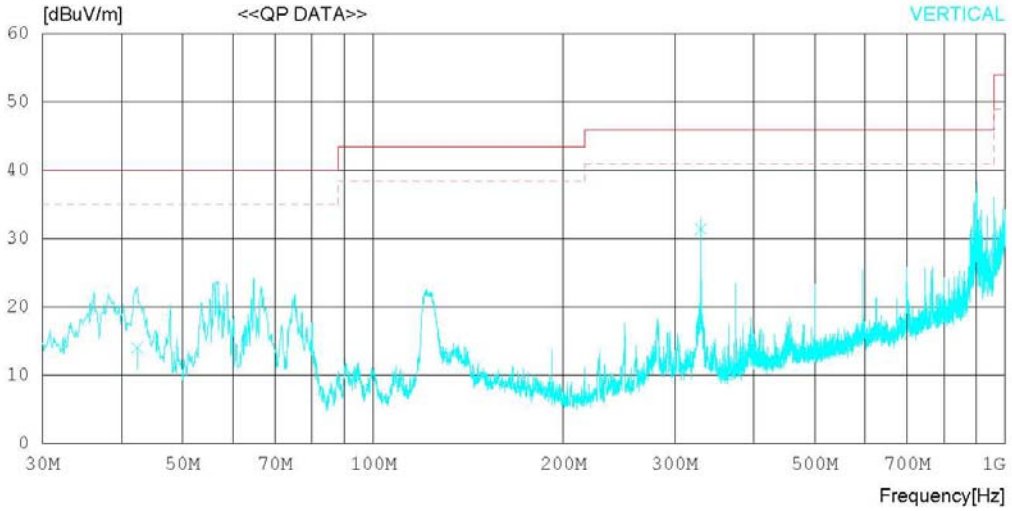
Date : 2014-04-14

Model No.	:	LG-D150g	Reference No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial	:		Temp/Humi	:	23 'C 45 % R.H.
Test Condition	:		Operator	:	H.S KO

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 5 dB





Results of Radiated Emissions

Date : 2014-04-14

Model No.	:	LG-D150g	Reference No.	:	
Type	:		Power Supply	:	120 V 60 Hz
Serial	:		Temp/Humi	:	23 'C 45 % R.H.
Test Condition	:		Operator	:	H.S KO

Memo :

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 5 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	120.575	31.4	12.1	1.0	26.7	17.8	43.5	25.7	369	359
2	989.996	33.9	23.4	3.5	27.0	33.8	54.0	20.2	301	359
----- Vertical ------										
3	42.368	27.3	12.7	0.7	26.6	14.1	40.0	25.9	132	358
4	330.039	41.9	13.9	1.9	26.3	31.4	46.0	14.6	106	92
5	901.235	31.3	22.6	3.3	26.6	30.6	46.0	15.4	100	356

< (1 ~ 6) GHz _ Peak >

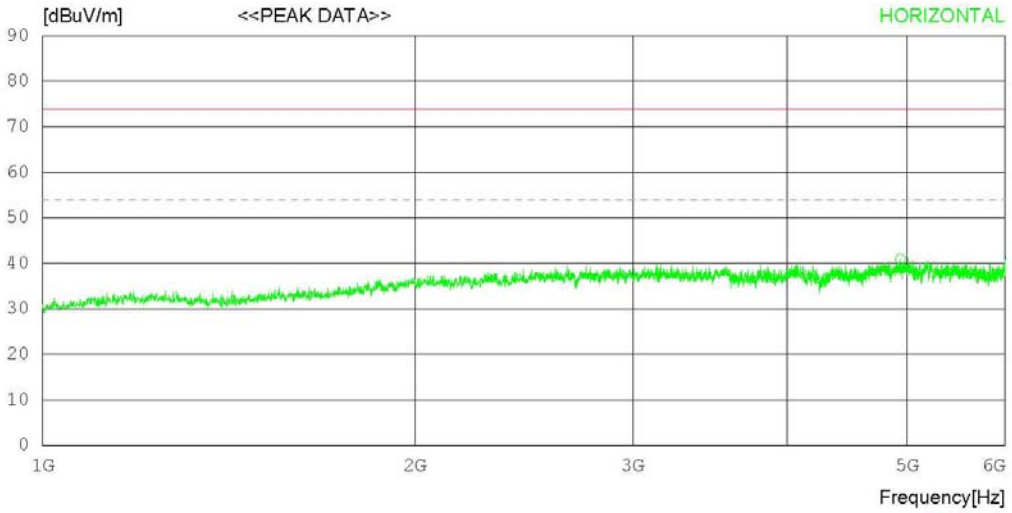
RADIATED EMISSION

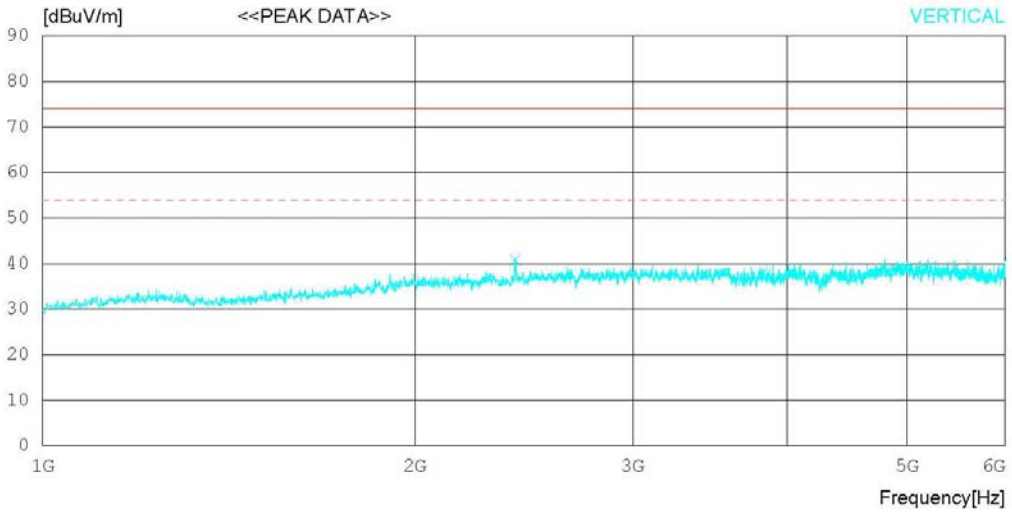
Date : 2014-04-14

Model Name	:	LG-D150g	Reference No.	:	
Model No.	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi	:	23 'C 45 % R.H.
Test Condition	:		Operator	:	H.S KO

Memo :

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





RADIATED EMISSION

Date : 2014-04-14

Model Name	:	LG-D150g	Reference No.	:	
Model No.	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi	:	23 'C 45 % R.H.
Test Condition	:		Operator	:	H.S KO

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	4937.500	36.7	-5.8	10.0	0.0	40.9	74.0	33.1	100	358
----- Vertical ------										
2	2409.625	44.1	-9.0	5.7	0.0	40.8	74.0	33.2	100	343

< (1 ~ 6) GHz _ Average >

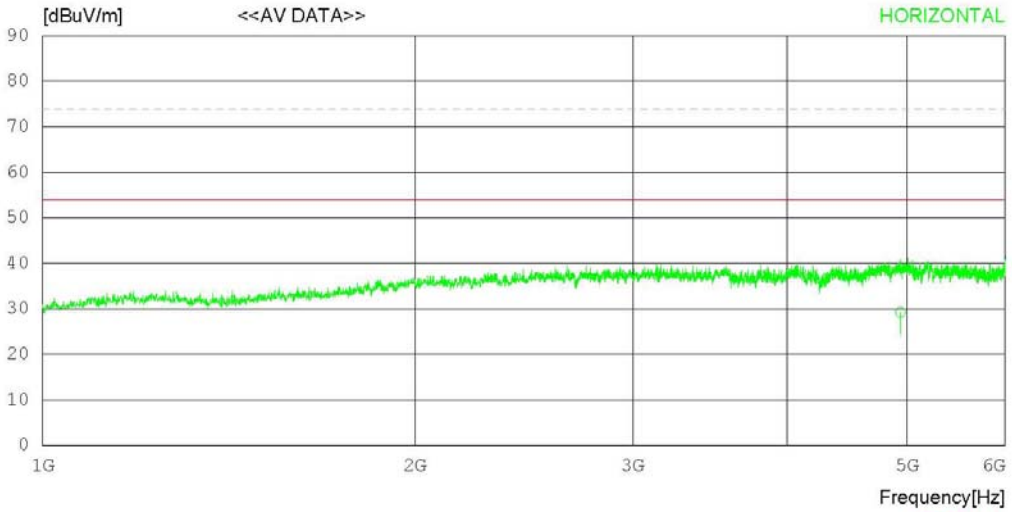
RADIATED EMISSION

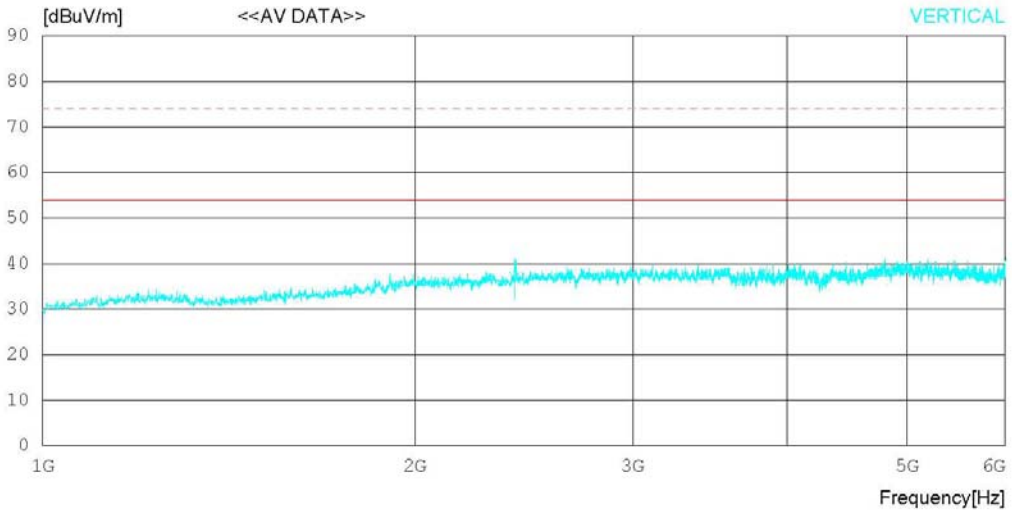
Date : 2014-04-14

Model Name	:	LG-D150g	Reference No.	:	
Model No.	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi	:	23 'C 45 % R.H.
Test Condition	:		Operator	:	H.S KO

Memo :

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





RADIATED EMISSION

Date : 2014-04-14

Model Name	:	LG-D150g	Reference No.	:	
Model No.	:		Power Supply	:	120 V 60 Hz
Serial No.	:		Temp/Humi	:	23 'C 45 % R.H.
Test Condition	:		Operator	:	H.S KO

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	4937.500	25.1	-5.8	10.0	0.0	29.3	54.0	24.7	100	358
----- Vertical ------										
2	2409.625	40.2	-9.0	5.7	0.0	36.9	54.0	17.1	100	343

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
☒	ARTIFICIAL MAINS NETWORK	PMM L2-16B	NARDA S.T.S. / PMM	000WX20305	2013.06.27	2014.06.27
☒	EMI TEST RECEIVER	ESCI7	ROHDE & SCHWARZ	100910	2014.02.27	2015.02.27
☒	LISN	NNLK8121	SCHWARZBECK	NNLK8121-580	2013.08.12	2014.08.12
☒	PULSE LIMITER	ESH3-Z2	ROHDE&SCHWARZ	101334	2014.01.08	2015.01.08
☒	50 OHM TERMINATOR	CT-01	TME	N/A	2014.01.08	2015.01.08
☐	EMI TEST RECEIVER	ESCI	ROHDE & SCHWARZ	100364	2014.02.27	2015.02.27
☐	LISN	ESH2-Z5	ROHDE & SCHWARZ	828739/006	2013.09.12	2014.09.12
☐	LISN	LISN1600	TTI	197204	2013.06.28	2014.06.28
☐	50 OHM TERMINATOR	CT-01	TME	N/A	2014.01.08	2015.01.08

2. Radiated Disturbance

Name of Instrument		Model No.	Manufacturer	Serial No.	Cal. Date	Next Cal. Date
☐	SPECTRUM ANALYZER	E4411B	AGILENT	US41062735	2013.06.27	2014.06.27
☐	AMPLIFIER	8447D	AGILENT	2443A03690	2013.06.28	2014.06.28
☒	TRILOG BROAD BAND ANTENNA	VULB9160	SCHWARZBECK	9160-3339	2013.02.05	2015.02.05
☒	HORN ANTENNA WITH PREAMPLIFIER (1~6GHZ)	3117/ MLA-0106-B03-36	ETS-LINDGREN/ TSJ	00143291/ 1784347	2013.03.06	2015.03.06
☒	LOW NOISE PRE AMPLIFIER	MLA-100K01-B01-26	TSJ	1252741	2014.02.28	2015.02.28
☒	EMI TEST RECEIVER	ESU 8	ROHDE&SCHWARZ	100348	2013.10.22	2014.10.22

Appendix 2

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None	Original	N/A	N/A