

EMI CERTIFICATION REPORT

Applicant:**LG Electronics MobileComm U.S.A., Inc.
1000 Sylvan Avenue, Englewood Cliffs NJ 07632****Date of Receipt: March 12, 2014****Date of Issue: March 25, 2014****Test Report No.: HCT-E-1403-F028****HCT FRN: 0005866421****FCC ID:****ZNFD380**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 b/g/n (2.4GHz_HT20), VoIP, Hotspot support
Model Name : LG-D380
Additional Model Name : LGD380, D380
Port / Connector(s) : USB / Earphone Port
Date of Test : March 14, 2014

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003. (See Test Report if any modifications were made for compliance)

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

HCT certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Tested By

Dong-Hyun Park
Test Engineer
EMC Team
Certification Division

Reviewed By

Sang-Jun Lee
Technical Manager
EMC Team
Certification Division

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.



DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1403-F028	March 25, 2014	Initial Release



TABLE OF CONTENTS

	PAGE
1. GENERAL INFORMATION	4
1.1 Product Description.....	4
1.2 Related Submittal(s) / Grant(s)	4
1.3 Test Facility	5
1.4 Tested System Details	6
1.5 Cable Description.....	7
1.6 Noise Suppression Parts on Cable. (I/O Cable)	7
2. DESCRIPTION OF TEST	8
2.1 Measurement of Conducted Emission.....	8
2.2 Measurement of Radiated Emission.....	9
2.3 Configuration of Tested System	10
3. PRELIMINARY TEST	11
3.1 Conducted Emission Test	11
3.2 Radiated Emission Test	11
4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY	12
4.1 Conducted Emission Test	12
4.2 Radiated Emission Test	17
5. TEST EQUIPMENT	19
6. CONCLUSION.....	20

ATTACHMENT: TEST SETUP PHOTOGRAPHS



1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test is manufactured by **LG Electronics MobileComm U.S.A., Inc.**
Its basic purpose is used for communications.

Model	LG-D380
FCC ID	ZNFD380
Additional Model	LGD380, D380
EUT Type	GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 b/g/n (2.4GHz_HT20), VoIP, Hotspot support
TX Frequency	824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 826.40 MHz to 846.60 MHz (WCDMA 850)
RX Frequency	869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 871.40 MHz to 891.60 MHz (WCDMA 850)

1.2 Related Submittal(s) / Grant(s)

Original submittal only.



1.3 Test Facility

Test site is located at 74, SEOICHEON-RO, 578BEON-GIL, MAJANG-MYEON, ICHEON-SI, GYEONGGI-DO, SOUTH KOREA. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4-2003.

Measurement Facilities	Reg. No.
Radiated Field strength measurement facility (3 m)	90661 (February 28, 2014)
Radiated Field strength measurement facility (10 m)	90661 (February 28, 2014)



1.4 Tested System Details

Device Type	Model Name	Manufacturer	FCC ID / DoC	Connected To
EUT	LG-D380	LG	ZNFD380	Notebook PC Ear-phone
USB cable	EAD62377902	Ningbo Broad	-	E.U.T Notebook PC
Ear-phone	EAB62808711	I-SOUND	-	E.U.T
Notebook PC	ProBook6560b	H.P	DoC	EUT Notebook PC adaptor
Notebook PC adaptor	PPP009D	DELTA Electronics (JIANGSU)LTD	-	Notebook PC
Gateway	MV440	Axesstel	PH7MV440	Notebook PC, Adaptor
Mouse	Serial 2 button mouse	Radio shack	FSUGMZE3	Notebook PC
Adaptor	DA-60M12	Yang Ming Industrial	-	Gateway
RJ45 cable	-	-	-	Notebook PC, Gateway
Micro SD card	8 GB	SanDisk	-	EUT



1.5 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	Micro USB	Y	Y	(P,D)1.0
	Ear-phone	N/A	N	(D)1.2
Notebook PC	RJ 45	N/A	N	(D)1.5
	Serial (Mouse)	N/A	Y	(D)1.8
	DC in	N	N/A	(P)1.8
Gateway	DC in	N	N/A	(P)1.8

* The marked "(D)" means the data cable and "(P)" means the power cable.

1.6 Noise Suppression Parts on Cable. (I/O Cable)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
EUT	Micro USB	N	N/A	Y	Both End
	Ear-phone	N	N/A	Y	EUT End
Notebook PC	RJ 45	N	N/A	N	N/A
	Serial (Mouse)	N	N/A	Y	Notebook PC End



2. DESCRIPTION OF TEST

2.1 Measurement of Conducted Emission

The test procedure was in accordance with ANSI C63.4-2003, Clause 7

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN).
Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.
- c. The frequency range from 150 kHz to 30 MHz was searched.

[Conducted Emission Limits]

Frequency (MHz)	Resolution Bandwidth	Quasi-Peak(dB μ V)	Average(dB μ V)
0.15 to 0.5	9 kHz	66 to 56*	56 to 46*
0.5 to 5	9 kHz	56	46
5 to 30	9 kHz	60	50

**Decreases with the logarithm of the frequency.*



2.2 Measurement of Radiated Emission

The test procedure was in accordance with ANSI C63.4-2003, Clause 8

- a. The EUT was placed on the top of a turn table 0.8 meters above the ground at a 3 m shield room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from 1 m to 4 m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 m to 4 m and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to Peak and Average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- g. The antenna height scans apply for both horizontal and vertical polarizations, except that for vertical polarization, the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the lowest antenna element clears the site reference ground plane by at least 25 cm.

[Radiated Emission Limits]

Frequency (MHz)	Antenna Distance (m)	Field Strength ($\mu V/m$)	Quasi-Peak (dB $\mu V/m$)
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0
Frequency (MHz)	Antenna Distance (m)	Peak (dB $\mu V/m$)	Average (dB $\mu V/m$)
Above 1 000	3	74	54

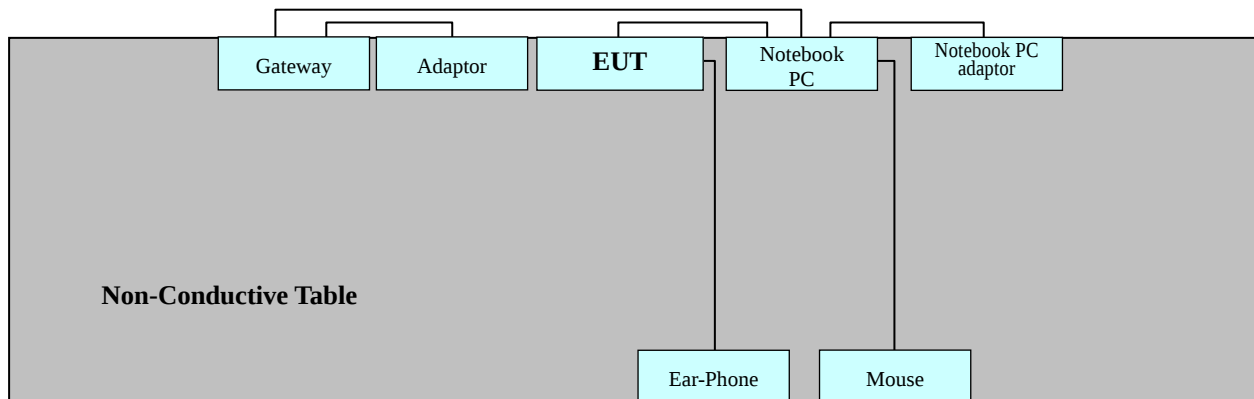


2.2.1 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

2.3 Configuration of Tested System



Power Line: 120 VAC, 60 Hz



3. PRELIMINARY TEST

3.1 Conducted Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

Operation Mode: ☒ Data Communication mode

3. 2 Radiated Emission Test

- It was tested Data Communication mode, after connecting all peripheral devices.

Operation Mode: ☒ Data Communication mode



4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

4.1 Conducted Emission Test

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

Limit Apply to	: FCC PART 15 Subpart B Class B
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Operation Mode	: Data Communication mode
Temperature	: 20.3°C
Humidity Level	: 24.8 %
Test Date	: March 14, 2014

Frequency (MHz)	Corr. (dB)	Conductor	Quasi-Peak			Average		
			Limit (dBuV)	Measurement Level (dBuV)	Result Level (dBuV)	Limit (dBuV)	Measurement Level (dBuV)	Result Level (dBuV)
0.1950	9.7	N	63.8	40.2	49.9	53.8	25.4	35.1
0.1950	9.7	L1	63.8	41.4	51.1	53.8	25.2	34.9
0.2040	9.7	N	63.4	39.5	49.2	53.4	25.5	35.2
0.2085	9.7	L1	63.3	40.3	50.0	53.3	-	-

※ Calculation Formula:

1. Conductor L1 = Hot, Conductor N = Neutral
 2. Corr. = LISN Factor + Cable Loss
 3. Measurement Level (Receiver Reading) = Result Level - Corr.
 4. Result Level = Measurement Level + Corr.
- * 'Result Level' in above table is same as the 'Quasi-Peak' and 'CAverage' of the Measurement Data Graph (Refer to page 13 to page 16 for details.)



EMI Auto Test(1)

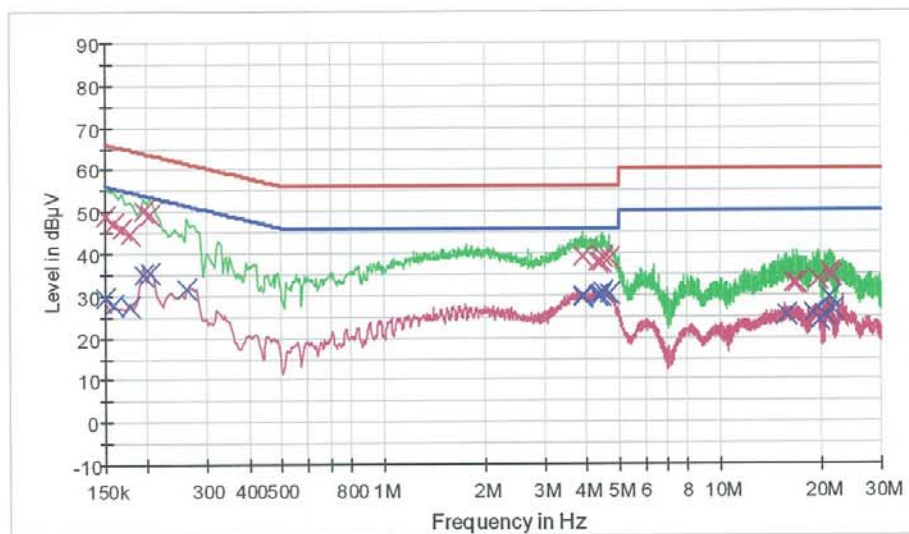
1 / 2

HCT TEST Report

Common Information

EUT: LG-D380
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: DATA MODE
 Operator Name:

FCC CLASS B



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK+
 — Preview Result 2-AVG × Final Result 1-QPK × Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	48.9	9.000	Off	N	9.7	17.1	66.0
0.159000	47.2	9.000	Off	N	9.7	18.3	65.5
0.168000	45.9	9.000	Off	N	9.7	19.2	65.1
0.177000	44.8	9.000	Off	N	9.7	19.8	64.6
0.195000	49.9	9.000	Off	N	9.7	13.9	63.8
0.204000	49.2	9.000	Off	N	9.7	14.2	63.4
3.893000	39.3	9.000	Off	N	10.1	16.7	56.0
3.911000	39.0	9.000	Off	N	10.1	17.0	56.0
4.329500	37.7	9.000	Off	N	10.1	18.3	56.0
4.410500	37.9	9.000	Off	N	10.1	18.1	56.0
4.460000	39.2	9.000	Off	N	10.1	16.8	56.0
4.671500	38.7	9.000	Off	N	10.1	17.3	56.0
16.493000	32.9	9.000	Off	N	10.7	27.1	60.0
16.853000	32.7	9.000	Off	N	10.7	27.3	60.0
19.431500	33.6	9.000	Off	N	10.8	26.4	60.0
21.024500	35.6	9.000	Off	N	10.8	24.4	60.0

3/14/2014

9:46:14



EMI Auto Test(1)

2 / 2

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
21.236000	35.4	9.000	Off	N	10.8	24.6	60.0
21.384500	34.3	9.000	Off	N	10.8	25.7	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	29.6	9.000	Off	N	9.7	26.4	56.0
0.159000	27.7	9.000	Off	N	9.7	27.8	55.5
0.177000	27.3	9.000	Off	N	9.7	27.3	54.6
0.195000	35.1	9.000	Off	N	9.7	18.7	53.8
0.204000	35.2	9.000	Off	N	9.7	18.2	53.4
0.262500	31.6	9.000	Off	N	9.7	19.8	51.4
3.893000	29.9	9.000	Off	N	10.1	16.1	46.0
3.920000	29.7	9.000	Off	N	10.1	16.3	46.0
4.329500	29.8	9.000	Off	N	10.1	16.2	46.0
4.410500	30.0	9.000	Off	N	10.1	16.0	46.0
4.460000	30.7	9.000	Off	N	10.1	15.3	46.0
4.671500	30.4	9.000	Off	N	10.1	15.6	46.0
15.647000	25.4	9.000	Off	N	10.7	24.6	50.0
18.905000	25.8	9.000	Off	N	10.8	24.2	50.0
19.634000	24.2	9.000	Off	N	10.8	25.8	50.0
20.475500	25.2	9.000	Off	N	10.8	24.8	50.0
21.236000	29.4	9.000	Off	N	10.8	20.6	50.0
21.515000	26.6	9.000	Off	N	10.9	23.4	50.0

3/14/2014

9:46:14



EMI Auto Test(1)

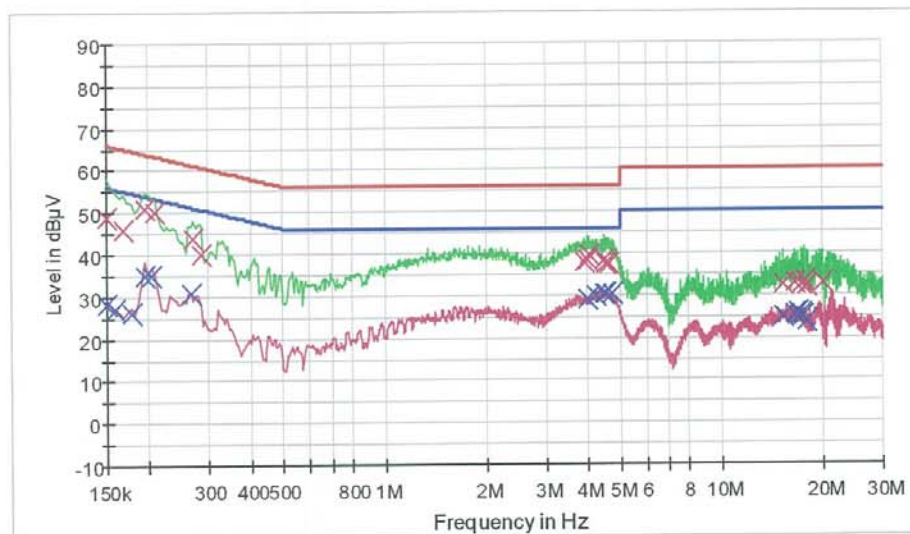
1 / 2

HCT TEST Report

Common Information

EUT: LG-D380
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: DATA MODE
 Operator Name:

FCC CLASS B



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK
 — Preview Result 2-AVG — Final Result 1-CPK — Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	49.0	9.000	Off	L1	9.7	17.0	66.0
0.168000	45.9	9.000	Off	L1	9.7	19.2	65.1
0.195000	51.1	9.000	Off	L1	9.7	12.7	63.8
0.208500	50.0	9.000	Off	L1	9.7	13.3	63.3
0.271500	43.9	9.000	Off	L1	9.7	17.2	61.1
0.285000	39.9	9.000	Off	L1	9.7	20.8	60.7
3.929000	38.0	9.000	Off	L1	10.1	18.0	56.0
3.992000	38.2	9.000	Off	L1	10.1	17.8	56.0
4.037000	39.4	9.000	Off	L1	10.1	16.6	56.0
4.464500	38.4	9.000	Off	L1	10.1	17.6	56.0
4.518500	37.7	9.000	Off	L1	10.1	18.3	56.0
4.626500	37.5	9.000	Off	L1	10.1	18.5	56.0
15.156500	32.3	9.000	Off	L1	10.7	27.7	60.0
16.497500	33.0	9.000	Off	L1	10.8	27.0	60.0
17.213000	32.3	9.000	Off	L1	10.8	27.7	60.0
17.708000	33.4	9.000	Off	L1	10.8	26.6	60.0

3/14/2014

9:39:49



EMI Auto Test(1)

2 / 2

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
17.847500	32.1	9.000	Off	L1	10.8	27.9	60.0
19.971500	32.8	9.000	Off	L1	10.9	27.2	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	28.3	9.000	Off	L1	9.7	27.7	56.0
0.159000	26.8	9.000	Off	L1	9.7	28.7	55.5
0.177000	26.2	9.000	Off	L1	9.7	28.4	54.6
0.195000	34.9	9.000	Off	L1	9.7	18.9	53.8
0.204000	35.1	9.000	Off	L1	9.7	18.3	53.4
0.267000	30.9	9.000	Off	L1	9.7	20.3	51.2
3.992000	29.0	9.000	Off	L1	10.1	17.0	46.0
4.230500	30.1	9.000	Off	L1	10.1	15.9	46.0
4.460000	30.5	9.000	Off	L1	10.1	15.5	46.0
4.523000	30.5	9.000	Off	L1	10.1	15.5	46.0
4.536500	30.5	9.000	Off	L1	10.1	15.5	46.0
4.743500	30.2	9.000	Off	L1	10.1	15.8	46.0
15.156500	24.9	9.000	Off	L1	10.7	25.1	50.0
16.497500	25.3	9.000	Off	L1	10.8	24.7	50.0
16.925000	25.6	9.000	Off	L1	10.8	24.4	50.0
17.213000	25.1	9.000	Off	L1	10.8	24.9	50.0
17.352500	24.8	9.000	Off	L1	10.8	25.2	50.0
17.847500	23.7	9.000	Off	L1	10.8	26.3	50.0

3/14/2014

9:39:49



4.2 Radiated Emission Test

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

-For Measurement Below 1 GHz

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak

6 dB Bandwidth: : RBW 120 kHz, VBW 300 kHz

Operation Mode : Data Communication mode

Temperature : 20.2°C

Humidity Level : 25.5 %

Test Date : March 14, 2014

Frequency (MHz)	Reading (dBuV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Total Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
43.00	6.52	V	1.0	12.25	3.43	40.0	22.2	17.8
58.70	13.09	V	1.0	11.88	3.53	40.0	28.5	11.5
86.50	12.62	H	2.5	7.67	3.72	40.0	24.0	16.0
625.00	13.54	V	1.0	19.97	5.39	46.0	38.9	7.1

※ Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Reading (Receiver Reading) = Total Level – Correction Factor
3. Margin = Limit - Total Level
4. Total Level = Quasi-Peak



-For Measurement Above 1 GHz

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Peak mode: Peak (RBW: 1 MHz, VBW: 3 MHz)
: Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)

Operation Mode : Data Communication mode

Temperature : 20.2°C

Humidity Level : 25.5 %

Test Date : March 14, 2014

Frequency (GHz)	Polarity (H/V)	Antenna Height (m)	Peak			Average		
			Total Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Total Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1.3286	V	1.0	47.2	74	26.8	27.3	54	26.7
1.9988	V	1.0	52.7	74	21.3	29.5	54	24.5
2.6661	V	1.1	50.8	74	23.2	31.6	54	22.4

※ Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Margin = Limit - Total Level



5. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Name</u>	<u>Serial Number</u>	<u>Calibration Cycle</u>	<u>Next CAL Date</u>
<u>Conducted Emission</u>					
☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	2015.01.24
☒ LISN	EMCO	3816/2SH	9706-1070	1 year	2014.04.26
☒ LISN	Rohde & Schwarz	ENV216	100073	1 year	2015.01.29
☐ EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	2014.06.23
☐ LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	2014.07.03
☐ Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	1 year	2014.07.03

Radiated Emission

-For measurement below 1 GHz

☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2015.04.07
☒ Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	2014.12.17
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Turn Table	HD GmbH	2090	9702/1224	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
☐ Trilog Antenna	Schwarzbeck	VULB9168	185	2 year	2015.04.16
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-

-For measurement above 1 GHz

☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2015.04.07
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Turn Table	HD GmbH	2090	9702/1224	N/A	-
☐ Power Amplifier	CERNEX	CBLU1183540	21690	1 year	2014.07.12
☒ Power Amplifier	CERNEX	CBLU1183540	22964	1 year	2014.07.24
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	2014.12.13
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☐ Power Amplifier	CERNEX	CBLU1183540	21691	1 year	2014.07.24



6. CONCLUSION

The data collected shows that the **EUT type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 b/g/n(2.4GHz_HT20), VoIP, Hotspot support, FCC ID: ZNFD380, Model: LG-D380** complies with §15.107 and §15.109 of the FCC rules.