

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE

FCC Certification

Applicant Name:
LG Electronics MobileComm U.S.A., Inc.

Address:
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue:

August 16, 2013

Test Site/Location:

HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon,
Icheon-si, Kyunggi-Do, Korea

Report No.: HCTR1308FR28

HCT FRN: 0005866421

FCC ID : ZNFD683

APPLICANT : LG Electronics MobileComm U.S.A., Inc.

FCC Model(s): LG-D683
Additional FCC Model(s): LGD683, D683
EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n(2.4GHz), VoIP, Hotspot support
RF Output Field Strength 11.50 dBuV/m
Frequency of Operation: 13.559973 MHz
Modulation type ASK
FCC Classification: Low Power Communication Device – Transmitter
FCC Rule Part(s): FCC Part 15.225 Subpart C

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C.853(a)



Report prepared by

: Jong Seok Lee

Test engineer of RF Team



Approved by

: Chang Seok Choi

Manager of RF Team

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FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1308FR28	Date of Issue: August 16, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n(2.4GHz), VoIP, Hotspot support		FCC ID: ZNFD683

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1308FR28	August 16, 2013	- First Approval Report

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1. GENERAL INFORMATION

Applicant: LG Electronics MobileComm U.S.A., Inc.
Address: 1000 Sylvan Avenue, Englewood Cliffs NJ 07632
FCC ID: ZNFD683
EUT: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n(2.4GHz), VoIP, Hotspot support
Model name(s): LG-D683
Additional Model name(s): LGD683, D683
Date of Test: August 06, 2013 ~ August 12, 2013
Place of Tests: HCT Co., Ltd.
105-1, Jangam-ri , Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, KOREA.
(IC Recognition No. : 5944A-3)

2. EUT DESCRIPTION

Product	GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n(2.4GHz), VoIP, Hotspot support
FCC Model Name	LG-D683
Additional FCC Model Name	LGD683, D683
Power Supply	DC 3.8 V
Battery Type	Li-ion Battery(Standard)
Frequency of Operation	11.50 dBuV/m
Transmit Power	13.559973 MHz
Modulation Type	ASK
Antenna Specification	Manufacturer: AT&C Co., LTD. Antenna type: FPCB Antenna

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3. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices(ANSI C63.10-2009).

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.225 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2009) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.3 of ANSI C63.10. (Version: 2009).

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

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3.5 STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance With

FCC Part 15.Subpart C

Regulation	Measurement standard	Range
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(a)	ANSI C63.10:2009	13.553MHz to 13.567MHz
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(d)	ANSI C63.10:2009	outside of the 13.110-14.010 MHz band
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.209	ANSI C63.10:2009	9kHz to 30MHz
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.209	ANSI C63.10:2009	30MHz to 1GHz
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.207	ANSI C63.10:2009	150kHz to 30MHz
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(e)	ANSI C63.10:2009	0.01% of nominal
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.215(c)	ANSI C63.10:2009	-

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The 10 m semi anechoic chamber used to collect the Conducted and Radiated data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4. Detailed description of test facilities was submitted to the Commission and accepted dated Sep. 03, 2010 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned loop, dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

* The antennas of this E.U.T are permanently attached.

*The E.U.T Complies with the requirement of §15.203

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7. TEST SUMMARY

The results in this report apply only to sample tested

Regulation	Test Type	Range	Result
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(a)	Radiated Electric Field Emissions	13.553MHz to 13.567MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(b)	Radiated Electric Field Emissions	13.410MHz to 13.553MHz and 13.567MHz to 13.710MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(c)	Radiated Electric Field Emissions	13.110 MHz to 13.410 MHz and 13.710 MHz to 14.010 MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.209 (d)	Radiated Electric Field Emissions	9kHz to 30MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.209	Radiated Electric Field Emissions	30MHz to 1GHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.207	AC power conducted emissions	150kHz to 30MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(e)	Frequency Stability	0.01% of nominal	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.215(c)	20 dB Bandwidth	-	Pass

8. RADIATED EMISSION MEASUREMENT

Requirement(s): 15.209, 15.225

Except as provided elsewhere in this paragraph the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Minimum Standard: FCC Part 15.225 / 15.209

Rule Part	Frequency (MHz)	Limit
Part 15.209	0.009 ~ 0.490	2400/F(kHz)uV/m@300
	0.490 ~1.705	24000/F(kHz)uV/m@30
	1.705 ~ 30	30 uV/m@30
	30 ~ 88	100 ** uV/m@3m
	88 ~ 216	150 ** uV/m@3m
	216 ~ 960	200 ** uV/m@3m
	Above 960	500 uV/m@3m

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

15.225 Operation within the band 13.110 – 14.010 MHz.

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter (= 84 dBuV/m) at 30 meters.

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter (=50.5dBuV/m) at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter (=40.5 dBuV/m) at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

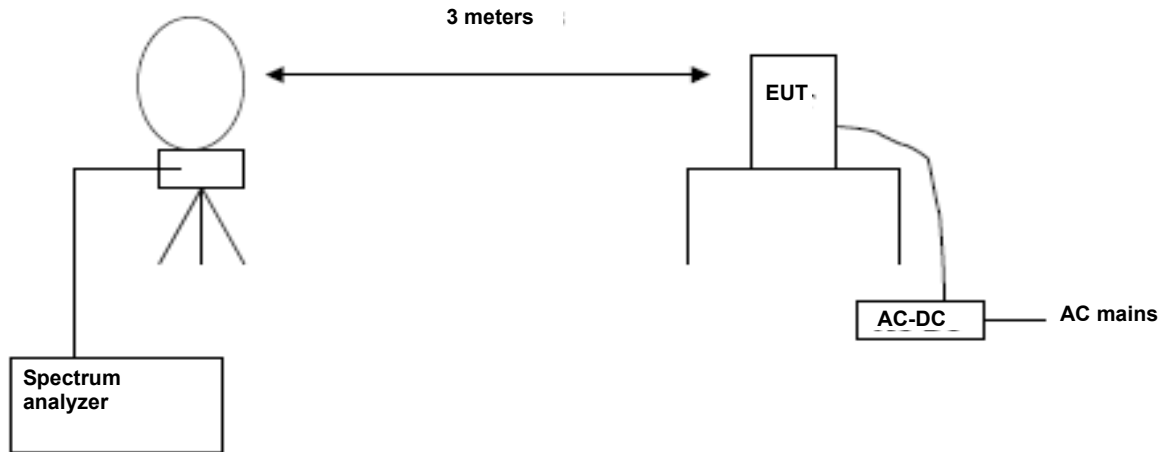
(e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

(f) In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.

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8.1. RADIATED EMISSION 9 kHz – 30 MHz

Test Set-up



Test Procedure

The EUT was placed on a non-conductive table located on a large open test site. The loop antenna was placed at a location 3m from the EUT. Radiated emissions were measured with the loop antenna both parallel and perpendicular to the plane of the EUT loop antenna.

The limit is converted from microvolts/meter to decibel microvolts/meter. Sample Calculation:

Corrected Amplitude = Raw Amplitude(dBμV/m) + ACF(dB) + Cable Loss(dB) – Distance Correction Factor

The spectrum analyzer is set to:

Frequency Range = 9 kHz ~ 1GHz

RBW = 9 kHz (9 kHz ~ 30MHz)
= 120 kHz (30 MHz ~ 1 GHz)

Trace Mode = max hold

Detector Mode = peak / Quasi-peak

Sweep time = auto

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Test Results

13.553 MHz-13.567 MHz						
Frequency (MHz)	Read Level (dBuV)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.559973	41.69(H)*	9.81	-40	11.50	84	72.50
13.559973	34.59(V)*	9.81	-40	4.40	84	79.60

13.410 MHz-13.553 MHz and 13.567 MHz-13.710 MHz						
Frequency (MHz)	Read Level (dBuV)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.4585	27.50	9.81	-40	-2.69	50.47	53.16
13.5670	40.91	9.81	-40	10.72	50.47	39.75

13.110 MHz – 13.410 MHz and 13.710 MHz-14.010 MHz						
Frequency (MHz)	Read Level (dBuV)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.3556	24.94	9.81	-40	-5.25	40.51	45.76
13.7782	24.22	9.81	-40	-5.97	40.51	46.48

9 kHz -30 MHz						
Frequency (MHz)	Read Level (dBuV)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
15.0315	23.71	9.81	-40	-6.48	29.54	36.02



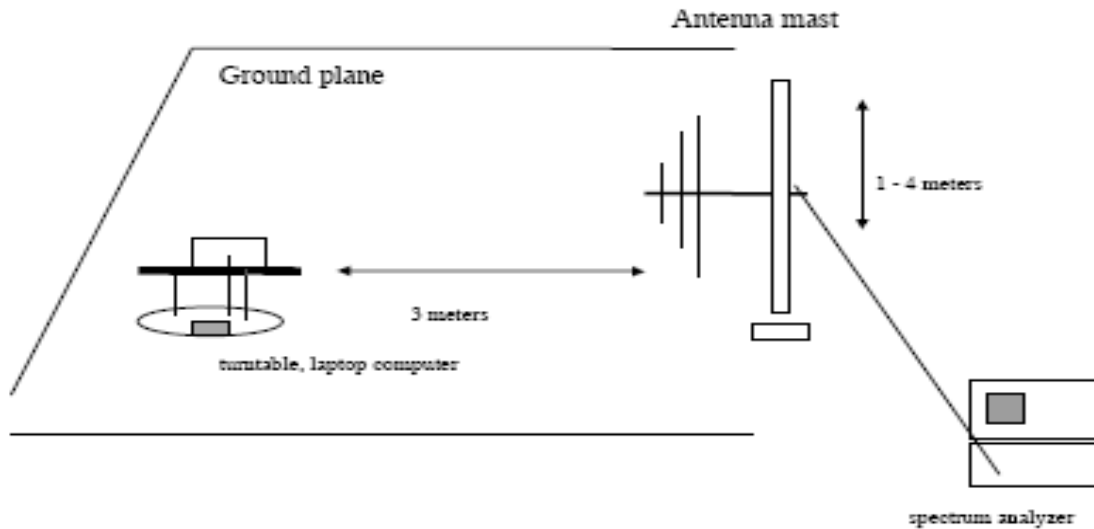
Note :

1. Distance Correction Below 30MHz = $40\log(3\text{m}/30\text{m}) = -40 \text{ dB}$
Measurement Distance : 3 m (Below 30 MHz)
2. Factor = Antenna Factor + Cable Loss
3. Result Level = Read Level + Factor + Distance Correction
4. Margin = Limit – Result Level
5. (H)* and (V)* mean antenna polarization.
6. Worst case of operating mode is type A, analog mode and 106 kbps.

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8.2. RADIATED EMISSION 30 MHz – 1000 MHz

Test Set-up



Test Procedures: Radiated emissions were measured according to ANSI C63.10.

The EUT was set to transmit at the highest output power.

The EUT was set 3 meter away from the measuring antenna.

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBμV	dB /m	dB	(H/V)	dBμV/m	dBμV/m	dB
No Critical peaks found							

Remark

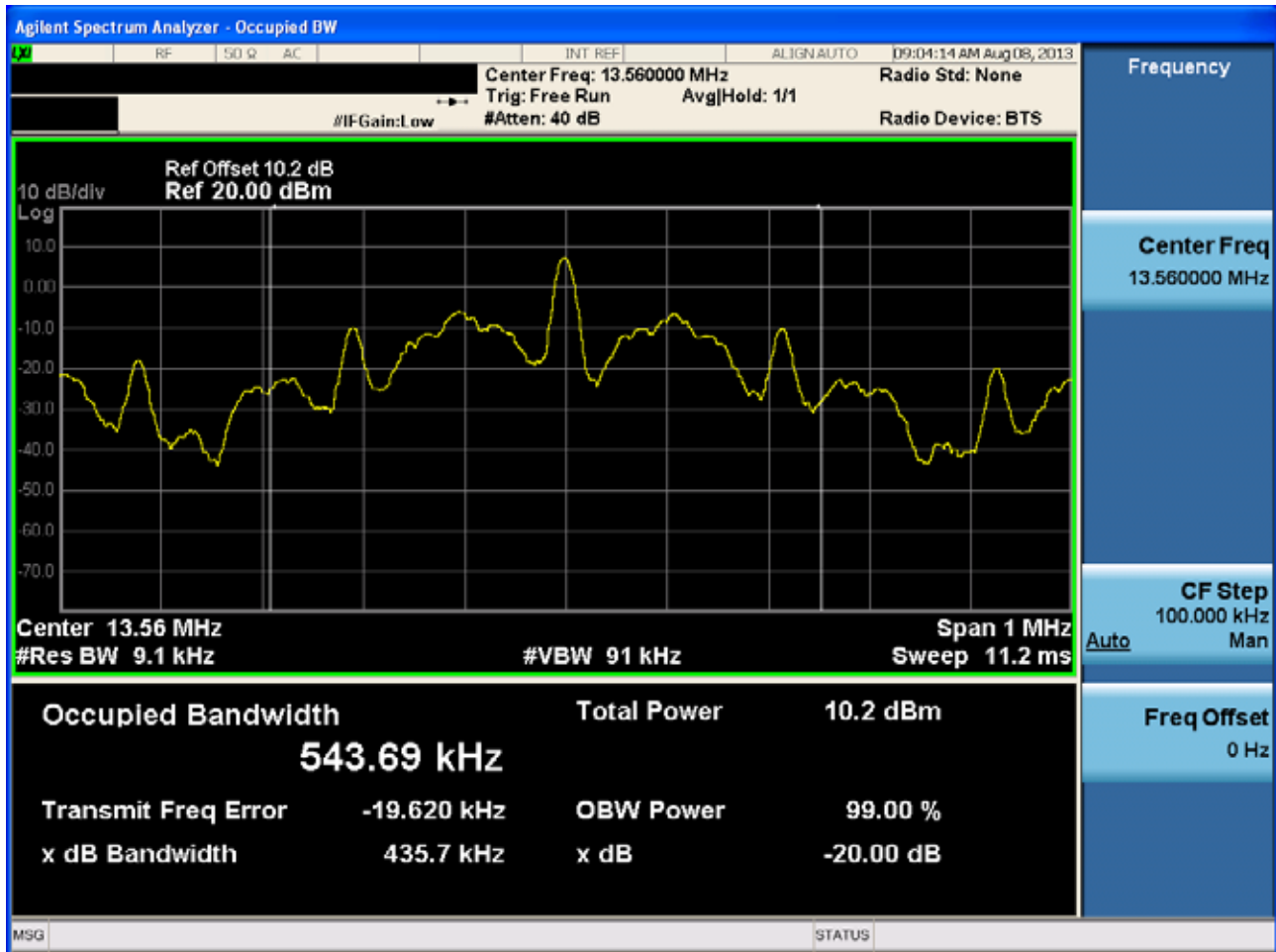
1. Result Level = Read Level + (Antenna Factor+ Cable Loss)
2. Margin = Limit – Result Level

9. EMISSION BANDWIDTH PLOT.

Requirement(s):

Test Set-up: The EUT was connected to a spectrum analyzer.

Test Procedure: The 20 dB bandwidth was measured by using a spectrum analyzer.



10. FREQUENCY TOLERANCE

Procedure: Part 15.225, ANSI 63.10

If required, the operating or transmitting frequency of an intentional radiator should be measured in accordance with the following procedure to ensure that the device operates outside certain precluded frequency bands and within the frequency range. No modulation needs to be supplied to the intentional radiator during these tests, unless modulation is required to produce an output, e.g., single-sideband suppressed carrier transmitters.

The frequency stability of the transmitter is measured by:

- a) Temperature: The temperature is varied from -20°C to + 50°C using an environmental chamber.
- b) For battery operated equipment, the equipment tests shall be performed using a new battery.

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency.

Measurement Result:

VOLTAGE (%)	POWER	Temperature (°C)	Frequency (MHz)	Frequency Error (Hz)
100%	3.8 V	-20	13.560151	178
100%		-10	13.560254	281
100%		0	13.560104	132
100%		10	13.560084	111
100%		20	13.559973	0
100%		30	13.560187	215
100%		40	13.560008	35
100%		50	13.560143	170

Notes:

1. The EUT is supplied with the fully re-charged battery.

11. POWERLINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

Test Plots

Unterminated the Antenna

Conducted Emissions (Line 1)

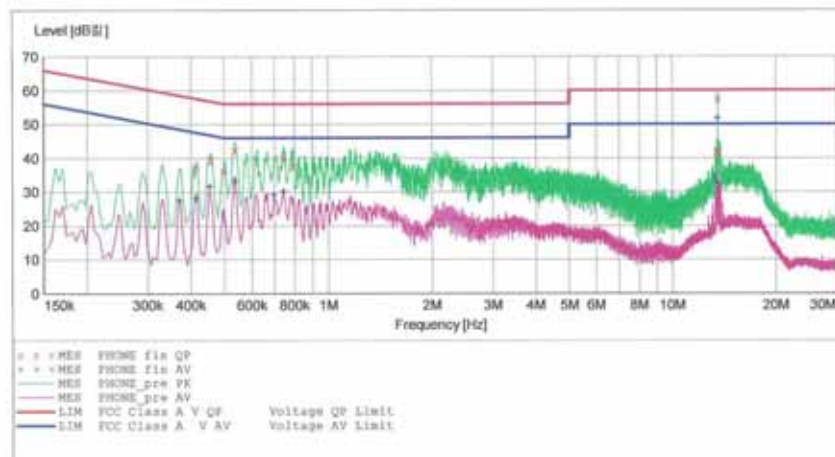
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EMC

EUT: LG-D683
 Manufacturer: LG
 Operating Condition: NFC MODE
 Test Site: SHIELD ROOM
 Operator: JC SHIN
 Test Specification: FCC PART15 B
 Comment: H(Underminated)

SCAN TABLE: "FCC CLASS B(H)"

Short Description:		KN22 CLASS B				
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.414001	37.30	9.8	58	20.2	---	---
0.458001	39.40	9.8	57	17.3	---	---
0.500000	36.20	9.8	56	19.8	---	---
0.536000	42.40	9.8	56	13.6	---	---
0.744000	40.20	9.8	56	15.8	---	---
0.792000	37.60	9.8	56	18.4	---	---
13.456000	42.20	10.7	60	17.8	---	---
13.560000	57.60	10.7	60	2.4	---	---
13.656000	41.70	10.7	60	18.3	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.370001	27.50	9.8	49	21.0	---	---
0.414001	28.20	9.8	48	19.4	---	---
0.454001	31.60	9.8	47	15.2	---	---
0.536000	33.20	9.8	46	12.8	---	---
0.696000	29.10	9.8	46	16.9	---	---
0.744000	30.20	9.8	46	15.8	---	---
13.348000	34.30	10.7	50	15.7	---	---
13.444000	32.90	10.7	50	17.1	---	---
13.560000	51.60	10.7	50	-1.6	---	---

Conducted Emissions (Line 2)

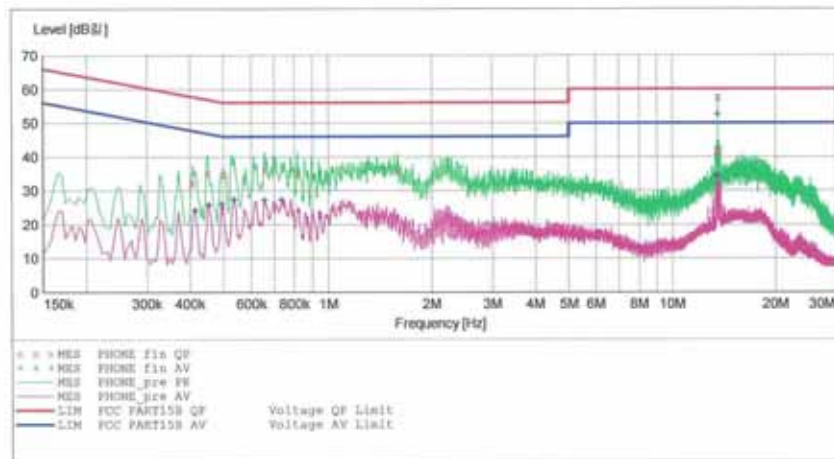
HCT

EMC

EUT: LG-D683
 Manufacturer: LG
 Operating Condition: NFC MODE
 Test Site: SHIELD ROOM
 Operator: JC SHIN
 Test Specification: FCC PART15 B
 Comment: N(Unterminated)

SCAN TABLE: "FCC CLASS B(N)"

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.406001	32.30	10.0	58	25.4	---	---
0.450001	35.30	10.0	57	21.6	---	---
0.500000	34.80	10.0	56	21.2	---	---
0.656000	36.20	10.0	56	19.8	---	---
0.816000	35.40	10.0	56	20.6	---	---
1.596000	35.80	10.1	56	20.2	---	---
13.468000	41.70	10.9	60	18.3	---	---
13.560000	57.50	10.9	60	2.5	---	---
13.656000	41.80	11.0	60	18.2	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-08-12 7:49오.후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.414001	24.10	10.0	48	23.5	---	---
0.454001	25.70	10.0	47	21.1	---	---
0.494001	25.90	10.0	46	20.2	---	---
0.536000	27.40	10.0	46	18.6	---	---
0.656000	27.10	10.0	46	18.9	---	---
0.736000	27.30	10.0	46	18.7	---	---
13.468000	34.30	10.9	50	15.7	---	---
13.560000	52.50	10.9	50	-2.5	---	---
13.656000	34.10	11.0	50	15.9	---	---

Terminated the Antenna Conducted Emissions (Line 1)

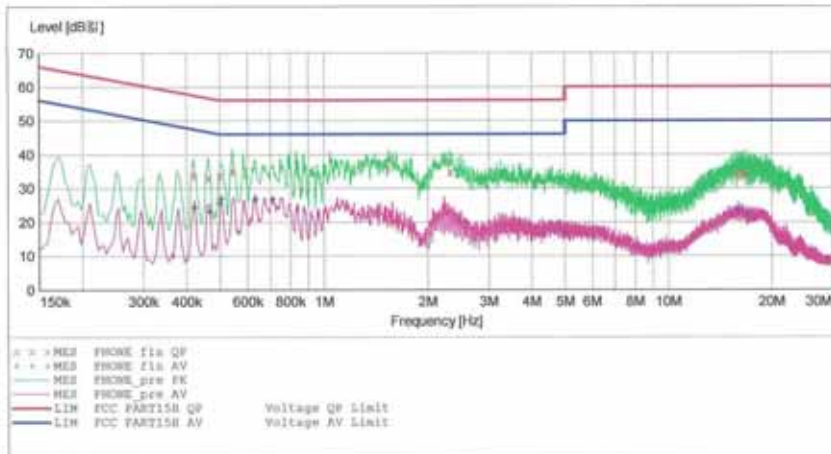
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EMC

EUT: LG-D683
Manufacturer: LG
Operating Condition: NFC MODE
Test Site: SHIELD ROOM
Operator: JC SHIN
Test Specification: FCC PART15 B
Comment: N(Terminated)

SCAN TABLE: "FCC CLASS B(N)"

Short Description:		KN22 CLASS B					
Start	Stop	Step	Detector	Meas.	IF	Transducer	
Frequency	Frequency	Width		Time	Bandw.		
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				



MEASUREMENT RESULT: "PHONE_fin QP"

2013-08-12 7:44오썻						
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.418001	34.00	10.0	58	23.5	---	---
0.462001	33.10	10.0	57	23.5	---	---
0.500000	33.90	10.0	56	22.1	---	---
0.544000	35.10	10.0	56	20.9	---	---
1.540000	36.00	10.1	56	20.0	---	---
2.324000	34.80	10.2	56	21.2	---	---
15.676000	33.90	11.1	60	26.1	---	---
16.432000	34.50	11.1	60	25.5	---	---
16.696000	33.90	11.1	60	26.1	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-08-12 7:44오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.422001	24.40	10.0	47	23.0	---	---
0.466001	23.20	10.0	47	23.4	---	---
0.500000	25.50	10.0	46	20.5	---	---
0.504000	26.90	10.0	46	19.1	---	---
0.632000	26.60	10.0	46	19.4	---	---
0.712000	26.70	10.0	46	19.3	---	---
5.000000	17.10	10.4	46	28.9	---	---
15.960000	23.30	11.1	50	26.7	---	---
16.936000	22.30	11.1	50	27.7	---	---

Conducted Emissions (Line 2)

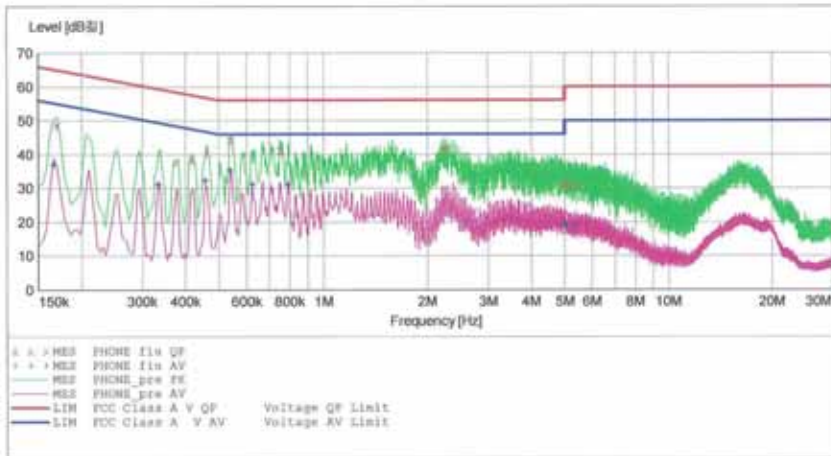
HCT

EMC

EUT: LG-D683
 Manufacturer: LG
 Operating Condition: NFC
 Test Site: SHIELD ROOM
 Operator: JC SHIN
 Test Specification: FCC PART15 B
 Comment: H(Terminated)

SCAN TABLE: "FCC CLASS B(H)"

Short Description:			KN22 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

2013-08-12 7:40오

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	FE
0.170001	48.60	9.8	65	16.3	---	---
0.418001	38.60	9.8	58	18.9	---	---
0.462001	40.50	9.8	57	16.2	---	---
0.540000	44.40	9.8	56	11.6	---	---
0.752000	41.30	9.8	56	14.7	---	---
2.252000	41.90	10.0	56	14.1	---	---
5.000000	31.30	10.2	56	24.7	---	---
5.124000	31.30	10.2	60	28.7	---	---
5.376000	30.80	10.2	60	29.2	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

2013-08-12 7:40오.후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.166001	37.00	9.8	55	18.2	---	---
0.334001	30.90	9.8	49	18.4	---	---
0.458001	32.20	9.8	47	14.5	---	---
0.540000	35.20	9.8	46	10.8	---	---
0.624000	31.00	9.8	46	15.0	---	---
0.792000	30.90	9.8	46	15.1	---	---
5.000000	19.70	10.2	46	26.3	---	---
5.040000	18.80	10.2	50	31.2	---	---
5.376000	19.10	10.2	50	30.9	---	---

12. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	Annual	02/06/2014	100073
Schwarzbeck	VULB 9160/ TRILOG Antenna	Biennial	12/17/2014	3150
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	04/16/2014	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	04/25/2014	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	05/14/2014	MY51110063
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/11/2013	10094
MITEQ	AMF-6B-180265-35-10P / POWER AMP	Annual	04/16/2014	667624
CERNEX	CBL26405040 / POWER AMP	Annual	04/16/2014	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	10/17/2013	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/30/2014	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	02/08/2014	839117/011
Agilent	E4416A /Power Meter	Annual	11/07/2013	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	04/16/2014	MY4442009
Wainwright Instrument	WHF3.0/18G-10EF / High Pass Filter	Annual	02/08/2014	F6
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	Annual	04/16/2014	1
Wainwright Instrument	WHNX7.0/18G-8SS / High Pass Filter	Annual	04/16/2014	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual	03/19/2014	1
Hewlett Packard	11636B/Power Divider	Annual	11/07/2013	11377
Agilent	87300B/Directional Coupler	Annual	12/24/2013	3116A03621
Hewlett Packard	11667B / Power Splitter	Annual	05/29/2014	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	11/07/2013	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/07/2013	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	04/24/2014	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	04/25/2014	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/11/2014	9009-2536
CERNEX	CBLU1183540 / POWER AMP	Annual	07/24/2014	21691
Agilent	8493C / Attenuator(10 dB)	Annual	07/24/2014	76649
WEINSCHL	2-3 / Attenuator(3 dB)	Annual	11/07/2013	BR0617