

FCC NFC REPORT

FCC Certification

Applicant Name:

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

Address:

1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue:

November 17, 2016

Test Site/Location:

HCT CO., LTD., 74,Seoicheon-ro 578beon-gil,Majang-myeo,Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

Report No.: HCT-R-1611-F017

HCT FRN: 0005866421

FCC ID : ZNFL01J

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

Model(s): L-01J

EUT Type: GSM/WCDMA/LTE Phone with WLAN, Bluetooth and NFC

RF Output Field Strength: 18.55 dBuV/m @30 m

Frequency of Operation: 13.56 MHz

Modulation type: ASK

FCC Classification: Low Power Communication Device – Transmitter

FCC Rule Part(s): FCC Part 15.225 Subpart C

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
: Kyung Soo Kang
Test Engineer of RF Team



Approved by
: Jong Seok Lee
Manager of RF Team

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

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1611-F017	November 17, 2016	- First Approval Report

Table of Contents

1. GENERAL INFORMATION	4
2. EUT DESCRIPTION	4
3. TEST METHODOLOGY	5
3.1 EUT CONFIGURATION	5
3.2 EUT EXERCISE	5
3.3 GENERAL TEST PROCEDURES	5
3.4 DESCRIPTION OF TEST MODES	5
4. INSTRUMENT CALIBRATION.....	6
5. FACILITIES AND ACCREDITATIONS	6
5.1 FACILITIES	6
5.2 EQUIPMENT	6
6. ANTENNA REQUIREMENTS	6
7. MEASUREMENT UNCERTAINTY	7
8. TEST SUMMARY	8
9. RADIATED EMISSION MEASUREMENT	9
9.1. RADIATED EMISSION 9 kHz – 30 MHz	10
9.2. RADIATED EMISSION 30 MHz – 1000 MHz	13
10. EMISSION BANDWIDTH PLOT	15
11. FREQUENCY TOLERANCE	16
12. POWERLINE CONDUCTE EMISSIONS	21
13. LIST OF TEST EQUIPMENT	30
13.1 LIST OF TEST EQUIPMENT(Conducted Test)	30
13.2 LIST OF TEST EQUIPMENT(Radiated Test).....	31

1. GENERAL INFORMATION

Applicant: LG Electronics MobileComm U.S.A., Inc.
Address: 1000 Sylvan Avenue, Englewood Cliffs NJ 07632
FCC ID: ZNFL01J
EUT Type: GSM/WCDMA/LTE Phone with WLAN, Bluetooth and NFC
Model (s): L-01J
Date(s) of Tests: October 11, 2016 ~ November 16, 2016
Place of Tests: HCT Co., Ltd.
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

2. EUT DESCRIPTION

Model	L-01J
EUT Type	GSM/WCDMA/LTE Phone with WLAN, Bluetooth and NFC
Power Supply	DC 3.85 V
Battery Information	Model: BL-T28 Type: Lithium Polymer Battery Pack
Frequency of Operation	13.56 MHz
Transmit Power	18.55 dBuV/m @30 m
Modulation Type	ASK
Antenna Specification	Manufacturer: KOMATECH Co., Ltd. Antenna type: Internal Antenna

3. TEST METHODOLOGY

The measurement procedure described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2013) is used in the measurement of the test device.

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 :2013) 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: 2013).

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.

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.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2006).

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 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4 (Version: 2014). Detailed description of test facilities was submitted to the Commission and accepted dated July 07, 2015 (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

7. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (\pm dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	6.07

8. TEST SUMMARY

The results in this report apply only to sample tested

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

9. 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 m
	0.490 ~1.705	24000/F(kHz) uV/m@30 m
	1.705 ~ 30	30 uV/m@30 m
	30 ~ 88	100 ** uV/m@3 m
	88 ~ 216	150 ** uV/m@3 m
	216 ~ 960	200 ** uV/m@3 m
	Above 960	500 uV/m@3 m

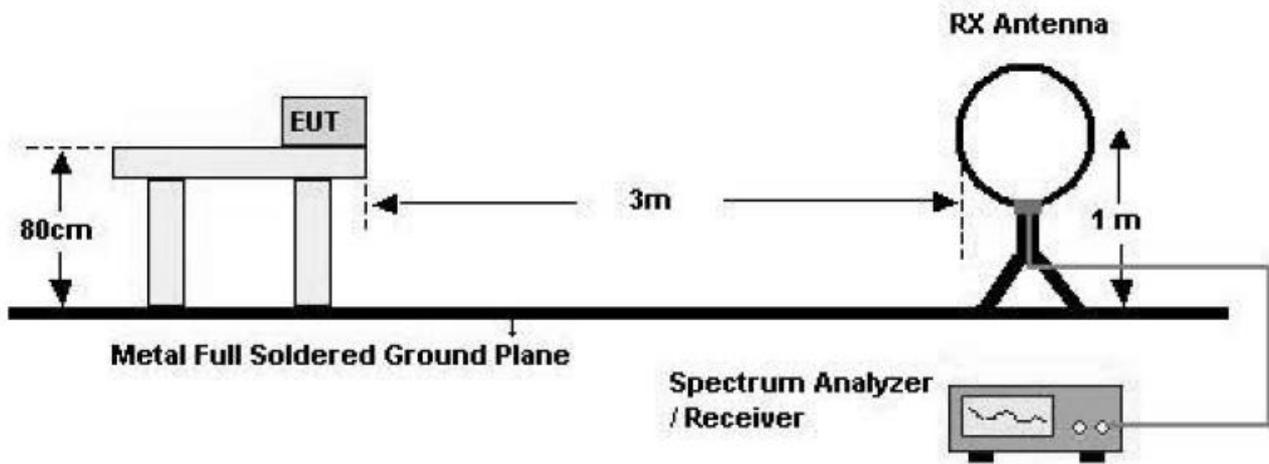
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part,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

15.225 Operation within the band 13.110 MHz – 14.010 MHz

- (a) The field strength of any emissions within the band 13.553 MHz-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 MHz-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 MHz-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 MHz-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.

9.1. RADIATED EMISSION 9 kHz – 30 MHz

Test Set-up



Test Procedure

The EUT was placed on a non-conductive table located on semi-anechoic chamber. 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 and with x, y, z planes in EUT.

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

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

The spectrum analyzer is set to:

Frequency Range = 9 kHz ~ 1 GHz

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

Trace Mode = max hold

Detector Mode = peak / Quasi-peak

Sweep time = auto

■ Test Results (Worst case : Z-H)

13.553 MHz-13.567 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.5600(H)	37.22	21.33	-40	18.55	84	65.45
13.5605(V)	33.08	21.33	-40	14.41	84	69.59

13.410 MHz-13.553 MHz and 13.567 MHz-13.710 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.553	22.62	21.33	-40	3.95	50.47	46.52
13.567	26.21	21.33	-40	7.54	50.47	42.93

13.110 MHz – 13.410 MHz and 13.710 MHz-14.010 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.1370	21.33	21.33	-40	2.66	40.51	37.85
13.9842	23.98	21.33	-40	5.31	40.51	35.2

9 kHz -30 MHz						
Frequency (MHz)	Read Level (dBuV/m)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
12.9791	11.11	21.34	-40	-7.55	29.54	37.09
14.8338	19.04	21.33	-40	0.37	29.54	29.17
27.1696	7.67	21.75	-40	-10.58	29.54	40.12
27.156	6.83	21.75	-40	-11.42	29.54	40.96

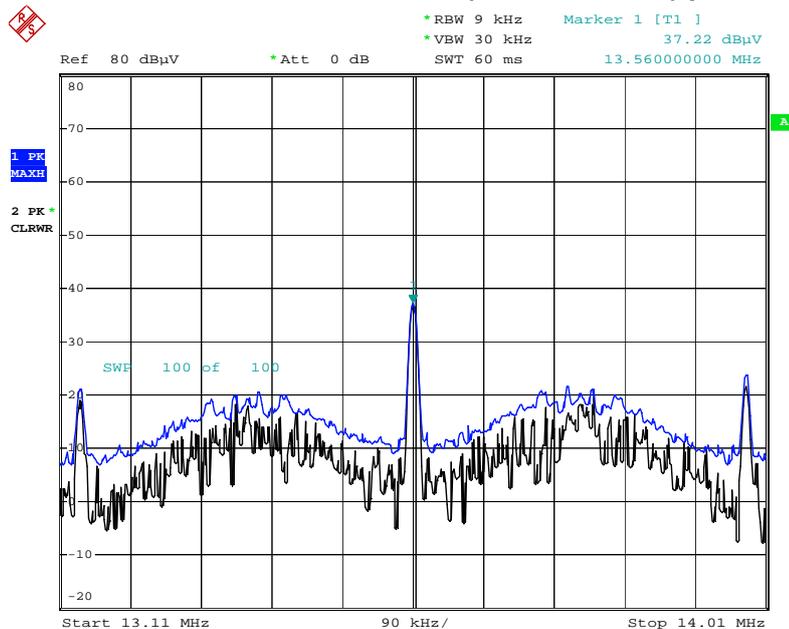
Note : The test results for below 30 MHz is correlated to an open site.

The result on OATS is about 2 dB higher than semi-anechoic chamber(10 m chamber)

1. Distance Correction Below 30 MHz = $40\log(3\text{ m}/30\text{ m}) = -40\text{ dB}$
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. We have done x, y, z planes in EUT
6. Antenna rotated about its vertical/horizontal axis for maximum response at each azimuth position around the EUT.
7. Worst case of operating mode is type A, analog mode and 106 kbps.

■ RESULT PLOTS

Radiated Emissions (9 kHz~30 MHz) plot

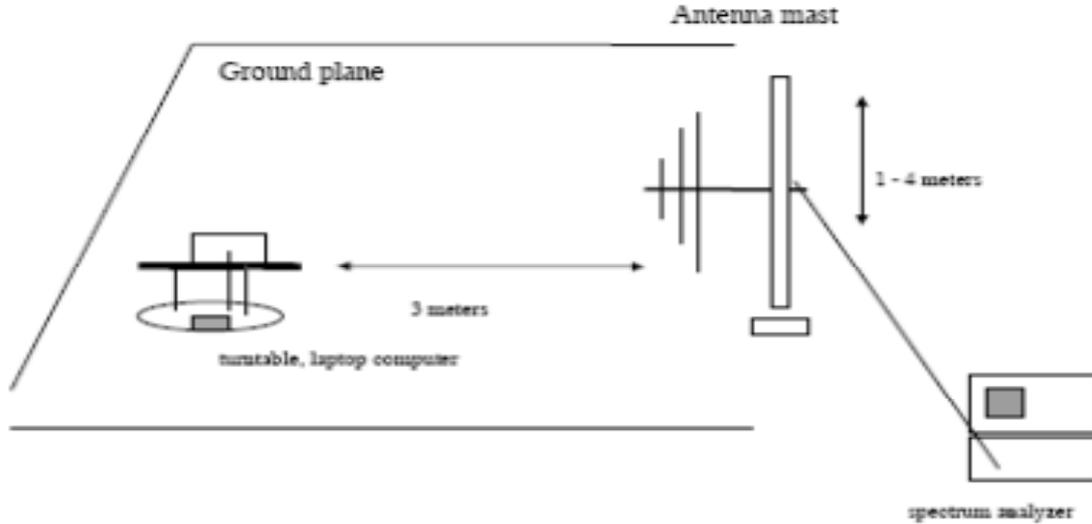


Date: 14.OCT.2016 14:26:15

Note : Only the worst case plots for Radiated Emissions.

9.2. 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.

■ Test Results

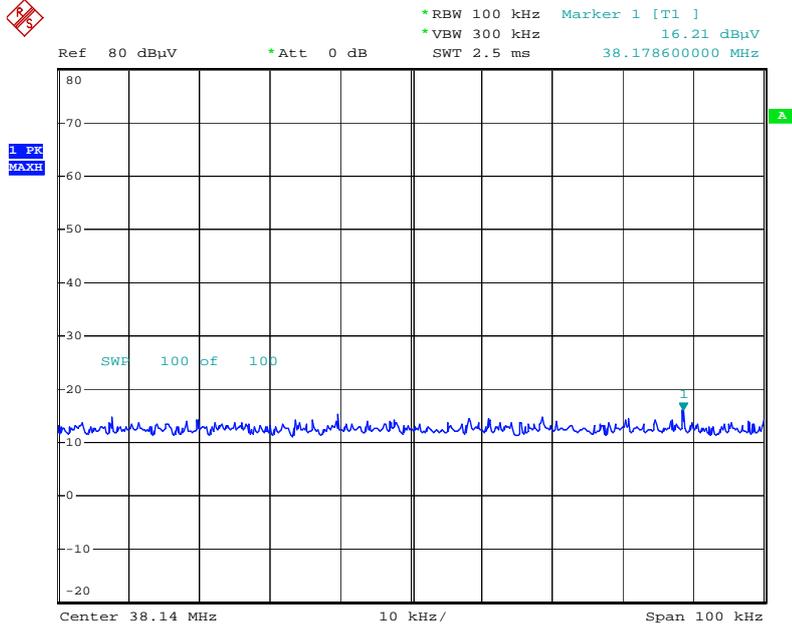
Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV	dB/m	dB	(H/V)	dBuV/m	dBuV/m	dB
*38.1786	16.21	11.95	0.66	H	28.82	40	11.18
52.656	14.31	12.38	0.7	H	27.39	40	12.61
*74.9222	15.16	9.25	0.77	V	25.18	40	14.82
*109.399	14.75	10.46	0.79	H	26	43.5	17.5
142.4618	15.01	12.84	0.92	H	28.77	43.5	14.73
160.314	14.69	13.41	0.95	V	29.05	43.5	14.45

Remark

1. Result Level = Read Level + (Antenna Factor+ Cable Loss)
2. Margin = Limit – Result Level
3. '*' is the result for restricted band.

■ RESULT PLOTS

Radiated Emissions (30 MHz ~ 1000 MHz) plot



Date: 9.NOV.2016 16:23:47

Note : Only the worst case plots for Radiated Emissions.

10. 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.

RBW = Auto

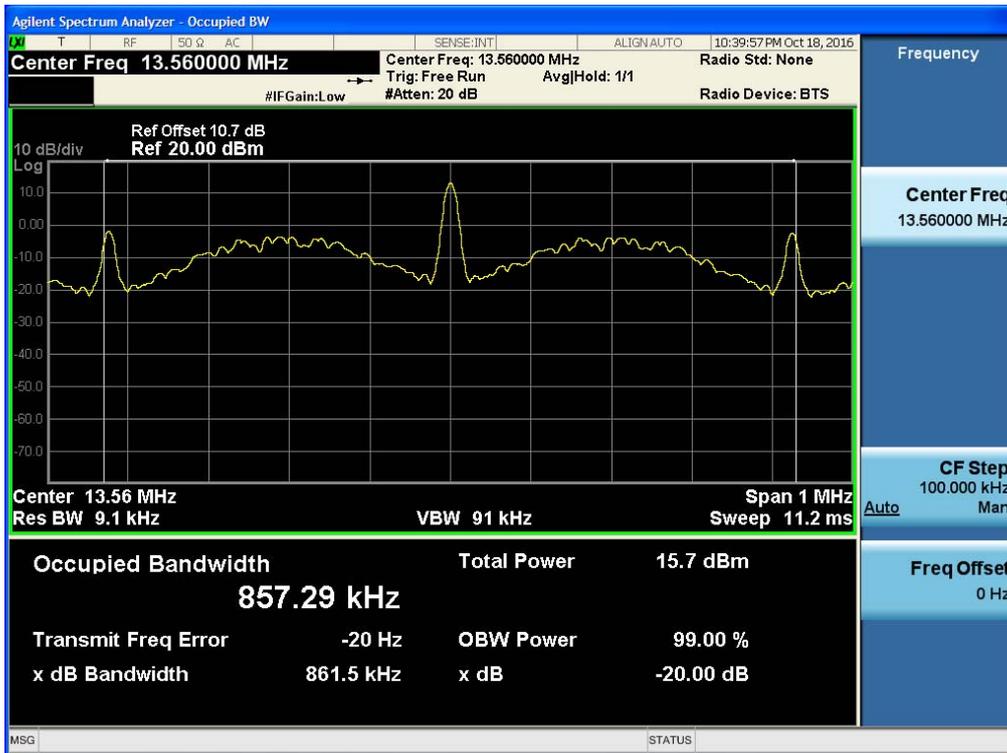
VBW = Auto

Span = Adequately in the operating Tx.

Detector = Peak

Trace mode = Max hold

Allow the trace to stabilize



11. FREQUENCY TOLERANCE

Procedure: Part 15.225, ANSI 63.10 (Version : 2013)

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 $+50^{\circ}\text{C}$ using an environmental chamber.
- b) For battery operated equipment, the equipment tests shall be performed using a new battery.
- c) Test Procedure
 - Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
 - Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
 - While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.
- d) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency.

Note : Below the measurement result is worst value of the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized

Startup

Measurement Result:

OPERATING FREQUENCY: 13.56 MHz
 REFERENCE VOLTAGE: 3.85 VDC
 DEVIATION LIMIT: 0.01 % = 1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100	3.85	-20	13.560305	305	0.0022493
100		-10	13.560309	309	0.0022788
100		0	13.560315	315	0.0023230
100		+10	13.560322	322	0.0023746
100		+20(Ref.)	13.560328	328	0.0024189
100		+30	13.560330	330	0.0024336
100		+40	13.560332	332	0.0024484
100		+50	13.560339	339	0.0025000
Maximum		4.40	+20	13.560325	325
End point	3.60	+20	13.560329	329	0.0024263

2 minutes

Measurement Result:

OPERATING FREQUENCY: 13.56 MHz
 REFERENCE VOLTAGE: 3.85 VDC
 DEVIATION LIMIT: 0.01 % = 1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100	3.85	-20	13.560308	308	0.0022714
100		-10	13.560315	315	0.0023230
100		0	13.560321	321	0.0023673
100		+10	13.560329	329	0.0024263
100		+20(Ref.)	13.560331	331	0.0024410
100		+30	13.560334	334	0.0024631
100		+40	13.560339	339	0.0025000
100		+50	13.560342	342	0.0025221
Maximum		4.40	+20	13.560330	330
End point	3.60	+20	13.560333	333	0.0024558

5 minutes

Measurement Result:

OPERATING FREQUENCY: 13.56 MHz
 REFERENCE VOLTAGE: 3.85 VDC
 DEVIATION LIMIT: 0.01 % = 1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100	3.85	-20	13.560312	312	0.0023009
100		-10	13.560315	315	0.0023230
100		0	13.560321	321	0.0023673
100		+10	13.560328	328	0.0024189
100		+20(Ref.)	13.560333	333	0.0024558
100		+30	13.560336	336	0.0024779
100		+40	13.560339	339	0.0025000
100		+50	13.560343	343	0.0025295
Maximum	4.40	+20	13.560331	331	0.0024410
End point	3.60	+20	13.560335	335	0.0024705

10 minutes

Measurement Result:

OPERATING FREQUENCY: 13.56 MHz
 REFERENCE VOLTAGE: 3.85 VDC
 DEVIATION LIMIT: 0.01 % = 1356 Hz

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (MHz)	Frequency Dev. (Hz)	Frequency Dev (%)
100	3.85	-20	13.560318	318	0.0023451
100		-10	13.560321	321	0.0023673
100		0	13.560324	324	0.0023894
100		+10	13.560330	330	0.0024336
100		+20(Ref.)	13.560337	337	0.0024853
100		+30	13.560339	339	0.0025000
100		+40	13.560345	345	0.0025442
100		+50	13.560349	349	0.0025737
Maximum	4.40	+20	13.560335	335	0.0024705
End point	3.60	+20	13.560334	334	0.0024631

12. POWERLINE CONDUCTE 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.
5. The EUT is the device operating below 30 MHz.
 - For unterminated the Antenna, the AC line conducted tests are performed with the antenna connected
 - For terminated the Antenna, the AC line conducted tests are performed with a dummy load connected to the EUT antenna output terminal.

Sample Calculation

Quasi-peak(Final Result) = Reading Value + Correction Factor

Test Plots

Untermine the Antenna

Conducted Emissions (Line 1)

EMI Auto Test(3)

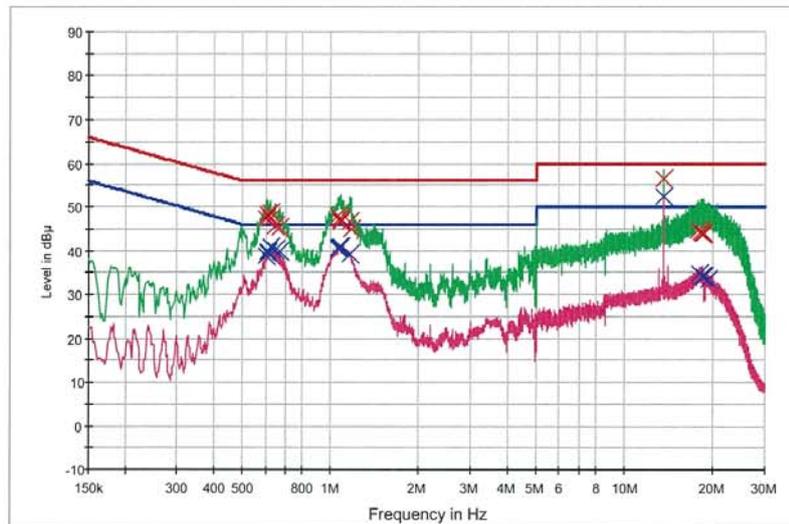
1 / 2

HCT TEST Report

Common Information

EUT: L-01J
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE_UNTERMINATION

FCC CLASS B



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

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.602000	47.4	9.000	Off	L1	9.7	8.6	56.0
0.610000	48.3	9.000	Off	L1	9.7	7.7	56.0
0.622000	48.7	9.000	Off	L1	9.7	7.3	56.0
0.626000	47.4	9.000	Off	L1	9.7	8.6	56.0
0.646000	45.7	9.000	Off	L1	9.7	10.3	56.0
0.674000	45.4	9.000	Off	L1	9.7	10.6	56.0
1.062000	48.1	9.000	Off	L1	9.8	7.9	56.0
1.072000	47.4	9.000	Off	L1	9.8	8.6	56.0
1.082000	46.7	9.000	Off	L1	9.8	9.3	56.0
1.088000	46.9	9.000	Off	L1	9.8	9.1	56.0
1.166000	46.5	9.000	Off	L1	9.8	9.5	56.0
1.170000	44.9	9.000	Off	L1	9.8	11.1	56.0
13.560000	56.6	9.000	Off	L1	10.2	3.4	60.0
17.722000	44.7	9.000	Off	L1	10.3	15.3	60.0
18.220000	44.2	9.000	Off	L1	10.3	15.8	60.0
18.298000	43.9	9.000	Off	L1	10.3	16.1	60.0
18.466000	44.0	9.000	Off	L1	10.3	16.0	60.0
18.478000	44.0	9.000	Off	L1	10.3	16.0	60.0

2016-11-01

오후 2:34:38

EMI Auto Test(3)

2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.602000	38.8	9.000	Off	L1	9.7	7.2	46.0
0.610000	39.6	9.000	Off	L1	9.7	6.4	46.0
0.614000	40.0	9.000	Off	L1	9.7	6.0	46.0
0.626000	40.9	9.000	Off	L1	9.7	5.1	46.0
0.650000	40.3	9.000	Off	L1	9.7	5.7	46.0
0.674000	39.8	9.000	Off	L1	9.7	6.2	46.0
1.062000	40.7	9.000	Off	L1	9.8	5.3	46.0
1.066000	40.4	9.000	Off	L1	9.8	5.6	46.0
1.074000	40.9	9.000	Off	L1	9.8	5.1	46.0
1.082000	41.0	9.000	Off	L1	9.8	5.0	46.0
1.088000	41.0	9.000	Off	L1	9.8	5.0	46.0
1.166000	39.2	9.000	Off	L1	9.8	6.8	46.0
13.560000	52.3	9.000	Off	L1	10.2	-2.3	50.0
17.944000	34.9	9.000	Off	L1	10.3	15.1	50.0
18.396000	34.2	9.000	Off	L1	10.3	15.8	50.0
18.466000	34.1	9.000	Off	L1	10.3	15.9	50.0
18.478000	34.1	9.000	Off	L1	10.3	15.9	50.0
19.138000	33.4	9.000	Off	L1	10.3	16.6	50.0

2016-11-01

오후 2:34:38

Conducted Emissions (Line 2)

EMI Auto Test(3)

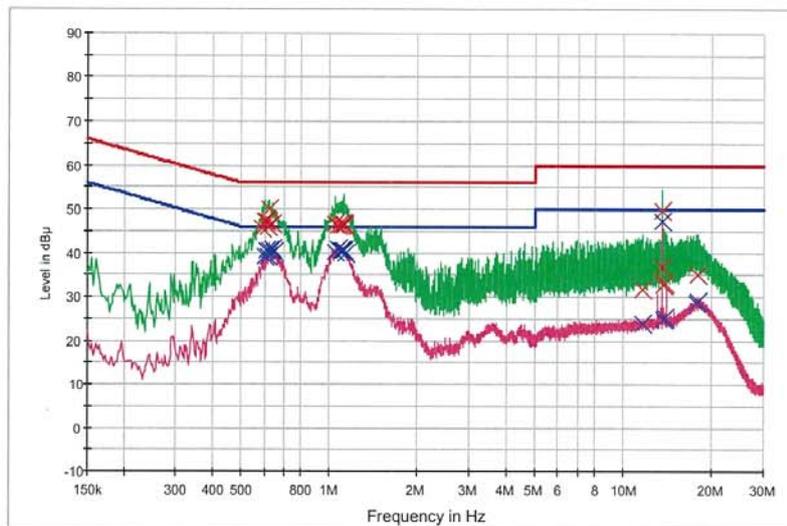
1 / 2

HCT TEST Report

Common Information

EUT: L-01J
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE_UNTERMINATION

FCC CLASS B



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

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.590000	45.5	9.000	Off	N	9.7	10.5	56.0
0.602000	47.5	9.000	Off	N	9.7	8.5	56.0
0.610000	47.2	9.000	Off	N	9.7	8.8	56.0
0.618000	45.9	9.000	Off	N	9.7	10.1	56.0
0.624000	50.0	9.000	Off	N	9.7	6.0	56.0
0.638000	46.6	9.000	Off	N	9.7	9.4	56.0
1.048000	46.6	9.000	Off	N	9.7	9.4	56.0
1.066000	46.4	9.000	Off	N	9.7	9.6	56.0
1.092000	46.4	9.000	Off	N	9.7	9.6	56.0
1.112000	46.5	9.000	Off	N	9.7	9.5	56.0
1.116000	46.6	9.000	Off	N	9.7	9.4	56.0
1.120000	46.4	9.000	Off	N	9.7	9.6	56.0
11.638000	31.6	9.000	Off	N	10.1	28.4	60.0
13.552000	36.9	9.000	Off	N	10.1	23.1	60.0
13.560000	49.6	9.000	Off	N	10.1	10.4	60.0
13.662000	32.6	9.000	Off	N	10.2	27.4	60.0
13.842000	33.1	9.000	Off	N	10.2	26.9	60.0
17.950000	35.1	9.000	Off	N	10.3	24.9	60.0

2016-11-01

오후 2:51:17

EMI Auto Test(3)

2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.600000	39.0	9.000	Off	N	9.7	7.0	46.0
0.612000	40.6	9.000	Off	N	9.7	5.4	46.0
0.616000	39.3	9.000	Off	N	9.7	6.7	46.0
0.624000	40.6	9.000	Off	N	9.7	5.4	46.0
0.636000	40.9	9.000	Off	N	9.7	5.1	46.0
0.648000	40.2	9.000	Off	N	9.7	5.8	46.0
1.048000	40.2	9.000	Off	N	9.7	5.8	46.0
1.064000	40.8	9.000	Off	N	9.7	5.2	46.0
1.092000	40.6	9.000	Off	N	9.7	5.4	46.0
1.112000	40.6	9.000	Off	N	9.7	5.4	46.0
1.120000	40.4	9.000	Off	N	9.7	5.6	46.0
1.140000	39.8	9.000	Off	N	9.7	6.2	46.0
11.638000	23.8	9.000	Off	N	10.1	26.2	50.0
13.560000	47.3	9.000	Off	N	10.1	2.7	50.0
13.662000	24.9	9.000	Off	N	10.2	25.1	50.0
13.842000	25.4	9.000	Off	N	10.2	24.6	50.0
17.710000	28.6	9.000	Off	N	10.3	21.4	50.0
17.950000	28.8	9.000	Off	N	10.3	21.2	50.0

2016-11-01

오후 2:51:17

**Terminate the Antenna
Conducted Emissions (Line 1)**

EMI Auto Test(3)

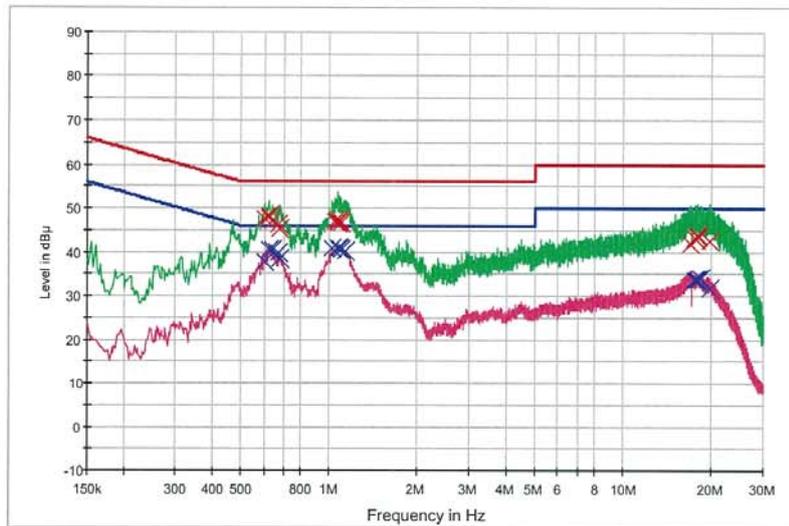
1 / 2

HCT TEST Report

Common Information

EUT: L-01J
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE_TERMINATION

FCC CLASS B



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

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.600000	47.7	9.000	Off	L1	9.7	8.3	56.0
0.622000	48.4	9.000	Off	L1	9.7	7.6	56.0
0.626000	47.9	9.000	Off	L1	9.7	8.1	56.0
0.638000	46.9	9.000	Off	L1	9.7	9.1	56.0
0.670000	46.4	9.000	Off	L1	9.7	9.6	56.0
0.682000	45.2	9.000	Off	L1	9.7	10.8	56.0
1.050000	47.0	9.000	Off	L1	9.8	9.0	56.0
1.064000	46.6	9.000	Off	L1	9.8	9.4	56.0
1.070000	47.0	9.000	Off	L1	9.8	9.0	56.0
1.082000	47.3	9.000	Off	L1	9.8	8.7	56.0
1.086000	47.3	9.000	Off	L1	9.8	8.7	56.0
1.090000	46.5	9.000	Off	L1	9.8	9.5	56.0
16.838000	42.0	9.000	Off	L1	10.2	18.0	60.0
17.588000	43.4	9.000	Off	L1	10.3	16.6	60.0
17.698000	43.0	9.000	Off	L1	10.3	17.0	60.0
17.864000	43.7	9.000	Off	L1	10.3	16.3	60.0
18.012000	43.4	9.000	Off	L1	10.3	16.6	60.0
19.788000	42.5	9.000	Off	L1	10.3	17.5	60.0

2016-11-01

오후 3:11:34

EMI Auto Test(3)

2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.602000	37.8	9.000	Off	L1	9.7	8.2	46.0
0.622000	40.6	9.000	Off	L1	9.7	5.4	46.0
0.626000	40.4	9.000	Off	L1	9.7	5.6	46.0
0.638000	40.4	9.000	Off	L1	9.7	5.6	46.0
0.670000	39.8	9.000	Off	L1	9.7	6.2	46.0
0.682000	38.3	9.000	Off	L1	9.7	7.7	46.0
1.022000	40.7	9.000	Off	L1	9.8	5.3	46.0
1.064000	40.8	9.000	Off	L1	9.8	5.2	46.0
1.082000	40.7	9.000	Off	L1	9.8	5.3	46.0
1.086000	40.8	9.000	Off	L1	9.8	5.2	46.0
1.090000	40.6	9.000	Off	L1	9.8	5.4	46.0
1.130000	40.2	9.000	Off	L1	9.8	5.8	46.0
17.594000	33.7	9.000	Off	L1	10.3	16.3	50.0
17.698000	33.6	9.000	Off	L1	10.3	16.4	50.0
17.848000	33.9	9.000	Off	L1	10.3	16.1	50.0
17.864000	33.9	9.000	Off	L1	10.3	16.1	50.0
18.290000	34.0	9.000	Off	L1	10.3	16.0	50.0
19.788000	31.6	9.000	Off	L1	10.3	18.4	50.0

2016-11-01

오후 3:11:34

Conducted Emissions (Line 2)

EMI Auto Test(3)

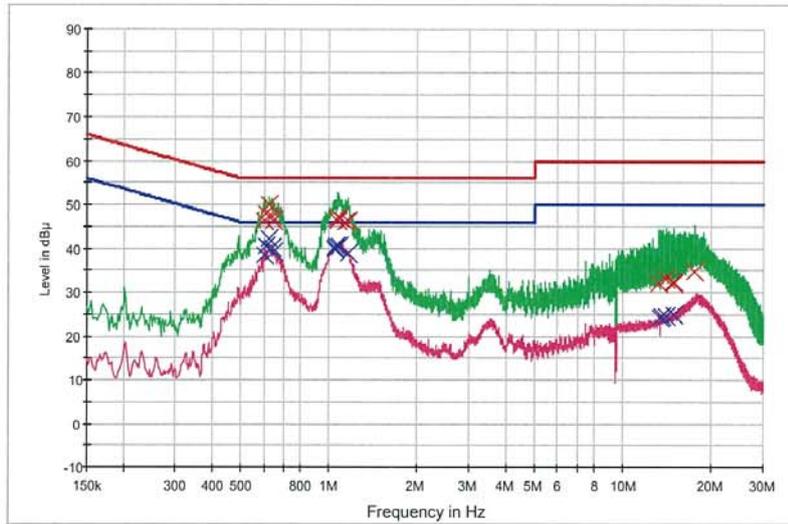
1 / 2

HCT TEST Report

Common Information

EUT: L-01J
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: NFC MODE_TERMINATION

FCC CLASS B



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

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.600000	46.2	9.000	Off	N	9.7	9.8	56.0
0.604000	46.2	9.000	Off	N	9.7	9.8	56.0
0.610000	47.8	9.000	Off	N	9.7	8.2	56.0
0.624000	50.2	9.000	Off	N	9.7	5.8	56.0
0.636000	47.3	9.000	Off	N	9.7	8.7	56.0
0.650000	46.4	9.000	Off	N	9.7	9.6	56.0
1.052000	46.7	9.000	Off	N	9.7	9.3	56.0
1.060000	46.8	9.000	Off	N	9.7	9.2	56.0
1.076000	46.4	9.000	Off	N	9.7	9.6	56.0
1.086000	46.9	9.000	Off	N	9.7	9.1	56.0
1.134000	45.8	9.000	Off	N	9.7	10.2	56.0
1.166000	46.3	9.000	Off	N	9.7	9.7	56.0
13.286000	32.2	9.000	Off	N	10.1	27.8	60.0
13.982000	33.1	9.000	Off	N	10.2	26.9	60.0
14.796000	32.4	9.000	Off	N	10.2	27.6	60.0
14.958000	32.1	9.000	Off	N	10.2	27.9	60.0
17.560000	34.9	9.000	Off	N	10.3	25.1	60.0
17.572000	34.8	9.000	Off	N	10.3	25.2	60.0

2016-11-01

오후 3:01:30

EMI Auto Test(3)

2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.600000	38.4	9.000	Off	N	9.7	7.6	46.0
0.612000	40.7	9.000	Off	N	9.7	5.3	46.0
0.624000	42.2	9.000	Off	N	9.7	3.8	46.0
0.632000	39.9	9.000	Off	N	9.7	6.1	46.0
0.636000	40.3	9.000	Off	N	9.7	5.7	46.0
0.648000	39.0	9.000	Off	N	9.7	7.0	46.0
1.040000	40.0	9.000	Off	N	9.7	6.0	46.0
1.048000	40.3	9.000	Off	N	9.7	5.7	46.0
1.052000	40.6	9.000	Off	N	9.7	5.4	46.0
1.078000	40.5	9.000	Off	N	9.7	5.5	46.0
1.086000	40.7	9.000	Off	N	9.7	5.3	46.0
1.166000	39.0	9.000	Off	N	9.7	7.0	46.0
13.324000	24.3	9.000	Off	N	10.1	25.7	50.0
13.396000	24.3	9.000	Off	N	10.1	25.7	50.0
13.582000	24.5	9.000	Off	N	10.2	25.5	50.0
13.982000	24.6	9.000	Off	N	10.2	25.4	50.0
14.796000	24.9	9.000	Off	N	10.2	25.1	50.0
14.958000	25.0	9.000	Off	N	10.2	25.0	50.0

2016-11-01

오후 3:01:30

13. LIST OF TEST EQUIPMENT

13.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	12/28/2015	Annual	100073
Rohde & Schwarz	ESCI / Test Receiver	12/28/2015	Annual	100584
Agilent	N9020A / Signal Analyzer	06/24/2016	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	11/24/2015	Annual	MY49431210
Agilent	N1911A / Power Meter	03/11/2016	Annual	MY45100523
Agilent	N1921A / Power Sensor	03/11/2016	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/30/2015	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	06/14/2016	Annual	05001
Hewlett Packard	E3632A / DC Power Supply	03/09/2016	Annual	KR75303962
Agilent	8493C / Attenuator(10 dB)	07/15/2016	Annual	07560

13.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Audix	AM4000 / Antenna Position Tower	N/A	N/A	N/A
Audix	Turn Table	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Rohde & Schwarz	Loop Antenna	02/23/2016	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	04/15/2015	Biennial	255
Schwarzbeck	BBHA 9120D / Horn Antenna	05/07/2015	Biennial	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	09/03/2015	Biennial	BBHA9170541
Rohde & Schwarz	FSP / Spectrum Analyzer	09/10/2016	Annual	100688
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/23/2016	Annual	101068-SZ
Wainwright Instruments	WHK3.0/18G-10EF / High Pass Filter	06/24/2016	Annual	8
Wainwright Instruments	WHFX7.0/18G-8SS / High Pass Filter	05/13/2016	Annual	29
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	07/06/2016	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/26/2016	Annual	2
Agilent	8493C-10 / Attenuator(10 dB)	08/11/2016	Annual	76649
CERNEX	CBLU1183540 / Power Amplifier	07/15/2016	Annual	22964
CERNEX	CBL06185030 / Power Amplifier	07/15/2016	Annual	22965
CERNEX	CBL18265035 / Power Amplifier	07/11/2016	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	07/11/2016	Annual	25956