

# 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:**  
October 23, 2012

**Test Site/Location:**  
HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon,  
Icheon-si, Kyunggi-Do, Korea

**Report No.:** HCTR1210FR20-1

**HCT FRN:** 0005866421

**FCC ID** : ZNFL02E

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

**FCC Model(s):** L-02E

**EUT Type:** Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)

**RF Output Field Strength** 14.83 dBuV/m

**Frequency of Operation:** 13.559680 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**  
: Sang Jun 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.

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E	

# Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1210FR20	October 19, 2012	- First Approval Report
HCTR1210FR20-1	October 23, 2012	- Add Loop Antenna in Section 5.2

# 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
3.5 STANDARDS .....	6
4. INSTRUMENT CALIBRATION.....	7
5. FACILITIES AND ACCREDITATIONS .....	7
5.1 FACILITIES .....	7
5.2 EQUIPMENT .....	7
6. ANTENNA REQUIREMENTS .....	7
7. TEST SUMMARY .....	8
8. RADIATED EMISSION MEASUREMENT .....	9
8.1. RADIATED EMISSION 9 kHz – 30 MHz .....	1 0
8.2. RADIATED EMISSION 30 MHz – 1000 MHz .....	1 4
9. EMISSION BANDWIDTH PLOT.....	1 5
10. FREQUENCY TOLERANCE.....	1 6
11. POWERLINE CONDUCTE EMISSIONS.....	1 7
12. LIST OF TEST EQUIPMENT .....	2 6

<b>FCC PT.15.225 TEST REPORT</b>	<b>FCC CERTIFICATION REPORT</b>		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
<b>Test Report No.</b> HCTR1210R20-1	<b>Date of Issue:</b> October 23, 2012	<b>EUT Type:</b> Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	<b>FCC ID :</b> ZNFL02E



## 1. GENERAL INFORMATION

**Applicant:** LG Electronics MobileComm U.S.A., Inc.  
**Address:** 1000 Sylvan Avenue, Englewood Cliffs NJ 07632  
**FCC ID:** ZNFL02E  
**EUT:** Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)  
**Model name(s):** L-02E  
**Date of Test:** September 07, 2012 ~ October 11, 2012  
**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

<b>Product</b>	Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
<b>FCC Model Name</b>	L-02E
<b>Power Supply</b>	DC 3.7 V
<b>Battery Type</b>	Li-ion Battery(Standard)
<b>Frequency of Operation</b>	14.83 dBuV/m
<b>Transmit Power</b>	13.559680 MHz
<b>Modulation Type</b>	ASK
<b>Antenna Specification</b>	Manufacturer: AT&C Co.,LTD. Antenna type: Loop Antenna

<b>FCC PT.15.225 TEST REPORT</b>	<b>FCC CERTIFICATION REPORT</b>		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
<b>Test Report No.</b> HCTR1210R20-1	<b>Date of Issue:</b> October 23, 2012	<b>EUT Type:</b> Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	<b>FCC ID :</b> ZNFL02E



### 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.

FCC PT.15.225 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E



### 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	-

<b>FCC PT.15.225 TEST REPORT</b>	<b>FCC CERTIFICATION REPORT</b>		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
<b>Test Report No.</b> HCTR1210R20-1	<b>Date of Issue:</b> October 23, 2012	<b>EUT Type:</b> Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	<b>FCC ID :</b> ZNFL02E



## 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

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)		FCC ID : ZNFL02E



## 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

<b>FCC PT.15.225 TEST REPORT</b>	<b>FCC CERTIFICATION REPORT</b>		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
<b>Test Report No.</b> HCTR1210R20-1	<b>Date of Issue:</b> October 23, 2012	<b>EUT Type:</b> Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	<b>FCC ID :</b> ZNFL02E



## 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.

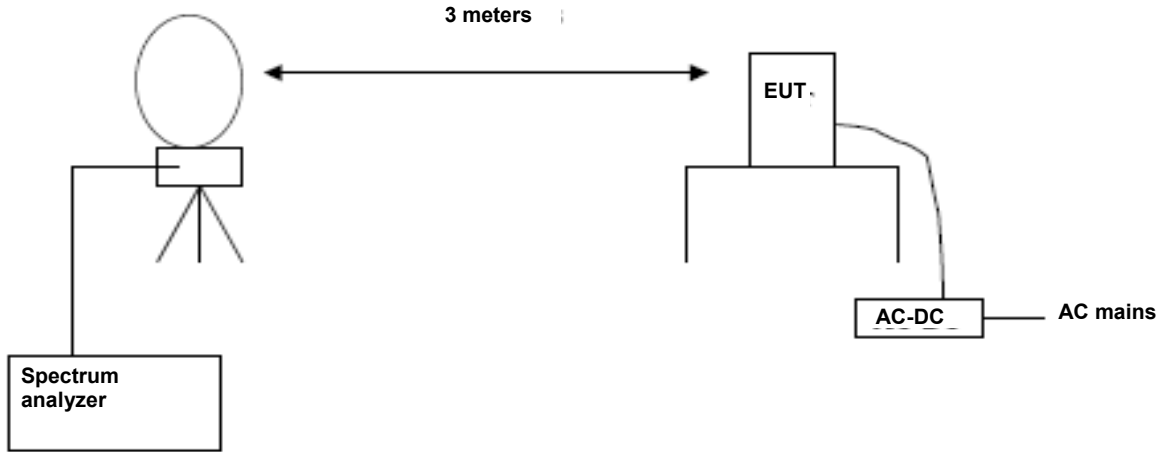
(e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a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

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E	

## 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(dB $\mu$ V/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

FCC PT.15.225 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E

## 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)
13.5597	45.02(H)*	9.81	-40	14.83	84	69.17
13.5597	39.24(V)*	9.81	-40	9.05	84	74.95

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)
13.553	28.72	9.81	-40	-1.47	50.47	51.94
13.567	32.86	9.81	-40	2.67	50.47	47.80

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)
13.348	25.86	9.81	-40	-4.33	40.51	44.84
13.772	25.67	9.81	-40	-4.52	40.51	45.03

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)
27.121	9.95	8.23	-40	-21.82	29.54	51.36

<b>FCC PT.15.225 TEST REPORT</b>		<b>FCC CERTIFICATION REPORT</b>		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
<b>Test Report No.</b> HCTR1210R20-1	<b>Date of Issue:</b> October 23, 2012	<b>EUT Type:</b> Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)		<b>FCC ID :</b> ZNFL02E



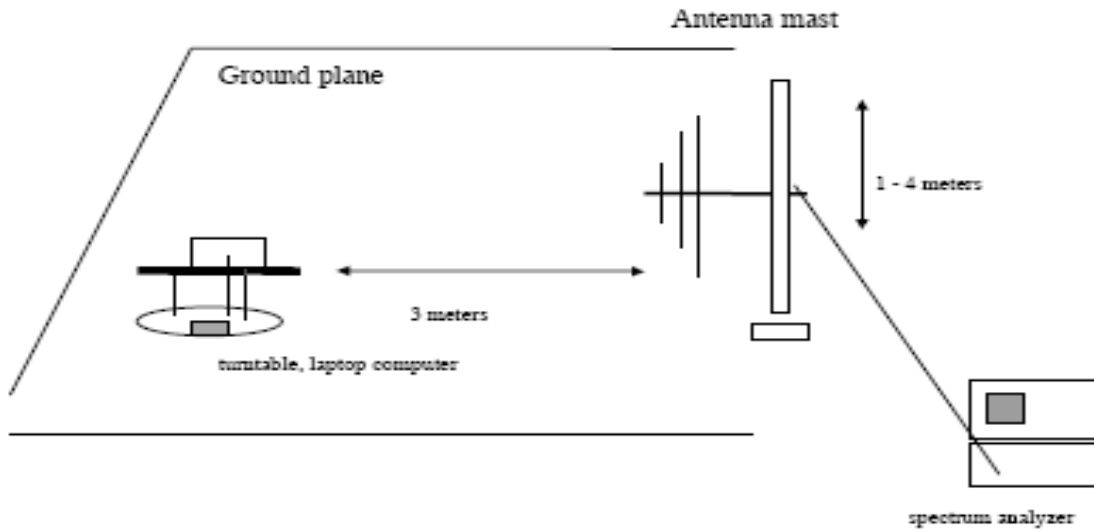
Note :

1. Distance Correction Below 30MHz =  $40\log(3m/30m) = - 40$  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.

<b>FCC PT.15.225 TEST REPORT</b>	<b>FCC CERTIFICATION REPORT</b>		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
<b>Test Report No.</b> HCTR1210R20-1	<b>Date of Issue:</b> October 23, 2012	<b>EUT Type:</b> Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	<b>FCC ID :</b> ZNFL02E

## 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	dB $\mu$ V	dB /m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
35.76	22.21	12.3	0.5	H	35.07	40.0	4.93
40.49	21.08	13.0	0.6	V	34.67	40.0	5.33
74.32	20.64	10.8	0.9	H	32.26	40.0	7.74

### Remark

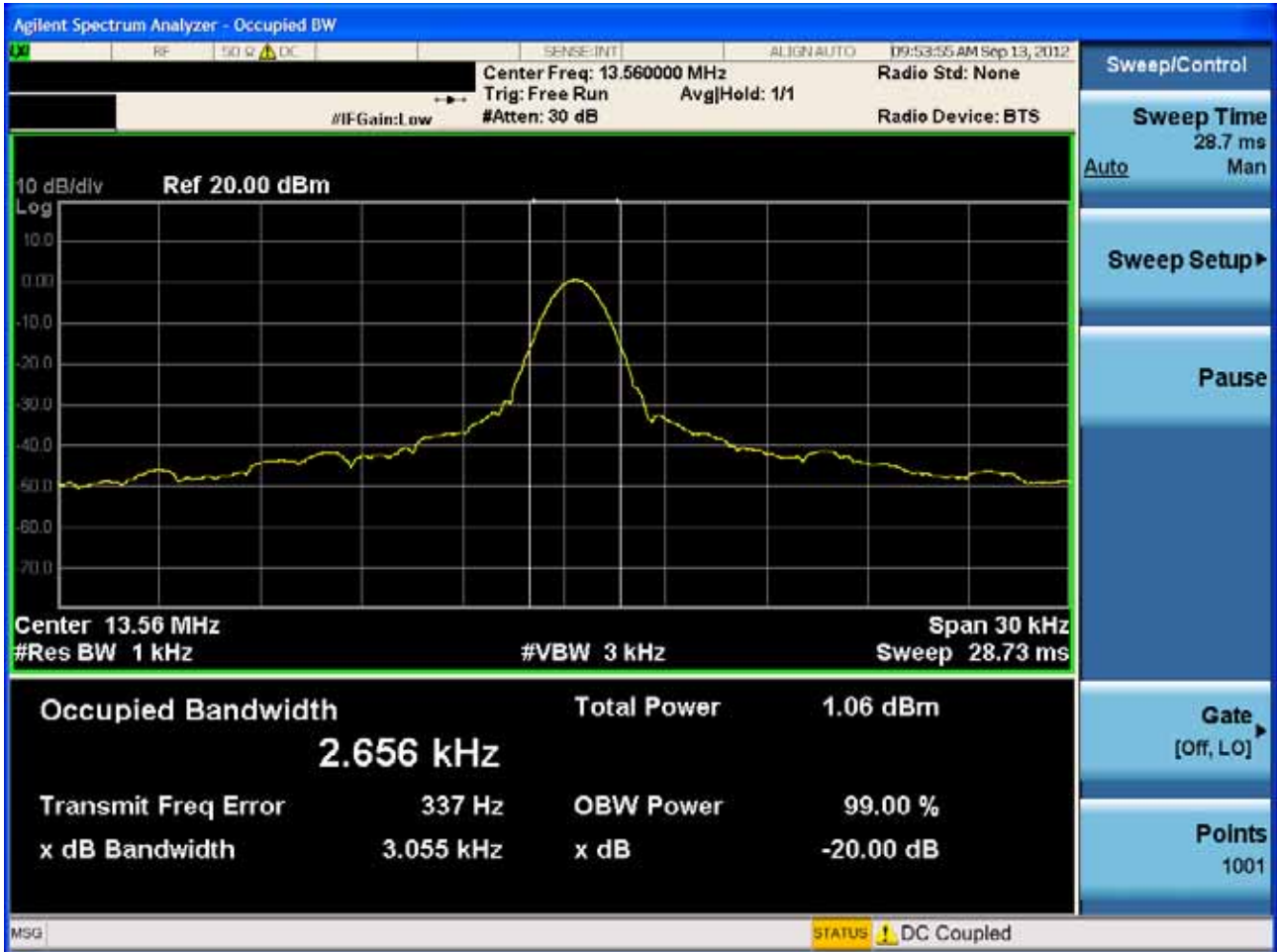
1. Result Level = Read Level + (Antenna Factor+ Cable Loss)
2. Margin = Limit – Result Level

## 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.



FCC PT.15.225 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E

## 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%	3.7 V	-20	13.560180	500
100%		-10	13.560210	530
100%		0	13.560140	460
100%		10	13.560230	550
100%		20	13.559680	0
100%		30	13.560160	480
100%		40	13.560040	360
100%		50	13.560014	334

### Notes:

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



## 11. 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 (dB $\mu$ V)	
	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**

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

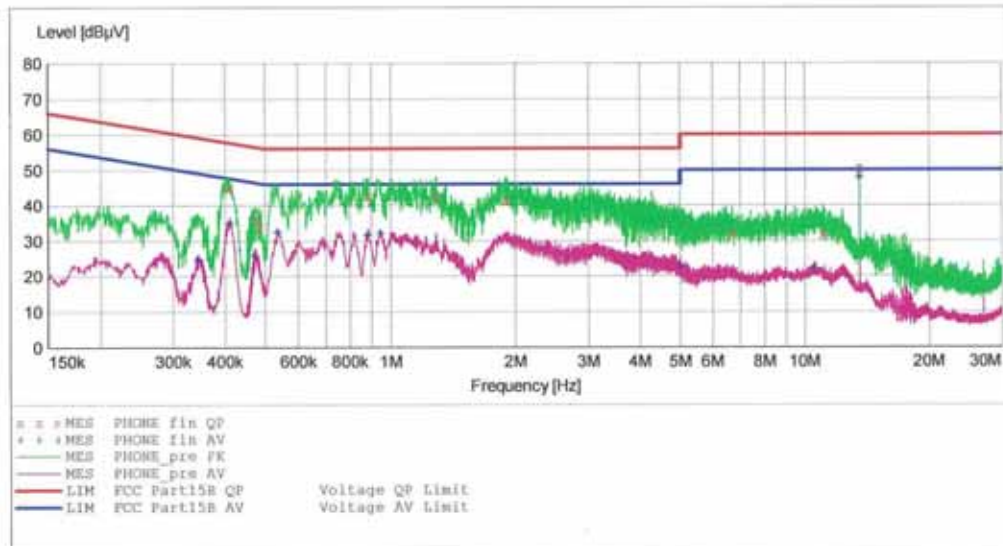
HCT

EMC

EUT: L-02E  
 Manufacturer: LG  
 Operating Condition: NFC MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART 15 B  
 Comment: H(Underminated)

**SCAN TABLE: "FCC PART 15 B(H)"**

Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	1.0 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
0.409010	45.00	9.8	58	12.7	---	---
0.474010	36.40	9.8	56	20.0	---	---
0.483010	33.90	9.8	56	22.4	---	---
0.884000	42.70	9.8	56	13.3	---	---
1.288000	42.60	9.8	56	13.4	---	---
1.904000	41.50	9.9	56	14.5	---	---
6.676000	32.20	10.3	60	27.8	---	---
11.084000	31.90	10.6	60	28.1	---	---
13.560000	50.20	10.8	60	9.8	---	---

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E	



**MEASUREMENT RESULT: "PHONE\_fin AV"**

10/11/2012 1:52PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.345010	24.60	9.7	49	24.4	---	---
0.411010	35.00	9.8	48	12.6	---	---
0.472010	26.00	9.8	47	20.5	---	---
0.536000	32.40	9.8	46	13.6	---	---
0.884000	31.70	9.8	46	14.3	---	---
0.948000	32.10	9.8	46	13.9	---	---
5.020000	22.50	10.2	50	27.5	---	---
10.576000	22.10	10.5	50	27.9	---	---
13.560000	47.80	10.8	50	2.2	---	---

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)		FCC ID : ZNFL02E



**Conducted Emissions (Line 2)**

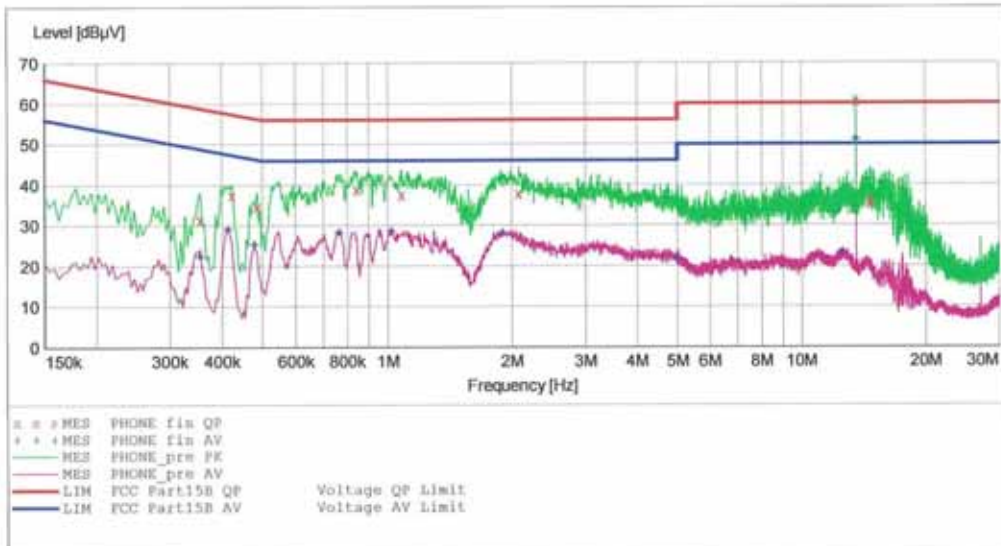
HCT

EMC

EUT: L-02E  
 Manufacturer: LG  
 Operating Condition: NFC MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART 15 CLASS B  
 Comment: N(Unterminated)

**SCAN TABLE: "FCC PART 15 B(N)"**

Short Description:			FCC PART 15 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"**

10/11/2012 1:47PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.354010	31.40	9.9	59	27.4	---	---
0.422010	37.60	10.0	57	19.8	---	---
0.486010	34.70	10.0	56	21.5	---	---
0.844000	38.90	10.0	56	17.1	---	---
1.080000	37.60	10.0	56	18.4	---	---
2.080000	37.90	10.1	56	18.1	---	---
13.560000	60.40	11.1	60	-0.4	---	---
14.668000	35.80	11.2	60	24.2	---	---
14.740000	35.30	11.2	60	24.7	---	---

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E	



**MEASUREMENT RESULT: "PHONE\_fin AV"**

10/11/2012 1:47PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.354010	22.40	9.9	49	26.5	---	---
0.414010	29.20	10.0	48	18.3	---	---
0.478010	25.30	10.0	46	21.1	---	---
0.764000	28.30	10.0	46	17.7	---	---
1.020000	28.50	10.0	46	17.5	---	---
1.904000	28.10	10.1	46	17.9	---	---
5.000000	21.60	10.4	46	24.4	---	---
12.564000	23.40	11.0	50	26.6	---	---
13.560000	51.00	11.1	50	-1.0	---	---

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)		FCC ID : ZNFL02E



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

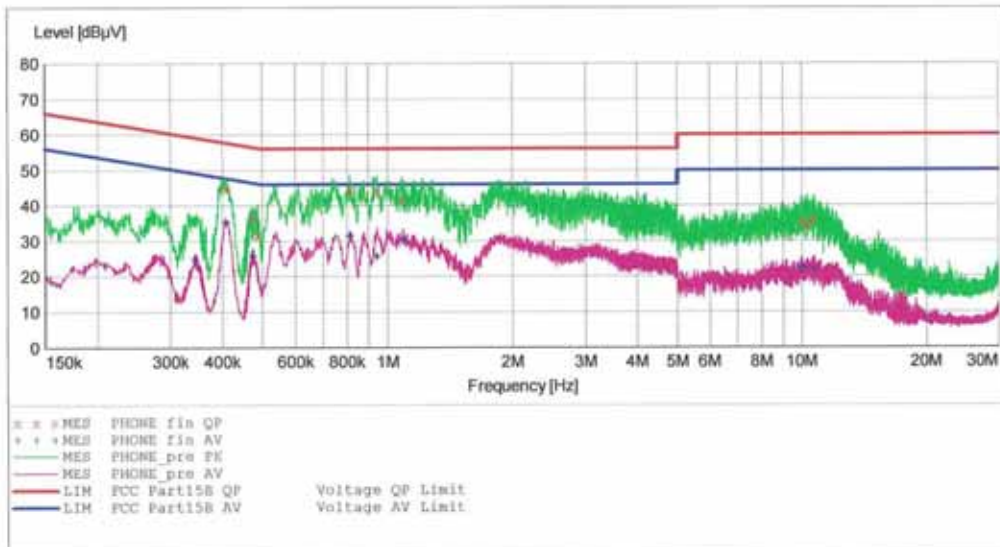
HCT

EMC

EUT: L-02E  
 Manufacturer: LG  
 Operating Condition: NFC MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART 15 B  
 Comment: H(Terminated)

**SCAN TABLE: "FCC PART 15 B(H)"**

Short Description:		FCC PART 15 CLASS B					Transducer
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.		
150.0 kHz	500.0 kHz	1.0 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
0.409010	45.00	9.8	58	12.7	---	---
0.472010	37.00	9.8	57	19.5	---	---
0.487010	31.70	9.8	56	24.5	---	---
0.812000	44.00	9.8	56	12.0	---	---
0.944000	44.00	9.8	56	12.0	---	---
1.084000	41.60	9.8	56	14.4	---	---
10.028000	35.50	10.5	60	24.5	---	---
10.300000	34.50	10.5	60	25.5	---	---
10.684000	36.40	10.5	60	23.6	---	---

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E	



**MEASUREMENT RESULT: "PHONE\_fin AV"**

10/11/2012 1:56PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.345010	24.80	9.7	49	24.3	---	---
0.409010	35.40	9.8	48	12.2	---	---
0.474010	26.00	9.8	46	20.4	---	---
0.812000	31.40	9.8	46	14.6	---	---
0.944000	25.60	9.8	46	20.4	---	---
1.092000	30.10	9.8	46	15.9	---	---
9.976000	22.50	10.5	50	27.5	---	---
10.000000	22.00	10.5	50	28.0	---	---
10.728000	22.00	10.5	50	28.0	---	---

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)		FCC ID : ZNFL02E



## Conducted Emissions (Line 2)

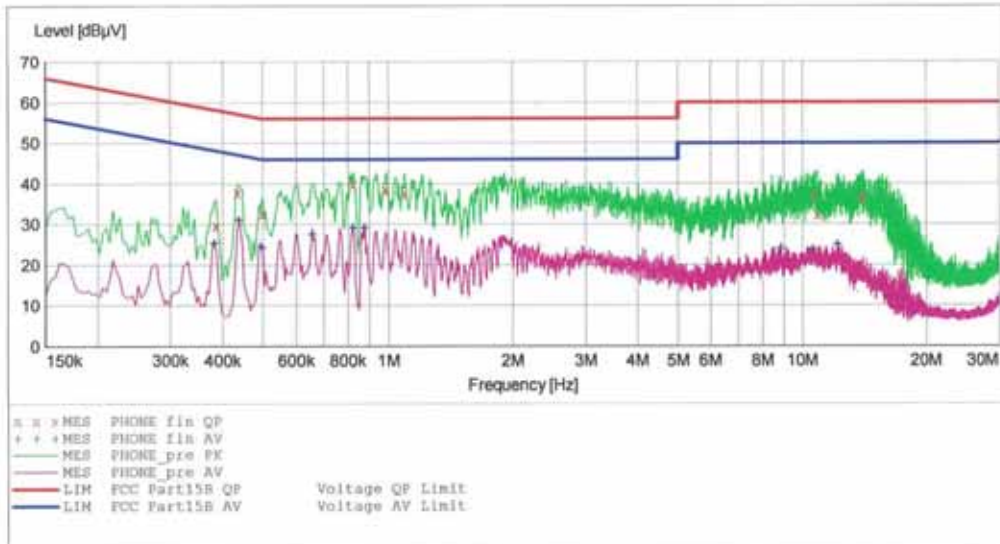
HCT

EMC

EUT: L-02E  
 Manufacturer: LG  
 Operating Condition: NFC MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART 15 CLASS B  
 Comment: N(Terminated)

### SCAN TABLE: "FCC PART 15 B(N)"

Short Description:			FCC PART 15 CLASS B			
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
			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"

10/11/2012 2:01PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.386010	29.70	10.0	58	28.5	---	---
0.434010	38.00	10.0	57	19.2	---	---
0.498010	32.70	10.0	56	23.4	---	---
0.824000	40.00	10.0	56	16.0	---	---
0.988000	38.40	10.0	56	17.6	---	---
1.096000	37.60	10.0	56	18.4	---	---
10.704000	37.20	10.8	60	22.8	---	---
10.896000	32.40	10.8	60	27.6	---	---
13.964000	36.70	11.1	60	23.3	---	---

FCC PT.15.225 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID : ZNFL02E





**MEASUREMENT RESULT: "PHONE\_fin AV"**

10/11/2012 2:01PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.382010	25.30	10.0	48	22.9	---	---
0.438010	31.10	10.0	47	16.0	---	---
0.498010	24.30	10.0	46	21.7	---	---
0.656000	27.60	10.0	46	18.4	---	---
0.824000	29.10	10.0	46	16.9	---	---
0.880000	29.10	10.0	46	16.9	---	---
8.864000	23.90	10.6	50	26.1	---	---
10.628000	23.80	10.8	50	26.2	---	---
12.168000	24.90	10.9	50	25.1	---	---

FCC PT.15.225 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1210R20-1	Date of Issue: October 23, 2012	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)		FCC ID : ZNFL02E

## 12. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	Annual	02/09/2013	100073
Schwarzbeck	VULB 9168/ TRILOG Antenna	Biennial	02/09/2013	200
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	05/03/2013	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	05/02/2013	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	07/31/2013	MY51110020
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
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	10/17/2013	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/26/2012	BBHA9170342
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	02/09/2013	839117/011
Agilent	E4416A /Power Meter	Annual	11/07/2012	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	05/02/2013	MY4442009
Hewlett Packard	11636B/Power Divider	Annual	11/07/2012	11377
Hewlett Packard	11667B / Power Splitter	Annual	06/05/2013	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	11/07/2012	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/07/2012	010002156287001199
EMCO	6502.LOOP ANTENNA	Biennial	01/11/2014	9009-2536
Agilent	8493C / Attenuator(10 dB)	Annual	07/30/2013	76649

<b>FCC PT.15.225 TEST REPORT</b>	<b>FCC CERTIFICATION REPORT</b>		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
<b>Test Report No.</b> HCTR1210R20-1	<b>Date of Issue:</b> October 23, 2012	<b>EUT Type:</b> Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	<b>FCC ID :</b> ZNFL02E