



HCT CO., LTD.

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## EMI CERTIFICATION REPORT

**Applicant:**

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

**Date of Issue:** June 15, 2012

**Test Report No.:** HCTE1206FE15

**Test Site:** HCT CO., LTD.

**HCT FRN:** 0005-8664-21

**FCC ID:**

**ZNFLG840G**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B  
Equipment Type : GSM/WCDMA Phone with Bluetooth & WLAN  
Model Name : LG840G  
Additional Model Name : LG840g  
Port / Connector(s) : USB Port / Headset Port

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 subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Report prepared by  
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**ATTACHMENT: TEST SETUP PHOTOGRAPHS**

## 1. GENERAL INFORMATION

### 1.1 Product Description

Equipment Under Test is **GSM/WCDMA Phone with Bluetooth & WLAN, Model: LG840G** manufactured by **LG Electronics MobileComm U.S.A., Inc.** Its basic purpose is used for communications.

<b>Model</b>	LG840G
<b>Additional Model Name</b>	LG840g
<b>FCC ID</b>	ZNFLG840G
<b>E.U.T Type</b>	GSM/WCDMA Phone with Bluetooth & WLAN
<b>TX Frequency</b>	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) 1 852.4 MHz to 1 907.6 MHz (WCDMA 1 900)
<b>RX Frequency</b>	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) 1 932.4 MHz to 1 987.6 MHz (WCDMA 1 900)

### 1.2 Related Submittal(s) / Grant(s)

Original submittal only.

### 1.3 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Manufacturer	Model Name	FCC ID / DoC	Connected To
E.U.T	LG	LG840G	ZNFLG840G	Notebook PC
Notebook PC	LG	X140-02	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	DELTA (JIANG SU)	ADP-40PH AD	-	Notebook PC
Mouse	PRIMAX ELECTRONICS	MOARUO	DoC	Notebook PC
USB cable	-	-	-	E.U.T Notebook PC
Headset	I-SOUND	EAB62209201	-	E.U.T
Micro SD card	SanDisk	2 GB	-	E.U.T
Net HDD	LG	N1A1DD1	Doc	Notebook PC Net HDD adaptor
Net HDD adaptor	Yang Ming Industrial	DA-60M12	-	Net HDD
RJ45 cable	-	-	-	Net HDD Notebook PC

### 1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
E.U.T	Micro USB	Y	Y	(P,D)1.2
	Headset jack	-	N	(D)1.2
Notebook PC	RJ45	-	N	(D)1.5
	USB (Mouse)	-	Y	(D)1.8

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

### 1.5 Noise Suppression Parts on Cable. (I/O cable)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
E.U.T	Micro USB	N	N/A	Y	Both End
	Headset jack	N	N/A	Y	E.U.T End
Notebook PC	RJ45	N	N/A	N	Both End
	USB (Mouse)	-	-	Y	Notebook PC End

## 1.6 Test Methodology

Both Conducted and Radiated testing was performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to E.U.T distance of 3 m

## 1.7 Test Facility

The 3 m semi anechoic chamber used to collect the test data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, Republic of 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 Mar 02, 2011 (Registration Number: 90661)

## 1.8 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 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

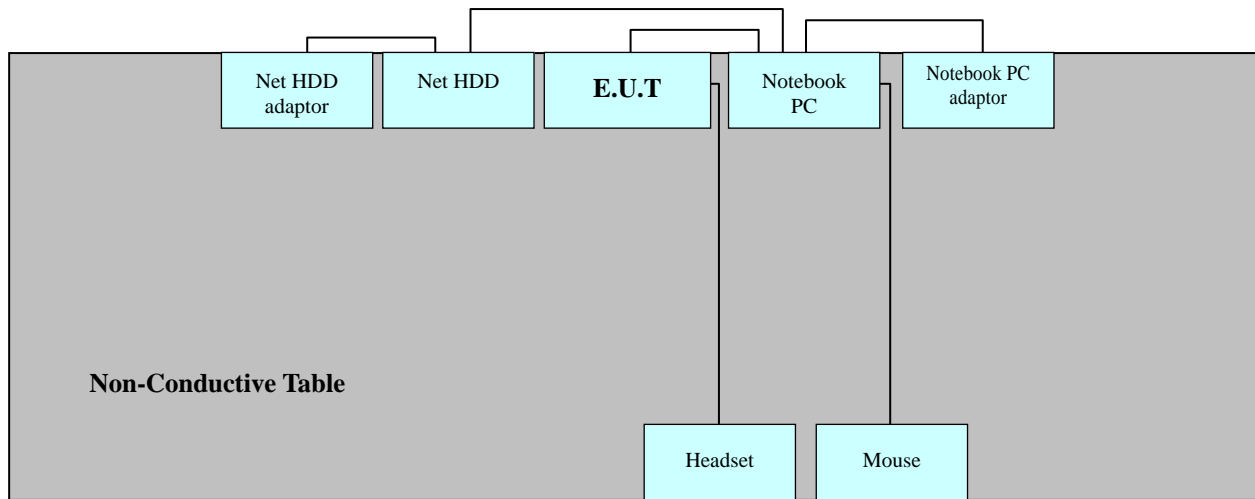
## 2. SYSTEM TEST CONFIGURATION

### 2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor and Base Station. Preliminary Power Line Conducted Emission tests were performed by using the procedure in ANSI C63.4/2003 7.2.3 to determine the worst operating conditions.

Radiated Emission test : Preliminary Radiated Emission tests were performed by using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worst operating condition. Final Radiated Emission tests were performed at 3 m semi-anechoic chamber.

[Configuration of Tested System]



Power Line: 110 VAC

### **3. PRELIMINARY TEST**

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#### **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	: 27.0 °C
Humidity Level	: 51.6 %
Test Date	: June 11, 2012

Frequency (MHz)	Transd (dB)	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
			(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)
0.150	10.0	N	66	38.3	48.3	56	-	-
20.692	11.4	N	60	34.5	45.9	50	-	-
21.024	11.5	N	60	33.1	44.6	50	-	-
21.112	11.5	N	60	32.6	44.1	50	-	-
20.532	11.6	H	60	33.1	44.7	50	-	-
20.904	11.6	H	60	31.4	43.0	50	-	-

※ **NOTE:** Refer to page 10 to page 13 for details.

1. The worst-case emissions are reported.
2. Line H = Hot, Line N = Neutral

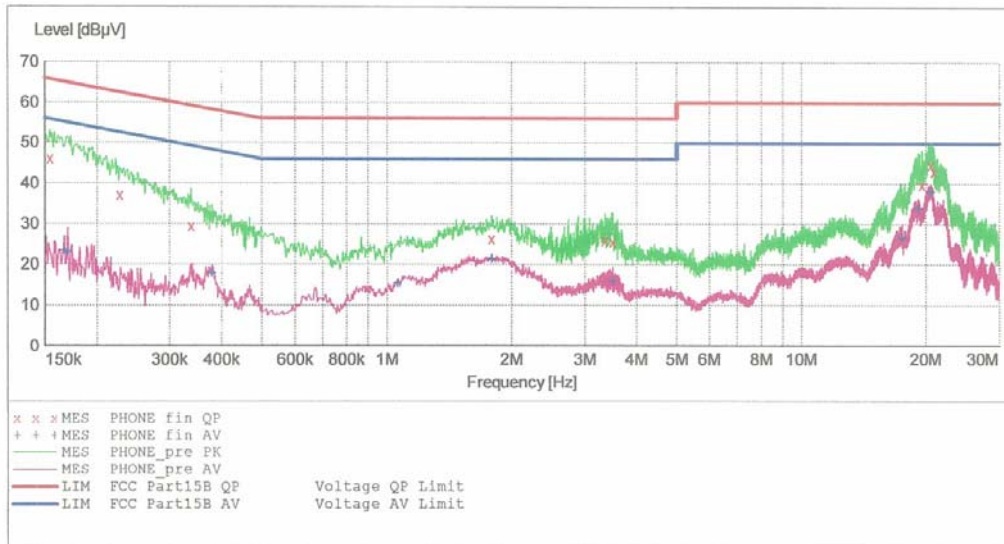
**HCT**

**EMC**

EUT: 840G  
 Manufacturer: LG  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: JH CHOI  
 Test Specification: FCC PART15 CLASS B  
 Comment: H

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

Short Description:			FCC PART 15 CLASS B				
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"**

6/11/2012 7:05PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154010	46.10	10.0	66	19.6	---	---
0.227010	37.10	10.1	63	25.5	---	---
0.337010	29.50	10.1	59	29.7	---	---
1.792000	26.50	10.2	56	29.5	---	---
3.364000	26.10	10.3	56	29.9	---	---
3.512000	25.70	10.3	56	30.3	---	---
19.536000	39.70	11.5	60	20.3	---	---
20.532000	44.70	11.6	60	15.3	---	---
20.904000	43.00	11.6	60	17.0	---	---

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

6/11/2012 7:05PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.167010	23.40	10.1	55	31.7	---	---
0.170010	23.00	10.1	55	31.9	---	---
0.378010	17.90	10.1	48	30.4	---	---
1.064000	15.40	10.1	46	30.6	---	---
1.792000	21.30	10.2	46	24.7	---	---
3.512000	16.00	10.3	46	30.0	---	---
17.488000	26.70	11.3	50	23.3	---	---
19.096000	33.90	11.4	50	16.1	---	---
20.528000	38.00	11.6	50	12.0	---	---

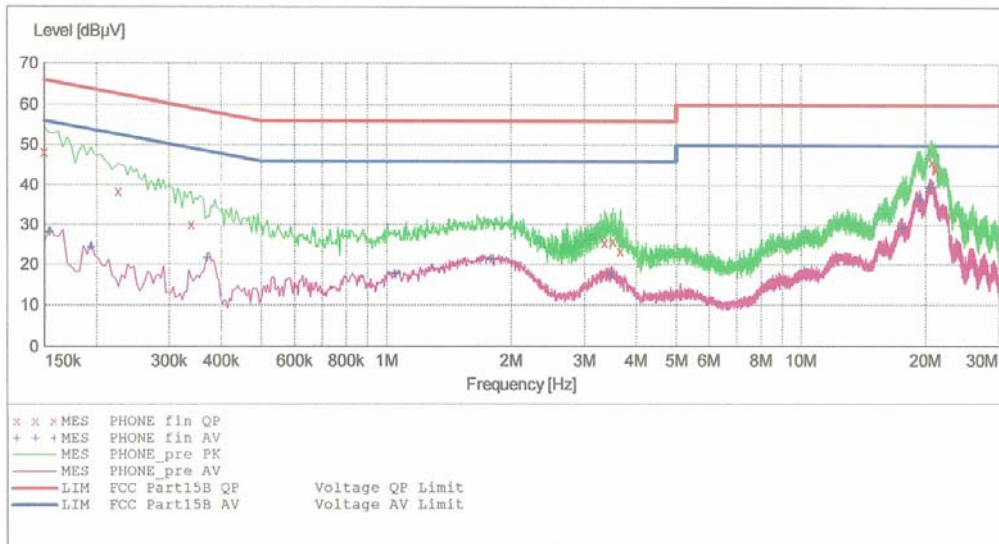
**HCT**

**EMC**

EUT: 840G  
 Manufacturer: LG  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: JH CHOI  
 Test Specification: FCC PART15 CLASS B  
 Comment: N

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

Short Description:			FCC PART 15 CLASS B				Transducer
Start	Stop	Step	Detector	Meas. Time	IF 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"**

6/11/2012 7:11PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150010	48.30	10.0	66	17.7	---	---
0.226010	38.40	10.1	63	24.1	---	---
0.338010	30.20	10.1	59	29.1	---	---
3.360000	25.60	10.3	56	30.4	---	---
3.520000	25.90	10.3	56	30.1	---	---
3.668000	23.30	10.3	56	32.7	---	---
20.692000	45.90	11.4	60	14.1	---	---
21.024000	44.60	11.5	60	15.4	---	---
21.112000	44.10	11.5	60	15.9	---	---

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

6/11/2012 7:11PM

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
0.154010	28.10	10.0	56	27.6	---	---
0.194010	24.30	10.1	54	29.6	---	---
0.370010	21.50	10.1	49	27.0	---	---
1.048000	17.70	10.1	46	28.3	---	---
1.784000	21.30	10.2	46	24.7	---	---
3.496000	17.60	10.3	46	28.4	---	---
17.580000	29.20	11.3	50	20.8	---	---
19.404000	36.50	11.4	50	13.5	---	---
20.500000	39.30	11.4	50	10.7	---	---

## 4.2 Radiated Emission Test

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

Limit Apply to : FCC PART 15 Subpart B Class B

**-For measurement below 1 GHz**

Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)

Operation Mode : Data communication mode

**-For measurement above 1 GHz**

Detector : Peak mode: Peak (RBW: 1 MHz / VBW: 1 MHz)

: Average mode: Peak (RBW: 1 MHz / VBW: 10 Hz)

Operation Mode : Data communication mode

Temperature : 22.9 °C

Humidity Level : 47.4 %

Test Date : June 12, 2012

Frequency (MHz)	Reading (dBuV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
30.500	12.84	V	1.0	11.46	3.40	40.0	27.7	12.3
55.200	16.36	V	1.0	12.14	3.60	40.0	32.1	7.9
249.600	19.95	H	1.0	11.76	4.50	46.0	36.2	9.8
296.300	16.84	H	1.5	13.27	4.59	46.0	34.7	11.3
757.000	10.47	H	1.2	21.83	5.70	46.0	38.0	8.0
933.800	7.97	H	1.0	23.60	6.03	46.0	37.6	8.4

※ NOTE:

1. Measurement above 1 GHz was performed from 1 GHz to the 5<sup>th</sup> harmonic of highest fundamental frequency. The highest fundamental frequency is GSM 1 900 center frequency.
2. For measurement above 1 GHz, Emission noise was not founded over the ambient noise.

## 5. FIELD STRENGTH CALCULATION

The field strength is calculated by adding the antenna factor and cable factor.  
 The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dB $\mu$ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB $\mu$ V/m value is mathematically converted to its corresponding level in  $\mu$ V/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dB}\mu\text{V/m}$$

### [Radiated Emission Limits]

Frequency of Emission (MHz)	Field Strength	
	$\mu$ V/m	dB $\mu$ V/m
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

## 6. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Next CAL Date</u>
<b><u>Conducted Emission</u></b>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2013.05.02
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	2013.02.03
<input type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	2013.02.09
<input checked="" type="checkbox"/> LISN	EMCO	3816/2SH	9706-1070	2013.05.02
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	2012.08.01
<b><u>Radiated Emission</u></b>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2013.05.03
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2012.08.02
<input type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3125	2013.05.03
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
<input type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	-
<input type="checkbox"/> Antenna master controller	HD GmbH	HD100	100/637BJ:00	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	-
<input checked="" type="checkbox"/> Power Amplifier	Rohde & Schwarz	SCU-18	10094	2012.09.19
<input type="checkbox"/> Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	937	2013.10.17



## **7. CONCLUSION**

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The data collected shows that the **GSM/WCDMA Phone with Bluetooth & WLAN, Model: LG840G, FCC ID: ZNFLG840G** complies with §15.107 and §15.109 of the FCC rules.