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## EMI CERTIFICATION REPORT

**Applicant:**  
LG Electronics MobileComm U.S.A., Inc.  
10101 Old Grove Road, San Diego, CA 92131

**Date of Issue:** December 15, 2011  
**Test Report No.:** HCTE1111FE15-1  
**Test Site:** HCT CO., LTD.  
**HCT FRN:** 0005-8664-21

**FCC ID:**

**ZNFL03D**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B  
Equipment Type : PCS GSM/GPRS and Cellular WCDMA/HSPA Modem  
Modem Name : L-03D  
Port / Connector(s) : USB 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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## TABLE OF CONTENTS

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	PAGE
1. GENERAL INFORMATION.....	3
1.1 Product Description.....	3
1.2 Related Submittal(s) / Grant(s).....	3
1.3 Tested System Details.....	4
1.4 Cable Description.....	4
1.5 Noise Suppression Parts on Cable. (I/O cable).....	4
1.6 Test Methodology.....	5
1.7 Test Facility.....	5
1.8 Frequency Range of Radiated Measurements.....	5
2. SYSTEM TEST CONFIGURATION.....	6
2.1 Configuration of Test System.....	6
3. PRELIMINARY TEST.....	7
3.1 Conducted Emission Test.....	7
3.2 Radiated Emission Test.....	7
4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY.....	8
4.1 Conducted Emission Test.....	8
4.2 Radiated Emission Test.....	13
5. FIELD STRENGTH CALCULATION.....	14
6. TEST EQUIPMENT.....	15
7. CONCLUSION.....	16

**ATTACHMENT: TEST SETUP PHOTOGRAPHS**

## 1. GENERAL INFORMATION

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### 1.1 Product Description

Equipment Under Test (E.U.T) is **PCS GSM/GPRS and Cellular WCDMA/HSPA Modem, Model: L-03D** manufactured by **LG Electronics MobileComm U.S.A., Inc.** Its basic purpose is used for communications.

<b>Model</b>	L-03D
<b>FCC ID</b>	ZNFL03D
<b>E.U.T Type</b>	PCS GSM/GPRS and Cellular WCDMA/HSPA Modem
<b>TX Frequency</b>	1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 826.40 MHz to 846.60 MHz (WCDMA 850)
<b>RX Frequency</b>	1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 871.40 MHz to 891.60 MHz (WCDMA 850)

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

Original submittal only.

### 1.3 Tested System Details

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

Device Type	Manufacturer	Model Number	FCC ID / DoC	Connected To
PCS GSM/GPRS and Cellular WCDMA /HSPA Modem	LG	L-03D	ZNFL03D	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	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
RJ45 cable	-	-	-	Notebook PC

### 1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
PCS GSM/GPRS and Cellular WCDMA /HSPA Modem	USB	-	-	-
Notebook PC	USB (Mouse)	-	Y	(D)1.8
	RJ 45	N	N	(P,D)2.0

\* 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
PCS GSM/GPRS and Cellular WCDMA /HSPA Modem	USB	-	-	-	E.U.T End
Notebook PC	USB (Mouse)	Y	Notebook PC End	Y	Notebook PC End
	RJ 45	N	-	N	Both 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 10 m semi anechoic chamber used to collect the test 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 Sep. 03, 2010 (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

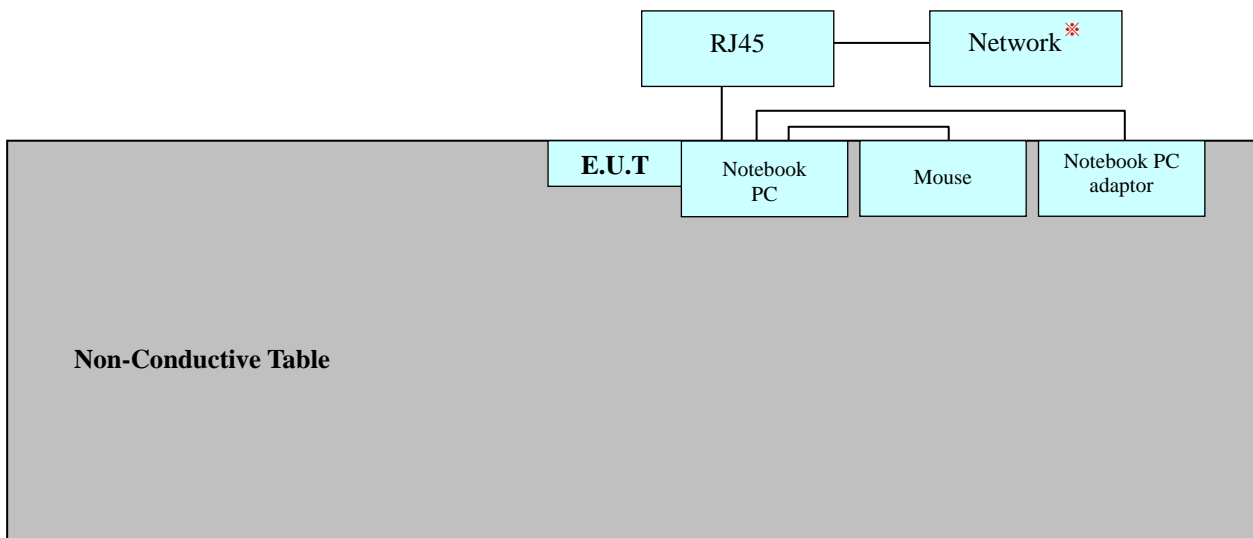
### 2.1 Configuration of Test System

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 10 m semi-anechoic chamber.

※ **NOTE:** The configuration of network is as follows, RJ45 cable is connected with laptop through fiber-convertor. The ping test was performed under the network configuration.

[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	: 24.3 °C
Humidity Level	: 49.5 %
Test Date	: December 13, 2011

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



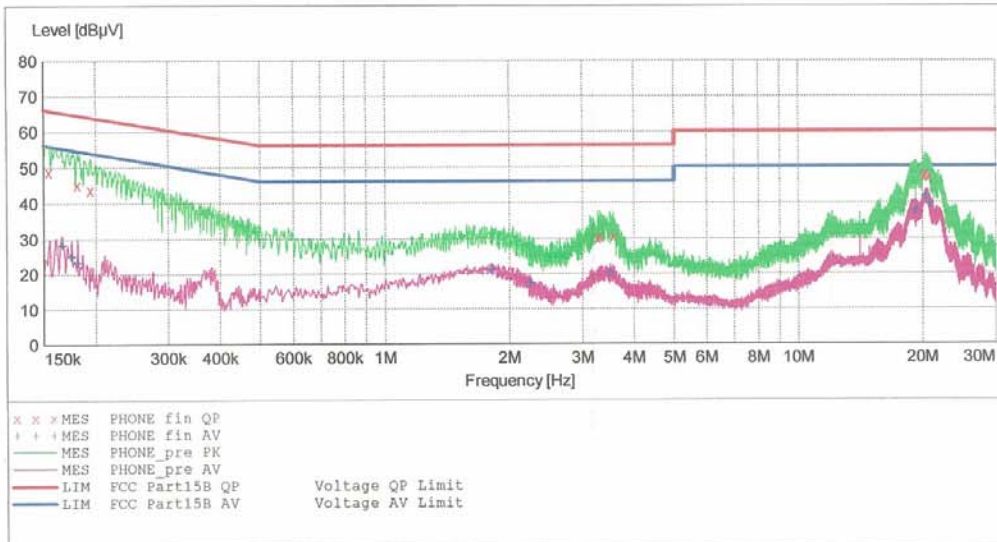
**HCT**

**EMC**

EUT: L-03D  
 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 Frequency	Stop Frequency	Step Width	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"**

12/13/2011 8:12PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154010	48.70	10.1	66	17.0	---	---
0.181010	45.20	10.1	64	19.2	---	---
0.194010	43.70	10.1	64	20.1	---	---
3.272000	29.90	10.3	56	26.1	---	---
3.312000	30.30	10.3	56	25.7	---	---
3.568000	30.80	10.3	56	25.2	---	---
20.072000	47.30	11.9	60	12.7	---	---
20.268000	47.90	11.9	60	12.1	---	---
20.732000	47.10	11.9	60	12.9	---	---

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

12/13/2011 8:12PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.166010	28.10	10.1	55	27.0	---	---
0.175010	24.80	10.1	55	29.9	---	---
0.181010	23.20	10.1	54	31.2	---	---
1.812000	21.00	10.2	46	25.0	---	---
2.240000	17.20	10.2	46	28.8	---	---
3.508000	20.20	10.3	46	25.8	---	---
19.232000	37.60	11.8	50	12.4	---	---
20.300000	41.50	11.9	50	8.5	---	---
20.840000	39.20	11.9	50	10.8	---	---

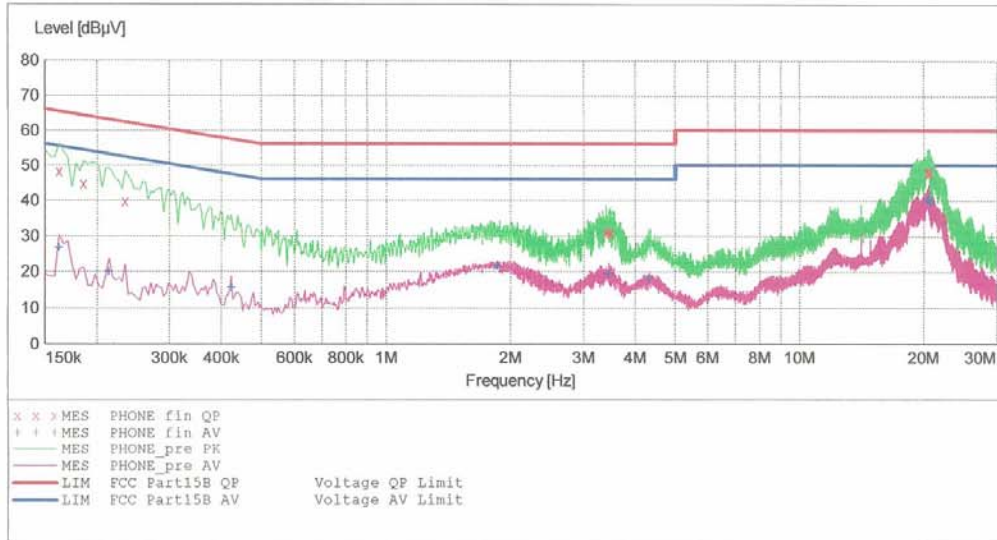
**HCT**

**EMC**

EUT: L-03D  
 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			
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"**

12/13/2011 8:07PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.162010	48.20	10.3	65	17.2	---	---
0.186010	44.60	10.3	64	19.6	---	---
0.234010	39.70	10.3	62	22.6	---	---
3.404000	31.20	10.6	56	24.8	---	---
3.456000	31.20	10.6	56	24.8	---	---
3.492000	30.80	10.6	56	25.2	---	---
20.404000	48.10	11.7	60	11.9	---	---
20.608000	47.90	11.7	60	12.1	---	---
20.656000	47.90	11.7	60	12.1	---	---

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

12/13/2011 8:07PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.162010	26.70	10.3	55	28.7	---	---
0.214010	19.90	10.3	53	33.2	---	---
0.422010	15.50	10.3	47	31.9	---	---
1.856000	21.60	10.4	46	24.4	---	---
3.456000	19.30	10.6	46	26.7	---	---
4.332000	18.00	10.6	46	28.0	---	---
20.548000	40.30	11.7	50	9.7	---	---
20.592000	40.10	11.7	50	9.9	---	---
20.772000	39.10	11.7	50	10.9	---	---

## 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 above 1 GHz

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

### -For measurement below 1 GHz

Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)  
 Operation Mode : Data communication mode  
 Temperature : 24.0 °C  
 Humidity Level : 49.1 %  
 Test Date : December 13, 2011

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)			
30.6	14.59	V	1.0	11.08	0.94	40.0	26.6	13.4
106.7	20.37	V	1.0	9.96	1.77	43.5	32.1	11.4
336.0	15.35	H	1.0	14.22	3.23	46.0	32.8	13.2
377.9	18.11	H	1.0	15.15	3.44	46.0	36.7	9.3
484.6	8.13	H	1.0	17.65	3.92	46.0	29.7	16.3
755.9	10.29	H	2.5	22.02	4.98	46.0	37.3	8.7

**※ 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.

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

### [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 type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2012.05.26
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2012.05.03
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	2012.02.01
<input type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	2012.04.01
<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	ESU26	100241	2012.08.02
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3125	2013.05.03
<input checked="" type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
<input checked="" type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
<input type="checkbox"/> Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	147	2012.04.13
<input checked="" type="checkbox"/> Power Amplifier	Rohde & Schwarz	SCU-18	10094	2012.09.19
<input type="checkbox"/> Power Amplifier	Rohde & Schwarz	CBL01188035-01	16074B	2012.04.28
<input type="checkbox"/> Base Station	Rohde & Schwarz	CMU 200	1100000802	2012.02.16

## **7. CONCLUSION**

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The data collected shows that the **PCS GSM/GPRS and Cellular WCDMA/HSPA Modem, Model: L-03D, FCC ID: ZNFL03D** complies with §15.107 and §15.109 of the FCC rules.