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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: April 03, 2012

Test Report No.: HCTE1204FE02

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

ZNFE610

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : Cellular/PCS GSM/GPRS Phone with Bluetooth/WLAN/NFC
Model Name : LG-E610
Additional Model(s) : E610, LGE610
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


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ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test is **Cellular/PCS GSM/GPRS Phone with Bluetooth/WLAN/NFC, Model: LG-E610** manufactured by **LG Electronics MobileComm U.S.A., Inc.** Its basic purpose is used for communications.

Model	LG-E610
Additional Model	E610, LGE610
FCC ID	ZNFE610
E.U.T Type	Cellular/PCS GSM/GPRS Phone with Bluetooth/ WLAN/NFC
TX Frequency	824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900)
RX Frequency	869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 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
Cellular/PCS GSM/ GPRS Phone with Bluetooth/WLAN/NFC	LG	LG-E610	ZNFE610	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
Micro SD card (8 GB)	SanDisk	-	-	E.U.T
USB cable	-	-	-	E.U.T Notebook PC
Headset	-	-	-	E.U.T
Router	MMCTECH	MW-2100R	-	Notebook PC
Router adaptor	Dee Van Electronics(Shenz hen)Co., Ltd.	DSA-0101F-05KA1	-	Router
RJ45 cable	-	-	-	Router Notebook PC

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
Cellular/PCS GSM/ GPRS Phone with Bluetooth/WLAN /NFC	Micro USB	Y	Y	(P,D)1.2
	Headset jack	-	N	(D)1.1
Notebook PC	RJ 45	-	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
Cellular/PCS GSM/ GPRS Phone with Bluetooth/WLAN /NFC	Micro USB	N	N/A	Y	Both End
	Headset jack	N	N/A	Y	E.U.T End
Notebook PC	RJ 45	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 th harmonic of the highest frequency or 40 GHz, whichever is lower

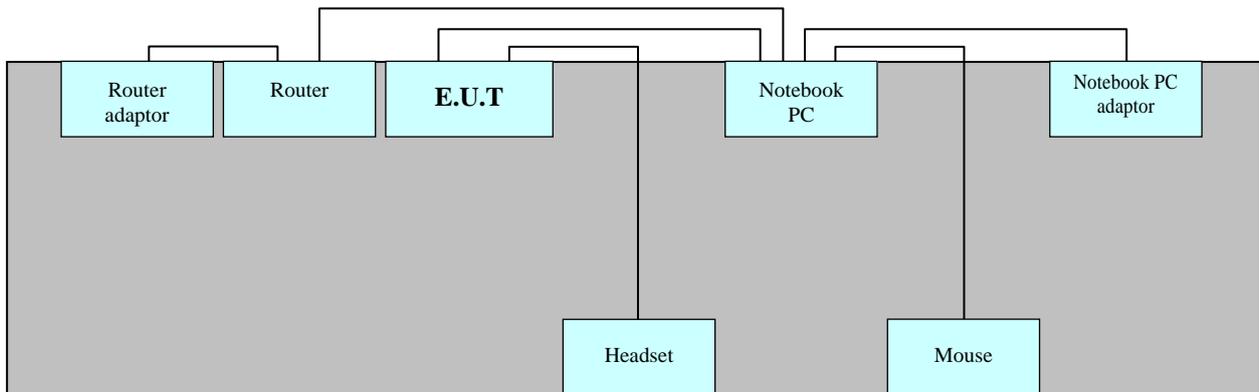
2. SYSTEM TEST CONFIGURATION

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]



Non-Conductive Table
Power Line: 110 VAC

3. PRELIMINARY TEST

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
Frequency Range (Test Limit)	: 0.15 MHz to 0.5 MHz Quasi-Peak(66dB μ V) Average (56 dB μ V)
	: 0.5 MHz to 5 MHz Quasi-Peak(56dB μ V) Average (46 dB μ V)
	: 5 MHz to 30 MHz Quasi-Peak(60dB μ V) Average (50 dB μ V)
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Operation Mode	: Data Communication mode
Temperature	: 24.7 °C
Humidity Level	: 49.7 %
Test Date	: March 31, 2012

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

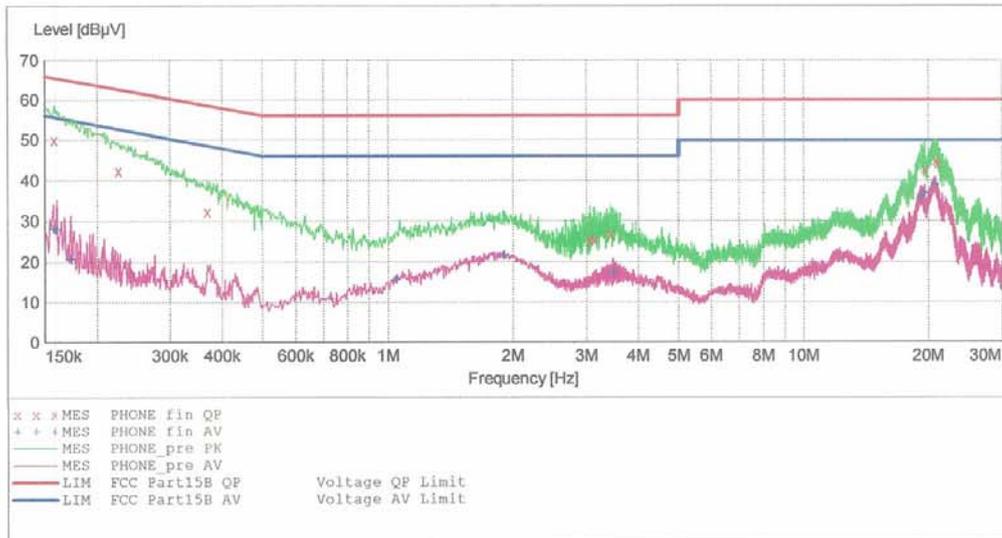
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EMC

EUT: E610
 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					Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
Frequency	Frequency	Width					
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"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.158010	50.00	10.1	66	15.6	---	---
0.225010	42.40	10.1	63	20.2	---	---
0.368010	32.40	10.1	59	26.1	---	---
3.060000	25.30	10.3	56	30.7	---	---
3.148000	25.50	10.3	56	30.5	---	---
3.432000	26.90	10.3	56	29.1	---	---
19.588000	42.80	11.8	60	17.2	---	---
20.828000	45.00	11.9	60	15.0	---	---
21.004000	44.20	11.9	60	15.8	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

3/31/2012 10:43AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.157010	28.10	10.1	56	27.5	---	---
0.160010	27.90	10.1	56	27.6	---	---
0.173010	20.70	10.1	55	34.1	---	---
1.052000	15.50	10.1	46	30.5	---	---
1.904000	21.50	10.2	46	24.5	---	---
3.484000	17.40	10.3	46	28.6	---	---
19.176000	35.80	11.8	50	14.2	---	---
19.588000	36.80	11.8	50	13.2	---	---
20.736000	39.00	11.9	50	11.0	---	---

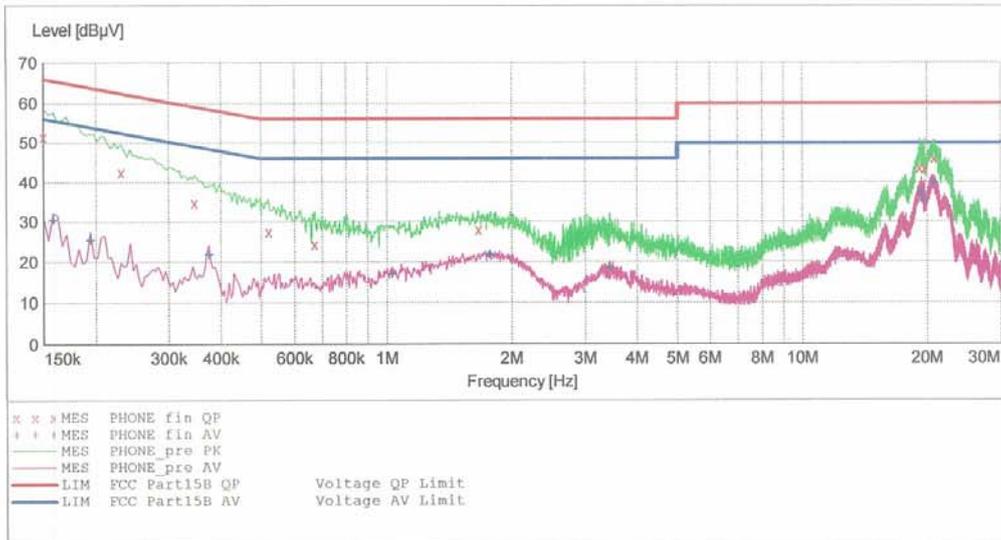
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EMC

EUT: E610
 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
Frequency	Frequency	Width				
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin_QP"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150010	51.60	10.3	66	14.4	---	---
0.230010	42.50	10.3	62	20.0	---	---
0.346010	34.80	10.3	59	24.3	---	---
0.520000	27.60	10.3	56	28.4	---	---
0.672000	24.30	10.4	56	31.7	---	---
1.664000	28.00	10.4	56	28.0	---	---
19.164000	43.50	11.7	60	16.5	---	---
19.700000	43.40	11.7	60	16.6	---	---
20.756000	46.00	11.7	60	14.0	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

3/31/2012 10:40AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.158010	30.50	10.3	56	25.1	---	---
0.194010	25.40	10.3	54	28.5	---	---
0.374010	21.80	10.3	48	26.6	---	---
1.032000	16.90	10.4	46	29.1	---	---
1.772000	21.70	10.4	46	24.3	---	---
3.440000	18.50	10.6	46	27.5	---	---
19.396000	37.10	11.7	50	12.9	---	---
19.688000	35.20	11.7	50	14.8	---	---
20.756000	39.90	11.7	50	10.1	---	---

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 : 23.8 °C

Humidity Level : 46.2 %

Test Date : March 31, 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)			
55.200	13.76	V	1.0	12.14	3.60	40.0	29.5	10.5
107.700	18.03	V	1.0	10.30	3.88	43.5	32.2	11.3
125.000	20.01	V	1.0	12.10	4.00	43.5	36.1	7.4
250.001	24.83	H	1.1	11.77	4.50	46.0	41.1	4.9
377.900	16.06	H	1.0	15.13	4.91	46.0	36.1	9.9
753.100	10.44	H	1.2	21.76	5.70	46.0	37.9	8.1

※ NOTE:

1. Measurement above 1 GHz was performed from 1 GHz to the 5th 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 μ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB μ V/m value is mathematically converted to its corresponding level in μ 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	
	μ V/m	dB μ 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>
<u>Conducted Emission</u>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2012.05.03
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	2013.02.03
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	2013.02.09
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	2012.08.01
<u>Radiated Emission</u>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2012.05.26
<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 checked="" 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 type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	-	2012.04.13
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	937	2013.10.17

7. CONCLUSION

The data collected shows that the **Cellular/PCS GSM/GPRS Phone with Bluetooth/WLAN/NFC, FCC ID: ZNFE610, Model: LG-E610** complies with §15.107 and §15.109 of the FCC rules.