

**HCT CO., LTD.**



PRODUCT COMPLIANCE DIVISION  
SAN 136-1, AMI-RI, BUBAL-EUP, ICHEON-SI, KYOUNGKI-DO, 467-701, KOREA  
TEL: +82 31 639 8539 FAX: +82 31 639 8525 [www.hct.co.kr](http://www.hct.co.kr)

## EMI CERTIFICATION REPORT

**LG Electronics Inc.**

**60-39, Gasan-dong, Gumchon-gu,  
Seoul, 153-023, Korea**

**Date of Issue: October 06, 2009**

**Test Report No.: HCTE0910FE02**

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

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

**FCC ID:**

**BEJGW620F**

Classification / Standard(s) : FCC PART 15 Subpart B / CISPR 22 Class B

Equipment Type : Cellular/PCS GSM/ WCDMA/ EDGE Phone with Bluetooth/WLAN


Trade Name / Model(s) : LG Electronics Inc. / GW620f


Port / Connector(s) : DC In Port / USB Data 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 denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862.

  
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**Report prepared by**  
**: Gyeong Seon Kim**  
**Test Engineer of EMC Tech. Part**

  
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**Approved by**  
**: Nam Wook Kang**  
**Manager of EMC Tech. Part**

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**ATTACHMENT : TEST SETUP PHOTOGRAPHS**

## 1. GENERAL INFORMATION

### 1.1 Product Description

The LG Electronics Inc. Model: GW620f, Cellular/PCS GSM/ WCDMA/ EDGE Phone with Bluetooth/WLAN.

It's basic purpose is used for communications. It transmits from GSM 850 (824.20 MHz to 848.80 MHz), GSM 1 900 (1 850.20 MHz to 1 909.80 MHz), WCDMA 850 (826.40 MHz to 846.60 MHz) and receives from GSM 850 (869.20 MHz to 893.80 MHz), GSM 1 900 (1 930.20 MHz to 1 989.80 MHz), WCDMA 850 (871.40 MHz to 891.60 MHz).

<b>Model</b>	GW620f
<b>FCC ID</b>	BEJGW620F
<b>E.U.T Type</b>	Cellular/PCS GSM/ WCDMA/ EDGE 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)
<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)

### 1.2 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 /Part Number	FCC ID / DoC	Connected to
Cellular/PCS GSM/ WCDMA/ EDGE Phone with Bluetooth/WLAN	LG	GW620f	BEJGW620F	Notebook PC
Travel adaptor	SALCOMP	STA-U12ES	-	E.U.T
Notebook PC	DELL	E5500	DoC	E.U.T, TA
Notebook PC adaptor	DELL	DA90PE1-00	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
Ear phone	-	-	-	E.U.T
USB cable	-	-	-	E.U.T 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/ WCDMA/ EDGE Phone with Bluetooth/WLAN	DC in	Y	-	(P)1.1
	Ear jack	-	N	(D)1.1
	USB data	Y	Y	(D)1.2
Notebook PC	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/ WCDMA/ EDGE Phone with Bluetooth/WLAN	DC in	N	-	Y	E.U.T end
	Ear jack	N	-	Y	E.U.T end
	USB data	N	-	Y	Both end
Notebook PC	USB (Mouse)	Y	Notebook PC end	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 open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, Maekok-ri, Hobup-myun, Icheon-si, Kyoungki-do, 467-701, Korea. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the commission and accepted dated June 10, 2009. (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.

<b>Highest frequency generated or used in the device or on which the device operates or tunes (MHz)</b>	<b>Upper frequency of measurement range (MHz)</b>
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

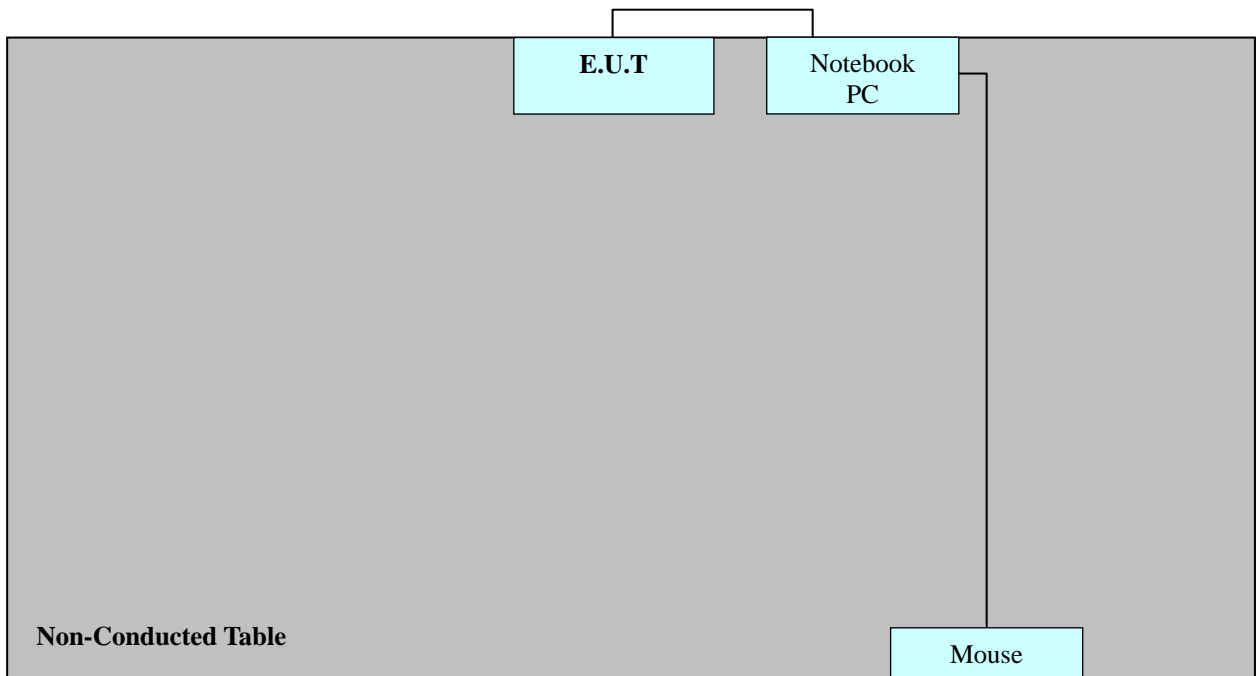
## 2. SYSTEM TEST CONFIGURATION

### 2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN, all other peripheral equipment were connected to another LISN. 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 open area test site.

[Configuration of Tested System]



Power Line: 110 VAC

### 3. PRELIMINARY TEST

#### 3.1 Conducted Emission Test

During preliminary tests, the following operating mode was investigated

Operation Mode	The Worst Operating Condition
GSM Idle (850, 1 900)	
WCDMA Idle (850)	
Camera	
MP3	
FM Radio	
Data Communication	○

#### 3. 2 Radiated Emission Test

During preliminary test, the following operation mode was investigated

Operation Mode	The Worst Operating Condition
GSM Idle (850, 1 900)	
WCDMA Idle (850)	
Camera	
MP3	
FM Radio	
Data Communication	○

## 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	: CISPR 22 Class B
Result	: Passed by 8.6 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 22.3 °C
Humidity level	: 34.5 %
Test date	: September 30, 2009

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB $\mu$ V)	Conductor	Result	Limit (dB $\mu$ V)	Margin (dB)
0.1941	55.4	HOT	Quasi-Peak	64.0	8.6
0.2421	35.3	HOT	Average	52.0	16.7
0.2221	52.3	NEUTRAL	Quasi-Peak	63.0	10.7
0.2181	37.4	NEUTRAL	Average	53.0	15.6

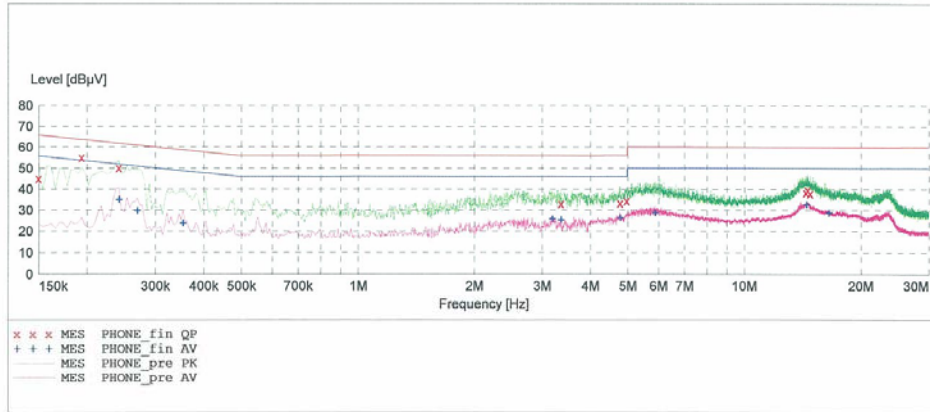
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**EMC**

EUT: GW620f  
 Manufacturer: LG Electroncis  
 Operating Condition: DATA LINK MODE  
 Test Site: SHIELD ROOM  
 Operator: GS-KIM  
 Test Specification: CISPR22 CLASS B  
 Comment: H

**SCAN TABLE: "EN 55022 Voltage"**

Short Description:		EN 55022 Voltage					
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer	
150.1 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3-Z5-2009.9.16	
			Average				
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3-Z5-2009.9.16	
			Average				
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3-Z5-2009.9.16	
			Average				



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

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150100	45.30	10.0	66	20.7	1	---
0.194100	55.30	10.0	64	8.6	1	---
0.242100	50.30	10.1	62	11.8	1	---
3.364000	33.20	10.4	56	22.8	1	---
4.780000	33.50	10.5	56	22.5	1	---
4.972000	34.50	10.5	56	21.5	1	---
14.432000	38.50	11.8	60	21.5	1	---
14.552000	39.80	11.8	60	20.2	1	---
14.792000	38.10	11.8	60	21.9	1	---

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

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.242100	35.30	10.1	52	16.7	1	---
0.270100	30.00	10.1	51	21.1	1	---

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

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.354100	24.10	10.1	49	24.7	1	---
3.192000	25.90	10.4	46	20.1	1	---
3.364000	25.60	10.4	46	20.4	1	---
4.780000	26.60	10.5	46	19.4	1	---
5.888000	29.00	10.7	50	21.0	1	---
14.472000	32.90	11.8	50	17.1	1	---
16.516000	28.80	12.0	50	21.2	1	---

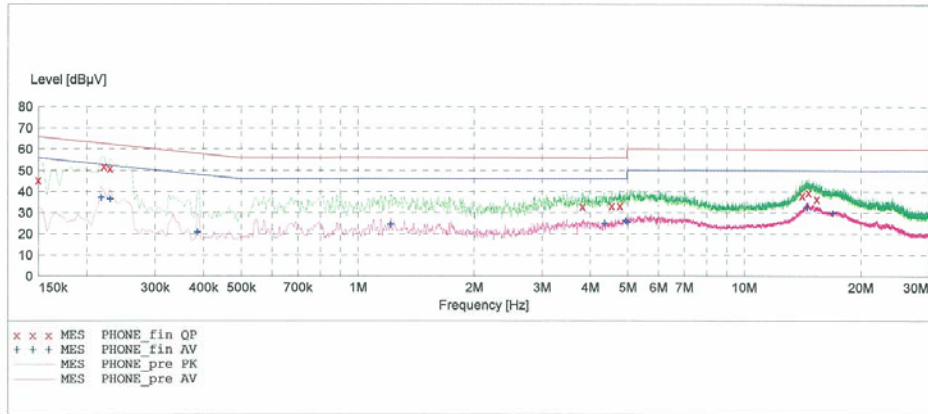
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**EMC**

EUT: GW620f  
 Manufacturer: LG Electronics  
 Operating Condition: DATA LINK MODE  
 Test Site: SHIELD ROOM  
 Operator: GS-KIM  
 Test Specification: CISPR22 CLASS B  
 Comment: N

**SCAN TABLE: "EN 55022 Voltage"**

Start Frequency	Stop Frequency	Step Width	EN 55022 Voltage Detector	Meas. Time	IF Bandw.	Transducer
150.1 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3-Z5-2009.9.16
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3-Z5-2009.9.16
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3-Z5-2009.9.16
			Average			



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

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150100	45.80	10.0	66	20.2	1	---
0.222100	52.10	10.1	63	10.7	1	---
0.230100	51.20	10.1	62	11.3	1	---
3.828000	33.30	10.4	56	22.7	1	---
4.560000	33.40	10.5	56	22.6	1	---
4.780000	33.40	10.5	56	22.6	1	---
14.128000	38.60	11.8	60	21.4	1	---
14.672000	39.90	11.8	60	20.1	1	---
15.400000	36.80	11.9	60	23.2	1	---

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

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.218100	37.30	10.1	53	15.6	1	---
0.230100	36.70	10.1	52	15.7	1	---

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

(continued)

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.386100	20.90	10.1	48	27.3	1	---
1.216000	24.50	10.2	46	21.5	1	---
4.360000	25.10	10.5	46	20.9	1	---
4.940000	26.20	10.5	46	19.8	1	---
5.000000	25.60	10.5	46	20.4	1	---
14.492000	32.60	11.8	50	17.4	1	---
16.896000	29.90	12.0	50	20.1	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
Result	: Passed by 10.6 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 25.3 °C
Humidity level	: 41.5 %
Test date	: September 30, 2009

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
482.4	16.0	17.0	2.4	V	35.4	46.0	10.6

**Note)**

For measurement over 1 GHz, noise level was more than 10 dB below the limit.

## 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>Next CAL Date</u>
EMI Test Receiver	Rohde & Schwarz	ESI40	2009.10.31
EMI Test Receiver	Rohde & Schwarz	ESCI	2010.06.02
LISN	Rohde & Schwarz	ESH3-Z5	2010.02.06
LISN	Rohde & Schwarz	ENV216	2010.04.01
Attenuator	Rohde & Schwarz	ESH3-Z2	2009.10.30
Trilog Antenna	Schwarzbeck	VULB9160	2010.12.18
Communication Antenna	TDK	LPDA-0802	-
Antenna Position Tower	HD	240/520/00	-
Base Station	Rohde & Schwarz	CMU 200	2010.02.17
Horn Antenna	Schwarzbeck	BBHA 9120D	2010.03.26
RF-Amplifier	MITEQ	AMF-6D-00101800-35.20PPS	2010.04.25
Bluetooth Base Station	TESCOM	TC-3000A	2010.01.09

## 7. CONCLUSION

The data collected shows that the **LG Electronics Inc. Model: GW620f, Cellular/PCS GSM /WCDMA/EDGE Phone with Bluetooth/WLAN. FCC ID: BEJGW620F** complies with §15.107 and §15.109 of the FCC rules.