

HCT CO., LTD.



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## EMI CERTIFICATION REPORT

**Applicant:**

LG Electronics Inc.

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

**Date of Issue:** May 26, 2010

**Test Report No.:** HCTE1005FE35

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

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

**FCC ID:**

**BEJGW370**

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

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


Model(s) Name : GW370


Port / Connector(s) : Headset 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.

  
Report prepared by  
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## TABLE OF CONTENTS

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	PAGE
1. GENERAL INFORMATION	
1.1 Product description	3
1.2 Related submittal(s)/Grant(s)	3
1.3 Tested system details	4
1.4 Cable description	5
1.5 Noise suppression parts on cable. (I/O cable)	5
1.6 Test methodology	6
1.7 Test facility	6
1.8 Frequency Range of Radiated Measurements	6
2. SYSTEM TEST CONFIGURATION	
2.1 Configuration of tested system	7
3. PRELIMINARY TEST	
3.1 Conducted Emission test	8
3.2 Radiated Emission test	8
4. CONDUCTED AND RADIATED EMISSION TESTS SUMMARY	
4.1 Conducted Emission test	9
4.2 Radiated Emission test	14
5. FIELD STRENGTH CALCULATION	15
6. TEST EQUIPMENT	16
7. CONCLUSION	17

**ATTACHMENT: TEST SETUP PHOTOGRAPHS**

## 1. GENERAL INFORMATION

### 1.1 Product Description

Equipment Under Test (E.U.T) is **Cellular/PCS GSM/WCDMA/EDGE Phone with Bluetooth, Model: GW370** manufactured by **LG Electronics Inc.** Its basic purpose is used for communications.

<b>Model (s)</b>	GW370
<b>FCC ID</b>	BEJGW370
<b>E.U.T Type</b>	Cellular/PCS GSM/WCDMA/EDGE Phone with Bluetooth
<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 Number/ Part Number	FCC ID / DoC	Connected To
Cellular/PCS GSM/ WCDMA/EDGE Phone with Bluetooth	LG	GW370	BEJGW370	Notebook PC
Notebook PC	HP	Compaq6730b	DoC	E.U.T
Notebook PC adaptor	Hipro Electronics	PPP014Y-S	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
Headset	-	-	-	-
USB Cable	-	-	-	Notebook PC E.U.T

## 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	Headset jack	-	N	(D)1.0
	USB data	Y	Y	(P,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	Headset 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, Ichon-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

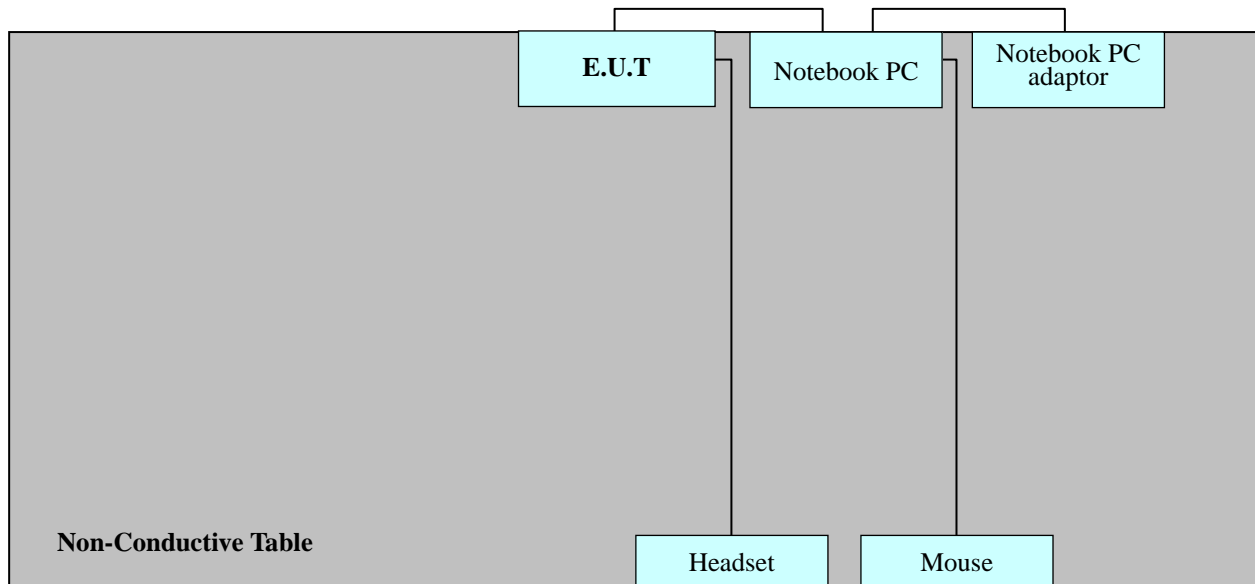
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

## 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.  
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**

- Test E.U.T with Data Communication mode, after connecting all peripheral devices.

During preliminary tests, the following operating mode was investigated:

Operation Mode	The Worst Operating Condition
Data Communication	○

#### **3. 2 Radiated Emission Test**

- Test E.U.T with Data Communication mode, after connecting all peripheral devices.

During preliminary tests, the following operating mode was investigated:

Operation Mode	The Worst Operating Condition
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 7.9 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 26.0 °C
Humidity level	: 36.9 %
Test date	: May 24, 2010

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB $\mu$ V)	Conductor	Result	Limit (dB $\mu$ V)	Margin (dB)
0.1500	53.9	NEUTRAL	Quasi-Peak	66.0	12.1
0.1500	58.1	HOT	Quasi-Peak	66.0	7.9
24.0000	42.1	NEUTRAL	Average	50.0	7.9
24.0000	41.5	HOT	Average	50.0	8.5

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

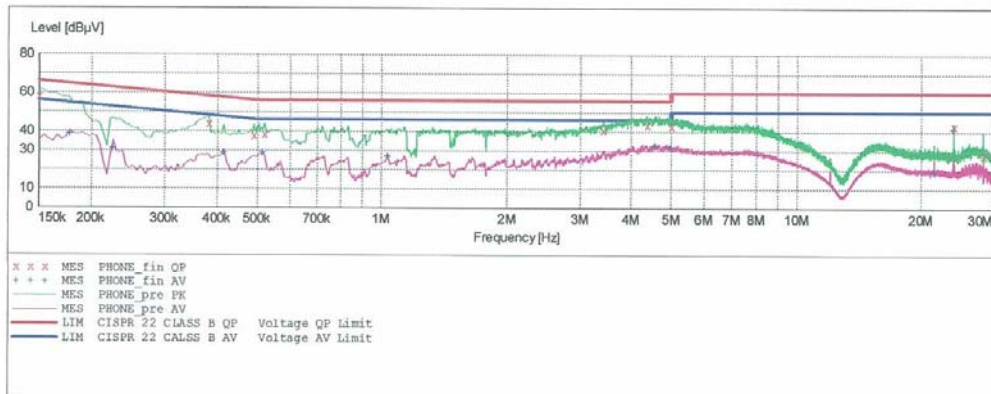
**HCT**

**EMC**

EUT: GW370  
Manufacturer: LG  
Operating Condition: DATA MODE  
Test Site: SHIELD ROOM  
Operator: DS-KIM  
Test Specification: CISPR22 CLASS B  
Comment: H

**SCAN TABLE: "CISPR22 CLASS B"**

Short Description:			CISPR22 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	ESH3 (20100210)
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			



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

5/24/2010 10:12AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150001	58.10	10.1	66	7.9	---	---
0.382001	43.70	10.1	58	14.5	---	---
0.490001	37.60	10.1	56	18.6	---	---
0.520000	38.40	10.1	56	17.6	---	---
3.420000	40.80	10.3	56	15.2	---	---
4.372000	43.30	10.4	56	12.7	---	---
5.000000	42.90	10.4	56	13.1	---	---
24.000000	43.10	11.7	60	16.9	---	---
28.404000	27.80	11.9	60	32.2	---	---

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

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.178001	38.40	10.1	55	16.2	---	---
0.226001	30.80	10.0	53	21.8	---	---
0.414001	28.60	10.1	48	18.9	---	---
0.516000	28.70	10.1	46	17.3	---	---
1.036000	26.90	10.1	46	19.1	---	---
4.580000	32.50	10.4	46	13.5	---	---
5.000000	31.70	10.4	46	14.3	---	---
21.500000	19.20	11.6	50	30.8	---	---
24.000000	41.50	11.7	50	8.5	---	---

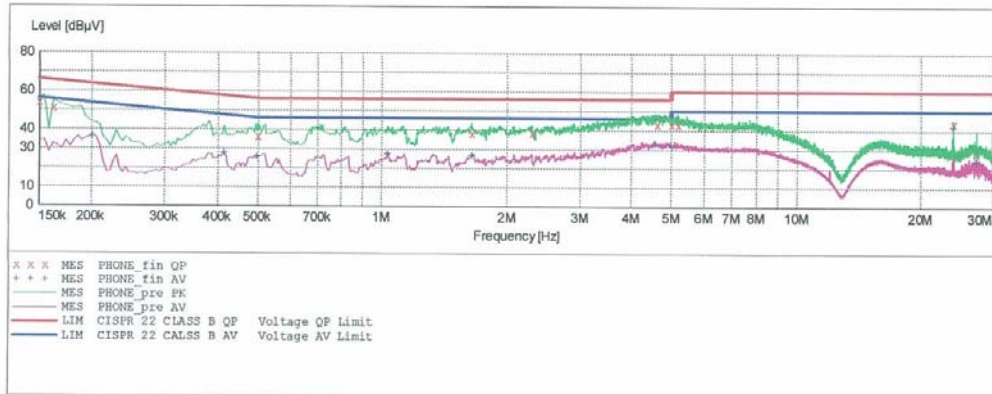
**HCT**

**EMC**

EUT: GW370  
Manufacturer: LG  
Operating Condition: DATA MODE  
Test Site: SHIELD ROOM  
Operator: DS-KIM  
Test Specification: CISPR22 CLASS B  
Comment: N

**SCAN TABLE: "CISPR22 CLASS B"**

Short Description:			CISPR22 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	ESH3 (20100210)
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			



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

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150001	53.90	10.1	66	12.1	---	---
0.162001	51.00	10.1	65	14.4	---	---
0.500000	36.20	10.1	56	19.8	---	---
1.644000	38.30	10.1	56	17.7	---	---
2.292000	38.60	10.2	56	17.4	---	---
4.620000	43.10	10.4	56	12.9	---	---
5.000000	43.10	10.4	56	12.9	---	---
5.200000	42.80	10.4	60	17.2	---	---
24.000000	43.70	11.7	60	16.3	---	---

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

5/24/2010 10:09AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.202001	36.40	10.0	54	17.1	---	---
0.414001	27.60	10.1	48	20.0	---	---
0.498001	25.60	10.1	46	20.5	---	---
1.036000	27.30	10.1	46	18.7	---	---
1.652000	26.50	10.1	46	19.5	---	---
4.576000	33.00	10.4	46	13.0	---	---
5.000000	32.30	10.4	46	13.7	---	---
24.000000	42.10	11.7	50	7.9	---	---
27.388000	23.80	11.9	50	26.2	---	---

## 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 5.7 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 16.0 °C
Humidity level	: 60.0 %
Test date	: May 25, 2010

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
30.5	21.1	11.2	0.7	V	33.0	40.0	7.0
102.7	21.0	9.3	1.1	V	31.4	43.5	12.1
180.3	13.5	11.5	1.4	H	26.4	43.5	17.1
245.3	21.3	11.3	1.7	H	34.3	46.0	11.7
345.2	18.3	14.0	2.0	H	34.3	46.0	11.7
893.3	13.7	23.2	3.4	V	40.3	46.0	5.7

## 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>
<b><u>Conducted Emission</u></b>			
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	2011.02.19
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	2011.02.05
<input type="checkbox"/> LISN	Rohde & Schwarz	ENV216	2011.04.06
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	2010.10.30
<b><u>Radiated Emission</u></b>			
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	2010.10.30
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	2010.12.18
<input checked="" type="checkbox"/> Antenna Master	HD	MA240	-
<input checked="" type="checkbox"/> Turn Table	EMCO	1060	-
<input type="checkbox"/> Communication Antenna	TDK	LPDA-0802	-
<input type="checkbox"/> Antenna Position Tower	HD	240/520/00	-
<input type="checkbox"/> Base Station	Rohde & Schwarz	CMU 200	2011.02.17
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	2012.04.13
<input checked="" type="checkbox"/> RF-Amplifier	MITEQ	AMF-6D-00101800 -35.20P.PS	2011.05.20
<input type="checkbox"/> Bluetooth Base Station	TESCOM	TC-3000A	2011.01.07



## **7. CONCLUSION**

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The data collected shows that the **LG Electronics Inc, Model: GW370, Cellular/PCS GSM/WCDMA/EDGE Phone with Bluetooth, FCC ID: BEJGW370** complies with §15.107 and §15.109 of the FCC rules.