



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: January 18, 2010

Test Report No.: HCTE1001FE17

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

**BEJGD510N**

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

Equipment (EUT) Type : PCS GSM/EDGE Phone with Bluetooth

Trade Name / Model(s) : LG Electronics Inc. / GD510N

Port / Connector(s) : 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  
: Gyeong Seon Kim  
Test Engineer of EMC Tech. Part

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

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

**TABLE OF CONTENTS**

	<b>PAGE</b>
<b>1. GENERAL INFORMATION</b>	
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
<b>2. SYSTEM TEST CONFIGURATION</b>	
2.1 Configuration of tested system.....	6
<b>3. PRELIMINARY TEST</b>	
3.1 Conducted Emission test.....	7
3.2 Radiated Emission test.....	7
<b>4. CONDUCTED AND RADIATED EMISSION TESTS SUMMARY</b>	
4.1 Conducted Emission test.....	8
4.2 Radiated Emission test.....	13
<b>5. FIELD STRENGTH CALCULATION.....</b>	<b>14</b>
<b>6. TEST EQUIPMENT.....</b>	<b>15</b>
<b>7. CONCLUSION.....</b>	<b>16</b>

**ATTACHMENT : TEST SETUP PHOTOGRAPHS**

## 1. GENERAL INFORMATION

### 1.1 Product Description

The **LG Electronics Inc. Model: GD510N, PCS GSM/EDGE Phone with Bluetooth.**

Its basic purpose is used for communications. It transmits from GSM 1 900 (1 850.20 MHz to 1 909.80 MHz) and receives from GSM 1 900 (1 930.20 MHz to 1 989.80 MHz).

<b>Model</b>	GD510N
<b>FCC ID</b>	BEJGD510N
<b>E.U.T Type</b>	PCS GSM/EDGE Phone with Bluetooth
<b>TX Frequency</b>	1 850.20 MHz to 1 909.80 MHz (GSM 1 900)
<b>RX Frequency</b>	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 Number/ Part Number	FCC ID / DoC	Connected To
PCS GSM/EDGE Phone with Bluetooth	LG	GD510N	BEJGD510N	Notebook PC
Notebook PC	Sam-Sung	NT-R519	DoC	E.U.T
Notebook PC adaptor	DELTA	ADP-60ZH D AD-6019R	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
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)
PCS GSM/EDGE Phone with Bluetooth	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
PCS GSM/EDGE Phone with Bluetooth	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

<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

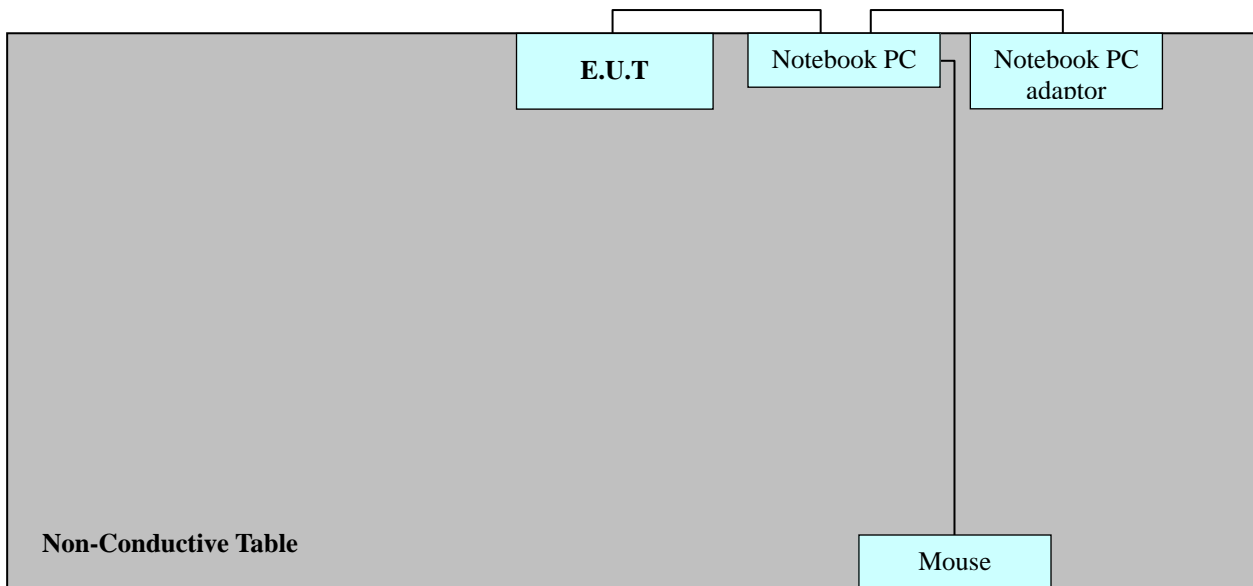
## 2. SYSTEM TEST CONFIGURATION

### 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
Data Communication	○

#### 3.2 Radiated Emission Test

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 5.0 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 20.8 °C
Humidity level	: 38.7 %
Test date	: January 13, 2010

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB $\mu$ V)	Conductor	Result	Limit (dB $\mu$ V)	Margin (dB)
0.5480	48.0	HOT	Quasi-Peak	56.0	8.0
0.5640	39.9	NEUTRAL	Average	46.0	6.7
0.5720	51.0	NEUTRAL	Quasi-Peak	56.0	5.0
0.5840	32.2	HOT	Average	46.0	13.8

※ **NOTE:** Refer to page 9 to page 12 for details.

1. All modes of operation were investigated, and the worst-case emissions are reported.
2. Line H = Hot, Line N = Neutral

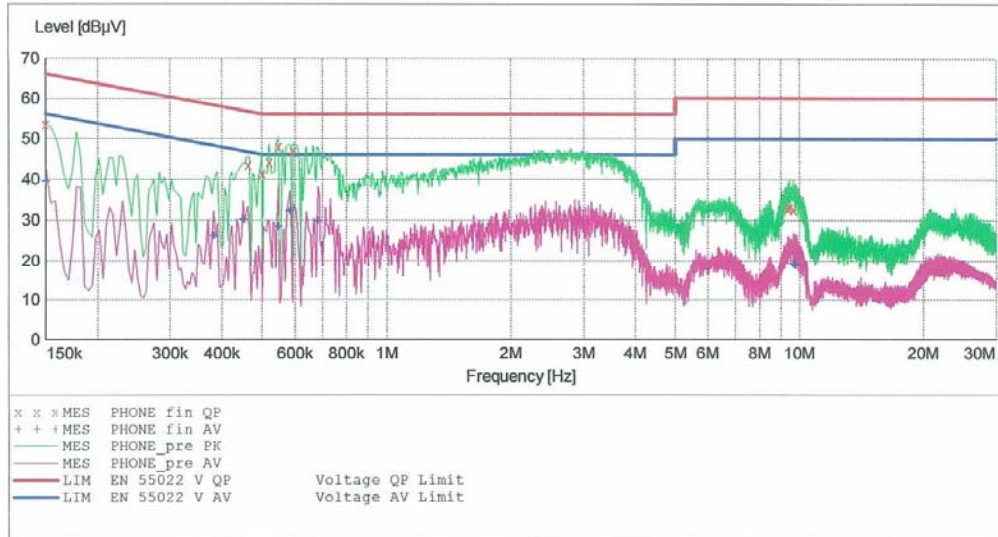
**HCT**

**EMC**

EUT: GD510N  
 Manufacturer: LG  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: GS KIM  
 Test Specification: CISPR22 CLASS B  
 Comment: H

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

Short Description:						
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	Average			
			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"**

1/13/2010 5:25PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	53.50	10.1	66	12.5	---	---
0.462000	43.50	10.1	57	13.1	---	---
0.500000	41.50	10.1	56	14.5	---	---
0.520000	44.20	10.1	56	11.8	---	---
0.548000	48.00	10.1	56	8.0	---	---
0.596000	46.90	10.1	56	9.1	---	---
9.400000	33.00	10.7	60	27.0	---	---
9.492000	33.10	10.7	60	26.9	---	---
9.684000	32.60	10.7	60	27.4	---	---

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

1/13/2010 5:25PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	39.50	10.1	56	16.5	---	---
0.382000	26.10	10.1	48	22.2	---	---
0.450000	30.20	10.1	47	16.7	---	---
0.548000	28.40	10.1	46	17.6	---	---
0.584000	32.20	10.1	46	13.8	---	---
0.684000	29.80	10.1	46	16.2	---	---
9.688000	19.10	10.7	50	30.9	---	---
9.732000	19.10	10.7	50	30.9	---	---
9.780000	18.70	10.7	50	31.3	---	---

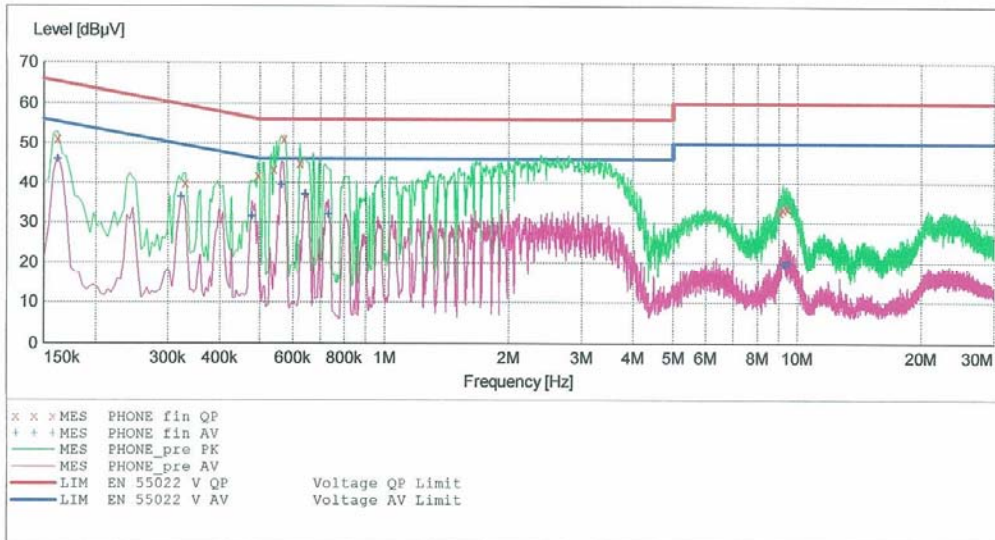
**HCT**

**EMC**

EUT: GD510N  
 Manufacturer: LG  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: GS KIM  
 Test Specification: CISPR22 CLASS B  
 Comment: N

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

Short Description:		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"**

1/13/2010 4:40PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.162000	51.00	10.1	65	14.3	---	---
0.330000	39.80	10.1	60	19.6	---	---
0.494000	41.80	10.1	56	14.3	---	---
0.540000	43.40	10.1	56	12.6	---	---
0.572000	51.00	10.1	56	5.0	---	---
0.624000	45.00	10.1	56	11.0	---	---
9.084000	32.80	10.6	60	27.2	---	---
9.224000	33.40	10.6	60	26.6	---	---
9.464000	33.70	10.7	60	26.3	---	---

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

1/13/2010 4:40PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.162000	45.80	10.1	55	9.6	---	---
0.322000	36.40	10.1	50	13.3	---	---
0.478000	31.50	10.1	46	14.9	---	---
0.564000	39.30	10.1	46	6.7	---	---
0.644000	36.90	10.1	46	9.1	---	---
0.732000	31.90	10.1	46	14.1	---	---
9.260000	19.50	10.7	50	30.5	---	---
9.360000	19.40	10.7	50	30.6	---	---
9.544000	19.80	10.7	50	30.2	---	---

## **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 8.0 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 10.0 °C
Humidity level	: 60.5 %
Test date	: January 13, 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
60.0	19.1	12.1	0.8	H	32.0	40.0	8.0
62.0	17.5	11.7	0.8	H	30.0	40.0	10.0
96.0	12.1	8.8	1.1	V	22.0	43.5	21.5
98.8	13.9	9.0	1.1	H	24.0	43.5	19.5
108.0	13.0	9.8	1.2	V	24.0	43.5	19.5
144.0	11.2	12.5	1.3	V	25.0	43.5	18.5

## 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	2010.06.02
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	2010.02.06
<input type="checkbox"/> LISN	Rohde & Schwarz	ENV216	2010.04.01
<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	2010.02.17
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	2010.03.26
<input checked="" type="checkbox"/> RF-Amplifier	MITEQ	AMF-6D-00101800-35. 20P.PS	2010.04.25
<input type="checkbox"/> Bluetooth Base Station	TESCOM	TC-3000A	2011.01.07

## **7. CONCLUSION**

The data collected shows that the **LG Electronics Inc. Model: GD510N. PCS GSM/EDGE Phone with Bluetooth. FCC ID: BEJGD510N** complies with §15.107 and §15.109 of the FCC rules.