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EMI REPORT (Certification)

LG Electronics Inc.

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

Date of Issue: February 16, 2009

Test report No.: HCT-EF09-0219

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

BEJGB230

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

Equipment (E.U.T) type : Cellular/PCS GSM Phone with Bluetooth

Trade name / Model(s) : LG Electronics Inc. / GB230

Port / Connector(s) : DC input port / Ear phone 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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ATTACHMENT : TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product description

The **LG Electronics Inc. GB230, Cellular/PCS GSM Phone with Bluetooth.**

Its 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), Bluetooth (2 402 MHz to 2 480 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), Bluetooth (2 402 MHz to 2 480 MHz).

Model	GB230
FCC ID	BEJGB230
E.U.T type	Cellular/PCS GSM Phone with Bluetooth
TX frequency	824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 2 402 MHz to 2 480 MHz (Bluetooth)
RX frequency	869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 2 402 MHz to 2 480 MHz (Bluetooth)

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 Phone with Bluetooth	LG	GB230	BEJGB230	Notebook PC, TA
Travel adaptor	DONGDO	STA-P53WD	-	E.U.T
Notebook PC	TOSHIBA	PSMA2K-01D002	DoC	E.U.T, TA
Notebook PC adaptor	DELTA	SADP-65KB B	-	Notebook PC
Mouse	MICROSOFT	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
Ear phone	CRESYN	SGEY0003719	-	E.U.T
USB cable	-	-	-	E.U.T, PC

1.4 Cable description

Product name	Port	Power cord shielded (Y/N)	I/O cable shielded (Y/N)	Length (M)
Cellular/PCS GSM Phone with Bluetooth	DC in	N	-	(P)1.5
	Ear jack	-	N	(D)1.1
	USB data	-	Y	(D)1.5
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 Phone with Bluetooth	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, Kyungki-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 July 6, 2006(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

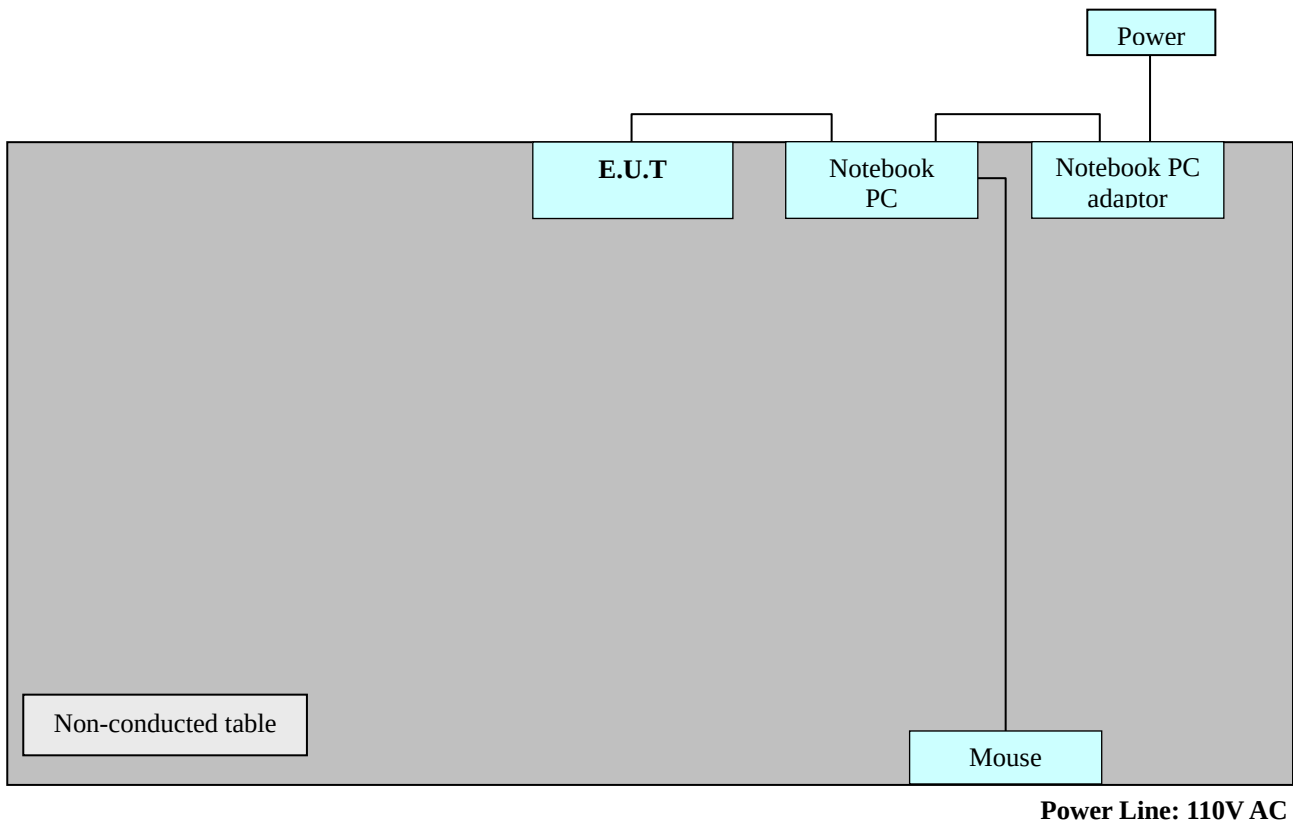
2. SYSTEM TEST CONFIGURATION

2.1 Configuration of test system

Power Line Conducted test : E.U.T was connected to LISN, all other supporting 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]



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, 1900)	
Camera	
MP3	
Bluetooth	
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, 1900)	
Camera	
MP3	
Bluetooth	
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 14.6 dB
Operating condition	: Data communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 12.2 °C
Humidity level	: 32.0 %
Test date	: February 13, 2009

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB μ V)	Conductor	Result	Limit (dB μ V)	Margin (dB)
0.2001	47.9	HOT	Quasi-Peak	64.0	15.7
0.2001	39.0	HOT	Average	54.0	14.6
0.2026	47.9	NEUTRAL	Quasi-Peak	64.0	15.6
0.2026	38.7	NEUTRAL	Average	54.0	14.8

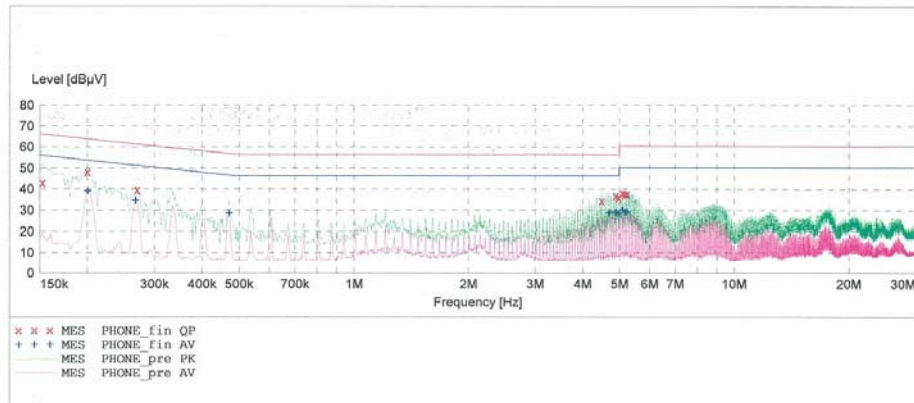
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EMC TEST LAB.

EUT: GB230
Manufacturer: LG Electronic Inc
Operating Condition: DATA COMMUNICATION MODE
Test Site: SHIELD ROOM
Operator: KH, YOON
Test Specification: CISPR 22 CLASS B
Comment: H

SCAN TABLE: "CISPR 22 Voltage"

Short Description:				CISPR 22 Voltage			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
Frequency	Frequency	Width					
150.1 kHz	500.0 kHz	2.5 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
0.152600	42.80	10.1	66	23.0	---	---
0.200100	47.90	10.1	64	15.7	---	---
0.270100	39.40	10.1	61	21.7	---	---
4.492000	34.10	10.6	56	21.9	---	---
4.892000	36.60	10.7	56	19.4	---	---
4.964000	35.70	10.7	56	20.3	---	---
5.096000	37.90	10.7	60	22.1	---	---
5.164000	37.40	10.7	60	22.6	---	---
5.228000	37.40	10.7	60	22.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.200100	39.00	10.1	54	14.6	---	---
0.267600	34.70	10.1	51	16.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.470100	28.70	10.2	47	17.8	---	---
4.692000	29.00	10.6	46	17.0	---	---
4.892000	29.10	10.7	46	16.9	---	---
4.964000	28.60	10.7	46	17.4	---	---
5.096000	30.20	10.7	50	19.8	---	---
5.164000	29.30	10.7	50	20.7	---	---
5.228000	29.30	10.7	50	20.7	---	---

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0.470100	28.70	10.2	47	17.8	---	---
4.692000	29.00	10.6	46	17.0	---	---
4.892000	29.10	10.7	46	16.9	---	---
4.964000	28.60	10.7	46	17.4	---	---
5.096000	30.20	10.7	50	19.8	---	---
5.164000	29.30	10.7	50	20.7	---	---
5.228000	29.30	10.7	50	20.7	---	---

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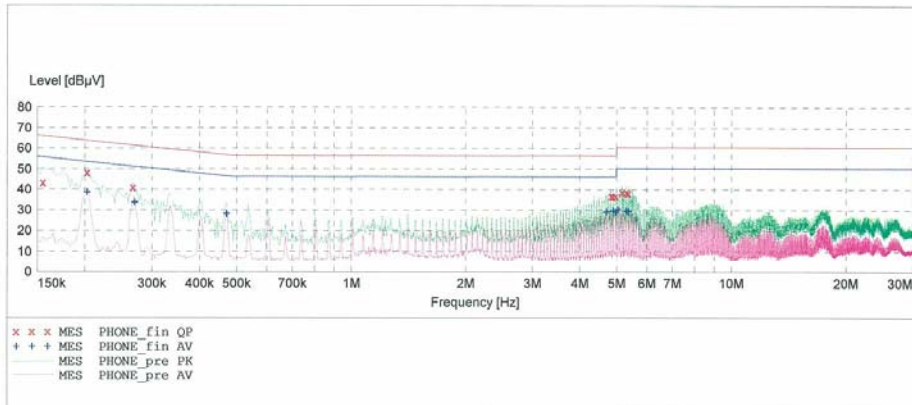
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EMC TEST LAB.

EUT: GB230
Manufacturer: LG Electronic Inc
Operating Condition: DATA COMMUNICATION MODE
Test Site: SHIELD ROOM
Operator: KH, YOON
Test Specification: CISPR 22 CLASS B
Comment: N

SCAN TABLE: "CISPR 22 Voltage"

Short Description:		CISPR 22 Voltage					
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
Frequency	Frequency	Width					
150.1 kHz	500.0 kHz	2.5 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
0.155100	43.00	10.1	66	22.7	---	---
0.202600	47.90	10.1	64	15.6	---	---
0.267600	40.70	10.1	61	20.5	---	---
4.828000	36.40	10.7	56	19.6	---	---
4.892000	36.20	10.7	56	19.8	---	---
4.964000	36.20	10.7	56	19.8	---	---
5.164000	38.20	10.7	60	21.8	---	---
5.296000	38.20	10.7	60	21.8	---	---
5.364000	37.90	10.7	60	22.1	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.202600	38.70	10.1	54	14.8	---	---
0.270100	33.80	10.1	51	17.3	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.470100	28.20	10.2	47	18.3	---	---
4.692000	29.10	10.6	46	16.9	---	---
4.896000	29.60	10.7	46	16.4	---	---
4.964000	29.10	10.7	46	16.9	---	---
5.028000	30.30	10.7	50	19.7	---	---
5.296000	29.60	10.7	50	20.4	---	---
5.364000	29.50	10.7	50	20.5	---	---

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 7.3 dB
Operating condition	: Data communication mode
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 12.2 °C
Humidity level	: 32.0 %
Test date	: February 13, 2009

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
48.0	18.0	12.6	1.6	V	32.2	40.0	7.8
54.0	18.6	12.4	1.7	V	32.7	40.0	7.3
120.0	21.0	10.7	2.6	V	34.3	43.5	9.2
150.3	16.6	12.6	2.9	V	32.1	43.5	11.4
192.0	17.6	10.6	3.3	H	31.5	43.5	12.0
288.0	18.9	12.7	4.1	H	35.7	46.0	10.3

*** 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 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>Manufacture</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	2009.06.01
LISN	EMCO	703125	2009.05.04
LISN	Rohde & Schwarz	ESH2-Z5	2009.04.18
LISN	Rohde & Schwarz	ESH3-Z5	2009.06.13
LISN	EMCO	3816/2SH	2010.02.06
Attenuator	Rohde & Schwarz	ESH3-Z2	2009.10.30
Trilog Antenna	Schwarzbeck	VULB9160	2010.12.18
Communication Antenna	TDK	LPDA-0802	N/A
Antenna Position Tower	HD	240/520/00	N/A
Base Station	Rohde & Schwarz	CMU 200	2009.02.28
Horn Antenna	Schwarzbeck	BBHA 9120D	2009.03.18
RF-Amplifier	MITEQ	AMF-6D-00101800-35.20P.PS	2009.04.25
Bluetooth Base Station	TESCOM	TC-3000A	2010.01.09

7. CONCLUSION

The data collected shows that the **LG Electronics Inc. Model: GB230, Cellular/PCS GSM Phone with Bluetooth. FCC ID: BEJGB230** complies with §15.107 and §15.109 of the FCC rules.