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EMI REPORT (Certification)

LG Electronics Inc.

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

Date of Issue: March 18, 2009

Test Report No.: HCT-EF09-0304

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

BEJGM310G

Classification/Standard(s) : FCC PART 15 Subpart B / CISPR 22 CLASS B
Equipment type : Cellular/PCS GSM/WCDMA/EDGE Phone with Bluetooth
Trade name/Model(s) : LG Electronics Inc. / GM310g
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. Model: GM310g, Cellular/PCS GSM/WCDMA/EDGE Phone with Bluetooth. It's basic purpose is used for communications. It transmits from GSM 850 (824.20 MHz to 848.80 MHz), GSM1900 (1850.20 MHz to 1909.80 MHz), WCDMA850 (826.40 MHz to 846.60 MHz), WCDMA1900 (1852.60 MHz to 1 907.40 MHz), Bluetooth (2 402 MHz to 2 480 MHz) and receives from GSM 850 (869.20 MHz to 893.80 MHz), GSM1900 (1 930.20 MHz to 1 989.80 MHz), WCDMA850 (871.40 MHz to 891.60 MHz), WCDMA1900 (1 932.60 MHz to 1 987.40 MHz), Bluetooth (2 402 MHz to 2 480 MHz).

Model	GM310g
FCC ID	BEJGM310G
EUT type	Cellular/PCS GSM/WCDMA/EDGE Phone with Bluetooth
TX frequency	824.20 MHz to 848.80 MHz (GSM850) 1 850.20 MHz to 1 909.80 MHz (GSM1900) 826.40 MHz to 846.60 MHz (WCDMA850) 1 852.60 MHz to 1 907.40 MHz (WCDMA1900) 2 402 MHz to 2 480 MHz (Bluetooth)
RX frequency	869.20 MHz to 893.80 MHz (GSM850) 1 930.20 MHz to 1 989.80 MHz (GSM1900) 871.40 MHz to 891.60 MHz (WCDMA850) 1 932.60 MHz to 1 987.40 MHz (WCDMA1900) 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 /WCDMA/EDGE phone with Bluetooth	LG	GM310g	BEJGM310G	Notebook PC, TA
Travel adaptor	DONGDO	STA-P54WD	-	EUT
Notebook PC	Toshiba	PSMA2K-01D002	DoC	EUT, TA
Notebook PC adaptor	Delta	SADP-65KB B	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2	DoC	Notebook PC
Ear phone	I-SOUND	SGEY0007604	-	EUT
USB cable	KSD	SGDY0010904	-	EUT, 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	DC in	N	-	(P)1.5
	Ear jack	-	N	(D)1.2
	USB data	Y	Y	(P, 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 /WCDMA/EDGE phone with Bluetooth	DC in	N	-	Y	EUT end
	Ear jack	N	-	Y	EUT 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 were 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 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

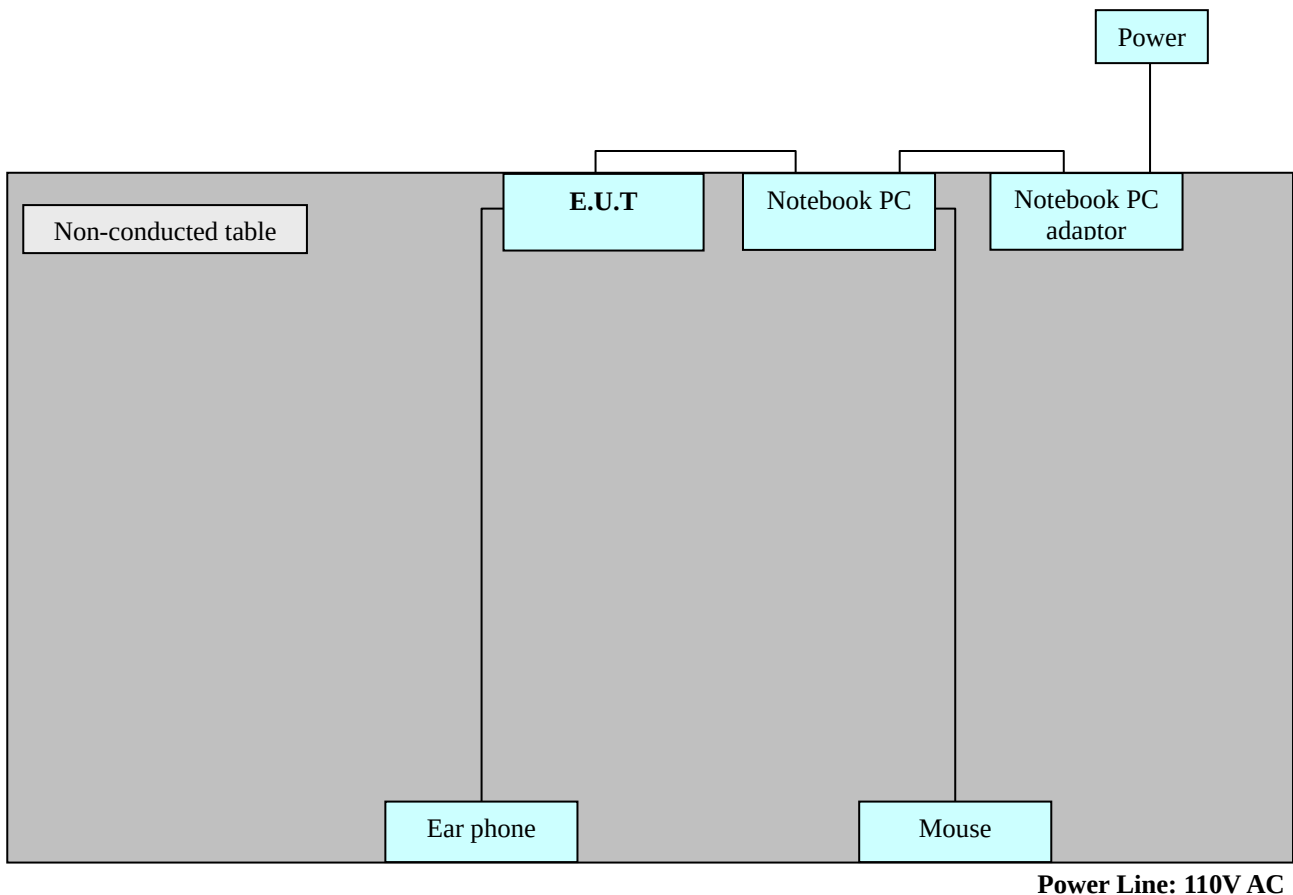
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

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, 1 900)	
WCDMA Idle (850, 1 900)	
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, 1 900)	
WCDMA Idle (850, 1 900)	
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 11.5 dB
Operating condition	: Data communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 14.2 °C
Humidity level	: 35.0 %
Test date	: March 12, 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	52.1	HOT	Quasi-Peak	64.0	11.5
4.8680	33.3	HOT	Average	46.0	12.7
0.1976	51.5	NEUTRAL	Quasi-Peak	64.0	12.2
4.8640	33.3	NEUTRAL	Average	46.0	12.7

*** Power Line Conducted Emissions tabulated data

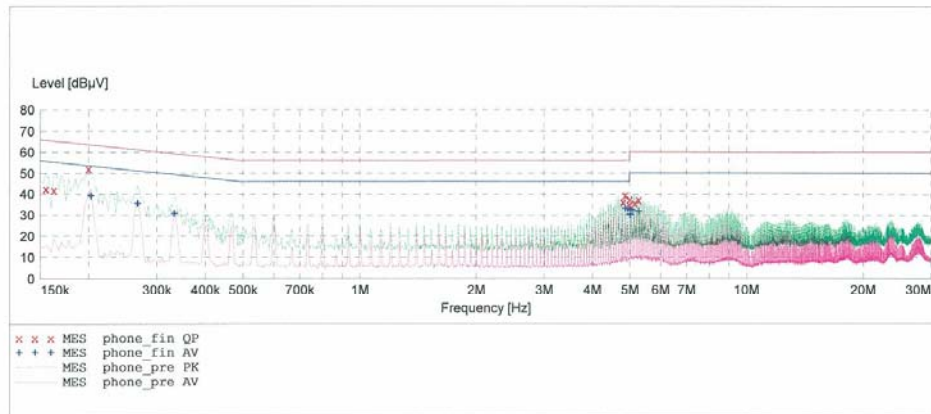
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EMC TEST LAB.

EUT: GM310g
Manufacturer: LG
Operating Condition: Data communication Mode
Test Site: SHIELD ROOM
Operator: YH, LEE
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
0.155100	42.50	10.1	66	23.3	---	---
0.162600	41.90	10.1	65	23.5	---	---
0.200100	52.10	10.1	64	11.5	---	---
4.804000	36.30	10.7	56	19.7	---	---
4.868000	39.50	10.7	56	16.5	---	---
5.000000	37.50	10.7	56	18.5	---	---
5.000000	35.00	10.7	56	21.0	---	---
5.136000	35.70	10.7	60	24.3	---	---
5.268000	37.20	10.7	60	22.8	---	---

MEASUREMENT RESULT: "phone_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.202600	39.20	10.1	54	14.4	---	---
0.267600	35.70	10.1	51	15.5	---	---
0.332600	31.00	10.1	49	18.4	---	---

MEASUREMENT RESULT: "phone_fin AV"

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
4.868000	33.30	10.7	46	12.7	---	---
4.936000	33.10	10.7	46	12.9	---	---
5.000000	32.60	10.7	46	13.4	---	---
5.000000	30.30	10.7	46	15.7	---	---
5.068000	32.50	10.7	50	17.5	---	---
5.268000	31.90	10.7	50	18.1	---	---

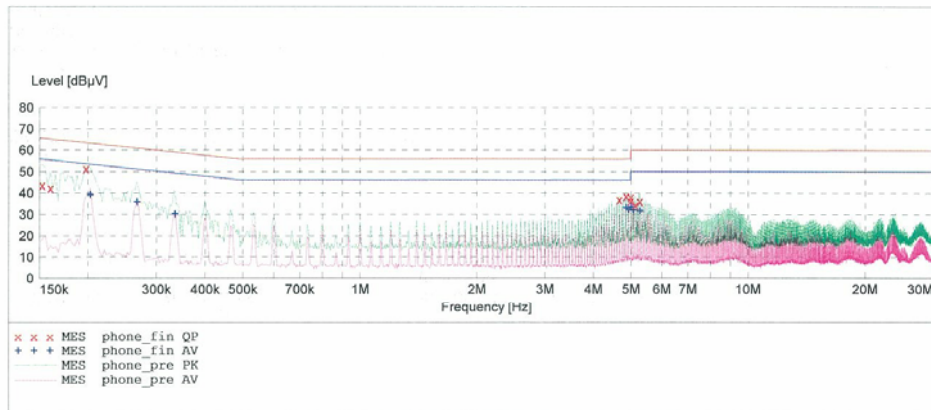
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EMC TEST LAB.

EUT: GM310g
Manufacturer: LG
Operating Condition: Data communication Mode
Test Site: SHIELD ROOM
Operator: YH, LEE
Test Specification: CISPR 22 CLASS B
Comment: N

SCAN TABLE: "CISPR 22 Voltage"

Short Description:			CISPR 22 Voltage			
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
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



MEASUREMENT RESULT: "phone_fin QP"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.152600	43.90	10.1	66	22.0	---	---
0.160100	42.50	10.1	66	23.0	---	---
0.197600	51.50	10.1	64	12.2	---	---
4.664000	37.20	10.6	56	18.8	---	---
4.864000	38.80	10.7	56	17.2	---	---
4.996000	36.70	10.7	56	19.3	---	---
5.000000	38.20	10.7	56	17.8	---	---
5.132000	34.60	10.7	60	25.4	---	---
5.264000	36.40	10.7	60	23.6	---	---

MEASUREMENT RESULT: "phone_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.202600	39.40	10.1	54	14.1	---	---
0.267600	36.00	10.1	51	15.2	---	---
0.335100	30.30	10.1	49	19.0	---	---

MEASUREMENT RESULT: "phone_fin AV"

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
4.864000	33.30	10.7	46	12.7	---	---
4.932000	32.50	10.7	46	13.5	---	---
4.996000	33.30	10.7	46	12.7	---	---
5.000000	33.80	10.7	46	12.2	---	---
5.064000	32.20	10.7	50	17.8	---	---
5.264000	31.90	10.7	50	18.1	---	---

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 6.9 dB
Operating condition	: Data communication mode
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 14.2 °C
Humidity level	: 35.0 %
Test date	: March 12, 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
69.0	20.1	10.3	1.9	V	32.3	40.0	7.7
127.0	22.6	11.3	2.7	V	36.6	43.5	6.9
161.0	17.1	12.7	3.0	H	32.8	43.5	10.7
207.0	22.0	10.1	3.5	H	35.6	43.5	7.9
231.8	20.2	10.9	3.6	H	34.7	46.0	11.3

*** 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	2010.02.17
Horn Antenna	Schwarzbeck	BBHA 9120D	2010.03.26
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: GM310g, Cellular/PCS GSM /WCDMA/EDGE Phone with Bluetooth. FCC ID: BEJGM310G** complies with §15.107 and §15.109 of the FCC Rules.