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EMI REPORT (Certification)

LG Electronics Inc.

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Seoul, 153-023, Korea

Date of Issue: January 20, 2009

Test report No.: HCT-EF09-0110

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

BEJGM310F

Classification / Standard(s) : FCC PART 15 Subpart B / CISPR 22 Class B
Equipment (EUT) type : Cellular/PCS GSM/EDGE/WCDMA Phone with Bluetooth
Trade name / Model(s) : LG Electronics Inc. / GM310f
Additional model : GM310
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 of 1988, 21 U.S.C.853 (a).

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ATTACHMENT : TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product description

The **LG Electronics Inc. GM310f, Cellular/PCS GSM/EDGE/WCDMA Phone with Bluetooth.**

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), 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), WCDMA 850 (871.40 MHz to 891.60 MHz), Bluetooth (2 402 MHz to 2 480 MHz).

Model	GM310f
FCC ID	BEJGM310F
EUT type	Cellular/PCS GSM/EDGE/WCDMA 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) 826.40 MHz to 846.60 MHz (WCDMA 850) 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) 871.40 MHz to 891.60 MHz (WCDMA 850) 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 /EDGE/WCDMA Phone with Bluetooth	LG	GM310f	BEJGM310F	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	SGDY0014401	-	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 /EDGE/WCDMA Phone with Bluetooth	DC in	N	N/A	(P)1.5
	Ear jack	N/A	N	(D)1.2
	USB data	Y	Y	(P, D)1.2
Notebook PC	USB (Mouse)	N/A	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 /EDGE/WCDMA 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 was performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to EUT 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, Gyeonggi-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

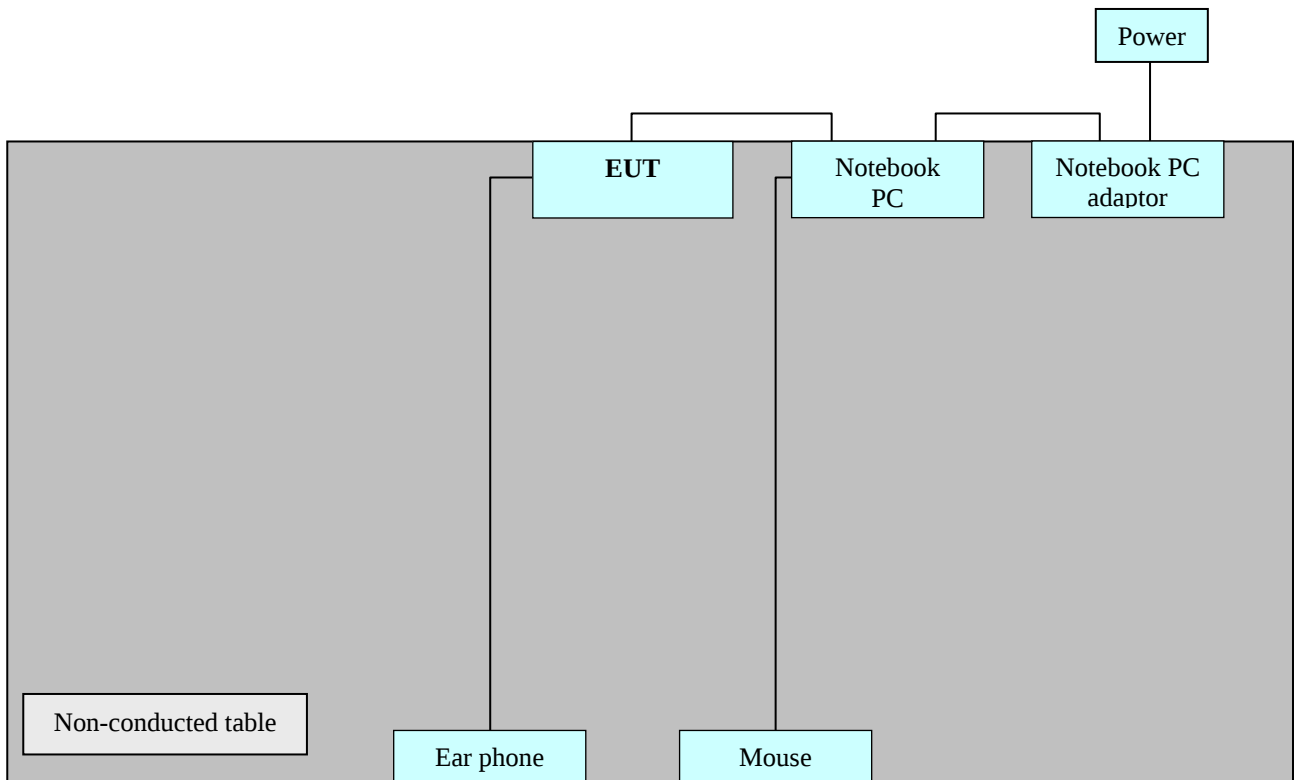
2. SYSTEM TEST CONFIGURATION

2.1 Configuration of test system

Power Line Conducted test : EUT 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]



Power Line: 110V AC

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	
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)	
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 11.0 dB
Operating condition	: Data communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 5.2 °C
Humidity level	: 42.0 %
Test date	: January 05, 2009

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB μ V)	Conductor	Result	Limit (dB μ V)	Margin (dB)
0.2026	50.5	HOT	Quasi-Peak	64.0	13.0
0.2026	42.5	HOT	Average	54.0	11.0
4.9640	43.0	NEUTRAL	Quasi-Peak	56.0	13.0
0.2001	41.8	NEUTRAL	Average	54.0	11.8

*** Power Line Conducted Emissions tabulated data

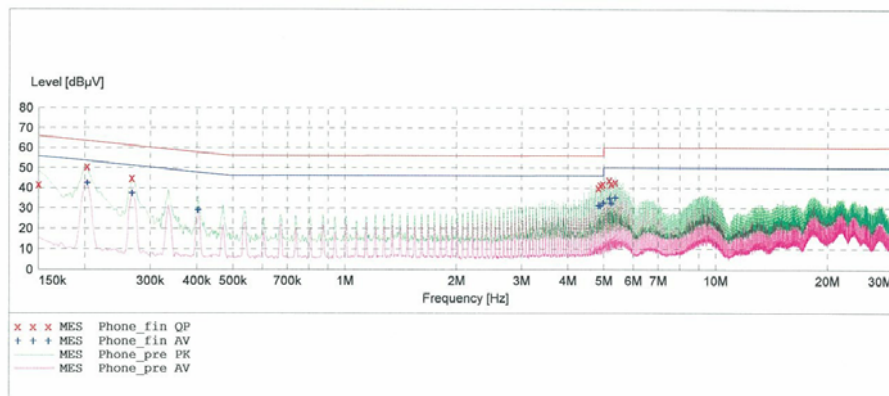
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EMC TEST LAB.

EUT: GB310f
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 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
			Average			



MEASUREMENT RESULT: "Phone_fin QP"

1/5/2009 11:30AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150100	41.70	10.1	66	24.3	---	---
0.202600	50.50	10.1	64	13.0	---	---
0.267600	44.80	10.1	61	16.4	---	---
4.828000	40.00	10.7	56	16.0	---	---
4.892000	41.50	10.7	56	14.5	---	---
4.960000	42.10	10.7	56	13.9	---	---
5.164000	43.90	10.7	60	16.1	---	---
5.228000	42.20	10.7	60	17.8	---	---
5.364000	43.00	10.7	60	17.0	---	---

MEASUREMENT RESULT: "Phone_fin AV"

1/5/2009 11:30AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.202600	42.50	10.1	54	11.0	---	---
0.267600	37.40	10.1	51	13.8	---	---

MEASUREMENT RESULT: "Phone_fin AV"

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.402600	29.20	10.1	48	18.6	---	---
4.828000	31.50	10.7	46	14.5	---	---
4.892000	31.30	10.7	46	14.7	---	---
4.960000	32.60	10.7	46	13.4	---	---
5.164000	35.00	10.7	50	15.0	---	---
5.228000	32.70	10.7	50	17.3	---	---
5.364000	35.40	10.7	50	14.6	---	---

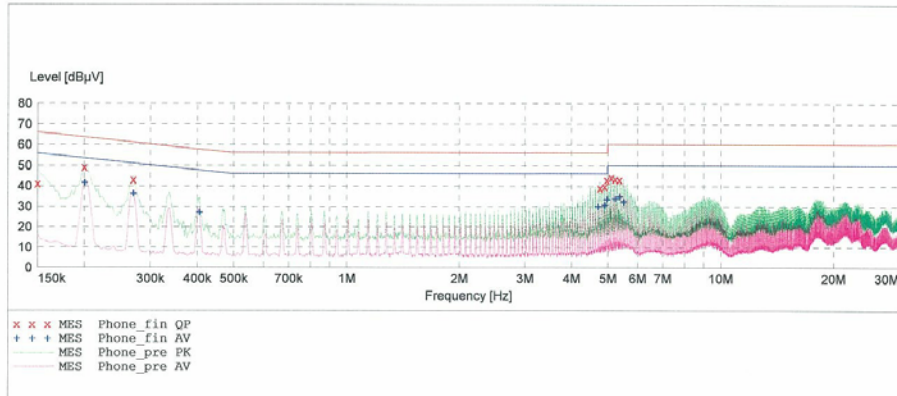
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EMC TEST LAB.

EUT: GB310f
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	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"

1/5/2009 11:34AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150100	41.20	10.1	66	24.8	---	---
0.200100	49.20	10.1	64	14.4	---	---
0.270100	43.10	10.1	61	18.0	---	---
4.760000	39.00	10.6	56	17.0	---	---
4.900000	39.80	10.7	56	16.2	---	---
4.964000	43.00	10.7	56	13.0	---	---
5.100000	44.20	10.7	60	15.8	---	---
5.232000	43.40	10.7	60	16.6	---	---
5.368000	43.10	10.7	60	16.9	---	---

MEASUREMENT RESULT: "Phone_fin AV"

1/5/2009 11:34AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.200100	41.80	10.1	54	11.8	---	---
0.270100	36.40	10.1	51	14.7	---	---

MEASUREMENT RESULT: "Phone_fin AV"

(continued)

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.405100	27.30	10.1	48	20.5	---	---
4.696000	30.10	10.6	46	15.9	---	---
4.900000	30.80	10.7	46	15.2	---	---
4.964000	33.70	10.7	46	12.3	---	---
5.232000	33.90	10.7	50	16.1	---	---
5.368000	34.90	10.7	50	15.1	---	---
5.500000	32.40	10.7	50	17.6	---	---

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 3.3 dB
Operating condition	: Data communication mode
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 5.2 °C
Humidity level	: 42.0 %
Test date	: January 05, 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
56.0	22.7	12.3	1.7	V	36.7	40.0	3.3
160.2	20.6	12.8	3.0	V	36.4	43.5	7.1
163.9	20.7	12.6	3.0	H	36.3	43.5	7.2
365.4	14.2	14.5	4.5	H	33.2	46.0	12.8
480.0	14.2	17.0	5.2	H	36.4	46.0	9.6
480.0	14.6	17.0	5.2	V	36.8	46.0	9.2
800.0	9.8	22.2	6.7	V	38.7	46.0	7.3

*** 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	2009.02.01
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: GM310f, Cellular/PCS GSM/EDGE/WCDMA Phone with Bluetooth. FCC ID: BEJGM310F** complies with §15.107 and §15.109 of the FCC rules.