

EMI CERTIFICATION REPORT

Applicant:

LG Electronics Inc.

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

Date of Issue: March 24, 2011

Test Report No.: HCTE1103FE20

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

BEJLS700

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
Equipment Type : Cellular/PCS CDMA/EvDO Phone with Bluetooth & WLAN
Trade Name : LG Electronics Inc
Model(s) : LS700
Port / Connector(s) : USB Data Port / Headset 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 subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862



Report prepared by
: Doo Hwan Ryu
Test Engineer of EMC Team



Approved by
: Sang Jun Lee
Manager of EMC Team

TABLE OF CONTENTS

	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	16
6. TEST EQUIPMENT	17
7. CONCLUSION	18

ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (E.U.T) is **Cellular/PCS CDMA/EvDO Phone with Bluetooth & WLAN**,
Model: LS700 manufactured by **LG Electronics Inc.** Its basic purpose is used for communications.

Model (s)	LS700
FCC ID	BEJLS700
E.U.T Type	Cellular/PCS CDMA/EvDO Phone with Bluetooth & WLAN
TX Frequency	824.70 MHz to 848.31 MHz (CDMA 835) 1 851.25 MHz to 1 908.75 MHz (CDMA 1 900) 817 MHz to 824 MHz (BC10)
RX Frequency	869.70 MHz to 893.31 MHz (CDMA 835) 1 931.25 MHz to 1 988.75 MHz (CDMA 1 900) 862 MHz to 869 MHz (BC10)

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/ Serial Number	FCC ID / DoC	Connected To
Cellular/PCS CDMA/ EvDO Phone with Bluetooth & WLAN	LG	LS700	BEJLS700	Notebook PC
Notebook PC	LG	X140-02 009QTAF022208	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	DELTA (JIANG SU)	ADP-40PH AD EAY60725501	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible 3902B008	DoC	Notebook PC
Headset	KSD	SGDY0018501	-	E.U.T
USB cable	I-SOUND	EAB62209201	-	E.U.T Notebook PC
SD card (4 GB)	HC	-	-	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 CDMA/ EvDO Phone with Bluetooth & WLAN	Headset jack	-	N	(D)1.2
	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 CDMA/ EvDO Phone with Bluetooth & WLAN	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 10 m

1.7 Test Facility

The 10 m semi anechoic chamber used to collect the radiated data is located at the 105 -1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyungki-Do, South Korea. Those measurement facilities are constructed in accordance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facilities was submitted to the Commission and accepted dated Sep. 03, 2010 (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

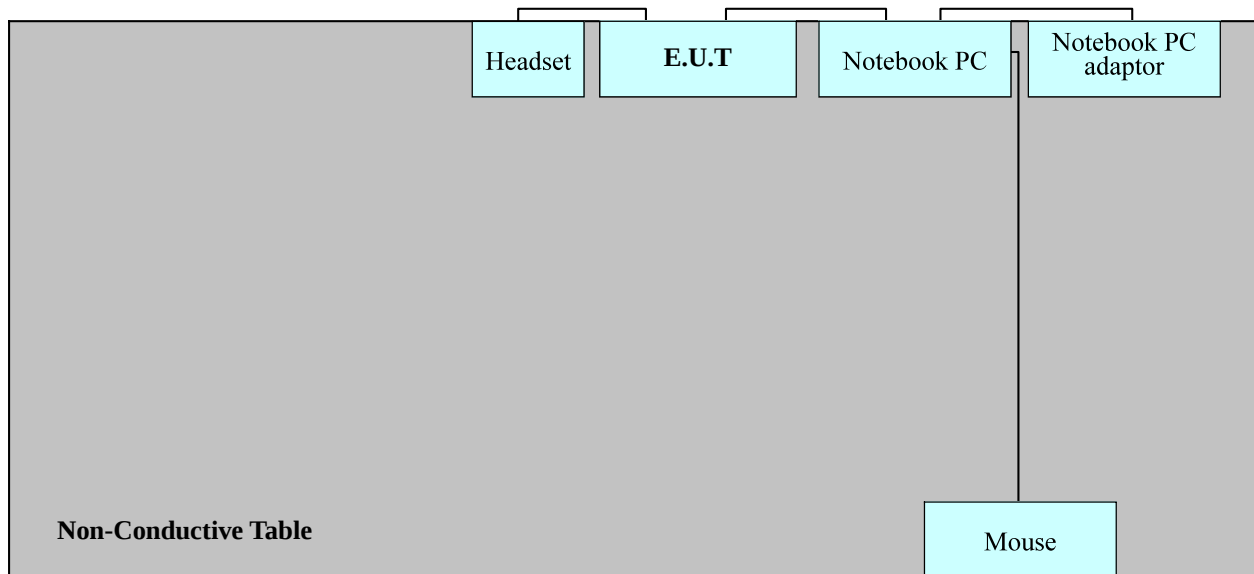
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

- Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor.
Preliminary Power Line Conducted Em ission 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 10 m semi-anechoic chamber.

[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	: FCC PART 15 Subpart B Class B
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 22.8 °C
Humidity level	: 42.5 %
Test date	: March 21, 2011

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

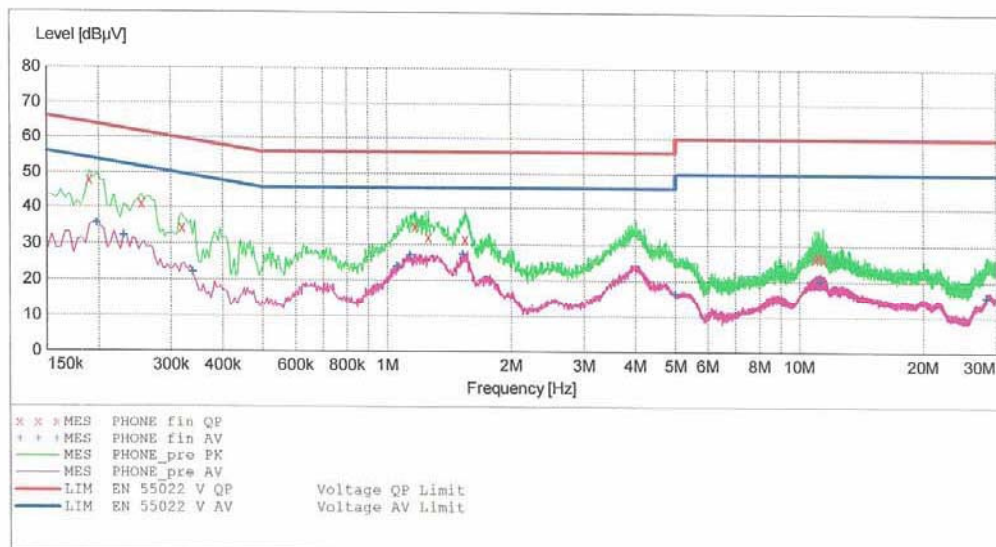
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EMC

EUT: LS700
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DH-RYU
Test Specification: FCC PART 15 CLASS B
Comment: H

SCAN TABLE: "FCC PART 15 CLASS B"

Short Description:			FCC PART 15 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	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"

3/21/2011 2:07PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.190010	48.10	10.3	64	15.9	---	---
0.254010	41.00	10.3	62	20.7	---	---
0.318010	34.50	10.3	60	25.3	---	---
1.172000	34.90	10.4	56	21.1	---	---
1.260000	32.00	10.4	56	24.0	---	---
1.548000	31.50	10.4	56	24.5	---	---
10.904000	26.50	11.1	60	33.5	---	---
11.176000	27.00	11.1	60	33.0	---	---
11.452000	26.40	11.1	60	33.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

3/21/2011 2:07PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.198010	35.60	10.3	54	18.1	---	---
0.230010	32.10	10.3	52	20.3	---	---
0.338010	22.30	10.3	49	26.9	---	---
1.060000	24.00	10.4	46	22.0	---	---
1.140000	26.90	10.4	46	19.1	---	---
1.532000	27.40	10.4	46	18.6	---	---
5.000000	16.60	10.7	46	29.4	---	---
11.252000	20.40	11.1	50	29.6	---	---
28.404000	15.90	11.9	50	34.1	---	---

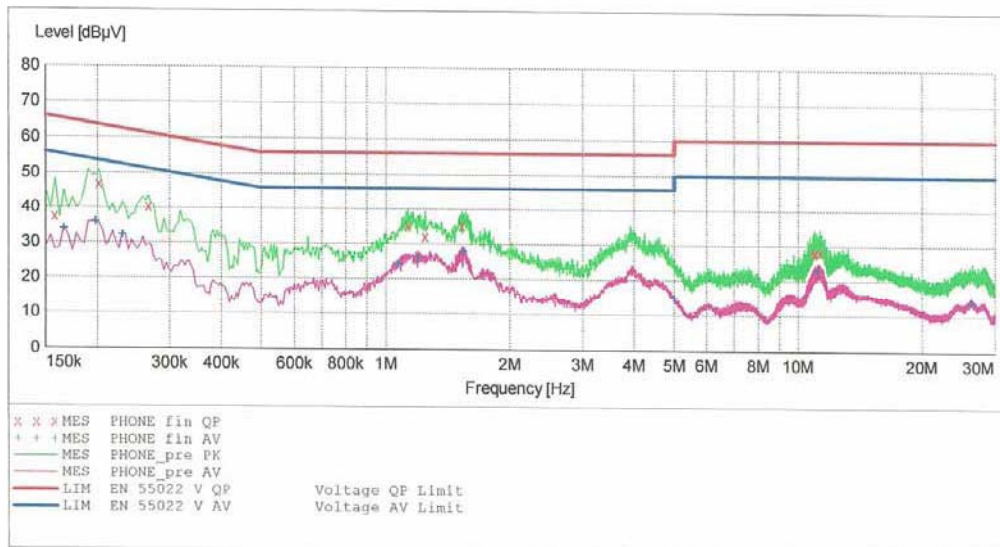
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EMC

EUT: LS700
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DH-RYU
Test Specification: FCC PART 15 CLASS B
Comment: N

SCAN TABLE: "FCC PART 15 CLASS B"

Short Description:			FCC PART 15 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	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"

3/21/2011 2:03PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.158010	37.60	10.3	66	28.0	---	---
0.202010	47.00	10.3	64	16.5	---	---
0.266010	40.50	10.3	61	20.8	---	---
1.132000	35.10	10.4	56	20.9	---	---
1.248000	32.20	10.4	56	23.8	---	---
1.532000	35.40	10.4	56	20.6	---	---
10.912000	28.00	11.1	60	32.0	---	---
10.988000	28.20	11.1	60	31.8	---	---
11.328000	28.40	11.1	60	31.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

3/21/2011 2:03PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.166010	33.90	10.3	55	21.3	---	---
0.198010	36.00	10.3	54	17.7	---	---
0.230010	32.20	10.3	52	20.3	---	---
1.072000	24.20	10.4	46	21.8	---	---
1.196000	26.00	10.4	46	20.0	---	---
1.544000	28.00	10.4	46	18.0	---	---
5.000000	14.80	10.7	46	31.2	---	---
11.172000	23.10	11.1	50	26.9	---	---
26.284000	14.00	11.8	50	36.0	---	---

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 Class B
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 23.1 °C
Humidity level	: 42.5 %
Test date	: March 22, 2011

※ **NOTE:**

1. Refer to page 15 for details.
2. For measurement above 1 GHz, noise level is more than 14 dB below the limit, specified in FCC Part 15.35

EMI Auto Test(1)

1 / 1

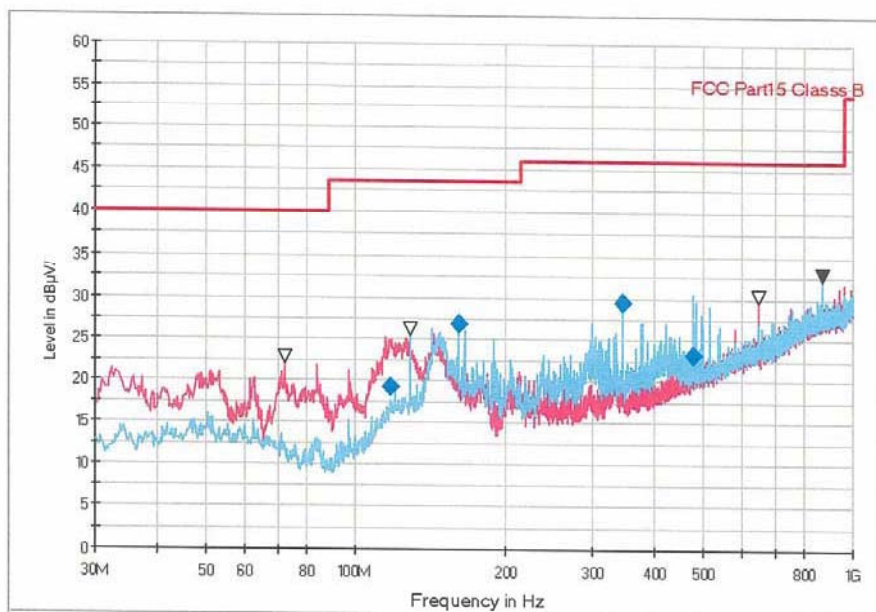
HCT Test Report

Common Information

EUT Name: LS700
Test Description: DATA MODE
Operator Name:
Environment Conditions: PHONE+HEADSET+NOTEBOOK(LG)
Comment:

FCC Part15 Class B

FCC Part15 Class B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
117.825700	19.3	100.0	V	114.0	13.0	24.2	43.5	
161.531600	27.0	193.0	H	0.0	14.7	16.5	43.5	
344.998300	29.5	100.0	H	16.0	16.7	16.5	46.0	
480.006600	23.2	100.0	H	19.0	20.2	22.8	46.0	

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>Manufacturer</u>	<u>Model Number</u>	<u>Serial Number</u>	<u>Next CAL Date</u>
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Conducted Emission

☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2011.05.28
☒ LISN	Rohde & Schwarz	ESH3-Z5	100282	2012.02.01
☐ LISN	Rohde & Schwarz	ENV216	3560.6550.02	2011.04.05
☒ Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.52	2011.10.25

Radiated Emission

☐ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2011.10.29
☒ EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2011.09.01
☒ Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
☒ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
☒ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
☒ Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
☐ RF-Amplifier	MITEQ	AMF-6D-0010 1800-35.20P.PS	-	2011.05.20
☐ Base Station	Rohde & Schwarz	CMU 200	1100000802	2012.02.16

7. CONCLUSION

The data collected shows that the **Cellular/PCS CDMA/EvDO Phone with Bluetooth & WLAN**, **Model: LS700, FCC ID: BEJLS700** complies with §15.107 and §15.109 of the FCC rules.