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EMI CERTIFICATION REPORT

Applicant:

LG Electronics Inc.

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

Date of Issue: April 19, 2010

Test Report No.: HCTE1004FE23

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

IC:

**BEJGS500G
2703C-GS500G**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B / CISPR 22 Class B
: ICES-003 Issue 4
Equipment Type : Cellular/PCS GSM/EDGE/WCDMA Phone with Bluetooth
FCC / IC Model Name : GS500g
FCC Listing No : 90661
IC Recognition No : IC 5944A-1
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 denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862.

**Report prepared by
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ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (E.U.T) is **Cellular/PCS GSM/EDGE/WCDMA Phone with Bluetooth**,
Model: GS500g manufactured by **LG Electronics Inc.** Its basic purpose is used for communications.

FCC/IC Model	GS500g
FCC ID / IC	BEJGS500G / 2703C-GS500G
E.U.T 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) 1 852.4 MHz to 1 907.6 MHz (WCDMA 1 900)
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) 1 932.4 MHz to 1 987.6 MHz (WCDMA 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
Cellular/PCS GSM/ EDGE/WCDMA Phone with Bluetooth	LG	GS500g	BEJGS500G	Notebook PC
Notebook PC	HP	Compaq6730b	DoC	E.U.T
Notebook PC adaptor	Hipro Electronics	PPP014Y-S	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
USB Cable	-	-	-	Notebook PC E.U.T
Headset	-	-	-	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 GSM/EDGE/WCDMA Phone with Bluetooth	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 GSM/EDGE/WCDMA Phone with Bluetooth	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 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

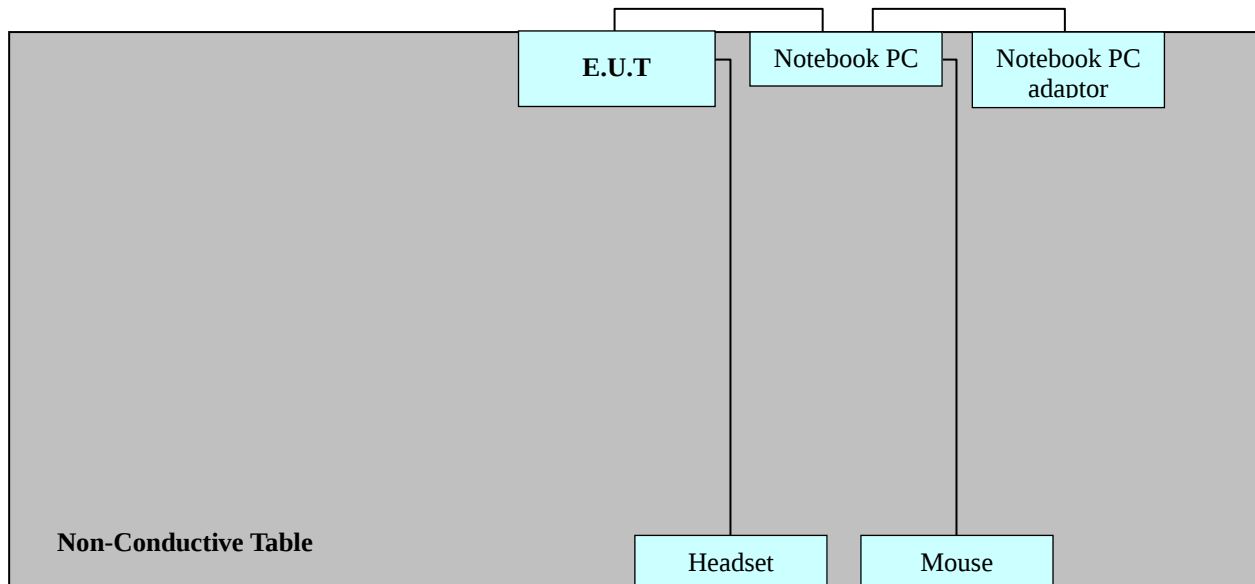
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

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 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

- 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	: CISPR 22 Class B
Result	: Passed by 5.4 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 25.7 °C
Humidity level	: 34.9 %
Test date	: April 16, 2010

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB μ V)	Conductor	Result	Limit (dB μ V)	Margin (dB)
0.7080	44.8	HOT	Quasi-Peak	56.0	11.2
0.7160	40.6	HOT	Average	46.0	5.4
0.7200	39.7	NEUTRAL	Average	46.0	6.3
0.7280	44.0	NEUTRAL	Quasi-Peak	56.0	12.0

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

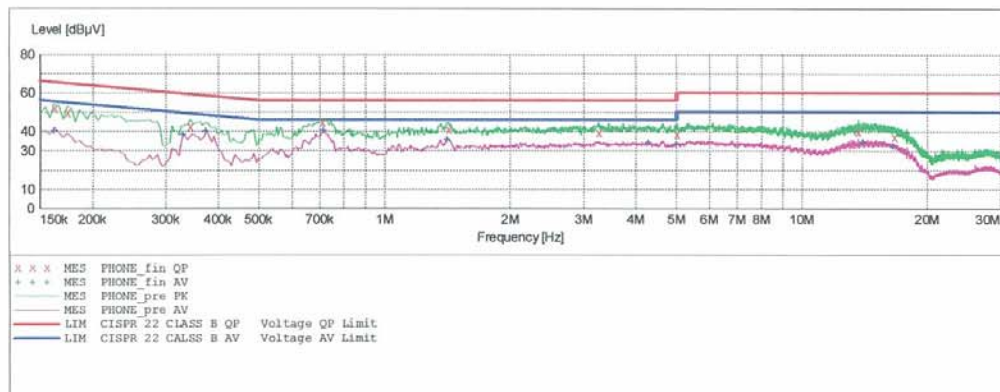
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EUT: GS500g
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DS-KIM
Test Specification: CISPR22 CLASS B
Comment: H

SCAN TABLE: "CISPR22 CLASS B"

Short Description:			CISPR22 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	ESH3 (20100210)
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.162001	52.00	10.1	65	13.4	---	---
0.174001	49.50	10.1	65	15.2	---	---
0.342001	42.50	10.1	59	16.6	---	---
0.708000	44.80	10.1	56	11.2	---	---
1.424000	40.90	10.1	56	15.1	---	---
3.260000	39.40	10.3	56	16.6	---	---
5.000000	38.60	10.4	56	17.4	---	---
13.636000	39.80	11.1	60	20.2	---	---
16.648000	37.20	11.4	60	22.8	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.162001	40.00	10.1	55	15.3	---	---
0.330001	38.40	10.0	50	11.0	---	---
0.374001	40.10	10.1	48	8.3	---	---
0.716000	40.60	10.1	46	5.4	---	---
1.416000	35.80	10.1	46	10.2	---	---
4.292000	34.00	10.4	46	12.0	---	---
5.000000	33.30	10.4	46	12.7	---	---
14.000000	34.40	11.2	50	15.6	---	---
16.576000	32.40	11.4	50	17.6	---	---

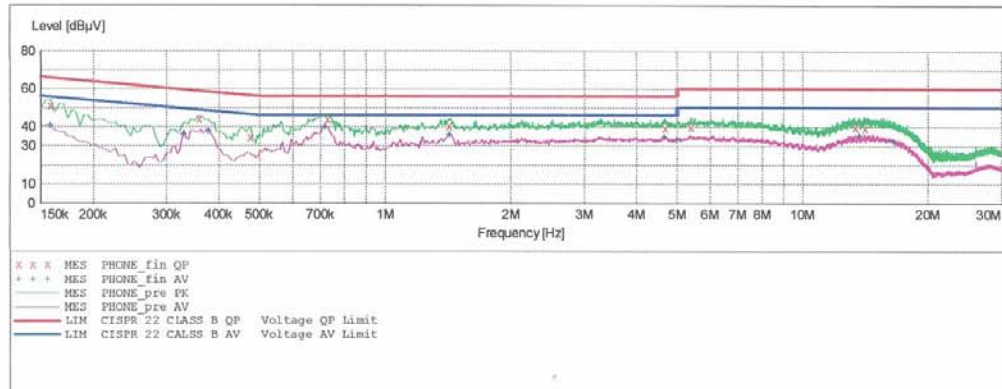
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EMC

EUT: GS500g
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DS-KIM
Test Specification: CISPR22 CLASS B
Comment: N

SCAN TABLE: "CISPR22 CLASS B"

Short Description:			CISPR22 CLASS B			
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	ESH3 (20100210)
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.158001	51.00	10.1	66	14.6	---	---
0.358001	44.20	10.1	59	14.6	---	---
0.474001	34.30	10.1	56	22.2	---	---
0.728000	44.00	10.1	56	12.0	---	---
1.420000	40.30	10.1	56	15.7	---	---
4.668000	39.40	10.4	56	16.6	---	---
5.408000	39.70	10.5	60	20.3	---	---
13.336000	39.70	11.1	60	20.3	---	---
14.112000	39.20	11.2	60	20.8	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

4/16/2010 4:28PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.158001	40.80	10.1	56	14.8	---	---
0.330001	36.00	10.0	50	13.4	---	---
0.378001	37.80	10.1	48	10.5	---	---
0.720000	39.70	10.1	46	6.3	---	---
1.428000	35.70	10.1	46	10.3	---	---
4.668000	34.30	10.4	46	11.7	---	---
5.000000	33.00	10.4	46	13.0	---	---
13.712000	35.30	11.1	50	14.7	---	---
16.596000	32.40	11.4	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 14.3 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 13.0 °C
Humidity level	: 37.8 %
Test date	: April 16, 2010

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
44.5	11.5	12.4	0.7	V	24.6	40.0	15.4
86.2	15.5	8.3	1.0	V	24.8	40.0	15.2
183.2	11.7	11.3	1.4	H	24.4	43.5	19.1
233.7	10.2	10.9	1.6	H	22.7	46.0	23.3
494.6	8.4	17.2	2.4	H	28.0	46.0	18.0
622.6	9.1	19.9	2.7	V	31.7	46.0	14.3

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>Next CAL Date</u>
<u>Conducted Emission</u>			
☒ EMI Test Receiver	Rohde & Schwarz	ESCI	2010.06.02
☒ LISN	Rohde & Schwarz	ESH3-Z5	2011.02.05
☐ LISN	Rohde & Schwarz	ENV216	2011.04.06
☒ Attenuator	Rohde & Schwarz	ESH3-Z2	2010.10.30
<u>Radiated Emission</u>			
☒ EMI Test Receiver	Rohde & Schwarz	ESI40	2010.10.30
☒ Trilog Antenna	Schwarzbeck	VULB9160	2010.12.18
☒ Antenna Master	HD	MA240	-
☒ Turn Table	EMCO	1060	-
☐ Communication Antenna	TDK	LPDA-0802	-
☐ Antenna Position Tower	HD	240/520/00	-
☐ Base Station	Rohde & Schwarz	CMU 200	2011.02.17
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	2011.03.26
☒ RF-Amplifier	MITEQ	AMF-6D-00101800 -35.20P.PS	2010.04.25
☐ Bluetooth Base Station	TESCOM	TC-3000A	2011.01.07

7. CONCLUSION

The data collected shows that the **LG Electronics Inc. Cellular/ PCS GSM/EDGE/WCDMA Phone with Bluetooth, Model: GS500g, FCC ID: BEJGS500G** complies with §15.107 and §15.109 of the FCC rules and **IC Model: GS500g, IC: 2703C-GS500G** complies with ICES-003 Issue 4 of the IC rule.