HCT CO., LTD.

PRODUCT COMPLIANCE DIVISION
SAN 136-1, AMI-RI, BUBAL-EUP, ICHEON-SI, KYOUNGKI-DO, 467-701, KOREA
TEL : +82 31 639 8539 FAX : +82 31 639 8525 www.hct.co.kr

EMI CERTIFICATION REPORT

Applicant Name: LG Electronics Inc. **Address:** **60-39, Gasan-dong, Gumchon-gu,** **Seoul, 153-023, Korea**	**Date of Issue: January 29, 2010** **Test Report No.: HCTE1001FE27** **Test Site: HCT CO., LTD.** **HCT FRN: 0005-8664-21**

FCC ID: **BEJGS155A**

Rule Part(s) / Standard(s)	: FCC PART 15 Subpart B / CISPR 22 Class B
Equipment (EUT) Type	: Cellular/PCS GSM Phone
Trade Name / Model(s)	: LG Electronics Inc. / GS155a
Port / Connector(s)	: USB Data 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
: Dong Sup Kim
Test Engineer of EMC Tech. Part

Approved by
: Nam Wook Kang
Manager of EMC Tech. Part

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ATTACHMENT : TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Product Description

The **LG Electronics Inc. Model: GS155a, Cellular/PCS GSM Phone.**
Its basic purpose is used for communications. It transmits from GSM 850 (824.20 ㎒ to 848.80 ㎒), GSM 1 900 (1 850.20 ㎒ to 1 909.80 ㎒) and receives from GSM 850 (869.20 ㎒ to 893.80 ㎒), GSM 1 900 (1 930.20 ㎒ to 1 989.80 ㎒).

Model	GS155a
FCC ID	BEJGS155A
E.U.T Type	Cellular/PCS GSM Phone
TX Frequency	824.20 ㎒ to 848.80 ㎒ (GSM 850) 1 850.20 ㎒ to 1 909.80 ㎒ (GSM 1 900)
RX Frequency	869.20 ㎒ to 893.80 ㎒ (GSM 850) 1 930.20 ㎒ to 1 989.80 ㎒ (GSM 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 Phone	LG	GS155a	BEJGS155A	Notebook PC
Notebook PC	Sam-Sung	NT-R519	DoC	E.U.T
Notebook PC adaptor	DELTA	ADP-60ZH D AD-6019R	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
USB cable	-	-	-	E.U.T Notebook 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	USB data	Y	Y	(P,D)1.0
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	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

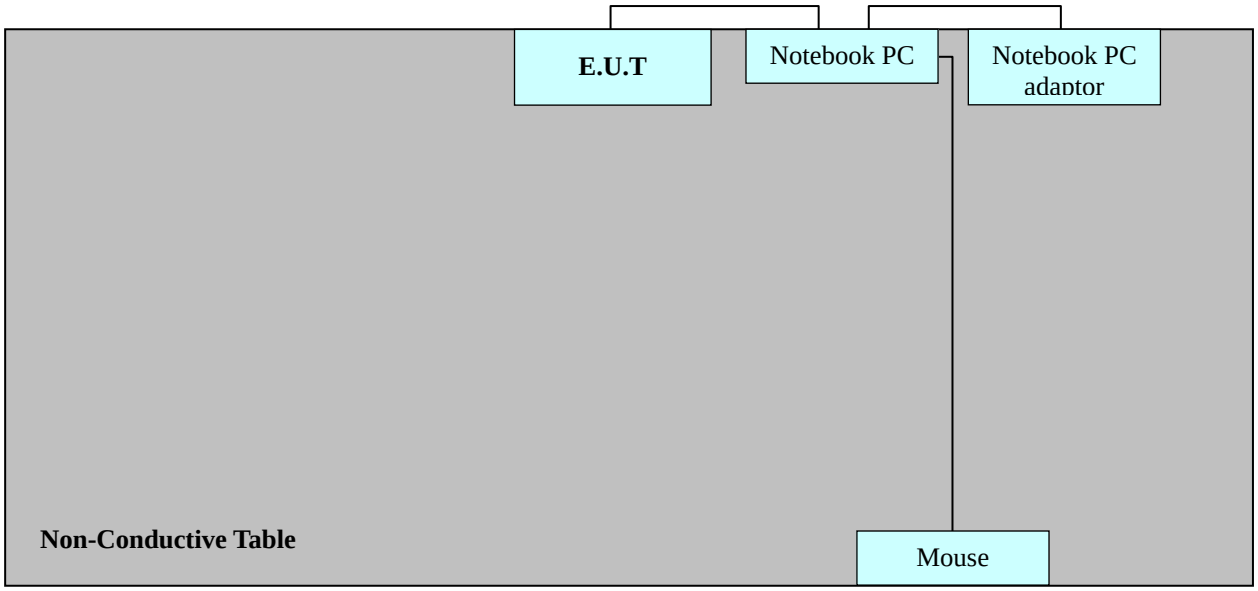
2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN, all other peripheral 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: 110 VAC

3. PRELIMINARY TEST

3.1 Conducted Emission Test

During preliminary tests, the following operating mode was investigated:

Operation Mode	The Worst Operating Condition
Data Communication	○

3. 2 Radiated Emission Test

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 10.4 ㏈
Operating condition	: Data Communication mode
Detector	: Quasi-Peak, Average (6 ㏈ Bandwidth: 9 ㎑)
Temperature	: 23.1 °C
Humidity level	: 40.1 %
Test date	: January 29, 2010

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (㎒)	Amplitude (㏈㎶)	Conductor	Result	Limit (㏈㎶)	Margin (㏈)
0.5600	31.1	HOT	Average	46.0	14.9
0.6400	45.6	NEUTRAL	Average	56.0	10.4
0.6600	45.10	HOT	Quasi-Peak	56.0	10.9
2.8480	32.9	NEUTRAL	Average	46.0	13.1

※ **NOTE:** Refer to page 9 to page 12 for details.

1. All modes of operation were investigated, and the worst-case emissions are reported.
2. Line H = Hot, Line N = Neutral

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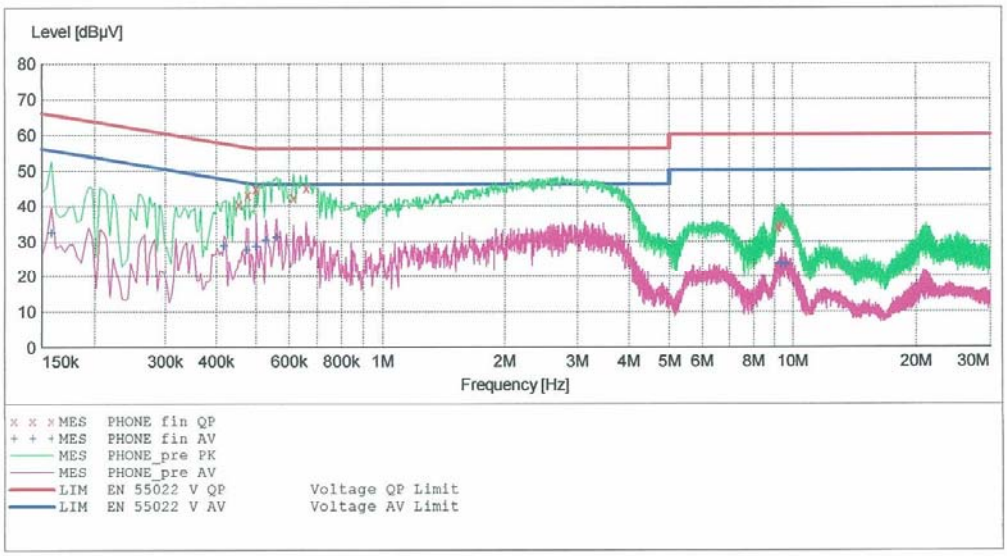
EUT: GS155a
Manufacturer: LG Electronics Icn.
Operating Condition: DATA Comminication Mode
Test Site: SHIELD ROOM
Operator: DS-KIM
Test Specification: CISPR22 CLASS B
Comment: H

SCAN TABLE: "CISPR22 CLASS B"

Short Description: KN22 CLASS B

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak Average	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
0.454001	40.50	10.1	57	16.3	---	---
0.478001	43.10	10.1	56	13.3	---	---
0.498001	44.90	10.1	56	11.2	---	---
0.500000	44.80	10.1	56	11.2	---	---
0.616000	42.30	10.1	56	13.7	---	---
0.660000	45.10	10.1	56	10.9	---	---
9.192000	34.10	10.6	60	25.9	---	---
9.200000	34.00	10.6	60	26.0	---	---
9.384000	34.70	10.7	60	25.3	---	---

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MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.158001	32.30	10.1	56	23.3	---	---
0.418001	28.70	10.1	48	18.8	---	---
0.474001	27.50	10.1	46	19.0	---	---
0.500000	28.60	10.1	46	17.4	---	---
0.528000	30.20	10.1	46	15.8	---	---
0.560000	31.10	10.1	46	14.9	---	---
9.364000	23.70	10.7	50	26.3	---	---
9.372000	23.50	10.7	50	26.5	---	---
9.620000	23.50	10.7	50	26.5	---	---

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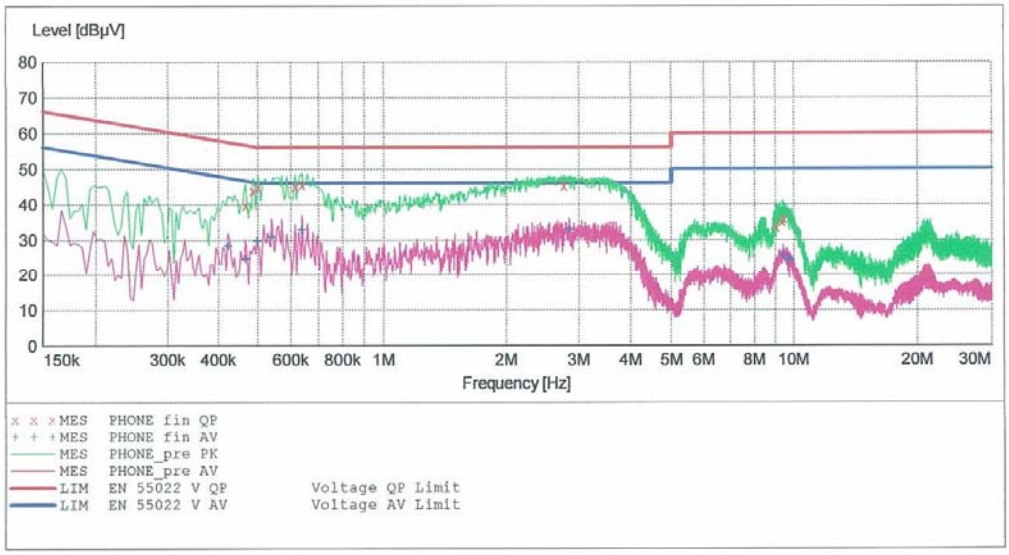
EUT: GS155a
Manufacturer: LG Electronics Icn.
Operating Condition: DATA Comminication Mode
Test Site: SHIELD ROOM
Operator: DS-KIM
Test Specification: CISPR22 CLASS B
Comment: N

SCAN TABLE: "CISPR22 CLASS B"

Short Description: KN22 CLASS B

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak Average	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
0.466001	39.70	10.1	57	16.9	---	---
0.486001	43.80	10.1	56	12.4	---	---
0.500000	44.90	10.1	56	11.1	---	---
0.616000	45.20	10.1	56	10.8	---	---
0.640000	45.60	10.1	56	10.4	---	---
2.764000	45.30	10.2	56	10.7	---	---
9.056000	33.60	10.6	60	26.4	---	---
9.400000	35.30	10.7	60	24.7	---	---
9.496000	35.90	10.7	60	24.1	---	---

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MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.422001	28.30	10.1	47	19.1	---	---
0.466001	24.60	10.1	47	22.0	---	---
0.498001	29.70	10.1	46	16.3	---	---
0.540000	30.90	10.1	46	15.1	---	---
0.640000	32.70	10.1	46	13.3	---	---
2.848000	32.90	10.2	46	13.1	---	---
9.436000	25.40	10.7	50	24.6	---	---
9.728000	24.50	10.7	50	25.5	---	---
9.784000	24.10	10.7	50	25.9	---	---

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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 4.0 dB
Operating condition : Data Communication mode
Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature : 12.0 °C
Humidity level : 46.5 %
Test date : January 29, 2010

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dBμV	dB/m	dB	(H/V)	dBμV/m	dBμV/m	dB
35.8	23.8	11.5	0.7	V	36.0	40.0	4.0
59.1	16.8	12.1	0.8	V	29.7	40.0	10.3
63.9	16.0	11.5	0.8	H	28.3	40.0	11.7
210.1	15.1	10.2	1.6	H	26.9	43.5	16.6
310.5	16.9	13.3	1.9	V	32.1	46.0	13.9
285.1	19.6	12.6	1.8	H	34.0	46.0	12.0

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 dBμV is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dBμV/m value is mathematically converted to its corresponding level in μV/m.

FS = 21.5 + 7.4 + 1.1 = 30 dBμV/m

[Radiated Emission Limits]

Frequency of Emission (㎒)	Field Strength	
	μV/m	dBμV/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

	Type	Manufacturer	Model Number	Next CAL Date
Conducted Emission				
☒	EMI Test Receiver	Rohde & Schwarz	ESCI	2010.06.02
☒	LISN	Rohde & Schwarz	ESH3-Z5	2010.02.06
☒	LISN	Rohde & Schwarz	ENV216	2010.04.01
☒	Attenuator	Rohde & Schwarz	ESH3-Z2	2010.10.30
Radiated Emission				
☒	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	2010.02.17
☒	Horn Antenna	Schwarzbeck	BBHA 9120D	2010.03.26
☒	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. Model: GS155a. Cellular/ PCS GSM Phone. FCC ID: BEJGS155A** complies with §15.107 and §15.109 of the FCC rules.