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EMI CERTIFICATION REPORT

Applicant:

LG Electronics Inc.

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153-023, Korea

Date of Issue: September 13, 2010

Test Report No.: HCTE1009FE10

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

BEJVS660

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B / CISPR 22 Class B

Equipment Type : Cellular/PCS CDMA/EvDO Phone with Bluetooth & WLAN

Model(s) Name : VS660, LG-VS660

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.

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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: VS660, LG-VS660** manufactured by **LG Electronics Inc.** Its basic purpose is used for communications.

Model (s)	VS660, LG-VS660
FCC ID	BEJVS660
E.U.T Type	Cellular/PCS CDMA/EvDO Phone with Bluetooth & WLAN
TX Frequency	824.70 MHz to 848.31 MHz (CDMA 850) 1 851.25 MHz to 1 908.75 MHz (CDMA 1 900)
RX Frequency	869.70 MHz to 893.31 MHz (CDMA 850) 1 931.25 MHz to 1 988.75 MHz (CDMA 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 CDMA/EvDO Phone with Bluetooth & WLAN	LG	LS670	BEJVS660	Notebook PC
Notebook PC	SAMSUNG	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	-	-	-	Notebook PC E.U.T
Headset	-	-	-	E.U.T
SD Card	SAMSUNG	MMAGR02GUECA-MB	-	-

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)1.0
	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 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

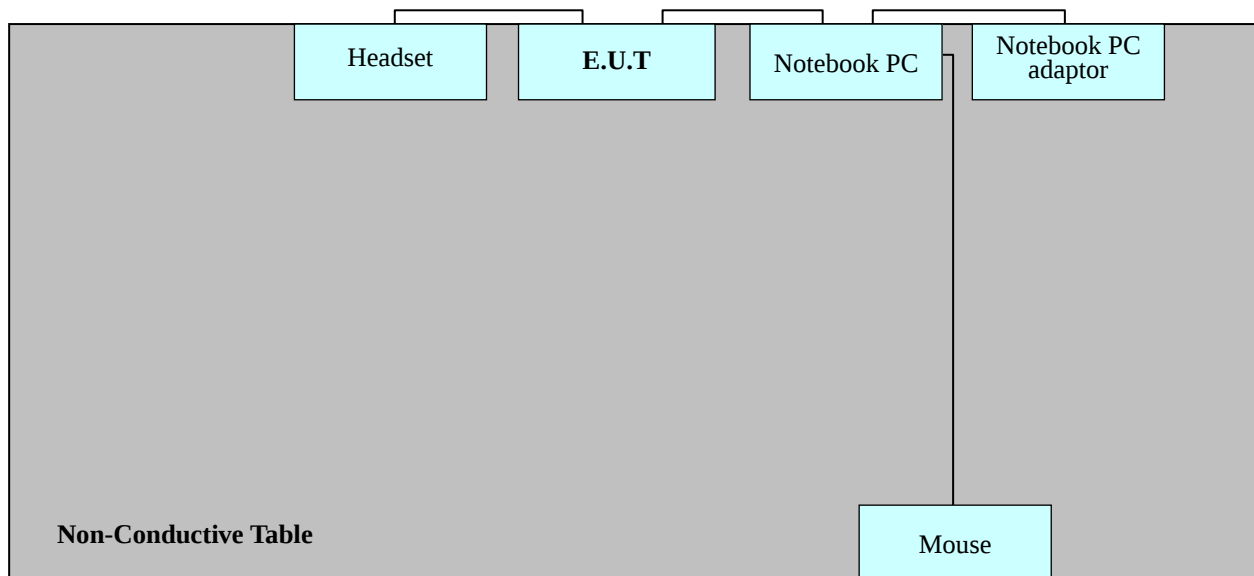
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

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 12.8 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 25.8 °C
Humidity level	: 48.1 %
Test date	: September 13, 2010

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB μ V)	Conductor	Detector	Limit (dB μ V)	Margin (dB)
0.1700	52.2	NEUTRAL	Quasi-Peak	65.0	12.8
4.2800	27.7	NEUTRAL	Average	46.0	18.3
4.2800	29.6	HOT	Average	46.0	16.4
4.3120	40.3	HOT	Quasi-Peak	56.0	15.7

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

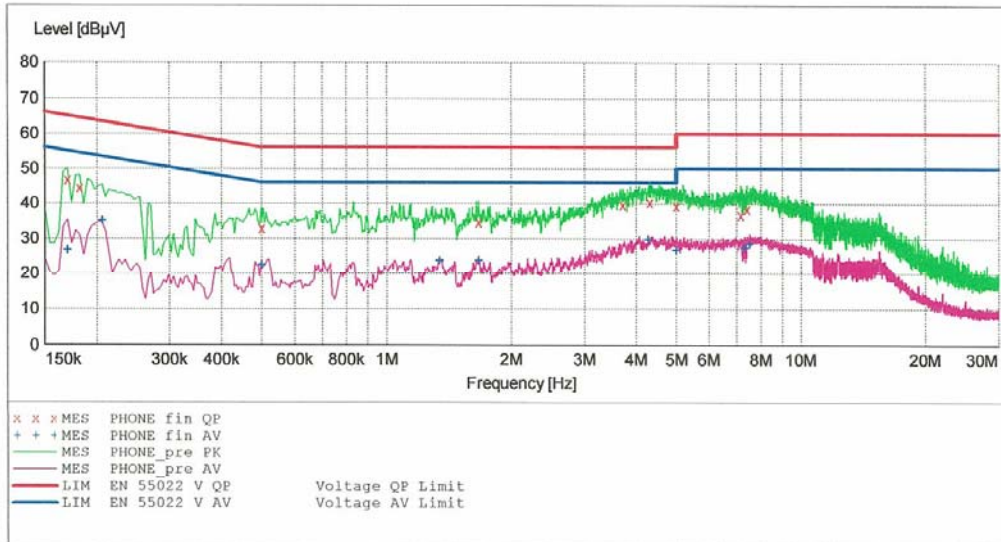
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EUT: VS660
Manufacturer: LG
Operating Condition: DATA MODE
Test Site: SHIELD ROOM
Operator: DS-KIM
Test Specification: CISPR22 CLASS B
Comment: H

SCAN TABLE: "CISPR22 CLASS B"

Short Description:			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	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
0.170000	46.70	10.1	65	18.2	---	---
0.182000	44.30	10.1	64	20.1	---	---
0.500000	32.90	10.1	56	23.1	---	---
1.668000	34.60	10.2	56	21.4	---	---
3.724000	39.60	10.4	56	16.4	---	---
4.312000	40.30	10.4	56	15.7	---	---
5.000000	39.20	10.5	56	16.8	---	---
7.164000	36.60	10.6	60	23.4	---	---
7.412000	38.50	10.6	60	21.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.170000	26.60	10.1	55	28.4	---	---
0.206000	34.90	10.1	53	18.5	---	---
0.500000	22.40	10.1	46	23.6	---	---
1.344000	23.80	10.2	46	22.2	---	---
1.668000	23.80	10.2	46	22.2	---	---
4.280000	29.60	10.4	46	16.4	---	---
5.000000	26.80	10.5	46	19.2	---	---
7.308000	27.30	10.6	50	22.7	---	---
7.516000	28.40	10.6	50	21.6	---	---

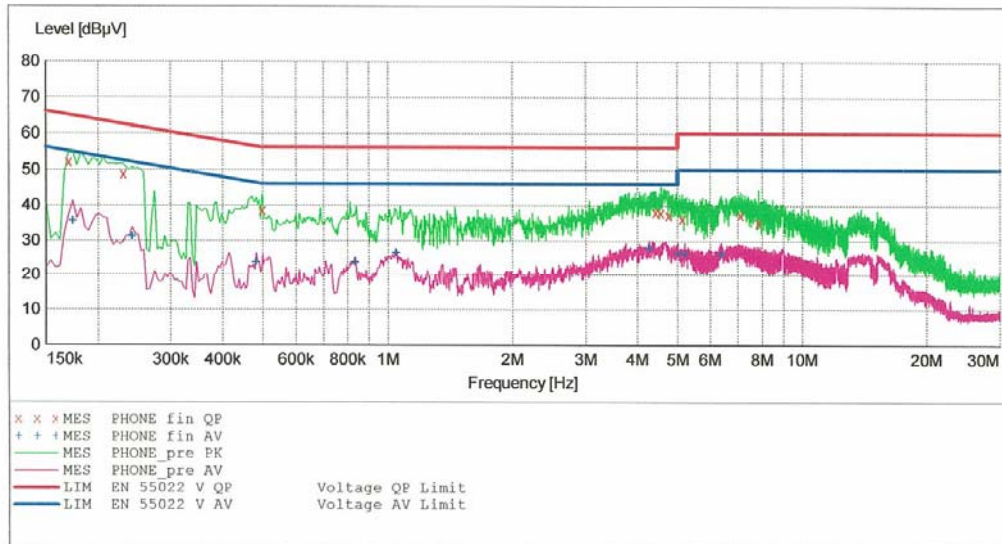
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EMC

EUT: VS660
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:			KN22 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
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"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.170000	52.20	10.1	65	12.8	---	---
0.230000	48.80	10.1	62	13.7	---	---
0.498000	38.70	10.1	56	17.3	---	---
4.436000	38.20	10.4	56	17.8	---	---
4.568000	38.00	10.4	56	18.0	---	---
4.768000	37.20	10.4	56	18.8	---	---
5.144000	36.30	10.5	60	23.7	---	---
7.088000	37.30	10.6	60	22.7	---	---
7.856000	35.30	10.7	60	24.7	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

9/13/2010 10:30AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.174000	35.60	10.1	55	19.2	---	---
0.242000	31.20	10.1	52	20.8	---	---
0.482000	23.80	10.1	46	22.5	---	---
0.836000	23.80	10.1	46	22.2	---	---
1.048000	26.50	10.2	46	19.5	---	---
4.280000	27.70	10.4	46	18.3	---	---
5.012000	26.40	10.5	50	23.6	---	---
5.212000	26.20	10.5	50	23.8	---	---
6.372000	26.10	10.6	50	23.9	---	---

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 6.2 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak (6 dB Bandwidth: 120 kHz)
Temperature	: 26.0 °C
Humidity level	: 53.0 %
Test date	: September 10, 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
41.2	20.6	12.2	0.7	V	33.5	40.0	6.5
42.4	20.8	12.3	0.7	V	33.8	40.0	6.2
218.0	22.9	10.5	1.6	H	35.0	46.0	11.0
290.6	19.9	12.8	1.8	H	34.5	46.0	11.5
431.9	15.3	16.1	2.2	H	33.6	46.0	12.4
436.0	15.7	16.3	2.2	V	34.2	46.0	11.8

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	100033	2011.02.19
EMI Test Receiver	Rohde & Schwarz	ESU26	100214	2011.04.29
LISN	Rohde & Schwarz	ESH3-Z5	100282	2011.02.05
LISN	Rohde & Schwarz	ENV216	3560.6550.02	2011.04.06
Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.52	2010.10.30

Radiated Emission

EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2010.10.30
EMI Test Receiver	Rohde & Schwarz	ESU26	100214	2011.04.29
Trilog Antenna	Schwarzbeck	VULB9160	9160-3150	2010.12.18
Antenna Master	HD	MA240	240/520/00	-
Turn Table	EMCO	1060	-	-
Communication Antenna	Schwarzbeck	USLP 9142	9142-248	-
Base Station	Rohde & Schwarz	CMU 200	1100000802	2011.02.17
Horn Antenna	Schwarzbeck	BBHA 9120D	-	2012.04.13
RF-Amplifier	MITEQ	AMF-6D-00101800 -35.20P.PS	-	2011.05.20
Bluetooth Base Station	TESCOM	TC-3000A	-	2011.01.07

7. CONCLUSION

The data collected shows that the **LG Electronics Inc, Cellular/PCS CDMA/EvDO Phone with Bluetooth & WLAN, Model: VS660, LG-VS660, FCC ID: BEJVS660** complies with §15.107 and §15.109 of the FCC rules.