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## EMI CERTIFICATION REPORT

**Applicant:**

LG Electronics MobileComm U.S.A., Inc.  
10101 Old Grove Road, San Diego, CA 92131

**Date of Issue:** January 04, 2012

**Test Report No.:** HCTE1112FE10-1

**Test Site:** HCT CO., LTD.

**HCT FRN:** 0005-8664-21

**FCC ID:**

**ZNFMS695**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B  
Equipment Type : Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN  
Model(s) Name : MS695, LG-MS695  
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  
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**ATTACHMENT: TEST SETUP PHOTOGRAPHS**

## 1. GENERAL INFORMATION

### 1.1 Product Description

Equipment Under Test (E.U.T) is **Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN, Model: MS695** manufactured by **LG Electronics MobileComm U.S.A., Inc.** Its basic purpose is used for communications.

<b>Model</b>	MS695
<b>Additional Model</b>	LG-MS695
<b>FCC ID</b>	ZNFMS695
<b>E.U.T Type</b>	Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN
<b>TX Frequency</b>	824.70 MHz to 848.31 MHz (CDMA 850) 1 851.25 MHz to 1 908.75 MHz (PCS CDMA) 1 711.25 MHz to 1 753.75 MHz (AWS CDMA)
<b>RX Frequency</b>	869.70 MHz to 893.31 MHz (CDMA 850) 1 931.25 MHz to 1 988.75 MHz (PCS CDMA) 2 111.25 MHz to 2 153.75 MHz (AWS CDMA)

### 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 Name	FCC ID / DoC	Connected To
Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN	LG	MS695	ZNFMS695	Notebook PC
Notebook PC	LG	X140-02	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	DELTA (JIANG SU)	ADP-40PH AD	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
USB cable	-	-	-	E.U.T Notebook PC
Headset	-	-	-	E.U.T
Micro SD card (2 GB)	SanDisk	-	-	E.U.T
RJ45 cable	-	-	-	Router Notebook PC
Router	-	HIGATE PLUS K12L012.00	-	Notebook PC
Router adaptor	-	SJH-0101R	-	Router

### 1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN	Micro USB	Y	Y	(P,D)1.2
	Headset jack	-	N	(D)1.1
Notebook PC	RJ 45	-	N	(D)1.5
	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/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN	Micro USB	N	N/A	Y	Both End
	Headset jack	N	N/A	Y	E.U.T End
Notebook PC	RJ 45	N	N/A	N	Both End
	USB (Mouse)	-	-	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 3 m semi anechoic chamber used to collect the test data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si, Kyoungki-Do, Republic of Korea. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4.

Detailed description of test facilities was submitted to the Commission and accepted dated Mar 02, 2011 (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 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

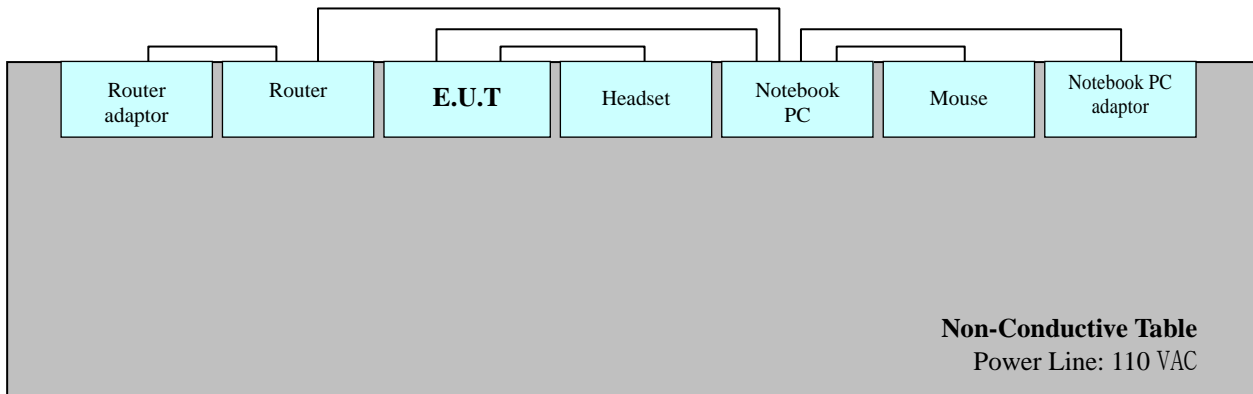
## 2. SYSTEM TEST CONFIGURATION

### 2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor and Base Station. 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 semi-anechoic chamber.

[Configuration of Tested System]



### **3. PRELIMINARY TEST**

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#### **3.1 Conducted Emission Test**

- It was tested Data Communication mode, after connecting all peripheral devices.

**Operation Mode:**       Data Communication mode

#### **3. 2 Radiated Emission Test**

- It was tested Data Communication mode, after connecting all peripheral devices.

**Operation Mode:**       Data Communication mode



## 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)
Operation Mode	: Data Communication mode
Temperature	: 24.2 °C
Humidity Level	: 48.0 %
Test Date	: January 03, 2012

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

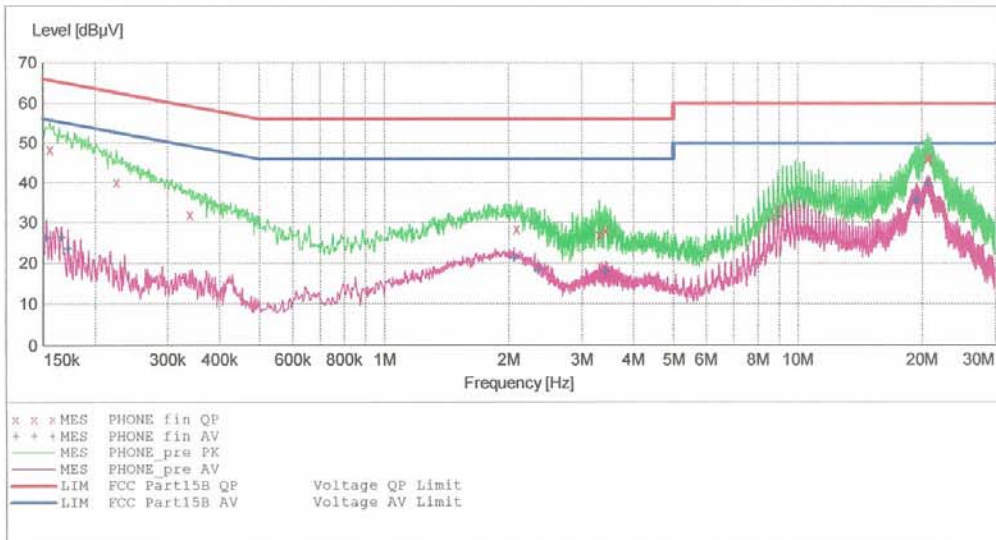
**HCT**

**EMC**

EUT: LG-MS695  
 Manufacturer: LG  
 Operating Condition: DATA COMMUNICATION  
 Test Site: SHIELD ROOM  
 Operator: JH CHOI  
 Test Specification: FCC PART15 CLASS B  
 Comment: H

**SCAN TABLE: "FCC PART 15 B(H)"**

Short Description:			FCC PART 15 CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	1.0 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"**

1/3/2012 9:26PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.156010	48.40	10.1	66	17.3	---	---
0.226010	40.10	10.1	63	22.4	---	---
0.339010	31.90	10.1	59	27.3	---	---
2.088000	28.40	10.2	56	27.6	---	---
3.316000	26.90	10.3	56	29.1	---	---
3.428000	28.00	10.3	56	28.0	---	---
20.644000	46.30	11.9	60	13.7	---	---
20.832000	46.40	11.9	60	13.6	---	---
20.840000	46.40	11.9	60	13.6	---	---

**MEASUREMENT RESULT: "PHONE\_fin AV"**

1/3/2012 9:26PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.153010	26.10	10.1	56	29.7	---	---
0.166010	26.20	10.1	55	29.0	---	---
0.172010	23.50	10.1	55	31.4	---	---
2.060000	21.10	10.2	46	24.9	---	---
2.356000	18.10	10.2	46	27.9	---	---
3.428000	17.80	10.3	46	28.2	---	---
19.400000	35.60	11.8	50	14.4	---	---
19.448000	35.40	11.8	50	14.6	---	---
20.688000	39.70	11.9	50	10.3	---	---

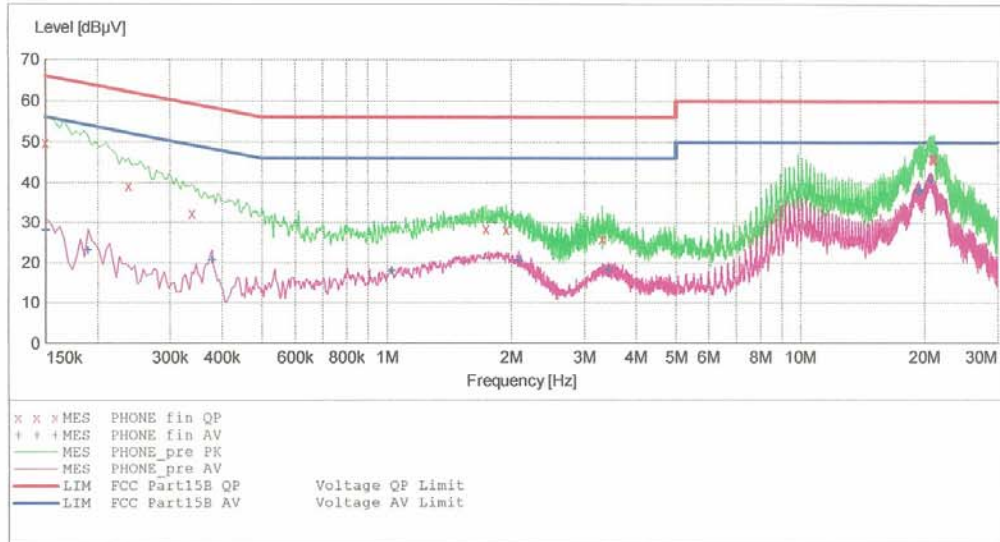
**HCT**

**EMC**

EUT: LG-MS695  
 Manufacturer: LG  
 Operating Condition: DATA COMMUNICATION  
 Test Site: SHIELD ROOM  
 Operator: JH CHOI  
 Test Specification: FCC PART15 CLASS B  
 Comment: N

**SCAN TABLE: "FCC PART 15 B(N)"**

Short Description:			FCC PART 15 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
0.150010	49.70	10.3	66	16.3	---	---
0.238010	39.20	10.3	62	23.0	---	---
0.338010	32.40	10.3	59	26.8	---	---
1.740000	28.60	10.4	56	27.4	---	---
1.948000	28.30	10.4	56	27.7	---	---
3.320000	25.90	10.5	56	30.1	---	---
20.796000	46.20	11.7	60	13.8	---	---
20.952000	45.70	11.7	60	14.3	---	---
21.136000	46.00	11.7	60	14.0	---	---

**MEASUREMENT RESULT: "PHONE\_fin AV"**

1/3/2012 9:22PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150010	28.00	10.3	56	28.0	---	---
0.190010	23.00	10.3	54	31.0	---	---
0.378010	20.60	10.3	48	27.7	---	---
1.028000	18.00	10.4	46	28.0	---	---
2.084000	20.50	10.4	46	25.5	---	---
3.432000	18.10	10.6	46	27.9	---	---
19.320000	37.70	11.7	50	12.3	---	---
19.484000	38.20	11.7	50	11.8	---	---
20.724000	40.80	11.7	50	9.2	---	---

## 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

**-For measurement below 1 GHz**

Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)

Operation Mode : Data Communication mode

**-For measurement above 1 GHz**

Detector : Peak mode: Peak (RBW: 1 MHz / VBW: 1 MHz)

: Average mode: Peak (RBW: 1 MHz / VBW: 10 Hz)

Operation Mode : Data Communication mode

Temperature : 23.7 °C

Humidity Level : 50.1 %

Test Date : January 03, 2012

Frequency (MHz)	Reading (dBuV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
47.300	12.48	V	1.0	12.38	3.55	40.0	28.4	11.6
70.800	17.14	V	1.0	10.25	3.71	40.0	31.1	8.9
99.900	18.80	V	1.2	9.30	3.80	43.5	31.9	11.6
300.200	20.00	H	1.0	13.39	4.60	46.0	38.0	8.0
529.900	18.43	H	1.0	18.31	5.36	46.0	42.1	3.9
566.800	17.08	H	1.0	19.09	5.43	46.0	41.6	4.4

※ NOTE:

1. Measurement above 1 GHz was performed from 1 GHz to the 5<sup>th</sup> harmonic of highest fundamental frequency. The highest fundamental frequency is PCS CDMA center frequency.
2. For measurement above 1 GHz, Emission noise was not founded over the ambient noise.

## 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 $\mu$ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB $\mu$ V/m value is mathematically converted to its corresponding level in  $\mu$ 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	
	$\mu$ V/m	dB $\mu$ 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>
<b><u>Conducted Emission</u></b>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	2012.05.03
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	2012.02.01
<input type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	2012.04.01
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	2012.08.01
<b><u>Radiated Emission</u></b>				
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2012.05.26
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2012.08.02
<input type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3125	2013.05.03
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
<input type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	-
<input checked="" type="checkbox"/> Antenna master controller	HD GmbH	HD100	100/637BJ:00	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	-
<input type="checkbox"/> Power Amplifier	Rohde & Schwarz	SCU-18	10094	2012.09.19
<input type="checkbox"/> Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	-	2012.04.13



## **7. CONCLUSION**

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The data collected shows that the **Type: Cellular/AWS/PCS CDMA/EVDO Phone with Bluetooth & WLAN, Model: MS695, FCC ID: ZNFMS695** complies with §15.107 and §15.109 of the FCC rules.