FCC TEST REPORT

Reference No. : **G-45-2012-03209**

Applicant : **LG Electronics MobileComm U.S.A., Inc.**

Equipment Under Test (EUT) :

Product Name : GSM & WCDMA Phone with Bluetooth and WLAN

Model Name : LG-E455g

Applied Standards : **FCC Part 15 : 2010, Subpart B, Class B**

ANSI C63.4 : 2003

CISPR 22 : 2006

Date of Receipt : **December 13, 2012**

Date of Test : **February 05, 2013**

Date of Issue : **February 06, 2013**

Test Results : **Complied**

Tested by : **Jerry Jeong**

Reviewed by : **Forest Lee**

Remarks :

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1. General Information

1.1 Client Information

Applicant : LG Electronics MobileComm U.S.A., Inc.
Address of Applicant : 1000 Sylvan Avenue Englewood Cliffs, NJ 07632
Manufacturer : LG Electronics MobileComm U.S.A., Inc.
Address of Manufacturer : 1000 Sylvan Avenue Englewood Cliffs, NJ 07632

1.2 Test Laboratory

Name and Address : SGS Korea Co., Ltd.
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Phone : + 82 31 428 5700
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1.3 General Information of E.U.T.

Product Name	GSM & WCDMA Phone with Bluetooth and WLAN
Model Name	LG-E455g
Serial No.	209KPRW235926
FCC ID	ZNFE455G
EMI Classification	Class B
Hardware Version	REV.1.0
Software Version	V05e
Highest Internal Frequency	Max. 1 ㎓
Test Voltage	120 ㏿.c., 60 ㎐ (from Notebook Computer)
Battery	3.8 ㏿.c., 1700 ㎃h, 6.5 ㏗h

1.4 Operating Modes and Conditions

Operating mode	Operating condition
USB Mode	USB Data Communication

Note : The EUT was exercised through batch file during testing.

1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer	FCC ID
USB Mouse	Basic Optical Mouse 1.0A USB/PS2 Compatible	-	MICROSOFT CORPORATION	DOC
Micro SD Card	Mobile Ultra 16GB	-	SanDisk	DOC
Notebook Computer	7665-AH6	L3-E5323	LENOVO	DOC
Wireless Router	WG602	1PA11C5000896	NETGEAR	PY3WG602V4

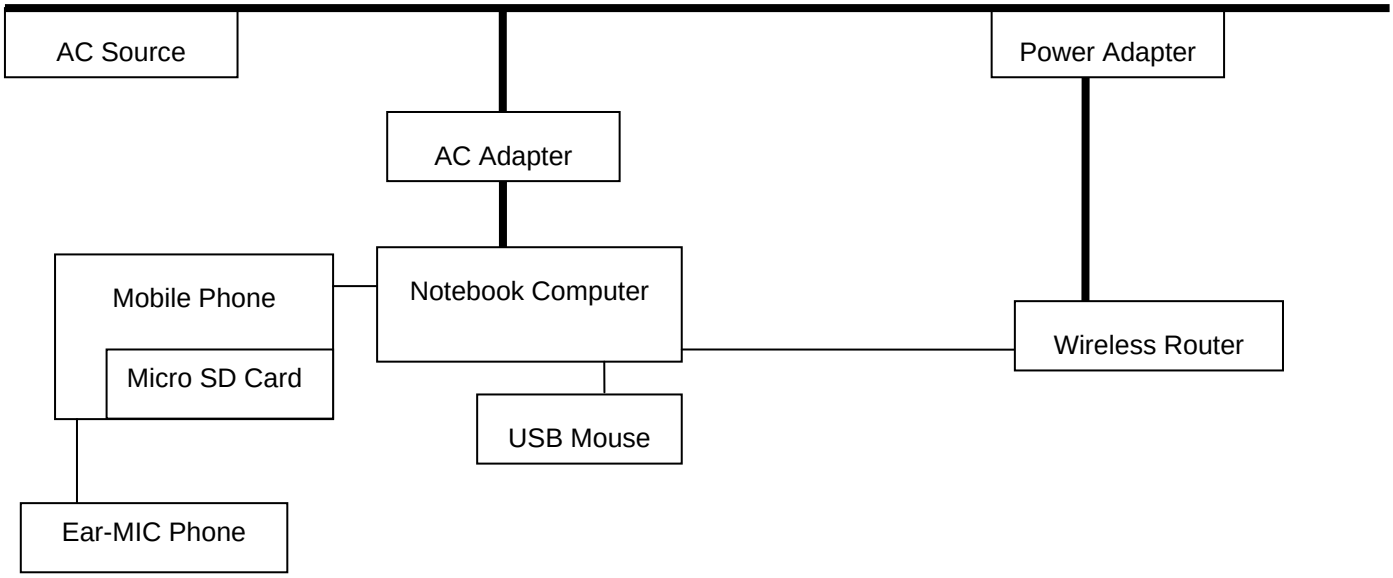
1.6 Cable List

Start		END		Cable Spec.	
Name	I/O Port	Name	I/O Port	Length	Shield
Mobile Phone	USB	Notebook Computer	USB	0.8	Shield
	IO	Ear-MIC Phone	-	1.1	Shield
	MicroSD Card Slot	MicroSD Card	-	-	-
Notebook Computer	USB	Mobile Phone	USB	0.8	Shield
	USB	USB Mouse	-	1.8	Shield
	DC IN	AC Adapter	DC OUT	1.5	Unshield
	LAN Port	Wireless Router	LAN	1.2	Unshield
AC Adapter	DC OUT	Notebook Computer	DC IN	1.5	Unshield
	AC IN	AC Source	-	1.5	Unshield
Wireless Router	DC IN	Power Adapter	-	1.5	Unshield
Power Adapter	AC IN	AC Source	-	-	-

1.7 System Configurations

Description	Model	Serial No.	Manufacturer
Ear MIC Phone	EAB62209201	-	-
USB Cable	-	-	-
Battery	BL-44JH	EAC61839001 LLL	LG

1.8 Test System Layout



1.9 Modifications

There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 : 2010, Subpart B	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Basic Standards	Results
Conducted Emission	ANSI C63.4 : 2003	Complied
Radiated Emission	ANSI C63.4 : 2003	Complied

Note : Test methods of all test items are performed according to the basic standards in this table.

EMISSION

2.1 Test Results

Test Items	Basic Standards	Test Results
Conducted Emission	ANSI C63.4 : 2003	**Complied**
Radiated Emission	ANSI C63.4 : 2003	**Complied**

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 ㎒ ~ 30 ㎒	9 ㎑	N/A
Radiated Emission	30 ㎒ ~ 1 ㎓	120 ㎑	10 ㎙ & 3 ㎙
	Above 1 ㎓	1 ㎒	3 ㎙

Note : 10 m method of radiated emission measurement is only applied to Class A equipment over the frequency range of 30 ㎒ ~ 1 ㎓. Except this, 3 m method is applied to Class B equipment over the frequency range of 30 ㎒ ~ 1 ㎓ and Class A and Class B equipment above 1 ㎓.

2.2.2 Test Limits

-Conducted Emission Limits

Frequency Range	Limits(dB(μV))		Class
	Quasi-peak	Average	
0.15 ㎒ ~ 0.5 ㎒	79	66	**Class A**
0.5 ㎒ ~ 30 ㎒	73	60	
0.15 ㎒ ~ 0.5 ㎒	66 to 56	56 to 46	**Class B**
0.5 ㎒ ~ 5 ㎒	56	46	
5 ㎒ ~ 30 ㎒	60	50	

Note : The lower limit shall apply at the transition frequencies. The limit decreases linearly with the logarithm of the frequency in the range 0.15 ㎒ to 0.5 ㎒.

-Radiated Emission Limits below 1 ㎓

Frequency Range	Limits(dB(μV/m))	Class
	Quasi-peak	
30 ㎒ ~ 88 ㎒	39.1	**Class A (10 m method)**
88 ㎒ ~ 216 ㎒	43.5	
216 ㎒ ~ 960 ㎒	46.4	
960 ㎒ ~ 1 ㎓	49.5	
30 ㎒ ~ 88 ㎒	40	**Class B (3 m method)**
88 ㎒ ~ 216 ㎒	43.5	
216 ㎒ ~ 960 ㎒	46	
960 ㎒ ~ 1 ㎓	54	

-Radiated Emission Limits above 1 ㎓ (3m method)

Frequency Range	Limits(dB(μV/m))		Class
	Average	Peak	
Above 1 ㎓	59.5	79.5	**Class A**
Above 1 ㎓	54	74	**Class B**

Note : The limits of class A equipment is extrapolated using an extrapolation factor of 20 dB/decade because it was measured at 3m distance not 10m distance.

2.3 Conducted Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(0.15 ㎒ to 30 ㎒) using a max hold mode incorporating a Peak detector and Average detector and using the software of ES-K1(Version V1.71 from R&S). The final test data was measured using a Quasi-Peak detector and Average detector.

2.3.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Last Cal. Date
Two-Line V-Network	ENV216	R & S	100190	2013.01.04
Artificial Mains Networks	ESH2-Z5	R & S	100280	2012.04.06
Test Receiver	ESHS10	R & S	863365/018	2012.05.31

Note 1 : The calibration period of every equipment is 1 year.

Note 2 : ENV216 is used for the EUT(the AC Adapter of the Notebook Computer) and ESH2-Z5 is used for auxiliary equipments.

2.3.2 Test Site

Shield Room in Gunpo Laboratory

2.3.3 Environment Conditions

Temperature : 17.8 ℃ ~ 18.7 ℃
Humidity : 23.8 %R.H. ~ 25.2 %R.H.
Atmospheric Pressure : 102.8 kPa

Test Date : February 05, 2013

Freq.	Line	Level (dBμV)		CL	LISN	Result (dBμV)		Limit (dBμV)		Margin (dB)	
(MHz)	(H/N)	Q/P	A/V	(dB)	(dB)	Q/P	A/V	Q/P	A/V	Q/P	A/V
0.39	H	31.80	29.70	0.02	9.57	41.39	39.29	58.17	48.17	16.78	8.88
0.41	N	31.10	28.30	0.02	9.65	40.77	37.97	57.65	47.65	16.88	9.68
0.71	H	30.50	29.10	0.04	9.57	40.11	38.71	56.00	46.00	15.89	7.29
0.74	N	32.10	29.10	0.04	9.65	41.79	38.79	56.00	46.00	14.21	7.21
16.47	N	34.30	30.10	0.18	9.78	44.26	40.06	60.00	50.00	15.74	9.94
16.65	H	34.50	28.90	0.18	9.71	44.39	38.79	60.00	50.00	15.61	11.21

Measurement Uncertainty : ± 4.12 dB (The confidential level is about 95%, K=2)

Note : • Line (H) : Hot • Line (N) : Neutral
• CL: Cable Loss • LISN : LISN Factor
• Result = Level + CL + LISN • Margin = Limit – Result

See Appendix A (Conducted Emission)

2.4 Radiated Emission

The initial preliminary exploratory scans were performed at 3 ㎜ distance over the measuring frequency range(30 ㎒ to 6 ㎓) using a max hold mode incorporating a Peak detector and using the software of EP5RE(Version Ver3.10.20 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 ㎓ at 3 ㎜ distance and a Peak and Average detector above 1 ㎓ at 3 ㎜ distance. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

2.4.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Last Cal. Date
Horn Antenna	HF906	R & S	100326	2011.11.23
Signal Conditioning Unit	SCU 18	R & S	10117	2013.01.14
Bilog Antenna	VULB9163	SCHWARZBECK MESS-ELEKTRONIK	396	2012.06.04
Test Receiver	ESU26	R & S	100109	2012.05.31
Amplifier	8447F	HP	2944A03909	2012.07.03

Note : Only the calibration period of Antennas is 2 years but the period of every equipment is 1 year.

2.4.2 Test Site

3 m Semi-Anechoic Chamber in Gunpo Laboratory

2.4.3 Environment Conditions

Below 1 GHz (3 m method)

Temperature : 20.1 °C ~ 21.7 °C
Humidity : 22.0 %R.H. ~ 24.0 %R.H.
Atmospheric Pressure : 102.8 kPa ~ 102.9 kPa

Test Date : February 05, 2013

Freq. (MHz)	Level (dBμV)	Pol. (H/V)	A (°)	H (m)	AF (dB)	CL (dB)	Amp. (dB)	F/S (dBμV/m)	Limit (dBμV/m)	Margin (dB)
47.78	45.70	V	262.9	1.01	15.50	0.92	27.60	34.52	40.00	5.48
58.70	43.50	V	3.0	1.10	14.03	1.03	27.58	30.98	40.00	9.02
101.82	54.30	H	156.2	3.10	12.47	1.40	27.50	40.67	43.50	2.83
143.29	52.80	V	358.8	1.00	8.68	1.73	27.41	35.80	43.50	7.70
360.00	43.60	H	75.5	1.00	15.67	2.55	27.30	34.52	46.00	11.48
600.00	40.30	V	47.7	1.20	20.34	3.44	28.50	35.58	46.00	10.42

Measurement Uncertainty (Horizontal) : ± 5.44 dB (The confidential level is about 95%, K=2)
Measurement Uncertainty (Vertical) : ± 5.81 dB (The confidential level is about 95%, K=2)

Note:
- AF = Antenna Factor
- CL = Cable Loss
- F/S = Field Strength
- Pol.(H) = Horizontal
- Pol.(V) = Vertical
- Amp. = Amplifier Gain
- Margin = Limit – F/S
- F/S = Level + AF + CL – Amp.
- A : Angle
- H : Height

Above 1 GHz (3 m method)

Temperature : 17.5 ℃ ~ 19.2 ℃
Humidity : 17.0 %R.H. ~ 18.0 %R.H.
Atmospheric Pressure : 102.7 kPa ~ 102.8 kPa

Test Date : February 05, 2013

Freq. (MHz)	Level (dBμV)	Pol. (H/V)	A (°)	H (m)	AF (dB)	CL (dB)	Amp. (dB)	F/S (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Peak Detector										
1825.63	56.80	V	139.7	2.00	27.11	6.52	43.84	46.59	74.00	27.41
1995.63	60.10	V	139.7	2.00	27.92	6.59	43.74	50.86	74.00	23.14
Average Detector										
1825.63	30.50	V	139.7	2.00	27.11	6.52	43.84	20.29	54.00	33.71
1995.63	32.10	V	139.7	2.00	27.92	6.59	43.74	22.86	54.00	31.14

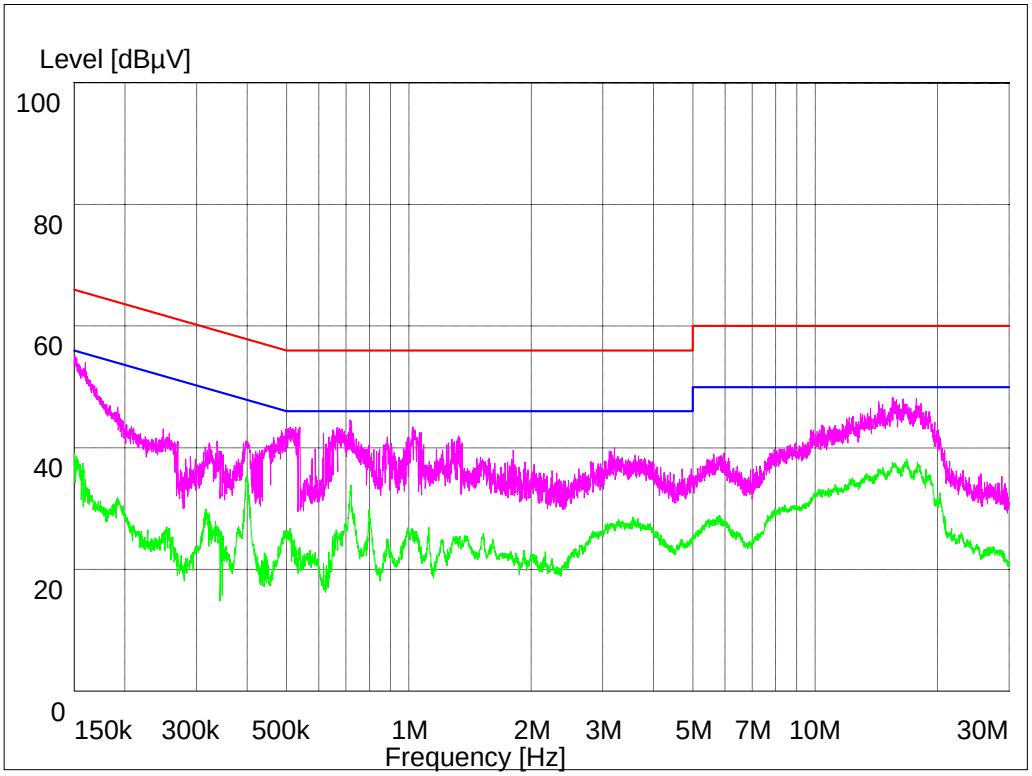
Measurement Uncertainty (Horizontal) : ± 4.80 dB (The confidential level is about 95%, K=2)
Measurement Uncertainty (Vertical) : ± 4.82 dB (The confidential level is about 95%, K=2)

Note: • AF = Antenna Factor • CL = Cable Loss • F/S = Field Strength
• Pol.(H) = Horizontal • Pol.(V) = Vertical • Amp. = Amplifier Gain
• Margin = Limit – F/S • F/S = Level + AF + CL – Amp.
• A : Angle • H : Height

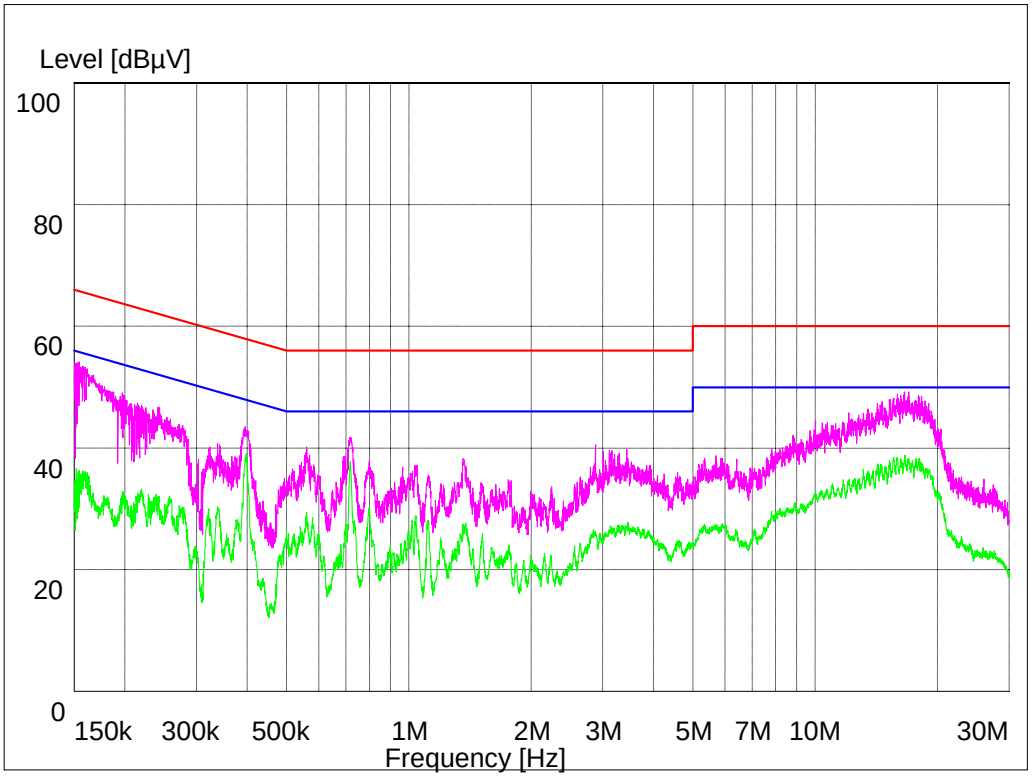
See Appendix B (Radiated Emission)

Appendix A : Conducted Emission

Neutral

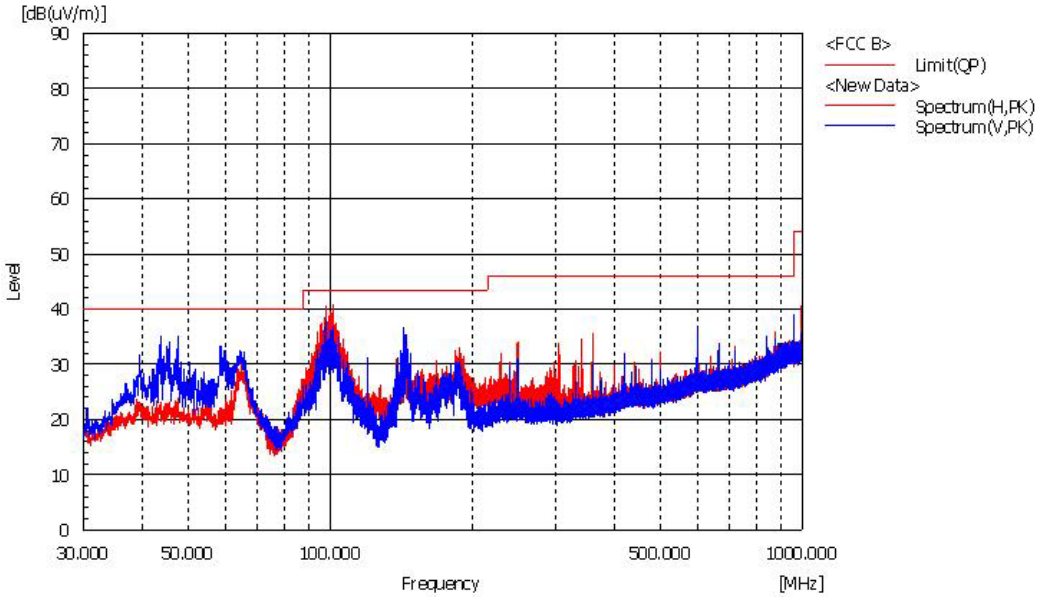


Hot



Appendix B : Radiated Emission

Below 1 GHz



Above 1 GHz