

FCC TEST REPORT

Reference No. : G-45-2012-03123

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

Equipment Under Test (EUT) :

Product Name : Cellular/PCS GSM/GPRS Phone with
Bluetooth and WLAN

Model Name : LG-C398

Add Model Name : LG-C393, LG-C396, LG-C397, LG-C399,
LGC393, LGC396, LGC397, LGC398, LGC399,
C396, C397, C398, C399

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 : January 06, 2013 ~ January 07, 2013

Date of Issue : January 17, 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.
18-34, Sanbon-dong, Gunpo, Gyeonggi-do, Korea
435-040
FCC Registration No. : 367021
IC Company No. : 4620F
Phone : + 82 31 428 5700
Fax : + 82 31 427 2370
e-mail : forest.lee@sgs.com

1.3 General Information of E.U.T.

Product Name	Cellular/PCS GSM/GPRS Phone with Bluetooth and WLAN	
Model Name	LG-C398	
Add Model Name	LG-C393, LG-C396, LG-C397, LG-C399, LGC393, LGC396, LGC397, LGC398, LGC399, C396, C397, C398, C399	
Model Difference	Model Name	Description
	LG-C398 (Basic Model)	Triple SIM
	LG-C393	Single SIM
	LG-C396	Single SIM
	LG-C397	Dual SIM
	LG-C399	Keypad
	LGC393, LGC396, LGC397, LGC398, LGC399, C396, C397, C398, C399	Only model name is different.
Serial No.	210KPGS242007	
FCC ID	ZNFC399	
Hardware Version	Rev.B	
Software Version	V09a	
EMI Classification	Class B	
Highest Internal Frequency	Max. 416 MHz	
Test Voltage	120 Va.c., 60 Hz (from Notebook Computer)	
Battery	3.7 Vd.c., 1540 mAh, 5.7 Wh	

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
USB Keyboard	SKG-3300UB	TAKB200205Z	MONTEREY INTERNATIONAL CORP.	N/A
Micro SD Card	Mobile Ultra 16GB	-	SanDisk	DOC
LCD Monitor	E2251VRT	202LTAQ1F608	LG	N/A
Notebook Computer	LGX14	008QTEQ024836	LG	N/A
Wireless Router	WG602	1PA11C5000896	NETGEAR	PY3WG602V4

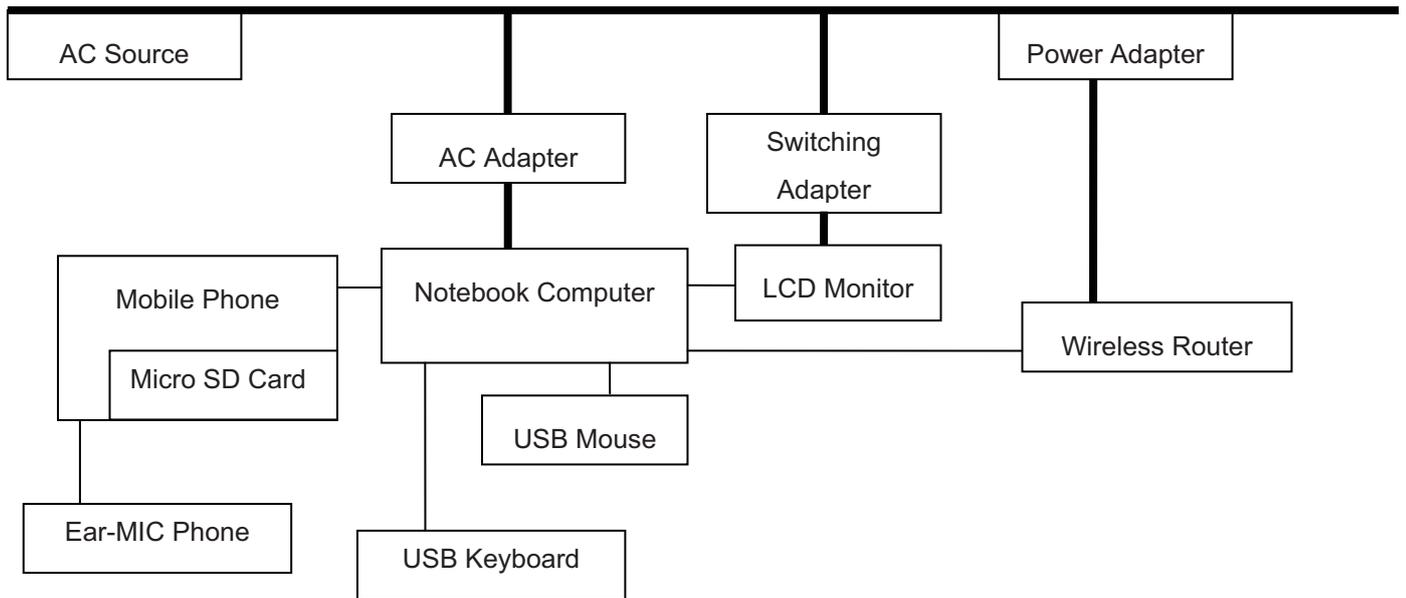
1.6 Cable List

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	Unshield
	Micro SD Card Slot	Micro SD Card	-	-	-
Notebook Computer	USB	Mobile Phone	USB	0.8	Shield
	USB	USB Mouse	-	1.8	Shield
	USB	USB Keyboard	-	1.7	Shield
	RGB	LCD Monitor	RGB	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	-	-	-
LCD Monitor	DC IN	Switching Adapter	DC OUT	1.5	Unshield
	RGB	Notebook Computer	RGB	1.8	Shield
Switching Adapter	DC OUT	LCD Monitor	DC IN	1.5	Unshield
	AC IN	AC Source	-	1.0	Unshield

1.7 System Configurations

Description	Model	Serial No.	Manufacturer
Ear MIC Phone	SGEY0003219	-	-
USB Cable	-	-	-
Battery	BL-44JN	EAC61679601 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 MHz ~ 30 MHz	9 kHz	N/A
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m & 3 m
	Above 1 GHz	1 MHz	3 m

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

2.2.2 Test Limits

-Conducted Emission Limits

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

--Radiated Emission Limits below 1 GHz

Frequency Range	Limits(dB(μ V/m))		Class
	Quasi-peak		
30 MHz ~ 230 MHz	40		Class A (10m method)
230 MHz ~ 1 GHz	47		
30 MHz ~ 230 MHz	40.5		Class B (3m method)
230 MHz ~ 1 GHz	47.5		

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

Frequency Range	Limits(dB(μ V/m))		Class
	Average	Peak	
Above 1 GHz	59.5	79.5	Class A
Above 1 GHz	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 MHz to 30 MHz) 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 : 21.7 °C ~ 22.1 °C
 Humidity : 26.8 %R.H. ~ 27.2 %R.H.
 Atmospheric Pressure : 102.8 kPa

Test Date : January 07, 2013

Freq. (MHz)	Line (H/N)	Level (dB μ V)		CL (dB)	LISN (dB)	Result (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q/P	A/V			Q/P	A/V	Q/P	A/V	Q/P	A/V
0.17	N	40.90	25.30	0.01	9.65	50.56	34.96	65.21	55.21	14.65	20.25
0.20	N	36.20	22.80	0.01	9.65	45.86	32.46	63.82	53.82	17.96	21.36
0.21	H	36.40	21.30	0.01	9.57	45.98	30.88	63.41	53.41	17.43	22.53
0.22	N	34.00	21.50	0.01	9.65	43.66	31.16	63.01	53.01	19.35	21.85
0.25	H	31.30	18.50	0.02	9.57	40.89	28.09	61.76	51.76	20.87	23.67
2.71	N	25.50	19.70	0.06	9.65	35.21	29.41	56.00	46.00	20.79	16.59

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

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

See Appendix A (Conducted Emission)

2.4 Radiated Emission

The initial preliminary exploratory scans were performed at 3 m distance over the measuring frequency range(30 MHz to 6 GHz) 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 GHz at 3 m distance and a Peak and Average detector above 1 GHz at 3 m 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	2012.01.12
Bilog Antenna	VULB9163	SCHWARZBEC K 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 : 19.7 °C ~ 20.5 °C

Humidity : 20.0 %R.H. ~ 23.0 %R.H.

Atmospheric Pressure : 102.6 kPa ~ 102.7 kPa

Test Date : January 06, 2013

Freq. (MHz)	Level (dB μ V)	Pol. (H/V)	A (°)	H (m)	AF (dB)	CL (dB)	Amp. (dB)	F/S (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
50.73	40.20	V	318.4	1.01	15.28	0.96	27.60	28.84	40.00	11.16
89.05	48.10	V	116.2	1.01	11.66	1.33	27.52	33.57	43.50	9.93
101.90	50.30	V	164.8	1.01	12.45	1.40	27.50	36.65	43.50	6.85
201.00	51.10	H	334.3	2.20	11.31	1.93	27.10	37.24	43.50	6.26
309.32	49.80	H	129.1	1.20	14.45	2.47	27.04	39.68	46.00	6.32
448.03	45.00	H	173.5	1.10	17.51	2.92	27.99	37.44	46.00	8.56

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 °C ~ 19.2 °C

Humidity : 17.0 %R.H. ~ 18.0 %R.H.

Atmospheric Pressure : 102.7 kPa ~ 102.8 kPa

Test Date : January 06, 2013

Freq. (MHz)	Level (dB μ V)	Pol. (H/V)	A (°)	H (m)	AF (dB)	CL (dB)	Amp. (dB)	F/S (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Peak Detector										
1329.58	51.10	V	293.5	1.10	25.05	5.48	43.65	37.97	74.00	36.03
2988.96	47.20	V	359.5	1.10	29.78	8.01	44.20	40.79	74.00	33.21
Average Detector										
1329.58	27.80	V	293.5	1.10	25.05	5.48	43.65	14.67	54.00	39.33
2988.96	26.50	V	359.5	1.10	29.78	8.01	44.20	20.09	54.00	33.91

Measurement Uncertainty (Horizontal) : \pm 4.80 dB (The confidential level is about 95%, K=2)

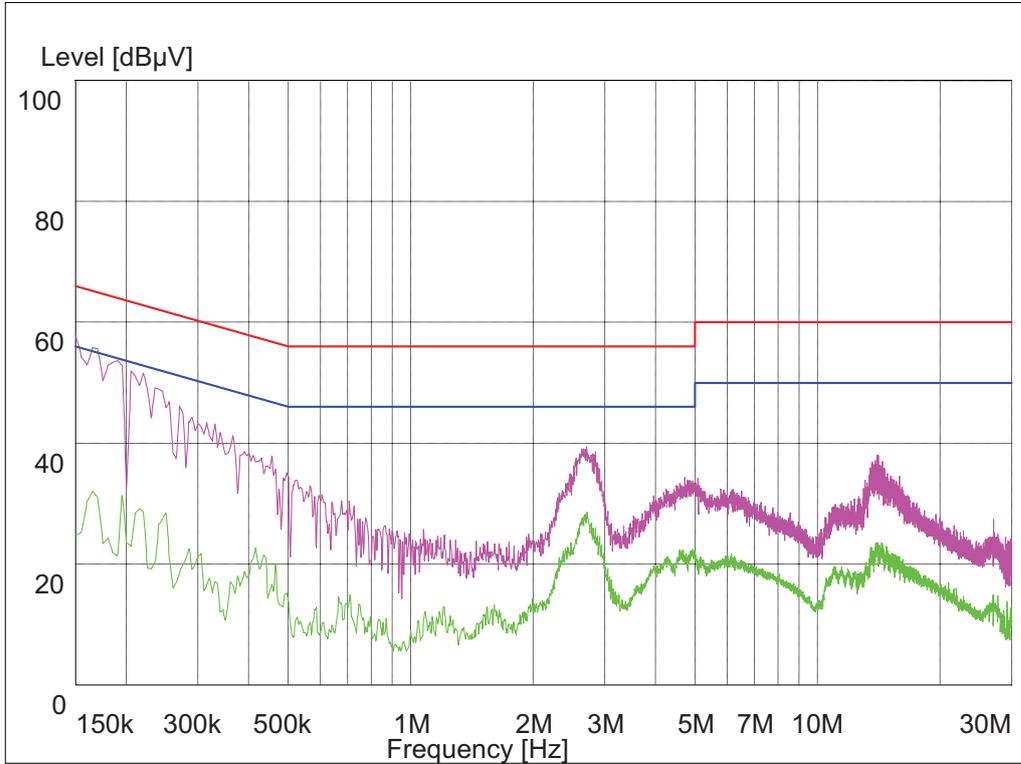
Measurement Uncertainty (Vertical) : \pm 4.82 dB (The confidential level is about 95%, K=2)

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

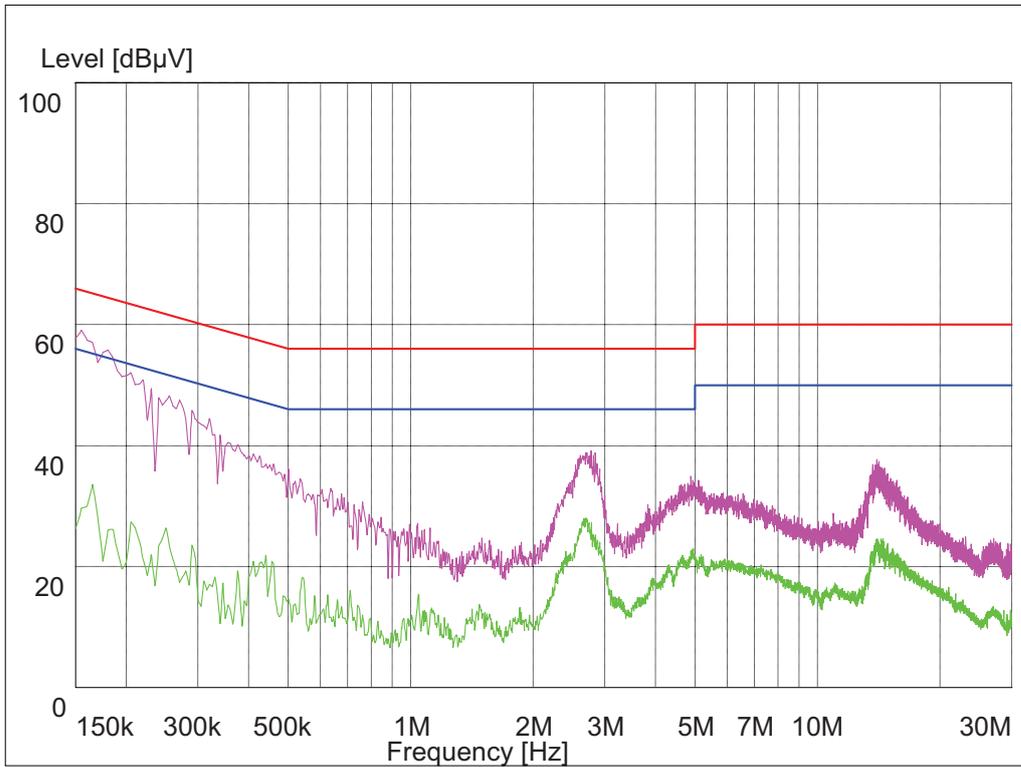
See Appendix B (Radiated Emission)

Appendix A : Conducted Emission

Neutral

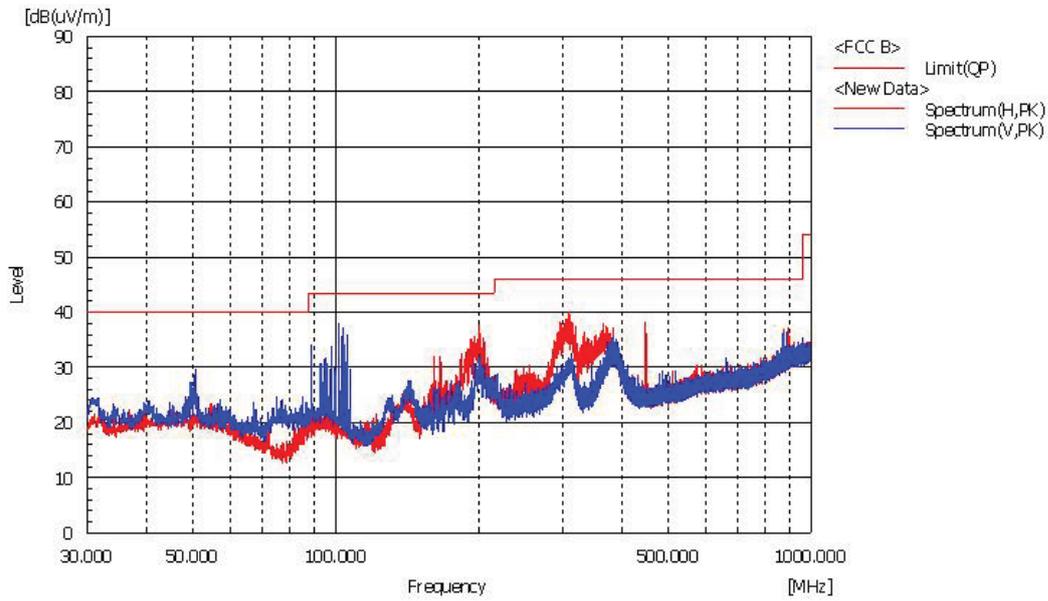


Hot



Appendix B : Radiated Emission

Below 1 GHz



Above 1 GHz

