

	ESTECH Co., Ltd. Rm. 1015, World Venture Center II, 426-5 Gasan-dong, Guncheon-gu, Seoul, 158-803, Korea	   	Electromagnetic Interference Test Report

Test Report for FCC

Report Number		ESTF150612-003			
Applicant	Company name	LG Electronics Inc.			
	Address	459-9, Kasan-dong, Keumchun-ku, Seoul 153-023, Korea			
	Telephone	82-2-2033-3847			
Product	Product name	GSM Phone with Bluetooth			
	Model No.	KE970	Manufacturer	LG Electronics Inc.	
	Serial No.	NONE	Country of origin	KOREA	
Test date	2006-11-27~2006-11-28		Date of issue	11-Dec-06	
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea				
Standard	FCC PART 15 2006 , ANSI C 63.4 2003				
Test item	☒ Conducted Emission	☐ Class A	☒ Class B	Test result	OK
	☒ Radiated Emission	☐ Class A	☒ Class B	Test result	OK
Measurement facility registration number		94696			
Tested by	Engineer J.H.Kim  (Signature)				
Reviewed by	Manager Engineer J.M.Yang  (Signature)				
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable				
* Note - This test report is not permitted to copy partly without our permission - This test result is dependent on only equipment to be used - This test result based on a single evaluation of one sample of the above mentioned					

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1. Laboratory Information

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report.

ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name : ESTECH Co. Ltd

Head Office : Rm 1015, World Venture Center II, 426-5, Gasan-dong, Geumcheon-gu, Seoul, Korea
(Safety & Telecom. Test Lab)

EMC Test Lab : 58-1 Osan-Ri, GaNam-Myon, YeoJoo-Gun, KyungKi-Do, Korea
97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea

1.3 Official Qualification(s)

MIC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements

FCC : Filed Laboratory at Federal Communications Commission

VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

2. Description of EUT

2.1 Summary of Equipment Under Test

Product name : GSM Phone with Bluetooth
Model Number : KE970
Serial Number : NONE
Manufacturer : LG Electronics Inc.
Country of origin : KOREA
Rating : Supplied from Note PC
Receipt Date : 27-Nov-06

2.2 General descriptions of EUT

The GSM Phone offers Bluetooth as a feature. The Bluetooth frequency hopping transceiver is designed to operate between 2400 and 2483.5MHz.

3. Test Standards

Test Standard : FCC PART 15 (2006)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2003)

This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain devices that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment. These methods apply to the measurement of individual units or systems comprised of multiple units.

4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
GSM Phone with Bluetooth	KE970	NONE	LG Electronics Inc.	EUT
NOTE PC	D400	TW-04U917-70161-326-40CT	Dell	
ADAPTER	PA-1650-05DK	71615-52P-1495	Dongguan Lite Power 2nd Plant	
PRINTER	C6414J	TH18M149P2	Hewlett Packard	
ADAPTER	C6409-60152	C1H14B	YOKOGAWA	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
GSM Phone with Bluetooth	USB	Note Pc	USB	1	Yes	
Note Pc	USB	Printer	USB	1.5	Yes	
Note Pc	Power	Adapter	-	1.5	No	
Printer	Power	Adapter	Power	1.5	No	

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC Part 15 (2006) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2006) & ANSI C 63.4 (2003) on an open test site, which allows a 3m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test setup.

5.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESVS10	Rohde & Schwarz	838562/002	2007. 1. 23
Spectrum Analyzer	R3261C	ADVANTEST	61720116	2007. 4. 19
LogBicon Antenna	VULB 9160	Schwarzbeck	3142	2007. 5. 03
Amplifier	8447F	HP	2805A02972	2007. 6. 26
Turn Table	2087	EMCO	2129	–
Antenna Mast	2070-01	EMCO	9702-203	–
ANT Mast Controller	2090	EMCO	1535	–
Turn Table Controller	2090	EMCO	1535	–

5.2 Environmental Condition

Test Place : Open site(3m)
 Temperature (°C) : 13 °C
 Humidity (%) : 39 %

5.3 Test data

Test Date : 28-Nov-06

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
53.51	12.10	V	1.0	12.60	1.2	40.0	25.89	-14.11
57.53	14.90	V	1.0	12.43	1.2	40.0	28.55	-11.45
75.02	13.10	V	1.0	9.87	1.4	40.0	24.34	-15.66
113.96	14.70	V	1.0	11.13	1.7	43.5	27.49	-16.01
132.09	15.10	V	1.0	12.65	1.8	43.5	29.55	-13.95
172.31	9.60	H	1.5	13.35	2.0	43.5	24.97	-18.53
200.00	10.10	H	1.2	10.38	2.2	43.5	22.63	-20.87
225.09	11.90	V	1.0	10.89	2.3	46.0	25.13	-20.87
250.02	13.90	H	1.1	11.92	2.6	46.0	28.38	-17.62
291.09	16.10	V	1.0	13.02	2.8	46.0	31.95	-14.05
340.03	12.10	V	1.0	14.09	3.1	46.0	29.28	-16.72
355.10	7.90	H	1.0	14.41	3.2	46.0	25.47	-20.53
427.65	10.10	H	1.0	15.90	3.5	46.0	29.53	-16.47
452.67	7.10	H	1.0	16.40	3.6	46.0	27.11	-18.89
540.00	9.10	H	1.0	17.68	4.1	46.0	30.84	-15.16
Remark	H : Horizontal, V : Vertical *Checked in all 3 axis and the maximum measured data were reported. *CL = Cable Loss-Amplifier Gain(In case of above1000Mhz) *CL = Cable Loss(In case of below1000Mhz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120KHz for Quasi-peak detection at frequency below 1GHz.							

6. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 to 30 MHz was measured in accordance to FCC Part 15 (2006) & ANSI C 63.4 (2003). The test setup was made according to FCC Part 15 (2006) & ANSI C 63.4 (2003) in a shielded. The EUT was placed on a non-conductive table at least 80 above the ground plane. A grounded vertical reference plane was positioned in a distance of 40cm from the EUT. The distance from the EUT to other metal surfaces was at least 0.8m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0m.. The test receiver with Quasi Peak detector complies with CISPR 16.

6.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
LISN	ESH3-Z5	Schwarzbeck	838979/010	2007. 2. 27
LISN	NNLA8120A	Schwarzbeck	8120161	2007. 2. 27
TEST Receiver	ESPI7	Rohde & Schwarz	100185	2007. 8. 24
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2007. 6. 15

6.2 Environmental Condition

Test Place : Shield Room
 Temperature (°C) : 21°C
 Humidity (%) : 46%

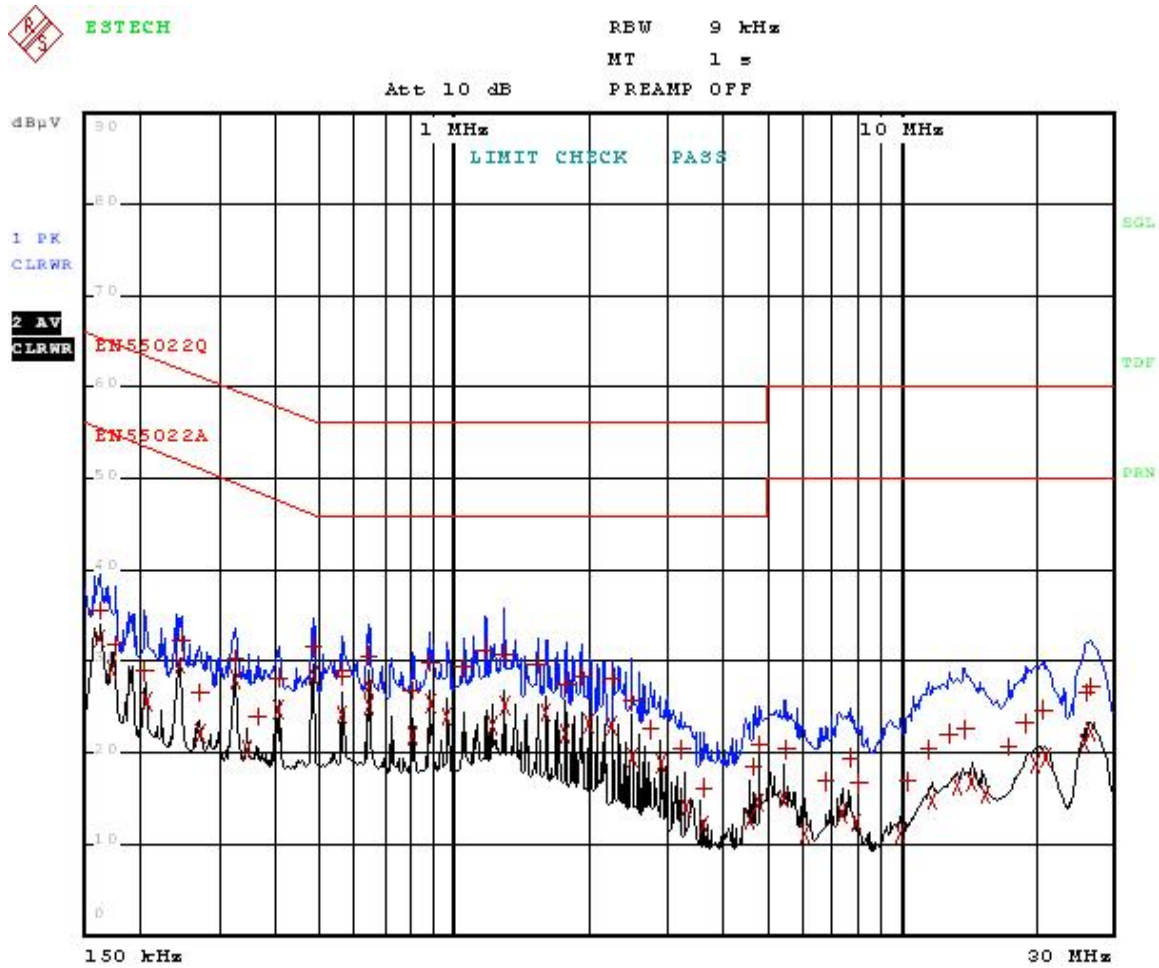
6.3 Test data

Test Date : 27-Nov-06

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.16	0.10	0.0	H	65.46	35.65	35.76	55.46		
0.19	0.10	0.0	N	64.04	28.40	28.53	54.04	24.30	24.43
0.24	0.10	0.1	N	61.99	28.15	28.31	51.99		
0.25	0.10	0.1	H	61.92	32.19	32.35	51.92		
0.33	0.10	0.1	N	59.53	24.49	24.70	49.53		
0.36	0.10	0.1	H	58.64	23.89	24.12	48.64		
0.65	0.10	0.2	H	56.00	30.49	30.79	46.00		
0.72	0.10	0.2	N	56.00	24.74	25.04	46.00		
0.89	0.10	0.2	H	56.00	29.90	30.20	46.00	25.46	25.76
1.05	0.10	0.2	N	56.00	26.19	26.50	46.00	21.13	21.44
1.29	0.10	0.2	H	56.00	30.79	31.12	46.00	25.21	25.54
1.94	0.10	0.3	N	56.00	26.21	26.60	46.00		
7.74	0.26	0.4	N	60.00	23.92	24.63	50.00		
8.10	0.27	0.5	H	60.00	16.54	17.28	50.00		
10.39	0.31	0.6	H	60.00	16.87	17.79	50.00		
11.61	0.33	0.7	N	60.00	23.12	24.12	50.00		
12.84	0.36	0.7	H	60.00	22.03	23.10	50.00		
13.68	0.37	0.7	N	60.00	22.71	23.83	50.00		
Remark	H : Hot Line, N : Neutral Line								

Appendix 1. Spectral diagram

*HOT



Comment: KE970 HOT
Date: 27.NOV.2006 13:25:02

*NEUTRAL



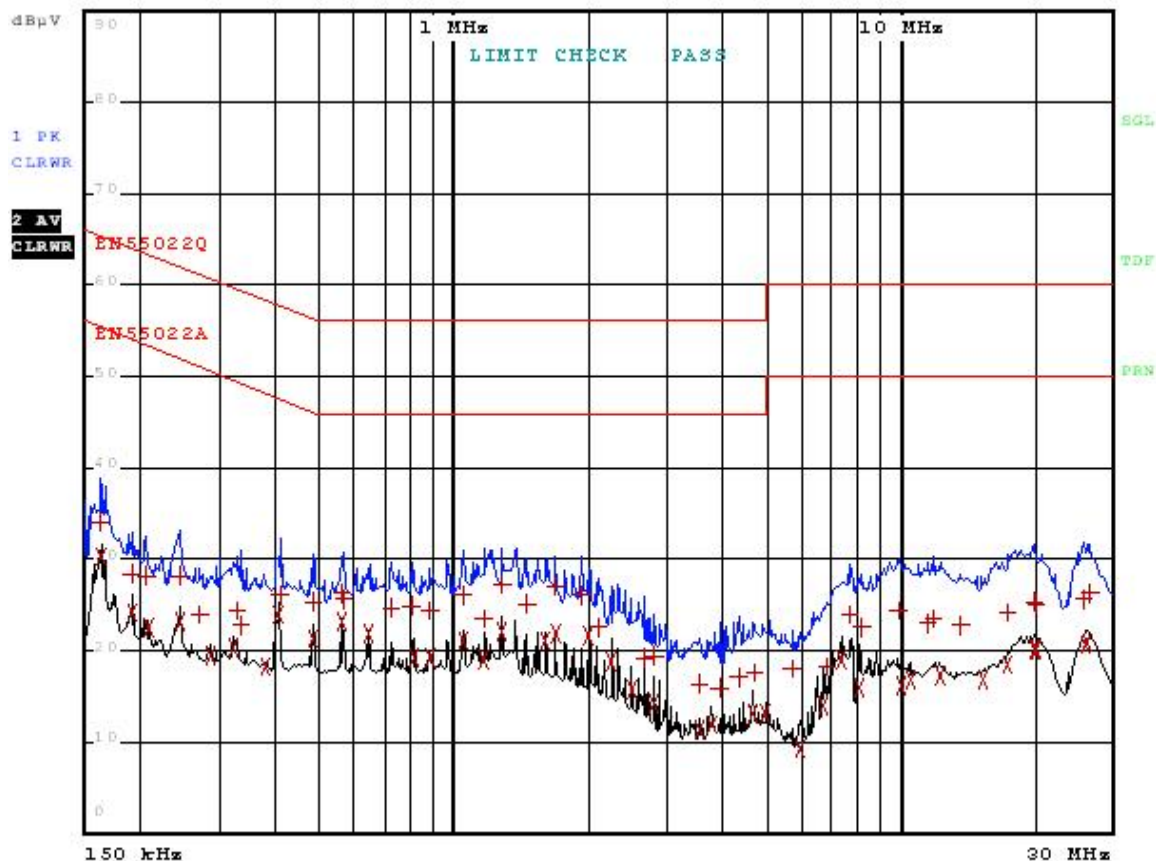
ESSTECH

RBW 9 kHz

MT 1 s

PREAMP OFF

Att 10 dB



Comment: KE970 NEUTRAL

Date: 27.NOV.2006 13:20:12