

## EMI CERTIFICATION REPORT

**Applicant:**

LG Electronics Inc.

60-39, Gasan-dong, Gumchon-gu, Seoul  
153-023, Korea

**Date of Issue:** April 14, 2011

**Test Report No.:** HCTE1104FE37

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

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

**FCC ID:**

**BEJP990H**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B  
Equipment Type : Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSPA phone with  
Bluetooth and WLAN  
Trade Name : LG Electronics Inc  
Model(s) : LG-P990h  
Additional Model(s) : P990h, LGP990h, LG-P990H, LGP990H, P990H  
Port / Connector(s) : USB Data Port / Headset Port / HDMI 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



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**ATTACHMENT: TEST SETUP PHOTOGRAPHS**

## 1. GENERAL INFORMATION

### 1.1 Product Description

Equipment Under Test (E.U.T) is **EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA /HSPA phone with Bluetooth & WLAN, Model: LG-P990h** manufactured by **LG Electronics Inc.** Its basic purpose is used for communications.

<b>Model (s)</b>	LG-P990h
<b>Additional Model (s)</b>	P990h, LGP990h, LG-P990H, LGP990H, P990H
<b>FCC ID</b>	BEJP990H
<b>E.U.T Type</b>	Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSPA phone with Bluetooth &WLAN
<b>TX Frequency</b>	824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 826.40 MHz to 846.60 MHz (WCDMA 850) 1 852.4 MHz to 1 907.6 MHz (WCDMA 1 900)
<b>RX Frequency</b>	869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 871.40 MHz to 891.60 MHz (WCDMA 850) 1 932.4 MHz to 1 987.6 MHz (WCDMA 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/ Serial Number	FCC ID / DoC	Connected To
Cellular/PCS GSM/GPRS /EDGE/WCDMA/HSPA phone with Bluetooth & WLAN	LG	LG-P990h	BEJP990H	Notebook PC TV Monitor
Notebook PC	LG	X140-02 009QTAF022208	DoC	E.U.T Notebook PC adaptor
Notebook PC adaptor	DELTA (JIANG SU)	ADP-40PH AD EAY60725501	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible 3902B008	DoC	Notebook PC
Headset	WATA	-	-	E.U.T
USB cable	BROAD	SGDY0018801	-	E.U.T Notebook PC
SD card (4 GB)	HC	-	-	E.U.T
TV Monitor	LG	W2261VT 102ND0A92084	-	E.U.T
HDMI cable	BD	EAD61668801	-	E.U.T TV Monitor

## 1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
Cellular/PCS GSM/ GPRS/EDGE/ WCDMA/HSPA phone with Bluetooth & WLAN	Headset jack	-	N	(D)1.2
	USB data	Y	Y	(P,D)1.2
	HDMI	-	Y	(D)2.0
Notebook PC	USB (Mouse)	-	Y	(D)1.8
TV Monitor	AC in	N	-	(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 GSM/ GPRS/EDGE/ WCDMA/HSPA phone with Bluetooth & WLAN	Headset jack	N	-	Y	E.U.T End
	USB data	N	-	Y	Both End
	HDMI	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 10 m semi anechoic chamber used to collect the radiated data is located at the 105-1, Jangam-Ri, Majang-Myeon, Icheon-Si Kyoungki-Do, 467-811, Republic of Korea.

Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facilities was submitted to the Commission and accepted dated Sep. 03, 2010 (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

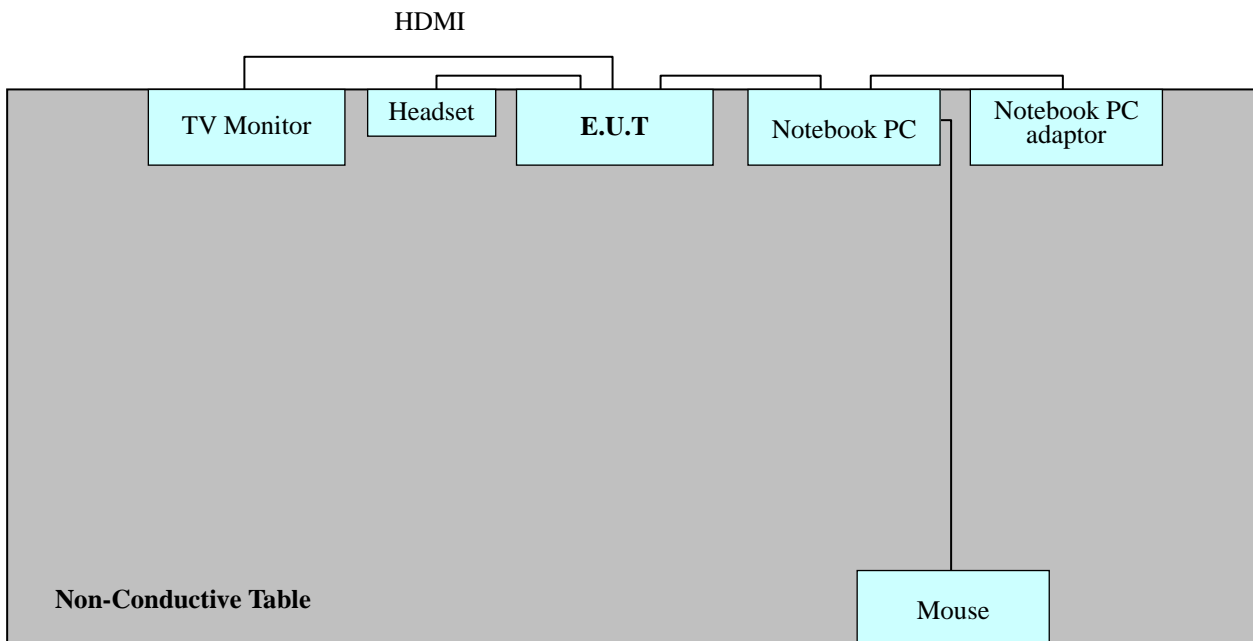
## 2. SYSTEM TEST CONFIGURATION

### 2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor.  
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.

<b>Operation Mode</b>	<b>The Worst Operating Condition</b>
Data Communication	○

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

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

<b>Operation Mode</b>	<b>The Worst Operating Condition</b>
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	: FCC PART 15 Subpart B Class B
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 23.8 °C
Humidity level	: 43.1 %
Test date	: April 13, 2011

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

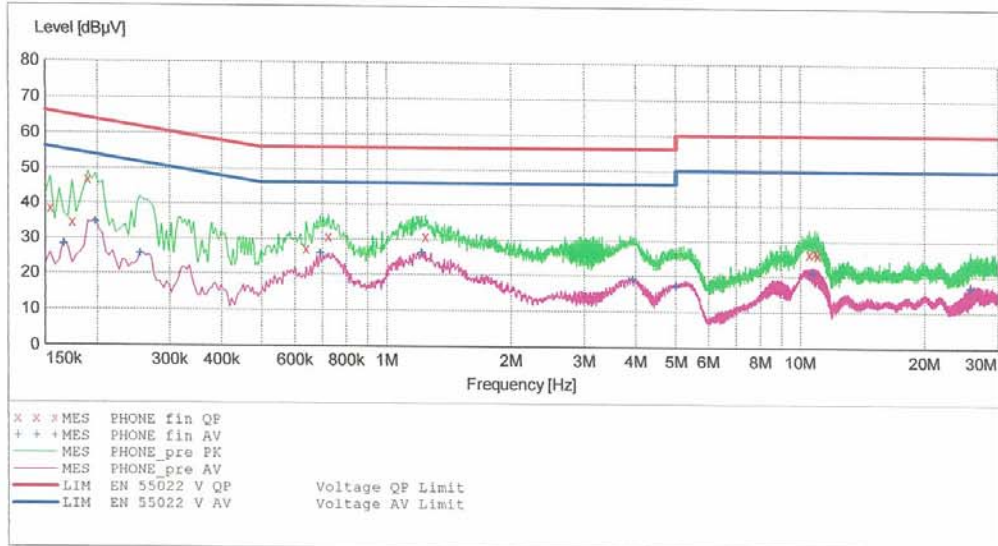
**HCT**

**EMC**

EUT: LG-P990h  
 Manufacturer: LG  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: DH-RYU  
 Test Specification: FCC PART 15 CLASS B  
 Comment: H

**SCAN TABLE: "FCC PART 15 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
500.0 kHz	5.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	None
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



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

4/13/2011 3:25PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154010	38.40	10.3	66	27.4	---	---
0.174010	34.50	10.3	65	30.3	---	---
0.190010	46.70	10.3	64	17.4	---	---
0.640000	27.10	10.3	56	28.9	---	---
0.724000	30.60	10.4	56	25.4	---	---
1.244000	30.70	10.4	56	25.3	---	---
10.528000	26.40	11.1	60	33.6	---	---
10.848000	26.80	11.1	60	33.2	---	---
11.004000	26.10	11.1	60	33.9	---	---

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

4/13/2011 3:25PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.166010	28.10	10.3	55	27.0	---	---
0.198010	34.40	10.3	54	19.3	---	---
0.254010	25.50	10.3	52	26.1	---	---
0.692000	25.80	10.4	46	20.2	---	---
1.216000	26.10	10.4	46	19.9	---	---
3.936000	19.00	10.6	46	27.0	---	---
5.000000	17.00	10.7	46	29.0	---	---
10.732000	20.80	11.1	50	29.2	---	---
25.764000	16.80	11.8	50	33.2	---	---

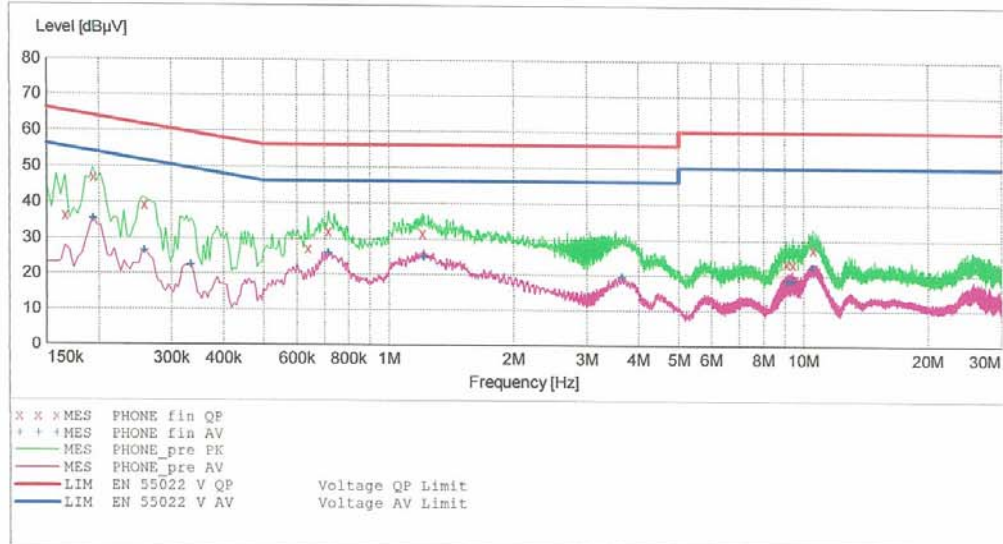
**HCT**

**EMC**

EUT: LG-P990h  
 Manufacturer: LG  
 Operating Condition: DATA MODE  
 Test Site: SHIELD ROOM  
 Operator: DH-RYU  
 Test Specification: FCC PART 15 CLASS B  
 Comment: N

**SCAN TABLE: "FCC PART 15 CLASS B"**

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
0.166010	36.20	10.3	65	28.9	---	---
0.194010	46.80	10.3	64	17.1	---	---
0.258010	39.30	10.3	62	22.2	---	---
0.640000	27.20	10.3	56	28.8	---	---
0.716000	32.00	10.4	56	24.0	---	---
1.208000	31.60	10.4	56	24.4	---	---
9.096000	23.40	11.0	60	36.6	---	---
9.444000	23.30	11.0	60	36.7	---	---
10.560000	27.50	11.1	60	32.5	---	---

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

4/13/2011 3:29PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.194010	35.10	10.3	54	18.7	---	---
0.258010	26.40	10.3	52	25.1	---	---
0.334010	22.40	10.3	49	26.9	---	---
0.716000	26.00	10.4	46	20.0	---	---
1.216000	24.90	10.4	46	21.1	---	---
3.652000	19.30	10.6	46	26.7	---	---
9.168000	18.20	11.0	50	31.8	---	---
9.420000	18.50	11.0	50	31.5	---	---
10.500000	22.10	11.1	50	27.9	---	---

## 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 Class B  
 For measurement below 1 GHz  
 -Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)  
 For measurement above 1 GHz  
 -Setting : Peak mode: Detector- Peak(RBW: 1 MHz / VBW: 1 MHz)  
                   Average mode: Detector- Peak (RBW: 1 MHz / VBW: 10 Hz)  
 Temperature : 23.5 °C  
 Humidity Level : 43.0%  
 Test Date : April 12, 2011

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB/m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
37.0	17.7	11.9	0.8	V	30.4	40.0	9.6
91.4	17.2	7.7	1.3	V	26.2	43.5	17.3
126.2	17.2	11.9	1.4	V	30.5	43.5	13.0
240.0	25.2	12.8	2.0	V	40.0	46.0	6.0
314.0	17.6	13.5	2.3	V	33.4	46.0	12.6
720.0	12.6	21.3	3.6	H	37.5	46.0	8.5

※ **NOTE:**

1. Measurement Above 1 GHz performed from 1 GHz to the 5<sup>th</sup> harmonic of highest fundamental frequency. The highest fundamental frequency is GSM 1 900 center frequency.
2. For measurement above 1 GHz, noise level is more than 14 dB below the limit, specified in FCC Part 15.35.

## 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	2011.05.28
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	2012.02.01
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	2012.04.01
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	375.8810.352	2011.10.25
<b><u>Radiated Emission</u></b>				
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	2011.10.29
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU26	100241	2011.09.01
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2012.09.13
<input checked="" type="checkbox"/> Antenna master	INNCO Systems	MA4000-EP	MA4000/283	-
<input checked="" type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	-
<input checked="" type="checkbox"/> Communication Antenna	Schwarzbeck	USLP9142	9142-248	-
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	-	2012.04.13
<input type="checkbox"/> RF-Amplifier	MITEQ	AMF-6D-0010 1800-35.20P.PS	-	2011.05.20
<input type="checkbox"/> Base Station	Rohde & Schwarz	CMU 200	1100000802	2012.02.16

## 7. CONCLUSION

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The data collected shows that the **EUT Type: Cellular/PCS GSM/GPRS/EDGE /WCDMA/HSPA Phone with Bluetooth and WLAN, Model: LG-P990h, FCC ID: BEJP990H** complies with §15.107 and §15.109 of the FCC rules.