



**HCT CO., LTD.**

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## EMI CERTIFICATION REPORT

**Applicant:**

LG Electronics MobileComm U.S.A., Inc.  
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

**Date of Issue:** June 03, 2013

**Test Report No.:** HCTE1306FE01

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

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

**FCC ID:**

**ZNFLS980**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B  
Equipment Type : CDMA, GSM, WCDMA and LTE Phone with WLAN, Bluetooth and NFC  
Model Name : LG-LS980  
Port / Connector(s) : USB / Earphone Port  
Date of Test : May 22, 2013 – May 30, 2013

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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This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

## DOCUMENT HISTORY

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The revision history for this document is shown in table.

Version	Date	Description
HCTE1306FE01	June 03, 2013	Initial Release

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**ATTACHMENT: TEST SETUP PHOTOGRAPHS**

## 1. GENERAL INFORMATION

### 1.1 Product Description

Equipment Under Test is **EUT type: CDMA, GSM, WCDMA and LTE Phone with WLAN, Bluetooth and NFC, Model: LG-LS980** manufactured by **LG Electronics MobileComm U.S.A., Inc.** Its basic purpose is used for communications.

<b>Model</b>	LG-LS980
<b>FCC ID</b>	ZNFLS980
<b>EUT Type</b>	CDMA, GSM, WCDMA and LTE Phone with WLAN, Bluetooth and NFC
<b>TX Frequency</b>	824.70 MHz to 848.31 MHz (CDMA BC0) 1 851.25 MHz to 1 908.75 MHz (CDMA BC1) 817.90 MHz to 823.10 MHz (CDMA BC10) 824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 1 850 MHz to 1 910 MHz (WCDMA B2) 824 MHz to 849 MHz (WCDMA B5) 1 850 MHz to 1 915 MHz (LTE B25) 814 MHz to 849 MHz (LTE B26) 2 496 MHz to 2 690 MHz (LTE B41)
<b>RX Frequency</b>	869.70 MHz to 893.31 MHz (CDMA BC0) 1 931.25 MHz to 1 988.75 MHz (CDMA BC1) 862.00 MHz to 894.00 MHz (CDMA BC10) 869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 1 930 MHz to 1 990 MHz (WCDMA B2) 869 MHz to 894 MHz (WCDMA B5) 1 930 MHz to 1 995 MHz (LTE B25) 859 MHz to 894 MHz (LTE B26) 2 496 MHz to 2 690 MHz (LTE B41)

### 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
EUT	LG	LG-LS980	ZNFLS980	Notebook PC Ear-phone
USB cable (2.0)	INTERFACESAMIL	IFS0001D	-	E.U.T Notebook PC
USB cable (3.0)	Ningbo	-	-	E.U.T Notebook PC
Ear-phone	I-SOUND	HC-MYD-LG149	-	E.U.T
Adaptor	Yang Ming Industrial	DA-60M12		Gateway
RJ45 cable	-	-	-	Notebook PC, Gateway
Notebook PC	LG	A560-XH55K	DoC	Notebook PC adaptor
Notebook PC adaptor	Dongguang Lite Power 2 <sup>nd</sup> plant	PA-1900-08	-	Notebook PC
Gateway	Axesstel	MV440R	-	Notebook PC, Adaptor
LCD monitor	SAMSUNG	B2230HF	-	HDMI cable
HDMI cable	Cambridge Audio	900 series	-	LCD monitor Notebook PC

### 1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	Micro USB	Y	Y	(P,D)1.1
	Ear-phone	N/A	Y	(D)1.2
	Micro USB (USB 3.0)	Y	Y	(P,D)0.1
Notebook PC	RJ 45	N/A	N	(D)1.5
	DC in	N	N/A	(P)1.8
	HDMI	N/A	Y	(D)1.5
Gateway	DC in	N	N/A	(P)1.8
LCD monitor	AC in	N	N/A	(P)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
EUT	Micro USB	N	N/A	Y	Both End
	Ear-phone	N	N/A	Y	EUT End
	Micro USB (USB 3.0)	N	N/A	Y	Both End
Notebook PC	RJ 45	N	N/A	N	N/A
	HDMI	N	N/A	Y	Both 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 EUT distance of 3 m

## 1.7 Test Facility

Chamber used to collect the test data is located at the 74, SEOICHEON-RO, 578BEON-GIL, MAJANG-MYEON, ICHEON-SI, GYEONGGI-DO, KOREA. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4.

Measurement Facilities	Reg. No.
Radiated Field strength measurement facility (3m)	90661(Mar. 02, 2011)
Radiated Field strength measurement facility (10m)	90661 (Sep. 03, 2010)

## 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

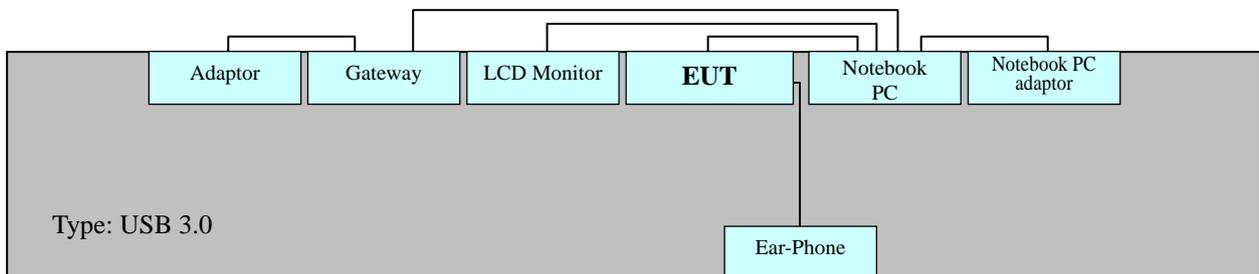
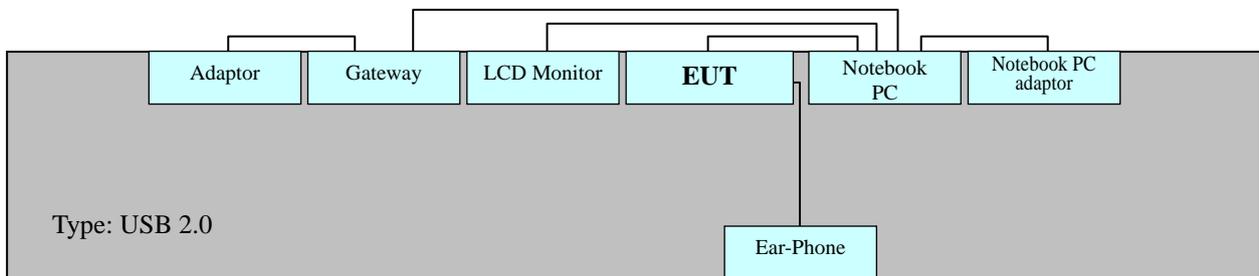
#### 2.1.1 Conducted Emission Test

EUT 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.

#### 2.1.2 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]



Non-Conductive Table  
Power Line: 120 VAC

### **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 (Type: USB 2.0)  
                                  Data Communication mode (Type: USB 3.0)

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

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

**Operation Mode:**       Data Communication mode (Type: USB 2.0)  
                                  Data Communication mode (Type: USB 3.0)

## 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.

[ Type: USB 2.0 ]

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	: 22.3-24.9 °C
Humidity Level	: 55.6-59.4 %
Test Date	: May 29, 2013 - May 30, 2013

Frequency	Transd	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
(MHz)	(dB)		(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV]
0.150	9.8	H	66	36.9	46.7	56	-	-
0.302	10.0	N	60	-	-	50	21.70	31.70
0.334	10.0	N	59	27.8	37.8	49	24.80	34.80
0.338	10.0	N	59	-	-	49	22.80	32.80
0.302	9.8	H	60	25.4	35.2	50	22.20	32.00
0.338	9.8	H	59	-	-	49	20.40	30.20

※ **NOTE:** Refer to page 11 to page 14 for details.

1. Line H = Hot, Line N = Neutral
2. Transd = LISN factor + Cable Loss factor

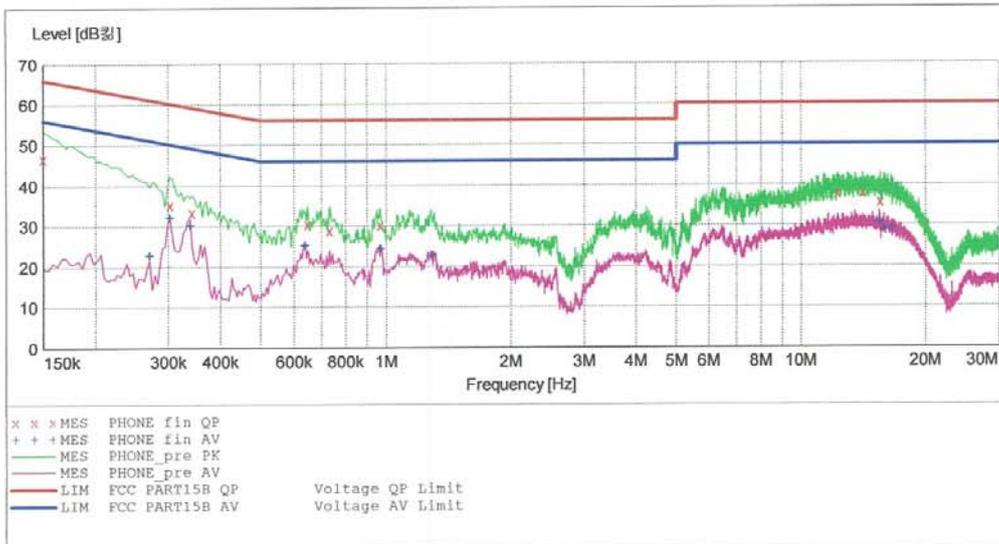
**HCT**

**EMC**

EUT: LG-LS980  
 Manufacturer: LG  
 Operating Condition: DATA MODE (USB 2.0)  
 Test Site: SHIELD ROOM  
 Operator: GC YOON  
 Test Specification: FCC PART15 B  
 Comment: H

**SCAN TABLE: "FCC CLASS B(H)"**

Short Description:			KN22 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			
			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"**

2013-05-29 1:51 오후

Frequency MHz	Level dB	Transd dB	Limit dB	Margin dB	Line	PE
0.150001	46.70	9.8	66	19.3	---	---
0.302001	35.20	9.8	60	25.0	---	---
0.342001	33.30	9.8	59	25.9	---	---
0.648000	30.50	9.8	56	25.5	---	---
0.732000	28.90	9.8	56	27.1	---	---
0.968000	30.20	9.8	56	25.8	---	---
12.240000	37.90	10.6	60	22.1	---	---
14.088000	38.00	10.7	60	22.0	---	---
15.572000	35.70	10.8	60	24.3	---	---

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

2013-05-29 1:51오.후

Frequency MHz	Level dB <sub>μV</sub>	Transd dB	Limit dB <sub>μV</sub>	Margin dB	Line	PE
0.270001	22.80	9.8	51	28.3	---	---
0.302001	32.00	9.8	50	18.2	---	---
0.338001	30.20	9.8	49	19.1	---	---
0.640000	25.20	9.8	46	20.8	---	---
0.972000	24.40	9.8	46	21.6	---	---
1.288000	22.70	9.9	46	23.3	---	---
15.456000	30.60	10.8	50	19.4	---	---
15.876000	28.80	10.8	50	21.2	---	---
16.560000	29.00	10.8	50	21.0	---	---

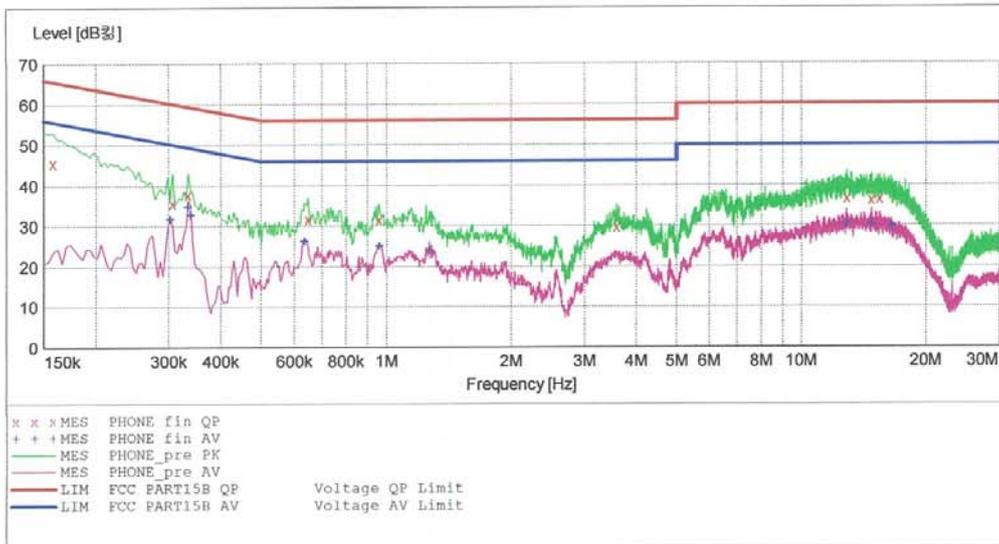
**HCT**

**EMC**

EUT: LG-LS980  
 Manufacturer: LG  
 Operating Condition: DATA MODE (USB 2.0)  
 Test Site: SHIELD ROOM  
 Operator: GC YOON  
 Test Specification: FCC PART15 B  
 Comment: N

**SCAN TABLE: "FCC CLASS B(N)"**

Short Description:			KN22 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"**

2013-05-29 1:47오후

Frequency MHz	Level dB	Transd dB	Limit dB	Margin dB	Line	PE
0.158001	45.50	10.0	66	20.0	---	---
0.306001	35.60	10.0	60	24.5	---	---
0.334001	37.80	10.0	59	21.6	---	---
0.648000	31.80	10.0	56	24.2	---	---
0.960000	31.60	10.0	56	24.4	---	---
3.588000	29.70	10.3	56	26.3	---	---
12.872000	36.70	10.9	60	23.3	---	---
14.780000	36.30	11.0	60	23.7	---	---
15.468000	36.50	11.1	60	23.5	---	---

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

2013-05-29 1:47오 후

Frequency MHz	Level dB <sub>μV</sub>	Transd dB	Limit dB <sub>μV</sub>	Margin dB	Line	PE
0.302001	31.70	10.0	50	18.5	---	---
0.334001	34.80	10.0	49	14.6	---	---
0.338001	32.80	10.0	49	16.4	---	---
0.636000	26.30	10.0	46	19.7	---	---
0.964000	25.10	10.0	46	20.9	---	---
1.272000	24.00	10.1	46	22.0	---	---
12.844000	30.30	10.9	50	19.7	---	---
14.772000	30.10	11.0	50	19.9	---	---
16.540000	29.70	11.1	50	20.3	---	---

[ Type: USB 3.0 ]

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 : 22.3-24.9 °C

Humidity Level : 55.6-59.4 %

Test Date : May 29, 2013 - May 30, 2013

Frequency (MHz)	Transd (dB)	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
			(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)
0.330	9.8	H	59	-	-	49	20.70	30.50
0.338	10.0	N	59	28.1	38.1	49	23.30	33.30
0.338	9.8	H	59	-	-	49	21.90	31.70
0.680	10.0	N	56	26.2	36.2	46	20.50	30.50
13.504	10.7	H	60	-	-	50	20.00	30.70
14.412	11.0	N	60	-	-	50	20.70	31.70

※ **NOTE:** Refer to page 16 to page 19 for details.

1. Line H = Hot, Line N = Neutral
2. Transd = LISN factor + Cable Loss factor

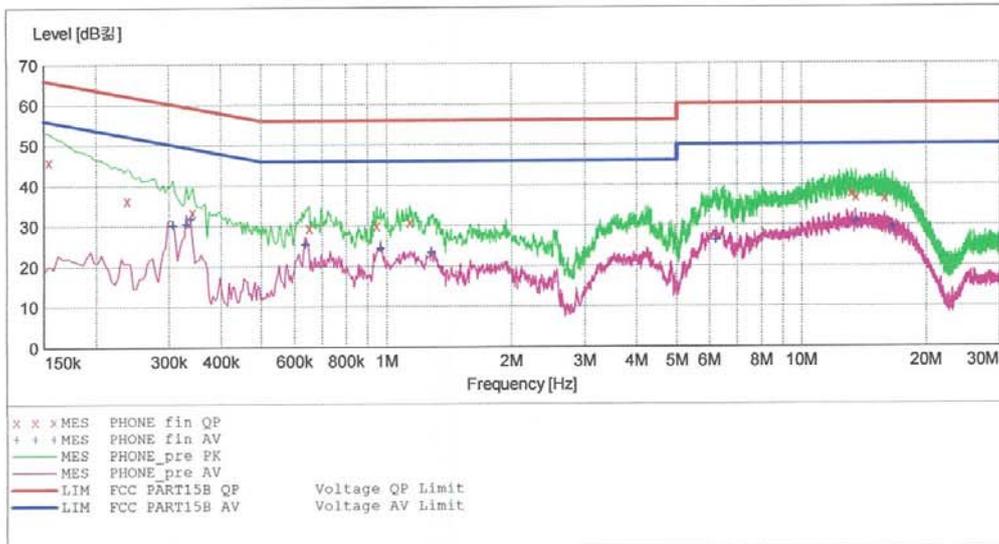
**HCT**

**EMC**

EUT: LG-LS980  
 Manufacturer: LG  
 Operating Condition: DATA MODE (USB 3.0)  
 Test Site: SHIELD ROOM  
 Operator: GC YOON  
 Test Specification: FCC PART15 B  
 Comment: H

**SCAN TABLE: "FCC CLASS B(H)"**

Short Description:			KN22 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
			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"**

2013-05-29 2:02오후

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.154001	46.00	9.8	66	19.8	---	---
0.238001	36.40	9.8	62	25.8	---	---
0.342001	33.50	9.8	59	25.6	---	---
0.652000	29.60	9.8	56	26.4	---	---
0.948000	30.00	9.8	56	26.0	---	---
1.140000	30.90	9.9	56	25.1	---	---
13.196000	38.00	10.7	60	22.0	---	---
13.524000	37.00	10.7	60	23.0	---	---
15.856000	36.70	10.8	60	23.3	---	---

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

2013-05-29 2:02오.후

Frequency MHz	Level dB <sub>μV</sub>	Transd dB	Limit dB <sub>μV</sub>	Margin dB	Line	PE
0.306001	30.20	9.8	50	19.9	---	---
0.330001	30.50	9.8	50	19.0	---	---
0.338001	31.70	9.8	49	17.6	---	---
0.640000	25.30	9.8	46	20.7	---	---
0.968000	24.40	9.8	46	21.6	---	---
1.280000	23.40	9.9	46	22.6	---	---
6.224000	26.30	10.2	50	23.7	---	---
13.504000	30.70	10.7	50	19.3	---	---
16.568000	29.10	10.8	50	20.9	---	---

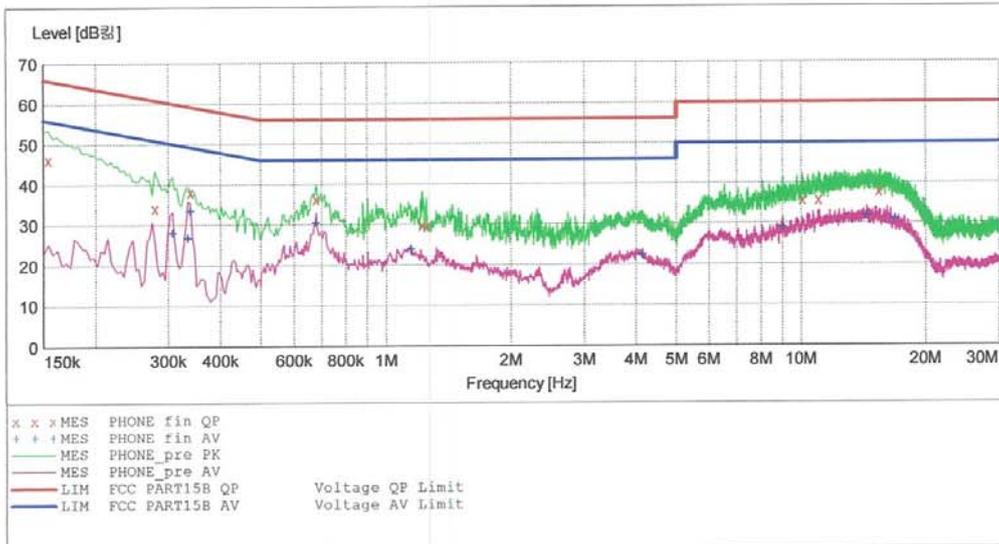
**HCT**

**EMC**

EUT: LG-LS980  
 Manufacturer: LG  
 Operating Condition: DATA MODE (USB 3.0)  
 Test Site: SHIELD ROOM  
 Operator: GC YOON  
 Test Specification: FCC PART15 B  
 Comment: N

**SCAN TABLE: "FCC CLASS B(N)"**

Short Description:			KN22 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			
			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"**

2013-05-29 2:05오후

Frequency MHz	Level dB	Transd dB	Limit dB	Margin dB	Line	PE
0.154001	46.20	10.0	66	19.6	---	---
0.278001	34.10	10.0	61	26.8	---	---
0.338001	38.10	10.0	59	21.2	---	---
0.680000	36.20	10.0	56	19.8	---	---
1.224000	29.80	10.1	56	26.2	---	---
1.252000	29.60	10.1	56	26.4	---	---
10.096000	35.80	10.7	60	24.2	---	---
11.040000	35.80	10.8	60	24.2	---	---
15.444000	37.90	11.1	60	22.1	---	---

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

2013-05-29 2:05오 후

Frequency MHz	Level dB <sub>μV</sub>	Transd dB	Limit dB <sub>μV</sub>	Margin dB	Line	PE
0.306001	28.00	10.0	50	22.0	---	---
0.334001	26.70	10.0	49	22.7	---	---
0.338001	33.30	10.0	49	15.9	---	---
0.680000	30.50	10.0	46	15.5	---	---
1.148000	23.80	10.1	46	22.2	---	---
4.148000	22.30	10.3	46	23.7	---	---
9.048000	28.90	10.6	50	21.1	---	---
14.412000	31.70	11.0	50	18.3	---	---
16.836000	30.90	11.1	50	19.1	---	---

## 4.2 Radiated Emission Test

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

[ Type: USB 2.0 ]

### -For measurement below 1 GHz

Limit Apply to : FCC PART 15 Subpart B Class B

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

Operation Mode : Data Communication mode

Temperature : 24.3-24.9 °C

Humidity Level : 56.9-61.3 %

Test Date : May 27, 2013 - May 28, 2013

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)			
34.000	16.22	V	1.0	11.45	3.43	40.0	31.1	8.9
48.400	9.54	V	1.0	12.41	3.55	40.0	25.5	14.5
69.300	16.19	V	1.0	10.69	3.71	40.0	30.6	9.4
222.000	20.33	H	1.0	10.66	4.41	46.0	35.4	10.6
299.900	13.35	H	1.0	13.41	4.64	46.0	31.4	14.6
480.000	12.67	V	1.0	17.23	5.20	46.0	35.1	10.9

**-For measurement above 1 GHz**

Limit Apply to : FCC PART 15 Subpart B Class B

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 : 23.7-24.8 °C

Humidity Level : 40.1-40.7 %

Test Date : May 22, 2013 - May 23, 2013

Frequency (GHz)	Peak			POL	Average		
	Total (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)		Total (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1.2131	57.10	74	16.9	V	33.50	54	20.5
1.3126	55.90	74	18.1	V	30.10	54	23.9
2.2250	53.40	74	20.6	H	41.40	54	12.6

**※ NOTE:**

1. Measurement above 1 GHz was performed from 1 GHz to the 5<sup>th</sup> harmonic of highest fundamental frequency. Test was measured by 12 GHz.

[ Type: USB 3.0 ]

**-For measurement below 1 GHz**

Limit Apply to : FCC PART 15 Subpart B Class B

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

Operation Mode : Data Communication mode

Temperature : 24.3-24.9 °C

Humidity Level : 56.9-61.3 %

Test Date : May 27, 2013 - May 28, 2013

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)			
31.700	15.60	V	1.0	11.39	3.41	40.0	30.4	9.6
34.000	15.62	V	1.0	11.45	3.43	40.0	30.5	9.5
36.300	22.04	V	1.0	11.61	3.45	40.0	37.1	2.9
148.300	21.81	H	2.0	12.89	4.10	43.5	38.8	4.7
301.200	20.02	H	1.0	13.44	4.64	46.0	38.1	7.9
741.600	8.47	H	1.9	21.53	5.70	46.0	35.7	10.3

**-For measurement above 1 GHz**

Limit Apply to : FCC PART 15 Subpart B Class B

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 : 23.7-24.8 °C

Humidity Level : 40.1-40.7 %

Test Date : May 22, 2013 - May 23, 2013

Frequency (GHz)	Peak			POL	Average		
	Total (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)		Total (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1.2164	59.00	74	15.0	V	32.60	54	21.4
1.2398	58.40	74	15.6	V	33.30	54	20.7
2.4940	57.80	74	16.2	V	30.90	54	23.1

**※ NOTE:**

1. Measurement above 1 GHz was performed from 1 GHz to the 5<sup>th</sup> harmonic of highest fundamental frequency. Test was measured by 12 GHz.

## 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 Name</u>	<u>Serial Number</u>	<u>Calibration Cycle</u>	<u>Next CAL Date</u>
<b><u>Conducted Emission</u></b>					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	2014.04.25
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	2013.06.18
<input type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	2013.07.04
<input checked="" type="checkbox"/> LISN	EMCO	3816/2SH	9706-1070	1 year	2014.04.26
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	1 year	2014.02.06
<input type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	1 year	2013.07.31

### **Radiated Emission**

-For measurement below 1 GHz

<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2014.04.16
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	2014.12.17
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	N/A	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	N/A	-

-For measurement above 1 GHz

<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2014.04.16
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	N/A	-
<input checked="" type="checkbox"/> Turn Table	HD GmbH	2090	9702/1224	N/A	-
<input checked="" type="checkbox"/> Power Amplifier	Rohde & Schwarz	SCU-18	10094	1 year	2013.09.11
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	2014.12.13

## 7. CONCLUSION

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The data collected shows that the **EUT type: CDMA, GSM, WCDMA and LTE Phone with WLAN, Bluetooth and NFC, FCC ID: ZNFLS980, Model: LG-LS980** complies with §15.107 and §15.109 of the FCC rules.