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EMI CERTIFICATION REPORT

Applicant: **LG Electronics MobileComm U.S.A., Inc.** **1000 Sylvan Avenue, Englewood Cliffs NJ 07632** **Date of Receipt: April 02, 2014**	**Date of Issue: April 14, 2014** **Test Report No. HCT-E-1404-F024** **HCT FRN: 0005866421**

FCC ID: **ZNFLS990**

Rule Part(s) / Standard(s)	: FCC PART 15 Subpart B Class B
EUT Type	: CDMA, GSM, WCDMA and LTE Phone with Bluetooth, WLAN, NFC and Wireless Charging
Model Name	: LGLS990
Additional Model Name	: LG-LS990, LS990
Port / Connector(s)	: USB / Earphone Port
Date of Test	: April 10, 2014 - April 11, 2014

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 denial the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Tested By

Ki-Min Lee
Test Engineer
EMC Team
Certification Division

Reviewed By

Sang-Jun Lee
Technical Manager
EMC Team
Certification Division

DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1404-F024	April 14, 2014	Initial Release

TABLE OF CONTENTS

PAGE

ATTACHMENT: TEST SETUP PHOTOGRAPHS

1. GENERAL INFORMATION

1.1 Description of EUT

Equipment Under Test is manufactured by **LG Electronics MobileComm U.S.A., Inc.**
Its basic purpose is used for communications.

Model	LGLS990
FCC ID	ZNFLS990
Additional Model	LG-LS990, LS990
EUT Type	CDMA, GSM, WCDMA and LTE Phone with Bluetooth, WLAN, NFC and Wireless Charging
TX Frequency	824.70 ㎒ to 848.31 ㎒ (CDMA BC0) 1 851.25 ㎒ to 1 908.75 ㎒ (CDMA BC1) 817.90 ㎒ to 823.10 ㎒ (CDMA BC10) 824.20 ㎒ to 848.80 ㎒ (GSM 850) 1 850.20 ㎒ to 1 909.80 ㎒ (GSM 1 900) 1 850 ㎒ to 1 915 ㎒ (LTE B25) 814 ㎒ to 849 ㎒ (LTE B26) 2 496 ㎒ to 2 690 ㎒ (LTE B41)
RX Frequency	869.70 ㎒ to 893.31 ㎒ (CDMA BC0) 1 931.25 ㎒ to 1 988.75 ㎒ (CDMA BC1) 862.00 ㎒ to 894.00 ㎒ (CDMA BC10) 869.20 ㎒ to 893.80 ㎒ (GSM 850) 1 930.20 ㎒ to 1 989.80 ㎒ (GSM 1 900) 1 925 ㎒ to 1 990 ㎒ (LTE B25) 859 ㎒ to 894 ㎒ (LTE B26) 2 496 ㎒ to 2 690 ㎒ (LTE B41)

1.2 Related Submittal(s) / Grant(s)

Original submittal only.

1.3 Test Facility

Test site is located at 74, SEOICHEON-RO, 578BEON-GIL, MAJANG-MYEON, ICHEON-SI, GYEONGGI-DO, SOUTH KOREA. Those measurement facilities are constructed in conformance with the requirements of ANSI C63.4-2003.

Measurement Facilities	Reg. No.
Radiated Field strength measurement facility (3 m)	90661 (February 28, 2014)
Radiated Field strength measurement facility (10 m)	90661 (February 28, 2014)

1.4 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Model Name	Manufacturer	FCC ID / DoC	Connected To
EUT	LGLS990	LG	ZNFLS990	Notebook PC Ear-phone
USB cable	EAD62588801	CRESYN	-	E.U.T Notebook PC
USB cable	EAD62329304	KSD	-	E.U.T Notebook PC
Ear-phone	EAB62910502	CRESYN	-	E.U.T
Standard cover	-	LG	-	E.U.T
Wireless charger cover	-	LG	-	E.U.T
Notebook PC	ProBook6560b	H.P	DoC	EUT Notebook PC adaptor
Notebook PC adaptor	PPP009D	DELTA Electronics (JIANGSU)LTD	-	Notebook PC
Gateway	MV440	Axesstel	PH7MV440	Notebook PC, Adaptor
Mouse	Serial 2 button mouse	Radio shack	FSUGMZE3	Notebook PC
Adaptor	DA-60M12	Yang Ming Industrial	-	Gateway
RJ45 cable	-	-	-	Notebook PC, Gateway
Micro SD Card	8 GB	Transcend	-	EUT

1.5 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)1.2
	Ear-phone	N/A	N	(D)1.2
Notebook PC	RJ 45	N/A	N	(D)1.5
	Serial (Mouse)	N/A	Y	(D)1.8
	DC in	N	N/A	(P)1.8
Gateway	DC in	N	N/A	(P)1.8

* The marked "(D)" means the data cable and "(P)" means the power cable.

1.6 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
Notebook PC	RJ 45	N	N/A	N	N/A
	Serial (Mouse)	N	N/A	Y	Notebook PC End

2. DESCRIPTION OF TEST

2.1 Measurement of Conducted Emission

The test procedure was in accordance with ANSI C63.4-2003, Clause 7

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN).
Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.
c. The frequency range from 150 ㎑ to 30 ㎒ was searched.

[Conducted Emission Limits]

Frequency (㎒)	Resolution Bandwidth	Quasi-Peak(dB㎶)	Average(dB㎶)
0.15 to 0.5	9 ㎑	66 to 56*	56 to 46*
0.5 to 5	9 ㎑	56	46
5 to 30	9 ㎑	60	50

**Decreases with the logarithm of the frequency.*

2.2 Measurement of Radiated Emission

The test procedure was in accordance with ANSI C63.4-2003, Clause 8

a. The EUT was placed on the top of a turn table 0.8 meters above the ground at a 3 m shield room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from 1 m to 4 m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 m to 4 m and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Quasi-Peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to Peak and Average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
g. The antenna height scans apply for both horizontal and vertical polarizations, except that for vertical polarization, the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the lowest antenna element clears the site reference ground plane by at least 25 cm. (below 1 GHz)

[Radiated Emission Limits]

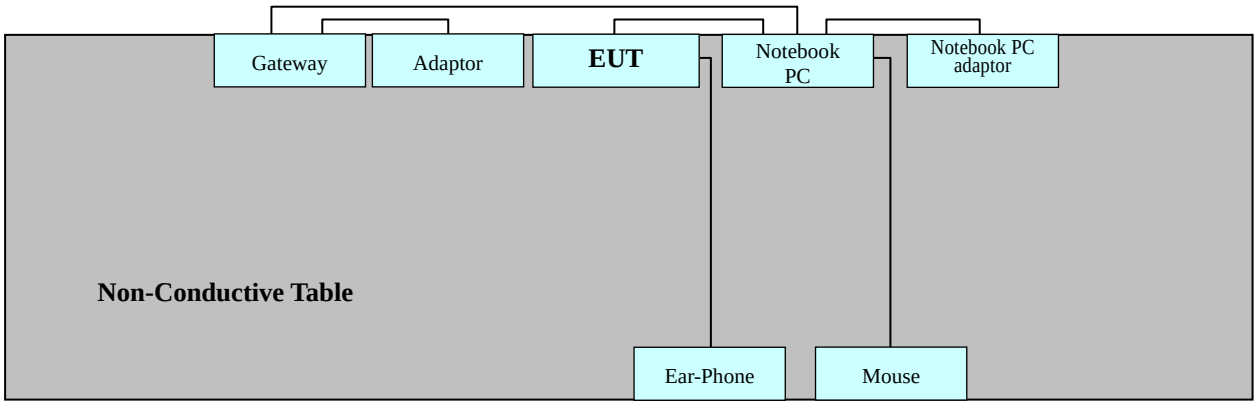
Frequency (㎒)	Antenna Distance (m)	Field Strength (㎶/m)	Quasi-Peak (dB㎶/m)
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0
Frequency (㎒)	**Antenna Distance (m)**	**Peak (dB㎶/m)**	**Average (dB㎶/m)**
Above 1 000	3	74	54

2.2.1 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 (㎒)	Upper frequency of measurement range (㎒)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5th harmonic of the highest frequency or 40 ㎓, whichever is lower

2.3 Configuration of Tested System



Power Line: 120 VAC, 60 Hz

3. PRELIMINARY TEST

3.1 Conducted Emission Test

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

Operation Mode: ☒ Data Communication mode

Test Configuration:
☒ USB cable (CRESYN) & Standard cover
☒ USB cable (KSD) & Standard cover
☒ USB cable (CRESYN) & Wireless charger cover
☒ USB cable (KSD) & Wireless charger cover
※The worst-case emissions are reported.

3. 2 Radiated Emission Test

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

Operation Mode: ☒ Data Communication mode

Test Configuration:
☒ USB cable (CRESYN) & Standard cover
☒ USB cable (KSD) & Standard cover
☒ USB cable (CRESYN) & Wireless charger cover
☒ USB cable (KSD) & Wireless charger cover
※The worst-case emissions are reported.

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 ㎑)
Operation Mode : Data Communication mode
Battery & USB Cable Type : Standard Cover & KSD
※The worst-case emissions are reported.

Temperature : 21.8°C
Humidity Level : 33.8 %
Test Date : April 11, 2014

Frequency	Corr.	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
(MHz)	(dB)		(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV]
0.1500	9.7	L1	66.0	38.1	47.8	56.0	12.4	22.1
0.1500	9.7	N	66.0	38.1	47.8	56.0	12.1	21.8
0.1950	9.7	N	63.8	40.0	49.7	53.8	21.9	31.6
0.1995	9.7	L1	63.6	39.3	49.0	53.6	-	-
0.2085	9.7	N	63.3	37.6	47.3	53.3	17.2	26.9
3.7220	10.0	L1	56.0	26.6	36.6	46.0	17.4	27.4

※ Calculation Formula:

1. Conductor L1 = Hot, Conductor N = Neutral
2. Corr. = LISN Factor + Cable Loss
3. Measurement Level (Receiver Reading) = Result Level - Corr.
4. Result Level = Measurement Level + Corr.
** 'Result Level' in above table is same as the 'Quasi-Peak' and 'CAverage' of the Test Data Graph (Refer to page 13 to page 16 for details.)*

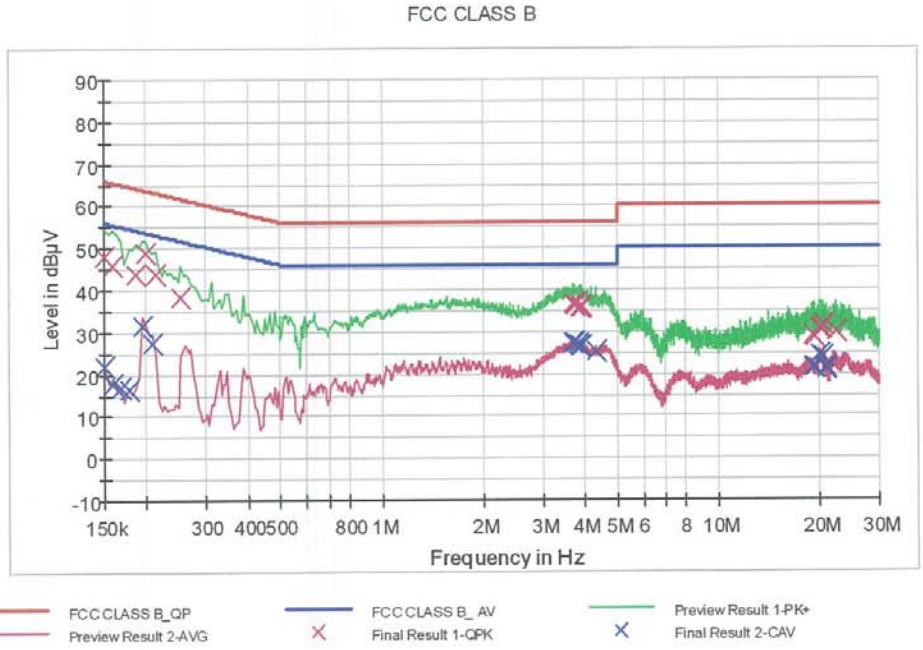
- Test Data Graph

EMI Auto Test(2) 1 / 2

HCT TEST Report

Common Information

EUT:	LGLS990
Manufacturer:	LG
Test Site:	SHIELD ROOM
Operating Conditions:	DATA MODE(KSD)(STANDARD COVER)
Operator Name:	



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	47.8	9.000	Off	L1	9.7	18.2	66.0
0.159000	46.0	9.000	Off	L1	9.7	19.5	65.5
0.186000	43.9	9.000	Off	L1	9.7	20.3	64.2
0.199500	49.0	9.000	Off	L1	9.7	14.6	63.6
0.213000	43.7	9.000	Off	L1	9.7	19.4	63.1
0.253500	38.4	9.000	Off	L1	9.7	23.2	61.6
3.681500	36.7	9.000	Off	L1	10.0	19.3	56.0
3.722000	36.6	9.000	Off	L1	10.0	19.4	56.0
3.731000	36.1	9.000	Off	L1	10.0	19.9	56.0
3.866000	35.7	9.000	Off	L1	10.0	20.3	56.0
3.893000	36.3	9.000	Off	L1	10.0	19.7	56.0
3.902000	35.6	9.000	Off	L1	10.0	20.4	56.0
19.112000	28.9	9.000	Off	L1	10.9	31.1	60.0
19.337000	28.7	9.000	Off	L1	10.9	31.3	60.0
20.012000	30.9	9.000	Off	L1	10.9	29.1	60.0
20.174000	30.6	9.000	Off	L1	10.9	29.4	60.0

4/11/2014 4:51:28

EMI Auto Test(2) 2 / 2

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
20.394500	31.7	9.000	Off	L1	10.9	28.3	60.0
22.298000	29.9	9.000	Off	L1	11.0	30.1	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	22.1	9.000	Off	L1	9.7	33.9	56.0
0.159000	17.5	9.000	Off	L1	9.7	38.0	55.5
0.168000	17.0	9.000	Off	L1	9.7	38.1	55.1
0.177000	16.4	9.000	Off	L1	9.7	38.2	54.6
0.195000	31.6	9.000	Off	L1	9.7	22.2	53.8
0.208500	27.3	9.000	Off	L1	9.7	26.0	53.3
3.681500	27.3	9.000	Off	L1	10.0	18.7	46.0
3.722000	27.4	9.000	Off	L1	10.0	18.6	46.0
3.812000	27.1	9.000	Off	L1	10.0	18.9	46.0
3.866000	26.8	9.000	Off	L1	10.0	19.2	46.0
3.893000	26.5	9.000	Off	L1	10.0	19.5	46.0
4.320500	25.2	9.000	Off	L1	10.1	20.8	46.0
19.112000	21.7	9.000	Off	L1	10.9	28.3	50.0
19.337000	21.6	9.000	Off	L1	10.9	28.4	50.0
20.012000	24.3	9.000	Off	L1	10.9	25.7	50.0
20.394500	24.0	9.000	Off	L1	10.9	26.0	50.0
20.817500	21.2	9.000	Off	L1	11.0	28.8	50.0
20.885000	21.3	9.000	Off	L1	11.0	28.7	50.0

4/11/2014 4:51:28

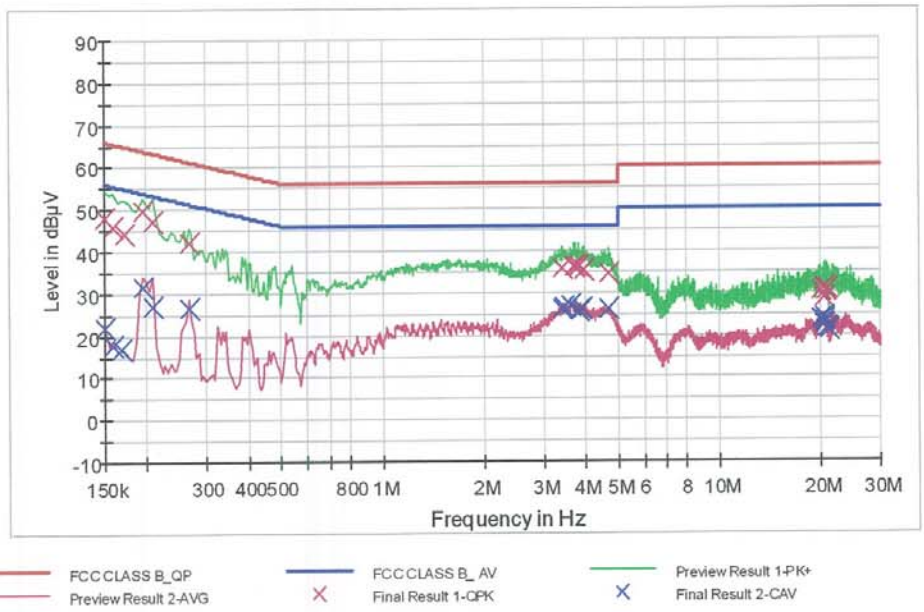
EMI Auto Test(2) 1 / 2

HCT TEST Report

Common Information

EUT:	LGLS990
Manufacturer:	LG
Test Site:	SHIELD ROOM
Operating Conditions:	DATA MODE(KSD)(STANDARD COVER)
Operator Name:	

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	47.8	9.000	Off	N	9.7	18.2	66.0
0.159000	46.0	9.000	Off	N	9.7	19.5	65.5
0.172500	44.3	9.000	Off	N	9.7	20.5	64.8
0.195000	49.7	9.000	Off	N	9.7	14.1	63.8
0.208500	47.3	9.000	Off	N	9.7	16.0	63.3
0.267000	42.2	9.000	Off	N	9.7	19.0	61.2
3.398000	35.7	9.000	Off	N	10.0	20.3	56.0
3.681500	36.3	9.000	Off	N	10.0	19.7	56.0
3.722000	36.3	9.000	Off	N	10.0	19.7	56.0
3.821000	36.1	9.000	Off	N	10.0	19.9	56.0
3.974000	35.4	9.000	Off	N	10.1	20.6	56.0
4.671500	34.5	9.000	Off	N	10.1	21.5	56.0
20.016500	30.4	9.000	Off	N	10.8	29.6	60.0
20.318000	31.3	9.000	Off	N	10.8	28.7	60.0
20.439500	28.8	9.000	Off	N	10.8	31.2	60.0
20.466500	31.0	9.000	Off	N	10.8	29.0	60.0

4/11/2014 4:46:14

EMI Auto Test(2) 2 / 2

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
20.597000	30.2	9.000	Off	N	10.8	29.8	60.0
20.813000	30.6	9.000	Off	N	10.8	29.4	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	21.8	9.000	Off	N	9.7	34.2	56.0
0.159000	17.6	9.000	Off	N	9.7	37.9	55.5
0.168000	17.1	9.000	Off	N	9.7	38.0	55.1
0.195000	31.6	9.000	Off	N	9.7	22.2	53.8
0.208500	26.9	9.000	Off	N	9.7	26.4	53.3
0.267000	26.7	9.000	Off	N	9.7	24.5	51.2
3.398000	26.0	9.000	Off	N	10.0	20.0	46.0
3.465500	26.5	9.000	Off	N	10.0	19.5	46.0
3.605000	26.9	9.000	Off	N	10.0	19.1	46.0
3.843500	25.8	9.000	Off	N	10.0	20.2	46.0
3.906500	26.1	9.000	Off	N	10.0	19.9	46.0
4.671500	26.0	9.000	Off	N	10.1	20.0	46.0
20.016500	23.8	9.000	Off	N	10.8	26.2	50.0
20.439500	22.4	9.000	Off	N	10.8	27.6	50.0
20.466500	23.8	9.000	Off	N	10.8	26.2	50.0
20.475500	23.1	9.000	Off	N	10.8	26.9	50.0
20.813000	21.6	9.000	Off	N	10.8	28.4	50.0
21.038000	21.2	9.000	Off	N	10.9	28.8	50.0

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Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak, Average (6 dB Bandwidth: 9 ㎑)
Operation Mode : Data Communication mode
Battery & USB Cable Type : Wireless Charger Cover & KSD
※The worst-case emissions are reported.

Temperature : 21.8°C
Humidity Level : 33.8 %
Test Date : April 11, 2014

Frequency	Corr.	Conductor	Quasi-Peak			Average		
			Limit	Measurement Level	Result Level	Limit	Measurement Level	Result Level
(MHz)	(dB)		(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dBuV]
0.1500	9.7	N	66.0	38.0	47.7	56.0	12.4	22.1
0.1950	9.7	L1	63.8	39.8	49.5	53.8	21.6	31.3
0.1995	9.7	N	63.6	39.8	49.5	53.6	22.4	32.1
0.2040	9.7	L1	63.5	38.6	48.3	53.5	-	-
0.2580	9.7	N	61.5	32.8	42.5	51.5	-	-
3.7490	10.0	L1	56.0	-	-	46.0	17.5	27.5

※ Calculation Formula:

1. Conductor L1 = Hot, Conductor N = Neutral
2. Corr. = LISN Factor + Cable Loss
3. Measurement Level (Receiver Reading) = Result Level - Corr.
4. Result Level = Measurement Level + Corr.
** 'Result Level' in above table is same as the 'Quasi-Peak' and 'CAverage' of the Test Data Graph (Refer to page 18 to page 21 for details.)*

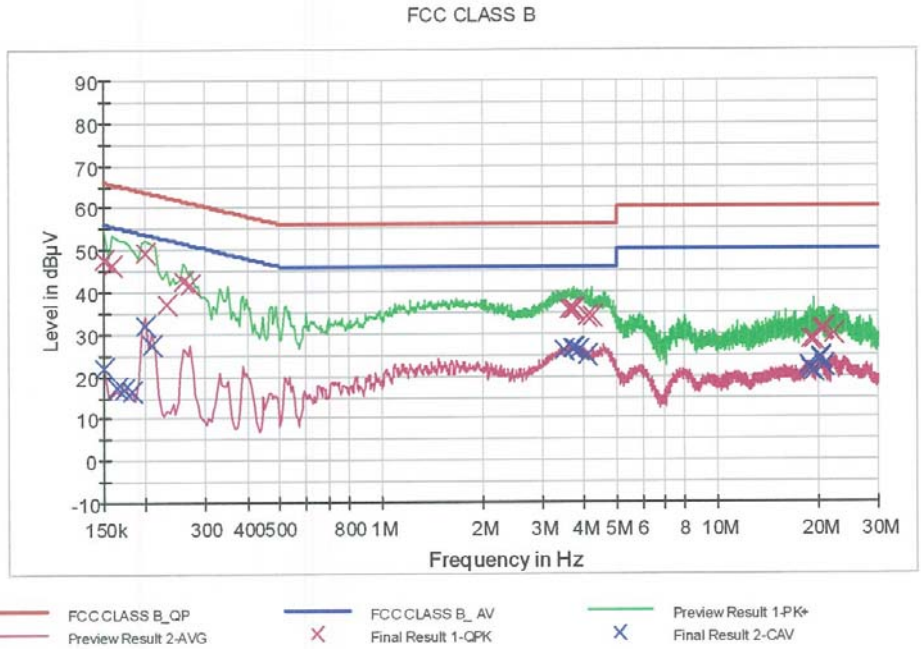
- Test Data Graph

EMI Auto Test(2) 1 / 2

HCT TEST Report

Common Information

EUT:	LGLS990
Manufacturer:	LG
Test Site:	SHIELD ROOM
Operating Conditions:	DATA MODE(KSD)(WIRELESS CHARGER COVER)
Operator Name:	



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	47.7	9.000	Off	N	9.7	18.3	66.0
0.159000	46.2	9.000	Off	N	9.7	19.3	65.5
0.199500	49.5	9.000	Off	N	9.7	14.1	63.6
0.231000	37.0	9.000	Off	N	9.7	25.4	62.4
0.258000	42.5	9.000	Off	N	9.7	19.0	61.5
0.271500	41.8	9.000	Off	N	9.7	19.3	61.1
3.591500	36.0	9.000	Off	N	10.0	20.0	56.0
3.699500	35.6	9.000	Off	N	10.0	20.4	56.0
3.726500	36.0	9.000	Off	N	10.0	20.0	56.0
3.744500	35.7	9.000	Off	N	10.0	20.3	56.0
4.091000	34.1	9.000	Off	N	10.1	21.9	56.0
4.248500	34.3	9.000	Off	N	10.1	21.7	56.0
18.819500	28.7	9.000	Off	N	10.8	31.3	60.0
19.256000	28.6	9.000	Off	N	10.8	31.4	60.0
20.318000	30.9	9.000	Off	N	10.8	29.1	60.0
20.340500	31.3	9.000	Off	N	10.8	28.7	60.0

4/11/2014 5:07:59

EMI Auto Test(2) 2 / 2

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
20.682500	31.2	9.000	Off	N	10.8	28.8	60.0
22.019000	30.1	9.000	Off	N	10.9	29.9	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	22.1	9.000	Off	N	9.7	33.9	56.0
0.163500	17.4	9.000	Off	N	9.7	37.9	55.3
0.172500	16.7	9.000	Off	N	9.7	38.1	54.8
0.181500	16.5	9.000	Off	N	9.7	37.9	54.4
0.199500	32.1	9.000	Off	N	9.7	21.5	53.6
0.208500	27.3	9.000	Off	N	9.7	26.0	53.3
3.510500	26.2	9.000	Off	N	10.0	19.8	46.0
3.699500	26.4	9.000	Off	N	10.0	19.6	46.0
3.744500	26.6	9.000	Off	N	10.0	19.4	46.0
3.857000	26.2	9.000	Off	N	10.0	19.8	46.0
4.091000	24.8	9.000	Off	N	10.1	21.2	46.0
4.104500	25.0	9.000	Off	N	10.1	21.0	46.0
18.648500	22.2	9.000	Off	N	10.8	27.8	50.0
18.819500	21.7	9.000	Off	N	10.8	28.3	50.0
19.256000	21.0	9.000	Off	N	10.8	29.0	50.0
20.178500	23.9	9.000	Off	N	10.8	26.1	50.0
20.273000	24.4	9.000	Off	N	10.8	25.6	50.0
20.682500	22.4	9.000	Off	N	10.8	27.6	50.0

4/11/2014 5:07:59

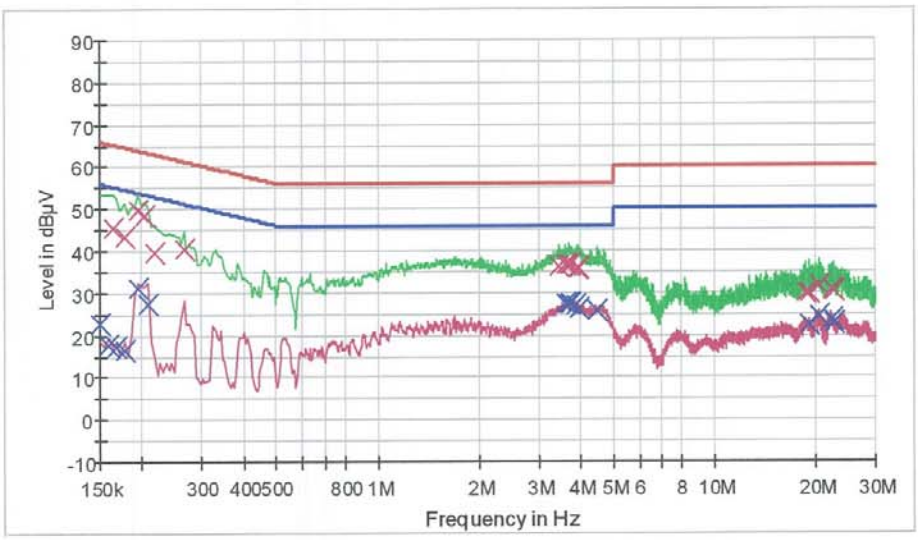
EMI Auto Test(2) 1 / 2

HCT TEST Report

Common Information

EUT:	LGLS990
Manufacturer:	LG
Test Site:	SHIELD ROOM
Operating Conditions:	DATA MODE(KSD)(WIRELESS CHARGER COVER)
Operator Name:	

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	45.5	9.000	Off	L1	9.7	19.8	65.3
0.177000	43.6	9.000	Off	L1	9.7	21.0	64.6
0.195000	49.5	9.000	Off	L1	9.7	14.3	63.8
0.204000	48.3	9.000	Off	L1	9.7	15.1	63.4
0.217500	39.6	9.000	Off	L1	9.7	23.3	62.9
0.267000	40.4	9.000	Off	L1	9.7	20.8	61.2
3.470000	36.0	9.000	Off	L1	10.0	20.0	56.0
3.609500	36.7	9.000	Off	L1	10.0	19.3	56.0
3.681500	36.7	9.000	Off	L1	10.0	19.3	56.0
3.753500	36.8	9.000	Off	L1	10.0	19.2	56.0
3.911000	35.9	9.000	Off	L1	10.0	20.1	56.0
3.965000	36.0	9.000	Off	L1	10.0	20.0	56.0
18.689000	30.1	9.000	Off	L1	10.8	29.9	60.0
18.972500	29.9	9.000	Off	L1	10.9	30.1	60.0
20.327000	31.7	9.000	Off	L1	10.9	28.3	60.0
20.457500	31.4	9.000	Off	L1	10.9	28.6	60.0

4/11/2014 5:01:27

EMI Auto Test(2) 2 / 2

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
22.235000	30.6	9.000	Off	L1	11.0	29.4	60.0
22.725500	30.2	9.000	Off	L1	11.0	29.8	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	22.6	9.000	Off	L1	9.7	33.4	56.0
0.159000	17.6	9.000	Off	L1	9.7	37.9	55.5
0.168000	17.2	9.000	Off	L1	9.7	37.9	55.1
0.177000	16.5	9.000	Off	L1	9.7	38.1	54.6
0.195000	31.3	9.000	Off	L1	9.7	22.5	53.8
0.208500	27.6	9.000	Off	L1	9.7	25.7	53.3
3.614000	27.2	9.000	Off	L1	10.0	18.8	46.0
3.677000	27.3	9.000	Off	L1	10.0	18.7	46.0
3.749000	27.5	9.000	Off	L1	10.0	18.5	46.0
3.866000	27.0	9.000	Off	L1	10.0	19.0	46.0
3.965000	26.3	9.000	Off	L1	10.0	19.7	46.0
4.460000	25.9	9.000	Off	L1	10.1	20.1	46.0
18.972500	22.2	9.000	Off	L1	10.9	27.8	50.0
19.044500	22.2	9.000	Off	L1	10.9	27.8	50.0
20.385500	24.5	9.000	Off	L1	10.9	25.5	50.0
20.457500	24.6	9.000	Off	L1	10.9	25.4	50.0
22.235000	23.4	9.000	Off	L1	11.0	26.6	50.0
22.725500	22.8	9.000	Off	L1	11.0	27.2	50.0

4/11/2014 5:01:27

4.2 Radiated Emission Test

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

-For Measurement Below 1 ㎓

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak
6 ㏈ Bandwidth: : RBW 120 ㎑, VBW 300 ㎑

Operation Mode : Data Communication mode
Battery & USB Cable Type : Standard Cover & KSD
※The worst-case emissions are reported.

Temperature : 22.0°C
Humidity Level : 31.6 %
Test Date : April 11, 2014

Frequency (MHz)	Reading (dBuV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Total Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
82.0	18.4	V	1.8	7.9	3.7	40.0	30.0	10.0
125.0	16.4	V	1.4	12.0	3.9	43.5	32.3	11.2
240.8	14.8	H	2.2	11.4	4.3	46.0	30.5	15.5
325.0	19.9	V	1.0	14.0	4.6	46.0	38.5	7.5

※ Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Reading (Receiver Reading) = Total Level – Correction Factor
3. Margin = Limit - Total Level
4. Total Level = Quasi-Peak

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Quasi-Peak
6 dB Bandwidth: : RBW 120 ㎑, VBW 300 ㎑

Operation Mode : Data Communication mode
Battery & USB Cable Type : Wireless Charger Cover & CRESYN
※The worst-case emissions are reported.

Temperature : 22.0°C
Humidity Level : 31.6 %
Test Date : April 11, 2014

Frequency (MHz)	Reading (dBuV)	Polarity (H/V)	Antenna Height (m)	Correction Factor		Limit (dBuV/m)	Total Level (dBuV/m)	Margin (dB)
				Antenna (dB/m)	Cable (dB)			
63.4	4.1	V	1.0	11.4	3.6	40.0	19.1	20.9
125.0	15.5	V	1.0	12.0	3.9	43.5	31.4	12.1
625.0	14.0	V	1.0	20.0	5.4	46.0	39.4	6.6

※ Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Reading (Receiver Reading) = Total Level – Correction Factor
3. Margin = Limit - Total Level
4. Total Level = Quasi-Peak

-For Measurement Above 1 ㎓

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Peak mode: Peak (RBW: 1 ㎒, VBW: 3 ㎒)
Average mode: Peak (RBW: 1 ㎒, VBW: 10 ㎐)

Operation Mode : Data Communication mode

Battery & USB Cable Type : Standard Cover & KSD

※The worst-case emissions are reported.

Temperature : 21.7°C

Humidity Level : 31.3 %

Test Date : April 10, 2014

Frequency (㎓)	Polarity (H/V)	Antenna Height (m)	Peak			Average		
			Total Level (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)	Total Level (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1.3296	V	1.5	47.0	74	27.0	29.8	54	24.2
1.9980	V	1.0	57.2	74	16.8	39.8	54	14.2
3.1858	V	1.3	52.0	74	22.0	34.1	54	19.9

※ Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Margin = Limit - Total Level

Limit Apply to : FCC PART 15 Subpart B Class B

Detector : Peak mode: Peak (RBW: 1 ㎒, VBW: 3 ㎒)
Average mode: Peak (RBW: 1 ㎒, VBW: 10 ㎐)

Operation Mode : Data Communication mode

Battery & USB Cable Type : Wireless Charger Cover & KSD

※The worst-case emissions are reported.

Temperature : 21.7°C

Humidity Level : 31.3 %

Test Date : April 10, 2014

Frequency (㎓)	Polarity (H/V)	Antenna Height (m)	Peak			Average		
			Total Level (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)	Total Level (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1.3298	V	1.0	48.3	74	25.7	30.7	54	23.3
1.9934	V	1.0	57.8	74	16.2	39.7	54	14.3
2.6640	V	1.0	50.2	74	23.8	32.2	54	21.8

※ Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Margin = Limit - Total Level

5. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model Name	Serial Number	Calibration Cycle	Next CAL Date
Conducted Emission					
☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	2015.01.24
☒ LISN	EMCO	3816/2SH	9706-1070	1 year	2014.04.26
☒ LISN	Rohde & Schwarz	ENV216	100073	1 year	2015.01.29
☐ EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	2014.06.23
☐ LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	2014.07.03
☐ Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	1 year	2014.07.03
☒ Software	Rohde & Schwarz	EMC32	-	-	-
Radiated Emission					
-For measurement below 1 ㎓					
☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2015.04.07
☒ Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	2014.12.17
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Turn Table	HD GmbH	2090	9702/1224	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
☐ Trilog Antenna	Schwarzbeck	VULB9168	185	2 year	2015.04.16
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ Software	Rohde & Schwarz	EMC32	-	-	-
-For measurement above 1 ㎓					
☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	2015.04.07
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Turn Table	HD GmbH	2090	9702/1224	N/A	-
☒ Power Amplifier	CERNEX	CBLU1183540	21691	1 year	2014.07.24
☐ Power Amplifier	CERNEX	CBLU1183540	21690	1 year	2014.07.12
☐ Power Amplifier	CERNEX	CBLU1183540	22964	1 year	2014.07.24
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	2014.12.13
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170124	2 year	2014.10.30
☒ Power Amplifier	CERNEX	CBL18265035	22966	1 year	2014.07.24
☒ Power Amplifier	CERNEX	CBL26405040	19660	1 year	2014.04.16
☒ Software	Rohde & Schwarz	EMC32	-	-	-

6. CONCLUSION

The data collected shows that the **EUT type: CDMA, GSM, WCDMA and LTE Phone with Bluetooth, WLAN, NFC and Wireless Charging, FCC ID: ZNFLS990, Model: LGLS990** complies with §15.107 and §15.109 of the FCC rules.