

EMI CERTIFICATION REPORT

Applicant:

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

Date of Receipt: May 22, 2014

Date of Issue: June 11, 2014

Test Report No. HCT-E-1406-F018

HCT FRN: 0005866421

FCC ID:

ZNFD105G

Rule Part(s) / Standard(s): FCC CFR 47 PART 15 Subpart B Class B
FCC Classification: JBP (Part 15 B – Class B Computing Device Peripheral)
EUT Type: Cellular/PCS GSM/GPRS/EDGE Rx/WCDMA/HSDPA/HSUPA
Phone with Bluetooth and WLAN
Model Name: LG-D105g
Additional Model Name: LG-D105G, D105g, D105G, LGD105g, LGD105G, LG-D100g,
LG-D100G, D100g, D100G, LGD100g, LGD100G, LG-D100AR,
D100AR, LGD100AR
Test Port: USB / Earphone Port
Date of Test: June 01, 2014 - June 05, 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 denied 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
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Reviewed By



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DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1406-F018	June 11, 2014	Initial Release



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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	LG-D105g
FCC ID	ZNFD105G
Additional Model	LG-D105G, D105g, D105G, LGD105g, LGD105G, LG-D100g, LG-D100G, D100g, D100G, LGD100g, LGD100G, LG-D100AR, D100AR, LGD100AR
EUT Type	Cellular/PCS GSM/GPRS/EDGE Rx/WCDMA/HSDPA/HSUPA Phone with Bluetooth and WLAN
TX Frequency	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)
RX Frequency	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 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	LG-D105g	LG	ZNFD105G	Notebook PC, Earphone
USB cable	SGDY0016701	KSD	-	EUT, Notebook PC
Earphone	EAB62808712	CRESYN	-	EUT
Notebook PC	ProBook6560b	HP	DoC	Notebook PC adaptor
Notebook PC adaptor	PPP009D	DELTA Electronics (JIANGSU)LTD	-	Notebook PC
Gateway	MV440	Axesstel	PH7MV440	Notebook PC, Adaptor
Serial 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 (16 GB)	-	SanDisk	-	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
	Earphone	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
	Earphone	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 kHz to 30 MHz was searched.

[Conducted Emission Limits]

Frequency (MHz)	Resolution Bandwidth	Quasi-Peak(dB μ V)	Average(dB μ V)
0.15 to 0.5	9 kHz	66 to 56*	56 to 46*
0.5 to 5	9 kHz	56	46
5 to 30	9 kHz	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 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 (MHz)	Antenna Distance (m)	Field Strength ($\mu V/m$)	Quasi-Peak (dB $\mu V/m$)
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 (MHz)	Antenna Distance (m)	Peak (dB $\mu V/m$)	Average (dB $\mu V/m$)
Above 1 000	3	74	54

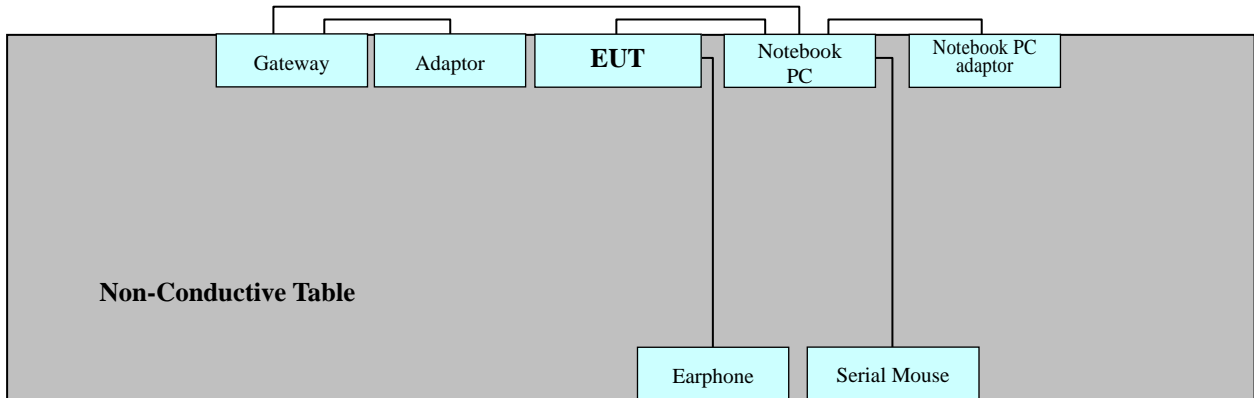


2.2.1 Frequency Range of Radiated Measurements

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 (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 th harmonic of the highest frequency or 40 GHz, 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

3. 2 Radiated Emission Test

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

Operation Mode: Data Communication mode



4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

4.1 Conducted Emission Test

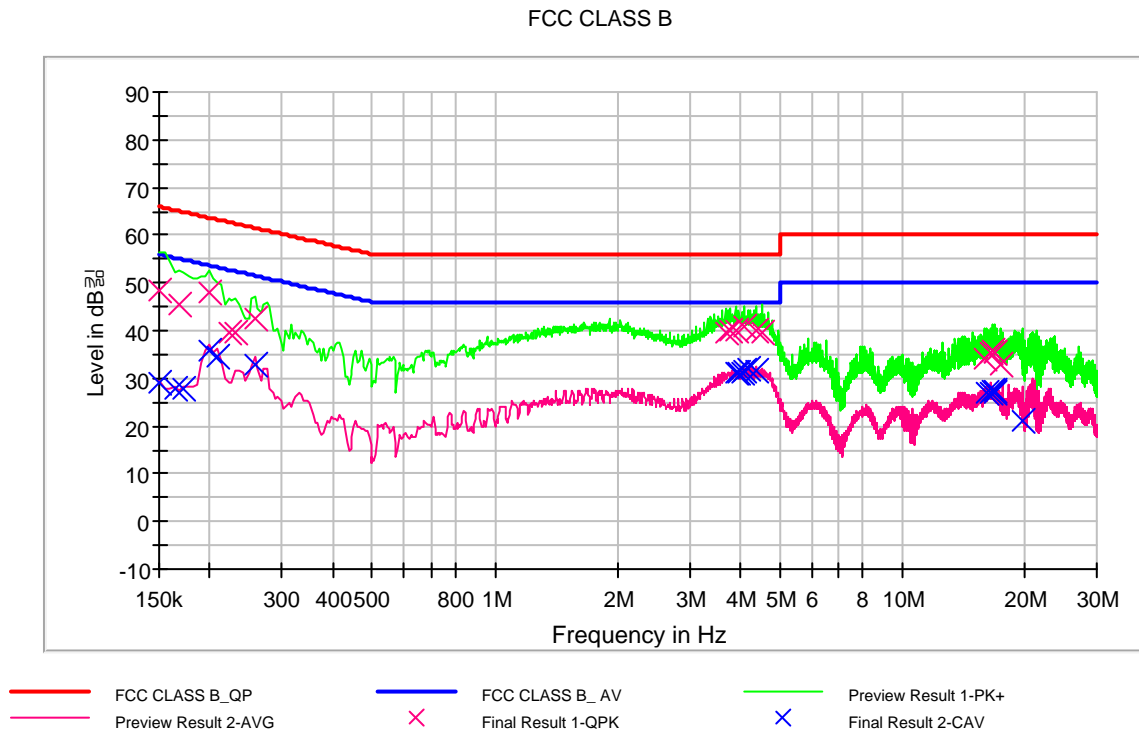
The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

Limit Apply to	: FCC PART 15 Subpart B Class B
Detector	: Quasi-Peak, CISPR-Average
6 dB Bandwidth	: 9 kHz
Operation Mode	: Data Communication mode
Temperature	: 24.2°C
Relative Humidity	: 47.5 %
Test Date	: June 02, 2014

※ NOTE: Refer to page 13 to page 18 for test data.



Figure 5: Spectral Diagrams, Conducted Emission, Phase (L1)



*** Calculation Formula:**

1. Conductor L1 = Hot, Conductor N = Neutral
2. Corr. = LISN Factor + Cable Loss
3. QuasiPeak or CAverage= Receiver Reading + Corr.
4. Margin = Limit – QuasiPeak or CAverage



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	48.3	9.000	L1	9.7	17.7	66.0
0.168000	45.3	9.000	L1	9.7	19.8	65.1
0.199500	48.1	9.000	L1	9.7	15.5	63.6
0.222000	39.4	9.000	L1	9.7	23.3	62.7
0.231000	39.5	9.000	L1	9.7	22.9	62.4
0.258000	42.5	9.000	L1	9.7	19.0	61.5
3.677000	39.8	9.000	L1	10.0	16.2	56.0
3.780500	39.9	9.000	L1	10.0	16.1	56.0
3.888500	40.2	9.000	L1	10.0	15.8	56.0
4.100000	41.0	9.000	L1	10.1	15.0	56.0
4.383500	39.8	9.000	L1	10.1	16.2	56.0
4.523000	39.8	9.000	L1	10.1	16.2	56.0
15.908000	34.3	9.000	L1	10.7	25.7	60.0
16.403000	35.3	9.000	L1	10.7	24.7	60.0
16.614500	35.7	9.000	L1	10.7	24.3	60.0
16.826000	35.3	9.000	L1	10.7	24.7	60.0
16.898000	35.5	9.000	L1	10.7	24.5	60.0
17.397500	33.0	9.000	L1	10.8	27.0	60.0

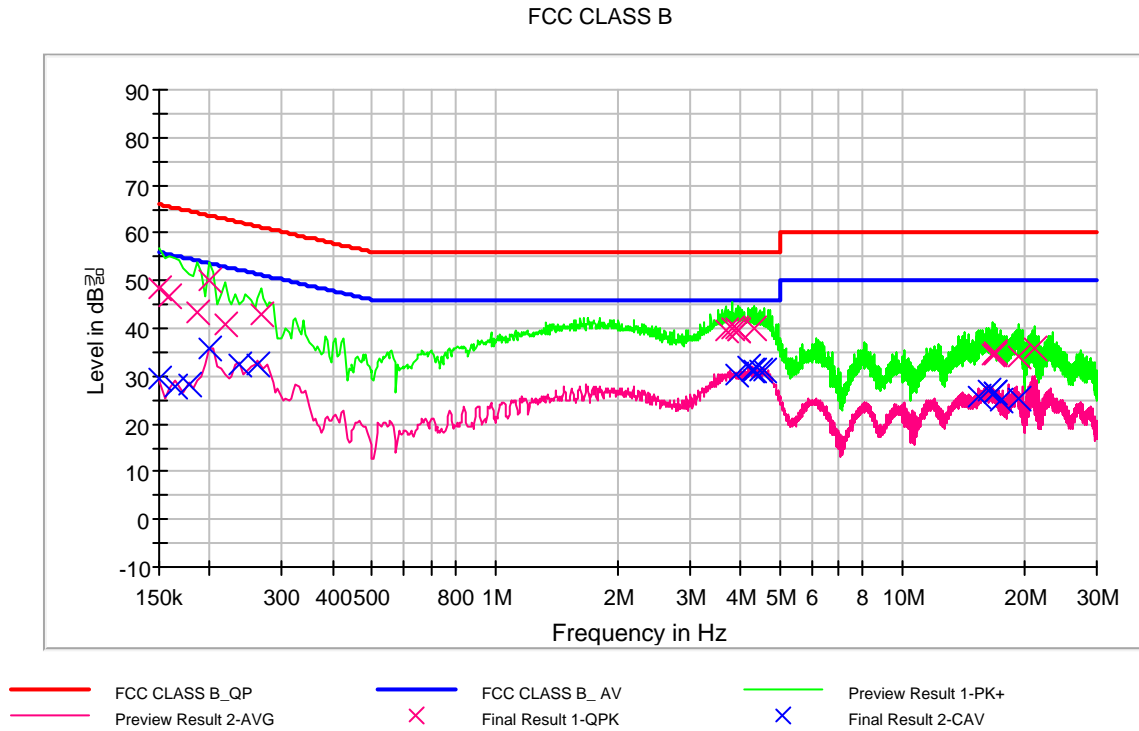


Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	28.9	9.000	L1	9.7	27.1	56.0
0.163500	27.8	9.000	L1	9.7	27.5	55.3
0.172500	27.9	9.000	L1	9.7	26.9	54.8
0.199500	35.7	9.000	L1	9.7	17.9	53.6
0.208500	34.4	9.000	L1	9.7	18.9	53.3
0.258000	32.9	9.000	L1	9.7	18.6	51.5
3.888500	31.0	9.000	L1	10.0	15.0	46.0
3.974000	31.0	9.000	L1	10.0	15.0	46.0
4.028000	31.1	9.000	L1	10.1	14.9	46.0
4.100000	31.8	9.000	L1	10.1	14.2	46.0
4.167500	32.0	9.000	L1	10.1	14.0	46.0
4.383500	31.6	9.000	L1	10.1	14.4	46.0
16.124000	27.0	9.000	L1	10.7	23.0	50.0
16.403000	27.2	9.000	L1	10.7	22.8	50.0
16.614500	27.2	9.000	L1	10.7	22.8	50.0
16.826000	26.9	9.000	L1	10.7	23.1	50.0
16.898000	27.3	9.000	L1	10.7	22.7	50.0
19.800500	21.3	9.000	L1	10.9	28.7	50.0



Figure 6: Spectral Diagrams, Conducted Emission, Phase (N)



※ Calculation Formula:

1. Conductor L1 = Hot, Conductor N = Neutral
2. Corr. = LISN Factor + Cable Loss
3. QuasiPeak or CAverage= Receiver Reading + Corr.
4. Margin = Limit – QuasiPeak or CAverage



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	48.5	9.000	N	9.7	17.6	66.0
0.159000	46.7	9.000	N	9.7	18.9	65.5
0.186000	43.4	9.000	N	9.7	20.8	64.2
0.199500	50.2	9.000	N	9.7	13.4	63.6
0.217500	40.9	9.000	N	9.7	22.0	62.9
0.267000	43.1	9.000	N	9.7	18.1	61.2
3.677000	39.5	9.000	N	10.0	16.5	56.0
3.816500	40.0	9.000	N	10.0	16.0	56.0
3.888500	40.0	9.000	N	10.0	16.0	56.0
3.960500	39.7	9.000	N	10.1	16.3	56.0
3.974000	39.7	9.000	N	10.1	16.3	56.0
4.311500	39.8	9.000	N	10.1	16.2	56.0
16.686500	34.5	9.000	N	10.7	25.5	60.0
16.754000	34.6	9.000	N	10.7	25.4	60.0
16.826000	35.1	9.000	N	10.7	24.9	60.0
16.898000	35.0	9.000	N	10.7	25.0	60.0
19.368500	34.1	9.000	N	10.8	25.9	60.0
21.065000	35.6	9.000	N	10.9	24.4	60.0



Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	29.5	9.000	N	9.7	26.5	56.0
0.163500	28.0	9.000	N	9.7	27.3	55.3
0.177000	28.2	9.000	N	9.7	26.4	54.6
0.199500	35.9	9.000	N	9.7	17.7	53.6
0.235500	32.4	9.000	N	9.7	19.9	52.3
0.262500	32.3	9.000	N	9.7	19.1	51.4
3.888500	30.5	9.000	N	10.0	15.5	46.0
4.167500	32.1	9.000	N	10.1	13.9	46.0
4.293500	31.2	9.000	N	10.1	14.8	46.0
4.316000	31.3	9.000	N	10.1	14.7	46.0
4.455500	31.2	9.000	N	10.1	14.8	46.0
4.595000	31.1	9.000	N	10.1	14.9	46.0
15.440000	25.9	9.000	N	10.6	24.1	50.0
16.205000	26.8	9.000	N	10.6	23.2	50.0
16.754000	26.6	9.000	N	10.7	23.4	50.0
16.898000	26.7	9.000	N	10.7	23.3	50.0
17.465000	25.0	9.000	N	10.7	25.0	50.0
19.368500	25.5	9.000	N	10.8	24.5	50.0



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 GHz

Limit Apply to	: FCC PART 15 Subpart B Class B
Detector	: Quasi-Peak
6 dB Bandwidth:	: RBW 120 kHz, VBW 300 kHz
Operation Mode	: Data Communication mode
Temperature	: 23.8°C
Relative Humidity	: 48.9 %
Test Date	: June 05, 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)			
85.4	16.8	H	3.5	7.7	3.7	40.0	28.2	11.8
109.3	13.6	V	1.0	10.4	3.8	43.5	27.8	15.7
263.6	22.3	H	1.4	12.2	4.4	46.0	38.9	7.1
376.0	13.2	V	1.0	15.1	4.8	46.0	33.1	12.9
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. Total Level = Reading (Receiver Reading) + Correction Factor
3. Margin = Limit - Total Level



-For Measurement Above 1 GHz

Limit Apply to : FCC PART 15 Subpart B Class B

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

Highest Operating Frequency : 1 GHz
※ This product was tested up to the 5th harmonic above frequency.

Operation Mode : Data Communication mode

Temperature : 24.0°C

Relative Humidity : 46.1 %

Test Date : June 01, 2014

Frequency (GHz)	Polarity (H/V)	Antenna Height (m)	Correction Factor	Reading (dBuV)	Peak		
					Total Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1.3291	V	1.5	-14.3	62.7	48.4	74	25.6
1.9959	V	1.0	-12.7	70.6	57.9	74	16.1
2.6589	V	1.0	-9.0	60.2	51.2	74	22.8

Frequency (GHz)	Polarity (H/V)	Antenna Height (m)	Correction Factor	Reading (dBuV)	CAverage		
					Total Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1.3291	V	1.5	-14.3	44.9	30.6	54	23.4
1.9959	V	1.0	-12.7	52.2	39.5	54	14.5
2.6589	V	1.0	-9.0	42.5	33.5	54	20.5

※ Calculation Formula:

1. Polarity H = Horizontal, Polarity V = Vertical
2. Margin = Limit - Total Level
3. Total Level = Reading (Receiver Reading) + Correction Factor
4. Corr. = Antenna Factor+ Cable Loss - Amplifier Gain



5. LIST OF TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Name</u>	<u>Serial Number</u>	<u>Calibration Cycle</u>	<u>CALDate</u>	
<u>Conducted Emission</u>						
<input checked="" type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	01.24. 2014
<input checked="" type="checkbox"/>	LISN	EMCO	3816/2SH	9706-1070	1 year	04.07. 2014
<input checked="" type="checkbox"/>	LISN	Rohde & Schwarz	ENV216	100073	1 year	01.29. 2014
<input type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	06.23. 2013
<input type="checkbox"/>	LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	07.03. 2013
<input type="checkbox"/>	Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	1 year	07.03. 2013
<input checked="" type="checkbox"/>	Software	Rohde & Schwarz	EMC32	-	-	-

Radiated Emission

-For measurement below 1 GHz

<input checked="" type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	04.07. 2014
<input checked="" type="checkbox"/>	Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	12.17. 2012
<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 type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	07.01. 2013
<input type="checkbox"/>	Trilog Antenna	Schwarzbeck	VULB9168	185	2 year	04.16. 2013
<input type="checkbox"/>	Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
<input type="checkbox"/>	Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
<input checked="" type="checkbox"/>	Software	Rohde & Schwarz	EMC32	-	-	-

-For measurement above 1 GHz

<input checked="" type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	04.07. 2014
<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	CERNEX	CBLU1183540	21691	1 year	07.24. 2013
<input checked="" type="checkbox"/>	Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	12.13. 2012
<input type="checkbox"/>	EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	07.01. 2013
<input type="checkbox"/>	Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
<input type="checkbox"/>	Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
<input type="checkbox"/>	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170124	2 year	10.30. 2013
<input type="checkbox"/>	Power Amplifier	CERNEX	CBL18265035	22966	1 year	07.24. 2013
<input type="checkbox"/>	Power Amplifier	CERNEX	CBL26405040	19660	1 year	04.04. 2014
<input checked="" type="checkbox"/>	Software	Rohde & Schwarz	EMC32	-	-	-



6. CONCLUSION

The data collected shows that the **EUT type: Cellular/PCS GSM/GPRS/EDGE Rx/WCDMA/HSDPA/HSUPA Phone with Bluetooth and WLAN, FCC ID: ZNFD105G, Model: LG-D105g** complies with §15.107 and §15.109 of the FCC rules.