

EMI CERTIFICATION REPORT

Applicant:

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

Date of Receipt: May 29, 2014**Date of Issue: June 10, 2014****Test Report No. HCT-E-1406-F013****HCT FRN: 0005866421****FCC ID:****ZNFLS885**

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 : CDMA and LTE Phone with Bluetooth, WLAN
Model Name : LGLS885
Additional Model Name : LG-LS885, LS885
Test Port : USB / Earphone Port
Date of Test : May 31, 2014 - June 01, 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

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DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1406-F013	June 10, 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	LGLS885
Additional Model	LG-LS885, LS885
FCC ID	ZNFLS885
EUT Type	CDMA and LTE Phone with Bluetooth, WLAN
TX Frequency	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) 824.70 MHz to 848.31 MHz (CDMA BC0) 1 851.25 MHz to 1 908.75 MHz (CDMA BC1)
RX Frequency	1 925 MHz to 1 990 MHz (LTE B25) 859 MHz to 894 MHz (LTE B26) 2 496 MHz to 2 690 MHz (LTE B41) 869.70 MHz to 893.31 MHz (CDMA BC0) 1 931.25 MHz to 1 988.75 MHz (CDMA BC1)

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	LGLS885	LG	ZNFLS885	Notebook PC, Earphone
USB cable	LG0126	Ningbo Broad	-	EUT, Notebook PC
USB cable	DLC-LGE30DCM UA-3	CRESYN	-	EUT, Notebook PC
Earphone	SGEY0007612	CRESYN	-	EUT
Notebook PC	ProBook6560b	HP	DoC	EUT, 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 (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
	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 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 (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

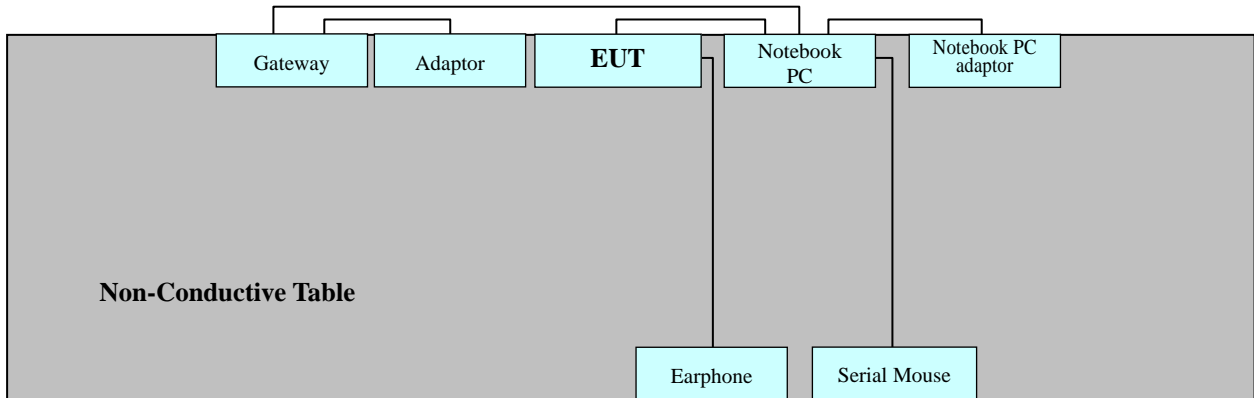


2.2.1 Frequency Range of Radiated Measurements

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

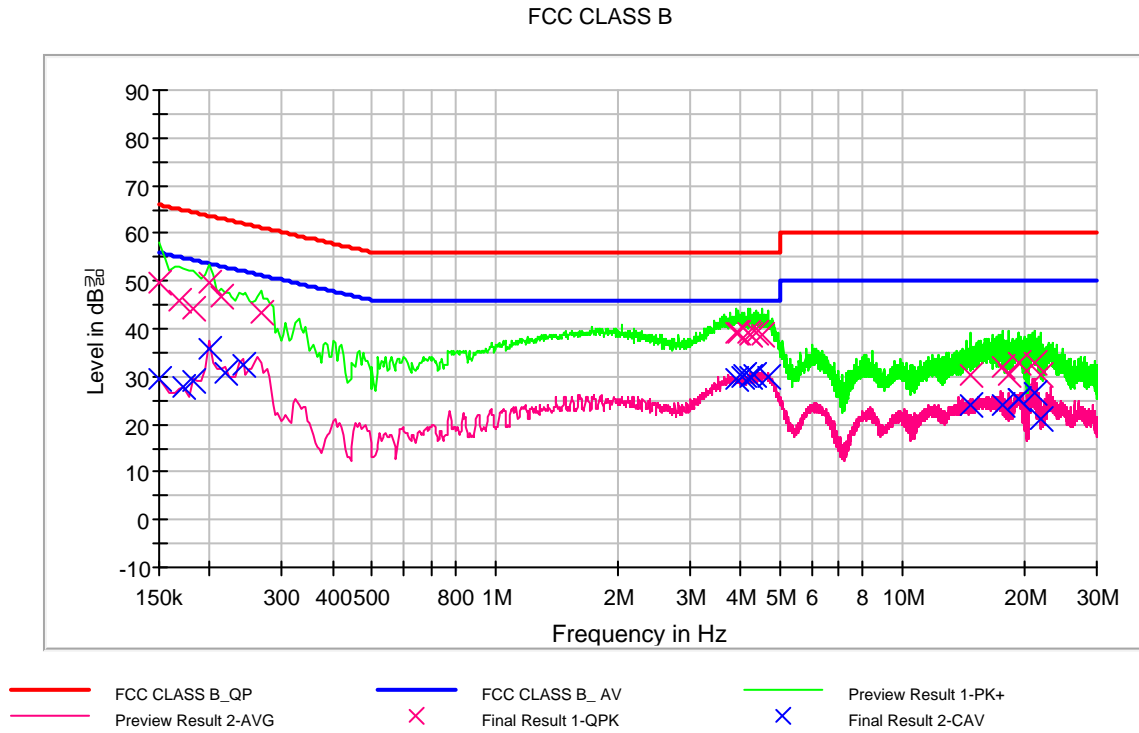
The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

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
USB Manufacturer	: Ningbo Broad
	※ The worst-case emissions are reported.
Temperature	: 23.9°C
Relative Humidity	: 45.1 %
Test Date	: June 01, 2014

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



Figure 1: 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	49.5	9.000	L1	9.7	16.5	66.0
0.168000	46.0	9.000	L1	9.7	19.1	65.1
0.181500	44.1	9.000	L1	9.7	20.3	64.4
0.199500	49.7	9.000	L1	9.7	13.9	63.6
0.213000	46.7	9.000	L1	9.7	16.4	63.1
0.267000	43.4	9.000	L1	9.7	17.8	61.2
3.893000	39.1	9.000	L1	10.0	16.9	56.0
3.965000	39.1	9.000	L1	10.0	16.9	56.0
4.176500	39.1	9.000	L1	10.1	16.9	56.0
4.248500	38.8	9.000	L1	10.1	17.2	56.0
4.388000	39.0	9.000	L1	10.1	17.0	56.0
4.532000	38.8	9.000	L1	10.1	17.2	56.0
14.652500	30.5	9.000	L1	10.6	29.5	60.0
17.645000	31.8	9.000	L1	10.8	28.2	60.0
18.198500	30.4	9.000	L1	10.8	29.6	60.0
19.260500	33.0	9.000	L1	10.9	27.0	60.0
21.051500	32.7	9.000	L1	11.0	27.3	60.0
21.735500	30.2	9.000	L1	11.0	29.8	60.0

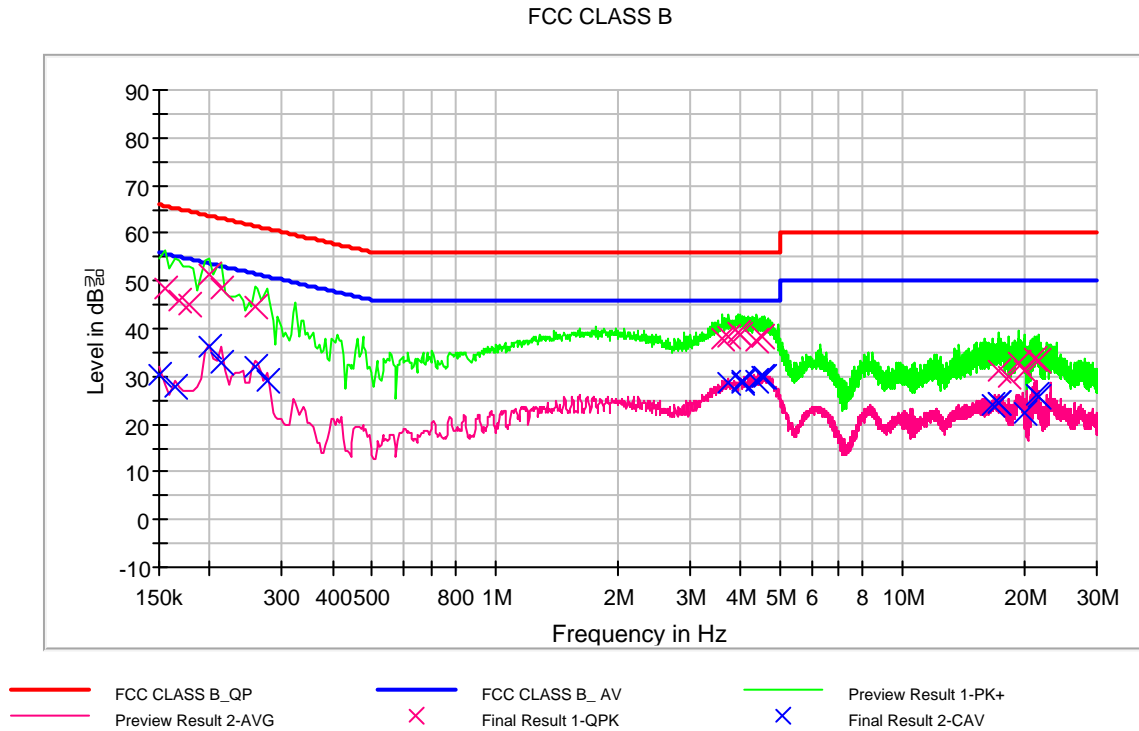


Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	29.4	9.000	L1	9.7	26.6	56.0
0.172500	27.8	9.000	L1	9.7	27.0	54.8
0.181500	28.9	9.000	L1	9.7	25.5	54.4
0.199500	36.0	9.000	L1	9.7	17.6	53.6
0.217500	30.9	9.000	L1	9.7	22.0	52.9
0.240000	32.3	9.000	L1	9.7	19.8	52.1
3.897500	29.4	9.000	L1	10.0	16.6	46.0
4.041500	29.9	9.000	L1	10.1	16.1	46.0
4.104500	30.4	9.000	L1	10.1	15.6	46.0
4.248500	30.1	9.000	L1	10.1	15.9	46.0
4.320500	30.4	9.000	L1	10.1	15.6	46.0
4.671500	29.8	9.000	L1	10.1	16.2	46.0
14.652500	23.9	9.000	L1	10.6	26.1	50.0
17.645000	23.9	9.000	L1	10.8	26.1	50.0
19.260500	25.4	9.000	L1	10.9	24.6	50.0
19.323500	25.4	9.000	L1	10.9	24.6	50.0
21.051500	26.5	9.000	L1	11.0	23.5	50.0
21.735500	21.1	9.000	L1	11.0	28.9	50.0



Figure 2: 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)
0.154500	48.6	9.000	N	9.7	17.2	65.8
0.168000	46.0	9.000	N	9.7	19.1	65.1
0.177000	44.9	9.000	N	9.7	19.7	64.6
0.199500	51.2	9.000	N	9.7	12.4	63.6
0.213000	48.3	9.000	N	9.7	14.8	63.1
0.258000	44.5	9.000	N	9.7	17.0	61.5
3.609500	38.0	9.000	N	10.0	18.0	56.0
3.753500	38.4	9.000	N	10.0	17.6	56.0
3.965000	39.0	9.000	N	10.1	17.0	56.0
3.978500	38.7	9.000	N	10.1	17.3	56.0
4.401500	37.3	9.000	N	10.1	18.7	56.0
4.554500	38.2	9.000	N	10.1	17.8	56.0
17.280500	31.4	9.000	N	10.7	28.6	60.0
18.293000	29.8	9.000	N	10.7	30.2	60.0
19.332500	32.7	9.000	N	10.8	27.3	60.0
19.895000	31.0	9.000	N	10.8	29.0	60.0
21.038000	33.7	9.000	N	10.9	26.3	60.0
21.519500	33.2	9.000	N	10.9	26.8	60.0



Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	30.4	9.000	N	9.7	25.6	56.0
0.163500	27.8	9.000	N	9.7	27.5	55.3
0.199500	36.1	9.000	N	9.7	17.5	53.6
0.213000	32.9	9.000	N	9.7	20.2	53.1
0.258000	32.1	9.000	N	9.7	19.4	51.5
0.276000	28.9	9.000	N	9.7	22.0	50.9
3.753500	28.7	9.000	N	10.0	17.3	46.0
4.037000	29.1	9.000	N	10.1	16.9	46.0
4.059500	28.8	9.000	N	10.1	17.2	46.0
4.401500	29.1	9.000	N	10.1	16.9	46.0
4.554500	30.0	9.000	N	10.1	16.0	46.0
4.604000	29.9	9.000	N	10.1	16.1	46.0
16.614500	24.0	9.000	N	10.7	26.0	50.0
17.280500	24.4	9.000	N	10.7	25.6	50.0
17.316500	24.4	9.000	N	10.7	25.6	50.0
19.895000	22.5	9.000	N	10.8	27.5	50.0
21.452000	26.1	9.000	N	10.9	23.9	50.0
21.519500	25.5	9.000	N	10.9	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
USB Cable Manufacturer	: CRESYN ※The worst-case emissions are reported.
Temperature	: 24.5°C
Relative Humidity	: 46.7 %
Test Date	: May 31, 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)			
63.6	8.7	V	1.0	11.4	3.6	40.0	23.6	16.4
85.4	20.2	H	2.5	7.7	3.7	40.0	31.6	8.4
250.0	17.7	H	1.0	11.8	4.4	46.0	33.8	12.2
625.0	13.2	V	1.0	20.0	5.4	46.0	38.6	7.4

※ 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 GHz

Limit Apply to : FCC PART 15 Subpart B Class B

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

Highest Operating Frequency : 1.2 GHz

※ This product was tested up to the 5th harmonic above frequency.

Operation Mode : Data Communication mode

USB cable Manufacturer : CRESYN

※ The worst-case emissions are reported.

Temperature : 24.5°C

Relative Humidity : 46.7 %

Test Date : May 31, 2014

Frequency (GHz)	Polarity (H/V)	Antenna Height (m)	Peak			Average		
			Total Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Total Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1.3300	V	1.0	47.1	74	26.9	30.0	54	24.0
1.9996	V	1.0	55.6	74	18.4	38.2	54	15.8
2.6641	V	1.0	50.7	74	23.3	32.8	54	21.2

※ Calculation Formula:

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



5. LIST OF TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Name</u>	<u>Serial Number</u>	<u>Calibration Cycle</u>	<u>CAL Date</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	-	-	-
<u>Radiated Emission</u>					
-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: CDMA and LTE Phone with Bluetooth, WLAN, FCC ID: ZNFLS885, Model: LGLS885** complies with §15.107 and §15.109 of the FCC rules.