

EMI CERTIFICATION REPORT

Applicant:

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

Date of Receipt: March 25, 2014

Date of Issue: April 08, 2014

Test Report No. HCT-E-1404-F007

HCT FRN: 0005866421

FCC ID:

ZNFLS620

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
EUT Type : CDMA Phone with Bluetooth4.0, WLAN2.4GHz 802.11b/g/n
Model Name : LGLS620
Additional Model Name : LS620
Port / Connector(s) : USB / Earphone Port
Date of Test : March 27, 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



Dong-Hyun Park
Test Engineer
EMC Team
Certification Division

Reviewed By



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DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1404-F007	April 08, 2014	Initial Release



TABLE OF CONTENTS

	PAGE
1. GENERAL INFORMATION	4
1.1 Description of EUT	4
1.2 Related Submittal(s) / Grant(s).....	4
1.3 Test Facility	5
1.4 Tested System Details.....	6
1.5 Cable Description	7
1.6 Noise Suppression Parts on Cable. (I/O Cable)	7
2. DESCRIPTION OF TEST	8
3. PRELIMINARY TEST	11
3.1 Conducted Emission Test	11
3.2 Radiated Emission Test	11
4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY	12
4.1 Conducted Emission Test	12
4.2 Radiated Emission Test	13
5. LIST OF TEST EQUIPMENT	19
6. CONCLUSION	20

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	LGLS620
Additional Model	LS620
FCC ID	ZNFLS620
EUT Type	CDMA Phone with Bluetooth4.0, WLAN2.4GHz 802.11b/g/n
TX Frequency	824.70 MHz to 848.31 MHz (CDMA 850) 1 851.25 MHz to 1 908.75 MHz (CDMA 1 900) 817.90 MHz to 823.10 MHz (CDMA BC10)
RX Frequency	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)

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	LGLS620	LG	ZNFLS620	Notebook PC Ear-phone
USB cable	EAD62786801	Ningbo Broad	-	EUT Notebook PC
Ear-phone	EAB62209202	CRESYN	-	EUT
Battery	EAC62258206	LGC	-	EUT
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	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)1.0
	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 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.

[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

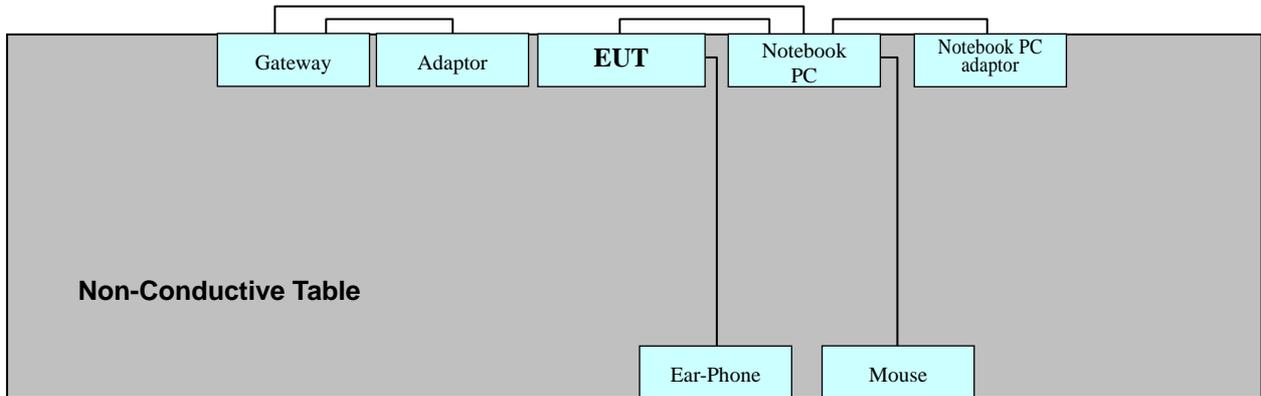


2.2.1 Frequency Range of Radiated Measurements

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, Average (6 dB Bandwidth: 9 kHz)
Operation Mode	: Data Communication mode
Temperature	: 21.5°C
Humidity Level	: 34.6 %
Test Date	: March 27, 2014

Frequency (MHz)	Corr. (dB)	Conductor	Quasi-Peak			Average		
			Limit (dBuV)	Measurement Level (dBuV)	Result Level (dBuV)	Limit (dBuV)	Measurement Level (dBuV)	Result Level (dBuV)
0.2040	9.7	L1	63.4	41.0	50.7	53.4	26.3	36.0
0.2040	9.7	N	63.4	43.2	52.9	53.4	26.9	36.6
0.2130	9.7	N	63.1	40.8	50.5	53.1	23.6	33.3
4.3925	10.1	L1	56.0	28.8	38.9	46.0	20.4	30.5
4.4330	10.1	L1	56.0	28.2	38.3	46.0	20.4	30.5
4.6085	10.1	N	56.0	28.6	38.7	46.0	21.3	31.4

※ 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 Measurement Data Graph (Refer to page 13 to page 16 for details.)



- Measurement Data Graph

EMI Auto Test(2)

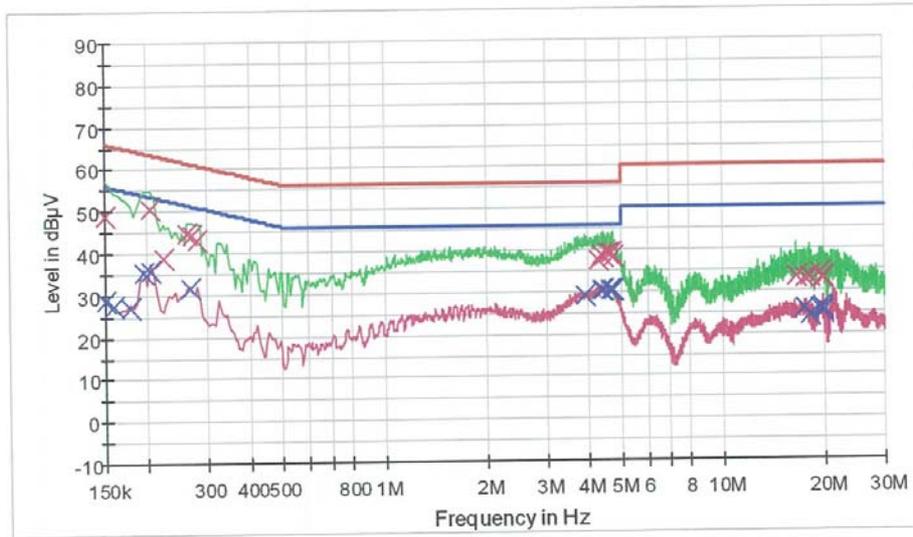
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HCT TEST Report

Common Information

EUT: LGLS620
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: DATA MODE
 Operator Name:

FCC CLASS B



— FCCCLASS B_OP
 — FCCCLASS B_AV
 — Preview Result 1-PK+
— Preview Result 2-AVG
 X Final Result 1-GPK
 X Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	49.0	9.000	Off	L1	9.7	17.0	66.0
0.204000	50.7	9.000	Off	L1	9.7	12.7	63.4
0.222000	38.6	9.000	Off	L1	9.7	24.1	62.7
0.262500	44.8	9.000	Off	L1	9.7	16.6	61.4
0.271500	44.3	9.000	Off	L1	9.7	16.8	61.1
0.280500	43.0	9.000	Off	L1	9.7	17.8	60.8
4.275500	37.6	9.000	Off	L1	10.1	18.4	56.0
4.392500	38.9	9.000	Off	L1	10.1	17.1	56.0
4.433000	38.3	9.000	Off	L1	10.1	17.7	56.0
4.604000	39.1	9.000	Off	L1	10.1	16.9	56.0
4.676000	39.0	9.000	Off	L1	10.1	17.0	56.0
4.748000	38.2	9.000	Off	L1	10.1	17.8	56.0
16.434500	33.1	9.000	Off	L1	10.8	26.9	60.0
17.357000	33.0	9.000	Off	L1	10.8	27.0	60.0
17.924000	33.3	9.000	Off	L1	10.8	26.7	60.0
19.341500	33.9	9.000	Off	L1	10.9	26.1	60.0

3/27/2014

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EMI Auto Test(2)

2 / 2

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
19.652000	33.4	9.000	Off	L1	10.9	26.6	60.0
19.751000	32.8	9.000	Off	L1	10.9	27.2	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	28.6	9.000	Off	L1	9.7	27.4	56.0
0.159000	27.4	9.000	Off	L1	9.7	28.1	55.5
0.177000	26.9	9.000	Off	L1	9.7	27.7	54.6
0.195000	35.5	9.000	Off	L1	9.7	18.3	53.8
0.204000	36.0	9.000	Off	L1	9.7	17.4	53.4
0.267000	31.8	9.000	Off	L1	9.7	19.4	51.2
3.920000	29.3	9.000	Off	L1	10.1	16.7	46.0
4.392500	30.5	9.000	Off	L1	10.1	15.5	46.0
4.433000	30.5	9.000	Off	L1	10.1	15.5	46.0
4.608500	30.4	9.000	Off	L1	10.1	15.6	46.0
4.685000	30.4	9.000	Off	L1	10.1	15.6	46.0
4.748000	30.2	9.000	Off	L1	10.1	15.8	46.0
17.357000	25.7	9.000	Off	L1	10.8	24.3	50.0
17.465000	25.7	9.000	Off	L1	10.8	24.3	50.0
17.924000	24.0	9.000	Off	L1	10.8	26.0	50.0
19.197500	25.7	9.000	Off	L1	10.9	24.3	50.0
19.652000	25.5	9.000	Off	L1	10.9	24.5	50.0
19.751000	24.7	9.000	Off	L1	10.9	25.3	50.0

3/27/2014

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EMI Auto Test(2)

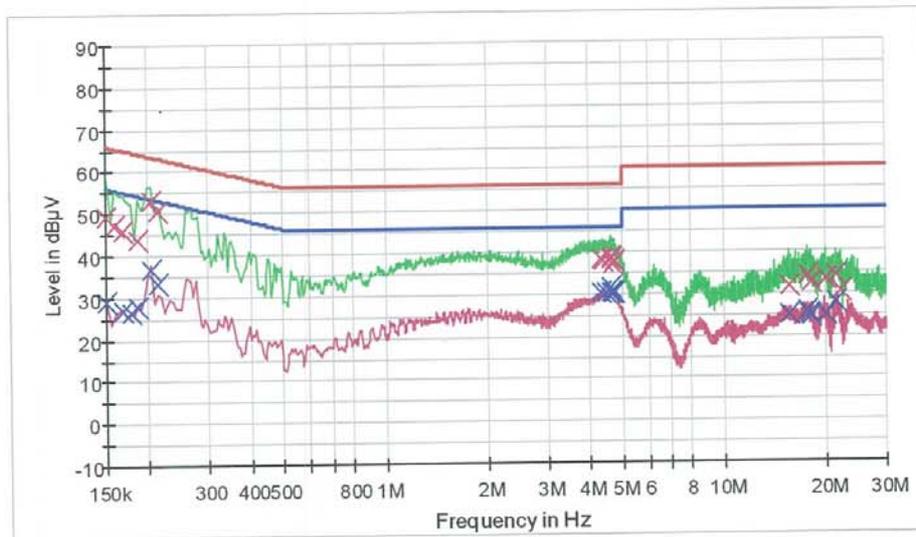
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HCT TEST Report

Common Information

EUT: LGLS620
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: DATA MODE
 Operator Name:

FCC CLASS B



— FCCCLASS B_QP — FCCCLASS B_AV — Preview Result 1-PK+
— Preview Result 2-AVG X Final Result 1-CPK X Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	49.3	9.000	Off	N	9.7	16.7	66.0
0.159000	47.3	9.000	Off	N	9.7	18.2	65.5
0.168000	45.8	9.000	Off	N	9.7	19.3	65.1
0.186000	44.0	9.000	Off	N	9.7	20.2	64.2
0.204000	52.9	9.000	Off	N	9.7	10.5	63.4
0.213000	50.5	9.000	Off	N	9.7	12.6	63.1
4.325000	38.5	9.000	Off	N	10.1	17.5	56.0
4.374500	37.7	9.000	Off	N	10.1	18.3	56.0
4.608500	38.7	9.000	Off	N	10.1	17.3	56.0
4.626500	38.1	9.000	Off	N	10.1	17.9	56.0
4.698500	37.2	9.000	Off	N	10.1	18.8	56.0
4.752500	38.0	9.000	Off	N	10.1	18.0	56.0
15.525500	31.6	9.000	Off	N	10.7	28.4	60.0
17.577500	34.2	9.000	Off	N	10.7	25.8	60.0
17.982500	32.5	9.000	Off	N	10.7	27.5	60.0
19.931000	33.3	9.000	Off	N	10.8	26.7	60.0

3/27/2014

9:47:16



EMI Auto Test(2)

2 / 2

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
21.335000	34.1	9.000	Off	N	10.8	25.9	60.0
22.050500	30.2	9.000	Off	N	10.9	29.8	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	29.0	9.000	Off	N	9.7	27.0	56.0
0.168000	26.8	9.000	Off	N	9.7	28.3	55.1
0.177000	26.7	9.000	Off	N	9.7	27.9	54.6
0.186000	27.9	9.000	Off	N	9.7	26.3	54.2
0.204000	36.6	9.000	Off	N	9.7	16.8	53.4
0.213000	33.3	9.000	Off	N	9.7	19.8	53.1
4.325000	30.3	9.000	Off	N	10.1	15.8	46.0
4.464500	30.3	9.000	Off	N	10.1	15.7	46.0
4.608500	31.4	9.000	Off	N	10.1	14.6	46.0
4.626500	30.2	9.000	Off	N	10.1	15.8	46.0
4.698500	30.2	9.000	Off	N	10.1	15.8	46.0
4.752500	30.4	9.000	Off	N	10.1	15.6	46.0
15.525500	24.8	9.000	Off	N	10.7	25.2	50.0
17.577500	25.7	9.000	Off	N	10.7	24.3	50.0
17.739500	24.9	9.000	Off	N	10.7	25.1	50.0
17.982500	24.4	9.000	Off	N	10.7	25.6	50.0
19.931000	25.0	9.000	Off	N	10.8	25.0	50.0
21.335000	27.7	9.000	Off	N	10.8	22.3	50.0

3/27/2014

9:47:16



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	: 22.7°C
Humidity Level	: 34.6 %
Test Date	: March 27, 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)			
64.8	13.9	V	1.0	11.2	3.6	40.0	28.7	11.3
265.6	14.3	H	1.5	12.3	4.4	46.0	31.0	15.0
625.0	13.3	V	1.0	20.0	5.4	46.0	38.7	7.3

※ 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)

Operation Mode : Data Communication mode

Temperature : 22.7°C

Humidity Level : 34.6 %

Test Date : March 27, 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)
1.3304	V	1.0	49.5	74	24.5	31.2	54	22.8
1.9927	V	1.0	55.1	74	18.9	38.0	54	16.0
2.6551	V	1.0	51.3	74	22.7	33.3	54	20.7

※ 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>Next CAL Date</u>
<u>Conducted Emission</u>					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	2015.01.24
<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	2015.01.29
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	2014.06.23
<input type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	2014.07.03
<input type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	357.8810.352	1 year	2014.07.03
<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	2015.04.07
<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	-
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
<input type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9168	185	2 year	2015.04.16
<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	2015.04.07
<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	2014.07.24
<input type="checkbox"/> Power Amplifier	CERNEX	CBLU1183540	21690	1 year	2014.07.12
<input type="checkbox"/> Power Amplifier	CERNEX	CBLU1183540	22964	1 year	2014.07.24
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	2014.12.13
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	2014.07.01
<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	-	-	-



6. CONCLUSION

The data collected shows that the **EUT type: CDMA Phone with Bluetooth4.0, WLAN2.4GHz 802.11b/g/n, FCC ID: ZNFLS620, Model: LGLS620** complies with §15.107 and §15.109 of the FCC rules.