

EMI CERTIFICATION REPORT

Applicant:**LG Electronics MobileComm U.S.A., Inc.**
1000 Sylvan Avenue, Englewood Cliffs NJ 07632**Date of Receipt: March 26, 2014****Date of Issue: April 11, 2014****Test Report No. HCT-E-1404-F018****HCT FRN: 0005866421****FCC ID:****ZNFVS880**

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B Class B
EUT Type : Cellular/PCS CDMA/EVDO and LTE Phone with Bluetooth,
WLAN and NFC
Model Name : LG-VS880
Additional Model Name : LGVS880, VS880
Port / Connector(s) : USB / Earphone Port
Date of Test : March 27, 2014 - April 09, 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

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DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1404-F018	April 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-VS880
FCC ID	ZNFVS880
Additional Model	LGVS880, VS880
EUT Type	Cellular/PCS CDMA/EVDO and LTE Phone with Bluetooth, WLAN and NFC
TX Frequency	824.70 MHz to 848.31 MHz (CDMA BC0) 1 851.25 MHz to 1 908.75 MHz (CDMA BC1) 1 710 MHz to 1 755 MHz (LTE B4) 777 MHz to 787 MHz (700 MHz LTE B13)
RX Frequency	869.70 MHz to 893.31 MHz (CDMA BC0) 1 931.25 MHz to 1 988.75 MHz (CDMA BC1) 2 110 MHz to 2 155 MHz (LTE B4) 746 MHz to 756 MHz (700 MHz LTE B13)

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-VS880	LG	ZNFVS880	Notebook PC Ear-phone
USB cable*	EAD62290202	Ningbo Broad	-	E.U.T Notebook PC
USB cable*	EAD62290203	CRESYN	-	E.U.T Notebook PC
Ear-phone	SGEY003744	CRESYN	-	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

※NOTE: The worst-case emissions are reported.



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 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

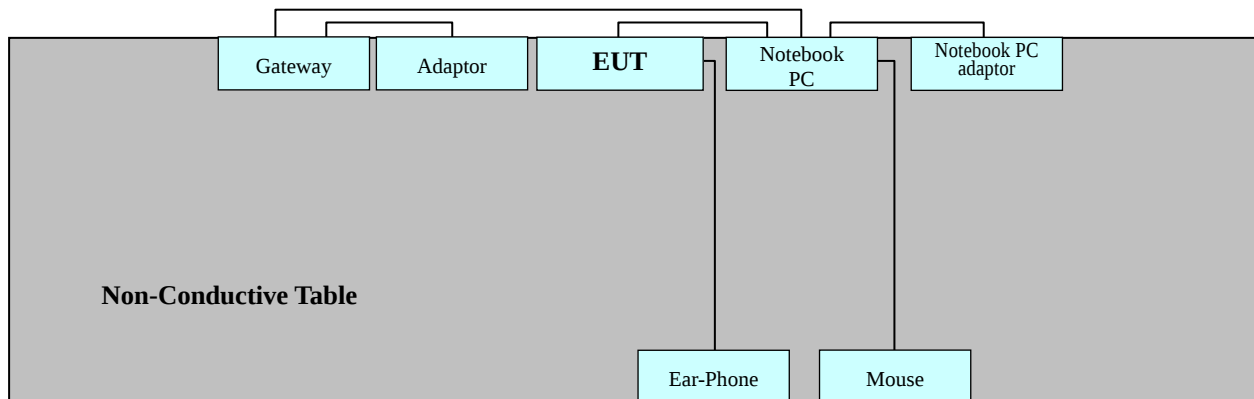


2.2.1 Frequency Range of Radiated Measurements

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
USB Cable Manufacturer	: CRESYN
	※ The worst-case emissions are reported.
Temperature	: 21.5 / 24.0°C
Humidity Level	: 34.6 / 33.6 %
Test Date	: March 27, 2014 / March 31, 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)
0.1995	9.7	N	63.6	41.2	50.9	53.6	26.3	36.0
0.2040	9.7	L1	63.4	40.1	49.8	53.4	26.2	35.9
0.2085	9.7	N	63.3	40.5	50.2	53.3	25.7	35.4
4.2170	10.1	L1	56.0	-	-	46.0	20.4	30.5
4.2395	10.1	L1	56.0	28.6	38.7	46.0	21.6	31.7
4.3880	10.1	N	56.0	29.7	39.8	46.0	21.5	31.6

※ 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)

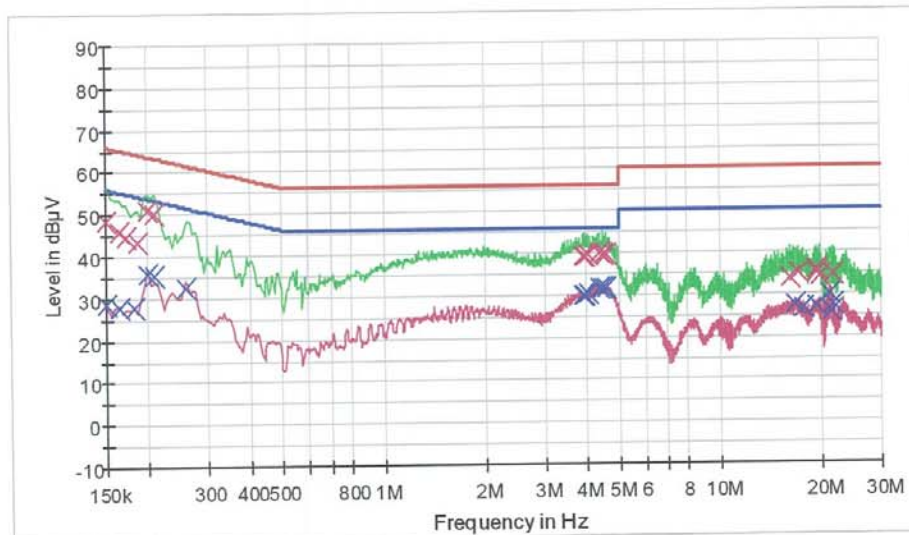
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HCT TEST Report

Common Information

EUT: LG-VS880
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: DATA MODE
 Operator Name:

FCC CLASS B



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK
 — Preview Result 2-AVG × Final Result 1-QPK × Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	48.3	9.000	Off	N	9.7	17.7	66.0
0.163500	46.0	9.000	Off	N	9.7	19.3	65.3
0.172500	44.6	9.000	Off	N	9.7	20.2	64.8
0.186000	43.2	9.000	Off	N	9.7	21.0	64.2
0.199500	50.9	9.000	Off	N	9.7	12.7	63.6
0.208500	50.2	9.000	Off	N	9.7	13.1	63.3
3.915500	39.0	9.000	Off	N	10.1	17.0	56.0
3.965000	39.2	9.000	Off	N	10.1	16.8	56.0
4.037000	39.4	9.000	Off	N	10.1	16.6	56.0
4.388000	39.8	9.000	Off	N	10.1	16.2	56.0
4.460000	39.7	9.000	Off	N	10.1	16.3	56.0
4.599500	39.7	9.000	Off	N	10.1	16.3	56.0
16.164500	33.8	9.000	Off	N	10.7	26.2	60.0
17.060000	35.1	9.000	Off	N	10.7	24.9	60.0
19.251500	35.6	9.000	Off	N	10.8	24.4	60.0
19.400000	34.9	9.000	Off	N	10.8	25.1	60.0

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EMI Auto Test(2)

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Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
19.683500	33.9	9.000	Off	N	10.8	26.1	60.0
21.663500	34.4	9.000	Off	N	10.9	25.6	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	N	9.7	27.4	56.0
0.163500	27.8	9.000	Off	N	9.7	27.5	55.3
0.181500	27.7	9.000	Off	N	9.7	26.7	54.4
0.199500	36.0	9.000	Off	N	9.7	17.6	53.6
0.208500	35.4	9.000	Off	N	9.7	17.9	53.3
0.258000	32.6	9.000	Off	N	9.7	18.9	51.5
3.915500	29.8	9.000	Off	N	10.1	16.2	46.0
3.965000	30.0	9.000	Off	N	10.1	16.0	46.0
4.037000	30.2	9.000	Off	N	10.1	15.8	46.0
4.388000	31.6	9.000	Off	N	10.1	14.4	46.0
4.460000	31.5	9.000	Off	N	10.1	14.5	46.0
4.599500	31.5	9.000	Off	N	10.1	14.5	46.0
16.560500	27.3	9.000	Off	N	10.7	22.7	50.0
17.559500	26.6	9.000	Off	N	10.7	23.4	50.0
19.251500	27.2	9.000	Off	N	10.8	22.8	50.0
21.236000	30.1	9.000	Off	N	10.8	19.9	50.0
21.452000	25.5	9.000	Off	N	10.9	24.5	50.0
21.663500	27.5	9.000	Off	N	10.9	22.5	50.0

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EMI Auto Test(2)

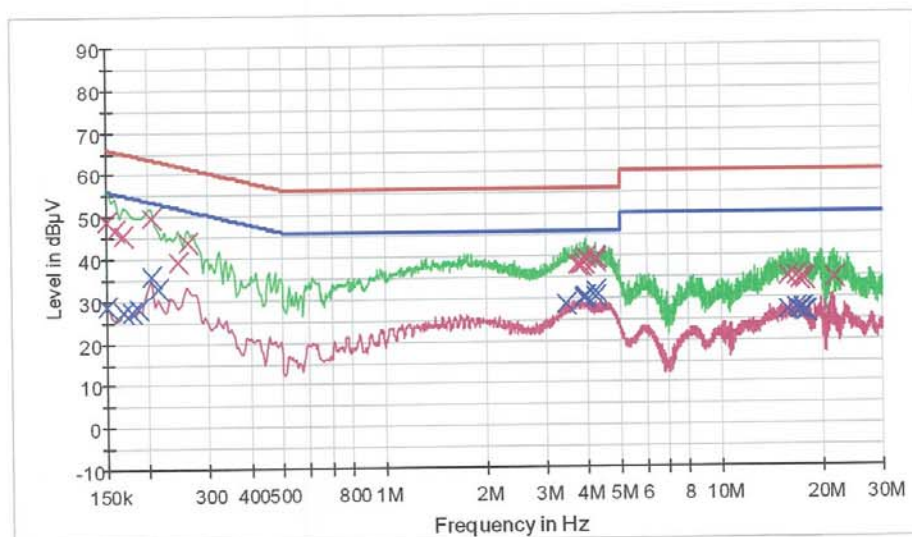
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HCT TEST Report

Common Information

EUT: LG-VS880
 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	48.7	9.000	Off	L1	9.7	17.3	66.0
0.159000	46.8	9.000	Off	L1	9.7	18.7	65.5
0.168000	45.3	9.000	Off	L1	9.7	19.8	65.1
0.204000	49.8	9.000	Off	L1	9.7	13.6	63.4
0.244500	39.3	9.000	Off	L1	9.7	22.6	61.9
0.262500	43.8	9.000	Off	L1	9.7	17.6	61.4
3.717500	38.0	9.000	Off	L1	10.0	18.0	56.0
3.807500	37.9	9.000	Off	L1	10.0	18.1	56.0
3.902000	38.3	9.000	Off	L1	10.1	17.7	56.0
3.965000	39.6	9.000	Off	L1	10.1	16.4	56.0
4.239500	38.7	9.000	Off	L1	10.1	17.3	56.0
4.248500	39.5	9.000	Off	L1	10.1	16.5	56.0
15.791000	34.9	9.000	Off	L1	10.7	25.1	60.0
16.569500	35.0	9.000	Off	L1	10.8	25.0	60.0
16.997000	34.3	9.000	Off	L1	10.8	25.7	60.0
17.388500	34.5	9.000	Off	L1	10.8	25.5	60.0

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EMI Auto Test(2)

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Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
17.636000	34.1	9.000	Off	L1	10.8	25.9	60.0
21.528500	34.5	9.000	Off	L1	11.0	25.5	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
0.168000	27.4	9.000	Off	L1	9.7	27.7	55.1
0.177000	27.4	9.000	Off	L1	9.7	27.2	54.6
0.186000	28.4	9.000	Off	L1	9.7	25.8	54.2
0.204000	35.9	9.000	Off	L1	9.7	17.5	53.4
0.213000	33.0	9.000	Off	L1	9.7	20.1	53.1
3.470000	28.6	9.000	Off	L1	10.0	17.4	46.0
3.893000	30.1	9.000	Off	L1	10.1	15.9	46.0
3.902000	29.7	9.000	Off	L1	10.1	16.3	46.0
3.965000	30.4	9.000	Off	L1	10.1	15.6	46.0
4.217000	30.5	9.000	Off	L1	10.1	15.5	46.0
4.239500	31.7	9.000	Off	L1	10.1	14.3	46.0
15.791000	27.1	9.000	Off	L1	10.7	22.9	50.0
16.569500	27.2	9.000	Off	L1	10.8	22.8	50.0
16.997000	26.9	9.000	Off	L1	10.8	23.1	50.0
17.388500	27.6	9.000	Off	L1	10.8	22.4	50.0
17.636000	26.7	9.000	Off	L1	10.8	23.3	50.0
17.847500	26.4	9.000	Off	L1	10.8	23.6	50.0

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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 : 22.7 / 20.5°C

Humidity Level : 34.6 / 30.1 %

Test Date : March 27, 2014 / April 09, 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
85.4	20.7	H	2.6	7.7	3.7	40.0	32.1	7.9
625.0	13.1	V	1.0	20.0	5.4	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



-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

USB Cable Manufacturer : CRESYN

※ The worst-case emissions are reported.

Temperature : 22.7 / 20.5°C

Humidity Level : 34.6 / 30.1 %

Test Date : March 27, 2014 / April 09, 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	1.5	48.0	74	26.0	31.5	54	22.5
1.9967	V	1.1	56.1	74	17.9	38.2	54	15.8
2.6609	V	1.0	51.9	74	22.1	33.4	54	20.6

※ 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>					
☒ 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 GHz

☒ 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 GHz

☒ 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: Cellular/PCS CDMA/EVDO and LTE Phone with Bluetooth, WLAN and NFC, FCC ID: ZNFVS880, Model: LG-VS880** complies with §15.107 and §15.109 of the FCC rules.