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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: January 15, 2016** **Date of Issue: February 18, 2016** **Test Report No. HCT-E-1601-F034-2** **HCT FRN: 0005866421**

FCC ID : **ZNFVC110**

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 SMALL BELT CLIP + BLUETOOTH, DTS b/g
Model Name:	LG-VC110
Additional Model Name:	LGVC110, VC110, LG-VC110B, LGVC110B, VC110B
Test Port:	Micro USB Port
Date of Test:	January 18, 2016 - January 19, 2016

CERTIFICATION TEST REPORT FOR Walkie Talkie Accessory GVC200WTH

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

Jea-Woong Lee
Test Engineer
EMC Team
Certification Division

Reviewed By

Jin-Pyo Hong
Technical Manager
EMC Team
Certification Division

DOCUMENT HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1601-F034	January 19, 2016	Initial Release
HCT-E-1601-F034-1	February 01, 2016	The revision of the EUT Type
HCT-E-1601-F034-2	February 18, 2016	Added the additional model names and Walkie Talkie Accessory

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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-VC110
FCC ID	ZNFVC110
Additional Model	LGVC110, VC110, LG-VC110B, LGVC110B, VC110B
EUT Type	CDMA SMALL BELT CLIP + BLUETOOTH, DTS b/g
TX Frequency	824.70 MHz to 848.31 MHz (CDMA 850) 1 851.25 MHz to 1 908.75 MHz (CDMA 1 900)
RX Frequency	869.70 MHz to 893.31 MHz (CDMA 850) 1 931.25 MHz to 1 988.75 MHz (CDMA 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.
HCT FRN: 0005866421 Radiated Field strength measurement facility (3 m)	90661 (February 28, 2014)
HCT FRN: 0005866421 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-VC110	LG	ZNFVC110	Notebook PC, Earphone
USB cable	EAD62377906	Ningbo Broad	-	EUT, Notebook PC
Notebook PC	ProBook6560b	HP	DoC	EUT, Notebook PC adaptor, RJ45 cable, Serial mouse
Notebook PC adaptor	PPP009D	DELTA Electronics (Jiangsu) LTD	-	Notebook PC
Gateway	TL-WR747N	TP-LINK	-	RJ45 cable, Gateway adaptor
Gateway adaptor	T120150-2H1	TP-LINK	-	Gateway
Serial mouse	Serial 2 button mouse	Radio shack	FSUGMZE3	Notebook PC
RJ45 cable	-	-	-	Notebook PC, Gateway

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
Notebook PC	RJ 45	N/A	N	(D)2.5
	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	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

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).
If the EUT is connected to the PC through USB, the AC power-line adapter of the PC is directly connected to 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 (kHz)	Quasi-Peak (dB(μV))	Average (dB(μV))
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 semi-anechoic chamber. 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]

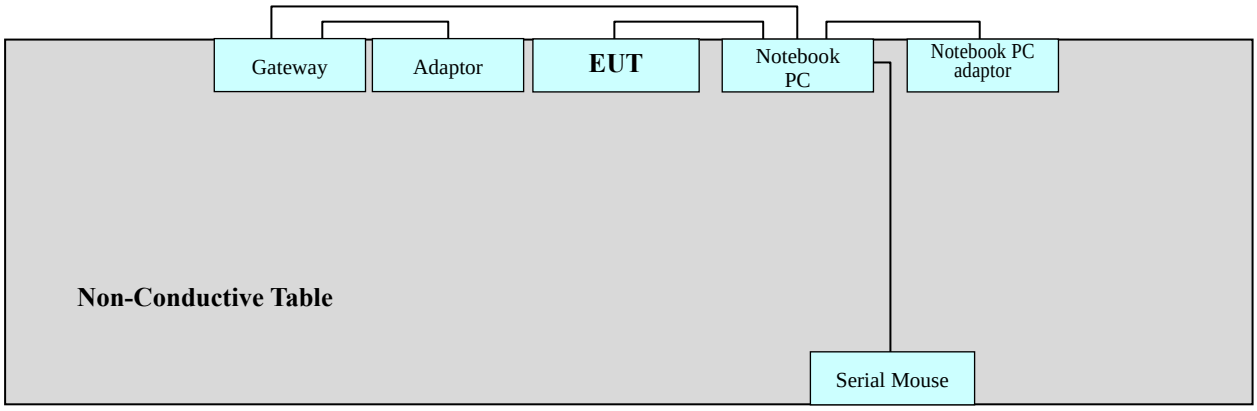
Frequency (MHz)	Antenna Distance (m)	Field Strength (μV/m)	Quasi-Peak (dB(μV)/m)
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0
Frequency (MHz)	**Antenna Distance (m)**	**Peak (dB(μV)/m)**	**Average (dB(μV)/m)**
Above 1 000	3	74	54

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	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 Link mode, after connecting all peripheral devices.

Operation Mode: ☒ Data Link mode

3. 2 Radiated Emission Test

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

Operation Mode: ☒ Data Link mode

4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

4.1 Conducted Emission Test

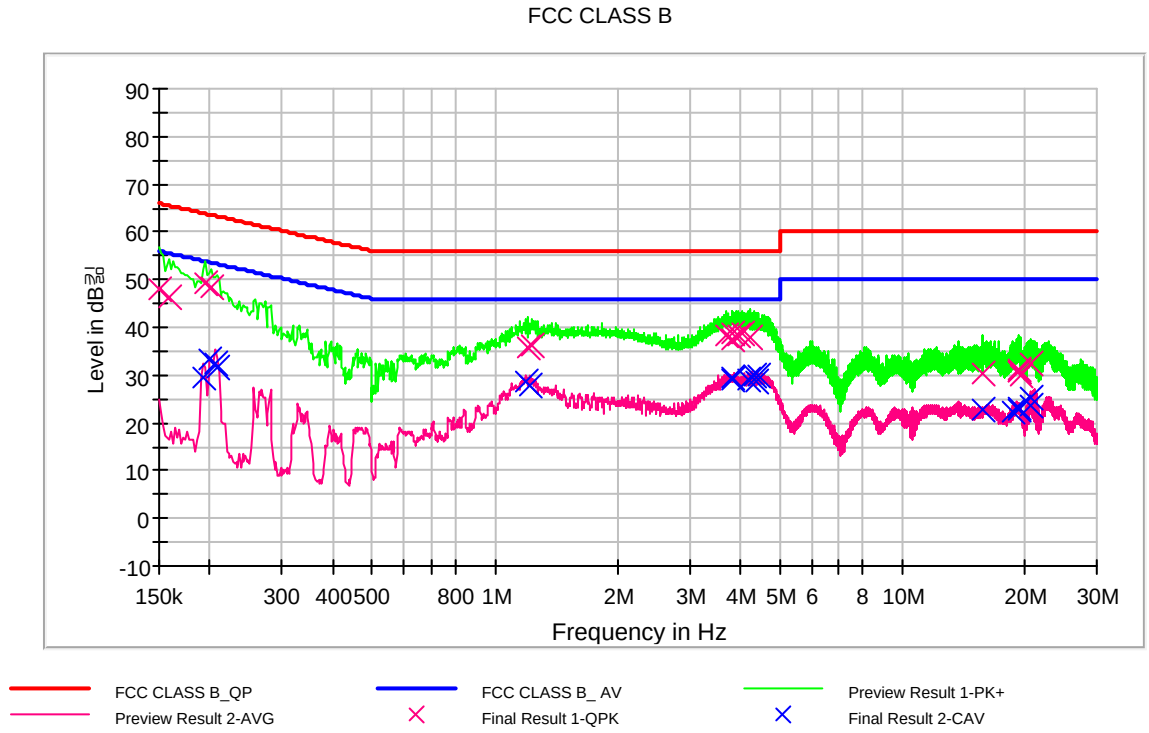
The test results of conducted emission at mains ports provide the following information:

Rule Part / Standard	FCC PART 15 Subpart B Class B
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Operation Mode	Data Link mode
Kind of Test Site	Shielded Room
Temperature	20.6 °C
Relative Humidity	31.2 %
Test Date	January 18, 2016

- 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

Figure 1: Spectral Diagrams, Conducted Emission, AC Main Port, Line (L1)



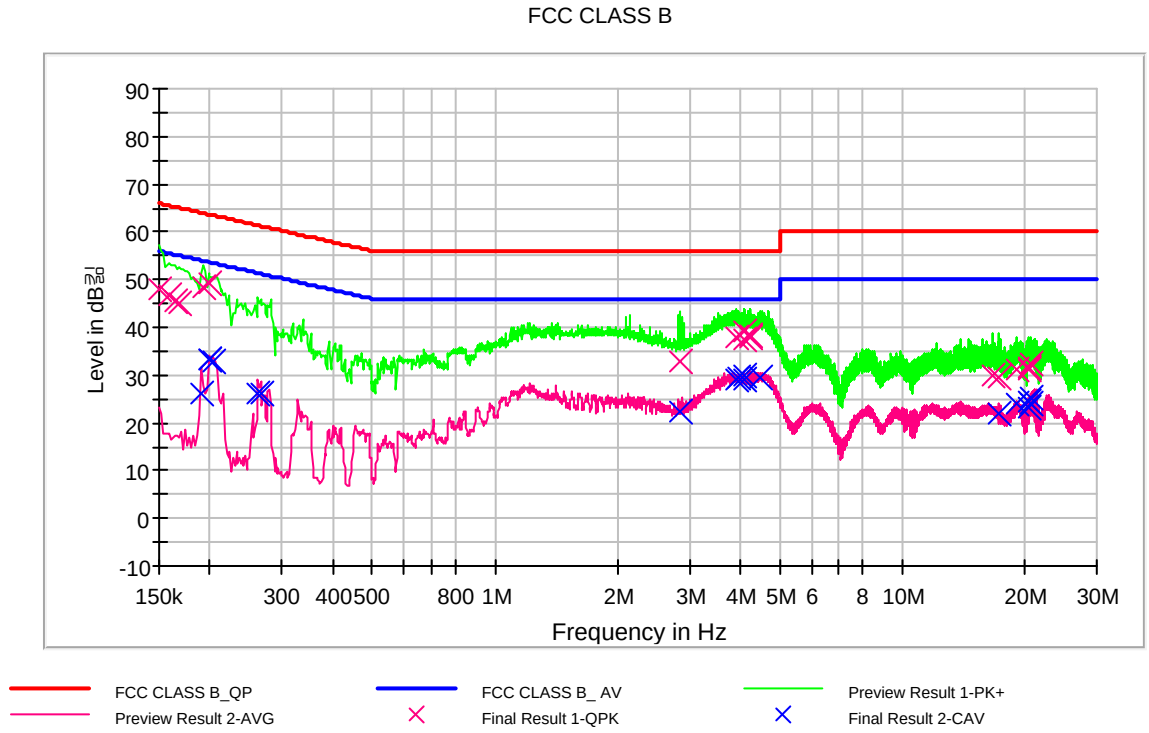
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	48.2	9.000	L1	9.7	17.8	66.0
0.158000	46.5	9.000	L1	9.6	19.1	65.6
0.194000	49.3	9.000	L1	9.6	14.6	63.9
0.202000	48.6	9.000	L1	9.6	14.9	63.5
1.208000	35.7	9.000	L1	9.7	20.3	56.0
1.236000	36.3	9.000	L1	9.7	19.7	56.0
3.676000	38.4	9.000	L1	9.8	17.6	56.0
3.816000	38.8	9.000	L1	9.8	17.2	56.0
3.826000	37.7	9.000	L1	9.8	18.3	56.0
3.960000	38.4	9.000	L1	9.8	17.6	56.0
4.028000	38.7	9.000	L1	9.8	17.3	56.0
4.242000	38.1	9.000	L1	9.8	17.9	56.0
15.694000	30.5	9.000	L1	10.2	29.5	60.0
19.304000	31.3	9.000	L1	10.2	28.7	60.0
19.368000	30.8	9.000	L1	10.2	29.2	60.0
19.378000	30.9	9.000	L1	10.2	29.1	60.0
19.518000	29.9	9.000	L1	10.2	30.1	60.0
20.656000	32.5	9.000	L1	10.3	27.5	60.0

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.192000	29.3	9.000	L1	9.6	24.6	53.9
0.200000	33.3	9.000	L1	9.6	20.3	53.6
0.206000	32.4	9.000	L1	9.6	21.0	53.4
0.208000	31.5	9.000	L1	9.6	21.8	53.3
1.186000	28.5	9.000	L1	9.7	17.5	46.0
1.212000	28.0	9.000	L1	9.7	18.0	46.0
3.818000	29.5	9.000	L1	9.8	16.5	46.0
3.826000	28.9	9.000	L1	9.8	17.1	46.0
4.176000	29.0	9.000	L1	9.8	17.0	46.0
4.314000	29.9	9.000	L1	9.8	16.1	46.0
4.396000	28.7	9.000	L1	9.8	17.3	46.0
4.440000	29.7	9.000	L1	9.8	16.3	46.0
15.694000	22.8	9.000	L1	10.2	27.2	50.0
18.660000	22.4	9.000	L1	10.2	27.6	50.0
19.328000	22.7	9.000	L1	10.2	27.3	50.0
19.378000	23.1	9.000	L1	10.2	26.9	50.0
20.638000	23.8	9.000	L1	10.3	26.2	50.0
20.656000	25.2	9.000	L1	10.3	24.8	50.0

Figure 2: Spectral Diagrams, Conducted Emission, AC Main Port, Line (N)



QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	48.2	9.000	N	9.6	17.8	66.0
0.158000	46.7	9.000	N	9.6	18.9	65.6
0.164000	45.6	9.000	N	9.6	19.7	65.3
0.168000	45.0	9.000	N	9.6	20.1	65.1
0.192000	48.5	9.000	N	9.6	15.4	63.9
0.198000	49.1	9.000	N	9.6	14.6	63.7
2.840000	32.7	9.000	N	9.8	23.3	56.0
3.892000	38.1	9.000	N	9.8	17.9	56.0
4.078000	37.4	9.000	N	9.8	18.6	56.0
4.100000	39.1	9.000	N	9.8	16.9	56.0
4.240000	38.3	9.000	N	9.8	17.7	56.0
4.244000	38.1	9.000	N	9.8	17.9	56.0
16.616000	29.9	9.000	N	10.2	30.1	60.0
17.320000	29.3	9.000	N	10.2	30.7	60.0
19.020000	31.3	9.000	N	10.2	28.7	60.0
20.424000	31.7	9.000	N	10.3	28.3	60.0
20.454000	31.1	9.000	N	10.3	28.9	60.0
20.726000	32.4	9.000	N	10.3	27.6	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.190000	26.1	9.000	N	9.6	27.9	54.0
0.198000	33.3	9.000	N	9.6	20.4	53.7
0.200000	33.3	9.000	N	9.6	20.3	53.6
0.204000	32.8	9.000	N	9.6	20.6	53.4
0.262000	26.0	9.000	N	9.6	25.4	51.4
0.266000	25.9	9.000	N	9.6	25.3	51.2
2.840000	22.6	9.000	N	9.8	23.4	46.0
3.892000	29.2	9.000	N	9.8	16.8	46.0
3.934000	29.3	9.000	N	9.8	16.7	46.0
4.078000	29.1	9.000	N	9.8	16.9	46.0
4.100000	29.8	9.000	N	9.8	16.2	46.0
4.458000	29.4	9.000	N	9.8	16.6	46.0
17.320000	21.7	9.000	N	10.2	28.3	50.0
19.020000	23.9	9.000	N	10.2	26.1	50.0
20.424000	24.5	9.000	N	10.3	25.5	50.0
20.454000	23.3	9.000	N	10.3	26.7	50.0
20.564000	24.2	9.000	N	10.3	25.8	50.0
20.726000	25.4	9.000	N	10.3	24.6	50.0

4.2 Radiated Emission Test

The test results of radiated emission provide the following information:

-For Measurement Below 1 GHz

Rule Part / Standard	FCC PART 15 Subpart B Class B
Detector	Quasi-Peak
Bandwidth	120 kHz (6 dB)
Operation Mode	Data Link mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	21.6 °C
Relative Humidity	31.7 %
Test Date	January 19, 2016

Frequency (MHz)	Quasi Peak (dBuV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
36.751663	27.0	115.0	V	179.0	15.2	13.0	40.0
56.230541	28.6	100.0	V	131.0	15.7	11.4	40.0
72.005531	28.2	240.0	H	31.0	13.7	11.8	40.0
265.610421	33.6	115.0	H	137.0	16.8	12.4	46.0
600.018036	33.2	100.0	H	227.0	25.6	12.8	46.0
800.038064	36.4	150.0	H	247.0	28.4	9.6	46.0

- Calculation Formula:

1. POL. H = Horizontal, POL. V = Vertical
2. QuasiPeak = Reading (Receiver Reading) + Corr.
3. Corr. (Correction Factor) = Antenna Factor + Cable Loss
4. Margin = Limit - QuasiPeak

-For Measurement Above 1 GHz

Rule Part / Standard	FCC PART 15 Subpart B Class B
Detector	Peak mode: Peak (RBW: 1 MHz, VBW: 3 MHz) CISPR-Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)
Highest Operating Frequency	480 MHz
Testing Frequency Range	1 GHz to 6 GHz
Operation Mode	Data Link mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	20.4 °C
Relative Humidity	31.5 %
Test Date	January 18, 2016

Frequency (MHz)	Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1332.114229	48.9	100.0	V	227.0	-9.8	25.1	74.0
1400.150300	47.6	183.0	V	213.0	-9.6	26.4	74.0
1999.749499	55.1	100.0	V	229.0	-8.4	18.9	74.0

Frequency (MHz)	CAverage (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1332.114229	31.2	100.0	V	227.0	-9.8	22.8	54.0
1400.150300	44.3	183.0	V	213.0	-9.6	9.7	54.0
1999.749499	36.6	100.0	V	229.0	-8.4	17.4	54.0

- Calculation Formula:

1. POL. H = Horizontal, POL. V = Vertical
2. Peak or CAverage = Reading (Receiver Reading) + Corr.
3. Corr. (Correction Factor) = Antenna Factor+ Cable Loss –Amplifier Gain
4. Margin = Limit - Peak or CAverage

5. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model Name	Serial Number	Calibration Cycle	CAL Date
Conducted Emission					
☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	12.28.2015
☒ LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	06.11.2015
☒ LISN	Rohde & Schwarz	ENV216	100073	1 year	12.28.2015
☒ Software	Rohde & Schwarz	EMC32	-	-	-
Radiated Emission					
-For measurement below 1 GHz					
☒ EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	04.01.2015
☒ Trilog Antenna	Schwarzbeck	VULB9160	3301	2 year	11.17.2014
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
☒ Turn Table	EMCO	1060-2M	-	N/A	-
☒ Turn Table controller	EMCO	2090	9702-1224	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	06.05.2015
☐ 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	04.01.2015
☒ Antenna master	HD GmbH	MA240	240/520	N/A	-
☒ Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
☒ Turn Table	EMCO	1060-2M	-	N/A	-
☒ Turn Table controller	EMCO	2090	9702-1224	N/A	-
☐ Power Amplifier	CERNEX	CBLU1183540	21691	1 year	07.06.2015
☒ Power Amplifier	CERNEX	CBLU5183530	24348	1 year	06.15.2015
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	10.07.2014
☐ EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	06.05.2015
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ Software	Rohde & Schwarz	EMC32	-	-	-

6. CONCLUSION

The data collected shows that the **EUT Type: CDMA SMALL BELT CLIP + BLUETOOTH, DTS b/g, Model: LG-VC110, FCC ID: ZNFVC110** complies with §15.107 and §15.109 of the FCC rules.