

EMI TEST REPORT FCC CERTIFICATION

Applicant:

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

Date of Receipt: July 17, 2017

Date of Issue: August 08, 2017

Test Report No. HCT-E-1708-F004-1

HCT FRN: 0005866421

FCC ID :

ZNFV30A

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: Multi-band CDMA/GSM/EDGE/WCDMA/LTE phone with WLAN, Bluetooth and RFID

Model Name: LG-VS996

Additional Model Name: LGVS996, VS996, LG-H931, LGH931, H931, LG-H933, LGH933, H933, LG-US998, LGUS998, US998

Date of Test: July 31, 2017 – August 05, 2017

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 C63.4-2014. (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-Hwan Seo
Test Engineer
EMC Team
Certification Division

Reviewed By



Jin-Pyo Hong
Technical Manager
EMC Team
Certification Division

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.



REVISION HISTORY

The revision history for this document is shown in table.

Version	Date	Description
HCT-E-1708-F004	August 07, 2017	Initial Release
HCT-E-1708-F004-1	August 08, 2017	Revision of USB Cable's manufacturer



TABLE OF CONTENTS

	PAGE
1. GENERAL INFORMATION	4
1.1 Description of EUT	4
1.2 Related Submittal(s) / Grant(s).....	5
1.3 Test Facility	5
1.4 Calibration of Measuring Instrument	5
1.5 Tested System Details.....	6
1.6 Cable Description	7
1.7 Noise Suppression Parts on Cable. (I/O Cable)	8
2. MEASUREMENT UNCERTAINTY	9
3. DESCRIPTION OF TEST	10
3.1 Measurement of Conducted Emission.....	10
3.2 Measurement of Radiated Measurements	10
4. PRELIMINARY TEST	13
4.1 Conducted Emission Test	13
4. 2 Radiated Emission Test	13
5. CONDUCTED AND RADIATED EMISSION TEST SUMMARY	14
5.1 Conducted Emission Test	14
5.2 Radiated Emission Test	27
6. LIST OF TEST EQUIPMENT	32
7. CONCLUSION	33

ATTACHMENT: TEST SETUP PHOTOGRAPHS



1. GENERAL INFORMATION

1.1 Description of EUT

Its basic purpose is used for communications.

FCC ID	ZNFV30A
Model	LG-VS996
Additional Model	LGVS996, VS996, LG-H931, LGH931, H931, LG-H933, LGH933, H933, LG-US998, LGUS998, US998
EUT Type	Multi-band CDMA/GSM/EDGE/WCDMA/LTE phone with WLAN, Bluetooth and RFID
TX Frequency	<p>824.70 MHz to 848.31 MHz (CDMA BC0) 1 851.25 MHz to 1 908.75 MHz (CDMA BC1) 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 B5) 1 852.4 MHz to 1 907.6 MHz (WCDMA B2) 1712.4 MHz to 1752.6 MHz (WCDMA B4) 1 850 MHz to 1 910 MHz (LTE B2) 1 710 MHz to 1 755 MHz (LTE B4) 824 MHz to 849 MHz (LTE B5) 2 496 MHz to 2 570 MHz (LTE B7) 699 MHz to 716 MHz (LTE B12) 777 MHz to 787 MHz (LTE B13) 704 MHz to 716 MHz (LTE B17) 1 850 MHz to 1 915 MHz (LTE B25) 2 305 MHz to 2 315 MHz (LTE B30) 1 710 MHz to 1 780 MHz (LTE B66) 2 402 MHz to 2 480 MHz (Bluetooth) 2 412 MHz to 2 462 MHz (WiFi 2.4 GHz) 5 180 MHz to 5 240 MHz (WiFi 5 GHz_UNII 1) 5 260 MHz to 5 320 MHz (WiFi 5 GHz_UNII 2A) 5 500 MHz to 5 720 MHz (WiFi 5 GHz_UNII 2C) 5 745 MHz to 5 825 MHz (WiFi 5 GHz_UNII 3) 13.56 MHz (RFID)</p>
RX Frequency	<p>869.70 MHz to 893.31 MHz (CDMA BC0) 1 931.25 MHz to 1 988.75 MHz (CDMA BC1) 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 B5) 1 932.4 MHz to 1 987.6 MHz (WCDMA B2) 2 112.4 MHz to 2 152.6 MHz (WCDMA B4) 1 930 MHz to 1 990 MHz (LTE B2) 2 110 MHz to 2 155 MHz (LTE B4)</p>



RX Frequency	869 MHz to 894 MHz (LTE B5) 2 516 MHz to 2 690 MHz (LTE B7) 729 MHz to 746 MHz (LTE B12) 746 MHz to 756 MHz (LTE B13) 734 MHz to 746 MHz (LTE B17) 1 925 MHz to 1 990 MHz (LTE B25) 717 MHz to 728 MHz (LTE B29) 2 350 MHz to 2 360 MHz (LTE B30) 2 496 MHz to 2 690 MHz (LTE B41) 5150 MHz to 5925 MHz (LTE B46) 2 110 MHz to 2 200 MHz (LTE B66) 2 402 MHz to 2 480 MHz (Bluetooth) 2 412 MHz to 2 462 MHz (WiFi 2.4 GHz) 5 180 MHz to 5 240 MHz (WiFi 5 GHz_UNII 1) 5 260 MHz to 5 320 MHz (WiFi 5 GHz_UNII 2A) 5 500 MHz to 5 720 MHz (WiFi 5 GHz_UNII 2C) 5 745 MHz to 5 825 MHz (WiFi 5 GHz_UNII 3) 13.56 MHz (RFID)
--------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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 C63.4-2014.

Measurement Facilities	Registration Number
Radiated Field strength measurement facility 3 m Semi Anechoic chamber	90661 (July 07, 2015)
Radiated Field strength measurement facility 10 m Semi Anechoic chamber	

1.4 Calibration of Measuring Instrument

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturers recommendations for utilizing calibration equipments, which is traceable to recognized national standards. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2006).



1.5 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Model Name	Serial Number	Manufacturer	FCC ID / DoC
EUT	LG-VS996	-	LG	ZNFV30A
USB Cable	EAD63849231	-	Ningbo	-
USB Cable	EAD64506502	-	Luxshare	-
Earphone	EAB62910502	-	CRESYN	-
Notebook PC	C1501W	-	GOOGLE	-
Notebook PC adaptor	PA-1600-23	-	LITE-On (Europe)	-
USB mouse	G100s	-	Logitech	-
SD card	256 GB EVD+UHS -1 microSDXC UI	-	SAMSUNG	-



1.6 Cable Description

USB Cable: Nningbo (EAD63849231)

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	USB type C	Y	Y	(P,D)1.0
	Earphone	N/A	Y	(D)1.2
Notebook PC	USB type C (Adaptor)	Y	N/A	(P)1.8
	USB type A	Y	Y	(P,D)1.0
	USB type A (Mouse)	N/A	Y	(D)2.0

* The marked “(D)” means the data cable and “(P)” means the power cable.

USB Cable: Luxshare (EAD64506502)

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	USB type C	Y	Y	(P,D)1.0
	Earphone	N/A	Y	(D)1.2
Notebook PC	USB type C (Adaptor)	Y	N/A	(P)1.8
	USB type C	Y	Y	(P,D)1.0
	USB type A (Mouse)	N/A	Y	(D)2.0

* The marked “(D)” means the data cable and “(P)” means the power cable.



1.7 Noise Suppression Parts on Cable. (I/O Cable)

USB Cable: Nningbo (EAD63849231)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
EUT	USB type C	N	N/A	Y	Both End
	Earphone	N	N/A	Y	EUT End
Notebook PC	USB type C (Adaptor)	N	N/A	Y	Notebook PC End
	USB type A	N	N/A	Y	EUT End
	USB type A (Mouse)	N	N/A	Y	Notebook PC End

USB Cable: Luxshare (EAD64506502)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
EUT	USB type C	N	N/A	Y	Both End
	Earphone	N	N/A	Y	EUT End
Notebook PC	USB type C (Adaptor)	N	N/A	Y	Notebook PC End
	USB type C	N	N/A	Y	EUT End
	USB type A (Mouse)	N	N/A	Y	Notebook PC End



2. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Emission (0.15 MHz to 30 MHz)	1.82 dB ($k = 2$)
Radiated Emissions (30 MHz to 1 GHz)	5.20 dB ($k = 2$)
Radiated Emissions (1 GHz to 18 GHz)	5.24 dB ($k = 2$)
Radiated Emissions (18 GHz to 40 GHz)	5.40 dB ($k = 2$)



3. DESCRIPTION OF TEST

3.1 Measurement of Conducted Emission

The test procedure was in accordance with ANSI C63.4-2014, Clause 7.3

- 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.*



3.2 Measurement of Radiated Emission

The test procedure was in accordance with ANSI C63.4-2014, Clause 8.3

- 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. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.(1 GHz to 40 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

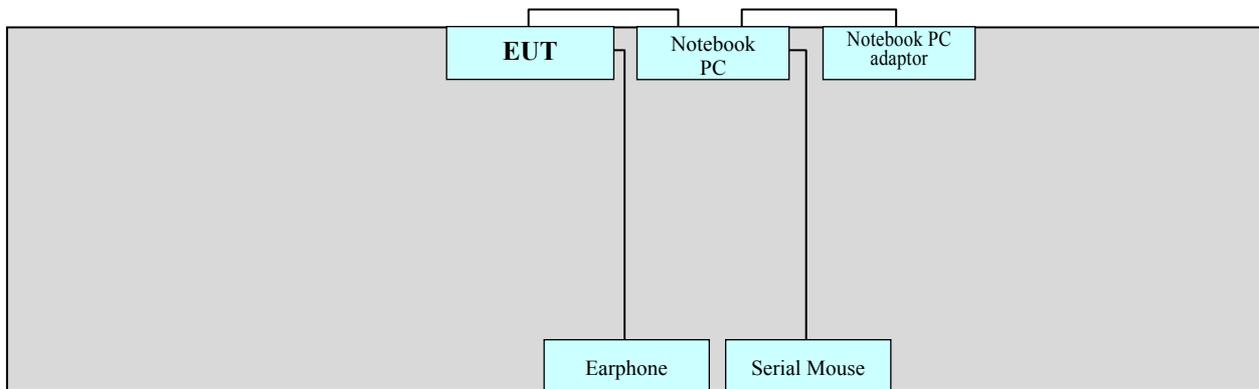


3.2.1 Frequency Range of Radiated Measurements

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

3.3 Configuration of Tested System



Non-Conductive Table
 Power Line: 120 VAC, 60 Hz



4. PRELIMINARY TEST

4.1 Conducted Emission Test

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

Operation Mode: Data Communication mode

4.2 Radiated Emission Test

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

Operation Mode: Data Communication mode



5. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

5.1 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 Communication mode
Kind of Test Site	Shielded Room
Temperature	23.0 / 24.1 °C
Relative Humidity	54.9 / 55.2 %
Test Date	July 31, 2017 / August 05, 2017

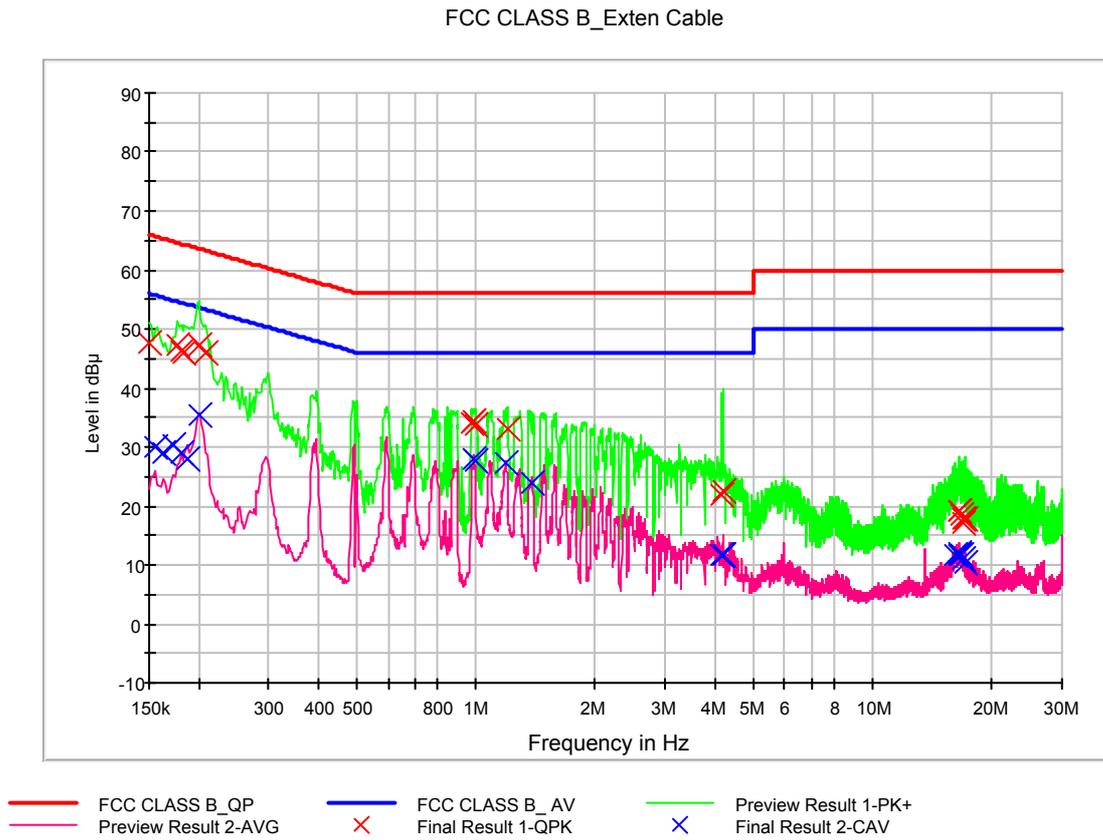
- Calculation Formula:

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



USB Cable: Nningbo (EAD63849231)

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	47.6	9.000	L1	9.7	18.4	66.0
0.176000	47.2	9.000	L1	9.7	17.5	64.7
0.180000	46.1	9.000	L1	9.7	18.4	64.5
0.184000	46.0	9.000	L1	9.7	18.3	64.3
0.200000	47.3	9.000	L1	9.7	16.3	63.6
0.208000	45.9	9.000	L1	9.7	17.4	63.3
0.976000	33.9	9.000	L1	9.8	22.1	56.0
0.988000	34.3	9.000	L1	9.8	21.7	56.0
0.998000	33.6	9.000	L1	9.8	22.4	56.0
1.196000	32.9	9.000	L1	9.8	23.1	56.0
4.138000	21.8	9.000	L1	10.0	34.2	56.0
4.184000	22.6	9.000	L1	10.0	33.4	56.0
16.532000	19.2	9.000	L1	10.7	40.8	60.0
16.544000	19.1	9.000	L1	10.7	40.9	60.0
16.730000	18.3	9.000	L1	10.7	41.7	60.0
16.836000	17.9	9.000	L1	10.7	42.1	60.0
16.936000	17.3	9.000	L1	10.7	42.7	60.0
17.128000	17.8	9.000	L1	10.7	42.2	60.0

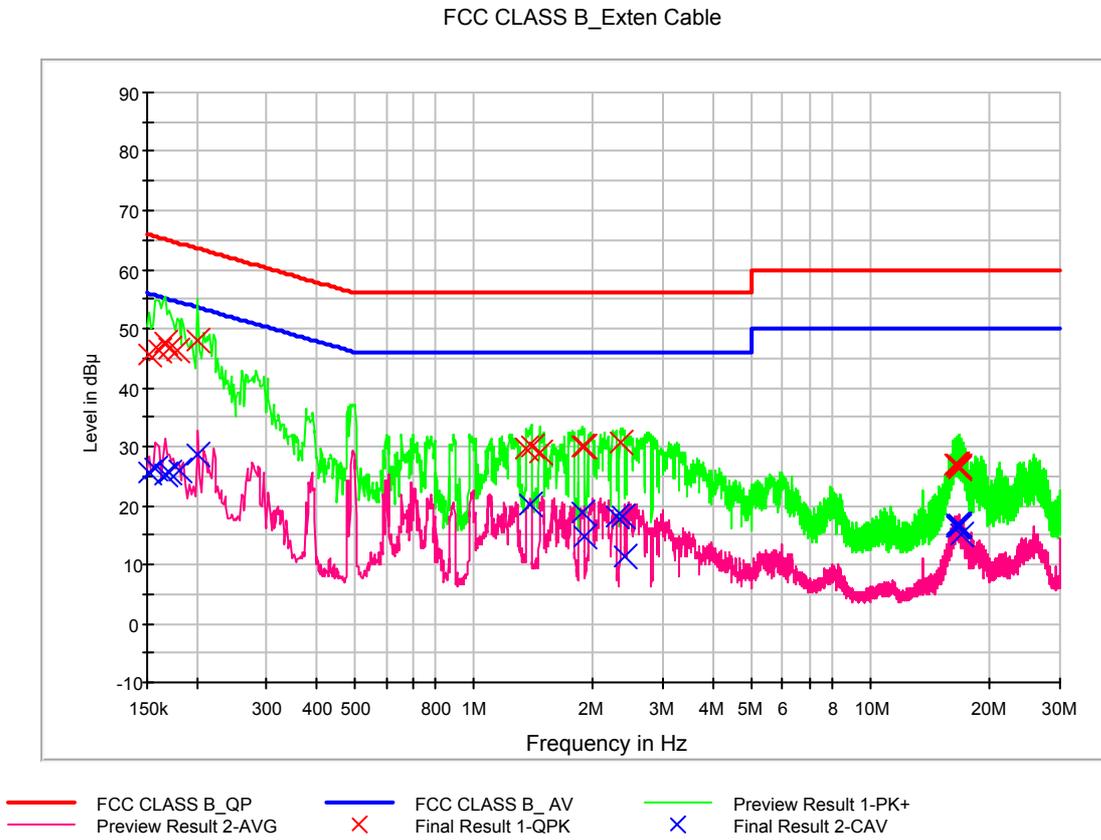


CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.156000	29.9	9.000	L1	9.7	25.8	55.7
0.162000	28.9	9.000	L1	9.7	26.5	55.4
0.172000	30.3	9.000	L1	9.7	24.5	54.9
0.180000	28.9	9.000	L1	9.7	25.5	54.5
0.188000	27.9	9.000	L1	9.7	26.2	54.1
0.202000	35.3	9.000	L1	9.7	18.2	53.5
0.986000	27.8	9.000	L1	9.8	18.2	46.0
0.992000	27.5	9.000	L1	9.8	18.5	46.0
1.188000	27.3	9.000	L1	9.8	18.7	46.0
1.388000	24.1	9.000	L1	9.8	21.9	46.0
4.138000	11.6	9.000	L1	10.0	34.4	46.0
4.184000	11.6	9.000	L1	10.0	34.4	46.0
16.206000	11.8	9.000	L1	10.7	38.2	50.0
16.532000	11.8	9.000	L1	10.7	38.2	50.0
16.546000	12.2	9.000	L1	10.7	37.8	50.0
16.730000	11.6	9.000	L1	10.7	38.4	50.0
16.936000	11.2	9.000	L1	10.7	38.8	50.0
17.128000	10.2	9.000	L1	10.7	39.8	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)
0.152000	45.7	9.000	N	9.7	20.2	65.9
0.160000	46.3	9.000	N	9.7	19.2	65.5
0.166000	47.7	9.000	N	9.7	17.5	65.2
0.170000	46.7	9.000	N	9.7	18.2	65.0
0.178000	46.2	9.000	N	9.7	18.4	64.6
0.200000	47.9	9.000	N	9.7	15.7	63.6
1.360000	29.8	9.000	N	9.8	26.2	56.0
1.394000	29.9	9.000	N	9.8	26.1	56.0
1.474000	29.1	9.000	N	9.8	26.9	56.0
1.882000	30.1	9.000	N	9.9	25.9	56.0
1.888000	30.1	9.000	N	9.9	25.9	56.0
2.356000	30.5	9.000	N	9.9	25.5	56.0
16.346000	27.0	9.000	N	10.7	33.0	60.0
16.454000	26.8	9.000	N	10.7	33.2	60.0
16.472000	26.7	9.000	N	10.7	33.3	60.0
16.748000	26.7	9.000	N	10.7	33.3	60.0
16.754000	26.5	9.000	N	10.7	33.5	60.0
16.768000	26.4	9.000	N	10.7	33.6	60.0



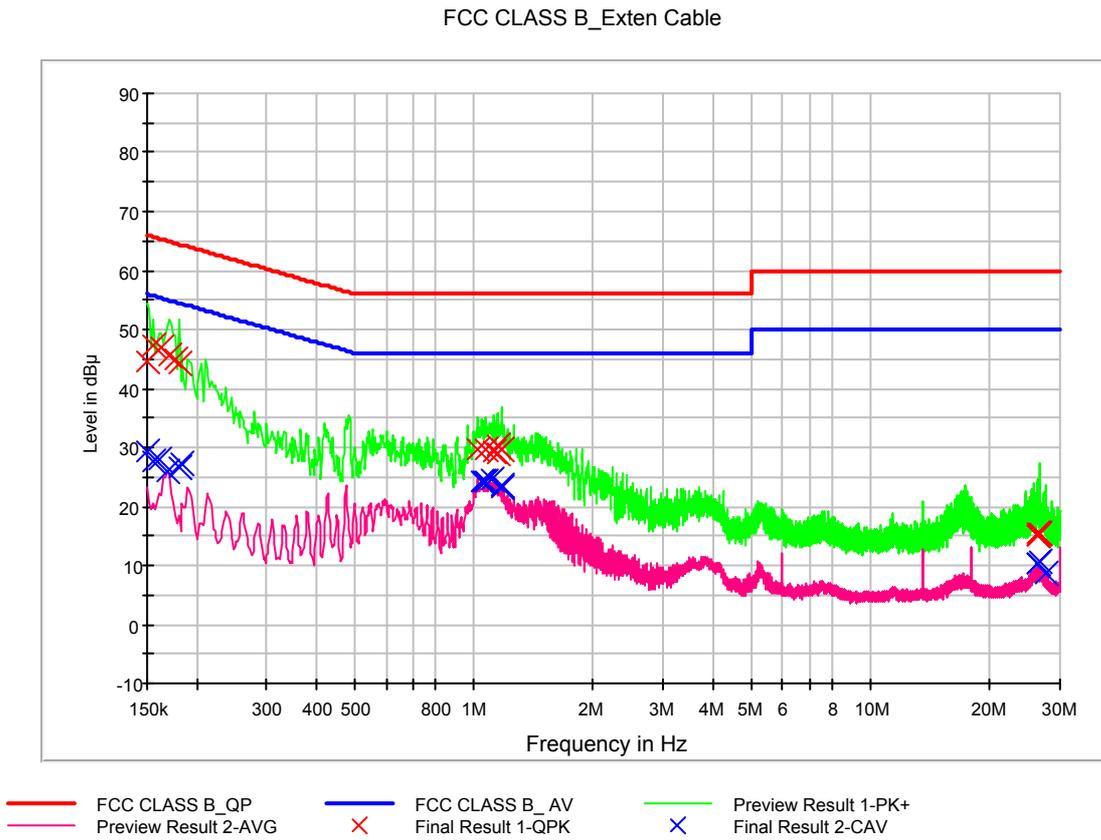
CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	25.6	9.000	N	9.7	30.3	55.9
0.158000	26.1	9.000	N	9.7	29.5	55.6
0.166000	25.1	9.000	N	9.7	30.1	55.2
0.170000	25.7	9.000	N	9.7	29.2	55.0
0.180000	25.8	9.000	N	9.7	28.7	54.5
0.202000	28.8	9.000	N	9.7	24.8	53.5
1.392000	20.2	9.000	N	9.8	25.8	46.0
1.872000	18.7	9.000	N	9.9	27.3	46.0
1.896000	14.8	9.000	N	9.9	31.2	46.0
2.278000	18.2	9.000	N	9.9	27.8	46.0
2.360000	18.0	9.000	N	9.9	28.0	46.0
2.402000	11.3	9.000	N	9.9	34.7	46.0
16.458000	16.4	9.000	N	10.7	33.6	50.0
16.466000	16.6	9.000	N	10.7	33.4	50.0
16.472000	16.9	9.000	N	10.7	33.1	50.0
16.758000	16.7	9.000	N	10.7	33.3	50.0
16.768000	16.5	9.000	N	10.7	33.5	50.0
16.862000	15.0	9.000	N	10.7	35.0	50.0



USB Cable: Luxshare (EAD64506502)

Figure 3: 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	44.5	9.000	L1	9.7	21.5	66.0
0.156000	47.2	9.000	L1	9.7	18.4	65.7
0.162000	47.1	9.000	L1	9.7	18.3	65.4
0.170000	45.5	9.000	L1	9.7	19.5	65.0
0.176000	44.8	9.000	L1	9.7	19.9	64.7
0.180000	44.3	9.000	L1	9.7	20.2	64.5
1.024000	29.8	9.000	L1	9.8	26.2	56.0
1.074000	29.6	9.000	L1	9.8	26.4	56.0
1.120000	29.4	9.000	L1	9.8	26.6	56.0
1.142000	30.3	9.000	L1	9.8	25.7	56.0
1.146000	29.0	9.000	L1	9.8	27.0	56.0
1.178000	29.6	9.000	L1	9.8	26.4	56.0
26.448000	15.4	9.000	L1	10.9	44.6	60.0
26.474000	15.2	9.000	L1	10.9	44.8	60.0
26.482000	15.2	9.000	L1	10.9	44.8	60.0
26.486000	15.0	9.000	L1	10.9	45.0	60.0
26.496000	15.3	9.000	L1	10.9	44.7	60.0
26.536000	15.5	9.000	L1	10.9	44.5	60.0

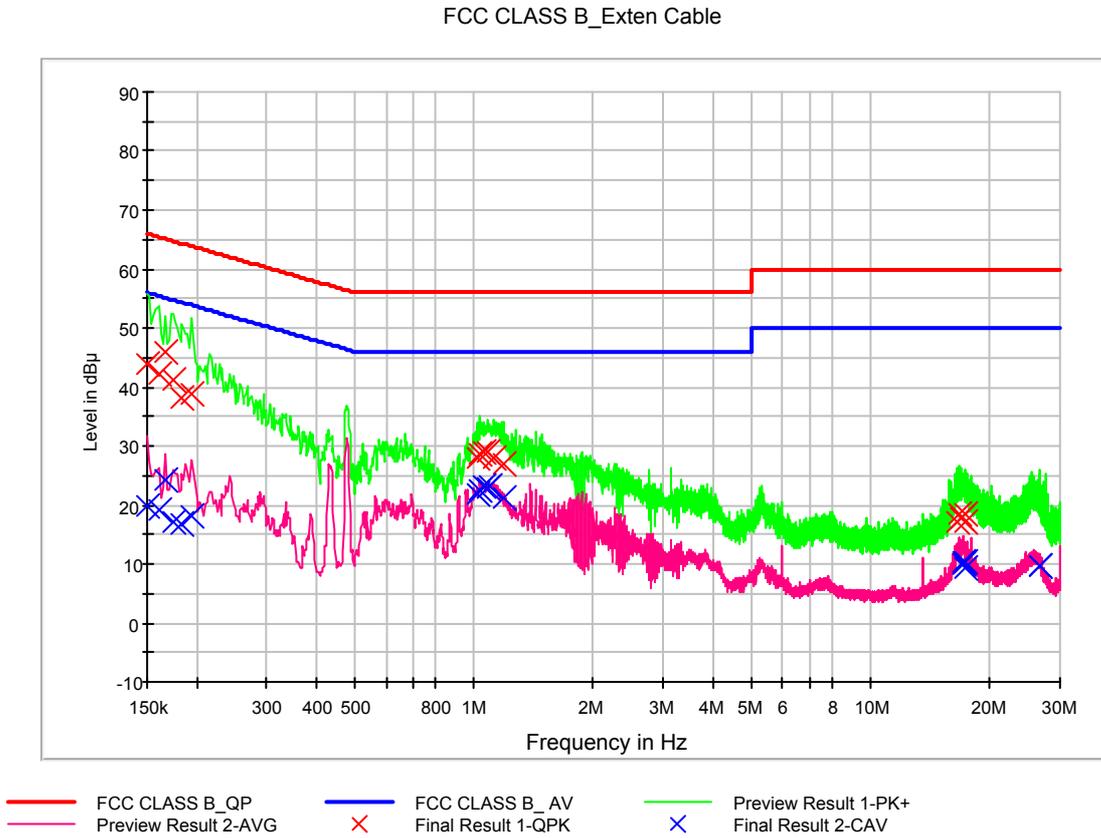


CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	29.3	9.000	L1	9.7	26.7	56.0
0.156000	27.6	9.000	L1	9.7	28.1	55.7
0.160000	27.9	9.000	L1	9.7	27.6	55.5
0.168000	26.0	9.000	L1	9.7	29.1	55.1
0.180000	26.7	9.000	L1	9.7	27.8	54.5
0.184000	27.1	9.000	L1	9.7	27.2	54.3
1.046000	24.2	9.000	L1	9.8	21.8	46.0
1.062000	24.2	9.000	L1	9.8	21.8	46.0
1.076000	24.1	9.000	L1	9.8	21.9	46.0
1.102000	24.6	9.000	L1	9.8	21.4	46.0
1.172000	23.6	9.000	L1	9.8	22.4	46.0
1.178000	23.3	9.000	L1	9.8	22.7	46.0
26.464000	10.4	9.000	L1	10.9	39.6	50.0
26.474000	10.5	9.000	L1	10.9	39.5	50.0
26.486000	10.4	9.000	L1	10.9	39.6	50.0
26.498000	10.5	9.000	L1	10.9	39.5	50.0
26.536000	10.5	9.000	L1	10.9	39.5	50.0
27.648000	8.8	9.000	L1	11.0	41.2	50.0



Figure 4: 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	43.8	9.000	N	9.7	22.2	66.0
0.160000	42.0	9.000	N	9.7	23.4	65.5
0.166000	45.9	9.000	N	9.7	19.2	65.2
0.174000	41.1	9.000	N	9.7	23.6	64.8
0.184000	38.0	9.000	N	9.7	26.3	64.3
0.194000	38.8	9.000	N	9.7	25.1	63.9
1.016000	27.9	9.000	N	9.8	28.1	56.0
1.036000	28.7	9.000	N	9.8	27.3	56.0
1.052000	29.1	9.000	N	9.8	26.9	56.0
1.084000	28.9	9.000	N	9.8	27.1	56.0
1.126000	27.9	9.000	N	9.8	28.1	56.0
1.188000	26.8	9.000	N	9.8	29.2	56.0
16.594000	17.3	9.000	N	10.7	42.7	60.0
16.644000	18.3	9.000	N	10.7	41.7	60.0
16.824000	17.8	9.000	N	10.7	42.2	60.0
16.850000	17.8	9.000	N	10.7	42.2	60.0
17.272000	17.2	9.000	N	10.7	42.8	60.0
17.358000	18.6	9.000	N	10.7	41.4	60.0



CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	19.7	9.000	N	9.7	36.3	56.0
0.160000	19.1	9.000	N	9.7	36.3	55.5
0.166000	24.2	9.000	N	9.7	31.0	55.2
0.174000	17.0	9.000	N	9.7	37.8	54.8
0.184000	16.7	9.000	N	9.7	37.6	54.3
0.194000	18.3	9.000	N	9.7	35.6	53.9
1.016000	21.8	9.000	N	9.8	24.2	46.0
1.038000	22.7	9.000	N	9.8	23.3	46.0
1.052000	23.1	9.000	N	9.8	22.9	46.0
1.082000	22.9	9.000	N	9.8	23.1	46.0
1.090000	23.1	9.000	N	9.8	22.9	46.0
1.188000	21.2	9.000	N	9.8	24.8	46.0
17.090000	10.2	9.000	N	10.7	39.8	50.0
17.114000	10.1	9.000	N	10.7	39.9	50.0
17.260000	10.2	9.000	N	10.7	39.8	50.0
17.272000	9.2	9.000	N	10.7	40.8	50.0
26.650000	9.7	9.000	N	10.9	40.3	50.0
26.658000	9.6	9.000	N	10.9	40.4	50.0



5.2 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 Communication mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	23.9 °C
Relative Humidity	59.3 %
Test Date	August 04, 2017

- 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



USB Cable: Nningbo (EAD63849231)

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
33.826400	30.9	100.0	V	163.0	22.1	9.1	40.0
34.488000	31.1	124.0	V	169.0	22.1	8.9	40.0
38.717600	26.7	150.0	V	198.0	22.6	13.3	40.0
76.996000	24.4	274.0	V	46.0	19.5	15.6	40.0
102.147200	26.7	350.0	V	326.0	18.9	16.8	43.5
271.131200	31.3	100.0	H	72.0	23.0	14.7	46.0

USB Cable: Luxshare (EAD64506502)

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
32.623200	35.3	100.0	V	119.0	22.0	4.7	40.0
33.818400	33.3	100.0	V	172.0	22.1	6.7	40.0
38.755200	27.4	193.0	V	195.0	22.6	12.6	40.0
54.690400	25.5	100.0	V	232.0	23.1	14.5	40.0
102.492000	25.3	320.0	H	316.0	19.0	18.2	43.5
227.215200	32.4	238.0	H	92.0	21.3	13.6	46.0



-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: 3 MHz)
Highest Operating Frequency	5 825 MHz
Upper Frequency of Measurement Range	1 GHz to 29.125 GHz
Operation Mode	Data Communication mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	23.9 °C
Relative Humidity	59.3 %
Test Date	August 04, 2017

- 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



USB Cable: Nningbo (EAD63849231)

Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
1033.760000	31.4	374.4	V	95.0	-14.0	42.6	74.0
1143.955000	35.4	348.6	V	193.0	-13.6	38.6	74.0
1507.440000	33.8	348.6	H	184.0	-12.6	40.2	74.0
2529.155000	34.5	399.8	V	326.0	-9.6	39.5	74.0
4046.550000	38.8	361.4	V	200.0	-6.6	35.2	74.0
4889.030000	39.1	149.7	H	209.0	-4.9	34.9	74.0

Frequency (MHz)	CAverage (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
1033.760000	18.4	374.4	V	95.0	-14.0	35.6	54.0
1143.955000	21.5	348.6	V	193.0	-13.6	32.5	54.0
1507.440000	20.8	348.6	H	184.0	-12.6	33.2	54.0
2529.155000	21.6	399.8	V	326.0	-9.6	32.4	54.0
4046.550000	25.6	361.4	V	200.0	-6.6	28.4	54.0
4889.030000	26.3	149.7	H	209.0	-4.9	27.7	54.0



USB Cable: Luxshare (EAD64506502)

Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
1041.490000	32.8	392.5	V	212.0	-13.9	41.2	74.0
1062.150000	32.6	400.0	V	134.0	-13.9	41.4	74.0
1149.975000	31.5	399.9	V	248.0	-13.6	42.5	74.0
1234.095000	36.8	399.9	V	159.0	-13.4	37.2	74.0
2196.520000	33.6	99.8	V	50.0	-11.0	40.4	74.0
3031.070000	36.2	99.9	H	209.0	-8.7	37.8	74.0

Frequency (MHz)	CAverage (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
1041.490000	18.6	392.5	V	212.0	-13.9	35.4	54.0
1062.150000	18.3	400.0	V	134.0	-13.9	35.7	54.0
1149.975000	18.5	399.9	V	248.0	-13.6	35.5	54.0
1234.095000	21.4	399.9	V	159.0	-13.4	32.6	54.0
2196.520000	20.5	99.8	V	50.0	-11.0	33.5	54.0
3031.070000	23.4	99.9	H	209.0	-8.7	30.6	54.0



6. 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 type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	12.23.2016
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	06.27.2017
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	1 year	12.23.2016
<input type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	05.22.2017
<input checked="" type="checkbox"/> Software	Rohde & Schwarz	EMC32 VER8.54.0	-	-	-
<u>Radiated Emission</u>					
-For measurement below 1 GHz					
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	11.04.2016
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	04.05.2017
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9168	760	2 year	04.06.2017
<input checked="" type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	N/A	-
<input checked="" type="checkbox"/> Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
<input checked="" type="checkbox"/> Turn Table	EMCO	1060-2M	-	N/A	-
<input type="checkbox"/> Turn Table controller	EMCO	2090	9702-1224	N/A	-
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	05.16.2017
<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 VER8.40.0	-	-	-
-For measurement above 1 GHz					
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	831564103	1 year	11.04.2016
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	04.05.2017
<input type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	N/A	-
<input type="checkbox"/> Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
<input checked="" type="checkbox"/> Antenna master	INNCO Systems	MA4000-XP-ET	48709515	N/A	-
<input checked="" type="checkbox"/> Antenna master controller	INNCO Systems	CO 3000	CO 3000/870/ 35990515/L	N/A	-
<input checked="" type="checkbox"/> Turn Table	EMCO	1060-2M	-	N/A	-
<input checked="" type="checkbox"/> Power Amplifier	CERNEX	CBLU5183530	24348	1 year	06.01.2017
<input type="checkbox"/> Turn Table controller	EMCO	2090	9702-1224	N/A	-
<input type="checkbox"/> Power Amplifier	CERNEX	CBLU1183540	21691	1 year	06.28.2017
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	10.12.2016
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170541	2 year	09.03.2015
<input checked="" type="checkbox"/> Power Amplifier	CERNEX	CBL18265035	21873	1 year	01.19.2017
<input checked="" type="checkbox"/> Power Amplifier	CERNEX	CBL26405040	19660	1 year	07.11.2017
<input type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	1300	2 year	08.25.2016
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU 26	100241	1 year	05.16.2017
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
<input checked="" type="checkbox"/> Software	Rohde & Schwarz	EMC32 VER8.40.0	-	-	-



7. CONCLUSION

The data collected shows that the **EUT Type: Multi-band CDMA/GSM/EDGE/WCDMA/LTE phone with WLAN, Bluetooth and RFID, Model: LG-VS996, FCC ID: ZNFV30A** complies with §15.107 and §15.109 of the FCC rules.