

EMI TEST REPORT

FCC CERTIFICATION

Applicant:

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

Date of Receipt: February 26, 2018**Date of Issue:** March 23, 2018**Test Report No.** HCT-EM-1803-FC016**FCC ID :****ZNFG710VM**

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 : LM-G710VM
Additional Model Name : LMG710VM, G710VM, LG-G710PM, LGG710PM, G710PM,
LM-G710ULM, LMG710ULM, G710ULM
Date of Test : March 08, 2018 – March 13, 2018
: March 15, 2018 – March 22, 2018

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

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REVISION HISTORY

The revision history for this document is shown in table.

Report No.	Issue Date	Information About Changes
HCT-EM-1803-FC016	March 23, 2018	Initial Release



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1. GENERAL INFORMATION

1.1 Description of EUT

Its basic purpose is used for communications.

FCC ID	ZNFG710VM
Model	LM-G710VM
Additional Model	LMG710VM, G710VM, LG-G710PM, LGG710PM, G710PM, LM-G710ULM, LMG710ULM, G710ULM
EUT Type	Multi-band CDMA/GSM/EDGE/WCDMA/LTE phone with WLAN, Bluetooth and RFID
TX Frequency	824.70 MHz to 848.31 MHz (CDMA BC0) 1 851.25 MHz to 1 908.75 MHz (CDMA BC1) 817.90 MHz to 823.10 MHz (CDMA BC10) 824.20 MHz to 848.80 MHz (GSM 850) 1 850.20 MHz to 1 909.80 MHz (GSM 1 900) 1 852.4 MHz to 1 907.6 MHz (WCDMA B2) 1712.4 MHz to 1752.6 MHz (WCDMA B4) 826.40 MHz to 846.60 MHz (WCDMA B5) 1 850.7 MHz to 1 909.3 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) 814 MHz to 849 MHz (LTE B26) 2 496 MHz to 2 690 MHz (LTE B41) 3 550 MHz to 3 700 MHz (LTE B48) 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 (NFC)
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) 869.20 MHz to 893.80 MHz (GSM 850) 1 930.20 MHz to 1 989.80 MHz (GSM 1 900) 1 932.4 MHz to 1 987.6 MHz (WCDMA B2) 2 112.4 MHz to 2 152.6 MHz (WCDMA B4) 871.40 MHz to 891.60 MHz (WCDMA B5) 1 930 MHz to 1 990 MHz (LTE B2) 2 110 MHz to 2 155 MHz (LTE B4) 869 MHz to 894 MHz (LTE B5)



RX Frequency	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) 859 MHz to 894 MHz (LTE B26) 2 496 MHz to 2 690 MHz (LTE B41) 5150 MHz to 5925 MHz (LTE B46) 3 550 MHz to 3 700 MHz (LTE B48) 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 (NFC)
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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. The Normalized site attenuations (30 MHz to 1GHz) and Site validation (1 GHz to 18 GHz) were performed in accordance with the standard in ANSI C63.4-2014

Measurement Facilities	Registration Number
Radiated Field strength measurement facility 3 m Semi Anechoic chamber	90661
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:

Type: C to C

Device Type	Model Name	Serial Number	Manufacturer	FCC ID / DoC
EUT	LM-G710VM	-	LG	ZNFG710VM
Data cable	EAD64506501	-	Ningbo Broad	-
Data cable	EAD64506502	-	Luxshare	-
Earphone	EAB64168751	-	I-SOUND	-
Notebook PC	C1501W	-	GOOGLE	DoC
Notebook PC adaptor	PA-1600-23	-	LITE-On (Europe)	-
USB mouse	M-U0026	-	Logitech	-
Micro SD card	256 EVO+UHS-I microSDXC U1	-	SAMSUNG	-

Type: C to USB

Device Type	Model Name	Serial Number	Manufacturer	FCC ID / DoC
EUT	LM-G710VM	-	LG	ZNFG710VM
Data cable	EAD64746103	-	Ningbo Broad	-
Earphone	EAB64168751	-	I-SOUND	-
Notebook PC	ProBook6560b	5CB2053MXF	HP	DoC
Notebook PC adaptor	Series PPP009L-E	-	LITE-On Technology	-
RJ45 cable	-	-	-	-
Gateway	TL-WR747N	-	TP-LINK	-
Gateway adaptor	T120150-2H1	-	TP-LINK	-
Serial mouse	Serial 2 button mouse	02031069	Radio shack	FSUGMZE3
Micro SD card	256GB EVO+UHS-I microSDXC U1	-	SAMSUNG	-



1.6 Cable Description

Type: C to C

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)	N/A	N	(D)1.8
	USB Type A (Mouse)	N/A	Y	(D)2.0

Type: C to USB

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	RJ 45	N/A	N	(D)1.6
	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.



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

Type: C to C

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	N	Notebook PC End
	USB Type A (Mouse)	N	N/A	Y	Notebook PC End

Type: C to USB

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	RJ 45	N	N/A	N	N/A
	Serial (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

- 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.
- The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- 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.
- 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.
- 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 ($\mu\text{V}/\text{m}$)	Quasi-Peak ($\text{dB}(\mu\text{V})/\text{m}$)
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 ($\text{dB}(\mu\text{V})/\text{m}$)	Average ($\text{dB}(\mu\text{V})/\text{m}$)
Above 1 000	3	74	54



3.2.1 Frequency Range of Radiated Measurements

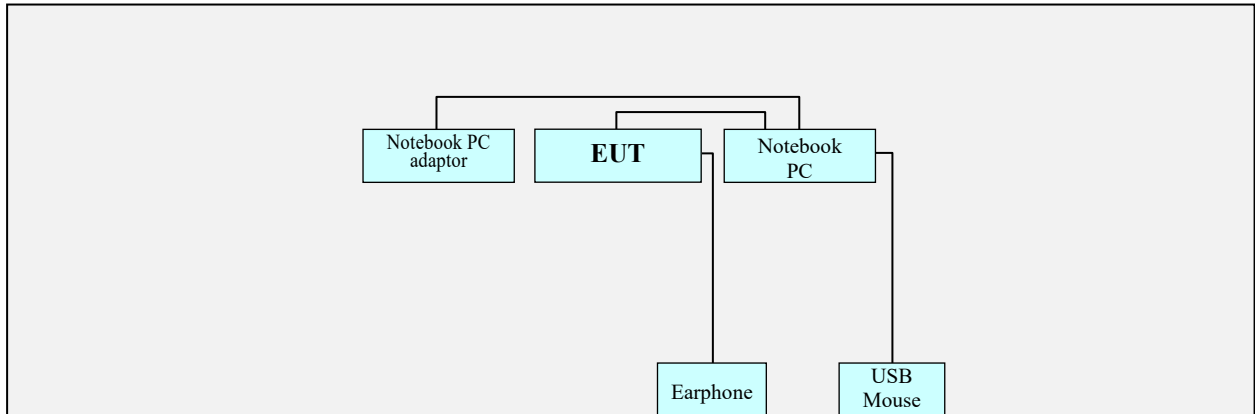
An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

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



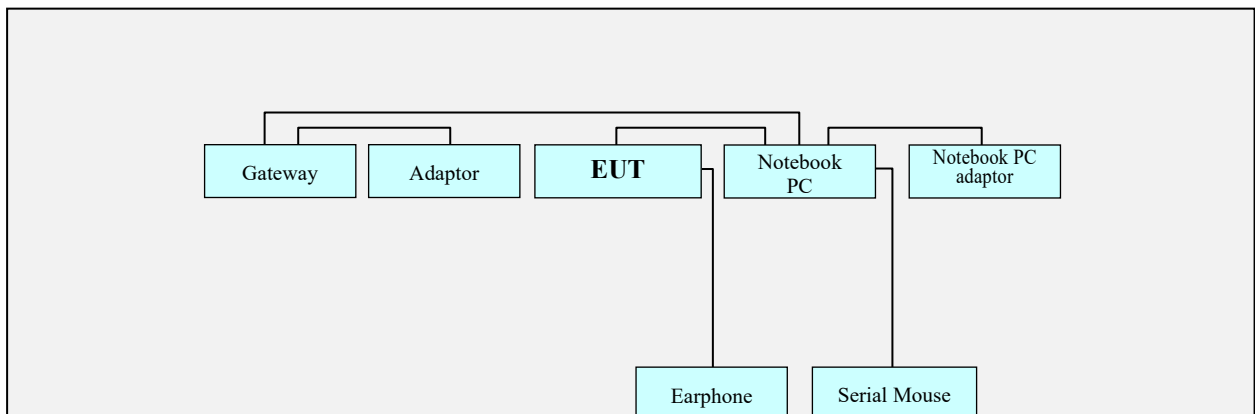
3.3 Configuration of Tested System

Type: C to C



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

Type: C to USB



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

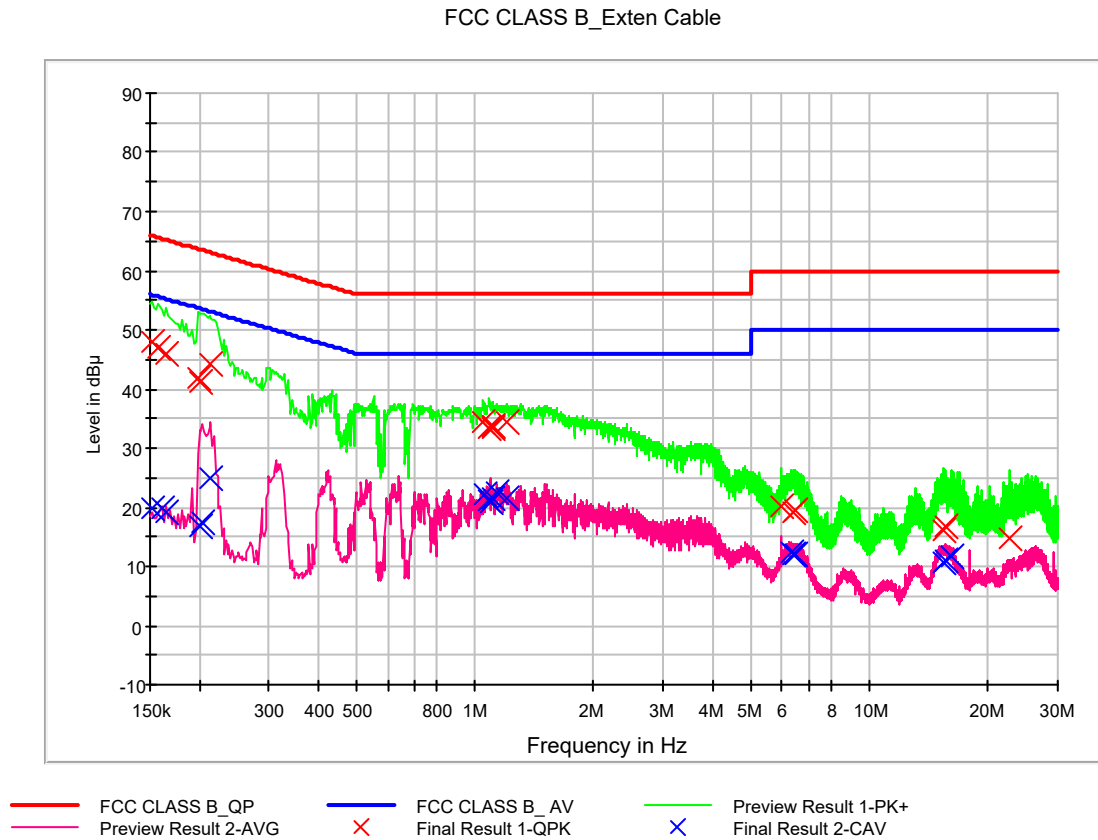
The test results of conducted emission at mains ports provide the following information:

Type: C to C

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
Worst Data Cable	Luxshare (EAD64506502)
Kind of Test Site	Shielded Room
Temperature	23.2 °C
Relative Humidity	37.9 %
Test Date	March 15, 2018

- 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: Conducted Emission, AC Main Port, Line (L1)**



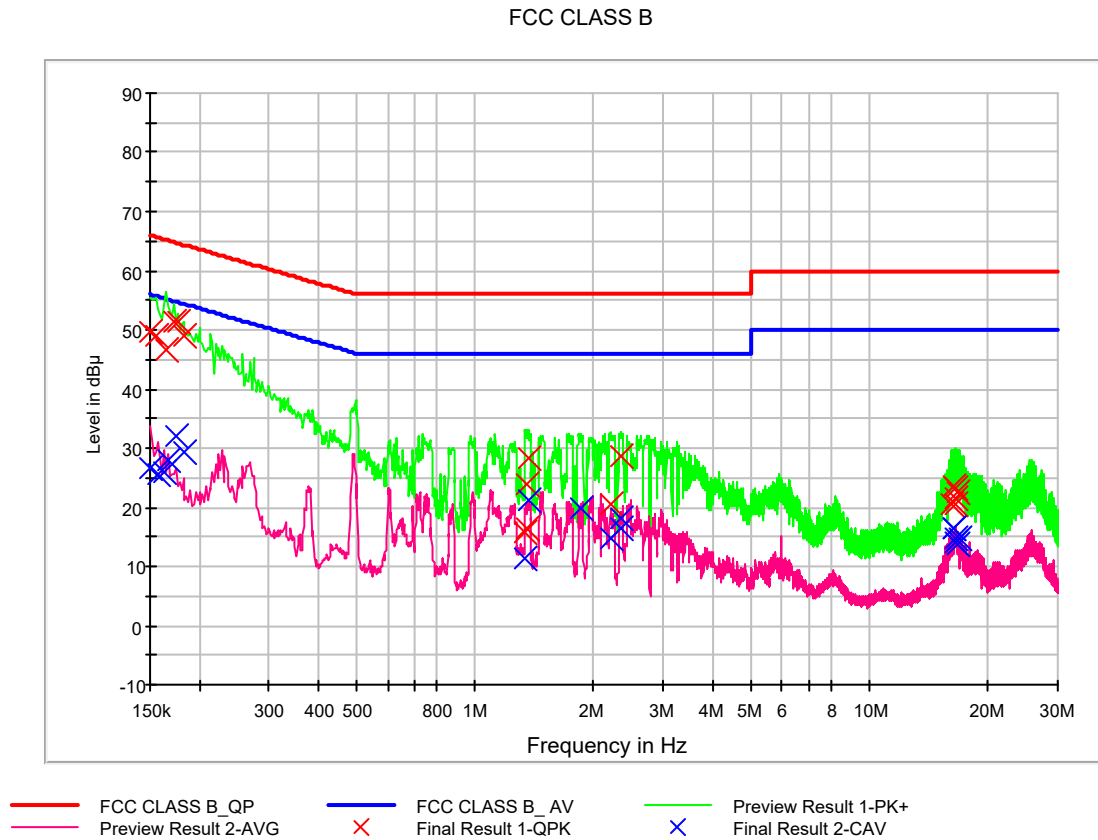
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	47.8	9.000	L1	9.7	18.1	65.9
0.158000	46.9	9.000	L1	9.7	18.7	65.6
0.164000	45.9	9.000	L1	9.7	19.4	65.3
0.198000	41.7	9.000	L1	9.7	22.0	63.7
0.202000	41.3	9.000	L1	9.7	22.2	63.5
0.212000	44.3	9.000	L1	9.7	18.9	63.1
1.050000	34.3	9.000	L1	9.8	21.7	56.0
1.088000	33.2	9.000	L1	9.8	22.8	56.0
1.102000	33.8	9.000	L1	9.8	22.2	56.0
1.108000	33.6	9.000	L1	9.8	22.4	56.0
1.112000	33.3	9.000	L1	9.8	22.7	56.0
1.200000	34.4	9.000	L1	9.8	21.6	56.0
5.998000	20.1	9.000	L1	10.0	39.9	60.0
6.412000	19.1	9.000	L1	10.0	40.9	60.0
6.452000	19.4	9.000	L1	10.0	40.6	60.0
15.404000	16.1	9.000	L1	10.3	43.9	60.0
15.542000	16.7	9.000	L1	10.3	43.3	60.0
22.674000	14.7	9.000	L1	10.4	45.3	60.0



CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	19.9	9.000	L1	9.7	36.0	55.9
0.160000	19.7	9.000	L1	9.7	35.8	55.5
0.164000	19.1	9.000	L1	9.7	36.1	55.3
0.200000	16.7	9.000	L1	9.7	36.9	53.6
0.204000	17.6	9.000	L1	9.7	35.8	53.4
0.214000	24.9	9.000	L1	9.7	28.1	53.0
1.062000	22.2	9.000	L1	9.8	23.8	46.0
1.084000	21.1	9.000	L1	9.8	24.9	46.0
1.090000	20.9	9.000	L1	9.8	25.1	46.0
1.108000	21.5	9.000	L1	9.8	24.5	46.0
1.134000	22.6	9.000	L1	9.8	23.4	46.0
1.200000	21.4	9.000	L1	9.8	24.6	46.0
6.306000	12.4	9.000	L1	10.0	37.6	50.0
6.410000	12.0	9.000	L1	10.0	38.0	50.0
6.452000	11.9	9.000	L1	10.0	38.1	50.0
15.404000	10.8	9.000	L1	10.3	39.2	50.0
15.542000	11.1	9.000	L1	10.3	38.9	50.0
16.218000	11.8	9.000	L1	10.3	38.2	50.0

**Figure 2: 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	49.5	9.000	N	9.6	16.5	66.0
0.156000	49.0	9.000	N	9.6	16.6	65.7
0.164000	46.7	9.000	N	9.6	18.5	65.3
0.172000	51.3	9.000	N	9.6	13.5	64.9
0.176000	51.3	9.000	N	9.6	13.3	64.7
0.182000	48.9	9.000	N	9.6	15.5	64.4
1.342000	15.9	9.000	N	9.7	40.1	56.0
1.346000	16.4	9.000	N	9.7	39.6	56.0
1.350000	24.0	9.000	N	9.7	32.0	56.0
1.374000	28.3	9.000	N	9.7	27.7	56.0
2.198000	20.5	9.000	N	9.7	35.5	56.0
2.352000	28.5	9.000	N	9.7	27.5	56.0
16.168000	20.5	9.000	N	10.1	39.5	60.0
16.316000	23.6	9.000	N	10.1	36.4	60.0
16.438000	23.3	9.000	N	10.1	36.7	60.0
16.462000	21.7	9.000	N	10.1	38.3	60.0
16.474000	20.7	9.000	N	10.1	39.3	60.0
16.738000	22.5	9.000	N	10.1	37.5	60.0



CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	26.6	9.000	N	9.6	29.4	56.0
0.158000	25.7	9.000	N	9.6	29.9	55.6
0.162000	26.0	9.000	N	9.6	29.4	55.4
0.166000	27.9	9.000	N	9.6	27.2	55.2
0.174000	32.2	9.000	N	9.6	22.6	54.8
0.182000	29.2	9.000	N	9.6	25.2	54.4
1.344000	11.4	9.000	N	9.7	34.6	46.0
1.374000	21.3	9.000	N	9.7	24.7	46.0
1.856000	19.9	9.000	N	9.7	26.1	46.0
2.198000	14.6	9.000	N	9.7	31.4	46.0
2.334000	18.2	9.000	N	9.7	27.8	46.0
2.356000	16.6	9.000	N	9.7	29.4	46.0
16.312000	16.4	9.000	N	10.1	33.6	50.0
16.326000	16.4	9.000	N	10.1	33.6	50.0
16.460000	14.8	9.000	N	10.1	35.2	50.0
16.470000	14.0	9.000	N	10.1	36.0	50.0
16.714000	13.8	9.000	N	10.1	36.2	50.0
16.862000	14.7	9.000	N	10.1	35.3	50.0



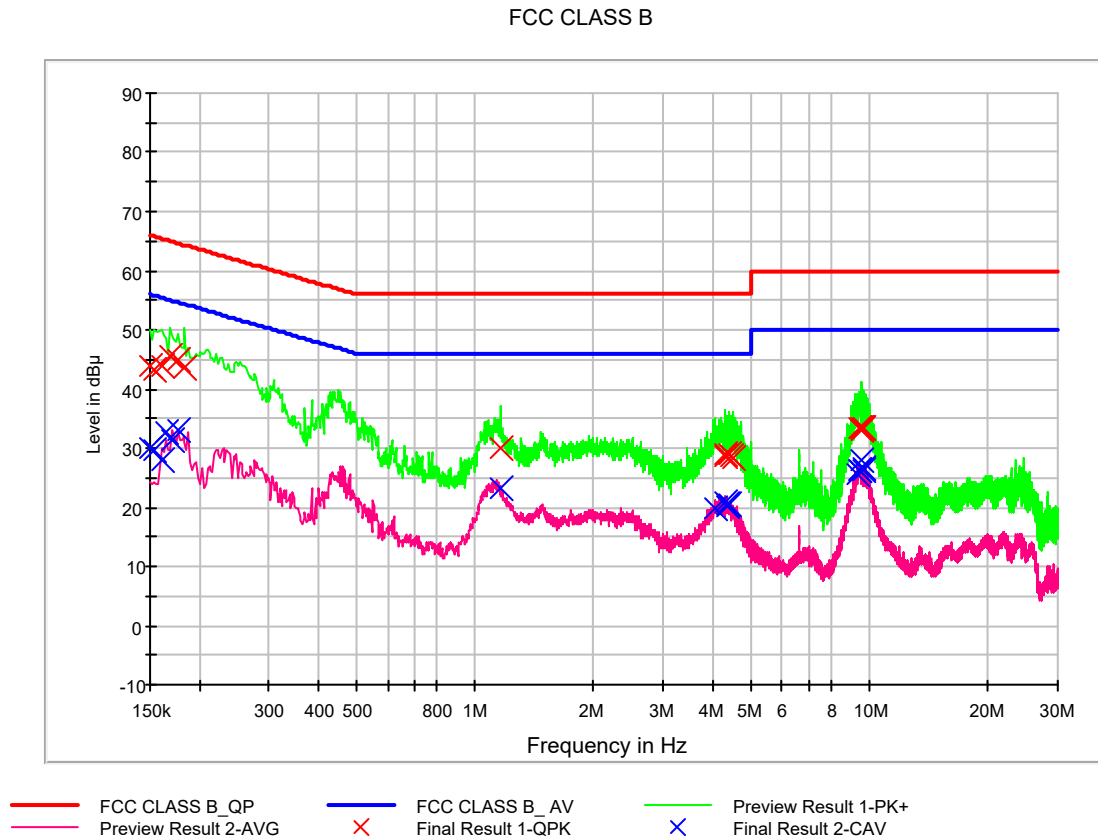
Type: C to USB

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	21.3 °C
Relative Humidity	35.4 %
Test Date	March 08, 2018

- 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 3: Conducted Emission, AC Main Port, Line (L1)**



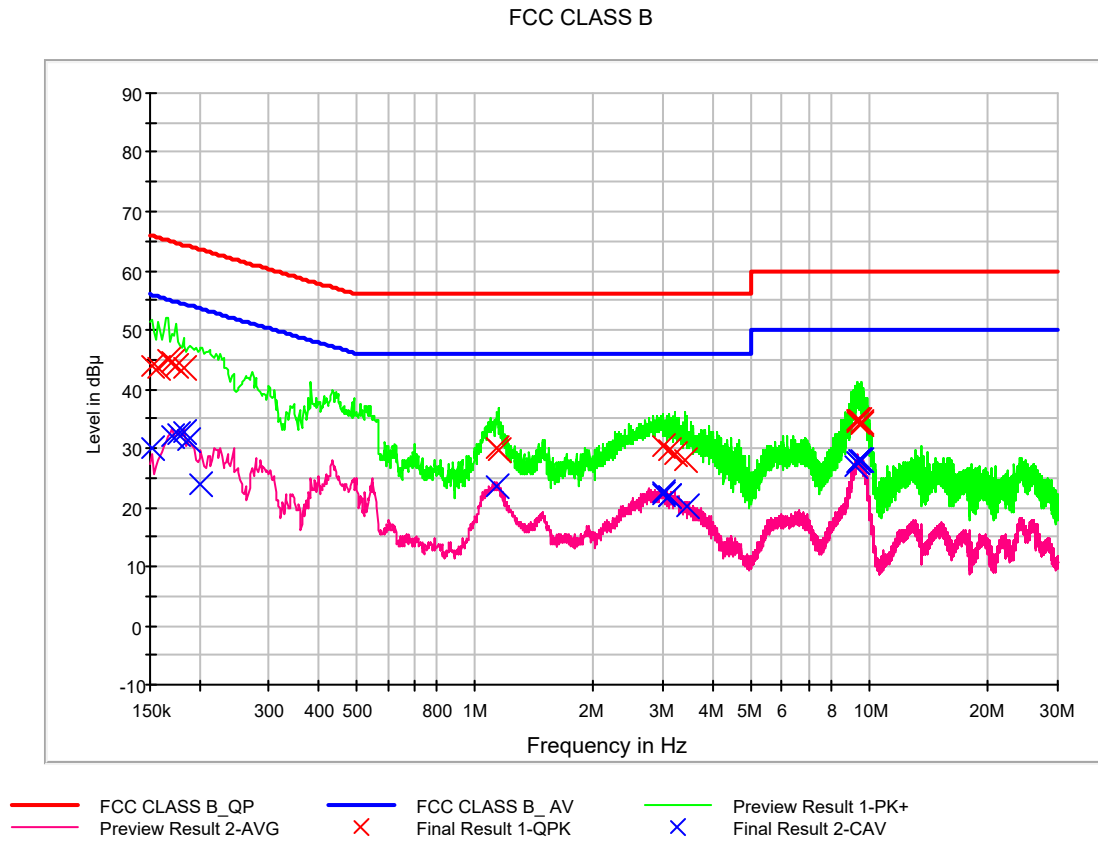
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	43.8	9.000	L1	9.6	22.2	66.0
0.154000	43.2	9.000	L1	9.6	22.6	65.8
0.160000	43.7	9.000	L1	9.6	21.7	65.5
0.168000	45.6	9.000	L1	9.6	19.5	65.1
0.176000	44.8	9.000	L1	9.6	19.9	64.7
0.184000	43.6	9.000	L1	9.6	20.7	64.3
1.162000	30.0	9.000	L1	9.7	26.0	56.0
4.312000	28.5	9.000	L1	9.8	27.5	56.0
4.318000	29.1	9.000	L1	9.8	26.9	56.0
4.386000	28.8	9.000	L1	9.8	27.2	56.0
4.438000	28.6	9.000	L1	9.8	27.4	56.0
4.498000	28.4	9.000	L1	9.8	27.6	56.0
9.474000	33.3	9.000	L1	9.9	26.7	60.0
9.496000	33.2	9.000	L1	9.9	26.8	60.0
9.568000	33.4	9.000	L1	9.9	26.6	60.0
9.574000	33.5	9.000	L1	10.0	26.5	60.0
9.610000	33.4	9.000	L1	10.0	26.6	60.0
9.646000	33.2	9.000	L1	10.0	26.8	60.0



CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	29.9	9.000	L1	9.6	26.1	56.0
0.154000	29.7	9.000	L1	9.6	26.0	55.8
0.160000	27.8	9.000	L1	9.6	27.6	55.5
0.164000	32.5	9.000	L1	9.6	22.7	55.3
0.170000	31.4	9.000	L1	9.6	23.5	55.0
0.176000	33.0	9.000	L1	9.6	21.7	54.7
1.162000	23.3	9.000	L1	9.7	22.7	46.0
4.038000	19.8	9.000	L1	9.8	26.2	46.0
4.312000	20.8	9.000	L1	9.8	25.2	46.0
4.336000	20.7	9.000	L1	9.8	25.3	46.0
4.362000	20.2	9.000	L1	9.8	25.8	46.0
4.388000	20.5	9.000	L1	9.8	25.5	46.0
9.338000	25.7	9.000	L1	9.9	24.3	50.0
9.424000	26.2	9.000	L1	9.9	23.8	50.0
9.474000	26.4	9.000	L1	9.9	23.6	50.0
9.568000	28.1	9.000	L1	9.9	21.9	50.0
9.608000	26.6	9.000	L1	10.0	23.4	50.0
9.652000	26.3	9.000	L1	10.0	23.7	50.0

**Figure 4: 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	43.8	9.000	N	9.6	22.1	65.9
0.158000	43.5	9.000	N	9.6	22.0	65.6
0.166000	44.8	9.000	N	9.6	20.4	65.2
0.170000	44.7	9.000	N	9.6	20.2	65.0
0.174000	44.1	9.000	N	9.6	20.7	64.8
0.182000	43.4	9.000	N	9.6	21.0	64.4
1.140000	30.0	9.000	N	9.7	26.0	56.0
1.148000	29.5	9.000	N	9.7	26.5	56.0
2.984000	30.5	9.000	N	9.8	25.5	56.0
3.088000	29.7	9.000	N	9.8	26.3	56.0
3.218000	29.1	9.000	N	9.8	26.9	56.0
3.408000	28.1	9.000	N	9.8	27.9	56.0
9.292000	34.5	9.000	N	10.0	25.5	60.0
9.306000	34.8	9.000	N	10.0	25.2	60.0
9.330000	34.7	9.000	N	10.0	25.3	60.0
9.418000	34.8	9.000	N	10.0	25.2	60.0
9.552000	34.2	9.000	N	10.0	25.8	60.0
9.576000	34.1	9.000	N	10.0	25.9	60.0



CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	29.9	9.000	N	9.6	26.0	55.9
0.170000	32.1	9.000	N	9.6	22.8	55.0
0.176000	32.3	9.000	N	9.6	22.3	54.7
0.184000	32.7	9.000	N	9.6	21.6	54.3
0.188000	31.2	9.000	N	9.6	22.9	54.1
0.202000	24.0	9.000	N	9.6	29.6	53.5
1.140000	23.6	9.000	N	9.7	22.4	46.0
2.978000	22.3	9.000	N	9.8	23.7	46.0
2.984000	22.5	9.000	N	9.8	23.5	46.0
3.088000	21.8	9.000	N	9.8	24.2	46.0
3.102000	22.0	9.000	N	9.8	24.0	46.0
3.430000	20.0	9.000	N	9.8	26.0	46.0
9.184000	26.9	9.000	N	10.0	23.1	50.0
9.292000	27.8	9.000	N	10.0	22.2	50.0
9.334000	27.7	9.000	N	10.0	22.3	50.0
9.418000	28.0	9.000	N	10.0	22.0	50.0
9.442000	27.8	9.000	N	10.0	22.2	50.0
9.512000	27.8	9.000	N	10.0	22.2	50.0



5.2 Radiated Emission Test

The test results of radiated emission provide the following information:

-For Measurement Below 1 GHz

Type: C to C

Rule Part / Standard	FCC PART 15 Subpart B Class B
Detector	Quasi-Peak
Bandwidth	120 kHz (6 dB)
Operation Mode	Data Communication mode
Worst Data Cable	Luxshare (EAD64506502)
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.8 °C
Relative Humidity	41.9 %
Test Date	March 19, 2018

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
36.752000	21.9	99.9	V	34.0	19.3	18.1	40.0
79.371200	21.6	400.0	H	295.0	15.8	18.4	40.0
120.010400	23.8	116.9	V	1.0	17.8	19.7	43.5
167.352000	33.1	150.2	H	307.0	19.7	10.4	43.5
230.912800	32.4	117.8	H	331.0	18.1	13.6	46.0
550.362400	27.5	99.7	V	34.0	26.3	18.5	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



Type: C to USB

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	23.5 °C
Relative Humidity	35.6 %
Test Date	March 08, 2018

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
81.768000	27.7	400.0	H	91.0	15.4	12.3	40.0
157.896000	26.4	149.8	H	1.0	20.1	17.1	43.5
275.980000	31.3	100.0	H	275.0	19.7	14.7	46.0
375.005600	33.6	100.0	H	78.0	22.4	12.4	46.0
500.009600	32.8	100.0	H	238.0	25.2	13.2	46.0
875.000800	37.7	100.0	H	0.0	30.9	8.4	46.0



-For Measurement Above 1 GHz

Type: C to C

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	5 825 MHz
Upper Frequency	1 GHz to 29.125 GHz
Operation Mode	Data Communication mode
Worst Data Cable	Luxshare (EAD64506502)
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.1 / 22.8 °C
Relative Humidity	37.9 / 38.3 %
Test Date	March 21 / March 22, 2018

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1238.525000	29.3	299.5	V	38.0	-28.9	44.7	74.0
2611.470000	32.5	290.5	H	224.0	-24.0	41.5	74.0
4921.210000	37.2	349.8	V	203.0	-18.5	36.8	74.0
7423.355000	41.8	299.4	V	266.0	-12.4	32.2	74.0
8708.205000	42.1	248.5	V	0.0	-11.7	31.9	74.0
9388.440000	43.5	306.4	H	118.0	-11.0	30.5	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1238.525000	16.7	299.5	V	38.0	-28.9	37.3	54.0
2611.470000	20.0	290.5	H	224.0	-24.0	34.0	54.0
4921.210000	23.8	349.8	V	203.0	-18.5	30.2	54.0
7423.355000	29.0	299.4	V	266.0	-12.4	25.0	54.0
8708.205000	29.5	248.5	V	0.0	-11.7	24.5	54.0
9388.440000	29.9	306.4	H	118.0	-11.0	24.1	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



Type: C to USB

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	5 825 MHz
Upper Frequency	1 GHz to 29.125 GHz
Operation Mode	Data Communication mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	23.0 °C
Relative Humidity	35.6 %
Test Date	March 13, 2018

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1400.070000	49.9	394.7	V	238.0	-11.4	24.2	74.0
1991.555000	50.9	99.8	V	55.0	-10.1	23.1	74.0
2659.295000	47.3	249.8	V	19.0	-7.4	26.7	74.0
4498.550000	44.5	199.4	V	0.0	-2.9	29.5	74.0
5975.765000	46.8	400.0	V	49.0	0.9	27.2	74.0
11045.270000	55.1	248.4	V	319.0	15.1	18.9	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1400.070000	48.3	394.7	V	238.0	-11.4	5.7	54.0
1991.555000	26.4	99.8	V	55.0	-10.1	27.6	54.0
2659.295000	23.8	249.8	V	19.0	-7.4	30.2	54.0
4498.550000	29.5	199.4	V	0.0	-2.9	24.5	54.0
5975.765000	31.0	400.0	V	49.0	0.9	23.0	54.0
11045.270000	42.4	248.4	V	319.0	15.1	11.6	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>					
☐ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	06.20.2017
☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100033	1 year	06.27.2017
☒ LISN	Rohde & Schwarz	ENV216	102245	1 year	12.20.2017
☐ LISN	Rohde & Schwarz	ESH3-Z5	100282	1 year	05.22.2017
☐ LISN	Rohde & Schwarz	ENV216	100073	1 year	07.18.2017
☒ Software	Rohde & Schwarz	EMC32 VER8.54.0	-	-	-
<u>Radiated Emission</u>					
-For measurement below 1 GHz					
☒ EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	08.16.2017
☒ Trilog Antenna	Schwarzbeck	VULB 9168	760	2 year	04.06.2017
☒ Antenna master	INNCO Systems	MA4000-XP-ET	-	N/A	-
☒ Antenna master controller	INNCO Systems	CO 3000	CO 3000/870/ 35990515/L	N/A	-
☒ Turn Table	INNCO Systems	-	-	N/A	-
☒ Turn Table controller	INNCO Systems	CO2000	-	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU26	100241	1 year	08.16.2017
☐ Antenna master	INNCO Systems	MA4000-EP	MA4000/283	N/A	-
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ Software	Rohde & Schwarz	EMC32 VER8.40.0	-	-	-
-For measurement above 1 GHz					
☒ EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	08.16.2017
☒ Antenna master	INNCO Systems	MA4000-XP-ET	-	N/A	-
☒ Antenna master controller	INNCO Systems	CO 3000	CO 3000/870/ 35990515/L	N/A	-
☒ Turn Table	INNCO Systems	-	-	N/A	-
☒ Turn Table controller	INNCO Systems	CO2000	-	N/A	-
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	296	2 year	10.12.2016
☒ Power Amplifier	CERNEX	CBLU5183530	24348	1 year	06.01.2017
☒ Low Noise Amplifier	TESTEK	TK-PA18H	170034-L	1 year	03.06.2018
☒ Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170#786	2 year	12.05.2017
☒ Power Amplifier	TESTEK	TK-PA1840H	170030-L	1 year	12.20.2017
☐ Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
☐ Power Amplifier	CERNEX	CBLU1183540	21691	1 year	06.28.2017
☐ Antenna master	HD GmbH	MA240	240/520	N/A	-
☐ Horn Antenna	Schwarzbeck	BBHA 9120D	1300	2 year	06.30.2017
☐ EMI Test Receiver	Rohde & Schwarz	ESU26	100241	1 year	08.16.2017
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ 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: LM-G710VM, FCC ID: ZNFG710VM** complies with §15.107 and §15.109 of the FCC rules.



8. APPENDIX A. TEST SETUP PHOTOGRAPHS

Please refer to Appendix A