

EMI TEST REPORT FCC CERTIFICATION / ISED

Applicant:

LG Electronics USA, Inc.
1000 Sylvan Avenue, Englewood Cliffs NJ 07632
United States

Date of Issue: February 15, 2019

Test Report No. HCT-EM-1901-FI001-R1

Test Site: HCT CO., LTD.

FCC ID
IC

ZNFG820UM
2703C-G820UM

Rule Part(s) / Standard(s) : FCC CFR 47 PART 15 Subpart B Class B
ICES-003 Issue 6 Class B
ANSI C63.4-2014

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

Model Name : LM-G820UM

Series Model Name : LMG820UM, G820UM, LM-G820TM, LMG820TM, G820TM,
LM-G820QM, LMG820QM, G820QM

Date of Test : January 02, 2019 to January 07, 2019

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-1901-FI001	January 09, 2019	Initial Release
HCT-EM-1901-FI001-R1	February 15, 2019	Revised FCC ID



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1. GENERAL INFORMATION

1.1 Description of EUT

Its basic purpose is used for communications.

FCC ID	ZNFG820UM
IC	2703C-G820UM
Model	LM-G820UM
Series Model Name	LMG820UM, G820UM, LM-G820TM, LMG820TM, G820TM, LM-G820QM, LMG820QM, G820QM
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 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) 788 MHz to 798 MHz (LTE B14) 704 MHz to 716 MHz (LTE B17) 1 850 MHz to 1 915 MHz (LTE B25) 814 MHz to 849 MHz (LTE B26) 2 305 MHz to 2 315 MHz (LTE B30) 2 496 MHz to 2 690 MHz (LTE B41) 3550 MHz to 3700 MHz (LTE B48) 1 710 MHz to 1 780 MHz (LTE B66) 663 MHz to 698 MHz (LTE B71) 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)



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) 2 516 MHz to 2 690 MHz (LTE B7) 729 MHz to 746 MHz (LTE B12) 746 MHz to 756 MHz (LTE B13) 758 MHz to 768 MHz (LTE B14) 734 MHz to 746 MHz (LTE B17) 1 925 MHz to 1 990 MHz (LTE B25) 859 MHz to 894 MHz (LTE B26) 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) 5 150 MHz to 5 925 MHz (LTE B46) 3550 MHz to 3700 MHz (LTE B48) 2 110 MHz to 2 200 MHz (LTE B66) 617 MHz to 652 MHz (LTE B71) 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)
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1.2 Tested System Details

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

Device Type	Model Name	Serial Number	Manufacturer
EUT	LM-G820UM	-	LG
Data Cable*	EAD64746101	-	Ningbo Broad
Data Cable*	EAD64746102	-	LUXSHARE
Earphone*	EAB63728251	-	CRESYN
Earphone*	EAB63728252	-	BUJEON
Micro SD Card	SAMSUNG EVO +microSDXC CLASS10 UHS-1 (256 GB)	-	SAMSUNG
Notebook PC	ProBook6560b	5CB2053MXF	HP
Notebook PC adaptor	Series PPP009L-E	-	LITE-On Technology
RJ45 cable	-	-	-
Gateway	TL-WR747N	-	TP-LINK
Gateway adaptor	T090060-2H1	-	TP-LINK
Serial mouse	Serial 2 button mouse	02031069	Radio shack

*NOTE. The worst case of operating mode is reported.



1.3 Cable Description

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	N	(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.

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

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



1.5 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 1 GHz) 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	
Filing the EMI Measurement Facility (3 m Semi Anechoic Chamber and Shielded Room)	IC 5944A-4
Filing the EMI Measurement Facility (10 m Semi-Anechoic Chamber)	IC 5944A-2

1.6 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).

1.7 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
Radiated Emissions (30 MHz to 1 GHz)	5.20 dB
Radiated Emissions (1 GHz to 18 GHz)	5.24 dB
Radiated Emissions (18 GHz to 40 GHz)	5.40 dB



2. 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 checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	06.25.2018
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	102245	1 year	12.12.2018
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	1 year	05.03.2018
<input checked="" type="checkbox"/> Software	Rohde & Schwarz	EMC32 VER8.54.0	-	-	-
<u>Radiated Emission</u>					
-For measurement below 1 GHz					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	07.27.2018
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB 9168	760	2 year	04.06.2017
<input checked="" type="checkbox"/> Antenna master	INNCO Systems	MA4640-XP-ET	-	N/A	-
<input checked="" type="checkbox"/> Antenna master controller	INNCO Systems	CO 3000	CO3000/870/ 35990515/L	N/A	-
<input checked="" type="checkbox"/> Turn Table	INNCO Systems	1060	-	N/A	-
<input checked="" type="checkbox"/> Turn Table controller	INNCO Systems	CO2000	CO2000/095/ 7590304/L	N/A	-
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU26	100241	1 year	08.14.2018
<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 checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	07.27.2018
<input checked="" type="checkbox"/> Antenna master	INNCO Systems	MA4640-XP-ET	-	N/A	-
<input checked="" type="checkbox"/> Antenna master controller	INNCO Systems	CO3000	CO3000/870/ 35990515/L	N/A	-
<input checked="" type="checkbox"/> Turn Table	INNCO Systems	1060	-	N/A	-
<input checked="" type="checkbox"/> Turn Table controller	INNCO Systems	CO2000	CO2000/095/ 7590304/L	N/A	-
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	01836	2 year	05.14.2018
<input checked="" type="checkbox"/> Low Noise Amplifier	TESTEK	TK-PA18H	170034-L	1 year	03.06.2018
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170#786	2 year	12.05.2017
<input checked="" type="checkbox"/> Power Amplifier	TESTEK	TK-PA1840H	170030-L	1 year	12.17.2018
<input type="checkbox"/> Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
<input type="checkbox"/> Power Amplifier	CERNEX	CBLU1183540	21691	1 year	06.25.2018
<input type="checkbox"/> Antenna master	HD GmbH	MA240	240/520	N/A	-
<input type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU26	100241	1 year	08.14.2018
<input type="checkbox"/> Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
<input checked="" type="checkbox"/> Software	Rohde & Schwarz	EMC32 VER8.40.0	-	-	-



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 ($\mu\text{V}/\text{m}$)	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

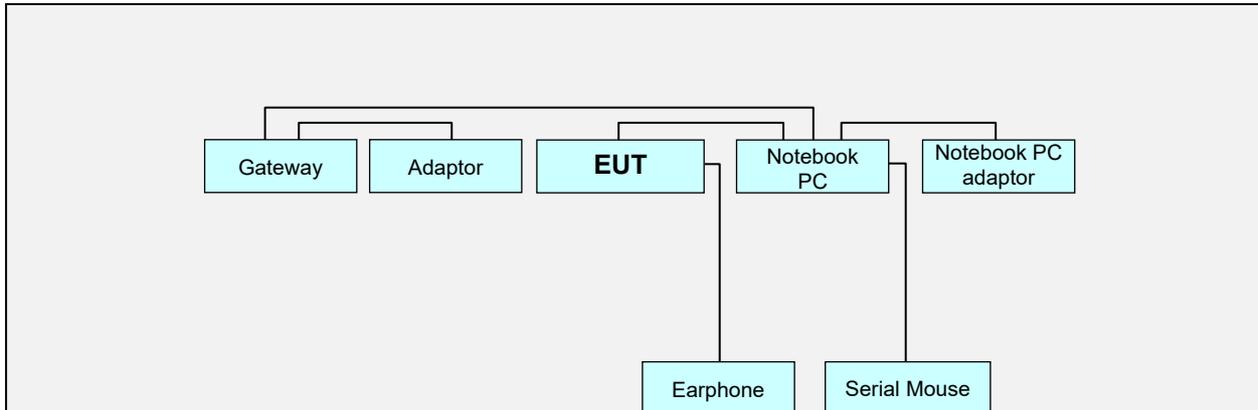


3.2.1 Frequency Range of Radiated Measurements

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



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



4. PRELIMINARY TEST

4.1 Conducted Emission

It was tested the following operating mode, after connecting all peripheral devices.

Operating Modes:

Data Communication mode

4.2 Radiated Emission

It was tested the following operating mode, after connecting all peripheral devices.

Operating Modes:

Data Communication mode



5. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

5.1 Conducted Emission

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

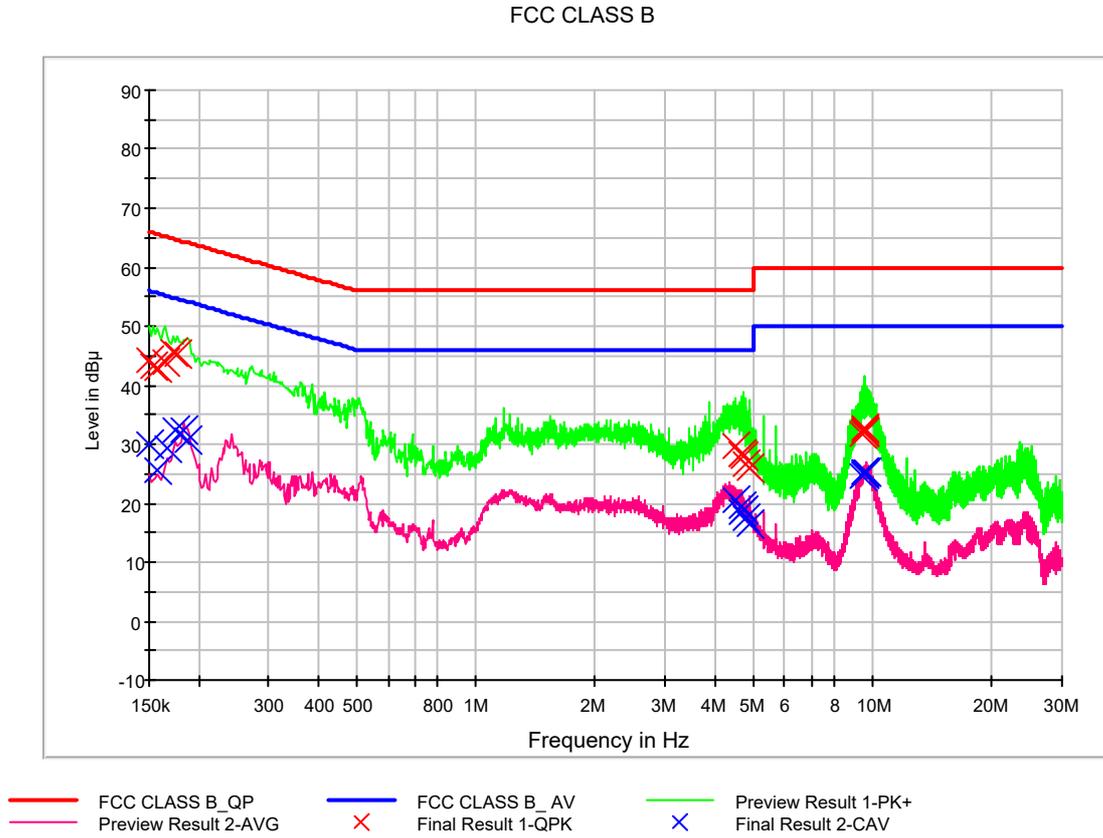
Rule Part / Standard	FCC PART 15 Subpart B Class B ICES-003 Issue 6 Class B ANSI C63.4-2014
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Operating Mode	Data Communication mode
Worst case of Data Cable / Earphone	LUXSHARE (EAD64746102) / CRESYN (EAB63728251)
Kind of Test Site	Shielded Room
Temperature	20.1 °C
Relative Humidity	41.5 %
Test Date	January 04, 2019

- 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)
0.150000	44.1	9.000	L1	9.6	21.9	66.0
0.154000	43.2	9.000	L1	9.6	22.5	65.8
0.158000	43.0	9.000	L1	9.6	22.6	65.6
0.164000	44.0	9.000	L1	9.6	21.3	65.3
0.172000	45.6	9.000	L1	9.6	19.3	64.9
0.176000	45.2	9.000	L1	9.6	19.4	64.7
4.500000	29.6	9.000	L1	9.8	26.4	56.0
4.656000	28.1	9.000	L1	9.8	27.9	56.0
4.698000	28.4	9.000	L1	9.8	27.6	56.0
4.730000	27.9	9.000	L1	9.8	28.1	56.0
4.778000	26.7	9.000	L1	9.8	29.3	56.0
4.874000	25.9	9.000	L1	9.8	30.1	56.0
9.440000	31.8	9.000	L1	10.0	28.2	60.0
9.506000	32.1	9.000	L1	10.0	27.9	60.0
9.514000	31.9	9.000	L1	10.0	28.1	60.0
9.546000	32.5	9.000	L1	10.0	27.5	60.0
9.578000	32.3	9.000	L1	10.0	27.7	60.0
9.590000	32.1	9.000	L1	10.0	27.9	60.0

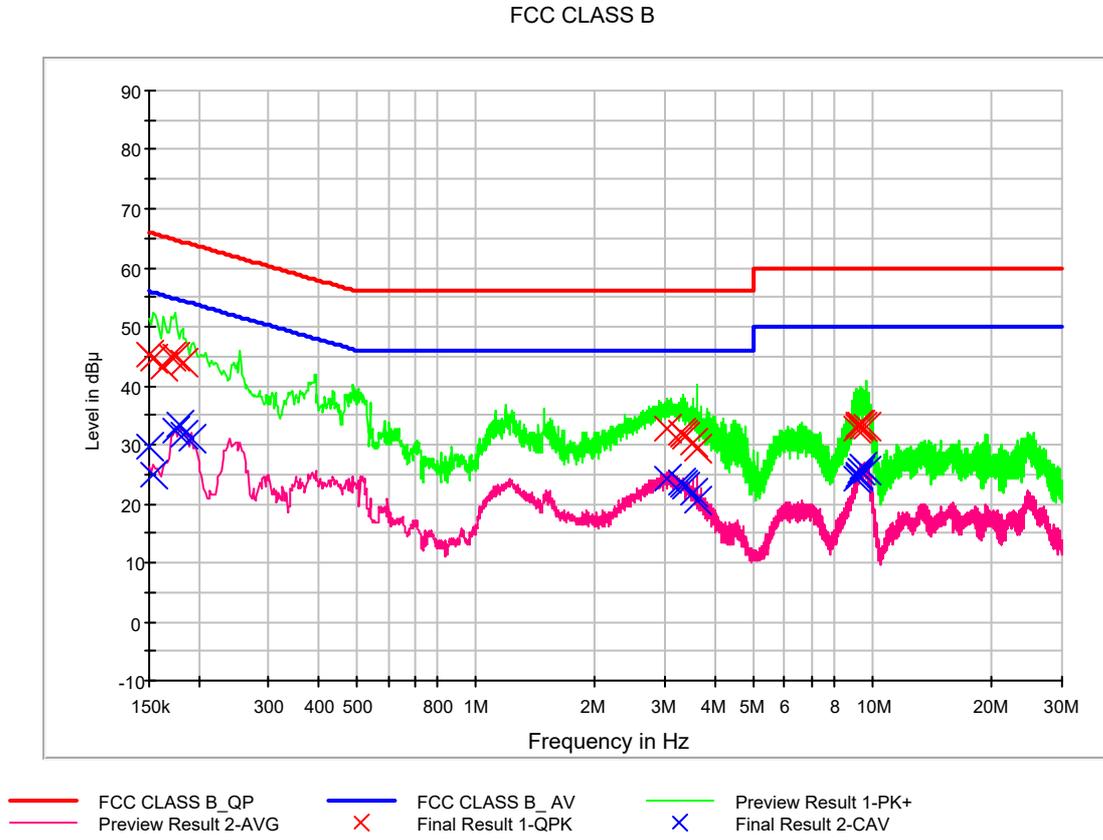


CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	30.0	9.000	L1	9.6	26.0	56.0
0.158000	25.6	9.000	L1	9.6	30.0	55.6
0.166000	29.5	9.000	L1	9.6	25.7	55.2
0.174000	32.3	9.000	L1	9.6	22.4	54.8
0.184000	32.4	9.000	L1	9.6	21.9	54.3
0.188000	30.6	9.000	L1	9.7	23.5	54.1
4.500000	20.4	9.000	L1	9.8	25.6	46.0
4.656000	19.4	9.000	L1	9.8	26.6	46.0
4.698000	18.5	9.000	L1	9.8	27.5	46.0
4.730000	18.8	9.000	L1	9.8	27.2	46.0
4.778000	17.6	9.000	L1	9.8	28.4	46.0
4.876000	16.6	9.000	L1	9.8	29.4	46.0
9.440000	24.5	9.000	L1	10.0	25.5	50.0
9.506000	25.0	9.000	L1	10.0	25.0	50.0
9.514000	25.0	9.000	L1	10.0	25.0	50.0
9.562000	25.3	9.000	L1	10.0	24.7	50.0
9.578000	25.1	9.000	L1	10.0	24.9	50.0
9.684000	25.1	9.000	L1	10.0	24.9	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	45.3	9.000	N	9.6	20.7	66.0
0.154000	44.6	9.000	N	9.6	21.2	65.8
0.162000	43.4	9.000	N	9.6	22.0	65.4
0.170000	45.1	9.000	N	9.6	19.9	65.0
0.174000	45.1	9.000	N	9.6	19.7	64.8
0.182000	43.9	9.000	N	9.6	20.5	64.4
3.016000	32.8	9.000	N	9.8	23.2	56.0
3.292000	32.0	9.000	N	9.8	24.0	56.0
3.312000	31.7	9.000	N	9.8	24.3	56.0
3.364000	31.5	9.000	N	9.8	24.5	56.0
3.510000	30.3	9.000	N	9.8	25.7	56.0
3.608000	29.3	9.000	N	9.8	26.7	56.0
9.148000	32.8	9.000	N	9.9	27.2	60.0
9.204000	33.3	9.000	N	9.9	26.7	60.0
9.208000	33.2	9.000	N	9.9	26.8	60.0
9.294000	33.3	9.000	N	9.9	26.8	60.0
9.476000	33.2	9.000	N	9.9	26.8	60.0
9.644000	33.1	9.000	N	9.9	26.9	60.0



CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	29.5	9.000	N	9.6	26.5	56.0
0.154000	24.8	9.000	N	9.6	31.0	55.8
0.174000	32.3	9.000	N	9.6	22.5	54.8
0.178000	33.5	9.000	N	9.6	21.0	54.6
0.184000	31.7	9.000	N	9.6	22.6	54.3
0.192000	30.9	9.000	N	9.6	23.1	53.9
3.016000	24.1	9.000	N	9.8	21.9	46.0
3.292000	23.5	9.000	N	9.8	22.5	46.0
3.312000	23.3	9.000	N	9.8	22.7	46.0
3.364000	22.8	9.000	N	9.8	23.2	46.0
3.510000	21.7	9.000	N	9.8	24.3	46.0
3.608000	20.4	9.000	N	9.8	25.6	46.0
9.148000	24.1	9.000	N	9.9	25.9	50.0
9.162000	24.5	9.000	N	9.9	25.5	50.0
9.204000	24.8	9.000	N	9.9	25.2	50.0
9.294000	25.6	9.000	N	9.9	24.4	50.0
9.476000	26.4	9.000	N	9.9	23.6	50.0
9.644000	25.7	9.000	N	9.9	24.3	50.0



5.2 Radiated Emission

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 ICES-003 Issue 6 Class B ANSI C63.4-2014
Detector	Quasi-Peak
Bandwidth	120 kHz (6 dB)
Operating Mode	Data Communication mode
Worst case of Data Cable / Earphone	LUXSHARE (EAD64746102) / CRESYN (EAB63728251)
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.7 °C
Relative Humidity	41.6 %
Test Date	January 07, 2019

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
99.568000	24.8	100.0	V	8.0	15.5	18.7	43.5
132.816800	25.9	100.0	V	256.0	19.0	17.6	43.5
266.527200	31.5	100.0	H	312.0	19.4	14.5	46.0
276.272000	29.5	100.0	H	320.0	19.7	16.5	46.0
600.004800	39.7	174.7	H	7.0	27.5	6.3	46.0
800.024000	38.8	100.0	H	42.0	30.2	7.2	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 ICES-003 Issue 6 Class B ANSI C63.4-2014
Detector	Peak mode: Peak (RBW: 1 MHz, VBW: 3 MHz) CISPR-Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)
Highest Frequency	5 925 MHz
Tested Frequency Range	1 GHz to 30 GHz
Operation Mode	Data Communication mode
Worst case of Data Cable / Earphone	LUXSHARE (EAD64746102) / CRESYN (EAB63728251)
Kind of Test Site	3 m semi anechoic chamber
Temperature	20.7 °C
Relative Humidity	40.2 %
Test Date	January 02, 2019

Frequency (MHz)	Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1399.985000	49.4	203.6	H	168.0	-28.2	24.6	74.0
1993.335000	49.5	111.4	V	46.0	-26.7	24.5	74.0
2660.550000	49.3	350.1	V	4.0	-24.2	24.7	74.0
4496.100000	43.7	179.4	V	2.0	-19.5	30.3	74.0
5994.835000	44.6	305.6	V	98.0	-17.1	29.4	74.0
9341.950000	43.7	298.4	V	50.0	-10.5	30.3	74.0

Frequency (MHz)	CAverage (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
1399.985000	46.0	203.6	H	168.0	-28.2	8.0	54.0
1993.335000	24.9	111.4	V	46.0	-26.7	29.1	54.0
2660.550000	22.2	350.1	V	4.0	-24.2	31.8	54.0
4496.100000	27.5	179.4	V	2.0	-19.5	26.5	54.0
5994.835000	27.6	305.6	V	98.0	-17.1	26.4	54.0
9341.950000	30.4	298.4	V	50.0	-10.5	23.6	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



6. CONCLUSION

The data collected shows that the **EUT Type: Multi-band CDMA/GSM/EDGE/WCDMA/LTE Phone with WLAN, Bluetooth and RFID, Model: LM-G820UM** complies with §15.107 and §15.109 of the FCC rules and ICES-003 Issue 6 of the IC rules.



7. APPENDIX A. TEST SETUP PHOTOGRAPHS

Please refer to Appendix A