

EMI TEST REPORT

FCC CERTIFICATION / ISED

Applicant:

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

Date of Issue: February 20, 2019**Test Report No. HCT-EM-1901-FI008-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

Additional Model Name : LMG820UM, G820UM, LM-G820TM, LMG820TM, G820TM,
LM-G820QM, LMG820QM, G820QM, LM-G820QM5,
LMG820QM5, G820QM5, LM-G820QM6, LMG820QM6,
G820QM6

Travel Adaptor Information : Model Name: MCS-H06WP / Manufacturer: PNTELECOM

Date of Test : January 07, 2019 to January 18, 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

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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-FI008	January 18, 2019	Initial Release
HCT-EM-1901-FI008-R1	February 20, 2019	Revised FCC ID Added Additional Model



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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
Additional Model Name	LMG820UM, G820UM, LM-G820TM, LMG820TM, G820TM, LM-G820QM, LMG820QM, G820QM, LM-G820QM5, LMG820QM5, G820QM5, LM-G820QM6, LMG820QM6, G820QM6
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)



1.2 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	LM-G820UM	-	LG	ZNFG820UM
Data Cable	EAD64746102	-	LUXSHARE	-
Earphone	EAB63728251	-	CRESYN	-
TA	MCS-H06WP	-	PNTELECOM	-
Micro SD card	SAMSUNG EVO +microSDXC CLASS10 UHS-1 (256 GB)	-	SAMSUNG	-
Wireless Charger	EP-PN920	-	SAMSUNG	A3LEPPN920
Micro USB Cable	ECB-DU4EWE	-	SAMSUNG	-
LED Monitor	27UD88	-	LG	-
Monitor Adapter	LCAP31	-	Genmao Electronics (Suzhou)	-
DP cable	NEXT-JCA141	-	EZ-NET Ubiquitous	-



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	N/A	(P)1.0
	Earphone	N/A	N	(D)1.2
LED monitor	DC IN	Y	N/A	(P) 1.0
	DP port	N/A	Y	(D) 1.2
Wireless Charger	Micro USB	Y	N/A	(P) 1.5

* 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
LED monitor	DP port	N	N/A	Y	Both End
Wireless Charger	Micro USB	N	N/A	Y	Both 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>					
☒ EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	06.25.2018
☒ LISN	Rohde & Schwarz	ENV216	102245	1 year	12.12.2018
☐ LISN	Rohde & Schwarz	ENV216	100073	1 year	05.03.2018
☒ 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	07.27.2018
☒ Trilog Antenna	Schwarzbeck	VULB 9168	760	2 year	04.06.2017
☒ Trilog Antenna	Schwarzbeck	VULB 9168	847	2 year	04.13.2018
☒ Antenna master	INNCO Systems	MA4640-XP-ET	-	N/A	-
☒ Antenna master controller	INNCO Systems	CO 3000	CO3000/870/ 35990515/L	N/A	-
☒ Turn Table	INNCO Systems	1060	-	N/A	-
☒ Turn Table controller	INNCO Systems	CO2000	CO2000/095/ 7590304/L	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU26	100241	1 year	08.14.2018
☐ 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	07.27.2018
☒ Antenna master	INNCO Systems	MA4640-XP-ET	-	N/A	-
☒ Antenna master controller	INNCO Systems	CO3000	CO3000/870/ 35990515/L	N/A	-
☒ Turn Table	INNCO Systems	1060	-	N/A	-
☒ Turn Table controller	INNCO Systems	CO2000	CO2000/095/ 7590304/L	N/A	-
☒ Horn Antenna	Schwarzbeck	BBHA 9120D	01836	2 year	05.14.2018
☒ 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	12.17.2018
☐ Antenna master controller	HD GmbH	HD 100	100/637	N/A	-
☐ Power Amplifier	CERNEX	CBLU1183540	21691	1 year	06.25.2018
☐ Antenna master	HD GmbH	MA240	240/520	N/A	-
☐ EMI Test Receiver	Rohde & Schwarz	ESU26	100241	1 year	08.14.2018
☐ Turn Table	INNCO Systems	DT3000-3T	DT3000/69	N/A	-
☒ 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

- 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 ($\mu\text{V/m}$)	Quasi-Peak ($\text{dB}(\mu\text{V/m})$)
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0
Frequency (MHz)	Antenna Distance (m)	Peak ($\text{dB}(\mu\text{V/m})$)	Average ($\text{dB}(\mu\text{V/m})$)
Above 1 000	3	74	54

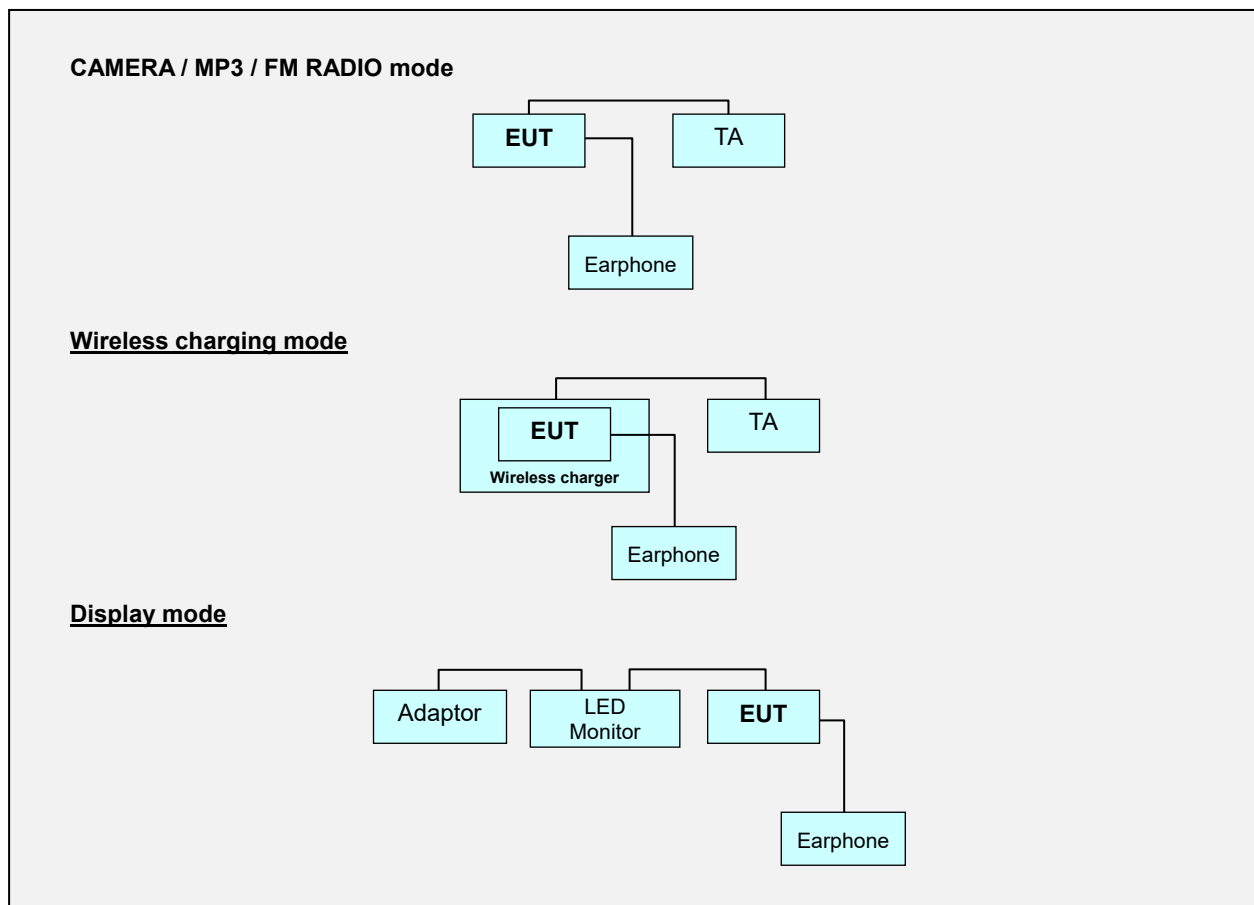


3.2.1 Frequency Range of Radiated Measurements

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:

- ☒ FRONT CAMERA & MP3 mode
- ☒ REAR CAMERA & FM RADIO mode
- ☒ ToF CAMERA mode
- ☒ IDLE mode

NOTE. The worst-case emissions are reported.

4.2 Radiated Emission

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

Operating Modes:

- ☒ FRONT CAMERA & MP3 mode
- ☒ REAR CAMERA & FM RADIO mode
- ☒ ToF CAMERA mode
- ☒ IDLE mode
- ☒ Wireless charging mode
- ☒ Display mode

NOTE. The worst-case emissions are reported.



5. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

5.1 Conducted Emission

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

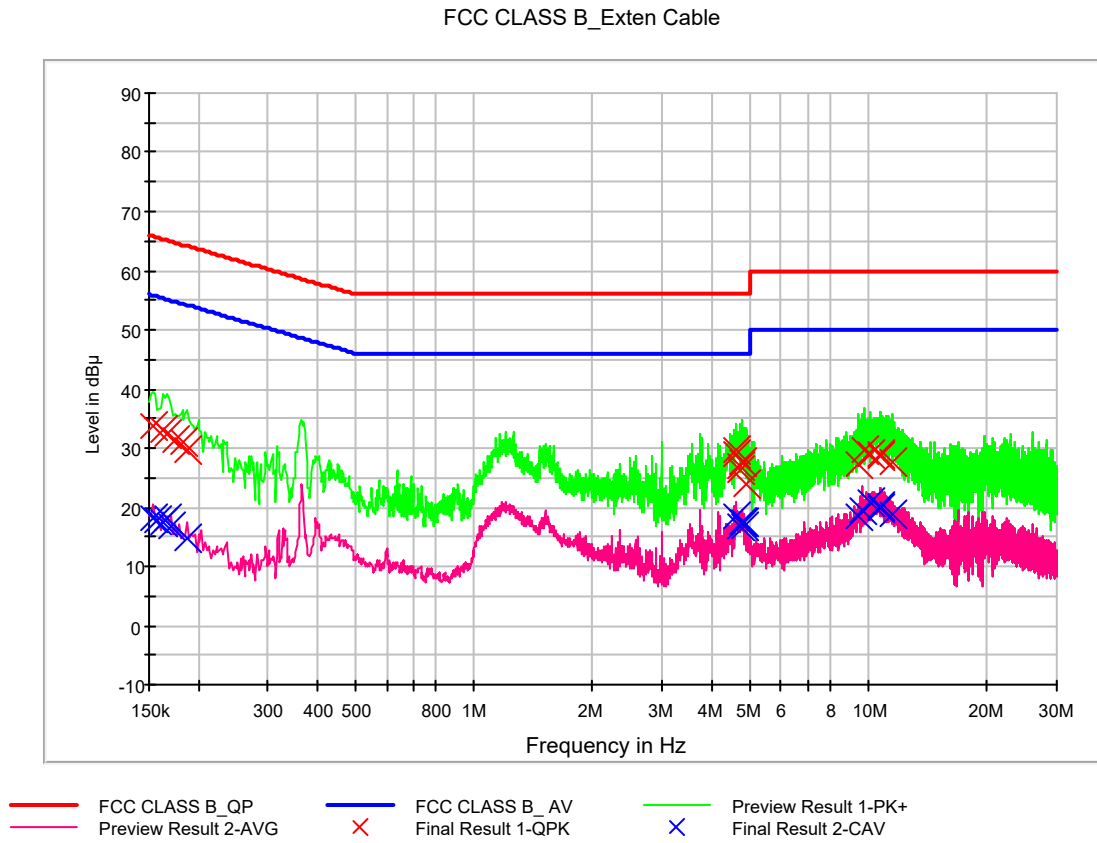
Rule Part / Standard	FCC PART 15 Subpart B Class B ICES-003 Issue 6 Class B ANSI C63.4-2014
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Operating Mode	FRONT CAMERA & MP3 mode
Kind of Test Site	Shielded Room
Temperature	20.1 °C
Relative Humidity	43.2 %
Test Date	January 11, 2019

- 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)
0.154000	33.7	9.000	L1	9.7	32.1	65.8
0.162000	33.0	9.000	L1	9.7	32.3	65.4
0.166000	32.4	9.000	L1	9.7	32.7	65.2
0.174000	31.2	9.000	L1	9.7	33.6	64.8
0.182000	31.0	9.000	L1	9.7	33.4	64.4
0.188000	29.7	9.000	L1	9.7	34.4	64.1
4.610000	28.9	9.000	L1	10.0	27.1	56.0
4.640000	29.7	9.000	L1	10.0	26.3	56.0
4.730000	26.4	9.000	L1	10.0	29.6	56.0
4.736000	26.9	9.000	L1	10.0	29.1	56.0
4.770000	27.7	9.000	L1	10.0	28.3	56.0
4.916000	24.0	9.000	L1	10.0	32.0	56.0
9.382000	27.3	9.000	L1	10.2	32.7	60.0
9.740000	29.5	9.000	L1	10.2	30.5	60.0
10.160000	28.9	9.000	L1	10.2	31.1	60.0
10.698000	28.8	9.000	L1	10.3	31.2	60.0
10.772000	29.0	9.000	L1	10.3	31.0	60.0
11.472000	27.6	9.000	L1	10.3	32.4	60.0

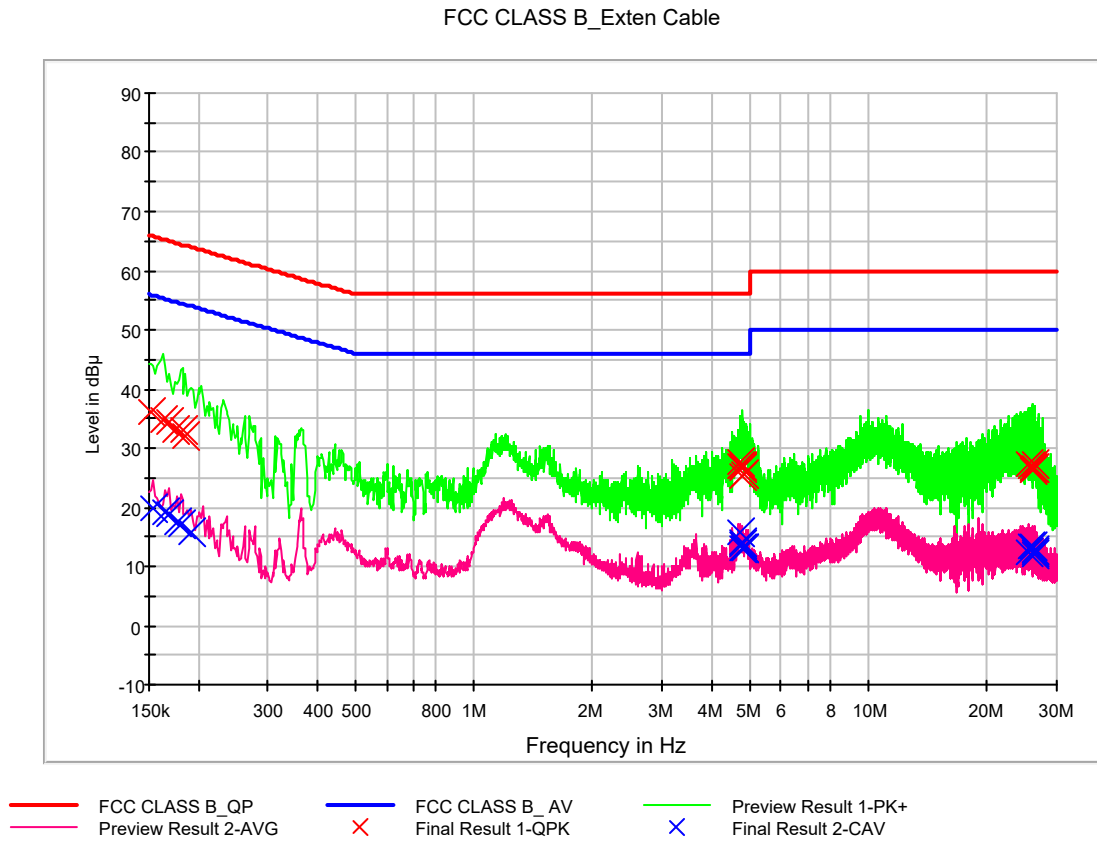


CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154000	18.1	9.000	L1	9.7	37.7	55.8
0.158000	17.6	9.000	L1	9.7	37.9	55.6
0.162000	17.5	9.000	L1	9.7	37.9	55.4
0.166000	18.1	9.000	L1	9.7	37.0	55.2
0.170000	16.9	9.000	L1	9.7	38.0	55.0
0.188000	14.9	9.000	L1	9.7	39.2	54.1
4.610000	18.5	9.000	L1	10.0	27.5	46.0
4.736000	16.7	9.000	L1	10.0	29.3	46.0
4.770000	17.3	9.000	L1	10.0	28.7	46.0
4.798000	17.5	9.000	L1	10.0	28.5	46.0
4.812000	17.4	9.000	L1	10.0	28.6	46.0
4.820000	16.7	9.000	L1	10.0	29.3	46.0
9.382000	18.5	9.000	L1	10.2	31.5	50.0
9.634000	19.6	9.000	L1	10.2	30.4	50.0
10.160000	20.7	9.000	L1	10.2	29.3	50.0
10.700000	20.2	9.000	L1	10.3	29.8	50.0
10.704000	19.9	9.000	L1	10.3	30.1	50.0
11.472000	18.9	9.000	L1	10.3	31.1	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)
0.152000	36.2	9.000	N	9.8	29.7	65.9
0.162000	34.7	9.000	N	9.8	30.6	65.4
0.168000	34.3	9.000	N	9.8	30.8	65.1
0.174000	33.0	9.000	N	9.8	31.7	64.8
0.182000	33.0	9.000	N	9.8	31.4	64.4
0.186000	32.0	9.000	N	9.8	32.2	64.2
4.714000	26.8	9.000	N	10.2	29.2	56.0
4.750000	27.7	9.000	N	10.2	28.3	56.0
4.776000	26.8	9.000	N	10.2	29.2	56.0
4.792000	26.5	9.000	N	10.2	29.5	56.0
4.810000	25.3	9.000	N	10.2	30.7	56.0
4.838000	25.5	9.000	N	10.2	30.5	56.0
25.440000	27.2	9.000	N	11.0	32.8	60.0
25.820000	27.1	9.000	N	11.0	32.9	60.0
26.036000	26.6	9.000	N	11.0	33.4	60.0
26.154000	26.2	9.000	N	11.1	33.8	60.0
26.264000	27.1	9.000	N	11.1	32.9	60.0
26.328000	26.5	9.000	N	11.1	33.5	60.0



CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154000	19.8	9.000	N	9.8	36.0	55.8
0.164000	19.1	9.000	N	9.8	36.1	55.3
0.168000	19.0	9.000	N	9.8	36.1	55.1
0.176000	17.5	9.000	N	9.8	37.1	54.7
0.180000	17.1	9.000	N	9.8	37.4	54.5
0.192000	15.7	9.000	N	9.8	38.2	53.9
4.714000	15.7	9.000	N	10.2	30.3	46.0
4.776000	14.0	9.000	N	10.2	32.0	46.0
4.792000	13.7	9.000	N	10.2	32.3	46.0
4.810000	13.0	9.000	N	10.2	33.0	46.0
4.834000	13.1	9.000	N	10.2	32.9	46.0
4.838000	13.2	9.000	N	10.2	32.8	46.0
25.440000	12.5	9.000	N	11.0	37.6	50.0
25.824000	13.5	9.000	N	11.0	36.5	50.0
26.036000	13.5	9.000	N	11.0	36.5	50.0
26.264000	12.5	9.000	N	11.1	37.5	50.0
26.272000	12.6	9.000	N	11.1	37.4	50.0
26.328000	12.2	9.000	N	11.1	37.8	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	FRONT CAMERA & MP3 mode Wireless charging mode Display mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.7 / 23.3 / 21.1 °C
Relative Humidity	41.6 / 44.2 / 43.0 %
Test Date	January 07 / January 15 / January 17, 2019

- 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



FRONT CAMERA & MP3 Mode

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
31.648800	26.1	100.0	V	336.0	18.8	13.9	40.0
33.784800	26.5	100.0	V	354.0	19.0	13.5	40.0
55.642400	20.9	100.0	V	78.0	20.0	19.1	40.0
87.127200	24.2	192.7	H	119.0	14.7	15.8	40.0
138.921600	21.1	100.0	V	293.0	19.5	22.4	43.5
787.110400	30.0	100.0	H	184.0	30.0	16.0	46.0

Wireless Charging Mode

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
32.119200	20.5	174.7	V	240.0	18.9	19.5	40.0
48.153600	26.3	174.8	V	186.0	20.2	13.7	40.0
70.643200	21.5	192.9	H	111.0	17.8	18.5	40.0
143.919200	21.7	100.0	V	251.0	19.7	21.8	43.5
600.185600	27.7	100.0	H	137.0	27.5	18.3	46.0
798.508000	30.4	374.8	H	197.0	30.2	15.6	46.0

Display Mode

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
37.216000	24.1	100.0	V	293.0	19.3	15.9	40.0
57.364000	25.6	100.0	V	89.0	19.8	14.4	40.0
67.591200	21.3	117.8	V	280.0	18.5	18.7	40.0
388.712000	36.1	100.0	H	96.0	22.7	9.9	46.0
508.584800	32.8	100.0	V	214.0	25.3	13.2	46.0
791.139200	36.0	100.0	H	305.0	30.1	10.0	46.0



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
Operating Mode	FRONT CAMERA & MP3 mode Wireless charging mode Display mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.3 / 23.3 / 21.3 °C
Relative Humidity	43.3 / 44.2 / 41.9 %
Test Date	January 14 / January 15 / January 18, 2019

- 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



FRONT CAMERA & MP3 Mode

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
2069.835000	31.7	260.6	V	185.0	-26.5	42.3	74.0
4952.005000	35.6	139.6	H	267.0	-18.6	38.4	74.0
7427.125000	41.4	249.9	H	196.0	-13.0	32.6	74.0
9342.815000	42.7	189.6	H	197.0	-10.5	31.3	74.0
11321.120000	45.7	150.0	H	268.0	-5.1	28.3	74.0
13126.515000	45.3	100.0	V	134.0	-4.3	28.7	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
2069.835000	18.8	260.6	V	185.0	-26.5	35.2	54.0
4952.005000	23.4	139.6	H	267.0	-18.6	30.6	54.0
7427.125000	28.7	249.9	H	196.0	-13.0	25.3	54.0
9342.815000	30.1	189.6	H	197.0	-10.5	23.9	54.0
11321.120000	32.6	150.0	H	268.0	-5.1	21.4	54.0
13126.515000	32.5	100.0	V	134.0	-4.3	21.5	54.0

Wireless Charging Mode

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
3033.770000	33.6	150.0	V	29.0	-22.8	40.4	74.0
5573.380000	36.4	150.0	V	50.0	-17.7	37.6	74.0
7427.400000	40.9	260.5	H	130.0	-13.0	33.1	74.0
9901.445000	43.6	260.5	H	304.0	-9.5	30.4	74.0
11189.340000	45.6	149.5	V	332.0	-5.3	28.4	74.0
14720.545000	46.6	149.6	H	79.0	-1.4	27.4	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
3033.770000	21.0	150.0	V	29.0	-22.8	33.0	54.0
5573.380000	23.8	150.0	V	50.0	-17.7	30.2	54.0
7427.400000	28.5	260.5	H	130.0	-13.0	25.5	54.0
9901.445000	31.1	260.5	H	304.0	-9.5	22.9	54.0
11189.340000	32.5	149.5	V	332.0	-5.3	21.5	54.0
14720.545000	33.9	149.6	H	79.0	-1.4	20.1	54.0



Display Mode

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1088.095000	47.6	100.0	V	297.0	-29.5	26.4	74.0
1597.425000	42.5	189.5	H	264.0	-27.5	31.5	74.0
3477.240000	42.6	244.4	H	240.0	-22.3	31.4	74.0
5399.885000	48.9	113.6	H	126.0	-18.0	25.1	74.0
14941.910000	46.7	218.4	H	51.0	-1.3	27.3	74.0
17886.040000	53.1	322.5	V	50.0	6.4	20.9	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1088.095000	34.8	100.0	V	297.0	-29.5	19.2	54.0
1597.425000	29.1	189.5	H	264.0	-27.5	24.9	54.0
3477.240000	29.9	244.4	H	240.0	-22.3	24.1	54.0
5399.885000	46.0	113.6	H	126.0	-18.0	8.0	54.0
14941.910000	34.1	218.4	H	51.0	-1.3	19.9	54.0
17886.040000	40.1	322.5	V	50.0	6.4	13.9	54.0



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