

TEST REPORT

EMI Test for FCC Certification of LM-G850UM Model

APPLICANT

LG Electronics USA, Inc.

REPORT NO.

HCT-EM-1909-FC002-R1

DATE OF ISSUE

September 27, 2019

HCT Co., Ltd.

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FCC Certification

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FCC ID
ZNFG850UM

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

Product Name Multi-band GSM/CDMA/WCDMA/LTE Phone with WLAN, Bluetooth, NFC
Model Name LM-G850UM
Series Model Name Refer to the clause 1.1 Description of EUT

Travel Adaptor Information Model name: MCS-H06WA
Manufacturer: AOHA1

Date of Test August 19, 2019 to September 06, 2019

Test Standard Used FCC CFR 47 PART 15 Subpart B Class B
ANSI C63.4-2014

Test Results Refer to the present document

Manufacturer LG Electronics Inc.

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

Tested by
Na-Eun Song

(signature)

Technical Manager
Gu-Cheol Yoon

(signature)

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REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	September 11, 2019	Initial Release
1	September 27, 2019	Added name to the setup photo

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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1. GENERAL INFORMATION

1.1 Description of EUT

FCC ID	ZNFG850UM
Model Name	LM-G850UM
Series Model Name	LM-G850QM, LM-G850QM6, LM-G850V, LM-G850UM2, LM-G850UM2X, LMG850UM, LMG850QM, LMG850QM6, LMG850V, LMG850UM2, LMG850UM2X, G850UM, G850QM, G850QM6, G850V, G850UM2, G850UM2X (These models are the same in all ways except model name itself.)
Product Name	Multi-band GSM/CDMA/WCDMA/LTE Phone with WLAN, Bluetooth, NFC
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)

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	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-G850UM	-	LG
LED Monitor	27UD88	-	LG
Monitor Adapter	LCAP31	-	LG
DP cable	NEXT-JCA141	-	EZ-Net Ubiquitous
Wireless Charger	EP-PN920	-	SAMSUNG
Micro USB Cable	ECB-DU4EWE	-	SAMSUNG
Data Cable	EAD64746105	-	KSD
Earphone	EAB63728251	-	CRESYN
TA	MCS-H06WA	-	AOHAI
Micro SD Card	SAMSUNG EVO+ microSDXC CLASS10 UHS- I	-	SAMSUNG

1.3 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (m)
EUT	USB Type C (Data Cable)	Y	N/A	(P) 1.0
	USB Type C (Display Cable)	N/A	Y	(D) 1.0
	Earphone	N/A	N	(D) 1.2
LED Monitor	DC IN	N	N/A	(P) 1.8
	DP port	N/A	Y	(D) 1.2
Wireless Charger	Micro USB	Y	N/A	(P) 1.5

NOTE. 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 (Data Cable)	N	N/A	Y	Both End
	USB Type C (Display Cable)	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	Designation No.
Radiated Field strength measurement facility 3 m Semi Anechoic chamber	KR0032
Radiated Field strength measurement facility 10 m Semi Anechoic chamber #1	
Radiated Field strength measurement facility 10 m Semi Anechoic chamber #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 equipment, which is traceable to recognized national standards. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5:2017

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
Conducted Emission (0.15 MHz to 30 MHz)	1.8 dB
3 m Radiated Emissions (30 MHz to 1 GHz)	4.8 dB
3 m Radiated Emissions (1 GHz to 18 GHz)	5.4 dB
3 m Radiated Emissions (18 GHz to 40 GHz)	5.7 dB

2. DESCRIPTION OF TEST

2.1 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)	Class A		Class B	
		Quasi-Peak (dBμV)	Average (dBμV)	Quasi-Peak (dBμV)	Average (dBμV)
0.15 to 0.5	9	79	66	66 to 56*	56 to 46*
0.5 to 5	9	73	60	56	46
5 to 30	9	73	60	60	50

NOTE. Decreases with the logarithm of the frequency.

2.2 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

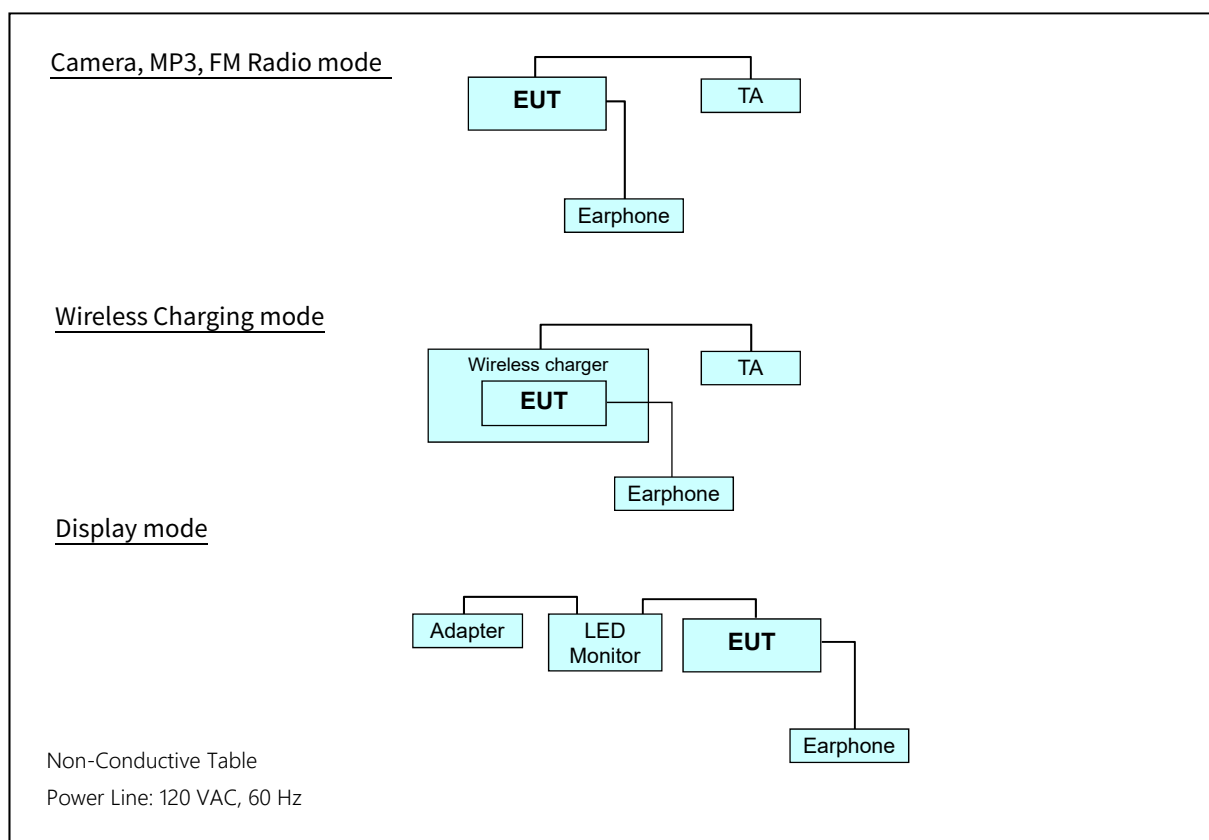
Frequency (MHz)	Class A			Class B		
	Antenna Distance (m)	Field Strength (μV/m)	Quasi-Peak (dBμV/m)	Antenna Distance (m)	Field Strength (μV/m)	Quasi-Peak (dBμV/m)
30 to 88	10	90	39.0	3	100	40.0
88 to 216	10	150	43.5	3	150	43.5
216 to 960	10	210	46.4	3	200	46.0
Above 960	10	300	49.5	3	500	54.0
Frequency (MHz)	Antenna Distance (m)	Class A		Class B		
		Peak (dBμV/m)	Average (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)	
Above 1 000	3	80	60	74	54	

2.2.1 Frequency Range of Radiated Measurements

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

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

2.3 Configuration of Tested System



3. PRELIMINARY TEST

3.1 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

Wireless charging mode

Display mode

IDLE mode

NOTE. The worst-case emissions are reported.

3.2 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

Wireless charging mode

Display mode

IDLE mode

NOTE. The worst-case emissions are reported.

4. CONDUCTED EMISSION AND RADIATED EMISSION TEST SUMMARY

4.1 Conducted Emission

4.1.1 Measuring instruments

	Type	Manufacturer	Model Name	Serial Number	Calibration Cycle	Calibration Date
☒	EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	06.18.2019
☒	LISN	Rohde & Schwarz	ENV216	102245	1 year	12.12.2018
☒	Software	Rohde & Schwarz	EMC32	-	-	-

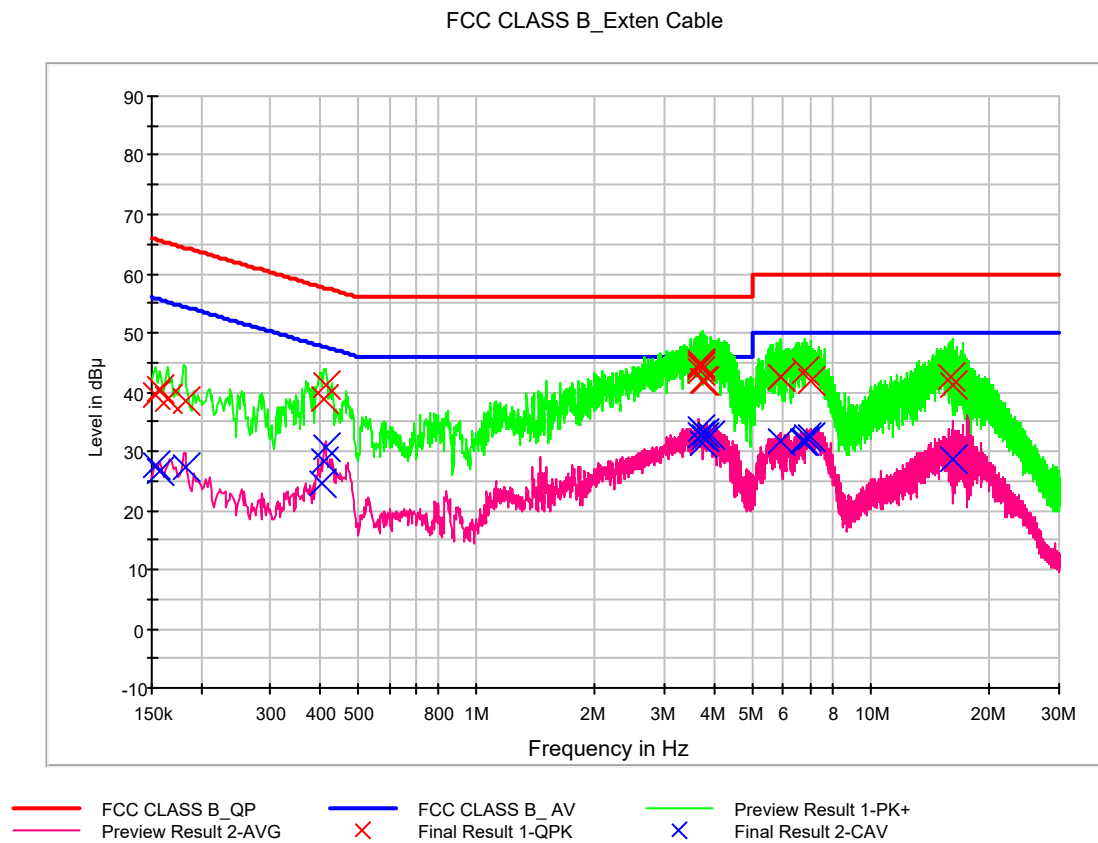
4.1.2 Operating Condition

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

Test Standard Used	FCC CFR 47 PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Worst Case of Operating Mode	REAR CAMERA & FM RADIO mode Wireless charging mode Display mode
Kind of Test Site	Shielded Room
Temperature	24.7 / 24.1 °C
Relative Humidity	43.6 / 43.5 %
Test Date	September 04 / September 06, 2019

4.1.3 Measuring Data

Figure 1: Conducted Emission, REAR CAMERA & FM RADIO mode, Line (L1)



QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	39.4	9.000	L1	9.8	26.4	65.8
0.158000	40.7	9.000	L1	9.8	24.9	65.6
0.164000	39.0	9.000	L1	9.8	26.3	65.3
0.182000	38.6	9.000	L1	9.8	25.8	64.4
0.408000	38.7	9.000	L1	9.8	19.0	57.7
0.414000	41.1	9.000	L1	9.8	16.5	57.6
3.694000	44.2	9.000	L1	9.9	11.8	56.0
3.698000	44.5	9.000	L1	9.9	11.5	56.0
3.704000	45.0	9.000	L1	9.9	11.0	56.0
3.714000	43.6	9.000	L1	9.9	12.4	56.0
3.724000	41.7	9.000	L1	9.9	14.3	56.0
3.796000	41.9	9.000	L1	9.9	14.1	56.0
5.870000	42.5	9.000	L1	10.1	17.5	60.0
5.892000	42.6	9.000	L1	10.1	17.4	60.0
6.772000	43.4	9.000	L1	10.2	16.6	60.0
7.050000	41.8	9.000	L1	10.2	18.2	60.0
15.860000	42.6	9.000	L1	10.5	17.4	60.0
16.150000	41.2	9.000	L1	10.5	18.8	60.0

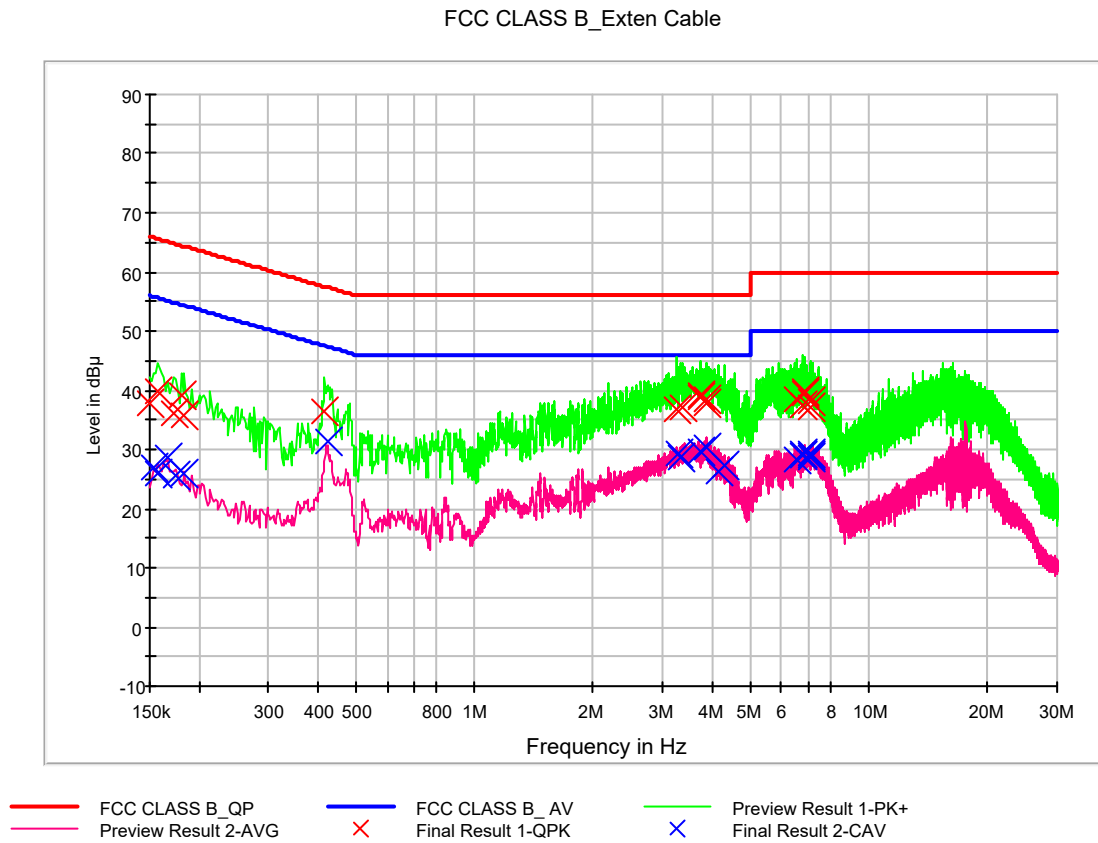
Calculation Formula:

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

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	27.7	9.000	L1	9.8	28.1	55.8
0.158000	26.8	9.000	L1	9.8	28.8	55.6
0.182000	27.2	9.000	L1	9.8	27.2	54.4
0.404000	24.7	9.000	L1	9.8	23.1	47.8
0.410000	28.1	9.000	L1	9.8	19.5	47.6
0.414000	30.6	9.000	L1	9.8	17.0	47.6
3.704000	33.8	9.000	L1	9.9	12.2	46.0
3.714000	32.8	9.000	L1	9.9	13.2	46.0
3.724000	31.5	9.000	L1	9.9	14.5	46.0
3.776000	33.0	9.000	L1	9.9	13.0	46.0
3.796000	32.5	9.000	L1	9.9	13.5	46.0
3.934000	32.6	9.000	L1	10.0	13.4	46.0
5.870000	31.6	9.000	L1	10.1	18.4	50.0
6.702000	31.6	9.000	L1	10.2	18.4	50.0
6.766000	31.7	9.000	L1	10.2	18.3	50.0
6.840000	32.3	9.000	L1	10.2	17.7	50.0
7.050000	32.3	9.000	L1	10.2	17.7	50.0
16.150000	28.6	9.000	L1	10.5	21.4	50.0

Figure 2: Conducted Emission, REAR CAMERA & FM RADIO mode, Line (N)



QuasiPeak Final Result, Line (N)

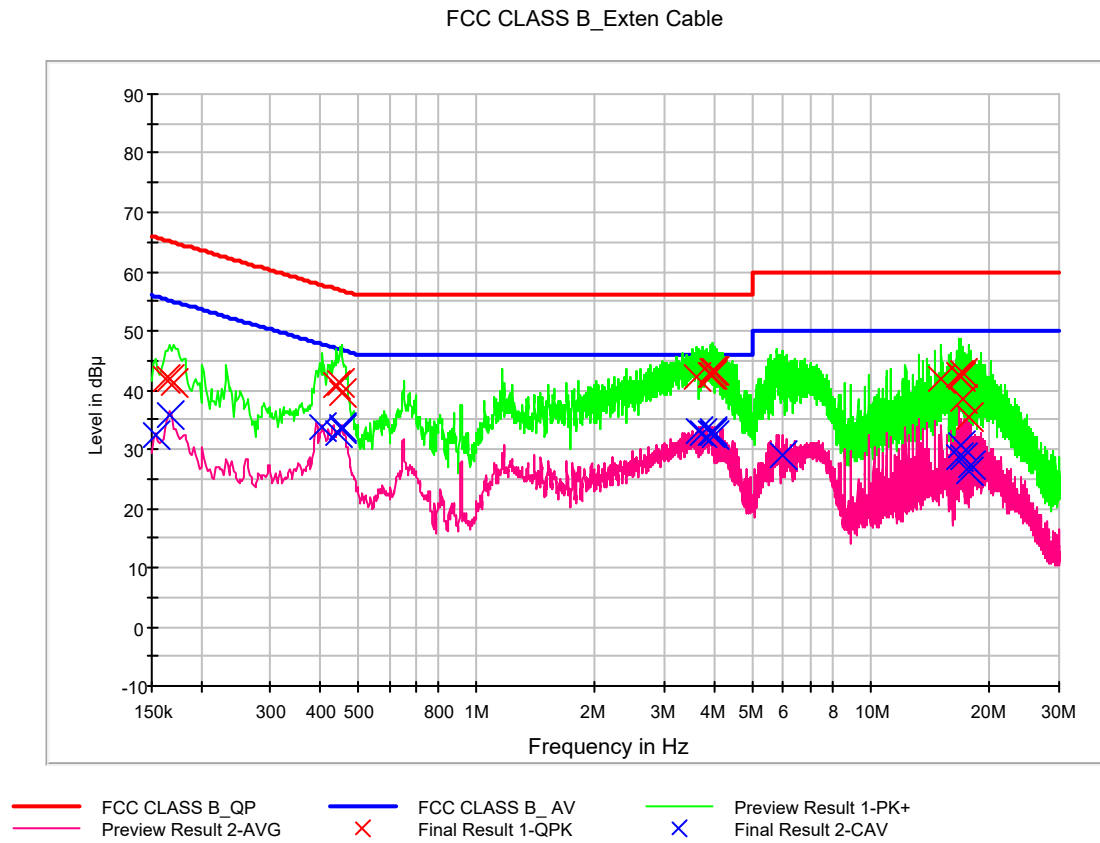
Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	37.9	9.000	N	9.9	28.1	66.0
0.158000	40.0	9.000	N	9.9	25.6	65.6
0.172000	36.0	9.000	N	9.9	28.9	64.9
0.180000	39.0	9.000	N	9.9	25.5	64.5
0.184000	35.9	9.000	N	9.9	28.4	64.3
0.416000	36.6	9.000	N	9.9	21.0	57.5
3.240000	36.7	9.000	N	10.1	19.3	56.0
3.372000	37.1	9.000	N	10.1	18.9	56.0
3.742000	39.0	9.000	N	10.1	17.0	56.0
3.750000	39.0	9.000	N	10.1	17.0	56.0
3.880000	38.6	9.000	N	10.2	17.4	56.0
3.886000	37.8	9.000	N	10.2	18.2	56.0
6.592000	38.4	9.000	N	10.4	21.6	60.0
6.776000	37.6	9.000	N	10.4	22.4	60.0
6.846000	39.9	9.000	N	10.4	20.1	60.0
6.854000	39.6	9.000	N	10.4	20.4	60.0
7.120000	38.0	9.000	N	10.4	22.0	60.0
7.136000	37.3	9.000	N	10.4	22.7	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	27.1	9.000	N	9.9	28.7	55.8
0.158000	26.0	9.000	N	9.9	29.6	55.6
0.166000	28.7	9.000	N	9.9	26.4	55.2
0.174000	25.5	9.000	N	9.9	29.2	54.8
0.184000	25.9	9.000	N	9.9	28.4	54.3
0.424000	31.5	9.000	N	9.9	15.9	47.4
3.302000	29.2	9.000	N	10.1	16.8	46.0
3.344000	28.8	9.000	N	10.1	17.2	46.0
3.750000	29.6	9.000	N	10.1	16.4	46.0
3.880000	30.3	9.000	N	10.2	15.7	46.0
4.178000	26.3	9.000	N	10.2	19.7	46.0
4.290000	27.3	9.000	N	10.2	18.7	46.0
6.592000	28.4	9.000	N	10.4	21.6	50.0
6.776000	28.8	9.000	N	10.4	21.2	50.0
6.784000	29.2	9.000	N	10.4	20.8	50.0
7.114000	29.4	9.000	N	10.4	20.6	50.0
7.120000	29.1	9.000	N	10.4	20.9	50.0
7.136000	28.6	9.000	N	10.4	21.4	50.0

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Figure 3: Conducted Emission, Wireless charging mode, Line (L1)



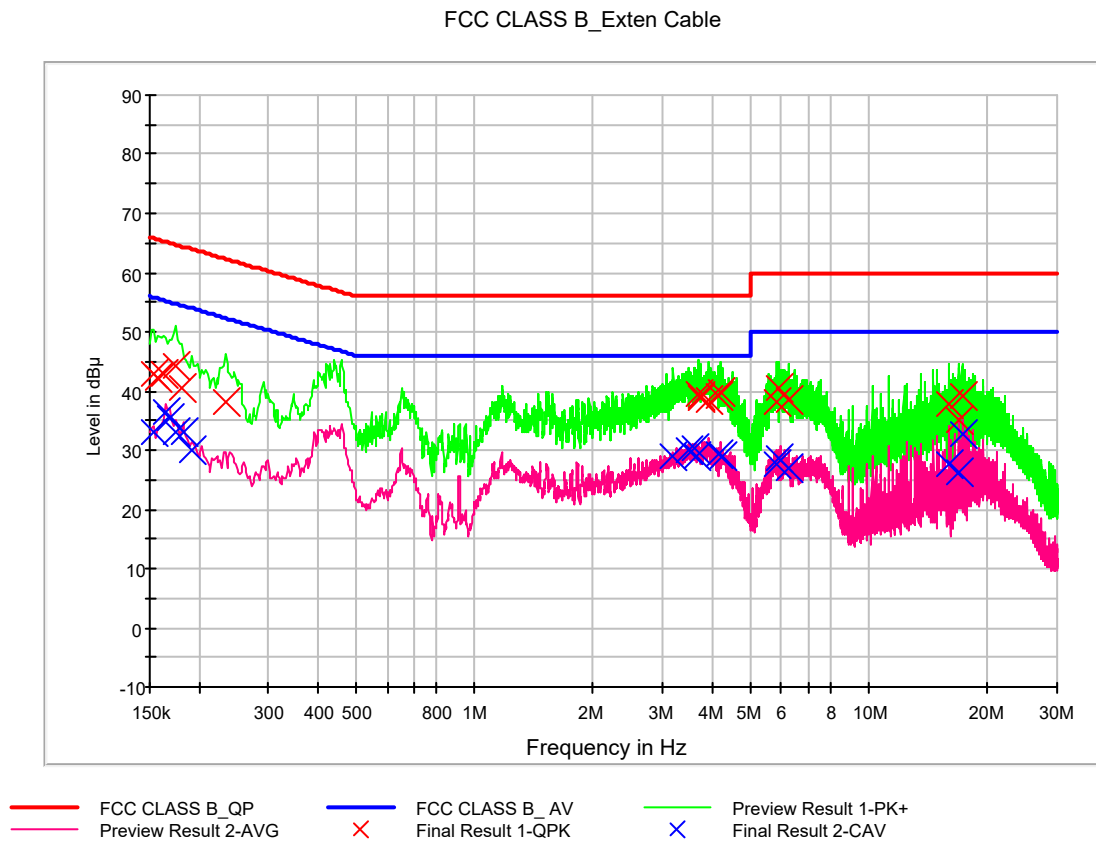
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.162000	41.7	9.000	L1	9.8	23.6	65.4
0.166000	41.9	9.000	L1	9.8	23.3	65.2
0.170000	41.3	9.000	L1	9.8	23.7	65.0
0.442000	40.8	9.000	L1	9.8	16.3	57.0
0.452000	41.2	9.000	L1	9.8	15.7	56.8
0.456000	39.5	9.000	L1	9.8	17.2	56.8
3.630000	42.4	9.000	L1	9.9	13.6	56.0
3.910000	42.4	9.000	L1	10.0	13.6	56.0
3.970000	42.4	9.000	L1	10.0	13.6	56.0
3.978000	43.2	9.000	L1	10.0	12.8	56.0
3.982000	43.2	9.000	L1	10.0	12.8	56.0
4.034000	43.4	9.000	L1	10.0	12.6	56.0
15.132000	41.8	9.000	L1	10.5	18.2	60.0
16.696000	42.5	9.000	L1	10.5	17.5	60.0
16.956000	42.2	9.000	L1	10.5	17.8	60.0
17.090000	38.6	9.000	L1	10.5	21.4	60.0
17.210000	42.9	9.000	L1	10.5	17.1	60.0
17.744000	35.5	9.000	L1	10.6	24.5	60.0

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	32.4	9.000	L1	9.8	23.4	55.8
0.166000	35.7	9.000	L1	9.8	19.4	55.2
0.406000	33.8	9.000	L1	9.8	13.9	47.7
0.444000	32.7	9.000	L1	9.8	14.3	47.0
0.454000	33.5	9.000	L1	9.8	13.3	46.8
0.458000	33.6	9.000	L1	9.8	13.2	46.7
3.636000	32.9	9.000	L1	9.9	13.1	46.0
3.750000	32.9	9.000	L1	9.9	13.1	46.0
3.912000	32.9	9.000	L1	10.0	13.1	46.0
3.978000	32.9	9.000	L1	10.0	13.1	46.0
3.982000	32.8	9.000	L1	10.0	13.2	46.0
4.034000	32.5	9.000	L1	10.0	13.5	46.0
6.006000	29.1	9.000	L1	10.1	20.9	50.0
16.696000	28.6	9.000	L1	10.5	21.4	50.0
16.954000	30.6	9.000	L1	10.5	19.4	50.0
17.090000	28.8	9.000	L1	10.5	21.2	50.0
17.744000	26.1	9.000	L1	10.6	23.9	50.0
18.000000	27.1	9.000	L1	10.6	22.9	50.0

Figure 4: Conducted Emission, Wireless charging mode, Line (N)



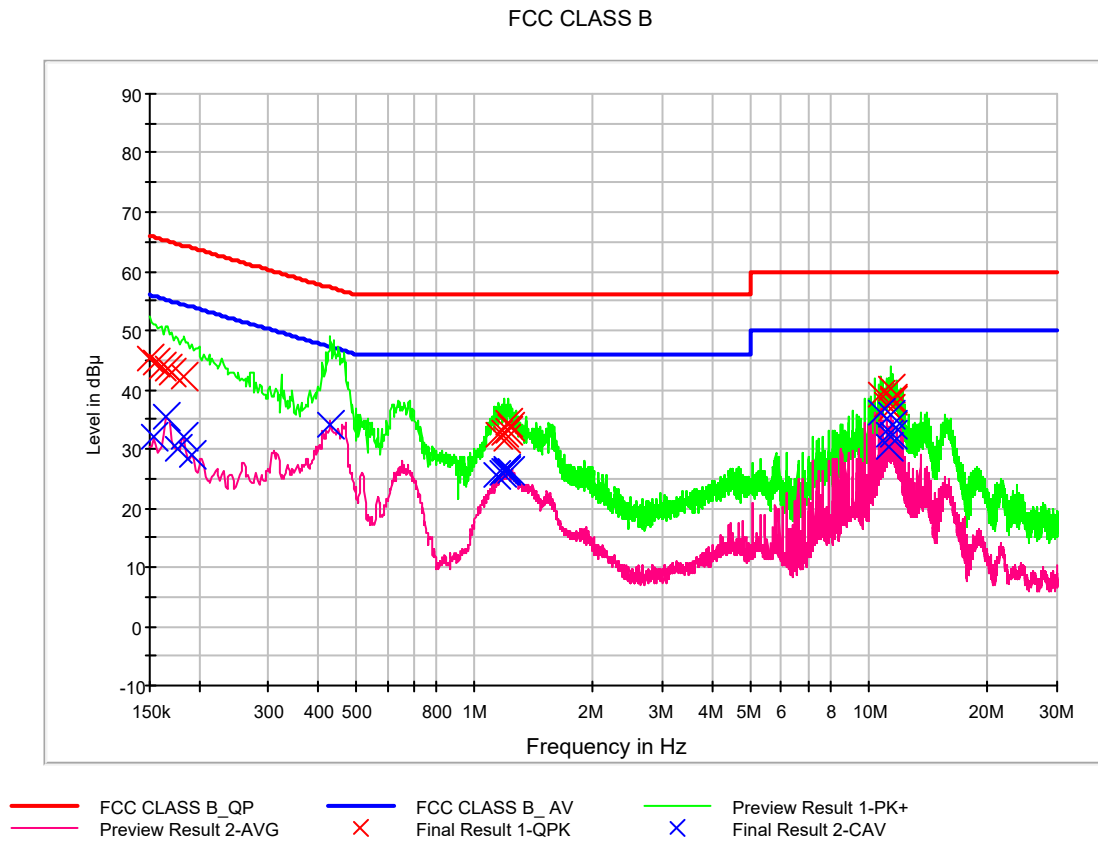
QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	42.7	9.000	N	9.9	23.1	65.8
0.158000	42.2	9.000	N	9.9	23.4	65.6
0.162000	43.0	9.000	N	9.9	22.3	65.4
0.174000	44.1	9.000	N	9.9	20.6	64.8
0.180000	40.6	9.000	N	9.9	23.9	64.5
0.234000	38.1	9.000	N	9.9	24.2	62.3
3.684000	39.4	9.000	N	10.1	16.6	56.0
3.732000	38.7	9.000	N	10.1	17.3	56.0
3.738000	39.0	9.000	N	10.1	17.0	56.0
3.914000	38.5	9.000	N	10.2	17.5	56.0
4.140000	39.0	9.000	N	10.2	17.0	56.0
4.200000	39.9	9.000	N	10.2	16.1	56.0
5.864000	38.2	9.000	N	10.3	21.8	60.0
5.914000	40.5	9.000	N	10.3	19.5	60.0
6.268000	38.5	9.000	N	10.4	21.5	60.0
15.916000	37.7	9.000	N	10.8	22.3	60.0
16.920000	35.0	9.000	N	10.8	25.0	60.0
17.214000	39.3	9.000	N	10.8	20.7	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	32.9	9.000	N	9.9	22.8	55.8
0.164000	36.5	9.000	N	9.9	18.8	55.3
0.168000	35.3	9.000	N	9.9	19.8	55.1
0.174000	33.0	9.000	N	9.9	21.7	54.8
0.182000	32.9	9.000	N	9.9	21.4	54.4
0.192000	30.0	9.000	N	9.9	23.9	53.9
3.194000	28.8	9.000	N	10.1	17.2	46.0
3.472000	29.9	9.000	N	10.1	16.1	46.0
3.622000	30.3	9.000	N	10.1	15.7	46.0
3.642000	29.0	9.000	N	10.1	17.0	46.0
4.140000	29.2	9.000	N	10.2	16.8	46.0
4.256000	28.9	9.000	N	10.2	17.1	46.0
5.862000	27.5	9.000	N	10.3	22.5	50.0
5.914000	28.8	9.000	N	10.3	21.2	50.0
6.270000	27.1	9.000	N	10.4	22.9	50.0
15.916000	27.7	9.000	N	10.8	22.3	50.0
16.960000	26.1	9.000	N	10.8	23.9	50.0
17.214000	32.6	9.000	N	10.8	17.4	50.0

Figure 5: Conducted Emission, DISPLAY mode, Line (L1)



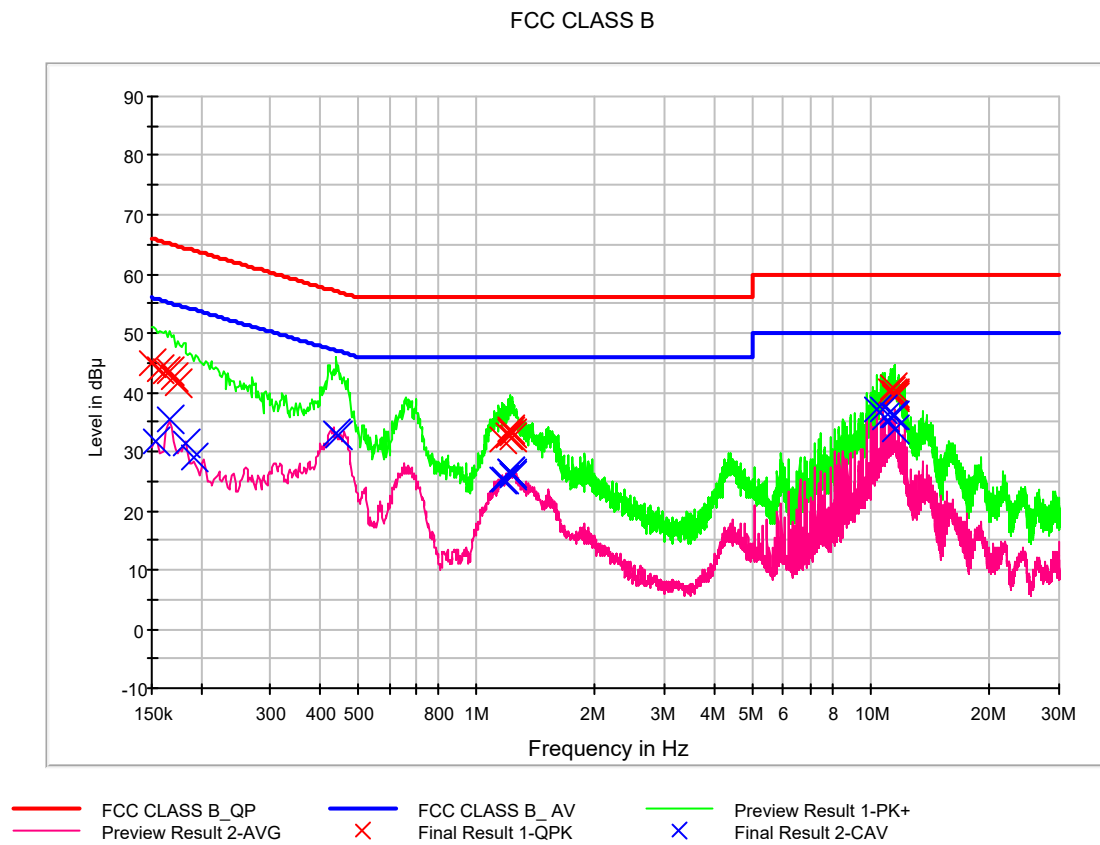
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	45.3	9.000	L1	9.7	20.7	66.0
0.156000	44.7	9.000	L1	9.7	21.0	65.7
0.160000	43.9	9.000	L1	9.7	21.6	65.5
0.166000	43.6	9.000	L1	9.7	21.6	65.2
0.170000	43.0	9.000	L1	9.7	22.0	65.0
0.184000	42.1	9.000	L1	9.7	22.3	64.3
1.154000	32.3	9.000	L1	9.8	23.7	56.0
1.190000	32.8	9.000	L1	9.8	23.2	56.0
1.196000	31.8	9.000	L1	9.8	24.2	56.0
1.218000	33.2	9.000	L1	9.8	22.8	56.0
1.224000	34.4	9.000	L1	9.8	21.6	56.0
1.228000	33.8	9.000	L1	9.8	22.2	56.0
10.666000	39.1	9.000	L1	10.1	20.9	60.0
11.136000	37.4	9.000	L1	10.1	22.6	60.0
11.346000	36.8	9.000	L1	10.1	23.2	60.0
11.400000	40.0	9.000	L1	10.1	20.0	60.0
11.466000	38.2	9.000	L1	10.1	21.8	60.0
11.534000	38.3	9.000	L1	10.1	21.7	60.0

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	32.1	9.000	L1	9.7	23.7	55.8
0.164000	35.4	9.000	L1	9.7	19.9	55.3
0.176000	30.0	9.000	L1	9.7	24.7	54.7
0.182000	31.9	9.000	L1	9.7	22.5	54.4
0.192000	28.9	9.000	L1	9.7	25.0	53.9
0.430000	33.9	9.000	L1	9.7	13.3	47.3
1.140000	25.6	9.000	L1	9.8	20.4	46.0
1.180000	25.8	9.000	L1	9.8	20.2	46.0
1.192000	26.3	9.000	L1	9.8	19.7	46.0
1.196000	26.4	9.000	L1	9.8	19.6	46.0
1.210000	26.6	9.000	L1	9.8	19.4	46.0
1.236000	26.2	9.000	L1	9.8	19.8	46.0
10.666000	36.2	9.000	L1	10.1	13.8	50.0
11.250000	30.3	9.000	L1	10.1	19.7	50.0
11.268000	32.5	9.000	L1	10.1	17.5	50.0
11.398000	35.6	9.000	L1	10.1	14.4	50.0
11.466000	32.4	9.000	L1	10.1	17.6	50.0
11.532000	34.2	9.000	L1	10.1	15.8	50.0

Figure 6: Conducted Emission, DISPLAY mode, Line (N)



QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	44.9	9.000	N	9.7	21.1	66.0
0.158000	43.8	9.000	N	9.7	21.8	65.6
0.162000	43.5	9.000	N	9.7	21.8	65.4
0.166000	43.5	9.000	N	9.7	21.7	65.2
0.170000	42.4	9.000	N	9.7	22.6	65.0
0.174000	41.7	9.000	N	9.7	23.1	64.8
1.162000	32.0	9.000	N	9.7	24.0	56.0
1.208000	32.6	9.000	N	9.7	23.4	56.0
1.220000	33.7	9.000	N	9.7	22.3	56.0
1.224000	33.2	9.000	N	9.7	22.8	56.0
1.228000	32.3	9.000	N	9.7	23.7	56.0
1.232000	33.1	9.000	N	9.7	22.9	56.0
11.264000	40.3	9.000	N	10.1	19.7	60.0
11.398000	40.9	9.000	N	10.1	19.1	60.0
11.402000	39.7	9.000	N	10.1	20.3	60.0
11.464000	39.6	9.000	N	10.1	20.4	60.0
11.468000	39.1	9.000	N	10.1	20.9	60.0
11.530000	40.0	9.000	N	10.1	20.0	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.154000	31.9	9.000	N	9.7	23.9	55.8
0.166000	35.5	9.000	N	9.7	19.7	55.2
0.184000	31.5	9.000	N	9.7	22.8	54.3
0.192000	29.0	9.000	N	9.7	25.0	53.9
0.442000	32.9	9.000	N	9.7	14.1	47.0
0.446000	32.8	9.000	N	9.7	14.1	46.9
1.158000	25.1	9.000	N	9.7	20.9	46.0
1.180000	25.3	9.000	N	9.7	20.7	46.0
1.220000	26.6	9.000	N	9.7	19.4	46.0
1.224000	26.5	9.000	N	9.7	19.5	46.0
1.228000	26.3	9.000	N	9.7	19.7	46.0
1.232000	26.0	9.000	N	9.7	20.0	46.0
10.398000	37.0	9.000	N	10.0	13.0	50.0
10.666000	37.2	9.000	N	10.0	12.8	50.0
10.866000	35.8	9.000	N	10.1	14.2	50.0
11.398000	36.1	9.000	N	10.1	13.9	50.0
11.464000	33.8	9.000	N	10.1	16.2	50.0
11.532000	36.2	9.000	N	10.1	13.8	50.0

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4.2 Radiated Emission Below 1 GHz

4.2.1 Measuring instruments

Type	Manufacturer	Model Name	Serial Number	Calibration Cycle	Calibration Date
☒ EMI test receiver	Rohde & Schwarz	ESU40	100524	1 year	05.17.2019
☒ Trilog antenna	Schwarzbeck	VULB 9168	255	2 year	03.26.2019
☒ 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	-
☒ Software	Rohde & Schwarz	EMC32	-	-	-

4.2.2 Operating Condition

The test results of radiated emission provide the following information:

Used Test Standard	FCC CFR 47 PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Quasi-Peak
Bandwidth	120 kHz (6 dB)
Worst Case of Operating Mode	REAR CAMERA & FM RADIO mode Wireless charging mode Display mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	23.9 / 21.1 °C
Relative Humidity	44.3 / 43.7 %
Test Date	August 19 / August 23, 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

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4.2.3 Measuring Data

REAR CAMERA & FM RADIO mode

Frequency (MHz)	Quasi Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
31.940000	23.9	100.0	V	7.0	18.4	16.1	40.0
52.835200	22.8	100.0	V	0.0	19.7	17.2	40.0
91.526400	19.4	192.7	H	124.0	14.4	24.1	43.5
114.558400	21.6	208.7	V	27.0	16.8	21.9	43.5
692.196000	28.7	199.8	H	0.0	28.7	17.3	46.0
950.276000	32.3	206.8	V	1.0	32.0	13.7	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)
31.798400	23.4	100.0	V	18.0	18.4	16.6	40.0
53.323200	22.6	100.0	V	150.0	19.7	17.4	40.0
85.393600	20.9	225.1	H	311.0	15.0	19.1	40.0
145.493600	18.6	100.0	V	169.0	19.3	24.9	43.5
682.791200	28.4	125.2	V	326.0	28.6	17.6	46.0
909.683200	31.6	225.2	V	28.0	31.7	14.4	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)
38.549600	26.3	174.8	V	70.0	18.9	13.7	40.0
55.900000	28.1	100.0	V	86.0	19.6	11.9	40.0
83.752000	33.6	225.0	H	309.0	15.2	6.4	40.0
166.803200	35.3	174.8	H	188.0	19.4	8.2	43.5
401.242400	32.1	100.0	H	96.0	22.9	13.9	46.0
793.920800	34.2	100.0	H	43.0	30.3	11.8	46.0

4.3 Radiated Emission Above 1 GHz

4.3.1 Measuring instruments

	Type	Manufacturer	Model Name	Serial Number	Calibration Cycle	Calibration Date
☒	EMI test receiver	Rohde & Schwarz	ESU40	100524	1 year	05.17.2019
☒	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	-
☒	Low Noise amplifier	TESTEK	TK-PA18H	170034-L	1 year	03.04.2019
☒	Horn antenna	Schwarzbeck	BBHA 9120D	01836	1 year	07.19.2019
☒	Power Amplifier	TK-PA1840H	TESTEK	170030-L	1 year	12.17.2018
☒	Horn Antenna	BBHA 9170	Schwarzbeck	BBHA9170 #786	2 year	12.05.2017
☒	Software	Rohde & Schwarz	EMC32	-	-	-

4.3.2 Operating Condition

The test results of radiated emission provide the following information:

Used Test Standard	FCC CFR 47 PART 15 Subpart B 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
Worst Case of Operating Mode	REAR CAMERA & FM RADIO mode Wireless charging mode Display mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	20.7 / 21.5 / 21.1 °C
Relative Humidity	45.2 / 43.2 / 43.7 %
Test Date	August 20 / August 21 / August 23, 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

4.3.3 Measuring Data

REAR CAMERA & FM RADIO mode

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
2983.110000	35.0	199.5	V	13.0	-21.1	39.0	74.0
5282.560000	38.8	113.6	V	256.0	-15.4	35.2	74.0
7328.390000	44.1	350.1	H	267.0	-9.7	29.9	74.0
9594.115000	48.1	277.6	V	153.0	-5.1	25.9	74.0
11276.830000	48.2	125.6	V	20.0	-2.4	25.8	74.0
14832.180000	48.7	249.9	V	252.0	1.2	25.3	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
2983.110000	22.2	199.5	V	13.0	-21.1	31.8	54.0
5282.560000	26.2	113.6	V	256.0	-15.4	27.8	54.0
7328.390000	31.3	350.1	H	267.0	-9.7	22.8	54.0
9594.115000	35.6	277.6	V	153.0	-5.1	18.4	54.0
11276.830000	35.3	125.6	V	20.0	-2.4	18.8	54.0
14832.180000	36.3	249.9	V	252.0	1.2	17.7	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)
3054.135000	35.2	100.0	V	158.0	-21.0	38.8	74.0
5279.675000	38.7	100.0	H	52.0	-15.4	35.4	74.0
7172.085000	43.9	336.5	V	105.0	-10.2	30.1	74.0
9200.650000	47.7	321.7	V	0.0	-6.0	26.3	74.0
10249.680000	47.9	100.0	V	151.0	-4.2	26.1	74.0
14893.715000	49.6	150.0	V	0.0	1.2	24.4	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
3054.135000	22.3	100.0	V	158.0	-21.0	31.7	54.0
5279.675000	26.2	100.0	H	52.0	-15.4	27.8	54.0
7172.085000	30.6	336.5	V	105.0	-10.2	23.4	54.0
9200.650000	35.0	321.7	V	0.0	-6.0	19.0	54.0
10249.680000	35.4	100.0	V	151.0	-4.2	18.6	54.0
14893.715000	36.0	150.0	V	0.0	1.2	18.0	54.0

DISPLAY mode

Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
1090.460000	48.3	188.4	H	284.0	-27.4	25.7	74.0
2403.660000	42.4	113.4	H	162.0	-23.8	31.6	74.0
4969.710000	46.7	198.6	H	144.0	-15.8	27.3	74.0
5400.095000	45.8	205.6	H	212.0	-15.3	28.2	74.0
9526.000000	49.5	100.0	V	99.0	-5.1	24.5	74.0
11313.725000	48.1	124.6	H	274.0	-2.4	25.9	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)
1090.460000	35.6	188.4	H	284.0	-27.4	18.4	54.0
2403.660000	29.6	113.4	H	162.0	-23.8	24.4	54.0
4969.710000	34.8	198.6	H	144.0	-15.8	19.2	54.0
5400.095000	40.2	205.6	H	212.0	-15.3	13.8	54.0
9526.000000	35.9	100.0	V	99.0	-5.1	18.1	54.0
11313.725000	35.3	124.6	H	274.0	-2.4	18.7	54.0

5. CONCLUSION

The data collected shows that the **Product Name: Multi-band GSM/CDMA/WCDMA/LTE Phone with WLAN, Bluetooth, NFC, Model Name: LM-G850UM** complies with §15.107 and §15.109 of the FCC rules.

6. APPENDIX A. TEST SETUP PHOTO

Please refer to Appendix. A and test setup photo file no. as follows;

File No.	Date of Issue	Description
HCT-EM-1909-FC002-P	September 11, 2019	Initial Release
HCT-EM-1909-FC002-R1-P	September 27, 2019	Added name to the setup photo

End of report