

TEST REPORT

EMI Test for FCC Certification of LM-G850UM Model

APPLICANT

LG Electronics USA, Inc.

REPORT NO.

HCT-EM-1908-FC013-R1

DATE OF ISSUE

September 09, 2019

HCT Co., Ltd.

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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 06, 2019 to August 14, 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	August 27, 2019	Initial Release
1	September 09, 2019	Added Series Model Name

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
LED Monitor	Earphone	N/A	N	(D) 1.2
	DC IN	N	N/A	(P) 1.8
Wireless Charger	DP port	N/A	Y	(D) 1.2

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 (dB μ V)	Average (dB μ V)	Quasi-Peak (dB μ V)	Average (dB μ V)
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

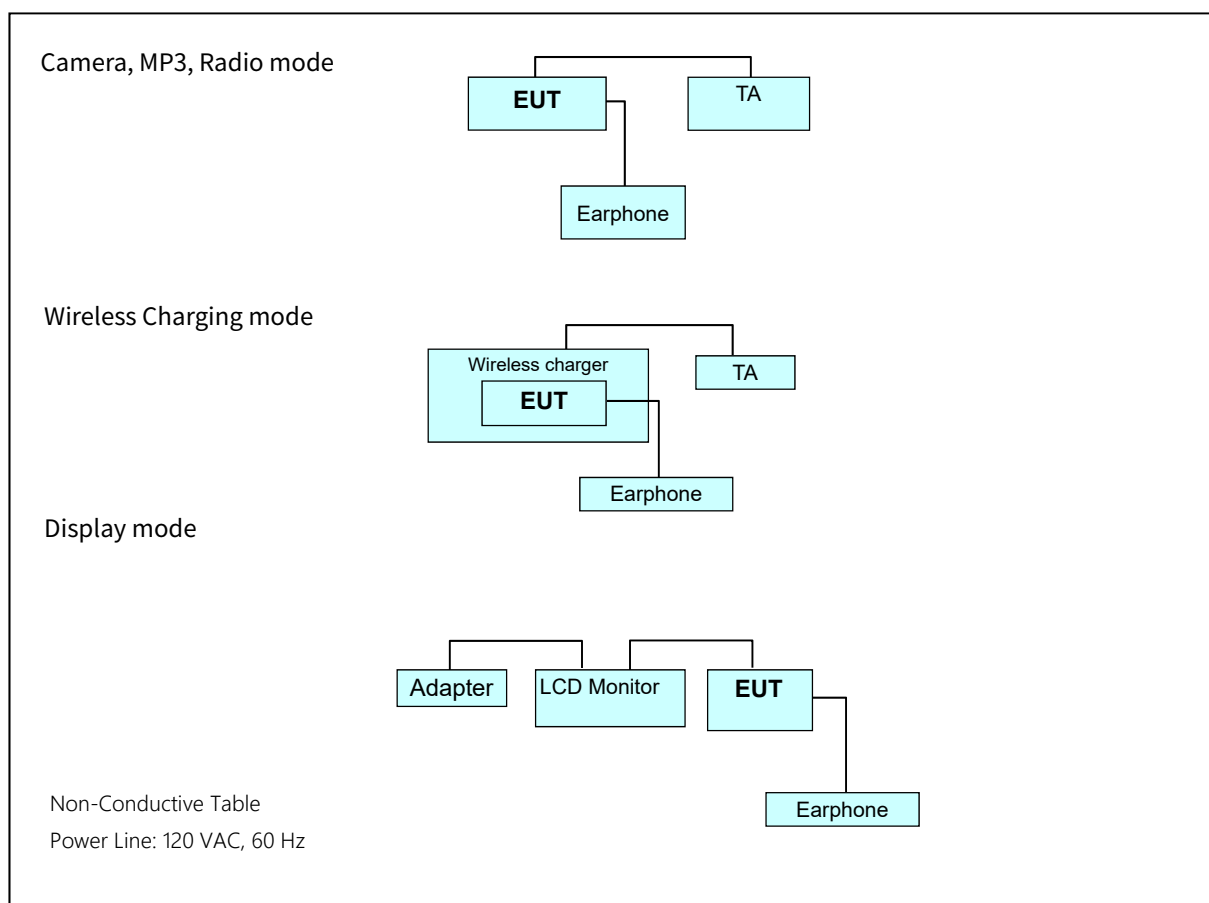
Frequency (MHz)	Class A			Class B		
	Antenna Distance (m)	Field Strength (μV/m)	Quasi-Peak (dBμV/m)	Antenna Distance (m)	Field Strength (μV/m)	Quasi-Peak (dBμV/m)
30 to 88	10	90	39.0	3	100	40.0
88 to 216	10	150	43.5	3	150	43.5
216 to 960	10	210	46.4	3	200	46.0
Above 960	10	300	49.5	3	500	54.0
Frequency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



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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	-	-	-

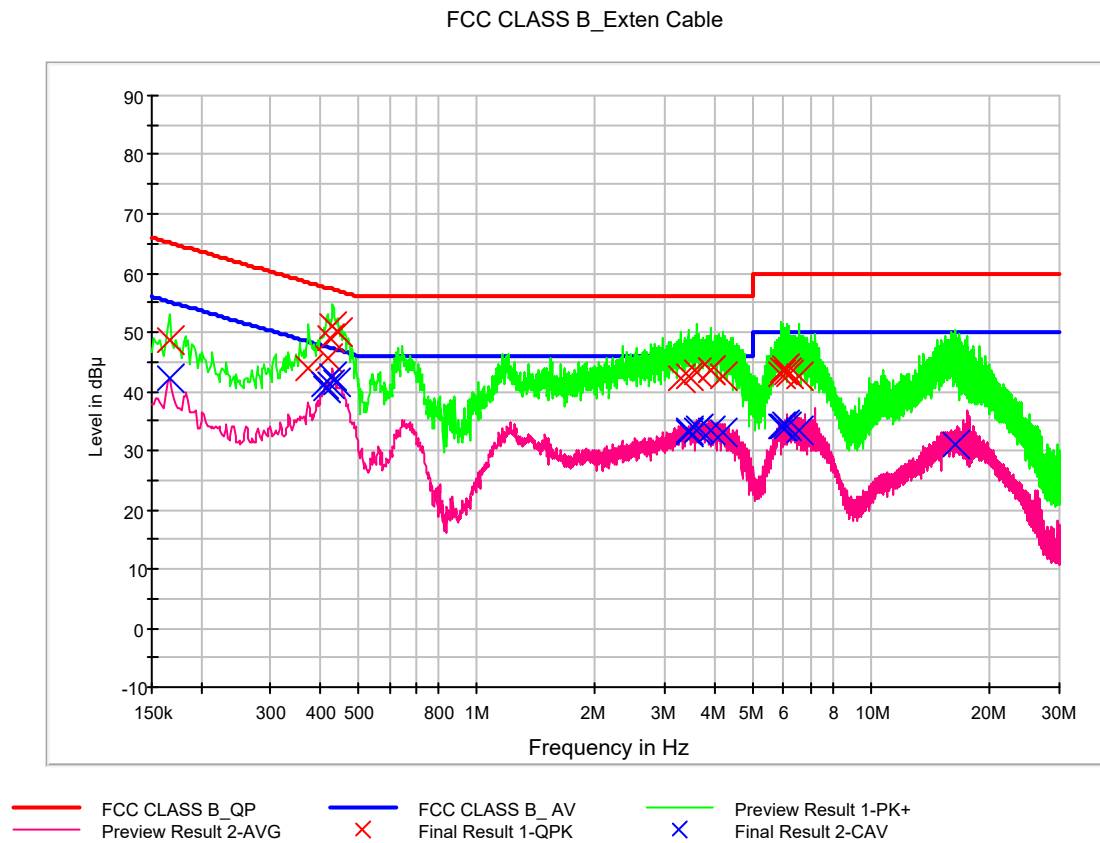
4.1.2 Operating Condition

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	FRONT CAMERA & MP3 mode Wireless charging mode Display mode
Kind of Test Site	Shielded Room
Temperature	23.2 °C
Relative Humidity	45.1 %
Test Date	August 14, 2019

4.1.3 Measuring Data

Figure 1: Conducted Emission, FRONT CAMERA & MP3 mode, Line (L1)



QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	48.7	9.000	L1	9.8	16.5	65.2
0.374000	44.0	9.000	L1	9.8	14.4	58.4
0.418000	45.5	9.000	L1	9.8	12.0	57.5
0.424000	49.0	9.000	L1	9.8	8.4	57.4
0.432000	51.1	9.000	L1	9.8	6.2	57.2
0.444000	49.8	9.000	L1	9.8	7.2	57.0
3.304000	42.2	9.000	L1	9.9	13.8	56.0
3.436000	42.5	9.000	L1	9.9	13.5	56.0
3.602000	43.3	9.000	L1	9.9	12.7	56.0
3.902000	43.4	9.000	L1	10.0	12.6	56.0
3.912000	43.4	9.000	L1	10.0	12.6	56.0
4.226000	42.4	9.000	L1	10.0	13.6	56.0
5.902000	43.0	9.000	L1	10.1	17.0	60.0
5.946000	43.7	9.000	L1	10.1	16.3	60.0
6.012000	44.0	9.000	L1	10.1	16.0	60.0
6.144000	43.4	9.000	L1	10.1	16.6	60.0
6.204000	42.9	9.000	L1	10.1	17.1	60.0
6.536000	42.5	9.000	L1	10.2	17.5	60.0

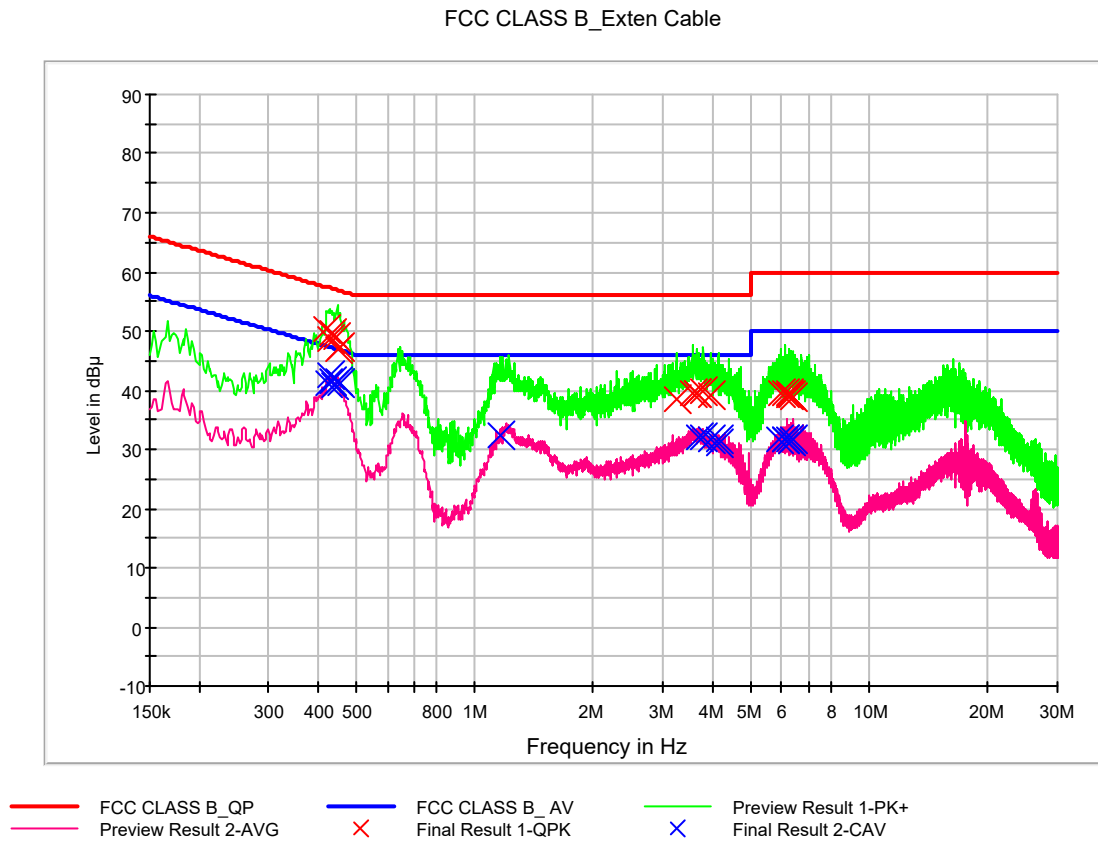
Calculation Formula:

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)
0.166000	42.1	9.000	L1	9.8	13.1	55.2
0.412000	41.1	9.000	L1	9.8	6.5	47.6
0.416000	40.4	9.000	L1	9.8	7.1	47.5
0.424000	41.3	9.000	L1	9.8	6.1	47.4
0.432000	42.4	9.000	L1	9.8	4.8	47.2
0.442000	41.6	9.000	L1	9.8	5.4	47.0
3.436000	33.1	9.000	L1	9.9	12.9	46.0
3.460000	33.5	9.000	L1	9.9	12.5	46.0
3.602000	33.5	9.000	L1	9.9	12.5	46.0
3.648000	33.8	9.000	L1	9.9	12.2	46.0
3.902000	33.5	9.000	L1	10.0	12.5	46.0
4.226000	33.2	9.000	L1	10.0	12.8	46.0
5.902000	34.0	9.000	L1	10.1	16.0	50.0
5.946000	34.2	9.000	L1	10.1	15.8	50.0
6.062000	34.4	9.000	L1	10.1	15.6	50.0
6.144000	34.2	9.000	L1	10.1	15.8	50.0
6.536000	33.4	9.000	L1	10.2	16.6	50.0
16.238000	30.9	9.000	L1	10.5	19.1	50.0

Figure 2: Conducted Emission, FRONT CAMERA & MP3 mode, Line (N)



QuasiPeak Final Result, Line (N)

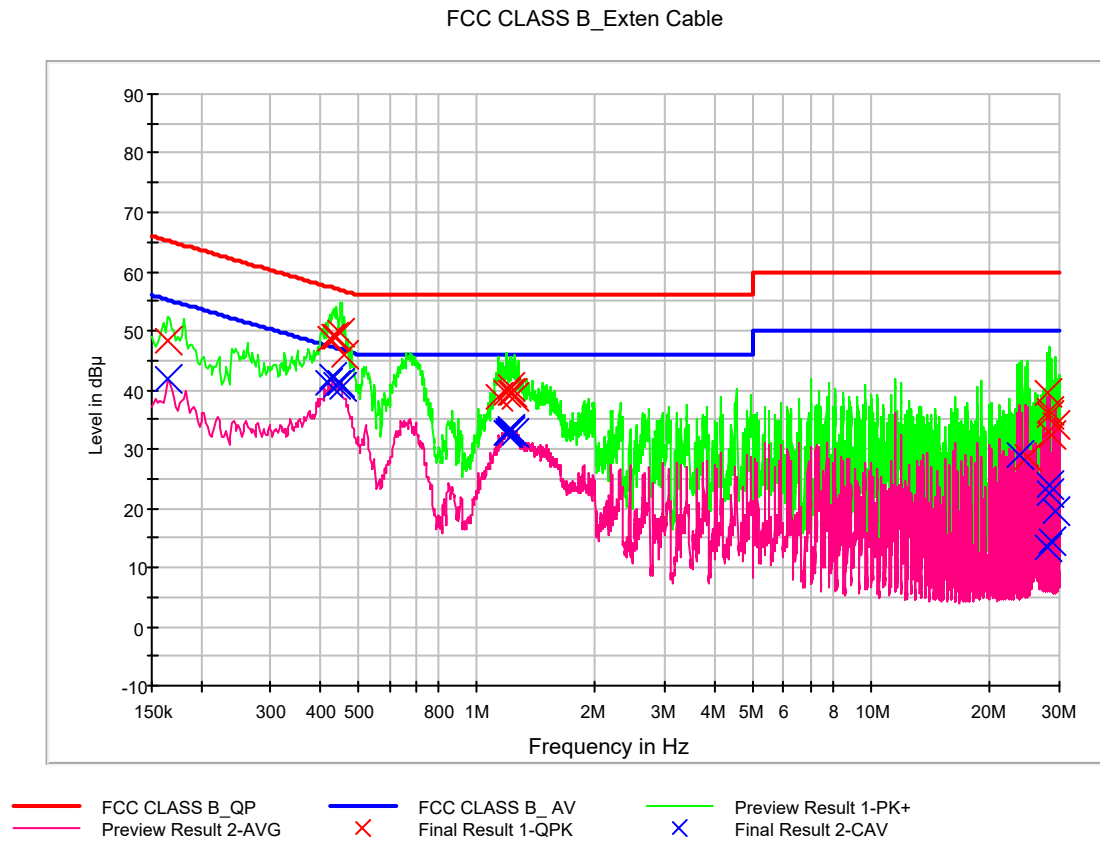
Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.422000	50.3	9.000	N	9.9	7.1	57.4
0.428000	48.8	9.000	N	9.9	8.5	57.3
0.434000	49.6	9.000	N	10.0	7.6	57.2
0.444000	49.0	9.000	N	10.0	8.0	57.0
0.448000	47.0	9.000	N	10.0	9.9	56.9
0.456000	47.3	9.000	N	10.0	9.5	56.8
3.262000	38.5	9.000	N	10.1	17.5	56.0
3.552000	39.5	9.000	N	10.1	16.5	56.0
3.642000	39.4	9.000	N	10.1	16.6	56.0
3.658000	39.5	9.000	N	10.1	16.5	56.0
3.806000	39.9	9.000	N	10.2	16.1	56.0
3.986000	39.2	9.000	N	10.2	16.8	56.0
5.982000	39.5	9.000	N	10.3	20.5	60.0
6.090000	39.7	9.000	N	10.3	20.3	60.0
6.232000	39.3	9.000	N	10.4	20.7	60.0
6.264000	39.3	9.000	N	10.4	20.7	60.0
6.302000	39.1	9.000	N	10.4	20.9	60.0
6.370000	38.7	9.000	N	10.4	21.3	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.424000	41.2	9.000	N	9.9	6.1	47.4
0.432000	42.5	9.000	N	9.9	4.7	47.2
0.436000	41.5	9.000	N	10.0	5.6	47.1
0.440000	40.9	9.000	N	10.0	6.2	47.1
0.448000	41.4	9.000	N	10.0	5.5	46.9
0.454000	41.1	9.000	N	10.0	5.7	46.8
1.158000	32.3	9.000	N	10.1	13.7	46.0
3.690000	32.0	9.000	N	10.1	14.0	46.0
3.764000	32.1	9.000	N	10.1	13.9	46.0
3.986000	31.7	9.000	N	10.2	14.3	46.0
4.150000	31.6	9.000	N	10.2	14.4	46.0
4.154000	31.1	9.000	N	10.2	14.9	46.0
5.920000	31.8	9.000	N	10.3	18.2	50.0
6.084000	31.9	9.000	N	10.3	18.1	50.0
6.090000	31.8	9.000	N	10.3	18.2	50.0
6.266000	31.6	9.000	N	10.4	18.4	50.0
6.302000	31.5	9.000	N	10.4	18.5	50.0
6.400000	31.8	9.000	N	10.4	18.2	50.0

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



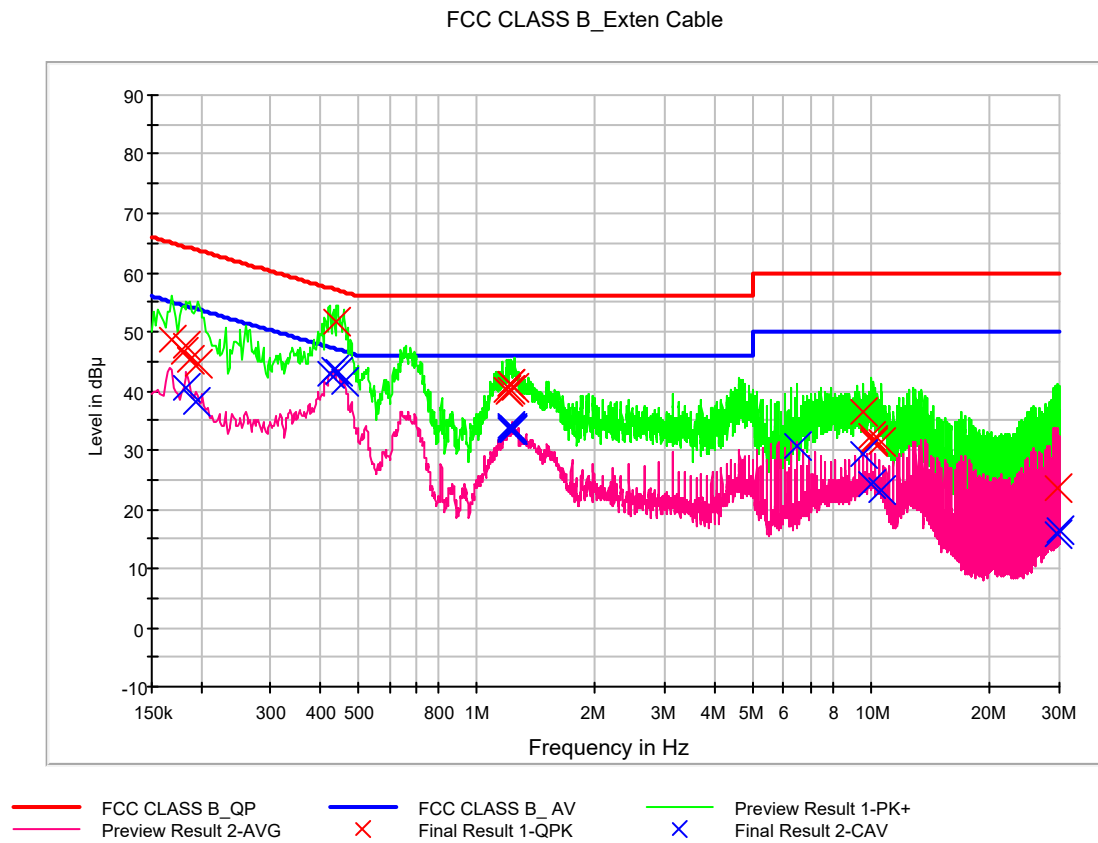
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.164000	48.4	9.000	L1	9.8	16.9	65.3
0.424000	48.8	9.000	L1	9.8	8.6	57.4
0.434000	49.1	9.000	L1	9.8	8.0	57.2
0.440000	49.1	9.000	L1	9.8	8.0	57.1
0.452000	49.6	9.000	L1	9.8	7.2	56.8
0.462000	46.0	9.000	L1	9.8	10.7	56.7
1.134000	38.8	9.000	L1	9.9	17.2	56.0
1.190000	39.4	9.000	L1	9.9	16.6	56.0
1.216000	39.6	9.000	L1	9.9	16.4	56.0
1.222000	40.4	9.000	L1	9.9	15.6	56.0
1.226000	39.5	9.000	L1	9.9	16.5	56.0
1.252000	38.7	9.000	L1	9.9	17.3	56.0
24.856000	28.7	9.000	L1	10.8	31.3	60.0
27.834000	39.6	9.000	L1	10.8	20.4	60.0
28.180000	36.4	9.000	L1	10.8	23.6	60.0
28.186000	35.7	9.000	L1	10.8	24.3	60.0
28.542000	32.4	9.000	L1	10.8	27.6	60.0
29.344000	33.9	9.000	L1	10.9	26.1	60.0

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.164000	41.7	9.000	L1	9.8	13.5	55.3
0.422000	41.3	9.000	L1	9.8	6.1	47.4
0.432000	42.2	9.000	L1	9.8	5.0	47.2
0.440000	40.9	9.000	L1	9.8	6.2	47.1
0.450000	41.3	9.000	L1	9.8	5.5	46.9
0.454000	40.5	9.000	L1	9.8	6.3	46.8
1.188000	32.7	9.000	L1	9.9	13.3	46.0
1.198000	32.8	9.000	L1	9.9	13.2	46.0
1.210000	33.2	9.000	L1	9.9	12.8	46.0
1.220000	33.0	9.000	L1	9.9	13.0	46.0
1.224000	33.4	9.000	L1	9.9	12.6	46.0
1.252000	32.6	9.000	L1	9.9	13.4	46.0
23.808000	28.8	9.000	L1	10.7	21.2	50.0
27.834000	13.4	9.000	L1	10.8	36.6	50.0
28.178000	23.8	9.000	L1	10.8	26.2	50.0
28.186000	22.7	9.000	L1	10.8	27.3	50.0
28.542000	14.3	9.000	L1	10.8	35.7	50.0
29.344000	19.4	9.000	L1	10.9	30.6	50.0

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



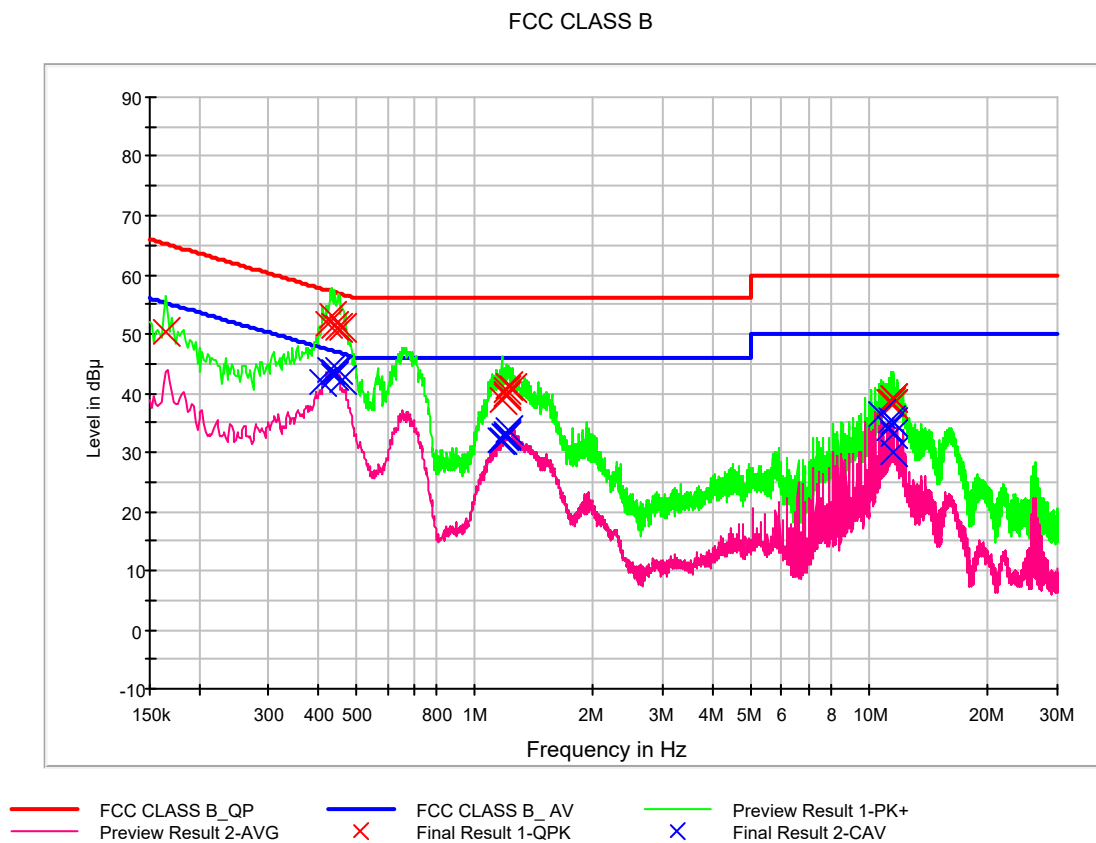
QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.168000	48.7	9.000	N	9.9	16.4	65.1
0.180000	46.7	9.000	N	9.9	17.8	64.5
0.184000	47.6	9.000	N	9.9	16.8	64.3
0.188000	45.2	9.000	N	9.9	19.0	64.1
0.196000	44.5	9.000	N	9.9	19.3	63.8
0.442000	51.8	9.000	N	10.0	5.2	57.0
1.194000	40.0	9.000	N	10.1	16.0	56.0
1.200000	40.0	9.000	N	10.1	16.0	56.0
1.212000	40.2	9.000	N	10.1	15.8	56.0
1.216000	41.2	9.000	N	10.1	14.8	56.0
1.222000	41.3	9.000	N	10.1	14.7	56.0
1.242000	40.5	9.000	N	10.1	15.5	56.0
9.514000	36.3	9.000	N	10.5	23.7	60.0
9.980000	32.3	9.000	N	10.5	27.7	60.0
10.162000	31.5	9.000	N	10.5	28.5	60.0
10.166000	31.5	9.000	N	10.5	28.5	60.0
10.556000	31.4	9.000	N	10.6	28.6	60.0
29.528000	23.6	9.000	N	11.1	36.4	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.184000	40.6	9.000	N	9.9	13.7	54.3
0.194000	38.1	9.000	N	9.9	15.8	53.9
0.424000	43.0	9.000	N	9.9	4.4	47.4
0.434000	43.6	9.000	N	10.0	3.5	47.2
0.444000	43.1	9.000	N	10.0	3.9	47.0
0.460000	41.7	9.000	N	10.0	5.0	46.7
1.212000	33.9	9.000	N	10.1	12.1	46.0
1.216000	33.7	9.000	N	10.1	12.3	46.0
1.222000	33.5	9.000	N	10.1	12.5	46.0
1.226000	33.9	9.000	N	10.1	12.1	46.0
1.232000	33.3	9.000	N	10.1	12.7	46.0
1.236000	33.5	9.000	N	10.1	12.5	46.0
6.498000	30.8	9.000	N	10.4	19.2	50.0
9.514000	29.2	9.000	N	10.5	20.8	50.0
9.980000	24.4	9.000	N	10.5	25.6	50.0
10.556000	23.3	9.000	N	10.6	26.7	50.0
29.760000	15.7	9.000	N	11.1	34.3	50.0
29.992000	16.6	9.000	N	11.1	33.4	50.0

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



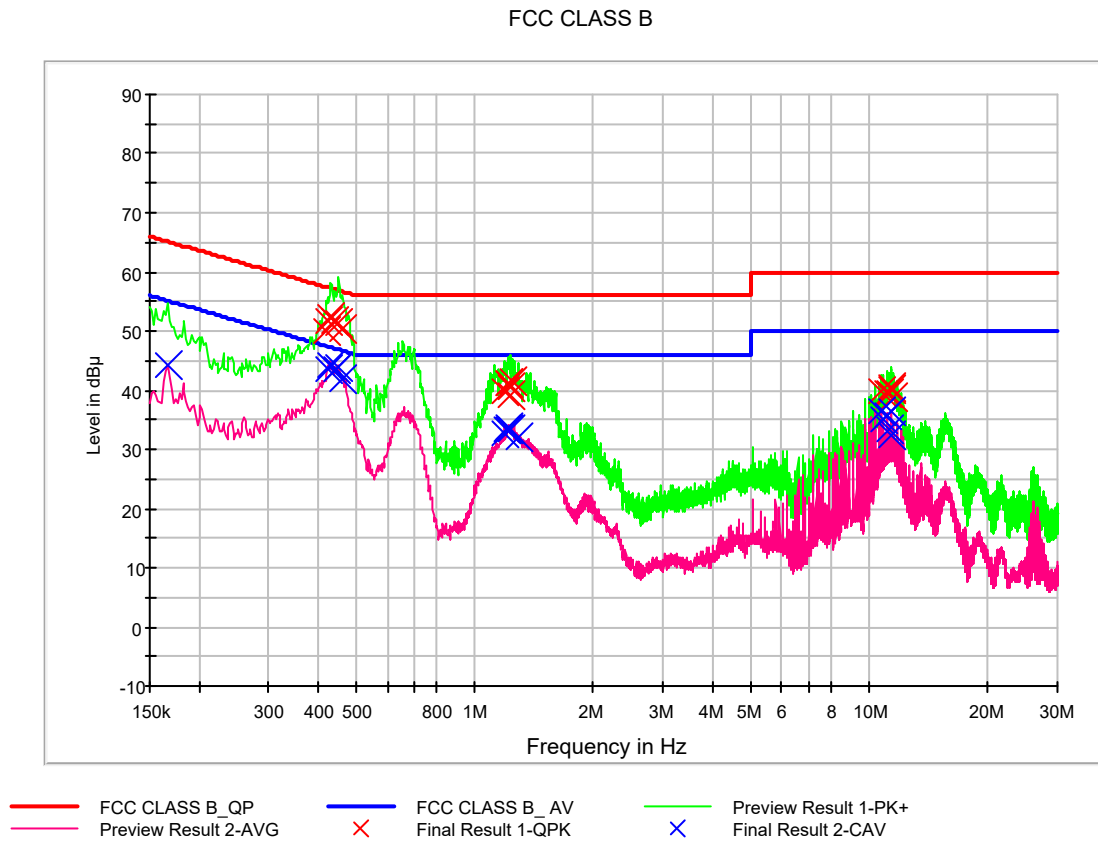
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.164000	50.5	9.000	L1	9.7	14.8	65.3
0.424000	51.7	9.000	L1	9.7	5.7	57.4
0.434000	53.0	9.000	L1	9.7	4.2	57.2
0.442000	51.4	9.000	L1	9.7	5.7	57.0
0.452000	51.0	9.000	L1	9.7	5.8	56.8
0.460000	50.9	9.000	L1	9.7	5.8	56.7
1.170000	38.7	9.000	L1	9.8	17.3	56.0
1.196000	39.7	9.000	L1	9.8	16.3	56.0
1.202000	40.6	9.000	L1	9.8	15.4	56.0
1.210000	39.6	9.000	L1	9.8	16.4	56.0
1.214000	41.3	9.000	L1	9.8	14.7	56.0
1.242000	40.8	9.000	L1	9.8	15.2	56.0
11.262000	38.6	9.000	L1	10.1	21.4	60.0
11.402000	38.6	9.000	L1	10.1	21.4	60.0
11.462000	38.2	9.000	L1	10.1	21.8	60.0
11.466000	39.1	9.000	L1	10.1	20.9	60.0
11.528000	38.3	9.000	L1	10.1	21.7	60.0
11.534000	39.1	9.000	L1	10.1	20.9	60.0

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	50.0
11.532000	35.0	9.000	L1	10.1	15.0	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)
0.420000	50.1	9.000	N	9.7	7.3	57.4
0.424000	51.6	9.000	N	9.7	5.8	57.4
0.432000	52.5	9.000	N	9.7	4.7	57.2
0.442000	51.6	9.000	N	9.7	5.4	57.0
0.452000	51.3	9.000	N	9.7	5.5	56.8
0.462000	50.3	9.000	N	9.7	6.3	56.7
1.192000	40.0	9.000	N	9.7	16.0	56.0
1.214000	41.3	9.000	N	9.7	14.7	56.0
1.220000	41.0	9.000	N	9.7	15.0	56.0
1.228000	39.3	9.000	N	9.7	16.7	56.0
1.234000	40.6	9.000	N	9.7	15.4	56.0
1.242000	41.5	9.000	N	9.7	14.5	56.0
10.664000	39.7	9.000	N	10.0	20.3	60.0
11.134000	39.6	9.000	N	10.1	20.4	60.0
11.266000	39.4	9.000	N	10.1	20.6	60.0
11.396000	40.2	9.000	N	10.1	19.8	60.0
11.400000	40.3	9.000	N	10.1	19.7	60.0
11.464000	38.7	9.000	N	10.1	21.3	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.166000	44.2	9.000	N	9.7	11.0	55.2
0.424000	43.5	9.000	N	9.7	3.9	47.4
0.432000	44.2	9.000	N	9.7	3.0	47.2
0.444000	43.6	9.000	N	9.7	3.4	47.0
0.452000	43.8	9.000	N	9.7	3.1	46.8
0.462000	42.0	9.000	N	9.7	4.7	46.7
1.192000	32.7	9.000	N	9.7	13.3	46.0
1.210000	33.5	9.000	N	9.7	12.5	46.0
1.220000	33.3	9.000	N	9.7	12.7	46.0
1.224000	33.6	9.000	N	9.7	12.4	46.0
1.228000	33.2	9.000	N	9.7	12.8	46.0
1.288000	32.2	9.000	N	9.8	13.8	46.0
10.664000	36.6	9.000	N	10.0	13.4	50.0
10.866000	35.0	9.000	N	10.1	15.0	50.0
11.132000	35.8	9.000	N	10.1	14.2	50.0
11.266000	33.5	9.000	N	10.1	16.5	50.0
11.332000	32.4	9.000	N	10.1	17.6	50.0
11.398000	36.4	9.000	N	10.1	13.6	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	760	2 year	03.22.2019
☒	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	FRONT CAMERA & MP3 mode Wireless charging mode Display mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.7 / 21.4 °C
Relative Humidity	45.4 / 43.9 %
Test Date	August 07 / August 08, 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

4.2.3 Measuring Data

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)
31.263200	24.9	100.0	V	115.0	18.8	15.1	40.0
52.992000	24.0	100.0	V	43.0	20.0	16.0	40.0
96.846400	17.8	225.3	H	85.0	15.3	25.7	43.5
149.988800	17.9	174.8	V	336.0	19.8	25.6	43.5
493.758400	24.3	209.7	V	280.0	25.3	21.7	46.0
685.228800	28.7	325.1	H	0.0	28.8	17.3	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)
44.772000	23.2	100.0	V	52.0	19.8	16.8	40.0
60.768800	28.0	100.0	V	1.0	19.6	12.0	40.0
114.544000	20.7	207.9	V	316.0	17.0	22.8	43.5
179.860800	26.9	174.7	H	334.0	18.5	16.6	43.5
680.804800	28.6	291.8	H	198.0	28.8	17.4	46.0
903.574400	31.9	191.8	H	278.0	32.1	14.1	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)
37.288000	27.9	274.7	V	116.0	18.9	12.1	40.0
56.934400	22.0	117.0	H	194.0	19.9	18.0	40.0
82.948000	25.0	100.0	H	138.0	20.0	15.0	40.0
150.011000	26.6	274.8	V	124.0	20.0	21.9	40.0
417.664800	29.5	174.9	V	16.0	23.5	16.5	46.0
788.197600	37.7	100.0	H	326.0	30.5	8.3	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	FRONT CAMERA & MP3 mode Wireless charging mode Display mode
Kind of Test Site	3 m semi anechoic chamber
Temperature	21.8 / 21.4 °C
Relative Humidity	43.6 / 43.9 %
Test Date	August 06 / August 08, 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

FRONT CAMERA & MP3 mode

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1533.435000	31.4	249.4	V	254.0	-25.6	42.6	74.0
5281.870000	39.2	350.0	H	28.0	-15.4	34.8	74.0
7332.465000	44.4	150.0	V	103.0	-9.7	29.6	74.0
9508.450000	49.1	100.0	V	86.0	-5.1	25.0	74.0
11306.985000	47.8	350.0	H	306.0	-2.4	26.2	74.0
14717.775000	49.2	249.9	H	305.0	1.0	24.8	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1533.435000	19.1	249.4	V	254.0	-25.6	34.9	54.0
5281.870000	26.2	350.0	H	28.0	-15.4	27.8	54.0
7332.465000	31.2	150.0	V	103.0	-9.7	22.8	54.0
9508.450000	35.8	100.0	V	86.0	-5.1	18.2	54.0
11306.985000	35.1	350.0	H	306.0	-2.4	18.9	54.0
14717.775000	36.7	249.9	H	305.0	1.0	17.3	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)
1014.11602	31.3	248.5	H	155.0	-27.7	42.7	74.0
1420.71500	32.2	320.5	H	202.0	-25.9	41.8	74.0
4312.21500	36.7	149.9	V	50.0	-18.2	37.3	74.0
7583.17000	44.5	306.4	H	80.0	-9.2	29.5	74.0
9673.25500	48.1	150.0	H	52.0	-5.1	25.9	74.0
11311.16500	47.6	149.9	V	308.0	-2.4	26.4	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1014.11602	18.5	248.5	H	155.0	-27.7	35.5	54.0
1420.71500	19.5	320.5	H	202.0	-25.9	34.5	54.0
4312.21500	24.2	149.9	V	50.0	-18.2	29.8	54.0
7583.17000	31.8	306.4	H	80.0	-9.2	22.2	54.0
9673.25500	35.0	150.0	H	52.0	-5.1	19.0	54.0
11311.16500	35.2	149.9	V	308.0	-2.4	18.8	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)
1101.090000	49.3	160.5	H	292.0	-27.4	24.7	74.0
2106.560000	46.8	113.3	H	271.0	-24.8	27.2	74.0
2398.750000	42.5	261.4	H	256.0	-23.8	31.5	74.0
4970.355000	44.6	150.0	H	234.0	-15.8	29.4	74.0
5399.960000	50.4	100.0	H	132.0	-15.3	23.6	74.0
9617.690000	48.5	125.8	H	132.0	-5.1	25.5	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)
1101.090000	36.6	160.5	H	292.0	-27.4	17.4	54.0
2106.560000	33.9	113.3	H	271.0	-24.8	20.1	54.0
2398.750000	28.6	261.4	H	256.0	-23.8	25.4	54.0
4970.355000	34.3	150.0	H	234.0	-15.8	19.7	54.0
5399.960000	47.5	100.0	H	132.0	-15.3	6.5	54.0
9617.690000	35.7	125.8	H	132.0	-5.1	18.3	54.0

5. CONCLUSION

The data collected shows that the **Product Name: Multi-band GSM/CDMA/WCDMA/LTE Phone with WLAN, Bluetooth, NFC, Model: 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-1908-FC013-P	August 27, 2019	Initial Release

End of report