

EMI TEST REPORT

FCC CERTIFICATION

Applicant:

SAMSUNG Electronics Co., Ltd.
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Gyeonggi-do, 16677, Korea

Date of Issue: April 05, 2019**Test Report No. HCT-EM-1904-FC003****Test Site: HCT CO., LTD.****FCC ID :****A3LSMA6060**

Applicable Standards : FCC CFR 47 PART 15 Subpart B Class B
ANSI C63.4-2014

EUT Type : Mobile Phone

Model Name : SM-A6060

Series Model Name : SM-A606Y/DS

Date of Test : April 03, 2019 to April 05, 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-1904-FC003	April 05, 2019	Initial Release



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1. GENERAL INFORMATION

1.1 Description of EUT

Its basic purpose is used for communications.

FCC ID	A3LSMA6060
Model name	SM-A6060
Series Model Name	SM-A606Y/DS
EUT type	Mobile Phone
Frequency band	GSM 850/1900, WCDMA 850/1900, LTE B5/41, BT 5.0, WLAN a/b/g/n/ac, NFC, ANT+
Power supply	Travel adaptor: Input: AC 100 to 240 V, 50/60 Hz, 0.5 A Output: DC 9.0 V 1.67 A or DC 5.0 V 2.0 A Battery: Low : 3.6 V / Normal :3.85 V / High : 4.4 V, Li-ion Battery

1.2 Equipment Units Tested

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

Device Type	Model Name	Serial Number	Manufacturer	FCC ID / DoC
EUT	SM-A6060	-	SAMSUNG	A3LSMA6060
Notebook PC	ProBook6560b	5CB2053MXF	HP	-
Notebook PC adaptor	Series PPP009L-E	-	LITE-ON TECHNOLOGY (CHANGZHOU)	-
Gateway	TL-WR747N	-	TP Link	-
Gateway adaptor	T090060-2H1	-	TP Link	-
Serial mouse	Serial 2 Button mouse	02031069	Radio Shack	FSUGMZE3
RJ45 cable	-	-	-	-
TA	EP-TA200	-	DYREL	-
Data Cable	EP-DR140AWE	-	KSD	-
Earphone	GHSS028-W4	-	BUJOEN	-
Micro SD Card	-	-	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	Y	Y	(P,D) 1.0
	Earphone (Type C)	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 (Type C)	N	N/A	Y	EUT End
Notebook PC	RJ 45	N	N/A	N	N/A
	Serial(Mouse)	N	N/A	Y	Notebook 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	

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 (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	100033	1 year	06.27.2018
<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"/> Radio communication analyzer	ANRITSU	MT8820C	6201138643	1 year	08.21.2018
<input checked="" type="checkbox"/> Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
<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	03.22.2019
<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 checked="" type="checkbox"/> Radio communication analyzer	ANRITSU	MT8820C	6201138643	1 year	08.21.2018
<input checked="" type="checkbox"/> Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
<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	07.20.2018
<input checked="" type="checkbox"/> Low Noise Amplifier	TESTEK	TK-PA18H	170034-L	1 year	03.04.2019
<input checked="" type="checkbox"/> Power Amplifier	TESTEK	TK-PA1840H	170030-L	1 year	12.17.2018
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170#786	2 year	12.05.2017
<input checked="" type="checkbox"/> Radio communication analyzer	ANRITSU	MT8820C	6201138643	1 year	08.21.2018
<input checked="" type="checkbox"/> Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
<input type="checkbox"/> Highpass Filter	Wainwright Instruments	WHKX1.0/15G-12SS	42	1 year	08.02.2018
<input checked="" type="checkbox"/> Software	Rohde & Schwarz	EMC32 VER8.40.0	-	-	-



3. DESCRIPTION OF MEASUREMENTS

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 (μV/m)	Quasi-Peak (dB(μV)/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 (dB(μV)/m)	Average (dB(μV)/m)
Above 1 000	3	74	54

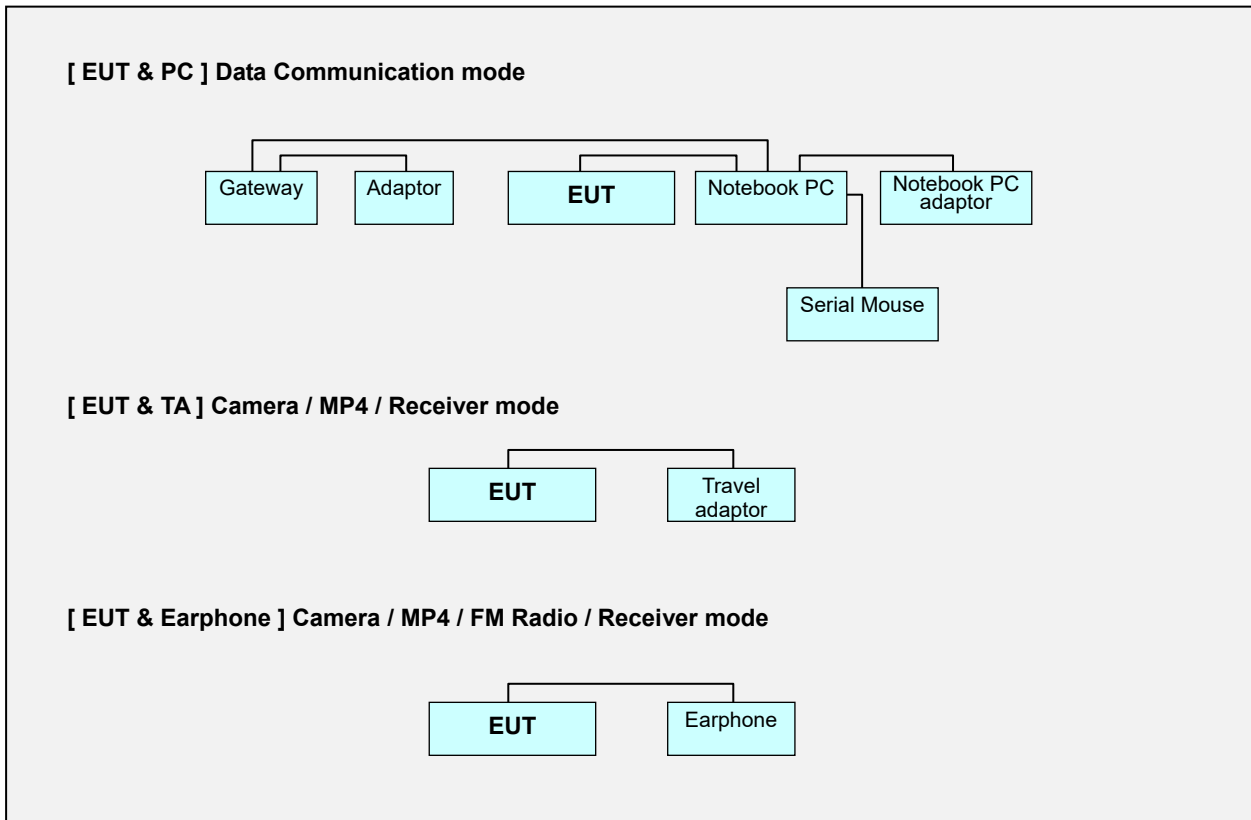


3.2.1 Frequency Range of Radiated Measurements

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

During preliminary tests, the following operating mode was investigated.

- Data Communication
- Rear / Front Camera (Preview / Recording)
- MP4 Play
- FM Radio mode (Low / Middle / High CH)
- LTE B5 Idle (Low / Middle / High CH)
- WCDMA 850 Idle (Low / Middle / High CH)
- GSM 850 Idle (Low / Middle / High CH)

4.1 Conducted Emission

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

Operating Modes:

[EUT & PC]

- Data Communication

[EUT & TA]

- Rear / Front Camera Preview
- Receiver mode (LTE B5 Low CH Idle) + MP4 Play
- Receiver mode (LTE B5 Middle CH Idle) + Rear Camera Recording
- Receiver mode (LTE B5 High CH Idle) + Front Camera Recording

NOTE.

1. The worst case of operating mode is reported.

4.2 Radiated Emission

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

Operating Modes:

[EUT & PC]

- Data Communication

[EUT & TA]

- Rear / Front Camera Preview
- Receiver mode (LTE B5 Low CH Idle) + MP4 Play
- Receiver mode (LTE B5 Middle CH Idle) + Rear Camera Recording
- Receiver mode (LTE B5 High CH Idle) + Front Camera Recording

**[EUT & Earphone]**

Rear Camera Preview +FM Radio (Low CH)
Front Camera Preview + FM Radio (Middle CH)
FM Radio (High CH)
Receiver mode (LTE B5 Low CH Idle) + MP4 Play
Receiver mode (LTE B5 Middle CH Idle) + Rear Camera Recording
Receiver mode (LTE B5 High CH Idle) + Front Camera Recording

NOTE.

1. Three orientations have been investigated and the worst case orientation is reported.
2. The worst case of operating mode is 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:

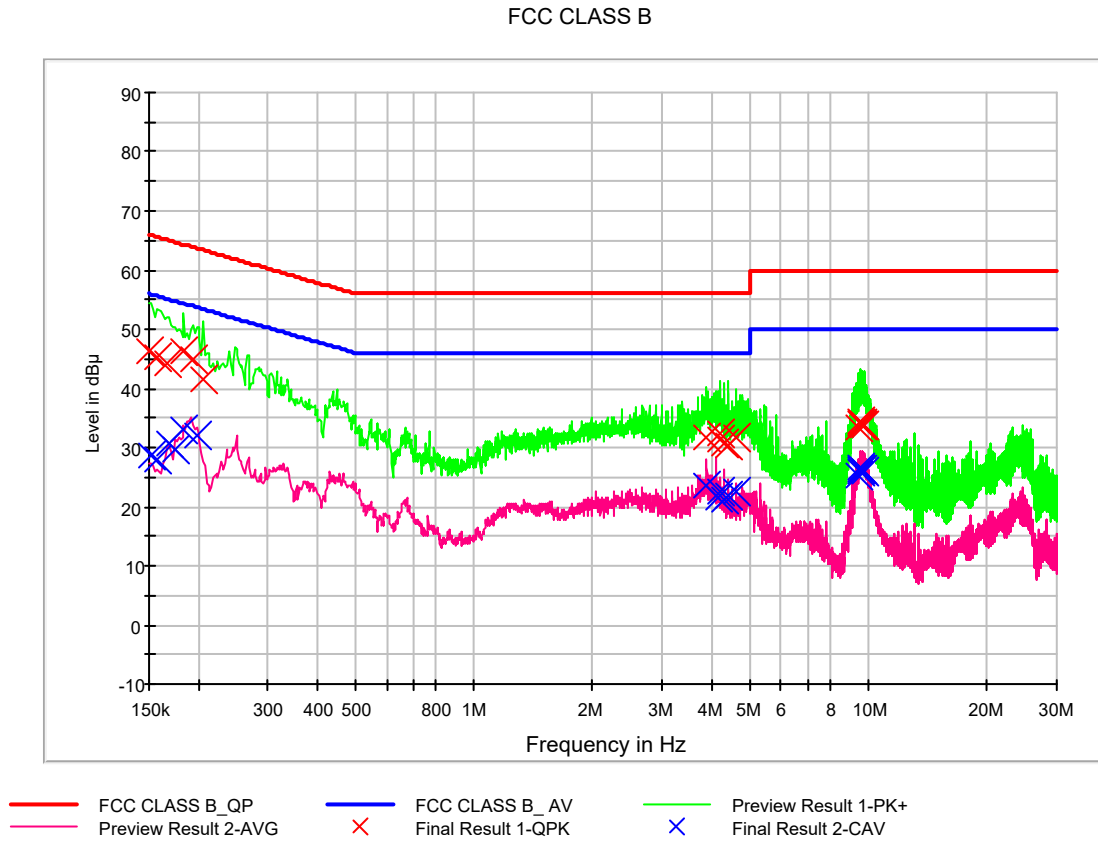
Applicable Standards	FCC PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Worst Case of Operating Mode	Data Communication Front Camera Preview Receiver mode (LTE B5 High CH Idle) + Front Camera Recording
Kind of Test Site	Shielded Room
Temperature	22.5 °C
Relative Humidity	44.1 %
Test Date	April 03, 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, Data Communication, Line (L1)





QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	46.4	9.000	L1	9.6	19.6	66.0
0.158000	45.1	9.000	L1	9.6	20.5	65.6
0.166000	44.2	9.000	L1	9.6	21.0	65.2
0.184000	46.2	9.000	L1	9.6	18.1	64.3
0.194000	44.7	9.000	L1	9.7	19.1	63.9
0.206000	41.5	9.000	L1	9.7	21.8	63.4
3.894000	31.7	9.000	L1	9.8	24.3	56.0
4.216000	31.5	9.000	L1	9.8	24.5	56.0
4.220000	32.3	9.000	L1	9.8	23.7	56.0
4.302000	30.7	9.000	L1	9.8	25.3	56.0
4.400000	30.5	9.000	L1	9.8	25.5	56.0
4.610000	31.8	9.000	L1	9.8	24.2	56.0
9.446000	33.3	9.000	L1	10.0	26.7	60.0
9.516000	34.3	9.000	L1	10.0	25.7	60.0
9.558000	33.9	9.000	L1	10.0	26.1	60.0
9.626000	33.8	9.000	L1	10.0	26.2	60.0
9.680000	34.0	9.000	L1	10.0	26.0	60.0
9.728000	33.6	9.000	L1	10.0	26.4	60.0

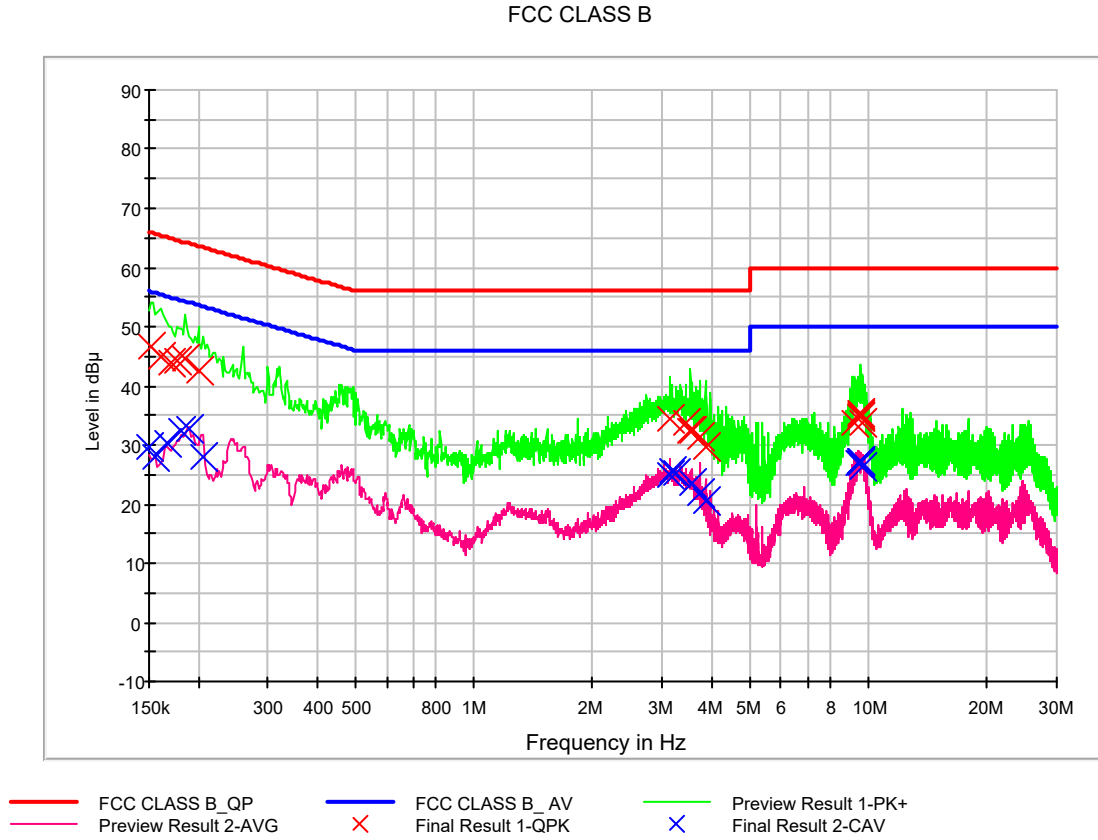


CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	28.6	9.000	L1	9.6	27.3	55.9
0.158000	28.0	9.000	L1	9.6	27.6	55.6
0.168000	30.7	9.000	L1	9.6	24.3	55.1
0.174000	29.8	9.000	L1	9.6	25.0	54.8
0.184000	33.2	9.000	L1	9.6	21.1	54.3
0.198000	32.1	9.000	L1	9.7	21.6	53.7
3.894000	23.5	9.000	L1	9.8	22.5	46.0
4.170000	21.6	9.000	L1	9.8	24.4	46.0
4.216000	22.4	9.000	L1	9.8	23.6	46.0
4.300000	21.3	9.000	L1	9.8	24.7	46.0
4.402000	21.8	9.000	L1	9.8	24.2	46.0
4.610000	22.6	9.000	L1	9.8	23.4	46.0
9.446000	25.4	9.000	L1	10.0	24.6	50.0
9.516000	26.0	9.000	L1	10.0	24.0	50.0
9.558000	26.5	9.000	L1	10.0	23.5	50.0
9.590000	26.4	9.000	L1	10.0	23.6	50.0
9.626000	26.3	9.000	L1	10.0	23.7	50.0
9.742000	25.9	9.000	L1	10.0	24.1	50.0



Figure 2: Conducted Emission, Data Communication, Line (N)





QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	46.5	9.000	N	9.6	19.4	65.9
0.160000	45.1	9.000	N	9.6	20.4	65.5
0.170000	43.9	9.000	N	9.6	21.1	65.0
0.176000	44.4	9.000	N	9.6	20.3	64.7
0.186000	44.7	9.000	N	9.6	19.5	64.2
0.200000	42.5	9.000	N	9.6	21.1	63.6
3.144000	34.3	9.000	N	9.8	21.7	56.0
3.446000	33.7	9.000	N	9.8	22.3	56.0
3.548000	32.3	9.000	N	9.8	23.7	56.0
3.554000	32.3	9.000	N	9.8	23.7	56.0
3.752000	31.3	9.000	N	9.8	24.7	56.0
3.852000	29.5	9.000	N	9.8	26.5	56.0
9.210000	33.6	9.000	N	9.9	26.4	60.0
9.496000	35.3	9.000	N	9.9	24.7	60.0
9.510000	35.1	9.000	N	9.9	24.9	60.0
9.568000	34.7	9.000	N	9.9	25.3	60.0
9.590000	34.9	9.000	N	9.9	25.1	60.0
9.682000	33.6	9.000	N	9.9	26.4	60.0

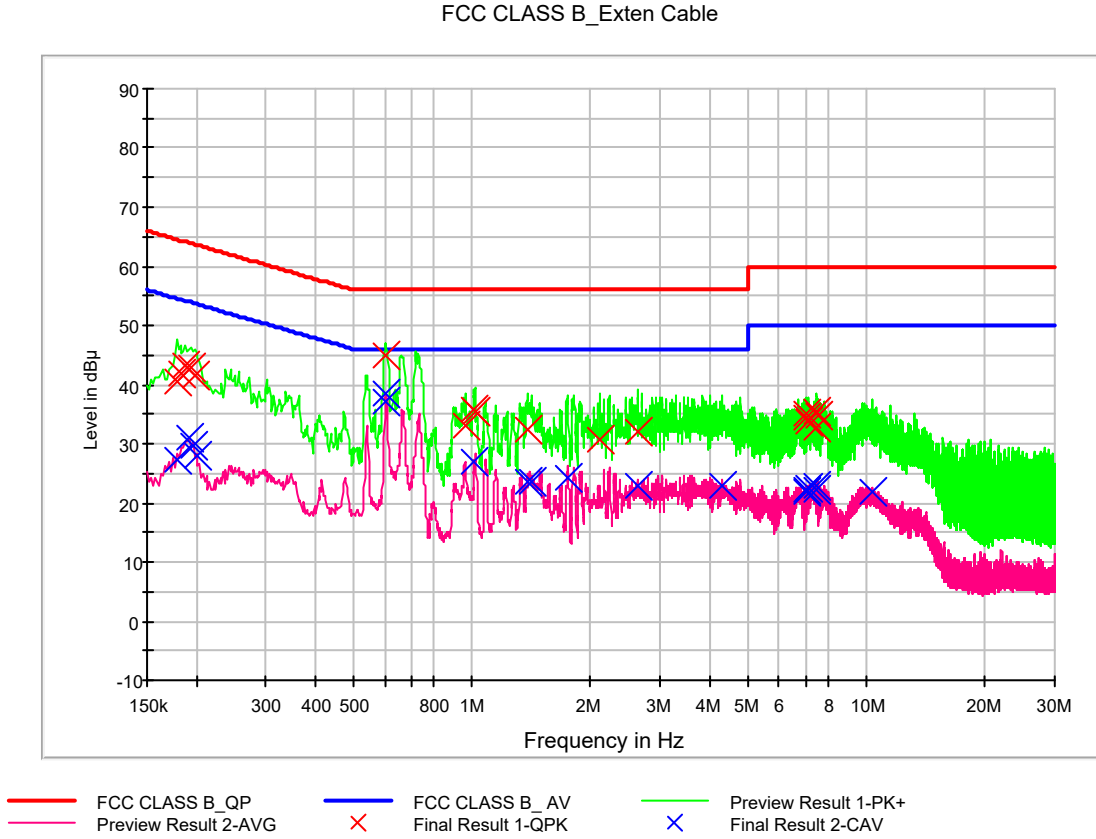


CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	29.8	9.000	N	9.6	26.2	56.0
0.156000	28.0	9.000	N	9.6	27.7	55.7
0.166000	30.5	9.000	N	9.6	24.7	55.2
0.180000	32.4	9.000	N	9.6	22.1	54.5
0.190000	32.9	9.000	N	9.6	21.2	54.0
0.206000	28.1	9.000	N	9.6	25.3	53.4
3.144000	25.1	9.000	N	9.8	20.9	46.0
3.190000	25.6	9.000	N	9.8	20.4	46.0
3.246000	25.2	9.000	N	9.8	20.8	46.0
3.554000	23.5	9.000	N	9.8	22.5	46.0
3.750000	21.9	9.000	N	9.8	24.1	46.0
3.852000	20.6	9.000	N	9.8	25.4	46.0
9.380000	27.0	9.000	N	9.9	23.0	50.0
9.496000	27.3	9.000	N	9.9	22.7	50.0
9.524000	27.3	9.000	N	9.9	22.7	50.0
9.572000	27.1	9.000	N	9.9	22.9	50.0
9.590000	27.1	9.000	N	9.9	22.9	50.0
9.682000	26.3	9.000	N	9.9	23.7	50.0



Figure 3: Conducted Emission, Front Camera Preview, Line (L1)





QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	40.6	9.000	L1	9.7	24.0	64.6
0.182000	42.0	9.000	L1	9.7	22.4	64.4
0.188000	43.3	9.000	L1	9.7	20.9	64.1
0.194000	42.9	9.000	L1	9.7	21.0	63.9
0.198000	41.7	9.000	L1	9.7	22.0	63.7
0.604000	45.1	9.000	L1	9.8	10.9	56.0
0.960000	32.9	9.000	L1	9.8	23.1	56.0
1.012000	35.7	9.000	L1	9.8	20.3	56.0
1.016000	35.3	9.000	L1	9.8	20.7	56.0
1.382000	32.4	9.000	L1	9.9	23.6	56.0
2.102000	30.8	9.000	L1	9.9	25.2	56.0
2.634000	32.1	9.000	L1	9.9	23.9	56.0
7.000000	35.1	9.000	L1	10.1	24.9	60.0
7.024000	34.4	9.000	L1	10.1	25.6	60.0
7.090000	33.6	9.000	L1	10.1	26.4	60.0
7.496000	32.7	9.000	L1	10.1	27.3	60.0
7.500000	35.6	9.000	L1	10.1	24.4	60.0
7.566000	34.8	9.000	L1	10.1	25.2	60.0

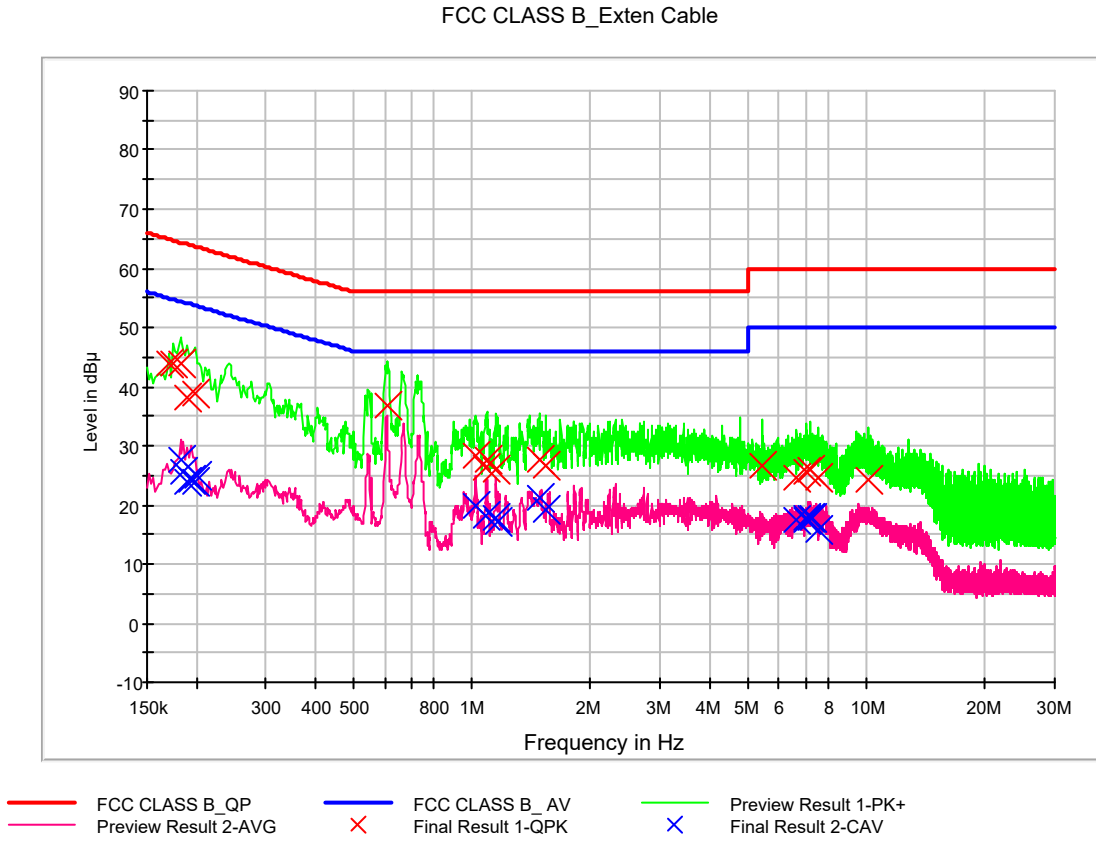


CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	27.5	9.000	L1	9.7	27.1	54.6
0.192000	31.2	9.000	L1	9.7	22.8	53.9
0.196000	29.8	9.000	L1	9.7	24.0	53.8
0.200000	28.0	9.000	L1	9.8	25.6	53.6
0.602000	37.1	9.000	L1	9.8	8.9	46.0
0.606000	38.4	9.000	L1	9.8	7.6	46.0
1.014000	26.9	9.000	L1	9.8	19.1	46.0
1.380000	23.5	9.000	L1	9.9	22.5	46.0
1.420000	23.6	9.000	L1	9.9	22.4	46.0
1.742000	24.1	9.000	L1	9.9	21.9	46.0
2.634000	22.9	9.000	L1	9.9	23.1	46.0
4.322000	23.0	9.000	L1	10.0	23.0	46.0
7.000000	21.7	9.000	L1	10.1	28.3	50.0
7.064000	22.3	9.000	L1	10.1	27.7	50.0
7.090000	22.6	9.000	L1	10.1	27.4	50.0
7.432000	22.4	9.000	L1	10.1	27.6	50.0
7.500000	23.0	9.000	L1	10.1	27.0	50.0
10.336000	21.8	9.000	L1	10.2	28.2	50.0



Figure 4: Conducted Emission, Front Camera Preview, Line (N)





QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.170000	44.0	9.000	N	9.8	20.9	65.0
0.174000	43.7	9.000	N	9.8	21.0	64.8
0.182000	43.8	9.000	N	9.8	20.6	64.4
0.190000	38.0	9.000	N	9.8	26.1	64.0
0.198000	38.8	9.000	N	9.8	24.9	63.7
0.610000	36.8	9.000	N	9.9	19.2	56.0
1.016000	28.3	9.000	N	10.0	27.7	56.0
1.086000	26.3	9.000	N	10.0	29.7	56.0
1.090000	27.5	9.000	N	10.0	28.5	56.0
1.154000	26.0	9.000	N	10.0	30.0	56.0
1.480000	27.5	9.000	N	10.1	28.5	56.0
1.542000	26.7	9.000	N	10.1	29.3	56.0
5.446000	26.5	9.000	N	10.2	33.5	60.0
6.674000	24.6	9.000	N	10.3	35.4	60.0
7.022000	25.7	9.000	N	10.3	34.3	60.0
7.224000	25.8	9.000	N	10.3	34.2	60.0
7.566000	24.4	9.000	N	10.4	35.6	60.0
10.120000	24.1	9.000	N	10.5	35.9	60.0

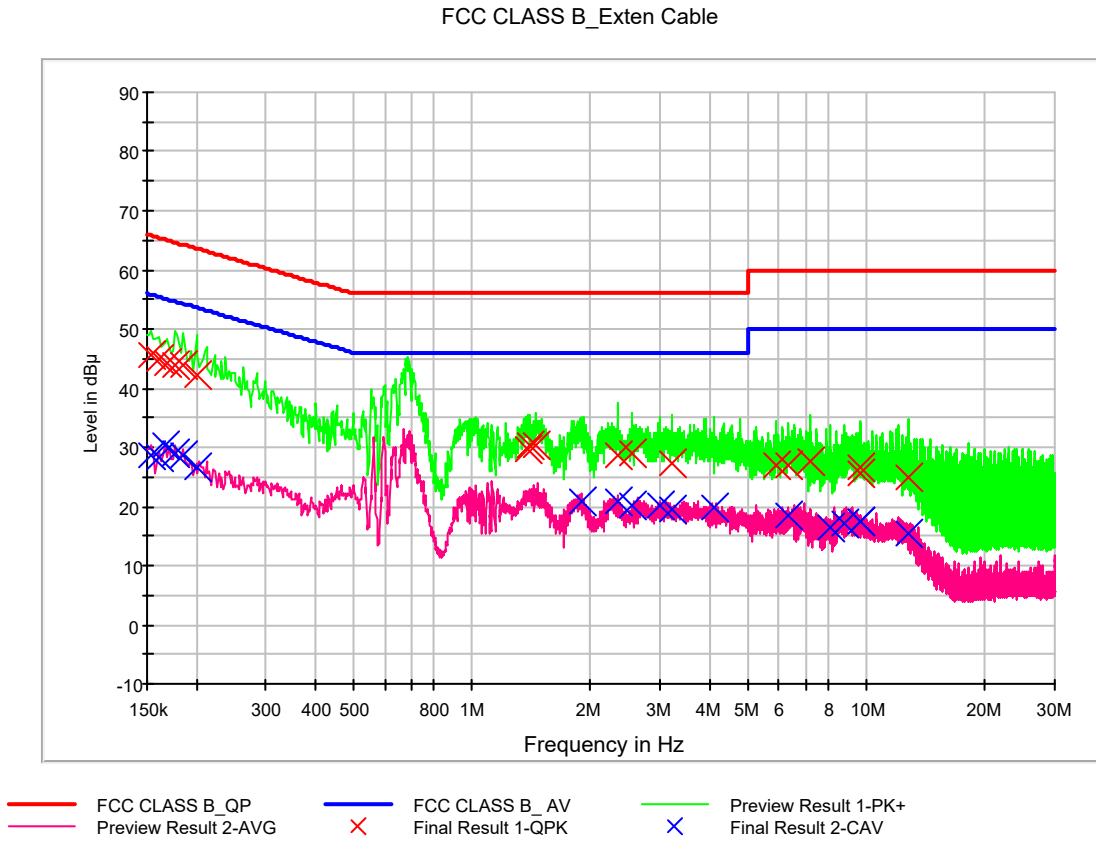


CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.182000	27.5	9.000	N	9.8	26.9	54.4
0.186000	25.6	9.000	N	9.8	28.6	54.2
0.190000	24.0	9.000	N	9.8	30.1	54.0
0.194000	24.2	9.000	N	9.8	29.7	53.9
0.198000	23.9	9.000	N	9.8	29.8	53.7
0.202000	24.9	9.000	N	9.9	28.6	53.5
1.026000	20.0	9.000	N	10.0	26.0	46.0
1.088000	18.2	9.000	N	10.0	27.8	46.0
1.152000	18.0	9.000	N	10.0	28.0	46.0
1.160000	17.3	9.000	N	10.0	28.7	46.0
1.478000	21.2	9.000	N	10.1	24.8	46.0
1.542000	19.2	9.000	N	10.1	26.8	46.0
6.608000	17.4	9.000	N	10.3	32.6	50.0
7.010000	17.5	9.000	N	10.3	32.5	50.0
7.022000	17.8	9.000	N	10.3	32.2	50.0
7.224000	17.9	9.000	N	10.3	32.1	50.0
7.276000	17.7	9.000	N	10.4	32.3	50.0
7.566000	15.8	9.000	N	10.4	34.2	50.0



Figure 5: Conducted Emission, Receiver mode (LTE B5 High CH Idle) + Front Camera Recording, Line (L1)





QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154000	45.7	9.000	L1	9.7	20.1	65.8
0.160000	45.0	9.000	L1	9.7	20.5	65.5
0.168000	44.4	9.000	L1	9.7	20.7	65.1
0.176000	44.0	9.000	L1	9.7	20.7	64.7
0.186000	43.9	9.000	L1	9.7	20.4	64.2
0.200000	42.1	9.000	L1	9.8	21.5	63.6
1.386000	29.7	9.000	L1	9.9	26.3	56.0
1.396000	30.5	9.000	L1	9.9	25.5	56.0
1.452000	30.5	9.000	L1	9.9	25.5	56.0
2.336000	28.8	9.000	L1	9.9	27.2	56.0
2.548000	29.0	9.000	L1	9.9	27.0	56.0
3.210000	27.3	9.000	L1	9.9	28.7	56.0
5.896000	26.9	9.000	L1	10.1	33.1	60.0
6.352000	26.8	9.000	L1	10.1	33.2	60.0
7.222000	27.7	9.000	L1	10.1	32.3	60.0
9.666000	26.5	9.000	L1	10.2	33.5	60.0
9.672000	25.7	9.000	L1	10.2	34.3	60.0
12.776000	24.9	9.000	L1	10.3	35.1	60.0

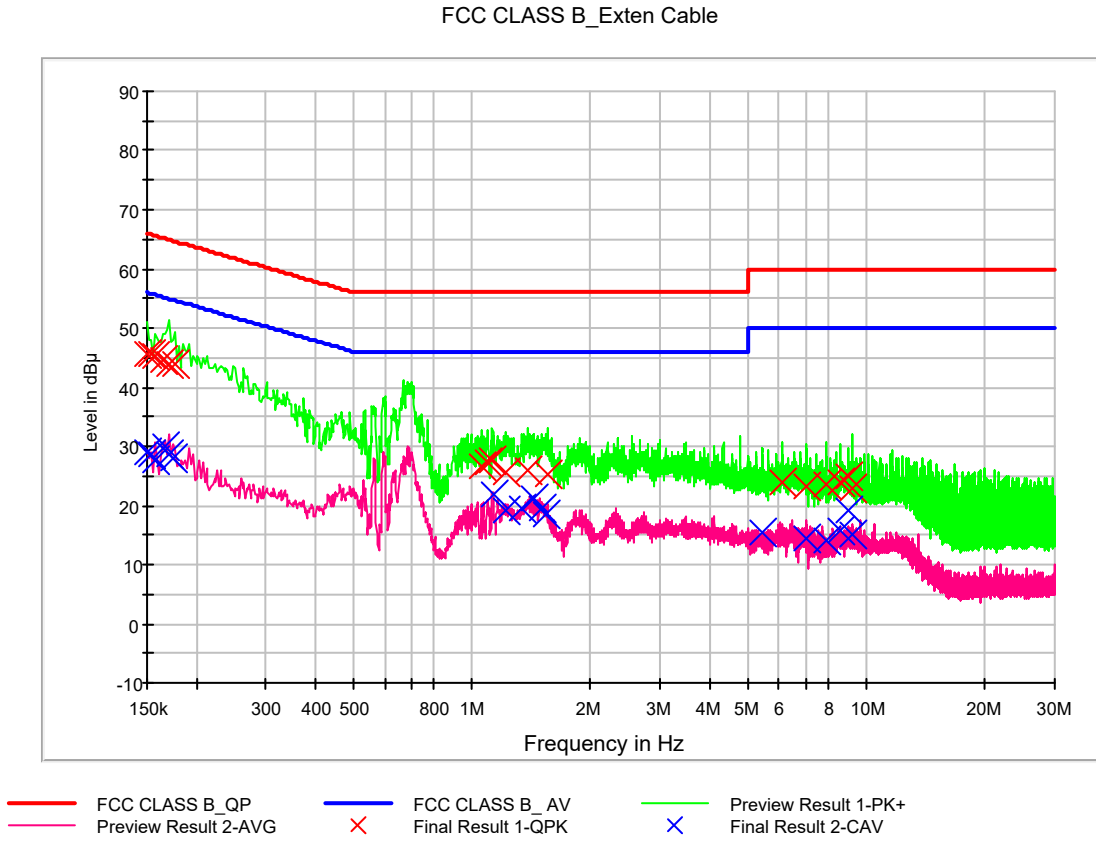


CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.154000	28.8	9.000	L1	9.7	27.0	55.8
0.160000	28.4	9.000	L1	9.7	27.1	55.5
0.166000	30.3	9.000	L1	9.7	24.8	55.2
0.176000	28.9	9.000	L1	9.7	25.7	54.7
0.186000	28.5	9.000	L1	9.7	25.7	54.2
0.200000	26.8	9.000	L1	9.8	26.8	53.6
1.888000	20.8	9.000	L1	9.8	25.2	46.0
2.334000	20.8	9.000	L1	9.9	25.2	46.0
2.548000	20.0	9.000	L1	9.9	26.0	46.0
3.006000	20.1	9.000	L1	9.9	25.9	46.0
3.210000	19.4	9.000	L1	9.9	26.6	46.0
4.118000	19.9	9.000	L1	10.0	26.1	46.0
6.352000	18.6	9.000	L1	10.1	31.4	50.0
8.098000	16.4	9.000	L1	10.2	33.6	50.0
8.762000	17.2	9.000	L1	10.2	32.8	50.0
9.666000	17.6	9.000	L1	10.2	32.4	50.0
9.672000	17.4	9.000	L1	10.2	32.6	50.0
12.776000	15.5	9.000	L1	10.3	34.5	50.0



Figure 6: Conducted Emission, Receiver mode (LTE B5 High CH Idle) + Front Camera Recording, Line (N)





QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	45.6	9.000	N	9.8	20.4	66.0
0.154000	45.6	9.000	N	9.8	20.2	65.8
0.158000	45.1	9.000	N	9.8	20.5	65.6
0.164000	44.7	9.000	N	9.8	20.5	65.3
0.170000	43.8	9.000	N	9.8	21.2	65.0
0.176000	43.9	9.000	N	9.8	20.8	64.7
1.060000	26.8	9.000	N	10.0	29.2	56.0
1.092000	27.1	9.000	N	10.0	28.9	56.0
1.128000	27.5	9.000	N	10.0	28.5	56.0
1.218000	25.7	9.000	N	10.0	30.3	56.0
1.386000	25.9	9.000	N	10.1	30.1	56.0
1.560000	25.3	9.000	N	10.1	30.7	56.0
6.108000	24.1	9.000	N	10.3	35.9	60.0
7.014000	23.4	9.000	N	10.3	36.6	60.0
7.886000	23.7	9.000	N	10.4	36.3	60.0
8.550000	23.9	9.000	N	10.4	36.1	60.0
9.004000	24.8	9.000	N	10.4	35.2	60.0
9.212000	22.9	9.000	N	10.4	37.1	60.0



CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	28.8	9.000	N	9.8	27.2	56.0
0.154000	28.6	9.000	N	9.8	27.2	55.8
0.158000	27.5	9.000	N	9.8	28.0	55.6
0.166000	30.1	9.000	N	9.8	25.0	55.2
0.170000	28.8	9.000	N	9.8	26.2	55.0
0.174000	28.1	9.000	N	9.8	26.7	54.8
1.130000	21.9	9.000	N	10.0	24.1	46.0
1.218000	19.2	9.000	N	10.0	26.8	46.0
1.340000	19.5	9.000	N	10.1	26.5	46.0
1.432000	21.1	9.000	N	10.1	24.9	46.0
1.504000	19.4	9.000	N	10.1	26.6	46.0
1.536000	18.6	9.000	N	10.1	27.4	46.0
5.446000	15.4	9.000	N	10.2	34.6	50.0
6.996000	14.5	9.000	N	10.3	35.5	50.0
7.886000	14.0	9.000	N	10.4	36.0	50.0
8.550000	15.7	9.000	N	10.4	34.3	50.0
9.004000	19.2	9.000	N	10.4	30.8	50.0
9.212000	15.1	9.000	N	10.4	34.9	50.0



5.2 Radiated Emission

The test results of radiated emission provide the following information:

-For Measurement Below 1 GHz

Applicable Standards	FCC PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Quasi-Peak
Bandwidth	120 kHz (6 dB)
Worst Case of Operating Mode	Data Communication [TA] Front Camera Preview Receiver mode (LTE B5 High CH Idle) + Front Camera Recording [Earphone] FM Radio(High CH) Receiver mode (LTE B5 Middle CH Idle) + Rear Camera Recording
Kind of Test Site	3 m semi anechoic chamber
Temperature	24.5 °C
Relative Humidity	42.9%
Test Date	April 04, 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



Data Communication

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
30.776800	25.2	100.0	V	231.0	18.7	14.8	40.0
66.418400	26.2	100.0	H	34.0	18.5	13.8	40.0
265.626400	30.9	100.0	H	159.0	19.4	15.1	46.0
276.819200	29.0	100.0	H	270.0	19.8	17.0	46.0
600.096000	28.2	100.0	V	0.0	27.6	17.8	46.0
800.033600	39.1	100.0	H	47.0	30.4	6.9	46.0

[TA] Front Camera Preview

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
31.308557	22.3	174.9	V	0.0	18.8	17.7	40.0
55.481600	30.3	100.0	V	16.0	19.9	9.7	40.0
65.216000	22.6	100.0	V	148.0	18.7	17.4	40.0
208.707200	21.7	100.0	V	0.0	17.7	21.8	43.5
490.410400	24.4	100.0	H	88.0	25.1	21.6	46.0
639.984000	27.8	208.8	V	130.0	28.0	18.2	46.0

[TA] Receiver mode (LTE B5 High CH Idle) + Front Camera Recording

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
32.396000	18.8	225.0	V	119.0	18.9	21.2	40.0
53.097600	28.4	100.0	V	155.0	20.0	11.6	40.0
140.016800	17.2	100.0	V	277.0	19.5	26.3	43.5
208.171200	21.1	100.0	V	344.0	17.7	22.4	43.5
465.352800	23.3	100.0	V	278.0	24.5	22.7	46.0
693.220000	28.5	175.0	H	71.0	28.7	17.5	46.0


[Earphone] FM Radio (High CH)

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
31.396000	22.8	174.9	V	295.0	18.8	17.2	40.0
50.908000	18.4	116.8	V	110.0	20.1	21.6	40.0
114.554400	20.7	174.8	V	335.0	17.0	22.8	43.5
192.008000	27.1	174.9	H	7.0	17.8	16.4	43.5
287.980000	30.4	100.0	H	20.0	20.2	15.6	46.0
797.050400	30.5	225.0	V	98.0	30.4	15.5	46.0

[Earphone] Receiver mode (LTE B5 Middle CH Idle) + Rear Camera Recording

Frequency (MHz)	Quasi Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
31.500000	23.8	174.9	V	30.0	18.8	16.2	40.0
51.919200	18.3	100.0	V	125.0	20.0	21.7	40.0
63.912800	16.7	100.0	V	295.0	19.0	23.3	40.0
149.666400	17.6	125.1	H	117.0	19.7	25.9	43.5
491.769600	24.0	100.0	V	258.0	25.1	22.0	46.0
699.038400	28.6	174.9	H	255.0	28.8	17.4	46.0



-For Measurement Above 1 GHz

Applicable Standards	FCC 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	5 825 MHz
Tested Frequency Range	1 GHz to 30 GHz
Worst Case of Operating Mode	Data Communication [TA] Front Camera Preview Receiver mode (LTE B5 High CH Idle) + Front Camera Recording [Earphone] FM Radio(High CH) Receiver mode (LTE B5 Middle CH Idle) + Rear Camera Recording
Kind of Test Site	3 m semi anechoic chamber
Temperature	24.5 / 23.1 °C
Relative Humidity	42.9 / 43.2 %
Test Date	April 04 / April 05, 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



Data Communication

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1400.070000	51.8	322.7	V	197.0	-26.1	22.2	74.0
1499.335000	44.4	231.4	V	11.0	-25.6	29.6	74.0
1999.165000	51.6	100.0	V	51.0	-25.3	22.4	74.0
2663.135000	47.5	111.4	V	0.0	-22.7	26.5	74.0
9516.725000	48.7	148.7	H	192.0	-5.4	25.3	74.0
11013.690000	48.2	100.0	V	153.0	-2.6	25.8	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1400.070000	50.6	322.7	V	197.0	-26.1	3.4	54.0
1499.335000	35.5	231.4	V	11.0	-25.6	18.5	54.0
1999.165000	29.3	100.0	V	51.0	-25.3	24.7	54.0
2663.135000	21.6	111.4	V	0.0	-22.7	32.4	54.0
9516.725000	36.1	148.7	H	192.0	-5.4	17.9	54.0
11013.690000	35.5	100.0	V	153.0	-2.6	18.5	54.0

[TA] Front Camera Preview

Frequency (MHz)	Peak (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1389.405000	33.1	349.8	H	327.0	-26.1	40.9	74.0
4932.675000	38.2	150.0	V	313.0	-16.1	35.8	74.0
7548.450000	44.2	149.6	V	272.0	-9.4	29.8	74.0
9266.060000	47.7	249.8	V	0.0	-6.0	26.3	74.0
11035.500000	47.8	150.0	V	173.0	-2.6	26.2	74.0
14788.570000	47.8	100.0	V	151.0	0.8	26.2	74.0

Frequency (MHz)	CAverage (dBμV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
1389.405000	20.0	349.8	H	327.0	-26.1	34.0	54.0
4932.675000	25.9	150.0	V	313.0	-16.1	28.1	54.0
7548.450000	31.6	149.6	V	272.0	-9.4	22.4	54.0
9266.060000	34.7	249.8	V	0.0	-6.0	19.3	54.0
11035.500000	34.9	150.0	V	173.0	-2.6	19.1	54.0
14788.570000	34.7	100.0	V	151.0	0.8	19.3	54.0


[TA] Receiver mode (LTE B5 High CH Idle) + Front Camera Recording

Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
3084.710000	35.1	249.9	V	50.0	-21.0	38.9	74.0
5607.080000	40.3	336.6	V	181.0	-15.3	33.7	74.0
7439.640000	44.0	306.4	V	153.0	-9.6	30.0	74.0
9514.770000	48.6	203.4	H	50.0	-5.4	25.4	74.0
10838.265000	48.0	248.6	H	50.0	-3.0	26.0	74.0
14767.380000	48.5	249.7	H	271.0	0.8	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)
3084.710000	22.4	249.9	V	50.0	-21.0	31.6	54.0
5607.080000	26.4	336.6	V	181.0	-15.3	27.6	54.0
7439.640000	31.4	306.4	V	153.0	-9.6	22.6	54.0
9514.770000	35.9	203.4	H	50.0	-5.4	18.1	54.0
10838.265000	35.1	248.6	H	50.0	-3.0	18.9	54.0
14767.380000	35.9	249.7	H	271.0	0.8	18.1	54.0

[Earphone] FM Radio (High CH)

Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
2988.305000	34.7	150.1	V	318.0	-21.1	39.3	74.0
5504.510000	39.0	249.6	H	0.0	-15.4	35.0	74.0
7295.930000	43.8	198.4	H	309.0	-10.0	30.2	74.0
9619.210000	47.9	176.4	H	128.0	-5.4	26.1	74.0
10587.840000	48.3	150.0	H	226.0	-3.4	25.7	74.0
14733.750000	49.2	204.6	V	242.0	0.8	24.8	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)
2988.305000	22.1	150.1	V	318.0	-21.1	31.9	54.0
5504.510000	26.0	249.6	H	0.0	-15.4	28.0	54.0
7295.930000	31.1	198.4	H	309.0	-10.0	22.9	54.0
9619.210000	35.5	176.4	H	128.0	-5.4	18.5	54.0
10587.840000	35.8	150.0	H	226.0	-3.4	18.2	54.0
14733.750000	36.0	204.6	V	242.0	0.8	18.0	54.0


[Earphone] Receiver mode (LTE B5 Middle CH Idle) + Rear Camera Recording

Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
3029.145000	35.3	100.0	H	268.0	-21.1	38.7	74.0
5293.715000	39.7	150.0	H	275.0	-15.6	34.3	74.0
7379.160000	44.0	100.0	H	163.0	-9.8	30.0	74.0
9263.875000	47.5	216.4	V	29.0	-6.0	26.5	74.0
11201.665000	47.6	100.0	V	109.0	-2.6	26.4	74.0
15066.540000	48.1	150.0	V	0.0	0.8	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)
3029.145000	22.2	100.0	H	268.0	-21.1	31.8	54.0
5293.715000	26.3	150.0	H	275.0	-15.6	27.7	54.0
7379.160000	31.5	100.0	H	163.0	-9.8	22.5	54.0
9263.875000	34.6	216.4	V	29.0	-6.0	19.4	54.0
11201.665000	34.9	100.0	V	109.0	-2.6	19.1	54.0
15066.540000	35.8	150.0	V	0.0	0.8	18.2	54.0



6. CONCLUSION

The data collected shows that the **EUT Type: Mobile Phone, FCC ID: A3LSMA6060, Model: SM-A6060** complies with §15.107 and §15.109 of the FCC rules.



7. APPENDIX A. TEST SETUP PHOTOGRAPHS

Please refer to ANNEX A_Test Setup Photo