

EMI TEST REPORT

FCC CERTIFICATION

Applicant:

SAMSUNG Electronics Co., Ltd.
129, Samsung-ro, Yeongtong-gu, Suwon-si,
Gyeonggi-do, 16677, Korea

Date of Issue: November 08, 2019**Test Report No. HCT-EM-1910-FC006-R1****Test Site: HCT CO., LTD.****FCC ID :****A3LSMG770F**

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

EUT Type : Mobile Phone

Model Name : SM-G770F/DS

Series Model Name : SM-G770F/DSM, SM-G770F

Date of Test : October 21, 2019 to October 23, 2019
November 08, 2019

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2014. (See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

HCT certifies that no party to application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C 862

Tested By

Na-Eun Song
Test Engineer
EMC Team
Certification Division

Reviewed

Jeong-Hyun Choi
Technical Manager
EMC Team
Certification Division

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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-1910-FC006	October 28, 2019	Initial Release
HCT-EM-1910-FC006-R1	November 08, 2019	Revised the operating mode



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1. GENERAL INFORMATION

1.1 Description of EUT

FCC ID	A3LSMG770F	
Model Name	SM-G770F/DS	
Series Model Name	SM-G770F/DSM, SM-G770F	
EUT Type	Mobile Phone	
Frequency Band	GSM 850/1900, WCDMA 850/1700/1900, LTE B2/4/5/7/12/13/17/26/66, BT, WLAN a/b/g/n/ac, NFC, ANT+	
Power Supply	TA	Input: AC (100 ~ 240) V, (50 ~ 60) Hz, 1.2 A Output: (PDO) DC 9.0 V, 3.0 A or DC 5.0 V, 3.0 A or DC 15.0 V, 3.0 A or DC 20.0 V, 2.25 A (PPS) (3.3 ~ 11.0) V, 4.05 A or (3.3 ~ 16.0) V, 2.8 A or (3.3 ~ 21.0) V, 2.1 A
	Battery	Low 3.75 V / Normal 3.85 V / High 4.35 V, Li-ion Battery

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	SM-G770F/DS	-	SAMSUNG
TA	EP-TA845	-	SOLUM
Data Cable	EP-DN975BBE	-	RFTECH
Earphone	TBD	-	BUJEON
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 (Data Cable)	Y	N/A	(P) 1.0
	USB Type C (Earphone)	N/A	N	(D) 1.2

* 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 (Earphone)	N	N/A	Y	EUT 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	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 (dB)
Conducted Emission (0.15 MHz to 30 MHz)	1.8 dB
Radiated Emissions (30 MHz to 1 GHz)	4.8 dB
Radiated Emissions (1 GHz to 18 GHz)	5.4 dB
Radiated Emissions (18 GHz to 40 GHz)	5.7 dB



2. LIST OF TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Name</u>	<u>Serial Number</u>	<u>Calibration Cycle</u>	<u>CAL Date</u>
<u>Conducted Emission</u>					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	06.18.2019
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ENV216	102245	1 year	09.11.2019
<input type="checkbox"/> LISN	Rohde & Schwarz	ENV216	100073	1 year	04.30.2019
<input checked="" type="checkbox"/> Radio communication analyzer	ANRITSU	MT8820C	6201138643	1 year	08.20.2019
<input checked="" type="checkbox"/> Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
<input checked="" type="checkbox"/> Software	Rohde & Schwarz	EMC32	-	-	-
<u>Radiated Emission</u>					
-For measurement below 1 GHz					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	05.17.2019
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB 9168	255	2 year	03.26.2019
<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	08.20.2019
<input checked="" type="checkbox"/> Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
<input checked="" type="checkbox"/> Software	Rohde & Schwarz	EMC32	-	-	-
-For measurement above 1 GHz					
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	05.17.2019
<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	1 year	07.19.2019
<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	08.20.2019
<input checked="" type="checkbox"/> Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
<input checked="" type="checkbox"/> Software	Rohde & Schwarz	EMC32	-	-	-



3. DESCRIPTION OF TEST

3.1 Measurement of Conducted Emission

The test procedure was in accordance with ANSI C63.4-2014, Clause 7.3

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN).
If the EUT is connected to the PC through USB, the AC power-line adapter of the PC is directly connected to a line impedance stabilization network (LISN).
Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both conducted lines are measured in Quasi-Peak and Average mode, including the worst-case data points for each tested configuration.
- c. The frequency range from 150 kHz to 30 MHz was searched.

[Conducted Emission Limits]

Frequency (MHz)	Resolution Bandwidth (kHz)	Quasi-Peak (dB(μV))	Average (dB(μV))
0.15 to 0.5	9	66 to 56*	56 to 46*
0.5 to 5	9	56	46
5 to 30	9	60	50

**Decreases with the logarithm of the frequency.*



3.2 Measurement of Radiated Emission

The test procedure was in accordance with ANSI C63.4-2014, Clause 8.3

- a. The EUT was placed on the top of a turn table 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from 1 m to 4 m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 m to 4 m and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to Peak and Average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- g. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.(1 GHz to 40 GHz)

[Radiated Emission Limits]

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



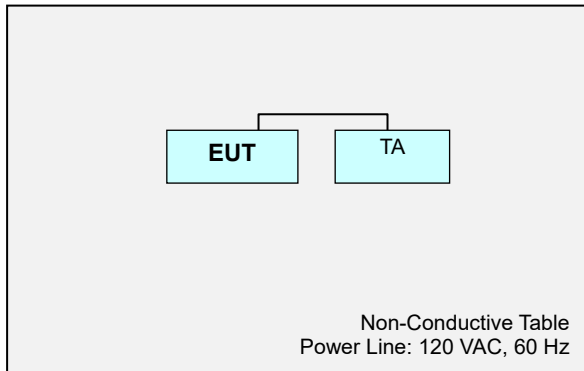
3.2.1 Frequency Range of Radiated Measurements

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

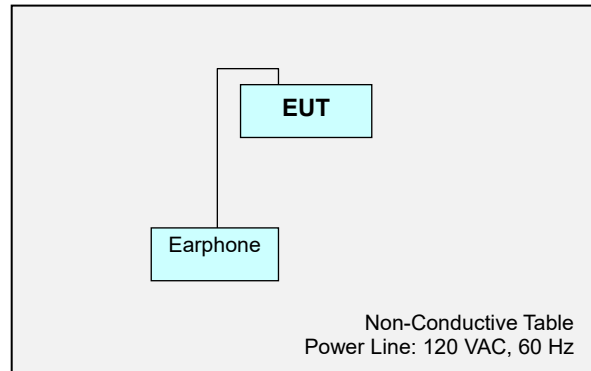
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

3.3 Configuration of Tested System

[EUT+TA]



[EUT+Earphone]





4. PRELIMINARY TEST

During preliminary tests, the following operating mode was investigated.

GSM 850 Idle (Low/Middle/High CH)
WCDMA 850 Idle (Low/Middle/High CH)
LTE B5 Idle (Low/Middle/High CH)
LTE B12 Idle (Low/Middle/High CH)
LTE B13 Idle (Low/Middle/High CH)
LTE B17 Idle (Low/Middle/High CH)
LTE B26 Idle (Low/Middle/High CH)

4.1 Conducted Emission

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

Operating Modes:

Receiver mode (LTE B26+B5 Low CH Idle)

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:

-For measurement below 1 GHz

[EUT+TA]

Receiver mode (LTE B26+B5 Low CH Idle)
Receiver mode (LTE B26+B5 Middle CH Idle)
Receiver mode (LTE B26+B5 High CH Idle)
Receiver mode (LTE B12+B13+B17 Low CH Idle)
Receiver mode (LTE B12+B13+B17 Middle CH Idle)
Receiver mode (LTE B12+B13+B17 High CH Idle)

[EUT+Earphone]

Receiver mode (LTE B26+B5 Low CH Idle)
Receiver mode (LTE B26+B5 Middle CH Idle)
Receiver mode (LTE B26+B5 High CH Idle)
Receiver mode (LTE B12+B13+B17 Low CH Idle)
Receiver mode (LTE B12+B13+B17 Middle CH Idle)
Receiver mode (LTE B12+B13+B17 High CH Idle)

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



-For measurement above 1 GHz

[EUT+TA]

Receiver mode (LTE B26+B5 Low CH Idle)

[EUT+Earphone]

Receiver mode (LTE B12+B13+B17 Middle CH Idle)

NOTE. 1. 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:

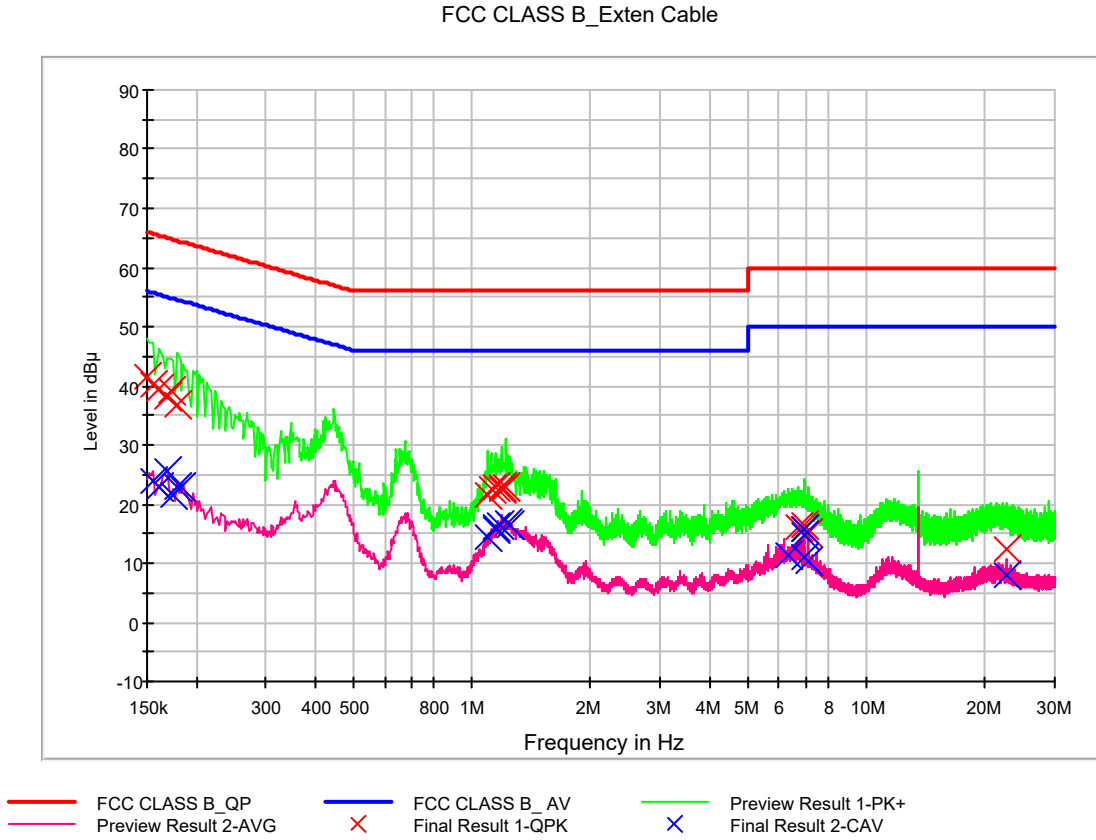
Rule Part / Standard	FCC PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Worst Case of Operating Mode	Receiver mode (LTE B26+B5 Low CH Idle)
Kind of Test Site	Shielded Room
Temperature	21.9 °C
Relative Humidity	43.1 %
Test Date	November 08, 2019

- 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, Receiver mode (LTE B26+B5 Low CH Idle), Line (L1)





QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	41.6	9.000	L1	9.8	24.4	66.0
0.156000	40.2	9.000	L1	9.8	25.5	65.7
0.160000	39.6	9.000	L1	9.8	25.9	65.5
0.168000	38.1	9.000	L1	9.8	27.0	65.1
0.172000	39.0	9.000	L1	9.8	25.9	64.9
0.178000	36.8	9.000	L1	9.8	27.8	64.6
1.096000	21.6	9.000	L1	9.9	34.4	56.0
1.116000	22.4	9.000	L1	9.9	33.6	56.0
1.142000	22.8	9.000	L1	9.9	33.2	56.0
1.184000	22.4	9.000	L1	9.9	33.6	56.0
1.188000	23.0	9.000	L1	9.9	33.0	56.0
1.214000	22.8	9.000	L1	9.9	33.2	56.0
6.680000	16.2	9.000	L1	10.2	43.8	60.0
6.922000	16.6	9.000	L1	10.2	43.4	60.0
6.930000	15.6	9.000	L1	10.2	44.4	60.0
6.936000	15.9	9.000	L1	10.2	44.1	60.0
7.100000	15.2	9.000	L1	10.2	44.8	60.0
22.646000	12.5	9.000	L1	10.8	47.5	60.0

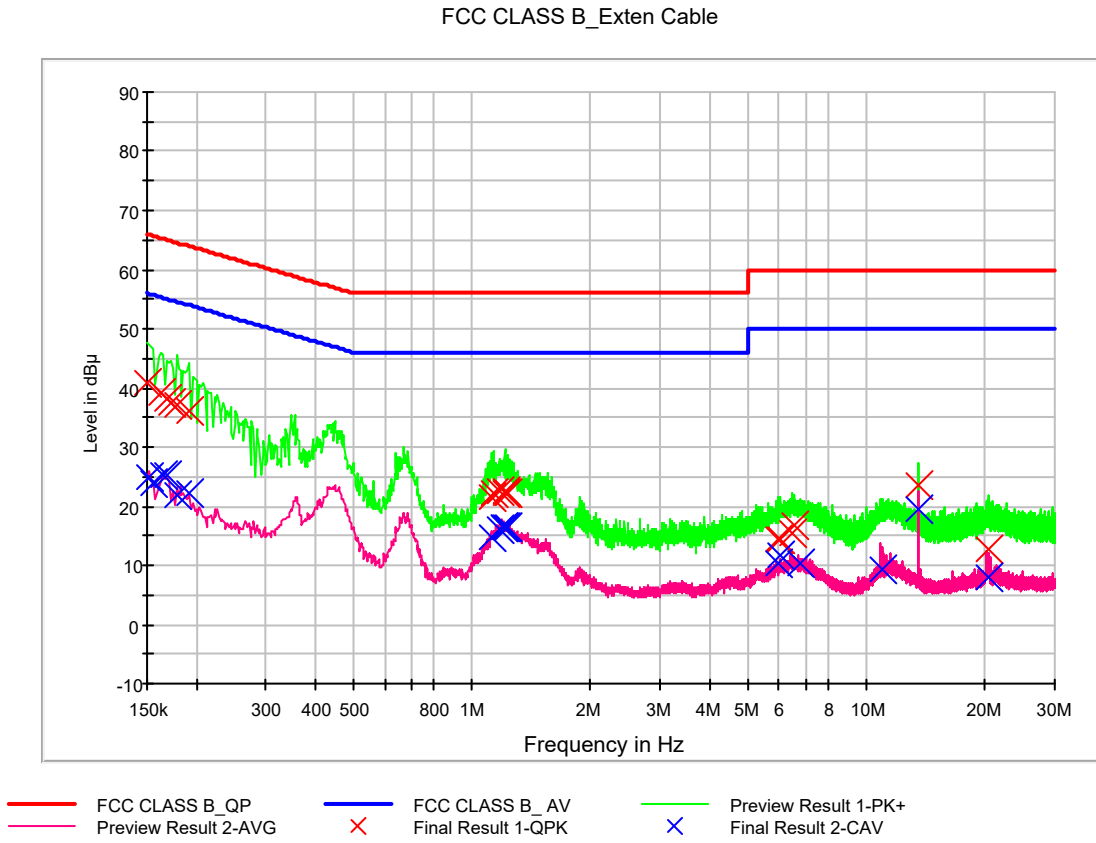


CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.156000	24.1	9.000	L1	9.8	31.6	55.7
0.160000	22.9	9.000	L1	9.8	32.6	55.5
0.168000	25.4	9.000	L1	9.8	29.6	55.1
0.174000	21.5	9.000	L1	9.8	33.3	54.8
0.178000	22.9	9.000	L1	9.8	31.6	54.6
0.182000	22.8	9.000	L1	9.8	31.6	54.4
1.096000	14.2	9.000	L1	9.9	31.8	46.0
1.144000	15.6	9.000	L1	9.9	30.4	46.0
1.152000	16.1	9.000	L1	9.9	29.9	46.0
1.174000	16.4	9.000	L1	9.9	29.6	46.0
1.226000	16.6	9.000	L1	9.9	29.4	46.0
1.244000	16.5	9.000	L1	9.9	29.5	46.0
6.314000	11.4	9.000	L1	10.1	38.6	50.0
6.926000	15.7	9.000	L1	10.2	34.3	50.0
6.930000	14.7	9.000	L1	10.2	35.3	50.0
6.936000	11.0	9.000	L1	10.2	39.0	50.0
7.100000	10.5	9.000	L1	10.2	39.5	50.0
22.652000	7.9	9.000	L1	10.8	42.1	50.0



Figure 2: Conducted Emission, Receiver mode (LTE B26+B5 Low CH Idle), Line (N)





QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	40.9	9.000	N	9.8	25.2	66.0
0.162000	39.0	9.000	N	9.8	26.4	65.4
0.168000	38.1	9.000	N	9.8	27.0	65.1
0.172000	37.4	9.000	N	9.8	27.5	64.9
0.178000	37.2	9.000	N	9.8	27.4	64.6
0.192000	36.0	9.000	N	9.8	28.0	63.9
1.118000	21.7	9.000	N	9.9	34.3	56.0
1.138000	22.1	9.000	N	9.9	33.9	56.0
1.172000	22.6	9.000	N	9.9	33.4	56.0
1.212000	22.5	9.000	N	9.9	33.5	56.0
1.218000	22.2	9.000	N	9.9	33.8	56.0
1.228000	22.1	9.000	N	9.9	33.9	56.0
5.988000	14.4	9.000	N	10.1	45.6	60.0
6.056000	14.5	9.000	N	10.1	45.5	60.0
6.482000	15.3	9.000	N	10.2	44.7	60.0
6.552000	16.8	9.000	N	10.2	43.2	60.0
13.560000	23.5	9.000	N	10.5	36.5	60.0
20.512000	12.9	9.000	N	10.8	47.1	60.0



CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	24.8	9.000	N	9.8	31.1	55.9
0.156000	24.0	9.000	N	9.8	31.7	55.7
0.164000	25.1	9.000	N	9.8	30.1	55.3
0.168000	25.3	9.000	N	9.8	29.7	55.1
0.178000	21.9	9.000	N	9.8	32.7	54.6
0.192000	22.1	9.000	N	9.8	31.9	53.9
1.118000	14.8	9.000	N	9.9	31.2	46.0
1.172000	16.2	9.000	N	9.9	29.8	46.0
1.202000	16.3	9.000	N	9.9	29.7	46.0
1.210000	16.6	9.000	N	9.9	29.4	46.0
1.218000	16.4	9.000	N	9.9	29.6	46.0
1.228000	16.3	9.000	N	9.9	29.7	46.0
5.988000	10.3	9.000	N	10.1	39.7	50.0
6.056000	11.7	9.000	N	10.1	38.3	50.0
6.762000	10.5	9.000	N	10.2	39.5	50.0
10.912000	9.4	9.000	N	10.4	40.6	50.0
13.560000	19.6	9.000	N	10.5	30.4	50.0
20.512000	8.0	9.000	N	10.8	42.0	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	[EUT+TA] Receiver mode (LTE B26+B5 Low CH Idle) Receiver mode (LTE B12+B13+B17 Middle CH Idle) [EUT+Earphone] Receiver mode (LTE B26+B5 Middle CH Idle) Receiver mode (LTE B12+B13+B17 Middle CH Idle)
Kind of Test Site	3 m semi anechoic chamber
Temperature	23.6 / 24.1 °C
Relative Humidity	44.1 / 42.6 %
Test Date	October 21 / October 22, 2019

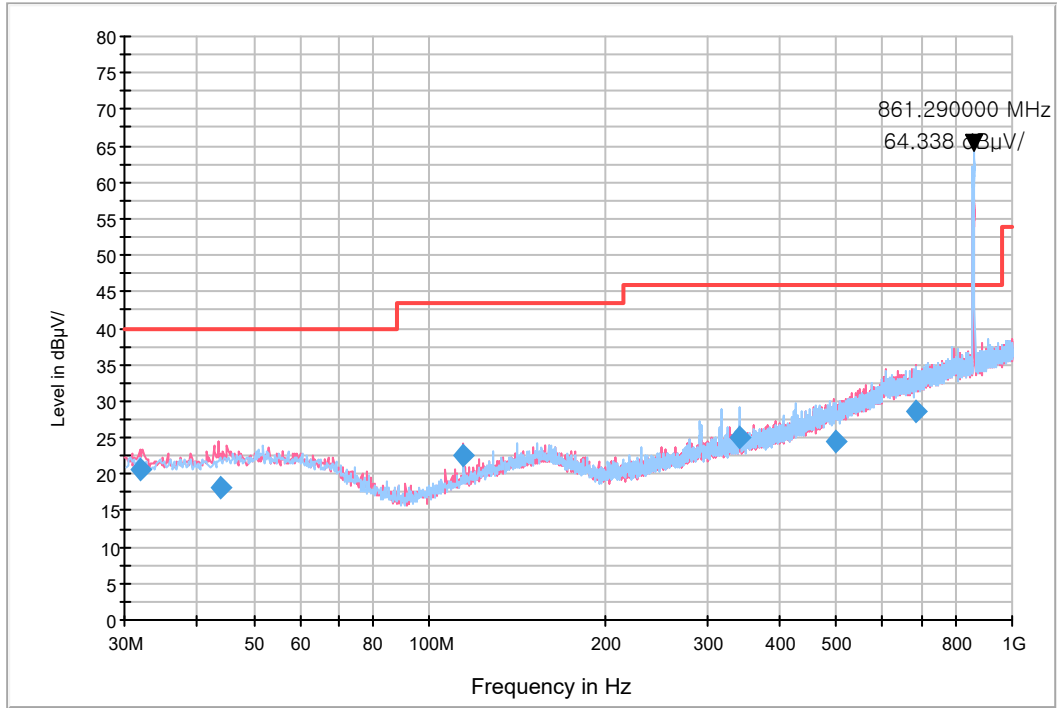
- Calculation Formula:

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



Figure 3: Radiated Emission, [EUT+TA] Receiver mode (LTE B26+B5 Low CH Idle)

FCC PART 15 CLASS B



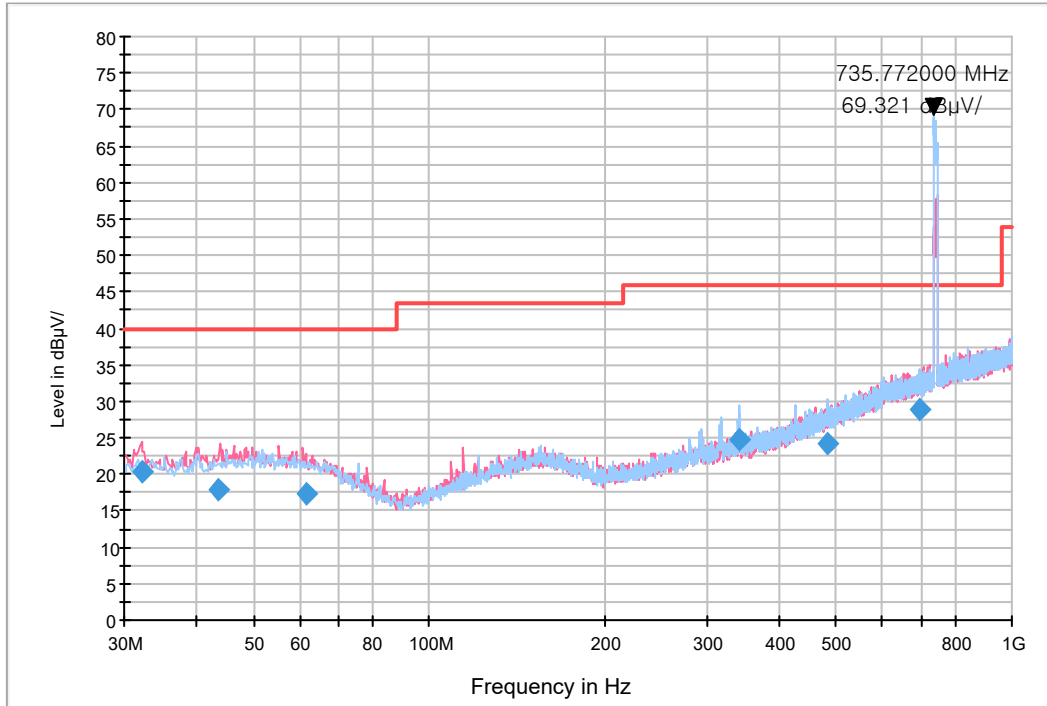
- NOTE. 1. LTE B26+B5 Low CH RX Frequency: 861.290 MHz
 2. These are signals for fundamental frequency from the base station

Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
32.023400	20.5	100.0	V	310.0	18.5	19.5	40.0
43.892800	18.1	100.0	V	192.0	19.3	21.9	40.0
114.560800	22.4	190.8	V	0.0	16.8	21.1	43.5
340.676400	25.1	117.8	H	89.0	21.5	20.9	46.0
496.512800	24.5	274.8	V	139.0	25.2	21.5	46.0
682.774000	28.6	225.1	V	158.0	28.6	17.4	46.0



Figure 4: Radiated Emission, [EUT+TA] Receiver mode (LTE B12+B13+B17 Middle CH Idle)

FCC PART 15 CLASS B



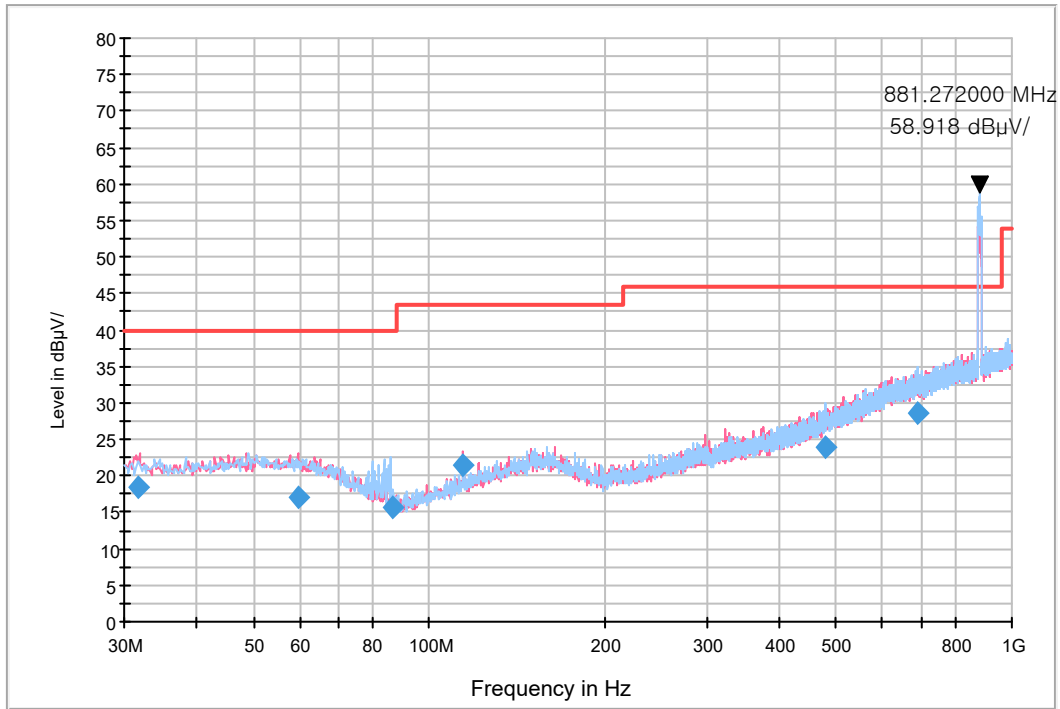
- NOTE. 1. LTE B12+B13+B17 Middle CH RX Frequency: 735.772 MHz
 2. These are signals for fundamental frequency from the base station

Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
32.174000	20.4	174.8	V	331.0	18.5	19.6	40.0
43.469200	17.7	100.0	V	178.0	19.3	22.3	40.0
61.508200	17.4	118.9	V	299.0	19.2	22.6	40.0
340.408200	24.8	100.0	H	88.0	21.5	21.2	46.0
481.055400	24.2	100.0	H	113.0	24.8	21.8	46.0
693.674800	28.8	100.0	H	218.0	28.7	17.2	46.0



Figure 5: Radiated Emission, [EUT+Earphone] Receiver mode (LTE B26+B5 Middle CH Idle)

FCC PART 15 CLASS B

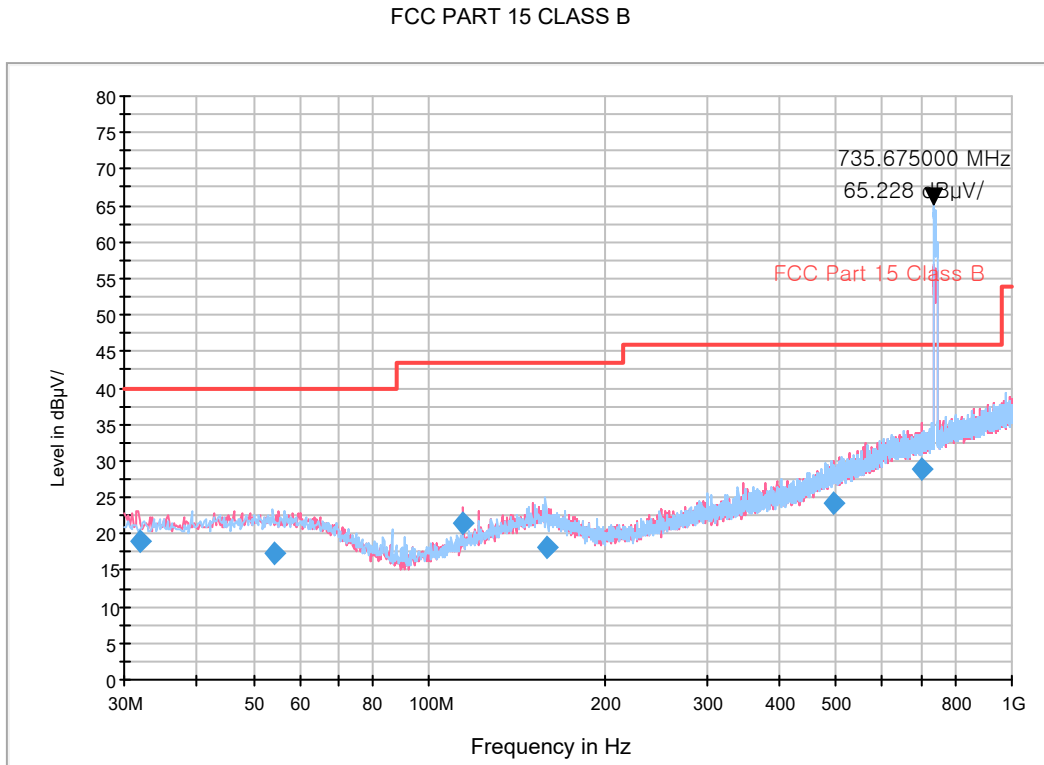


- NOTE. 1. LTE B26+B5 Middle CH RX Frequency: 881.272 MHz
 2. These are signals for fundamental frequency from the base station

Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
31.619400	18.5	100.0	V	308.0	18.4	21.5	40.0
59.532200	17.1	192.8	V	93.0	19.4	22.9	40.0
86.916000	15.6	174.7	H	6.0	14.7	24.4	40.0
114.545600	21.3	174.9	V	0.0	16.8	22.2	43.5
480.854600	24.0	174.8	H	254.0	24.8	22.0	46.0
690.208400	28.7	199.7	H	77.0	28.7	17.3	46.0



Figure 6: Radiated Emission, [EUT+Earphone] Receiver mode (LTE B12+B13+B17 Middle CH Idle)



- NOTE. 1. LTE B12+B13+B17 Middle CH RX Frequency: 735.675 MHz
 2. These are signals for fundamental frequency from the base station

Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
31.866800	19.1	174.8	V	308.0	18.4	20.9	40.0
54.314200	17.2	100.0	H	54.0	19.6	22.8	40.0
114.555600	21.4	225.2	V	140.0	16.8	22.1	43.5
158.767200	18.2	174.9	H	236.0	19.9	25.3	43.5
494.678600	24.3	174.7	V	248.0	25.2	21.7	46.0
700.741000	28.9	100.0	V	59.0	28.8	17.1	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	[EUT+TA] Receiver mode (LTE B26+B5 Low CH Idle) [EUT+Earphone] Receiver mode (LTE B12+B13+B17 Middle CH Idle)
Kind of Test Site	3 m semi anechoic chamber
Temperature	24.1/ 23.5 °C
Relative Humidity	42.6 / 42.6 %
Test Date	October 22, 2019 / November 08, 2019

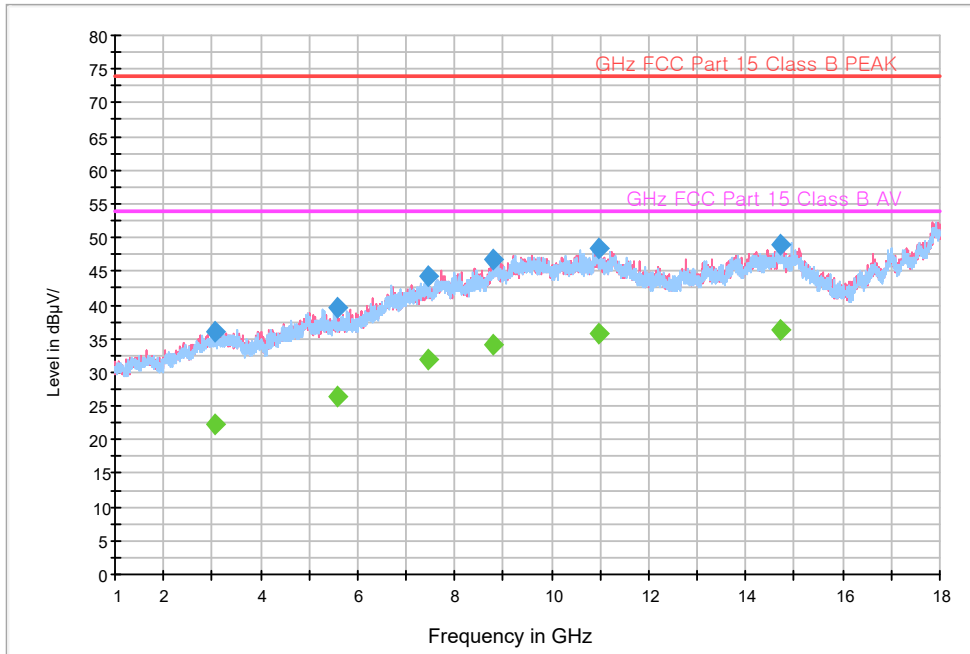
- Calculation Formula:

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

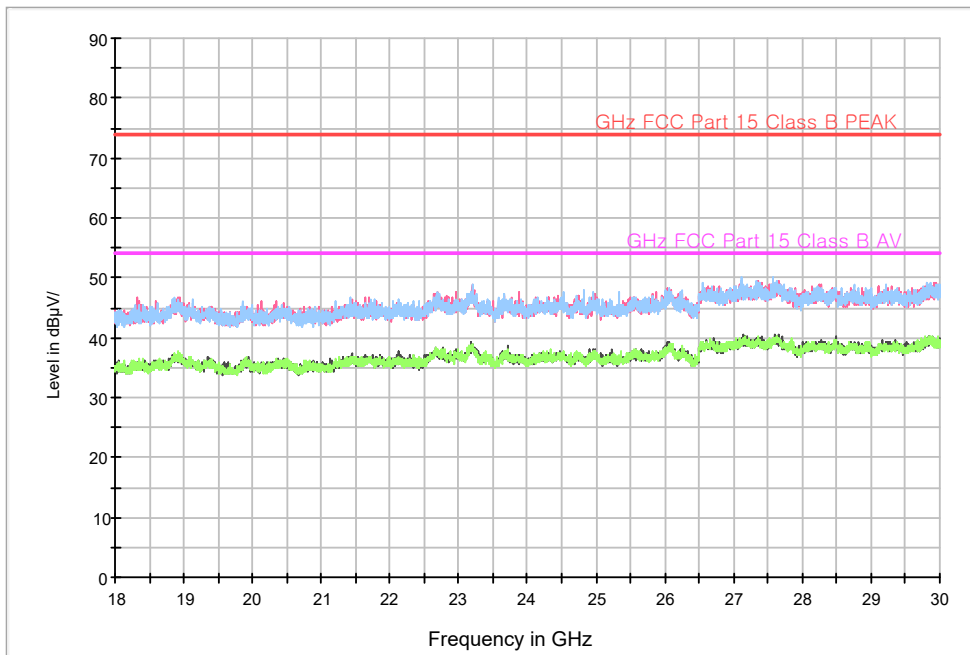


Figure 7: Radiated Emission, [EUT+TA] Receiver mode (LTE B26+B5 Low CH Idle)

Tilting of GHz FCC PART 15 CLASS B



Tilting of GHz FCC PART 15 CLASS B_18~40GHz





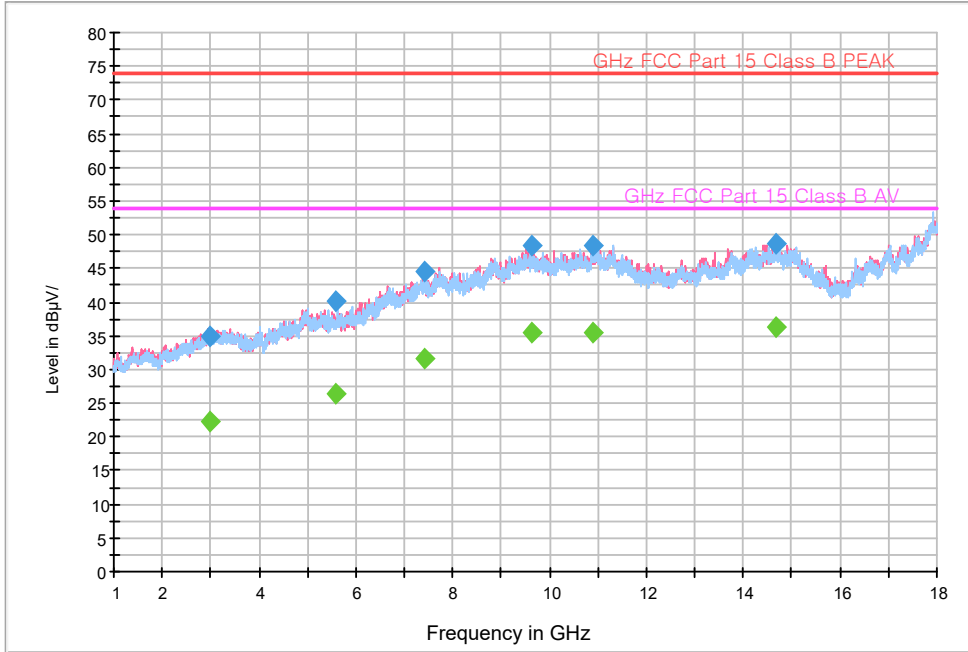
Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
3050.050000	35.9	189.5	V	138.0	-21.0	38.1	74.0
5568.200000	39.6	158.5	H	327.0	-15.1	34.4	74.0
7444.660000	44.3	202.4	H	0.0	-9.4	29.7	74.0
8781.130000	46.7	150.0	V	301.0	-7.3	27.3	74.0
10964.840000	48.3	229.3	V	277.0	-2.5	25.7	74.0
14724.475000	49.0	188.4	V	0.0	1.0	25.0	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)
3050.050000	22.4	189.5	V	138.0	-21.0	31.6	54.0
5568.200000	26.5	158.5	H	327.0	-15.1	27.5	54.0
7444.660000	31.9	202.4	H	0.0	-9.4	22.1	54.0
8781.130000	34.0	150.0	V	301.0	-7.3	20.0	54.0
10964.840000	35.7	229.3	V	277.0	-2.5	18.3	54.0
14724.475000	36.3	188.4	V	0.0	1.0	17.7	54.0

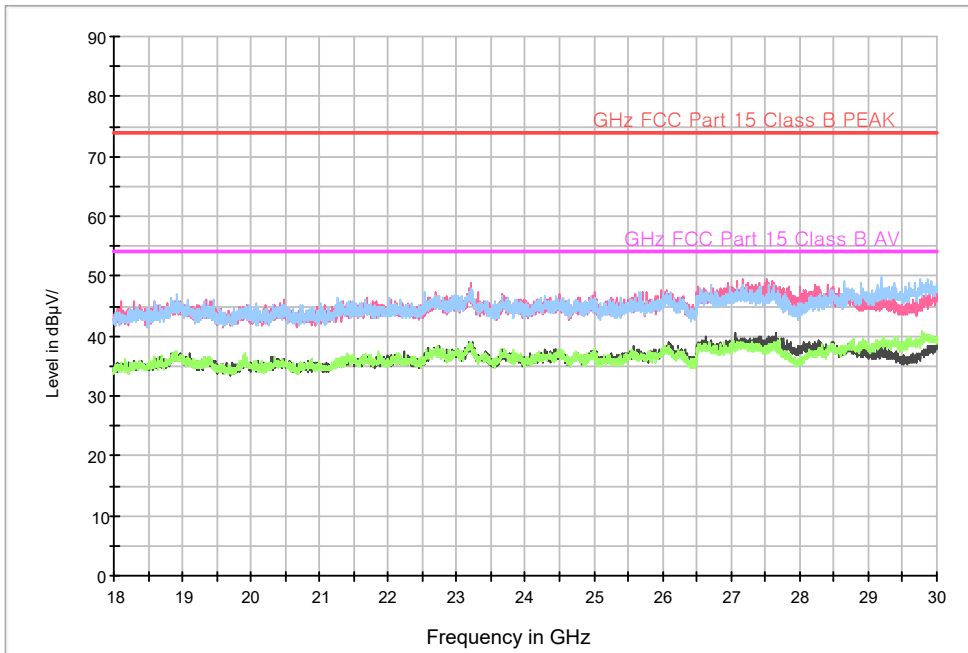


Figure 8: Radiated Emission, [EUT+Earphone] Receiver mode (LTE B12+B13+B17 Middle CH Idle)

Tilting of GHz FCC PART 15 CLASS B



Tilting of GHz FCC PART 15 CLASS B_18~40GHz





Frequency (MHz)	Peak (dB μ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)
2974.570000	35.0	249.9	V	149.0	-21.1	39.0	74.0
5595.075000	40.3	100.0	H	30.0	-15.1	33.7	74.0
7399.040000	44.6	175.6	H	0.0	-9.5	29.4	74.0
9617.070000	48.3	100.0	V	322.0	-5.1	25.7	74.0
10876.835000	48.4	321.5	V	246.0	-2.6	25.6	74.0
14675.755000	48.7	276.4	H	173.0	1.0	25.3	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)
2974.570000	22.2	249.9	V	149.0	-21.1	31.8	54.0
5595.075000	26.4	100.0	H	30.0	-15.1	27.6	54.0
7399.040000	31.7	175.6	H	0.0	-9.5	22.3	54.0
9617.070000	35.4	100.0	V	322.0	-5.1	18.6	54.0
10876.835000	35.5	321.5	V	246.0	-2.6	18.5	54.0
14675.755000	36.2	276.4	H	173.0	1.0	17.8	54.0



6. CONCLUSION

The data collected shows that the **EUT Type: Mobile Phone, FCC ID: A3LSMG770F, Model Name: SM-G770F/DS** complies with §15.107 and §15.109 of the FCC rules.



7. APPENDIX A. TEST SETUP PHOTO

Please refer to EMI Test Setup Photo and test setup photo file no. as follows;

Rev. No.	Issue Date	File No.
0	October 28, 2019	HCT-EM-1910-FC006-P

End of report