

# EMI TEST REPORT

## FCC CERTIFICATION / ISED

**Applicant:**

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

**Date of Issue: January 02, 2020**

**Test Report No. HCT-EM-2001-FI001**

**Test Site: HCT CO., LTD.**

**FCC ID  
IC**

**A3LSMG715U  
649E-SMG715W**

Rule Part(s) / Standard(s) : 47 CFR PART 15 Subpart B Class B  
ICES-003 Issue 6 Class B  
ANSI C63.4-2014

Product Name : Mobile Phone

Model Name : SM-G715U1

Series Model Name : SM-G715W

Date of Test : December 18, 2019 to December 31, 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**



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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-2001-FI001	January 02, 2020	Initial Release

This Test Report is not related to the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation), which signed the ILAC-MRA.



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## 1. GENERAL INFORMATION

### 1.1 Description of EUT

FCC ID	A3LSMG715U
IC	649E-SMG715W
Model Name	SM-G715U1
Series Model Name	SM-G715W
Product Name	Mobile Phone
Frequency Band	GSM 850/1900, WCDMA B2/4/5, LTE B2/4/5/7/12/13/14/38/40/41/48/66, Bluetooth, WLAN a/b/g/n/ac, NFC, ANT+
Power Supply	Travel adaptor: Input: AC 100 to 240 V, 50 to 60 Hz, 0.5 A Output: 5.0 V, 2.0 A or 9.0 V, 1.67 A

### 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-G715U1	-	SAMSUNG
Notebook PC	ProBook6560b	5CB2053MXF	HP
Notebook PC Adaptor	Series PPP009L-E	-	LITE-ON TECHNOLOGY (CHANGZHOU)
Gateway	DIR-806M	-	D-Link
Gateway Adaptor	AMS1-0501200FK	-	D-Link
Serial Mouse	Serial 2 Button mouse	02031069	Radio Shack
RJ45 cable	-	-	-
TA	EP-TA200	-	DONGYANG
Data Cable	EP-DR140ABE	-	RFT
Earphone	EHS61ASFBE	-	CRESYN
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	N/A	N	(D) 1.5
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	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	KR0032
Radiated Field strength measurement facility 10 m Semi Anechoic chamber #1	
Radiated Field strength measurement facility 10 m Semi Anechoic chamber #2	
Filing the EMI Measurement Facility (3 m Semi Anechoic Chamber and Shielded Room)	IC 5944A-4
Filing the EMI Measurement Facility (10 m Semi-Anechoic Chamber)	IC 5944A-2

## 1.6 Calibration of Measuring Instrument

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturers recommendations for utilizing calibration 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 checked="" 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	TK-PA1840H	TESTEK	170033-L	1 year	03.11.2019
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170786	1 year	12.03.2019
<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	-	-	-



### 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 (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

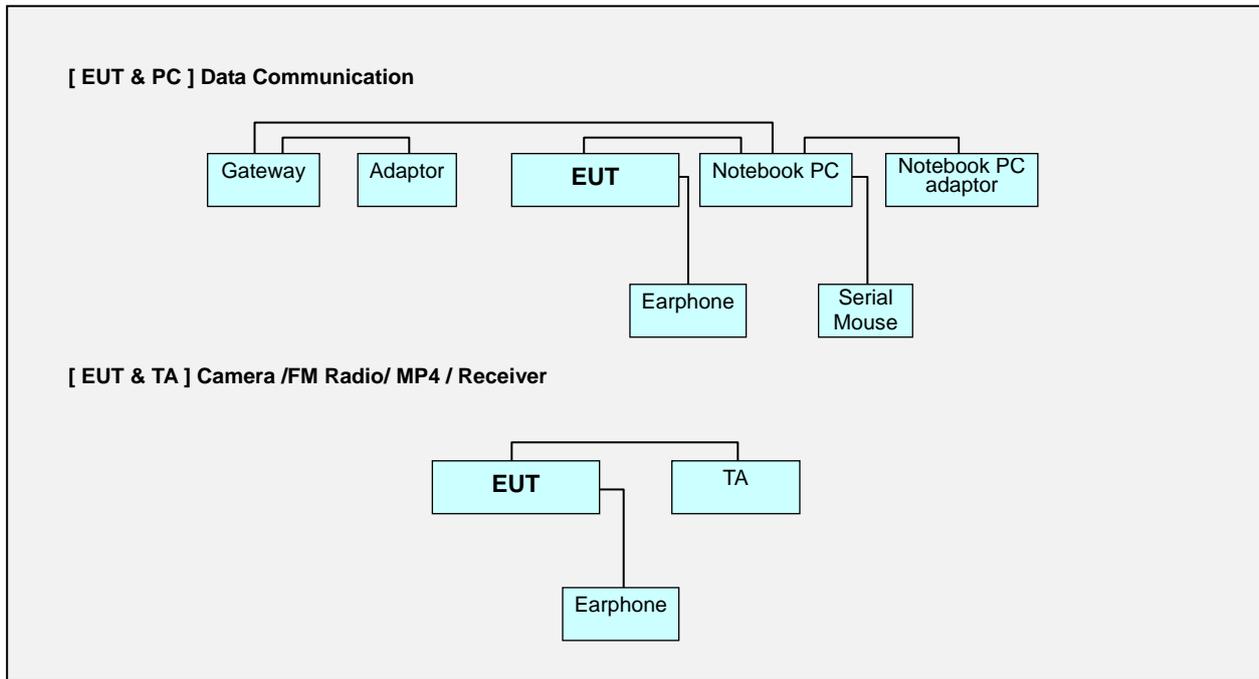


### 3.2.1 Frequency Range of Radiated Measurements

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 <sup>th</sup> 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)
- FM Radio (Low/Middle/High CH)
- MP4 Play
- Receiver mode (GSM 850 Low/Middle/High CH Idle)
- Receiver mode (WCDMA B5 Low/Middle/High CH Idle)
- Receiver mode (LTE B5 Low/Middle/High CH Idle)
- Receiver mode (LTE B12 Low/Middle/High CH Idle)
- Receiver mode (LTE B13 Low/Middle/High CH Idle)
- Receiver mode (LTE B14 Low/Middle/High CH Idle)

### 4.1 Conducted Emission

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

#### Operating Modes:

- Data Communication mode \*
- Front Camera Preview+FM Radio (Low CH)
- Rear Camera Preview+FM Radio (Middle CH)
- FM Radio (High CH) \*
- LTE B5 Idle (Low CH)
- LTE B5 Idle (Middle CH)+MP4 Play \*
- LTE B5 Idle (High CH)
- LTE B12+B13 Idle (Low CH)
- LTE B12+B13 Idle (Middle CH)+Front Camera Recording \*
- LTE B12+B13 Idle (High CH)
- LTE B14 Idle (Low CH)
- LTE B14 Idle (Middle CH)+Rear Camera Recording \*
- LTE B14 Idle (High CH)

NOTE. 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:

Data Communication mode \*  
Front Camera Preview+FM Radio(Low CH)  
Rear Camera Preview+FM Radio(Middle CH)  
FM Radio(High CH) \*  
LTE B5 Idle(Low CH)  
LTE B5 Idle(Middle CH)+MP4 Play \*  
LTE B5 Idle(High CH)  
LTE B12+B13 Idle(Low CH)  
LTE B12+B13 Idle(Middle CH)+Front Camera Recording \*  
LTE B12+B13 Idle(High CH)  
LTE B14 Idle(Low CH)  
LTE B14 Idle(Middle CH)+Rear Camera Recording \*  
LTE B14 Idle(High CH)

### NOTE.

1. Three orientations have been investigated and the worst case orientation (x-axis: The display of EUT placed on the table is facing upwards) 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:

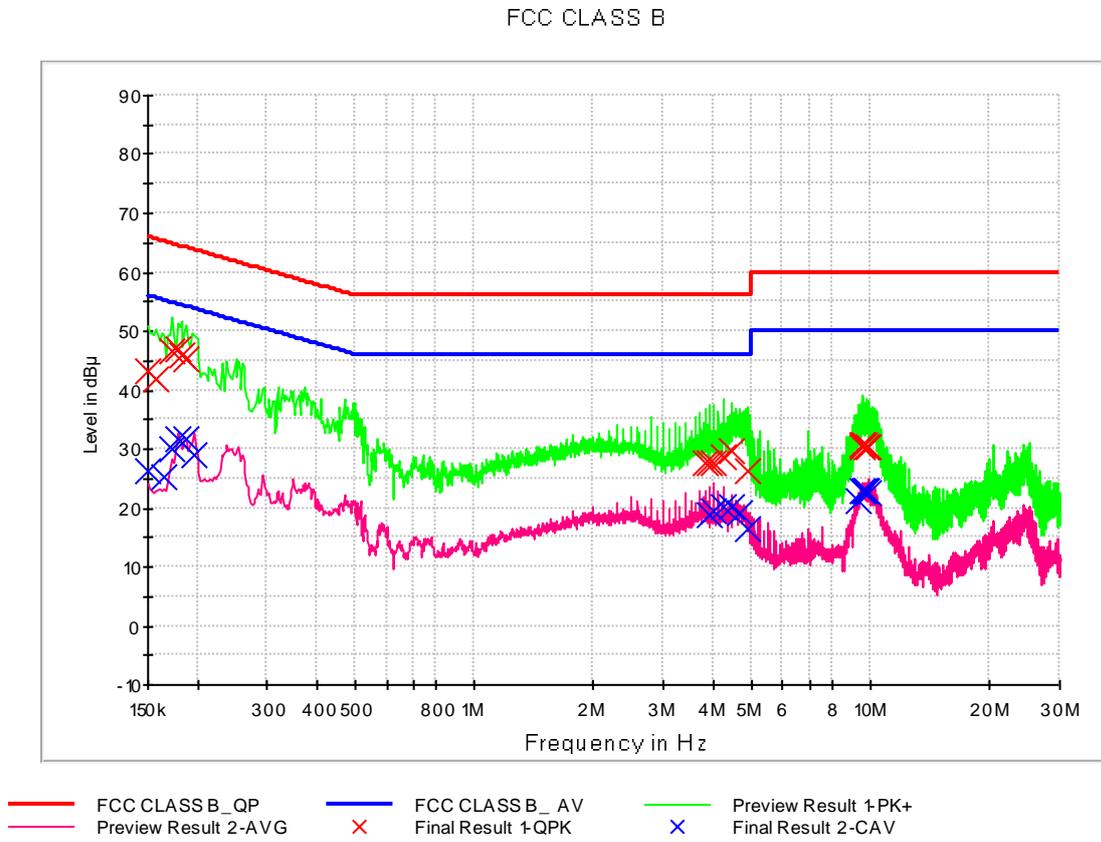
Test Standard Used	FCC PART 15 Subpart B Class B ICES-003 Issue 6 Class B ANSI C63.4-2014
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Operating Mode	Data Communication FM Radio(High CH) LTE B5 Idle(Middle CH)+MP4 Play LTE B12+B13 Idle(Middle CH)+Front Camera Recording LTE B14 Idle(Middle CH)+Rear Camera Recording
Kind of Test Site	EMI Shielded Room
Temperature	22.9 / 23.3 °C
Relative Humidity	43.1 / 41.7 %
Test Date	December 24 / December 31, 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: DATA Communication, Line (L1)





**QuasiPeak Final Result**

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	43.3	9.000	L1	9.7	22.7	66.0
0.158000	41.9	9.000	L1	9.7	23.7	65.6
0.172000	46.5	9.000	L1	9.7	18.4	64.9
0.178000	47.1	9.000	L1	9.7	17.5	64.6
0.182000	46.0	9.000	L1	9.7	18.4	64.4
0.188000	45.3	9.000	L1	9.7	18.8	64.1
3.820000	27.6	9.000	L1	9.8	28.4	56.0
3.922000	27.7	9.000	L1	9.8	28.3	56.0
4.028000	27.6	9.000	L1	9.8	28.4	56.0
4.234000	28.6	9.000	L1	9.8	27.4	56.0
4.440000	29.6	9.000	L1	9.8	26.4	56.0
4.890000	26.4	9.000	L1	9.9	29.6	56.0
9.480000	30.5	9.000	L1	10.0	29.5	60.0
9.514000	30.3	9.000	L1	10.0	29.7	60.0
9.580000	30.7	9.000	L1	10.0	29.3	60.0
9.684000	30.7	9.000	L1	10.0	29.3	60.0
9.728000	30.5	9.000	L1	10.0	29.5	60.0
9.930000	30.5	9.000	L1	10.0	29.5	60.0

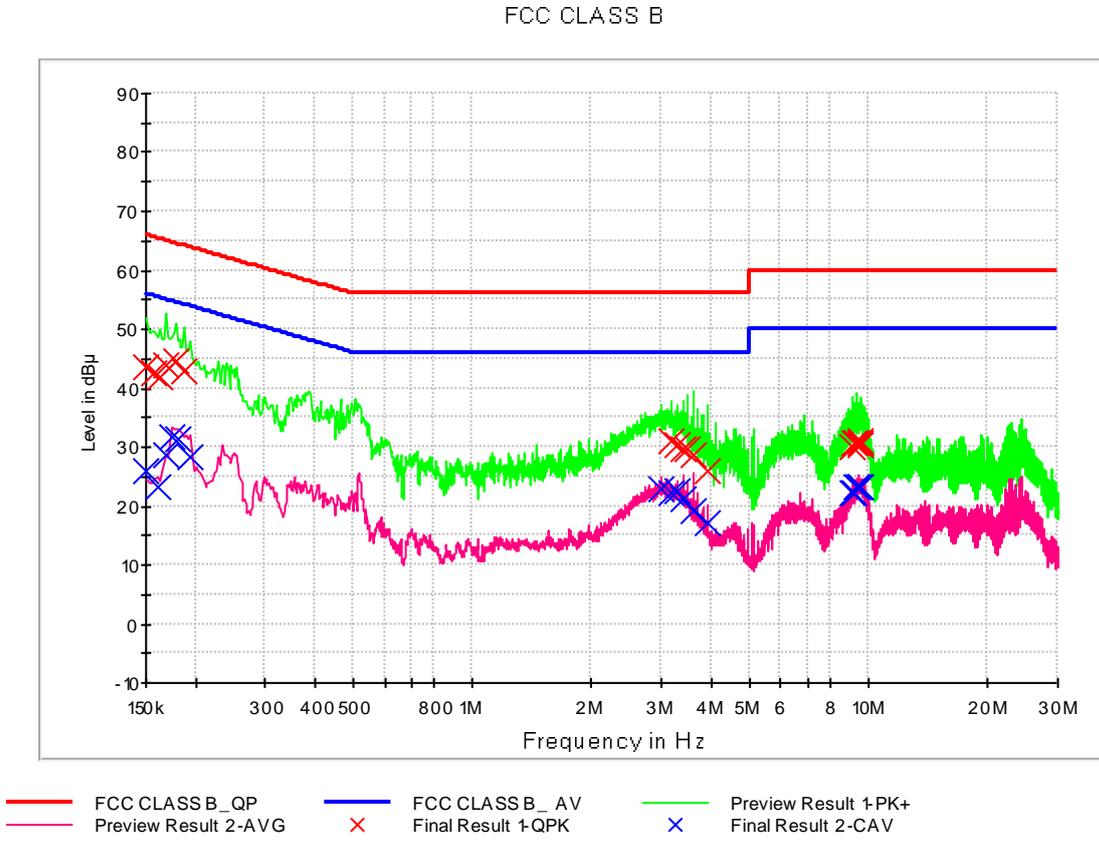


## CAverage Final Result

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	26.2	9.000	L1	9.7	29.8	56.0
0.164000	25.2	9.000	L1	9.7	30.1	55.3
0.172000	30.1	9.000	L1	9.7	24.7	54.9
0.178000	31.8	9.000	L1	9.7	22.8	54.6
0.188000	31.7	9.000	L1	9.7	22.4	54.1
0.196000	28.9	9.000	L1	9.7	24.8	53.8
3.924000	18.8	9.000	L1	9.8	27.2	46.0
4.028000	19.5	9.000	L1	9.8	26.5	46.0
4.232000	20.2	9.000	L1	9.8	25.8	46.0
4.440000	20.3	9.000	L1	9.8	25.7	46.0
4.694000	19.1	9.000	L1	9.9	26.9	46.0
4.890000	16.5	9.000	L1	9.9	29.5	46.0
9.296000	21.3	9.000	L1	10.0	28.7	50.0
9.512000	22.8	9.000	L1	10.0	27.2	50.0
9.684000	22.9	9.000	L1	10.0	27.1	50.0
9.728000	22.8	9.000	L1	10.0	27.2	50.0
9.738000	22.7	9.000	L1	10.0	27.3	50.0
9.828000	22.6	9.000	L1	10.0	27.4	50.0



Figure 2: DATA Communication, Line (N)





**QuasiPeak Final Result**

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	43.5	9.000	N	9.7	22.5	66.0
0.158000	42.5	9.000	N	9.7	23.1	65.6
0.162000	41.8	9.000	N	9.7	23.6	65.4
0.168000	43.9	9.000	N	9.7	21.2	65.1
0.178000	44.5	9.000	N	9.7	20.1	64.6
0.188000	43.0	9.000	N	9.7	21.2	64.1
3.190000	31.0	9.000	N	9.8	25.0	56.0
3.294000	30.3	9.000	N	9.8	25.7	56.0
3.396000	29.8	9.000	N	9.8	26.2	56.0
3.500000	29.6	9.000	N	9.8	26.4	56.0
3.602000	28.6	9.000	N	9.8	27.4	56.0
3.912000	26.0	9.000	N	9.8	30.0	56.0
9.142000	30.0	9.000	N	10.0	30.0	60.0
9.160000	30.5	9.000	N	10.0	29.5	60.0
9.340000	30.7	9.000	N	10.0	29.3	60.0
9.484000	30.8	9.000	N	10.0	29.2	60.0
9.580000	30.4	9.000	N	10.0	29.6	60.0
9.590000	30.9	9.000	N	10.0	29.1	60.0

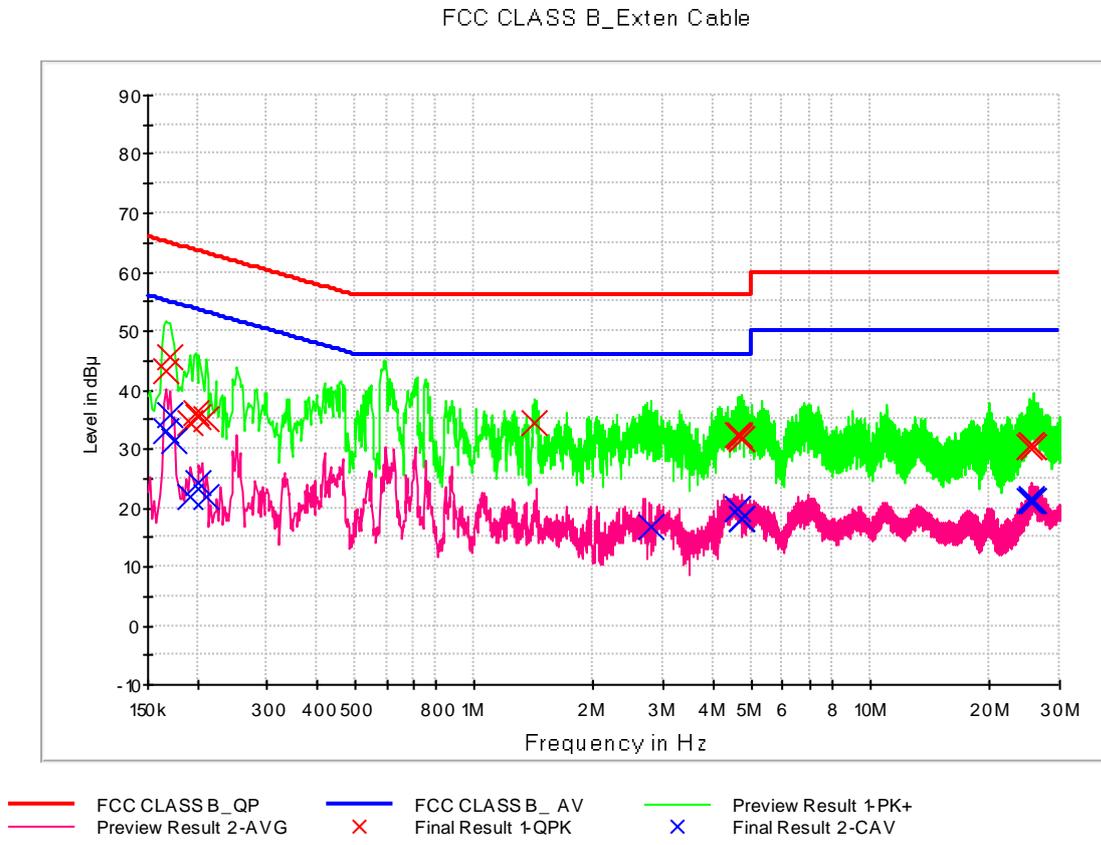


**CAverage Final Result**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	26.0	9.000	N	9.7	30.0	56.0
0.160000	23.4	9.000	N	9.7	32.1	55.5
0.168000	28.7	9.000	N	9.7	26.3	55.1
0.174000	31.7	9.000	N	9.7	23.1	54.8
0.180000	31.4	9.000	N	9.7	23.1	54.5
0.194000	28.4	9.000	N	9.7	25.5	53.9
2.984000	22.9	9.000	N	9.8	23.1	46.0
3.192000	22.3	9.000	N	9.8	23.7	46.0
3.294000	22.6	9.000	N	9.8	23.4	46.0
3.396000	21.3	9.000	N	9.8	24.7	46.0
3.602000	19.1	9.000	N	9.8	26.9	46.0
3.912000	17.1	9.000	N	9.8	28.9	46.0
9.142000	22.1	9.000	N	10.0	27.9	50.0
9.160000	22.3	9.000	N	10.0	27.7	50.0
9.340000	23.1	9.000	N	10.0	26.9	50.0
9.382000	23.2	9.000	N	10.0	26.8	50.0
9.484000	23.2	9.000	N	10.0	26.8	50.0
9.516000	23.1	9.000	N	10.0	26.9	50.0



Figure 3: FM Radio (High CH), Line (L1)





### QuasiPeak Final Result

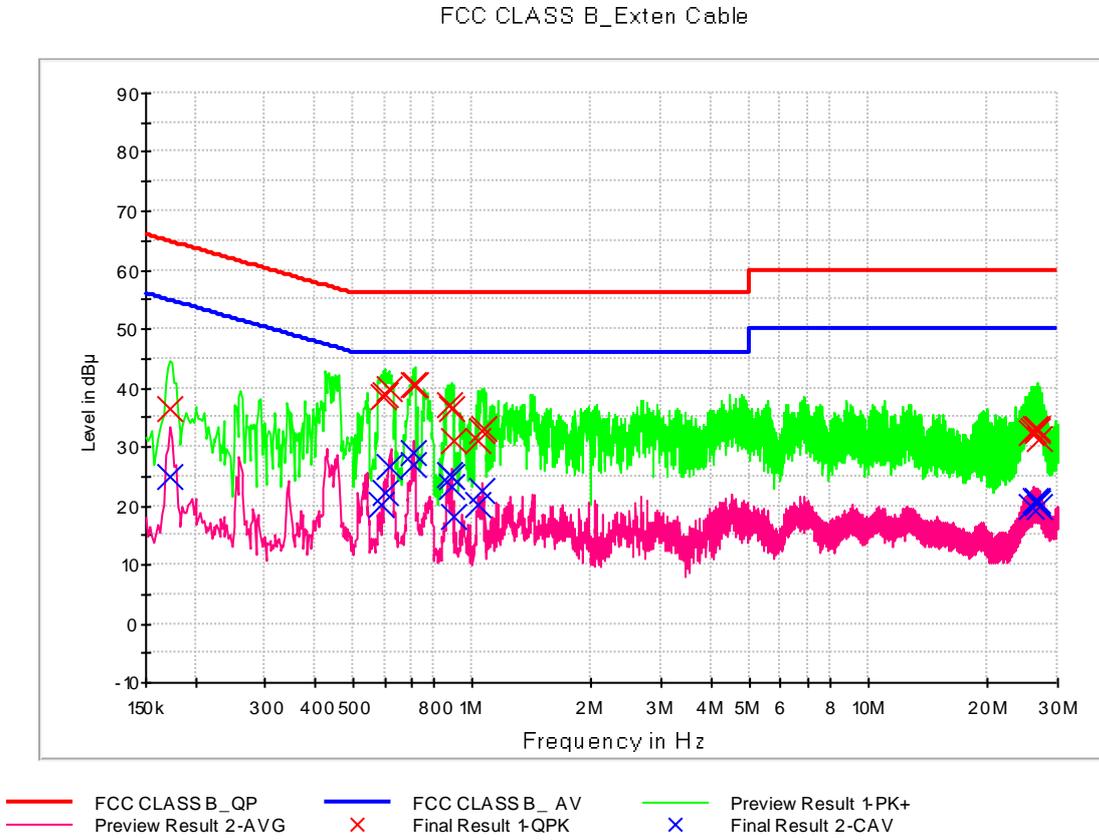
Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.166000	43.4	9.000	L1	9.8	21.8	65.2
0.170000	45.6	9.000	L1	9.8	19.4	65.0
0.192000	34.3	9.000	L1	9.8	29.7	63.9
0.198000	36.0	9.000	L1	9.8	27.7	63.7
0.202000	35.5	9.000	L1	9.8	28.0	63.5
0.210000	35.2	9.000	L1	9.8	28.0	63.2
1.424000	34.4	9.000	L1	9.9	21.6	56.0
4.644000	32.2	9.000	L1	10.0	23.8	56.0
4.662000	32.3	9.000	L1	10.0	23.7	56.0
4.670000	32.1	9.000	L1	10.0	23.9	56.0
4.742000	31.8	9.000	L1	10.0	24.2	56.0
4.752000	31.8	9.000	L1	10.0	24.2	56.0
25.258000	30.4	9.000	L1	10.8	29.6	60.0
25.296000	30.4	9.000	L1	10.8	29.6	60.0
25.388000	30.6	9.000	L1	10.8	29.4	60.0
25.530000	30.6	9.000	L1	10.8	29.4	60.0
25.708000	30.4	9.000	L1	10.8	29.6	60.0
25.918000	30.2	9.000	L1	10.8	29.8	60.0

**CAverage Final Result**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.166000	33.1	9.000	L1	9.8	22.0	55.2
0.170000	35.8	9.000	L1	9.8	19.2	55.0
0.174000	31.4	9.000	L1	9.8	23.3	54.8
0.192000	22.0	9.000	L1	9.8	31.9	53.9
0.202000	24.4	9.000	L1	9.8	29.2	53.5
0.210000	21.8	9.000	L1	9.8	31.4	53.2
2.782000	16.7	9.000	L1	9.9	29.3	46.0
4.614000	19.9	9.000	L1	10.0	26.1	46.0
4.644000	19.7	9.000	L1	10.0	26.3	46.0
4.710000	18.3	9.000	L1	10.0	27.7	46.0
4.742000	18.2	9.000	L1	10.0	27.8	46.0
4.752000	18.2	9.000	L1	10.0	27.8	46.0
25.258000	21.2	9.000	L1	10.8	28.8	50.0
25.388000	21.3	9.000	L1	10.8	28.7	50.0
25.508000	21.6	9.000	L1	10.8	28.4	50.0
25.530000	21.3	9.000	L1	10.8	28.7	50.0
25.708000	21.2	9.000	L1	10.8	28.8	50.0
25.918000	21.3	9.000	L1	10.8	28.7	50.0



Figure 4: FM Radio (High CH), Line (N)





**QuasiPeak Final Result**

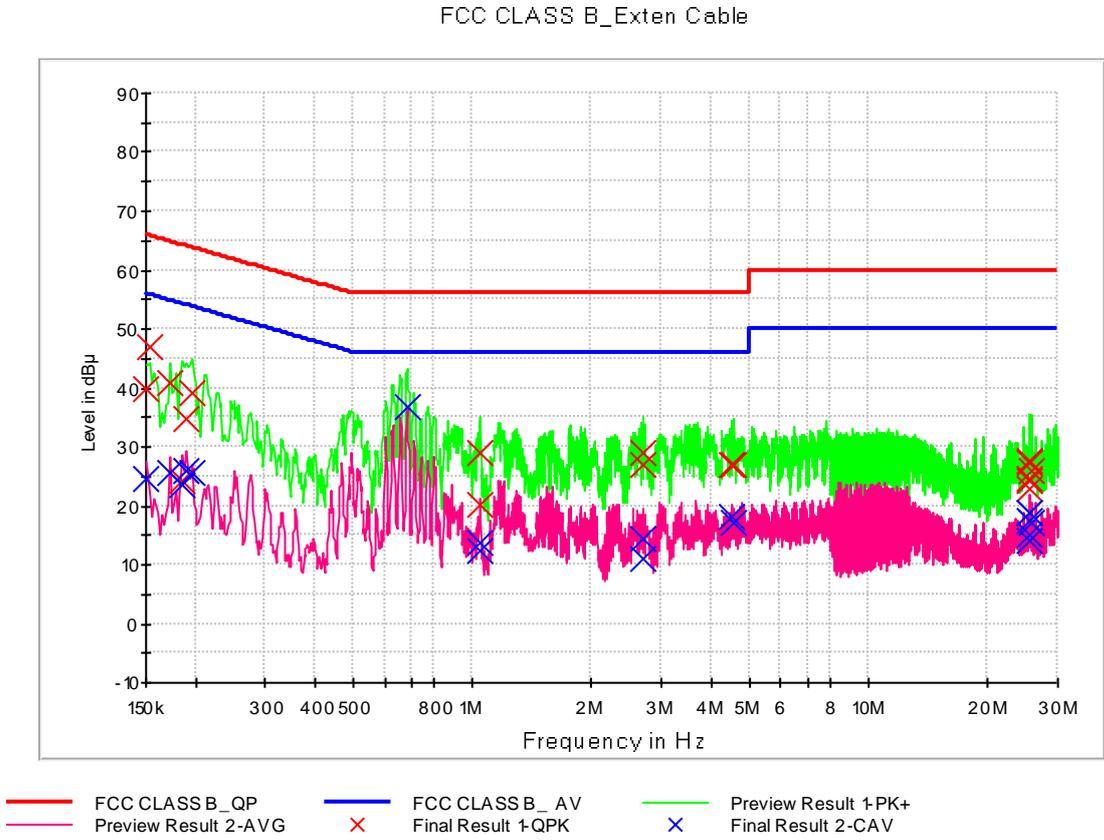
Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.172000	36.6	9.000	N	9.8	28.3	64.9
0.596000	38.5	9.000	N	9.8	17.5	56.0
0.600000	38.7	9.000	N	9.8	17.3	56.0
0.616000	39.8	9.000	N	9.8	16.2	56.0
0.710000	40.6	9.000	N	9.8	15.4	56.0
0.716000	40.6	9.000	N	9.8	15.4	56.0
0.882000	37.1	9.000	N	9.8	18.9	56.0
0.890000	36.3	9.000	N	9.8	19.7	56.0
0.894000	31.1	9.000	N	9.8	24.9	56.0
1.032000	31.0	9.000	N	9.9	25.0	56.0
1.058000	32.7	9.000	N	9.9	23.3	56.0
1.070000	32.9	9.000	N	9.9	23.1	56.0
25.876000	32.3	9.000	N	11.0	27.7	60.0
26.132000	32.8	9.000	N	11.0	27.2	60.0
26.294000	33.0	9.000	N	11.0	27.0	60.0
26.632000	33.1	9.000	N	11.0	26.9	60.0
26.642000	32.7	9.000	N	11.0	27.3	60.0
26.998000	31.3	9.000	N	11.0	28.7	60.0

**CAverage Final Result**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.172000	25.0	9.000	N	9.8	29.8	54.9
0.586000	20.1	9.000	N	9.8	25.9	46.0
0.600000	22.3	9.000	N	9.8	23.7	46.0
0.616000	26.7	9.000	N	9.8	19.3	46.0
0.710000	28.9	9.000	N	9.8	17.1	46.0
0.714000	26.8	9.000	N	9.8	19.2	46.0
0.880000	25.4	9.000	N	9.8	20.6	46.0
0.884000	25.0	9.000	N	9.8	21.0	46.0
0.888000	23.4	9.000	N	9.8	22.6	46.0
0.894000	18.2	9.000	N	9.8	27.8	46.0
1.032000	20.0	9.000	N	9.9	26.0	46.0
1.058000	22.6	9.000	N	9.9	23.4	46.0
25.656000	20.0	9.000	N	11.0	30.0	50.0
26.294000	20.7	9.000	N	11.0	29.3	50.0
26.604000	20.8	9.000	N	11.0	29.2	50.0
26.738000	20.6	9.000	N	11.0	29.4	50.0
26.752000	20.5	9.000	N	11.0	29.5	50.0
26.998000	19.8	9.000	N	11.0	30.2	50.0



Figure 5: LTE B5 Idle (Middle CH)+MP4 Play, Line (L1)





### QuasiPeak Final Result

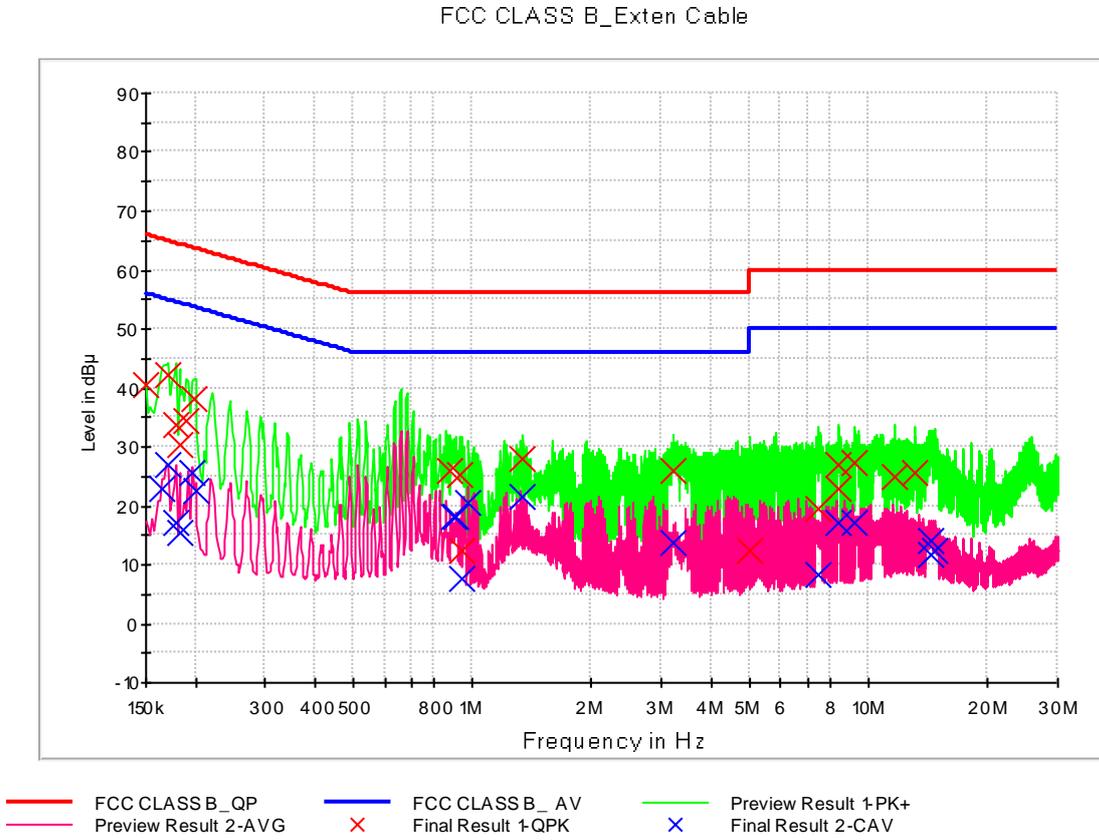
Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	39.7	9.000	L1	9.8	26.3	66.0
0.154000	46.9	9.000	L1	9.8	18.9	65.8
0.172000	40.9	9.000	L1	9.8	23.9	64.9
0.186000	24.4	9.000	L1	9.8	39.8	64.2
0.190000	34.8	9.000	L1	9.8	29.2	64.0
0.196000	39.3	9.000	L1	9.8	24.5	63.8
1.042000	28.8	9.000	L1	9.9	27.2	56.0
1.046000	20.0	9.000	L1	9.9	36.0	56.0
2.696000	26.8	9.000	L1	9.9	29.2	56.0
2.700000	28.9	9.000	L1	9.9	27.1	56.0
4.504000	27.1	9.000	L1	10.0	28.9	56.0
4.542000	27.1	9.000	L1	10.0	28.9	56.0
25.402000	27.6	9.000	L1	10.8	32.4	60.0
25.408000	27.5	9.000	L1	10.8	32.5	60.0
25.452000	24.2	9.000	L1	10.8	35.8	60.0
25.474000	24.7	9.000	L1	10.8	35.3	60.0
25.482000	22.7	9.000	L1	10.8	37.3	60.0
25.626000	26.1	9.000	L1	10.8	33.9	60.0

**CAverage Final Result**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	24.6	9.000	L1	9.8	31.4	56.0
0.172000	25.7	9.000	L1	9.8	29.1	54.9
0.186000	23.6	9.000	L1	9.8	30.7	54.2
0.190000	25.9	9.000	L1	9.8	28.1	54.0
0.196000	25.7	9.000	L1	9.8	28.1	53.8
0.684000	36.7	9.000	L1	9.8	9.3	46.0
1.046000	12.4	9.000	L1	9.9	33.6	46.0
1.050000	13.9	9.000	L1	9.9	32.1	46.0
2.696000	14.4	9.000	L1	9.9	31.6	46.0
2.700000	11.1	9.000	L1	9.9	34.9	46.0
4.504000	18.0	9.000	L1	10.0	28.0	46.0
4.542000	17.0	9.000	L1	10.0	29.0	46.0
25.402000	18.9	9.000	L1	10.8	31.1	50.0
25.408000	18.8	9.000	L1	10.8	31.2	50.0
25.452000	17.4	9.000	L1	10.8	32.6	50.0
25.474000	15.1	9.000	L1	10.8	34.9	50.0
25.482000	14.2	9.000	L1	10.8	35.8	50.0
25.626000	17.2	9.000	L1	10.8	32.8	50.0



Figure 6: LTE B5 Idle (Middle CH)+MP4 Play, Line (N)





### QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	40.4	9.000	N	9.8	25.6	66.0
0.170000	42.3	9.000	N	9.8	22.7	65.0
0.178000	33.8	9.000	N	9.8	30.7	64.6
0.182000	30.3	9.000	N	9.8	34.1	64.4
0.190000	34.5	9.000	N	9.8	29.6	64.0
0.198000	38.3	9.000	N	9.8	25.4	63.7
0.882000	25.8	9.000	N	9.8	30.2	56.0
0.930000	25.4	9.000	N	9.9	30.6	56.0
0.942000	12.3	9.000	N	9.9	43.7	56.0
1.344000	27.9	9.000	N	9.9	28.1	56.0
3.202000	25.8	9.000	N	9.9	30.2	56.0
4.998000	12.5	9.000	N	10.1	43.5	56.0
7.438000	19.5	9.000	N	10.2	40.5	60.0
8.356000	26.8	9.000	N	10.3	33.2	60.0
8.384000	22.7	9.000	N	10.3	37.3	60.0
9.258000	27.2	9.000	N	10.3	32.8	60.0
11.600000	24.8	9.000	N	10.4	35.2	60.0
13.096000	25.5	9.000	N	10.5	34.6	60.0

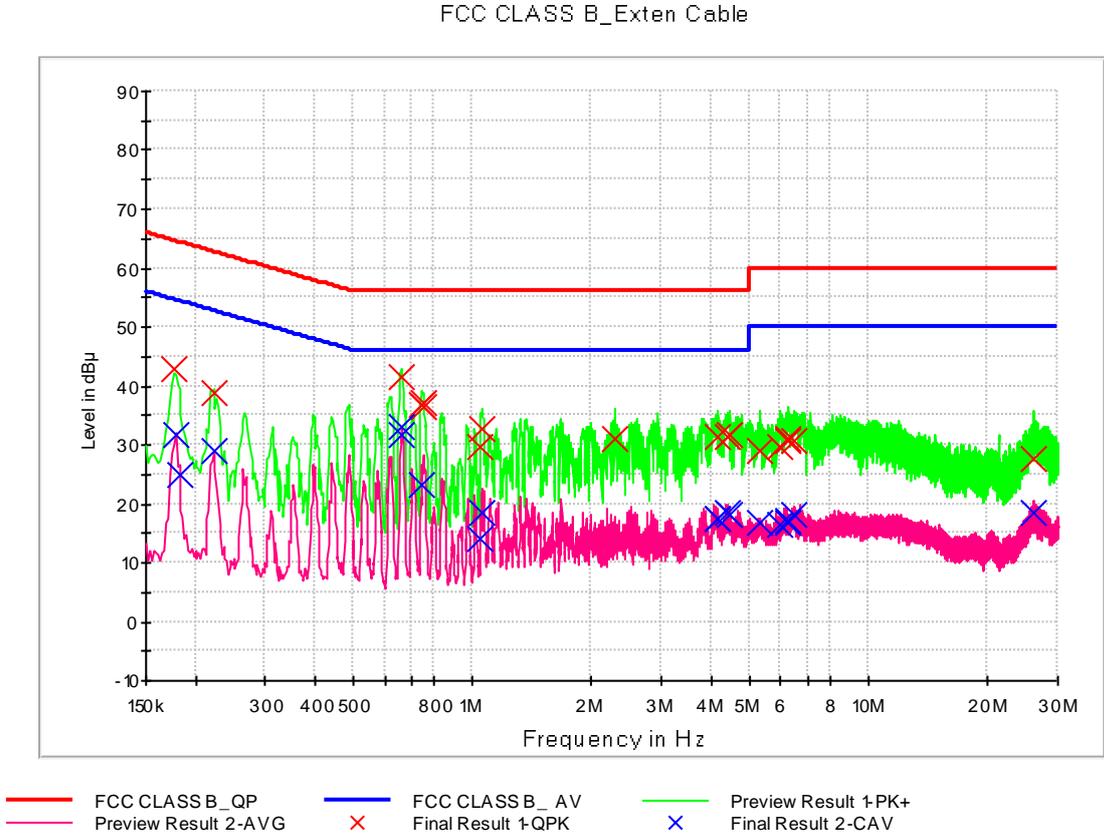


## CAverage Final Result

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.164000	22.7	9.000	N	9.8	32.5	55.3
0.170000	27.0	9.000	N	9.8	27.9	55.0
0.178000	17.0	9.000	N	9.8	37.6	54.6
0.182000	15.5	9.000	N	9.8	38.9	54.4
0.196000	25.7	9.000	N	9.8	28.1	53.8
0.200000	22.5	9.000	N	9.8	31.1	53.6
0.894000	18.0	9.000	N	9.8	28.0	46.0
0.906000	18.3	9.000	N	9.9	27.7	46.0
0.942000	7.8	9.000	N	9.9	38.2	46.0
0.978000	20.5	9.000	N	9.9	25.5	46.0
1.344000	21.6	9.000	N	9.9	24.4	46.0
3.202000	13.7	9.000	N	9.9	32.3	46.0
7.438000	8.3	9.000	N	10.2	41.7	50.0
8.356000	17.1	9.000	N	10.3	32.9	50.0
9.258000	17.0	9.000	N	10.3	33.0	50.0
14.346000	11.7	9.000	N	10.5	38.3	50.0
14.408000	13.9	9.000	N	10.5	36.1	50.0
14.710000	12.3	9.000	N	10.6	37.7	50.0



Figure 7: LTE B12+B13 Idle (Middle CH)+Front Camera Recording, Line (L1)





**QuasiPeak Final Result**

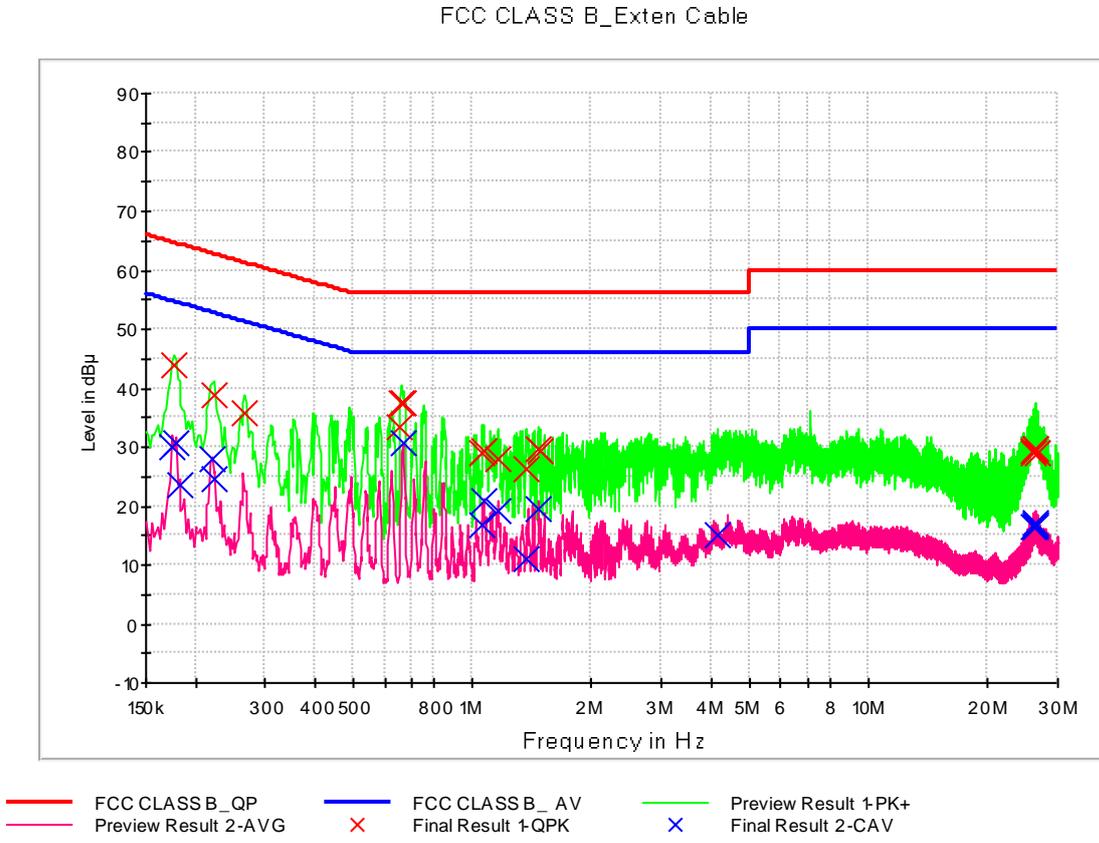
Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.176000	42.8	9.000	L1	9.8	21.9	64.7
0.222000	39.0	9.000	L1	9.8	23.8	62.7
0.664000	41.6	9.000	L1	9.8	14.4	56.0
0.746000	36.8	9.000	L1	9.8	19.2	56.0
0.750000	37.0	9.000	L1	9.8	19.0	56.0
0.754000	36.4	9.000	L1	9.8	19.6	56.0
1.050000	29.7	9.000	L1	9.9	26.3	56.0
1.054000	32.8	9.000	L1	9.9	23.2	56.0
2.290000	31.0	9.000	L1	9.9	25.0	56.0
4.152000	31.2	9.000	L1	10.0	24.8	56.0
4.422000	31.2	9.000	L1	10.0	24.8	56.0
4.444000	31.5	9.000	L1	10.0	24.5	56.0
5.340000	29.1	9.000	L1	10.1	30.9	60.0
5.992000	29.8	9.000	L1	10.1	30.2	60.0
6.268000	31.0	9.000	L1	10.1	29.0	60.0
6.284000	30.8	9.000	L1	10.1	29.2	60.0
6.490000	30.8	9.000	L1	10.1	29.2	60.0
26.024000	27.8	9.000	L1	10.8	32.2	60.0

**CAverage Final Result**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.178000	31.8	9.000	L1	9.8	22.7	54.6
0.182000	25.0	9.000	L1	9.8	29.4	54.4
0.222000	29.0	9.000	L1	9.8	23.8	52.7
0.662000	31.8	9.000	L1	9.8	14.2	46.0
0.666000	33.1	9.000	L1	9.8	12.9	46.0
0.746000	23.3	9.000	L1	9.8	22.7	46.0
1.050000	14.2	9.000	L1	9.9	31.8	46.0
1.054000	18.6	9.000	L1	9.9	27.4	46.0
4.152000	17.4	9.000	L1	10.0	28.6	46.0
4.158000	17.4	9.000	L1	10.0	28.6	46.0
4.388000	18.5	9.000	L1	10.0	27.5	46.0
4.444000	18.0	9.000	L1	10.0	28.0	46.0
5.340000	16.8	9.000	L1	10.1	33.2	50.0
5.992000	16.3	9.000	L1	10.1	33.7	50.0
6.268000	17.2	9.000	L1	10.1	32.8	50.0
6.284000	16.7	9.000	L1	10.1	33.3	50.0
6.490000	18.0	9.000	L1	10.1	32.0	50.0
26.024000	18.3	9.000	L1	10.8	31.7	50.0



Figure 8: LTE B12+B13 Idle (Middle CH)+Front Camera Recording, Line (N)





### QuasiPeak Final Result

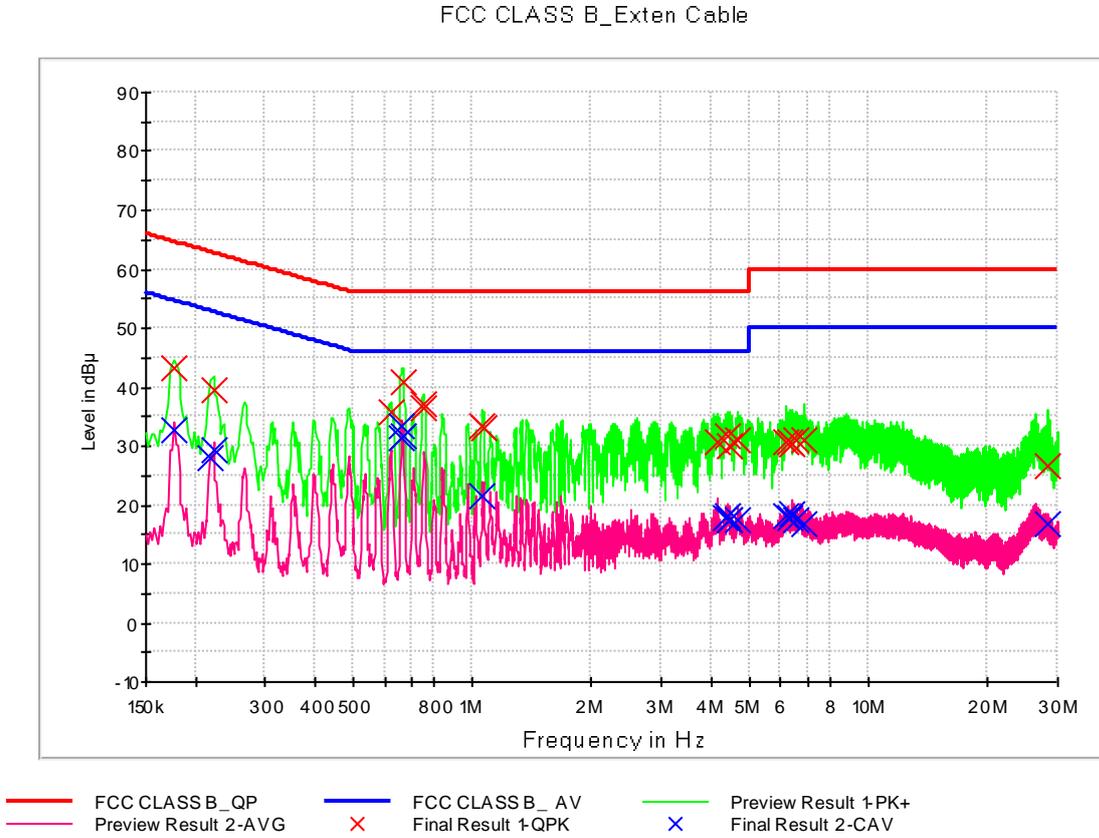
Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.176000	44.0	9.000	N	9.8	20.7	64.7
0.222000	38.9	9.000	N	9.8	23.9	62.7
0.266000	35.6	9.000	N	9.8	25.6	61.2
0.656000	33.3	9.000	N	9.8	22.7	56.0
0.664000	37.4	9.000	N	9.8	18.6	56.0
0.670000	37.4	9.000	N	9.8	18.6	56.0
1.056000	28.9	9.000	N	9.9	27.1	56.0
1.064000	29.2	9.000	N	9.9	26.8	56.0
1.160000	27.9	9.000	N	9.9	28.1	56.0
1.362000	26.4	9.000	N	9.9	29.6	56.0
1.472000	29.7	9.000	N	9.9	26.3	56.0
1.478000	29.3	9.000	N	9.9	26.7	56.0
26.036000	29.1	9.000	N	11.0	30.9	60.0
26.110000	29.2	9.000	N	11.0	30.8	60.0
26.232000	29.6	9.000	N	11.0	30.4	60.0
26.470000	29.5	9.000	N	11.0	30.5	60.0
26.474000	29.6	9.000	N	11.0	30.4	60.0
26.678000	28.9	9.000	N	11.0	31.1	60.0

**CAverage Final Result**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.174000	30.1	9.000	N	9.8	24.7	54.8
0.178000	30.6	9.000	N	9.8	24.0	54.6
0.182000	23.5	9.000	N	9.8	30.9	54.4
0.220000	27.9	9.000	N	9.8	24.9	52.8
0.224000	24.7	9.000	N	9.8	28.0	52.7
0.668000	30.6	9.000	N	9.8	15.4	46.0
1.058000	16.9	9.000	N	9.9	29.1	46.0
1.066000	21.0	9.000	N	9.9	25.0	46.0
1.160000	19.1	9.000	N	9.9	26.9	46.0
1.362000	11.1	9.000	N	9.9	34.9	46.0
1.472000	19.3	9.000	N	9.9	26.7	46.0
4.134000	15.2	9.000	N	10.0	30.8	46.0
26.036000	16.5	9.000	N	11.0	33.5	50.0
26.232000	16.9	9.000	N	11.0	33.1	50.0
26.268000	16.7	9.000	N	11.0	33.3	50.0
26.366000	16.5	9.000	N	11.0	33.5	50.0
26.470000	17.0	9.000	N	11.0	33.0	50.0
26.474000	16.8	9.000	N	11.0	33.2	50.0



Figure 9: LTE B14 Idle (Middle CH)+Rear Camera Recording, Line (L1)





### QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.176000	43.4	9.000	L1	9.8	21.3	64.7
0.222000	39.4	9.000	L1	9.8	23.3	62.7
0.622000	35.8	9.000	L1	9.8	20.2	56.0
0.668000	41.0	9.000	L1	9.8	15.0	56.0
0.750000	37.1	9.000	L1	9.8	18.9	56.0
0.754000	36.5	9.000	L1	9.8	19.5	56.0
1.058000	33.4	9.000	L1	9.9	22.6	56.0
1.066000	33.1	9.000	L1	9.9	22.9	56.0
4.172000	30.5	9.000	L1	10.0	25.5	56.0
4.414000	31.8	9.000	L1	10.0	24.2	56.0
4.470000	30.1	9.000	L1	10.0	25.9	56.0
4.690000	30.9	9.000	L1	10.0	25.1	56.0
6.194000	30.8	9.000	L1	10.1	29.2	60.0
6.312000	30.7	9.000	L1	10.1	29.3	60.0
6.430000	30.2	9.000	L1	10.1	29.8	60.0
6.560000	30.9	9.000	L1	10.1	29.1	60.0
6.878000	30.9	9.000	L1	10.2	29.1	60.0
28.214000	26.6	9.000	L1	10.9	33.4	60.0

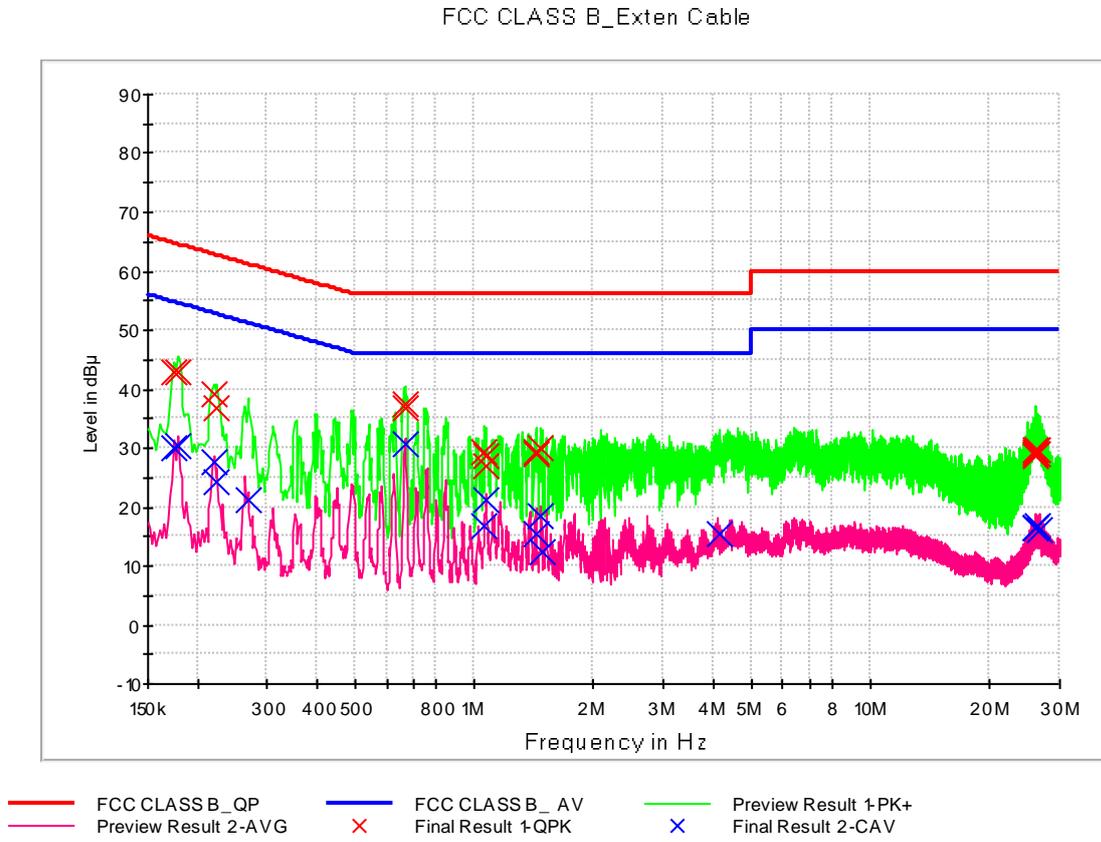


**CAverage Final Result**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.176000	32.8	9.000	L1	9.8	21.9	54.7
0.218000	28.0	9.000	L1	9.8	24.9	52.9
0.222000	29.4	9.000	L1	9.8	23.4	52.7
0.662000	31.4	9.000	L1	9.8	14.6	46.0
0.666000	33.5	9.000	L1	9.8	12.5	46.0
0.670000	31.8	9.000	L1	9.8	14.2	46.0
1.058000	21.6	9.000	L1	9.9	24.4	46.0
4.372000	17.8	9.000	L1	10.0	28.2	46.0
4.414000	18.3	9.000	L1	10.0	27.7	46.0
4.460000	17.3	9.000	L1	10.0	28.7	46.0
4.470000	17.3	9.000	L1	10.0	28.7	46.0
4.682000	17.6	9.000	L1	10.0	28.4	46.0
6.194000	18.1	9.000	L1	10.1	31.9	50.0
6.312000	17.7	9.000	L1	10.1	32.3	50.0
6.430000	18.4	9.000	L1	10.1	31.6	50.0
6.560000	17.3	9.000	L1	10.1	32.7	50.0
6.878000	16.9	9.000	L1	10.2	33.1	50.0
28.214000	16.9	9.000	L1	10.9	33.1	50.0



Figure 10: LTE B14 Idle (Middle CH)+Rear Camera Recording, Line (N)





### QuasiPeak Final Result

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.174000	42.7	9.000	N	9.8	22.1	64.8
0.178000	42.9	9.000	N	9.8	21.6	64.6
0.220000	39.3	9.000	N	9.8	23.5	62.8
0.224000	36.8	9.000	N	9.8	25.9	62.7
0.668000	37.4	9.000	N	9.8	18.6	56.0
0.674000	36.8	9.000	N	9.8	19.2	56.0
1.060000	29.4	9.000	N	9.9	26.6	56.0
1.066000	28.7	9.000	N	9.9	27.3	56.0
1.072000	27.1	9.000	N	9.9	28.9	56.0
1.432000	29.4	9.000	N	9.9	26.6	56.0
1.436000	28.9	9.000	N	9.9	27.1	56.0
1.474000	29.9	9.000	N	9.9	26.1	56.0
26.024000	29.8	9.000	N	11.0	30.2	60.0
26.040000	28.8	9.000	N	11.0	31.2	60.0
26.074000	28.7	9.000	N	11.0	31.3	60.0
26.104000	29.2	9.000	N	11.0	30.8	60.0
26.234000	29.7	9.000	N	11.0	30.3	60.0
26.370000	29.0	9.000	N	11.0	31.0	60.0



## CAverage Final Result

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.174000	29.9	9.000	N	9.8	24.9	54.8
0.178000	30.4	9.000	N	9.8	24.2	54.6
0.220000	27.8	9.000	N	9.8	25.0	52.8
0.224000	24.1	9.000	N	9.8	28.5	52.7
0.268000	21.3	9.000	N	9.8	29.9	51.2
0.668000	30.7	9.000	N	9.8	15.3	46.0
1.058000	16.7	9.000	N	9.9	29.3	46.0
1.066000	21.0	9.000	N	9.9	25.0	46.0
1.436000	15.5	9.000	N	9.9	30.5	46.0
1.476000	18.4	9.000	N	9.9	27.6	46.0
1.484000	12.4	9.000	N	9.9	33.6	46.0
4.132000	15.4	9.000	N	10.0	30.6	46.0
26.024000	16.6	9.000	N	11.0	33.4	50.0
26.086000	16.3	9.000	N	11.0	33.7	50.0
26.104000	16.3	9.000	N	11.0	33.7	50.0
26.118000	16.5	9.000	N	11.0	33.5	50.0
26.234000	16.7	9.000	N	11.0	33.3	50.0
26.634000	16.0	9.000	N	11.0	34.0	50.0



## 5.2 Radiated Emission Below 1 GHz

The test results of radiated emission provide the following information:

Test Standard Used	FCC PART 15 Subpart B Class B ICES-003 Issue 6 Class B ANSI C63.4-2014
Frequency Range	30 MHz to 1 000 MHz
Detector	Quasi-Peak
Bandwidth	120 kHz (6 dB)
Operating Mode	Data Communication FM Radio(High CH) LTE B5 Idle(Middle CH)+MP4 Play LTE B12+B13 Idle(Middle CH)+Front Camera Recording LTE B14 Idle(Middle CH)+Rear Camera Recording
Kind of Test Site	3 m semi anechoic chamber
Temperature	22.4 / 23.1 °C
Relative Humidity	42.2 / 42.5 %
Test Date	December 18 / December 19, 2019

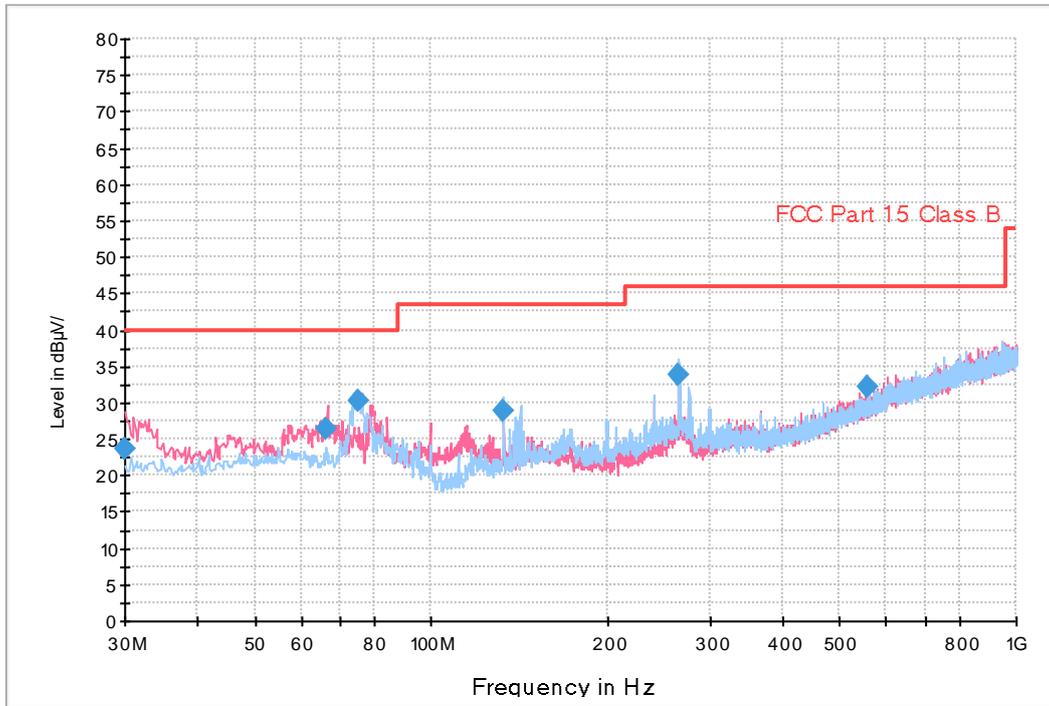
- Calculation Formula:

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 11: DATA Communication

FCC PART 15 CLASS B

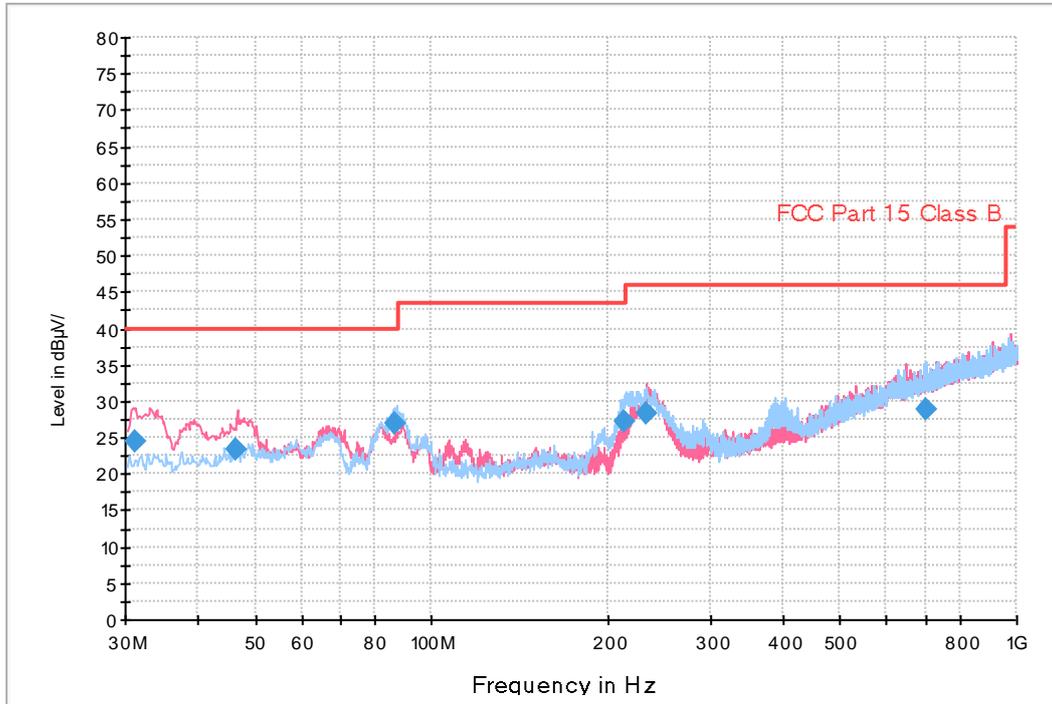


Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.008886	23.7	100.0	V	46.0	18.3	16.3	40.0
66.437000	26.4	100.0	V	34.0	18.5	13.6	40.0
74.865200	30.2	225.1	H	111.0	17.0	9.8	40.0
133.254400	29.0	225.1	H	275.0	18.5	14.5	43.5
265.551600	33.9	125.1	H	176.0	19.3	12.1	46.0
558.381200	32.2	100.0	H	249.0	26.5	13.8	46.0



Figure 12: FM Radio (High CH)

FCC PART 15 CLASS B

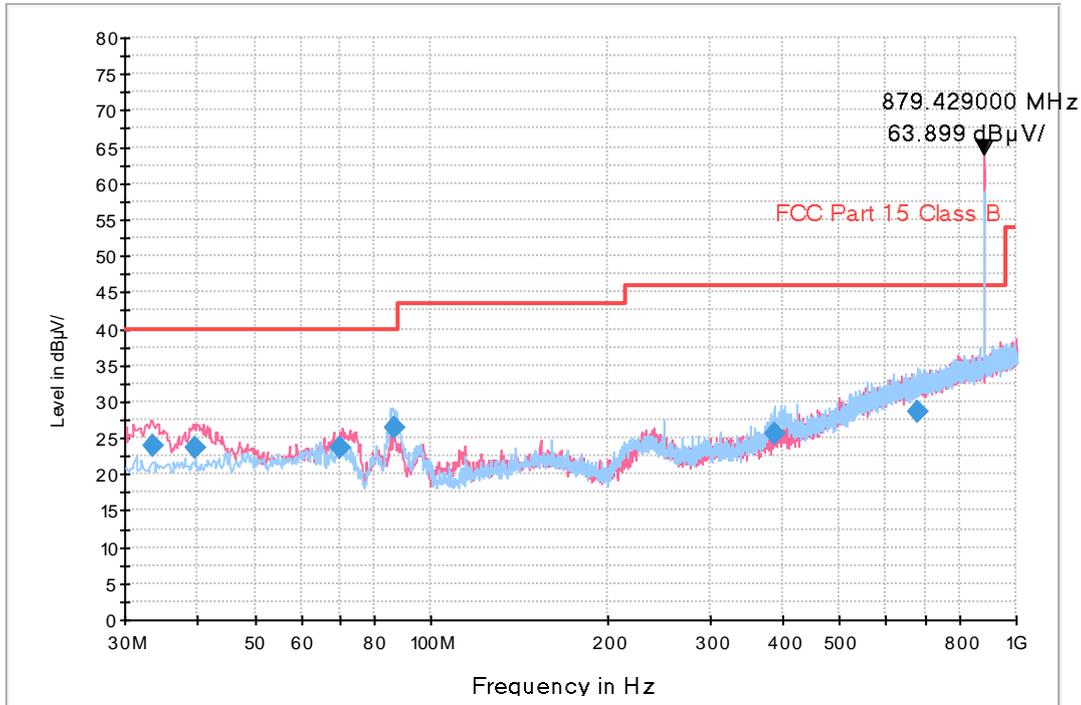


Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
31.205000	24.4	100.0	V	0.0	18.4	15.6	40.0
46.459400	23.5	100.0	V	0.0	19.5	16.5	40.0
86.685600	26.9	225.3	H	32.0	14.8	13.1	40.0
214.210800	27.3	100.0	H	1.0	17.3	16.2	43.5
232.654600	28.2	100.0	V	319.0	18.0	17.8	46.0
702.841200	28.9	174.7	H	318.0	28.9	17.1	46.0



Figure 13: LTE B5 Idle (Middle CH)+MP4 Play

FCC PART 15 CLASS B



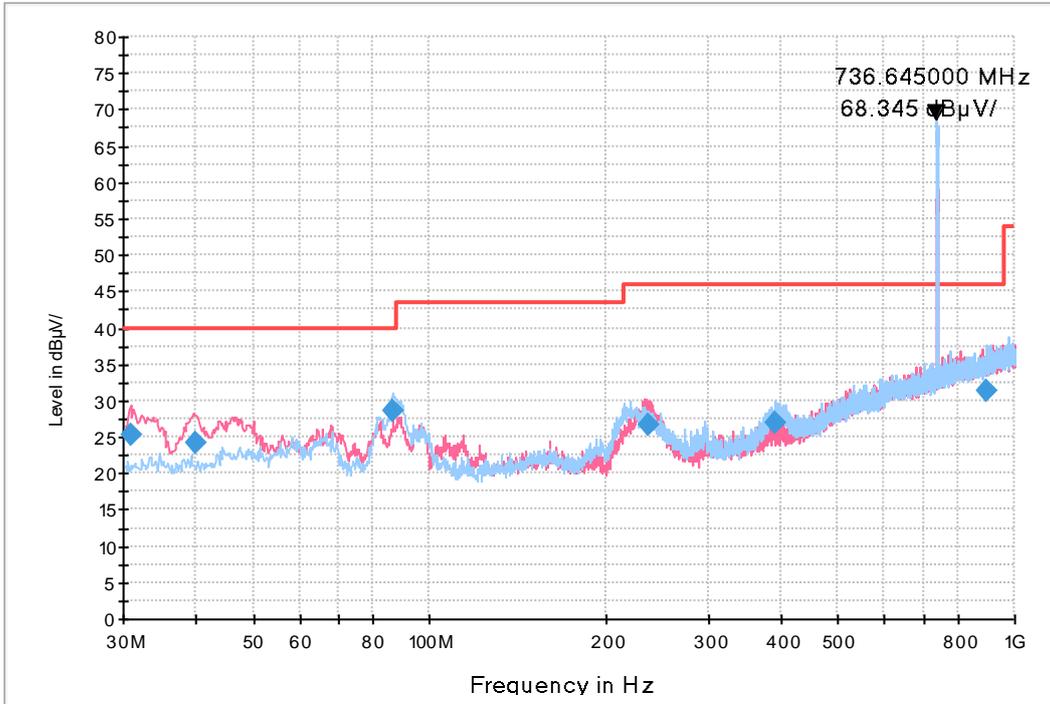
- NOTE. 1. Carrier Frequency: RX 879.429 MHz  
 2. These are signals for fundamental frequency from the base station

Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
33.614600	23.8	100.0	V	60.0	18.6	16.2	40.0
39.729800	23.6	100.0	V	126.0	19.0	16.4	40.0
70.173600	23.6	100.0	V	168.0	18.0	16.4	40.0
86.377600	26.4	207.8	H	42.0	14.8	13.6	40.0
385.719600	25.6	100.0	H	339.0	22.5	20.4	46.0
681.087400	28.6	206.7	H	204.0	28.5	17.4	46.0



Figure 14: LTE B12+B13 Idle(Middle CH)+Front Camera Recording

FCC PART 15 CLASS B

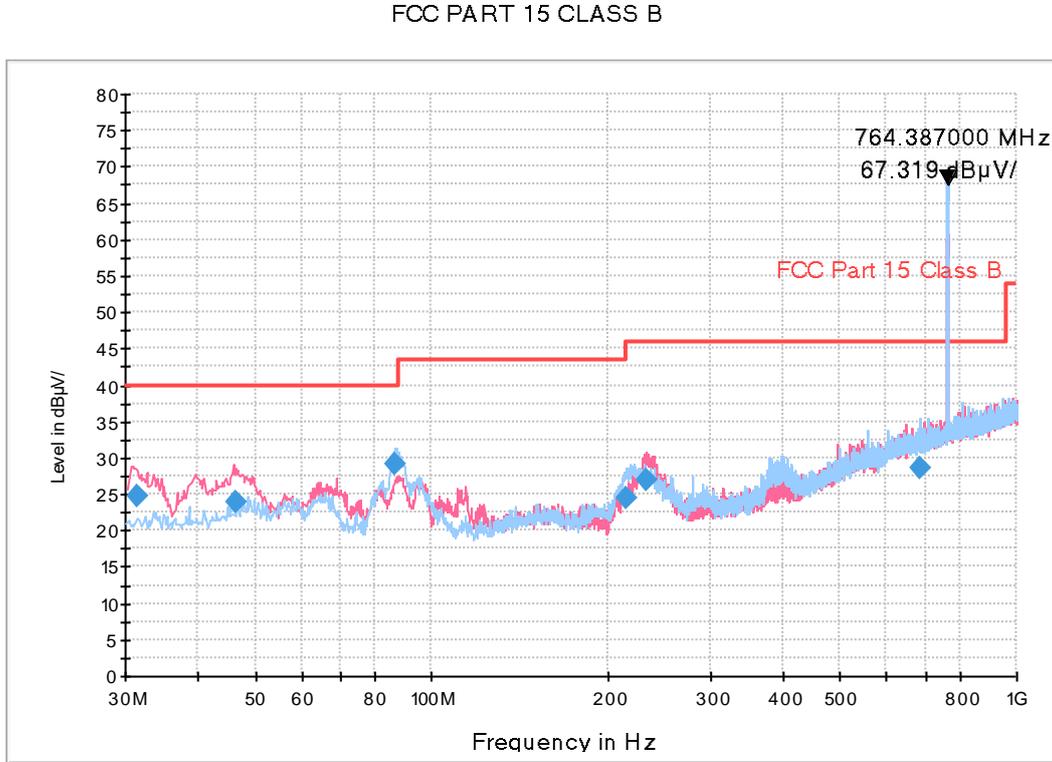


- NOTE. 1. Carrier Frequency: RX 736.645 MHz  
 2. These are signals for fundamental frequency from the base station

Frequency (MHz)	Quasi Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
30.943039	25.4	100.0	V	0.0	18.4	14.6	40.0
39.872400	24.3	100.0	V	124.0	19.0	15.7	40.0
86.742000	28.5	225.1	H	32.0	14.8	11.5	40.0
235.927600	26.7	100.0	V	256.0	18.2	19.3	46.0
389.884600	26.9	100.0	H	340.0	22.6	19.1	46.0
893.201000	31.5	174.9	H	327.0	31.5	14.5	46.0



Figure 15: LTE B14 Idle (Middle CH)+Rear Camera Recording



NOTE. 1. Carrier Frequency: RX 764.387 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)
31.416715	24.8	100.0	V	354.0	18.4	15.2	40.0
46.233800	24.0	100.0	V	352.0	19.5	16.0	40.0
86.940200	29.1	225.0	H	42.0	14.7	10.9	40.0
215.091600	24.6	100.0	H	6.0	17.3	18.9	43.5
233.470200	27.0	100.0	V	259.0	18.1	19.0	46.0
684.309200	28.6	199.8	H	282.0	28.6	17.4	46.0



### 5.3 Radiated Emission Above 1 GHz

The test results of radiated emission provide the following information:

Test Standard Used	FCC PART 15 Subpart B Class B ICES-003 Issue 6 Class B ANSI C63.4-2014
Detector	Peak mode: Peak (RBW: 1 MHz, VBW: 3 MHz) CISPR-Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)
Highest Frequency	5 825 MHz
Tested Frequency Range	1 GHz to 30 GHz
Operating Mode	Data Communication FM Radio(High CH) LTE B5 Idle(Middle CH)+MP4 Play LTE B12+B13 Idle(Middle CH)+Front Camera Recording LTE B14 Idle(Middle CH)+Rear Camera Recording
Kind of Test Site	3 m semi anechoic chamber
Temperature	21.8 – 23.2 °C
Relative Humidity	41.4 – 43.2 %
Test Date	December 19, 2019 to December 30, 2019

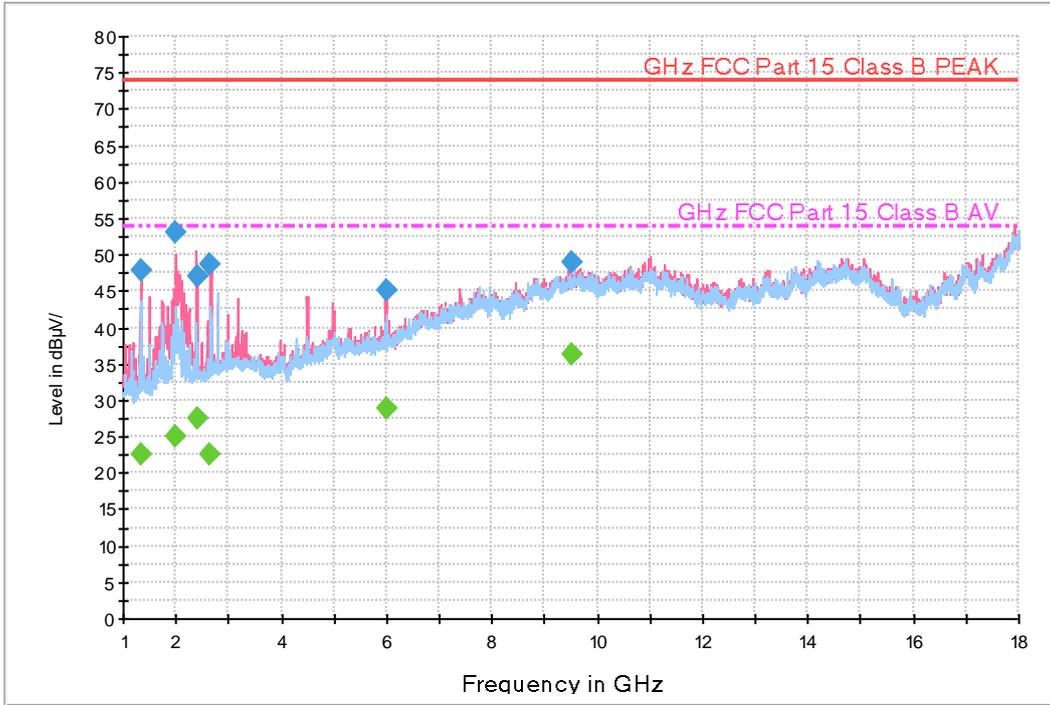
**- Calculation Formula:**

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

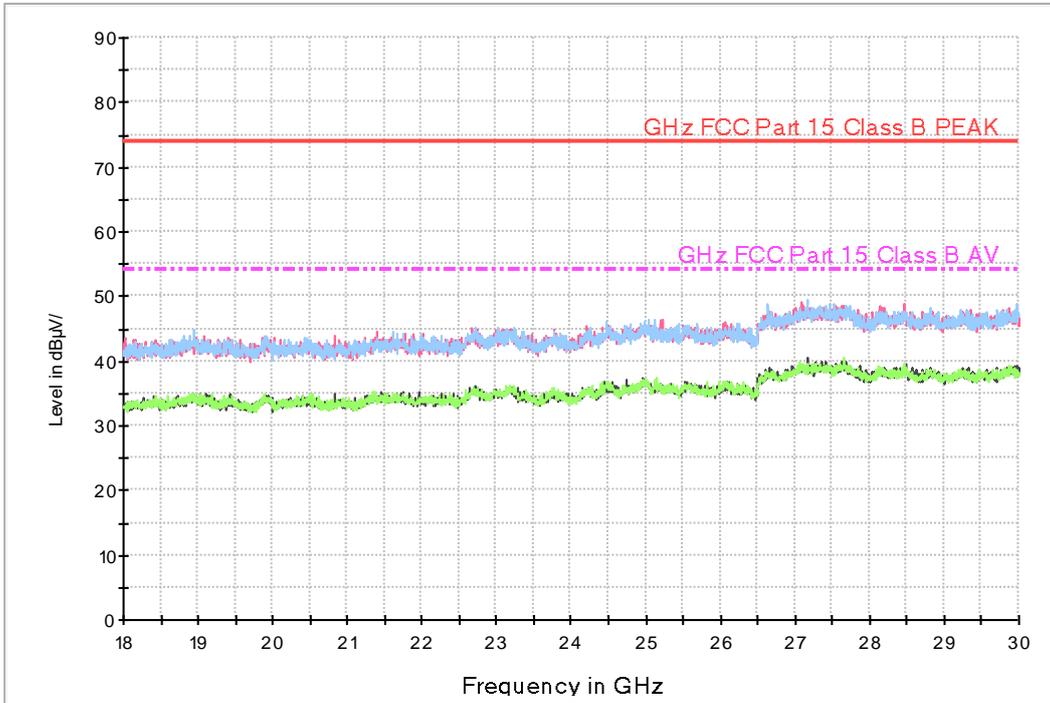


Figure 16: DATA Communication

Tilting of GHz FCC PART 15 CLASS B



Tilting of GHz FCC PART 15 CLASS B\_18~40GHz





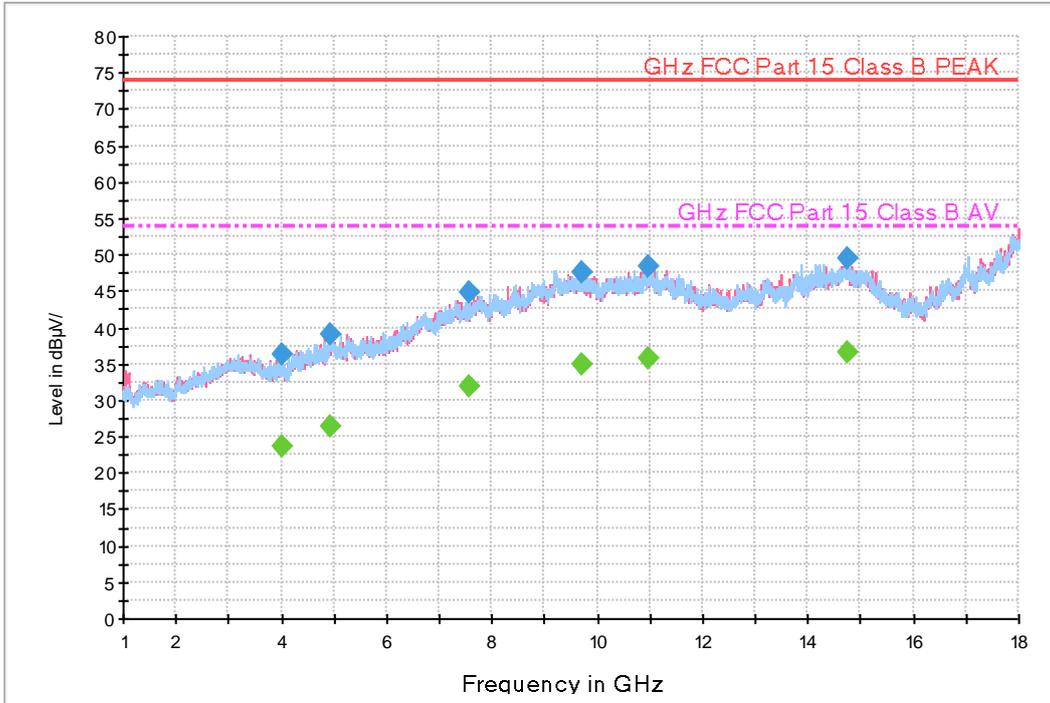
Frequency (MHz)	Peak (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
1328.925000	47.8	325.5	V	0.0	-26.3	26.2	74.0
1997.715000	53.2	100.0	V	53.0	-25.2	20.8	74.0
2399.690000	47.0	260.5	V	37.0	-23.8	27.0	74.0
2658.640000	48.6	175.6	V	29.0	-22.7	25.4	74.0
5998.235000	45.1	100.0	V	118.0	-14.7	28.9	74.0
9525.440000	48.8	100.0	V	265.0	-5.1	25.2	74.0

Frequency (MHz)	CAverage (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
1328.925000	22.6	325.5	V	0.0	-26.3	31.4	54.0
1997.715000	25.0	100.0	V	53.0	-25.2	29.0	54.0
2399.690000	27.5	260.5	V	37.0	-23.8	26.5	54.0
2658.640000	22.6	175.6	V	29.0	-22.7	31.4	54.0
5998.235000	29.0	100.0	V	118.0	-14.7	25.0	54.0
9525.440000	36.2	100.0	V	265.0	-5.1	17.8	54.0

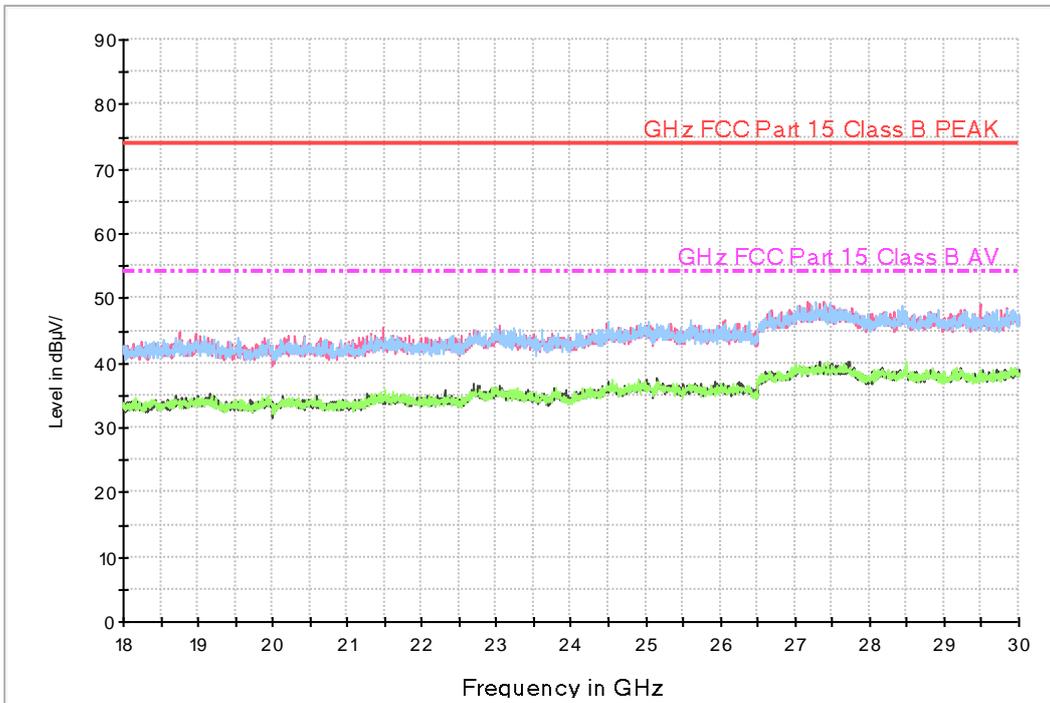


Figure 17: FM Radio (High CH)

Tilting of GHz FCC PART 15 CLASS B



Tilting of GHz FCC PART 15 CLASS B\_18~ 40GHz





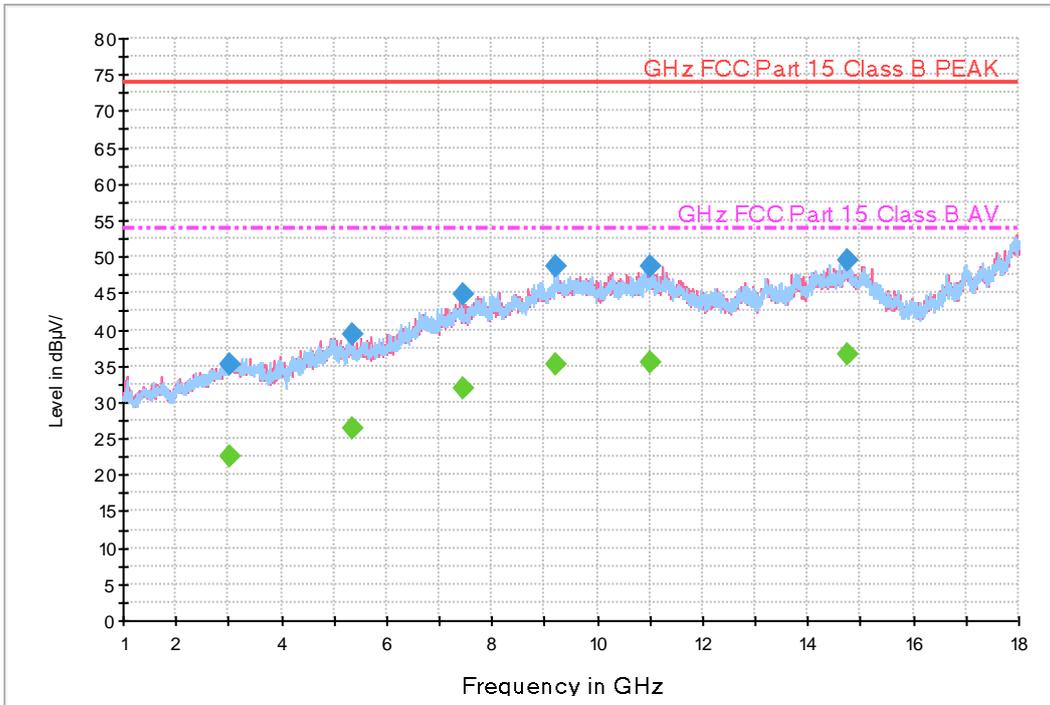
Frequency (MHz)	Peak (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
4002.220000	36.3	199.5	V	328.0	-19.6	37.7	74.0
4925.480000	39.1	150.0	H	166.0	-16.0	34.9	74.0
7555.030000	44.9	148.7	H	104.0	-9.2	29.1	74.0
9726.595000	47.7	244.4	H	182.0	-5.1	26.3	74.0
10962.355000	48.5	231.4	H	128.0	-2.5	25.5	74.0
14747.875000	49.5	276.4	V	267.0	1.1	24.5	74.0

Frequency (MHz)	CAverage (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
4002.220000	23.6	199.5	V	328.0	-19.6	30.4	54.0
4925.480000	26.4	150.0	H	166.0	-16.0	27.6	54.0
7555.030000	32.0	148.7	H	104.0	-9.2	22.0	54.0
9726.595000	34.8	244.4	H	182.0	-5.1	19.2	54.0
10962.355000	35.7	231.4	H	128.0	-2.5	18.3	54.0
14747.875000	36.5	276.4	V	267.0	1.1	17.5	54.0

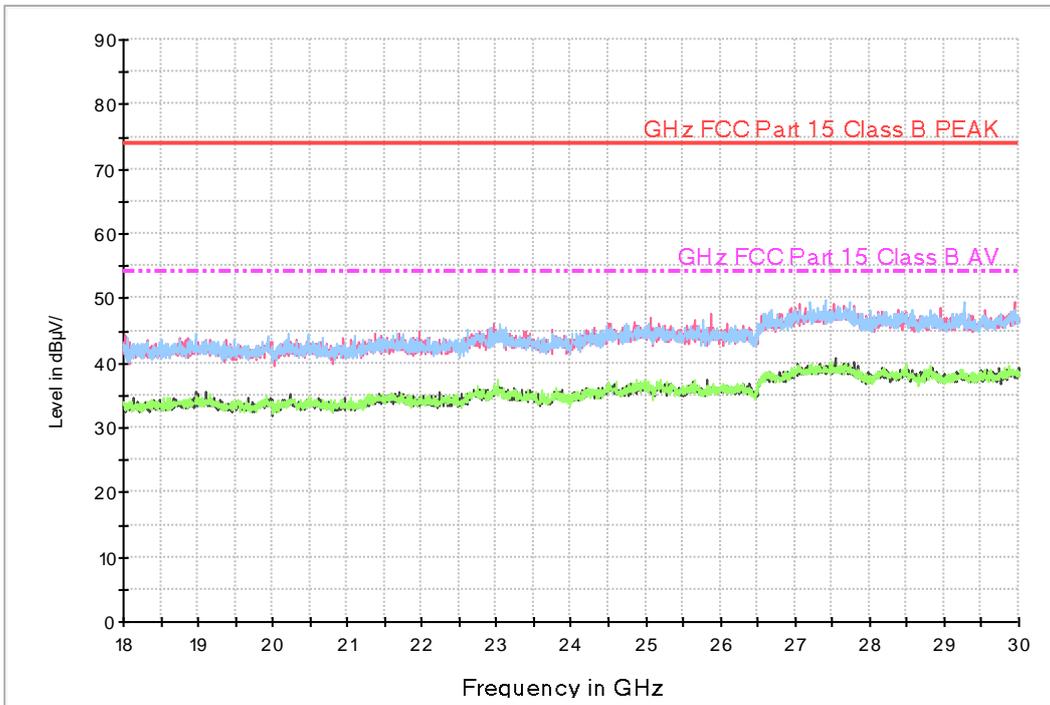


Figure 18: LTE B5 Idle (Middle CH)+MP4 Play

Tilting of GHz FCC PART 15 CLASS B



Tilting of GHz FCC PART 15 CLASS B\_18~40GHz





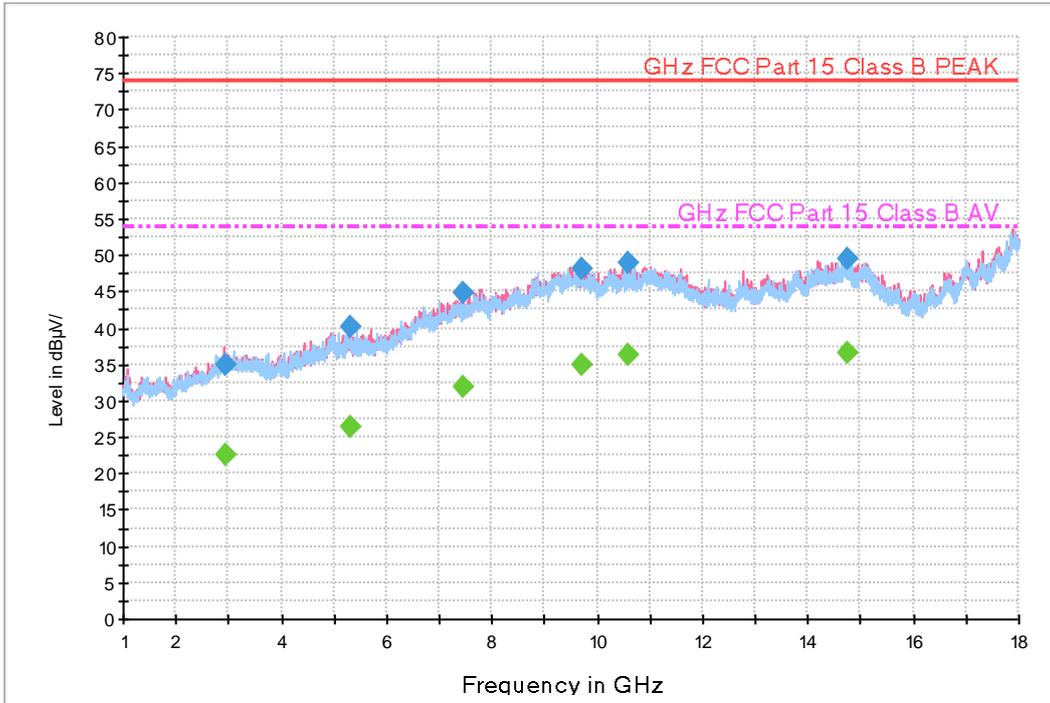
Frequency (MHz)	Peak (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
3043.450000	35.1	320.4	V	191.0	-21.0	38.9	74.0
5349.410000	39.4	249.9	V	15.0	-15.3	34.6	74.0
7449.330000	44.8	350.1	H	0.0	-9.4	29.2	74.0
9220.435000	48.7	150.0	H	21.0	-5.9	25.3	74.0
11020.695000	48.6	149.6	V	241.0	-2.4	25.4	74.0
14767.900000	49.5	150.0	H	50.0	1.1	24.5	74.0

Frequency (MHz)	CAverage (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
3043.450000	22.6	320.4	V	191.0	-21.0	31.4	54.0
5349.410000	26.3	249.9	V	15.0	-15.3	27.7	54.0
7449.330000	31.9	350.1	H	0.0	-9.4	22.1	54.0
9220.435000	35.1	150.0	H	21.0	-5.9	18.9	54.0
11020.695000	35.6	149.6	V	241.0	-2.4	18.4	54.0
14767.900000	36.7	150.0	H	50.0	1.1	17.3	54.0

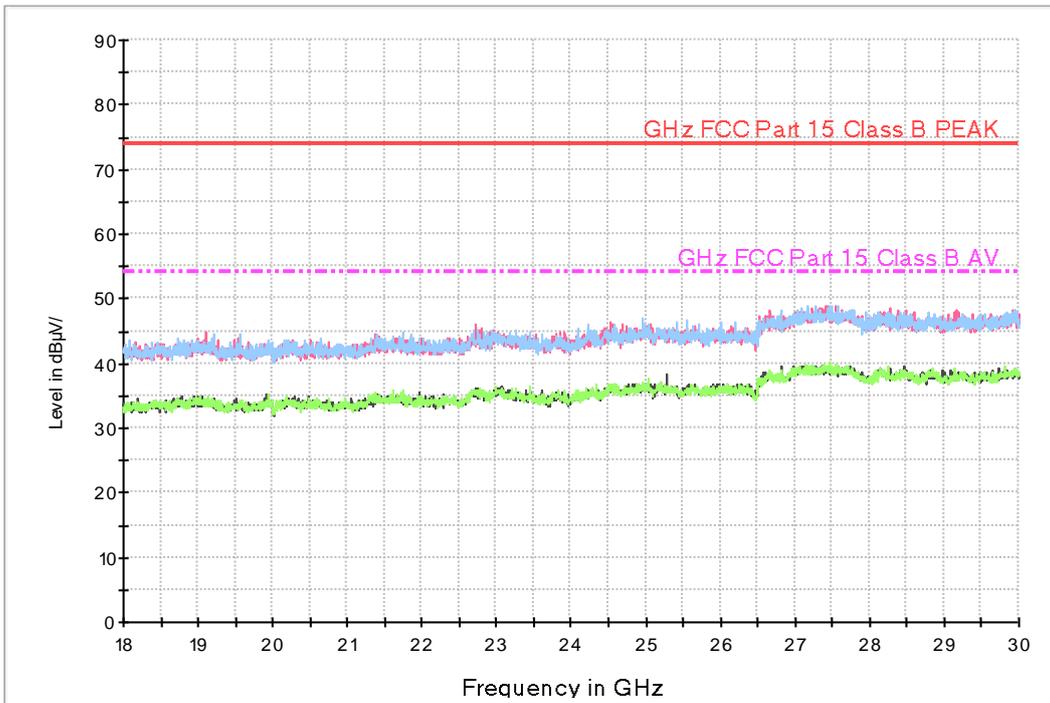


Figure 19: LTE B12+B13 Idle(Middle CH)+Front Camera Recording

Tilting of GHz FCC PART 15 CLASS B



Tilting of GHz FCC PART 15 CLASS B\_18~40GHz





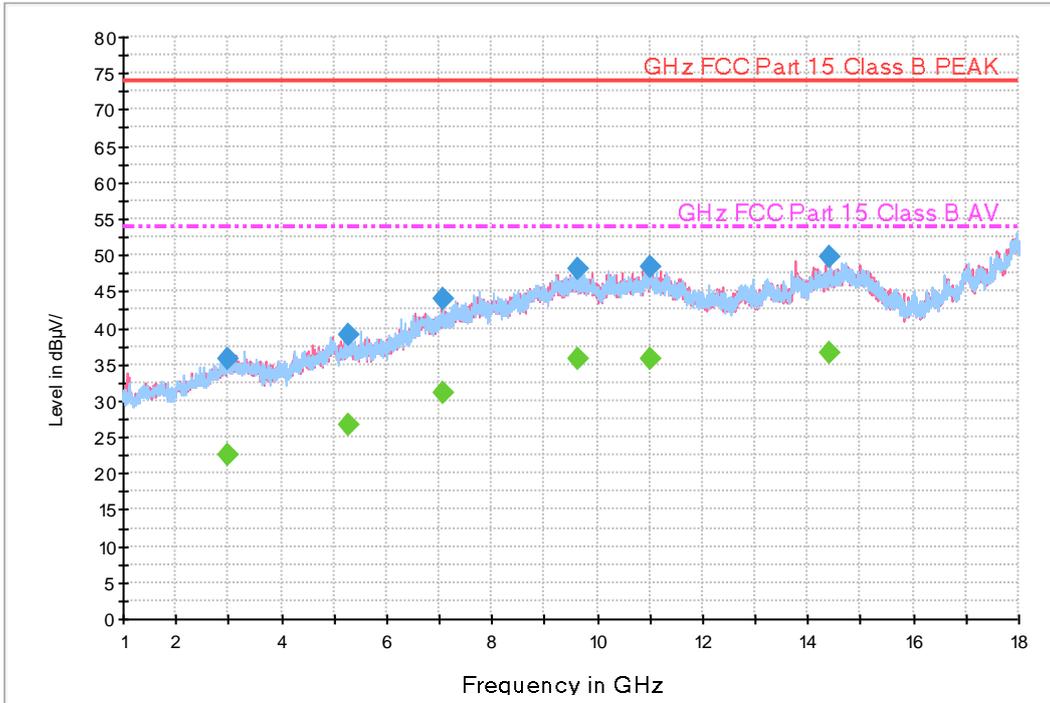
Frequency (MHz)	Peak (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
2929.320000	34.9	111.6	V	21.0	-21.3	39.1	74.0
5301.360000	40.1	305.6	V	333.0	-15.4	33.9	74.0
7446.115000	44.7	150.0	V	29.0	-9.4	29.3	74.0
9698.380000	48.1	189.4	V	248.0	-5.1	25.9	74.0
10598.675000	49.0	249.4	H	50.0	-3.2	25.0	74.0
14759.475000	49.6	299.4	H	21.0	1.1	24.4	74.0

Frequency (MHz)	CAverage (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
2929.320000	22.5	111.6	V	21.0	-21.3	31.5	54.0
5301.360000	26.4	305.6	V	333.0	-15.4	27.6	54.0
7446.115000	32.0	150.0	V	29.0	-9.4	22.0	54.0
9698.380000	34.9	189.4	V	248.0	-5.1	19.2	54.0
10598.675000	36.2	249.4	H	50.0	-3.2	17.8	54.0
14759.475000	36.5	299.4	H	21.0	1.1	17.5	54.0

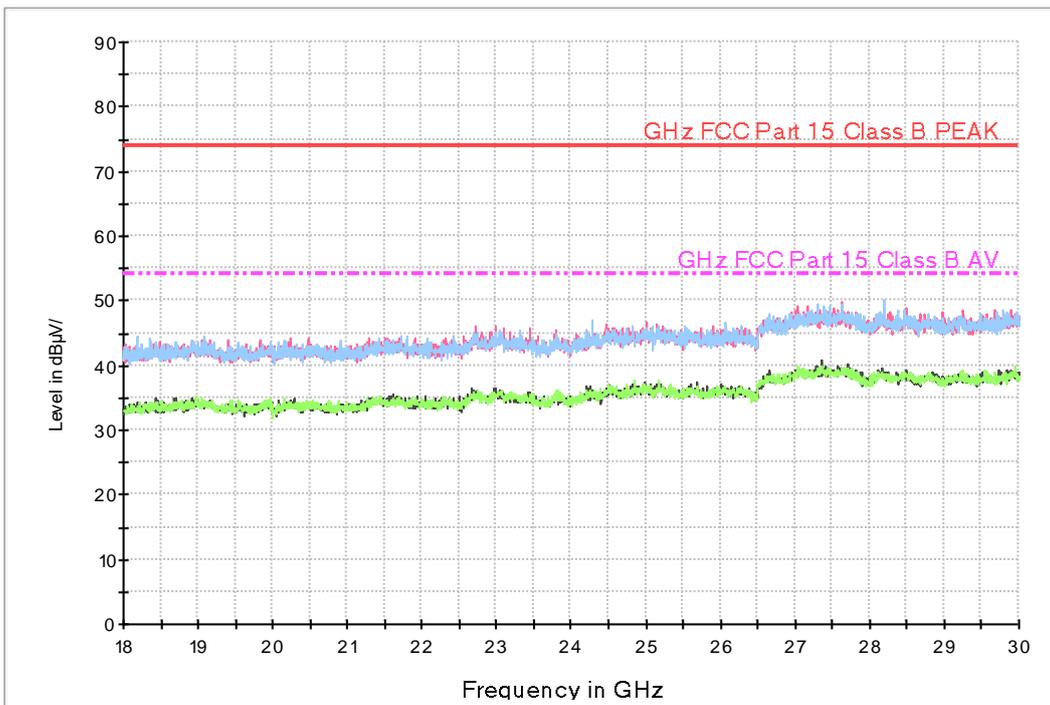


Figure 20: LTE B14 Idle (Middle CH)+Rear Camera Recording

Tilting of GHz FCC PART 15 CLASS B



Tilting of GHz FCC PART 15 CLASS B\_18~40GHz





Frequency (MHz)	Peak (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
2972.575000	35.6	249.8	V	312.0	-21.1	38.4	74.0
5279.105000	39.1	204.4	V	246.0	-15.4	34.9	74.0
7063.405000	44.0	150.0	V	114.0	-10.5	30.0	74.0
9640.720000	48.1	217.5	V	240.0	-5.1	25.9	74.0
11010.955000	48.4	100.0	H	256.0	-2.4	25.6	74.0
14420.955000	49.7	100.0	V	246.0	0.5	24.3	74.0

Frequency (MHz)	CAverage (dB $\mu$ V/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V/m)
2972.575000	22.5	249.8	V	312.0	-21.1	31.5	54.0
5279.105000	26.6	204.4	V	246.0	-15.4	27.4	54.0
7063.405000	31.0	150.0	V	114.0	-10.5	23.0	54.0
9640.720000	35.6	217.5	V	240.0	-5.1	18.4	54.0
11010.955000	35.8	100.0	H	256.0	-2.4	18.2	54.0
14420.955000	36.5	100.0	V	246.0	0.5	17.5	54.0



## 6. CONCLUSION

The data collected shows that the **EUT Type: Mobile Phone, Model Name: SM-G715U1** complies with §15.107 and §15.109 of the FCC rules and ICES-003 Issue 6 of the IC rules.



## 7. APPENDIX A. TEST SETUP PHOTO

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

Rev. No.	Issue Date	File No.
0	January 02, 2020	HCT-EM-2001-FI001-P

End of report