ANNEX B_EMI TEST RESULT

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1. GENERAL INFORMATION

1.1 Details of Support Equipment

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

Device Type	Model Name	Manufacturer	Tech. Information
EUT	SCV43	SAMSUNG	-
TA	EP-TA200	SOLUM	Input: AC 100~240 V, 50~60 Hz, 0.5 A Output: DC 9.0 V, 1.67 A or DC 5.0 V, 2.0 A
Data Cable	ECB-DU68BE	RF Tech	-
Earphone	EHS61ASFBE	CRESYN	-
Micro SD Card	-	SAMSUNG	-

1.2. 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	

1.3 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).

1.4 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

	Type	Manufacturer	Model Name	Serial Number	Calibration Cycle	CAL Date
Conducted Emission						
☒	EMI Test Receiver	Rohde & Schwarz	ESCI	100584	1 year	06.25.2018
☒	LISN	Rohde & Schwarz	ENV216	102245	1 year	12.12.2018
☒	Radio communication analyzer	ANRITSU	MT8820C	6201138643	1 year	08.21.2018
☒	Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
☒	Software	Rohde & Schwarz	EMC32 VER8.54.0	-	-	-
Radiated Emission						
-For measurement below 1 GHz						
☒	EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	07.27.2018
☒	Trilog Antenna	Schwarzbeck	VULB 9168	760	2 year	03.22.2019
☒	Antenna master	INNCO Systems	MA4640-XP-ET	-	N/A	-
☒	Antenna master controller	INNCO Systems	CO 3000	CO3000/870/ 35990515/L	N/A	-
☒	Turn Table	INNCO Systems	1060	-	N/A	-
☒	Turn Table controller	INNCO Systems	CO2000	CO2000/095/ 7590304/L	N/A	-
☒	Radio communication analyzer	ANRITSU	MT8820C	6201138643	1 year	08.21.2018
☒	Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
☒	Software	Rohde & Schwarz	EMC32 VER8.40.0	-	-	-
-For measurement above 1 GHz						
☒	EMI Test Receiver	Rohde & Schwarz	ESU40	100524	1 year	07.27.2018
☒	Antenna master	INNCO Systems	MA4640-XP-ET	-	N/A	-
☒	Antenna master controller	INNCO Systems	CO3000	CO3000/870/ 35990515/L	N/A	-
☒	Turn Table	INNCO Systems	1060	-	N/A	-
☒	Turn Table controller	INNCO Systems	CO2000	CO2000/095/ 7590304/L	N/A	-
☒	Horn Antenna	Schwarzbeck	BBHA 9120D	01836	2 year	07.20.2018
☒	Low Noise Amplifier	TESTEK	TK-PA18H	170034-L	1 year	03.04.2019
☒	Power Amplifier	TESTEK	TK-PA1840H	170030-L	1 year	12.17.2018
☒	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170#786	2 year	12.05.2017
☒	Radio communication analyzer	ANRITSU	MT8820C	6201138643	1 year	08.21.2018
☒	Antenna (for Communication)	Schwarzbeck	USLP9142	VSLP 9142-200	-	-
☐	Highpass Filter	Wainwright Instruments	WHKX1.0/15G-12SS	42	1 year	08.02.2018
☒	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	5th harmonic of the highest frequency or 40 ㎓, whichever is lower

4. PRELIMINARY TEST

During preliminary tests, the following operating mode was investigated.

WCDMA 850 Idle (Low/Middle/High CH)
GSM 850 Idle (Low/Middle/High CH)
LTE B17 Idle (Low/Middle/High CH)

NOTE.
1. The worst band is tested.

4.1 Conducted Emission

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

Operating Modes:

WCDMA 850 Middle CH Idle
LTE B17 Middle CH Idle

4.2 Radiated Emission

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

Operating Modes:

WCDMA 850 Low CH Idle
WCDMA 850 Middle CH Idle
WCDMA 850 High CH Idle
LTE B17 Low CH Idle
LTE B17 Middle CH Idle
LTE 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.

5. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

5.1 Conducted Emission

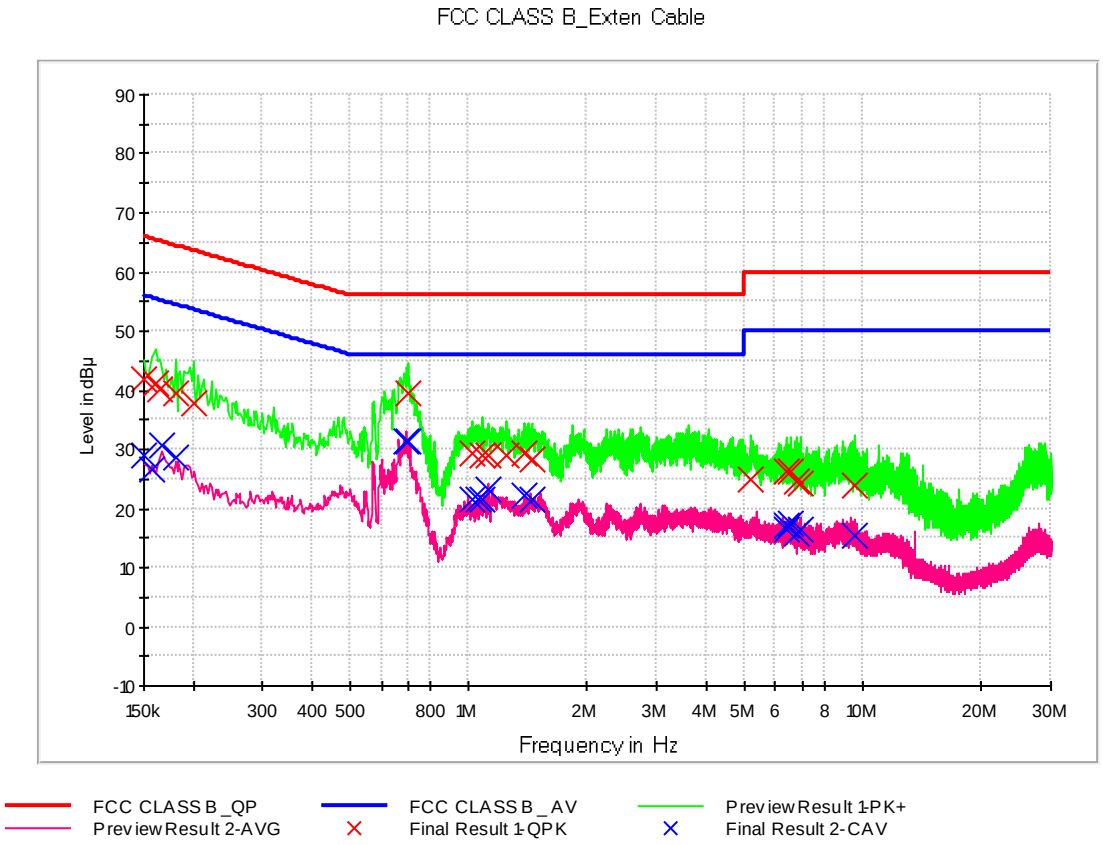
The test results of conducted emission at mains ports provide the following information:

Applicable Standards	FCC PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Quasi-Peak, CISPR-Average
Bandwidth	9 kHz (6 dB)
Operating Mode	WCDMA 850 Middle CH Idle LTE B17 Middle CH Idle
Kind of Test Site	Shielded Room
Temperature	24.1 ℃
Relative Humidity	43.8 %
Test Date	April 11, 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, WCDMA 850 Middle CH Idle, Line (L1)



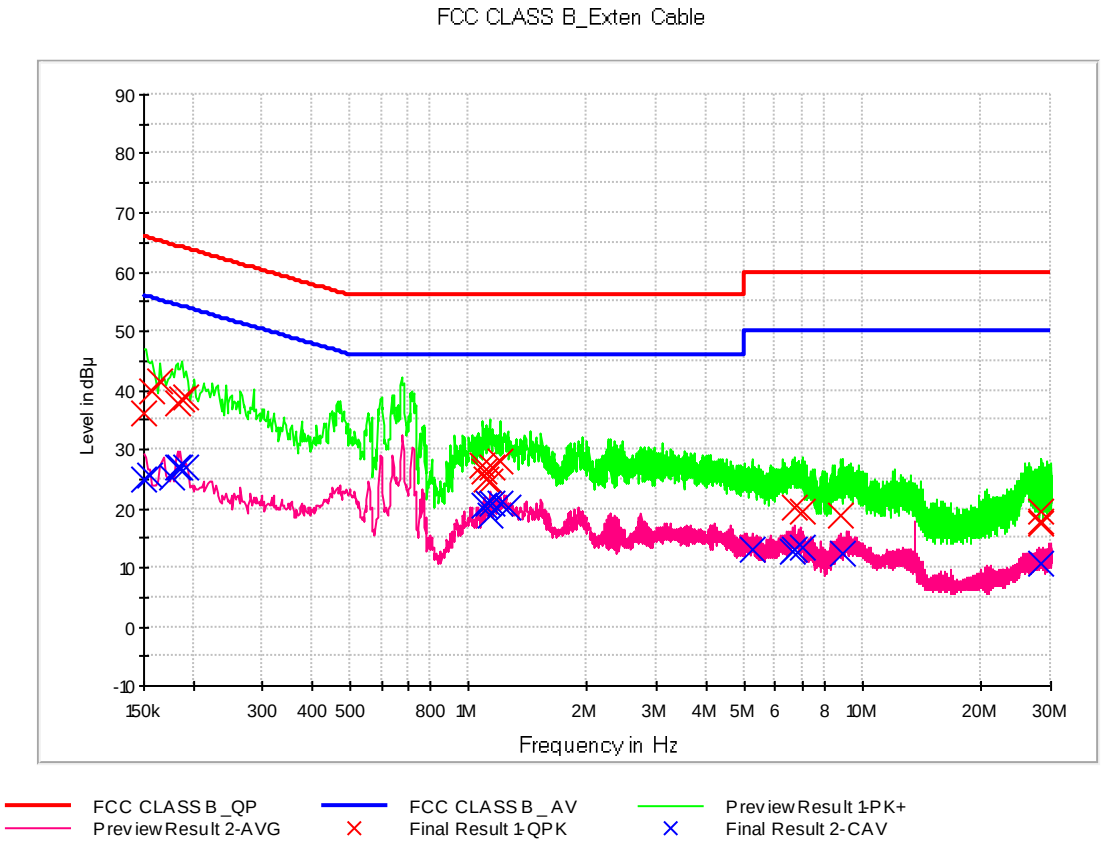
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	42.0	9.000	L1	9.7	24.0	66.0
0.160000	41.3	9.000	L1	9.7	24.2	65.5
0.164000	40.1	9.000	L1	9.7	25.1	65.3
0.180000	39.6	9.000	L1	9.7	24.9	64.5
0.200000	37.7	9.000	L1	9.8	26.0	63.6
0.702000	39.3	9.000	L1	9.8	16.7	56.0
1.022000	29.4	9.000	L1	9.8	26.6	56.0
1.086000	28.9	9.000	L1	9.8	27.1	56.0
1.116000	29.1	9.000	L1	9.8	26.9	56.0
1.246000	28.9	9.000	L1	9.9	27.1	56.0
1.380000	29.2	9.000	L1	9.9	26.8	56.0
1.444000	28.4	9.000	L1	9.9	27.6	56.0
5.188000	25.0	9.000	L1	10.0	35.0	60.0
6.444000	26.1	9.000	L1	10.1	33.9	60.0
6.522000	26.3	9.000	L1	10.1	33.7	60.0
6.816000	24.6	9.000	L1	10.1	35.4	60.0
6.944000	24.4	9.000	L1	10.1	35.6	60.0
9.502000	24.0	9.000	L1	10.2	36.0	60.0

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	28.8	9.000	L1	9.7	27.2	56.0
0.158000	26.7	9.000	L1	9.7	28.9	55.6
0.166000	30.7	9.000	L1	9.7	24.4	55.2
0.180000	28.7	9.000	L1	9.7	25.8	54.5
0.696000	31.4	9.000	L1	9.8	14.6	46.0
0.702000	31.4	9.000	L1	9.8	14.6	46.0
1.022000	21.6	9.000	L1	9.8	24.4	46.0
1.054000	21.4	9.000	L1	9.8	24.6	46.0
1.086000	21.5	9.000	L1	9.8	24.5	46.0
1.116000	23.2	9.000	L1	9.8	22.8	46.0
1.380000	22.1	9.000	L1	9.9	23.9	46.0
1.444000	21.4	9.000	L1	9.9	24.6	46.0
6.418000	16.4	9.000	L1	10.1	33.6	50.0
6.444000	17.1	9.000	L1	10.1	32.9	50.0
6.522000	17.5	9.000	L1	10.1	32.5	50.0
6.816000	15.6	9.000	L1	10.1	34.4	50.0
6.944000	16.6	9.000	L1	10.1	33.4	50.0
9.502000	15.3	9.000	L1	10.2	34.7	50.0

Figure 2: Conducted Emission, WCDMA 850 Middle CH Idle, Line (N)



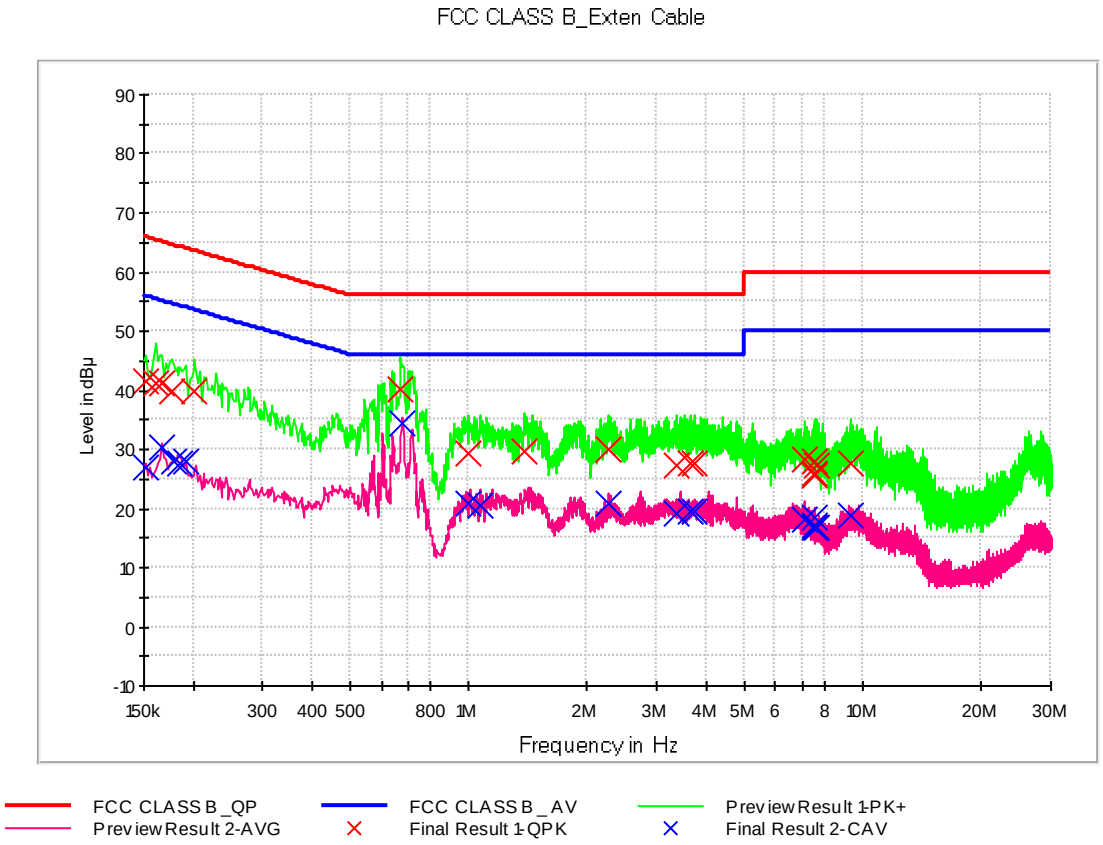
QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	36.2	9.000	N	9.8	29.8	66.0
0.158000	39.7	9.000	N	9.8	25.9	65.6
0.164000	41.4	9.000	N	9.8	23.8	65.3
0.182000	37.9	9.000	N	9.8	26.5	64.4
0.188000	38.6	9.000	N	9.8	25.6	64.1
0.192000	38.8	9.000	N	9.8	25.1	63.9
1.086000	27.3	9.000	N	10.0	28.7	56.0
1.094000	26.2	9.000	N	10.0	29.8	56.0
1.106000	25.0	9.000	N	10.0	31.0	56.0
1.130000	24.7	9.000	N	10.0	31.3	56.0
1.150000	27.1	9.000	N	10.0	28.9	56.0
1.202000	27.8	9.000	N	10.0	28.2	56.0
6.732000	20.3	9.000	N	10.3	39.7	60.0
6.996000	19.4	9.000	N	10.3	40.6	60.0
8.774000	18.9	9.000	N	10.4	41.1	60.0
28.252000	17.7	9.000	N	11.1	42.3	60.0
28.272000	19.4	9.000	N	11.1	40.6	60.0
28.450000	17.4	9.000	N	11.1	42.6	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	25.1	9.000	N	9.8	30.9	56.0
0.156000	25.6	9.000	N	9.8	30.1	55.7
0.176000	25.4	9.000	N	9.8	29.3	54.7
0.182000	27.1	9.000	N	9.8	27.3	54.4
0.186000	27.0	9.000	N	9.8	27.2	54.2
0.192000	26.8	9.000	N	9.8	27.2	53.9
1.096000	20.6	9.000	N	10.0	25.4	46.0
1.116000	20.7	9.000	N	10.0	25.3	46.0
1.130000	18.7	9.000	N	10.0	27.3	46.0
1.150000	20.7	9.000	N	10.0	25.3	46.0
1.200000	21.0	9.000	N	10.0	25.0	46.0
1.254000	20.2	9.000	N	10.0	25.8	46.0
5.268000	13.2	9.000	N	10.2	36.8	50.0
6.598000	12.9	9.000	N	10.3	37.1	50.0
6.732000	13.1	9.000	N	10.3	36.9	50.0
6.996000	13.3	9.000	N	10.3	36.7	50.0
8.842000	12.2	9.000	N	10.4	37.8	50.0
28.272000	10.8	9.000	N	11.1	39.2	50.0

Figure 3: Conducted Emission, LTE B17 Middle CH Idle, Line (L1)



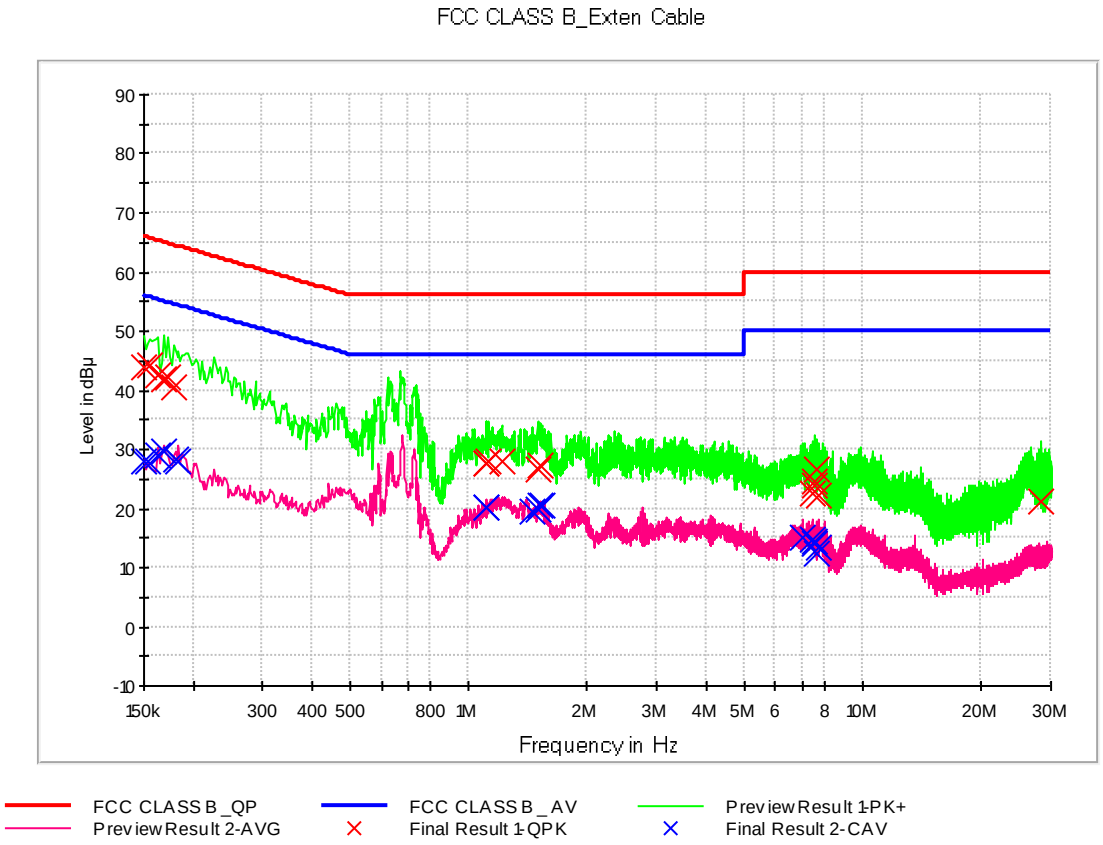
QuasiPeak Final Result, Line (L1)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	41.5	9.000	L1	9.7	24.4	65.9
0.160000	41.2	9.000	L1	9.7	24.2	65.5
0.166000	41.3	9.000	L1	9.7	23.8	65.2
0.176000	39.8	9.000	L1	9.7	24.8	64.7
0.202000	39.9	9.000	L1	9.7	23.7	63.5
0.672000	40.1	9.000	L1	9.8	15.9	56.0
0.994000	29.5	9.000	L1	9.8	26.5	56.0
1.390000	29.6	9.000	L1	9.9	26.4	56.0
2.260000	29.8	9.000	L1	9.9	26.2	56.0
3.356000	27.2	9.000	L1	9.9	28.8	56.0
3.634000	27.6	9.000	L1	9.9	28.4	56.0
3.740000	27.5	9.000	L1	10.0	28.5	56.0
7.122000	28.3	9.000	L1	10.1	31.7	60.0
7.530000	28.1	9.000	L1	10.1	31.9	60.0
7.582000	25.8	9.000	L1	10.1	34.2	60.0
7.586000	25.7	9.000	L1	10.1	34.3	60.0
7.634000	27.3	9.000	L1	10.2	32.7	60.0
9.344000	27.8	9.000	L1	10.2	32.2	60.0

CAverage Final Result, Line (L1)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	27.1	9.000	L1	9.7	28.8	55.9
0.166000	30.2	9.000	L1	9.7	25.0	55.2
0.178000	28.0	9.000	L1	9.7	26.6	54.6
0.186000	27.6	9.000	L1	9.7	26.6	54.2
0.192000	28.1	9.000	L1	9.7	25.9	53.9
0.682000	34.4	9.000	L1	9.8	11.6	46.0
0.994000	20.7	9.000	L1	9.8	25.3	46.0
1.074000	20.5	9.000	L1	9.8	25.5	46.0
2.260000	20.7	9.000	L1	9.9	25.3	46.0
3.356000	19.3	9.000	L1	9.9	26.7	46.0
3.634000	19.4	9.000	L1	9.9	26.6	46.0
3.740000	19.5	9.000	L1	10.0	26.5	46.0
7.122000	18.2	9.000	L1	10.1	31.8	50.0
7.530000	16.7	9.000	L1	10.1	33.3	50.0
7.582000	17.2	9.000	L1	10.1	32.8	50.0
7.586000	18.4	9.000	L1	10.1	31.6	50.0
7.634000	16.8	9.000	L1	10.2	33.2	50.0
9.344000	18.8	9.000	L1	10.2	31.2	50.0

Figure 4: Conducted Emission, LTE B17 Middle CH Idle, Line (N)



QuasiPeak Final Result, Line (N)

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	43.9	9.000	N	9.8	22.1	66.0
0.156000	44.3	9.000	N	9.8	21.4	65.7
0.162000	42.4	9.000	N	9.8	23.0	65.4
0.168000	42.0	9.000	N	9.8	23.0	65.1
0.172000	42.3	9.000	N	9.8	22.6	64.9
0.178000	40.5	9.000	N	9.8	24.1	64.6
1.108000	27.7	9.000	N	10.0	28.3	56.0
1.112000	27.6	9.000	N	10.0	28.4	56.0
1.128000	28.1	9.000	N	10.0	27.9	56.0
1.212000	27.8	9.000	N	10.0	28.2	56.0
1.494000	26.6	9.000	N	10.1	29.4	56.0
1.514000	27.1	9.000	N	10.1	28.9	56.0
7.460000	22.4	9.000	N	10.4	37.6	60.0
7.520000	23.9	9.000	N	10.4	36.1	60.0
7.564000	24.5	9.000	N	10.4	35.5	60.0
7.624000	26.6	9.000	N	10.4	33.4	60.0
7.726000	22.0	9.000	N	10.4	38.0	60.0
28.366000	21.1	9.000	N	11.1	38.9	60.0

CAverage Final Result, Line (N)

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	28.0	9.000	N	9.8	28.0	56.0
0.154000	28.0	9.000	N	9.8	27.8	55.8
0.162000	28.9	9.000	N	9.8	26.4	55.4
0.168000	29.7	9.000	N	9.8	25.3	55.1
0.180000	28.2	9.000	N	9.8	26.3	54.5
0.184000	28.1	9.000	N	9.8	26.2	54.3
1.108000	20.2	9.000	N	10.0	25.8	46.0
1.112000	20.3	9.000	N	10.0	25.7	46.0
1.450000	19.5	9.000	N	10.1	26.5	46.0
1.494000	19.9	9.000	N	10.1	26.1	46.0
1.514000	20.4	9.000	N	10.1	25.6	46.0
1.530000	20.6	9.000	N	10.1	25.4	46.0
7.014000	15.1	9.000	N	10.3	34.9	50.0
7.460000	14.8	9.000	N	10.4	35.2	50.0
7.520000	14.4	9.000	N	10.4	35.6	50.0
7.564000	14.0	9.000	N	10.4	36.0	50.0
7.624000	12.5	9.000	N	10.4	37.5	50.0
7.726000	13.2	9.000	N	10.4	36.8	50.0

5.2 Radiated Emission

The test results of radiated emission provide the following information:

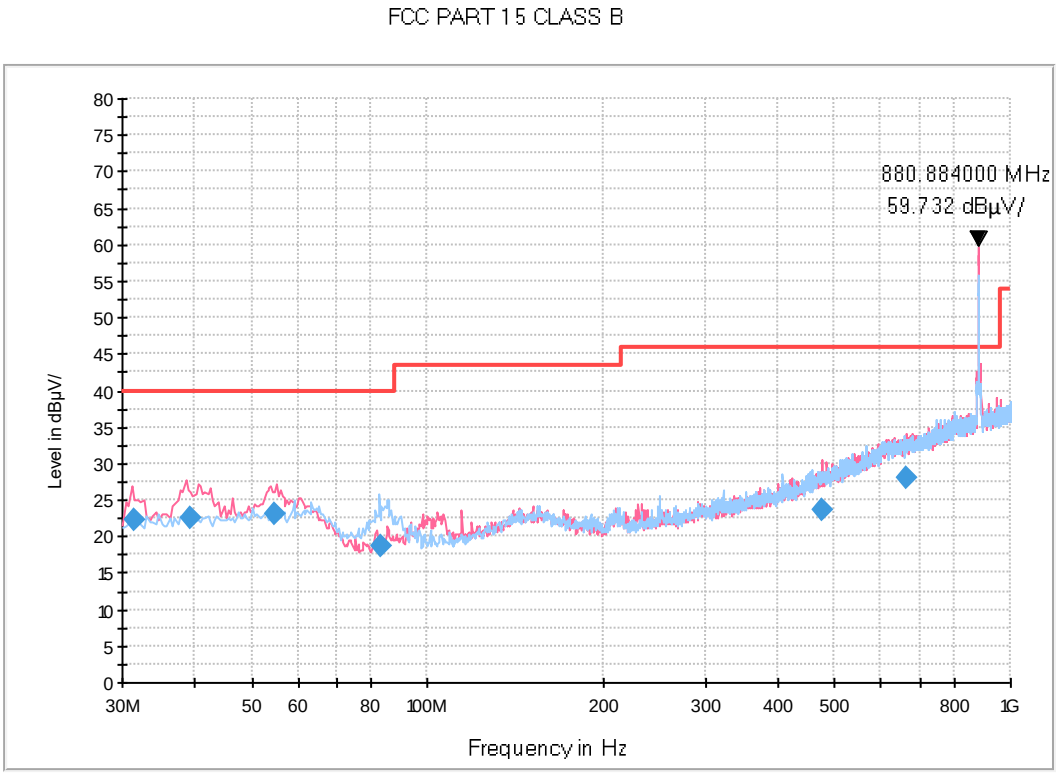
For Measurement Below 1 GHz

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	WCDMA 850 Middle CH Idle LTE B17 Middle CH Idle
Kind of Test Site	3 m semi anechoic chamber
Temperature	24.6 ℃
Relative Humidity	44.2 %
Test Date	April 09, 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

WCDMA 850 Middle CH Idle

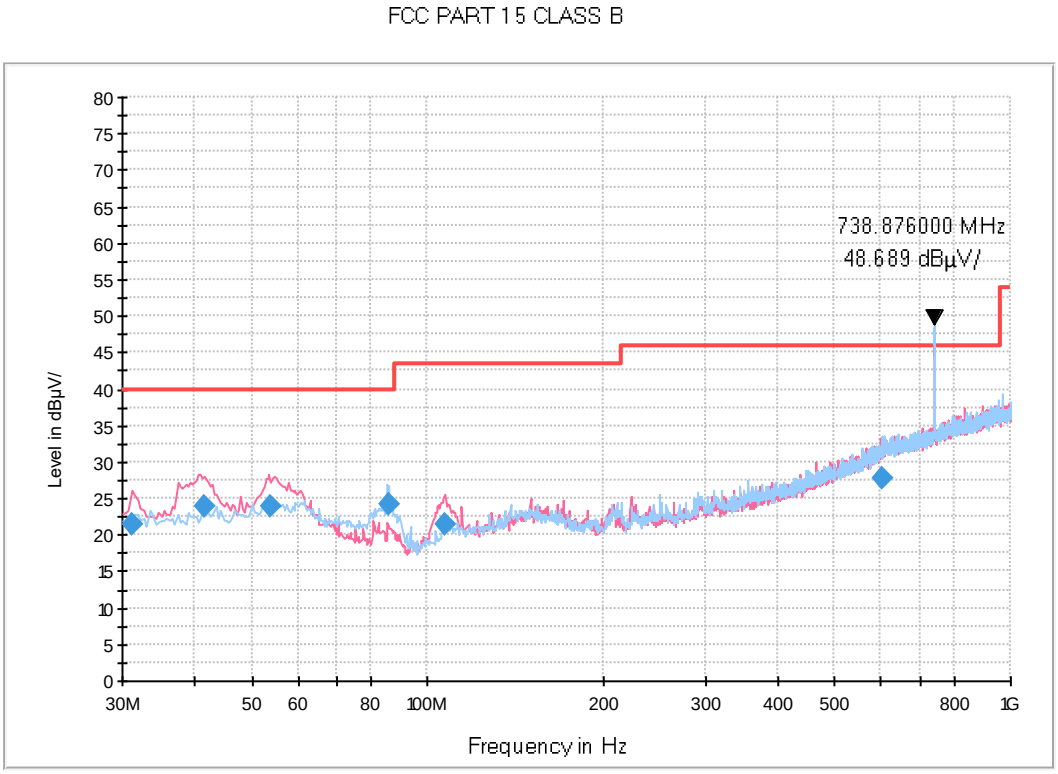


note. WCDMA 850 Middle ch Rx Frequency : 880.884 MHz

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)
31.381600	22.3	210.9	V	0.0	18.8	17.7	40.0
39.378400	22.6	100.0	V	67.0	19.5	17.4	40.0
54.575200	23.1	100.0	V	73.0	19.9	16.9	40.0
83.378400	18.6	274.8	H	116.0	14.8	21.4	40.0
474.342400	23.6	100.0	V	30.0	24.7	22.4	46.0
662.043200	28.1	119.8	V	30.0	28.3	17.9	46.0

LTE B17 Middle CH Idle



note. LTE B17 Middle ch Rx Frequency : 738.876 MHz

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)
31.285600	21.3	191.8	V	106.0	18.8	18.7	40.0
41.377600	23.8	100.0	V	36.0	19.6	16.2	40.0
53.894400	23.8	100.0	V	31.0	20.0	16.2	40.0
85.752800	24.1	225.2	H	115.0	14.6	15.9	40.0
107.168800	21.4	100.0	V	30.0	16.3	22.1	43.5
602.808800	27.7	100.0	H	230.0	27.6	18.3	46.0

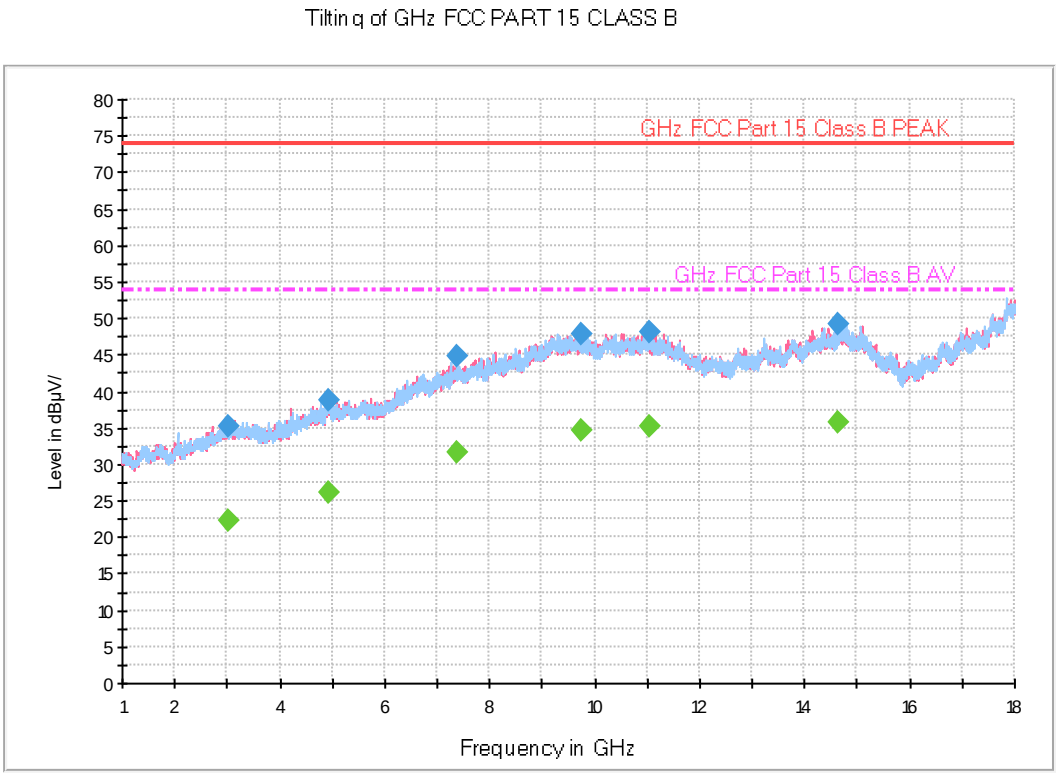
For Measurement Above 1 GHz

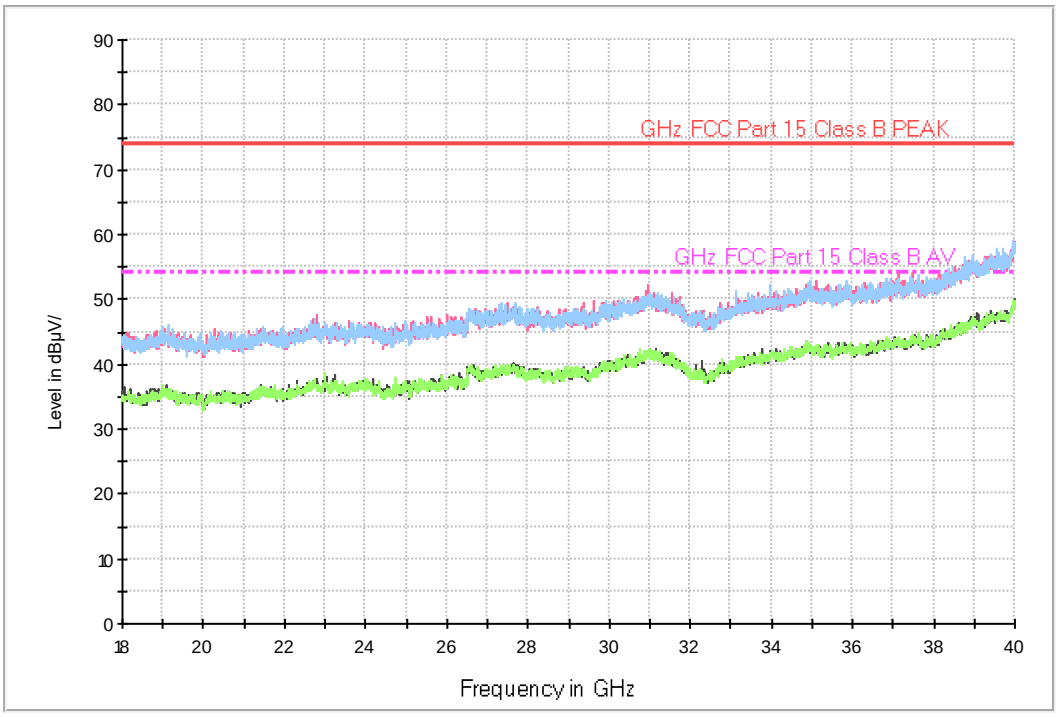
Applicable Standards	FCC PART 15 Subpart B Class B ANSI C63.4-2014
Detector	Peak mode: Peak (RBW: 1 MHz, VBW: 3 MHz) CISPR-Average mode: Peak (RBW: 1 MHz, VBW: 10 Hz)
Worst Case of Operating Mode	WCDMA 850 Middle CH Idle LTE B17 Middle CH Idle
Kind of Test Site	3 m semi anechoic chamber
Temperature	24.6 / 23.7 ℃
Relative Humidity	44.2 / 43.8 %
Test Date	April 09 / April 10, 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

WCDMA 850 Middle CH Idle



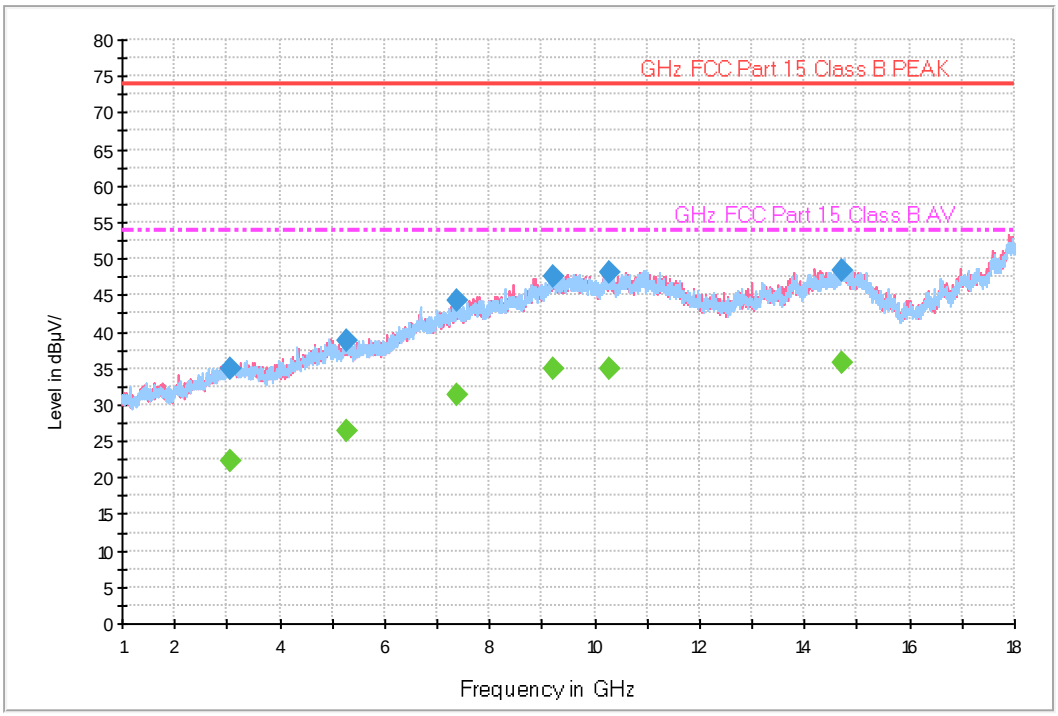


Frequency (MHz)	Peak (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
3038.595000	35.1	125.8	V	352.0	-21.0	38.9	74.0
4939.245000	38.8	199.6	V	50.0	-16.1	35.2	74.0
7392.695000	44.9	150.0	H	90.0	-9.8	29.1	74.0
9755.670000	47.8	125.6	H	50.0	-5.4	26.2	74.0
11038.625000	48.1	288.4	H	40.0	-2.6	25.9	74.0
14650.815000	49.1	100.1	V	97.0	0.7	24.9	74.0

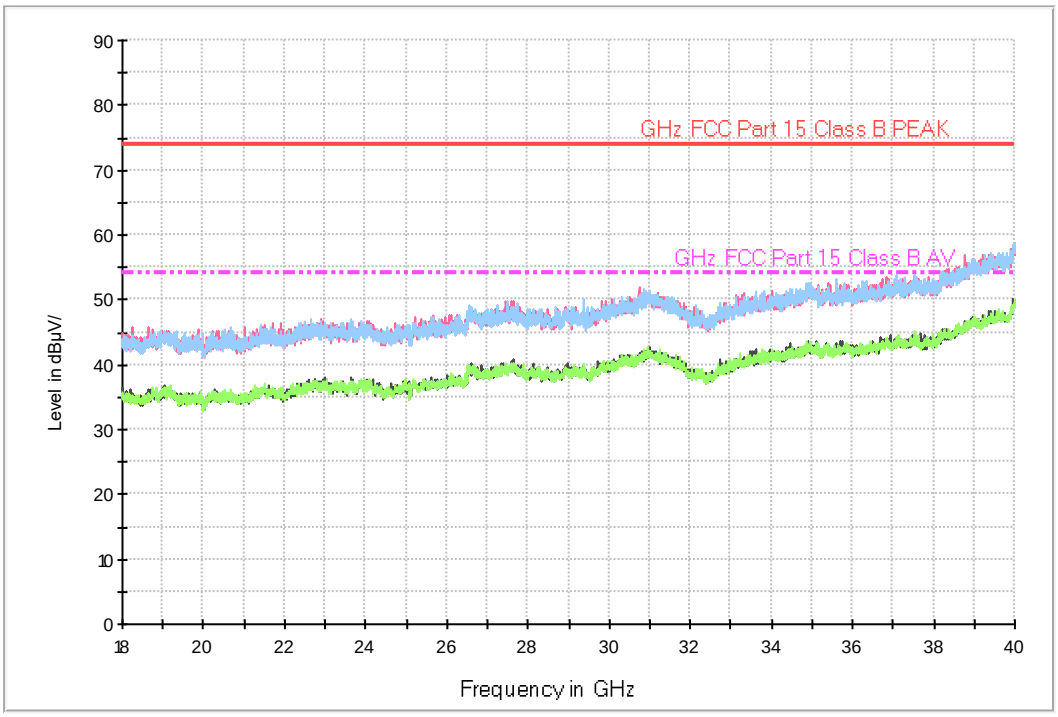
Frequency (MHz)	CAverage (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
3038.595000	22.2	125.8	V	352.0	-21.0	31.8	54.0
4939.245000	26.2	199.6	V	50.0	-16.1	27.8	54.0
7392.695000	31.6	150.0	H	90.0	-9.8	22.4	54.0
9755.670000	34.5	125.6	H	50.0	-5.4	19.5	54.0
11038.625000	35.2	288.4	H	40.0	-2.6	18.8	54.0
14650.815000	35.8	100.1	V	97.0	0.7	18.2	54.0

LTE 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 (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
3060.510000	34.8	350.0	V	277.0	-21.0	39.2	74.0
5276.730000	38.9	100.0	V	255.0	-15.6	35.1	74.0
7367.385000	44.2	305.4	V	305.0	-9.8	29.8	74.0
9224.720000	47.6	147.5	H	0.0	-6.1	26.4	74.0
10300.195000	48.2	316.5	V	109.0	-4.3	25.8	74.0
14718.960000	48.5	203.6	H	158.0	0.8	25.5	74.0

Frequency (MHz)	CAverage (dBµV/m)	Antenna Height (cm)	POL. (H/V)	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
3060.510000	22.4	350.0	V	277.0	-21.0	31.6	54.0
5276.730000	26.4	100.0	V	255.0	-15.6	27.6	54.0
7367.385000	31.4	305.4	V	305.0	-9.8	22.6	54.0
9224.720000	34.9	147.5	H	0.0	-6.1	19.1	54.0
10300.195000	35.1	316.5	V	109.0	-4.3	19.0	54.0
14718.960000	35.9	203.6	H	158.0	0.8	18.1	54.0