4.7 Unwanted Emissions

Test Location

☒ 10 m SAC (test distance : ☐ 10 m, ☒ 3 m)
☒ 3 m SAC (test distance : 3 m)

Test Procedures

KDB 987594 - Section G
KDB 789033 - Section G

1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
2) In the frequency rage above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

Test Settings:

Frequency Range = 9 kHz ~ 1 GHz

a) RBW = 100 kHz for f < 1 GHz, 9 kHz for f < 30 MHz

b) VBW ≥ RBW

c) Detector = CISPR Quasi-peak

d) Sweep time = auto couple

- Peak

Frequency Range = 1 GHz ~ 40 GHz

a) RBW = 1 MHz

b) VBW ≥ 3 x RBW

c) Detector = Peak

d) Sweep time = auto

e) Trace mode = max hold

- Average (duty cycle ≥ 98%)

Frequency Range = 1 GHz ~ 40 GHz

a) RBW = 1 MHz

b) VBW ≥ 3 x RBW

c) Detector = RMS

d) Sweep time = auto

e) Averaging type = power (i.e., RMS)

f) Trace mode = average (at least 100 traces)

- Average (duty cycle < 98%)

Frequency Range = 1 GHz ~ 40 GHz

a) RBW = 1 MHz

b) VBW ≥ 3 x RBW

c) Detector = RMS

d) Sweep time = auto

e) Averaging type = power (i.e., RMS)

f) Trace mode = average (at least 100 traces)
If power averaging (RMS) mode, then the applicable correction factor is 10 log(1/x), where x is the duty cycle.

Test mode	Duty Cycle Factor (dB)
802.11ax_HE20	0.80
802.11ax_HE40	0.81
802.11ax_HE80	0.87

Limit

- **15.209(a)**

Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

** Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

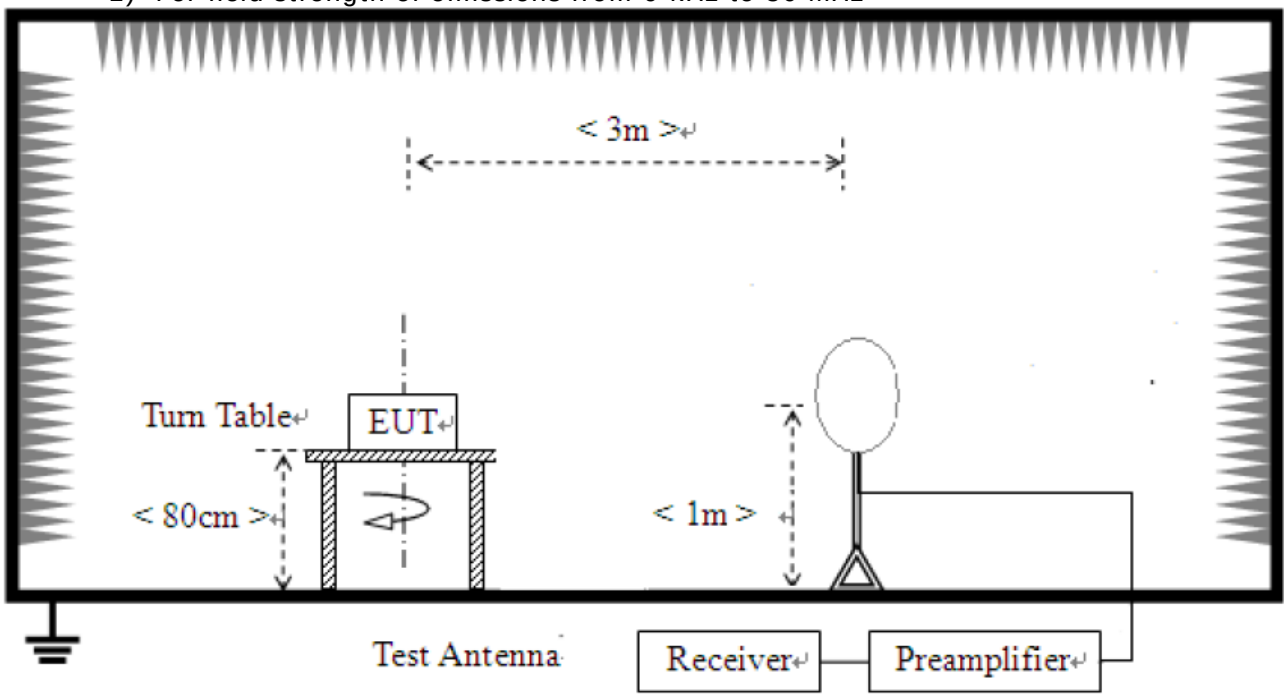
- **15.407, KDB 987594**

E.I.R.P -27 dBm/MHz

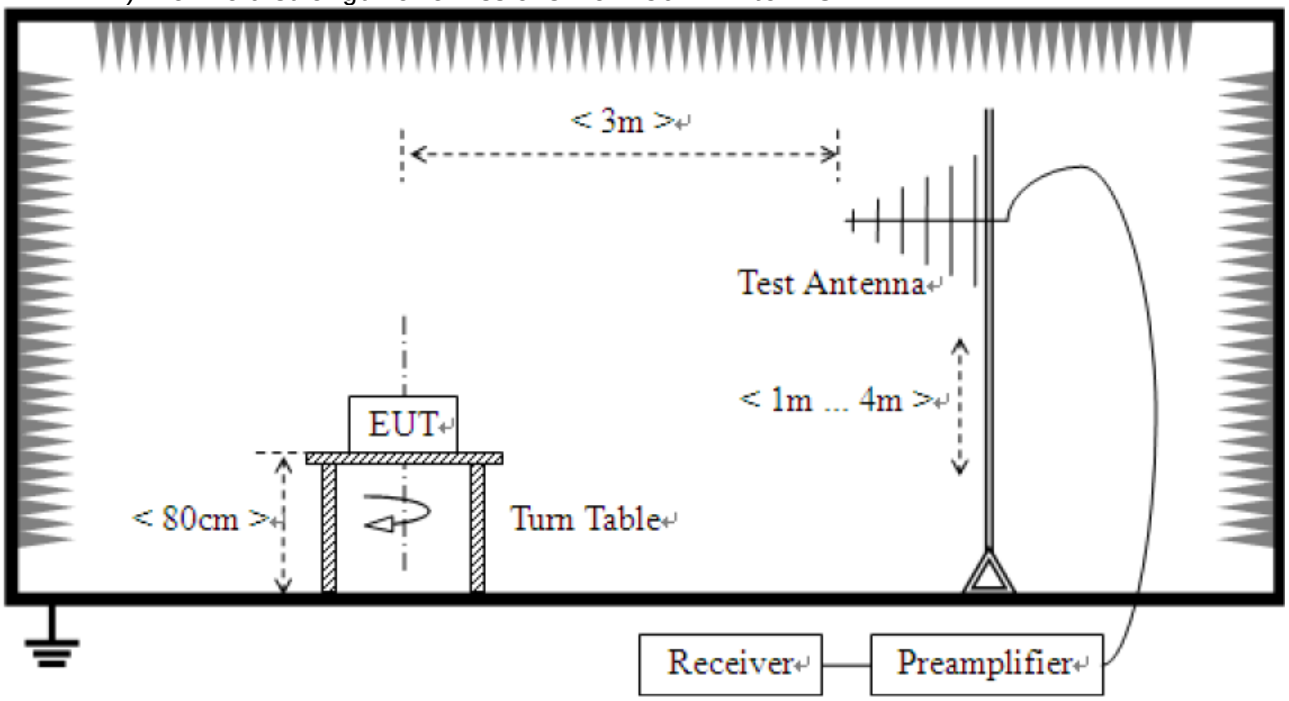
E[dBuV/m] = EIRP[dBm] + 95.2, for d = 3m

Test Setup:

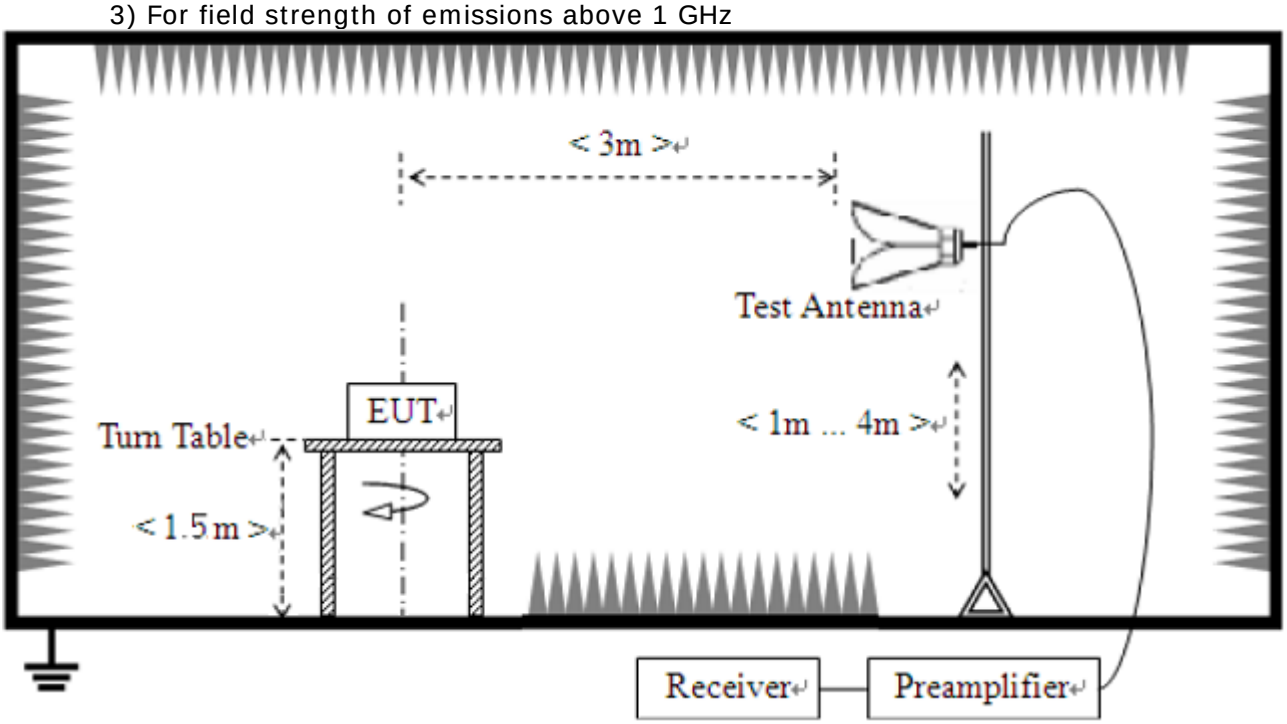
1) For field strength of emissions from 9 kHz to 30 MHz



2) For field strength of emissions from 30 MHz to 1 GHz



3) For field strength of emissions above 1 GHz



Test Mode

We have done all test mode.
The worst case antenna configuration and Test mode are determined to be as follows.

802.11ax : ANT1 + ANT2 (MIMO)

So the results are only attached worst cases.

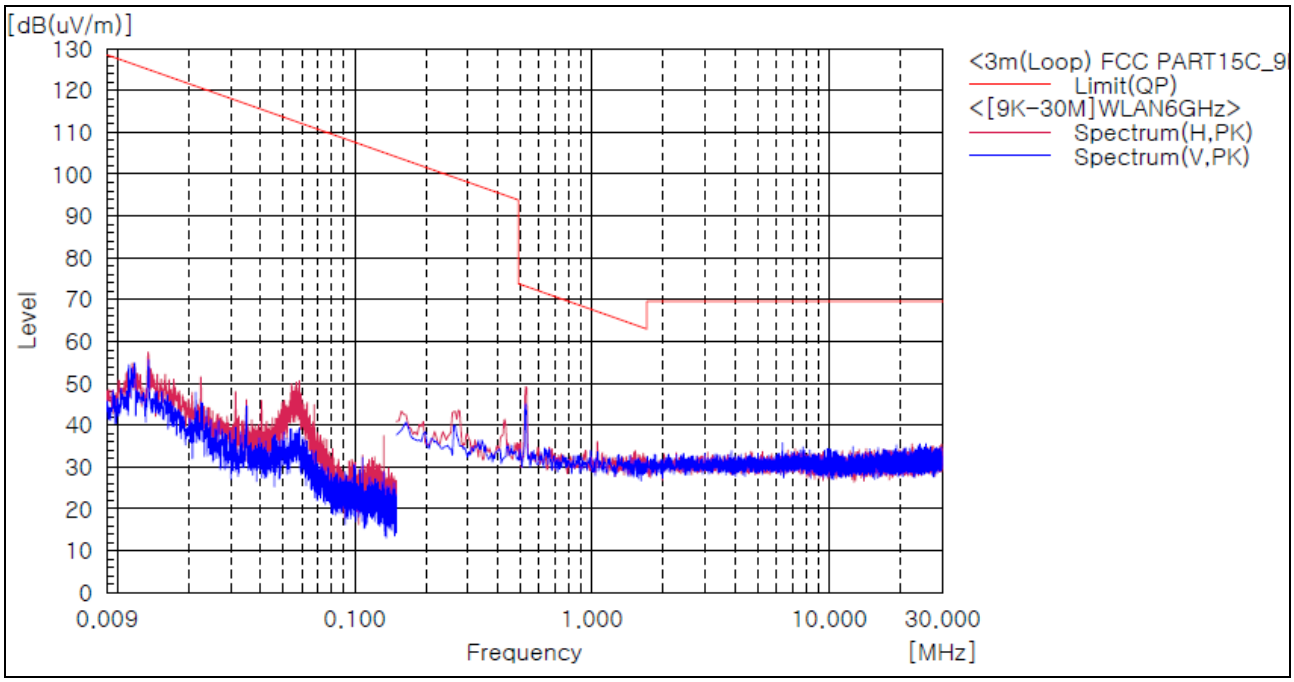
Test Results

1) 9 kHz to 30 MHz

Test mode : Transmitter (Worst Case)

The requirements are:
☒ Complies

Test Data



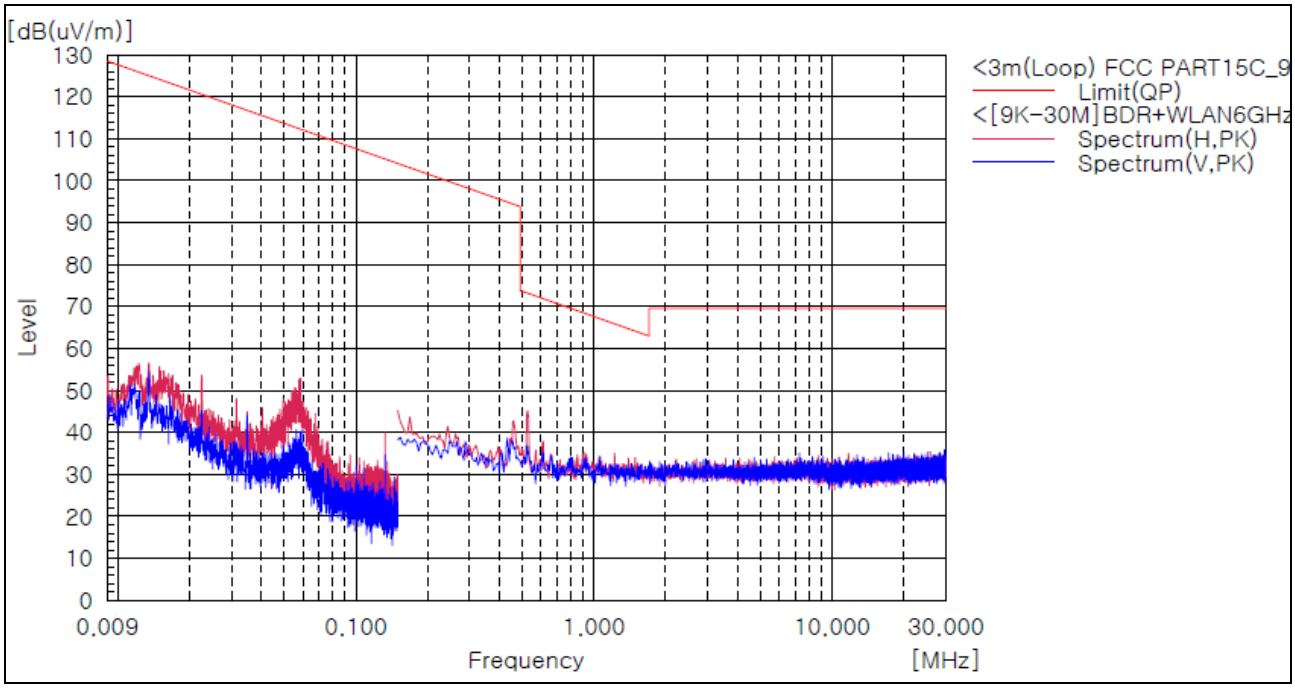
Frequency [MHz]	(P)	Reading [dBuV]	c.f [dB(1/m)]	Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
The emissions 9 kHz to 30 MHz were 20 dB lower than the limit.						

Remark :
1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in lie-down positon(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

Test mode : Transmitter (simultaneous transmissions BDR+ WLAN 6E)

The requirements are:
☒ Complies

Test Data



Frequency [MHz]	(P)	Reading [dBuV]	c.f [dB(1/m)]	Level [dB(uV/m)]	Limit [dB(uV/m)]	Margin [dB]
The emissions 9 kHz to 30 MHz were 20 dB lower than the limit.						

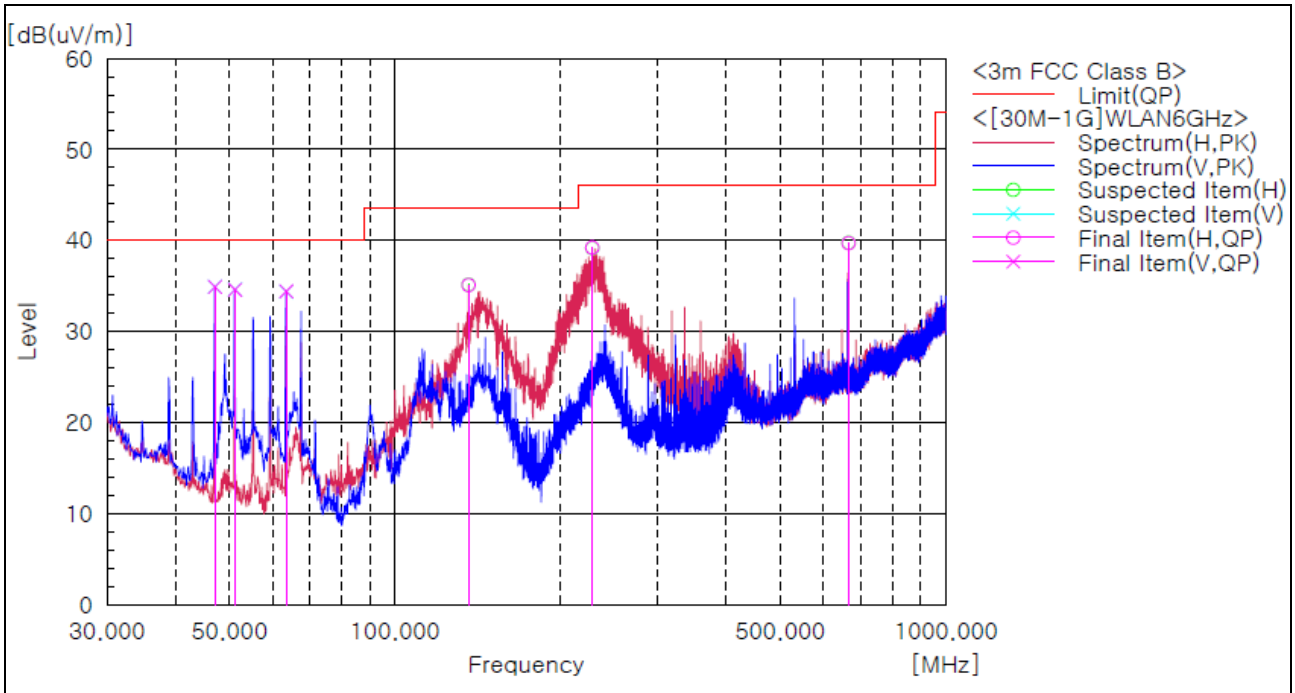
Remark :
1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in lie-down positon(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

2) 30 MHz to 1 GHz

Test mode : Transmitter (Worst Case)

The requirements are:
☒ Complies

Test Data



Final Result

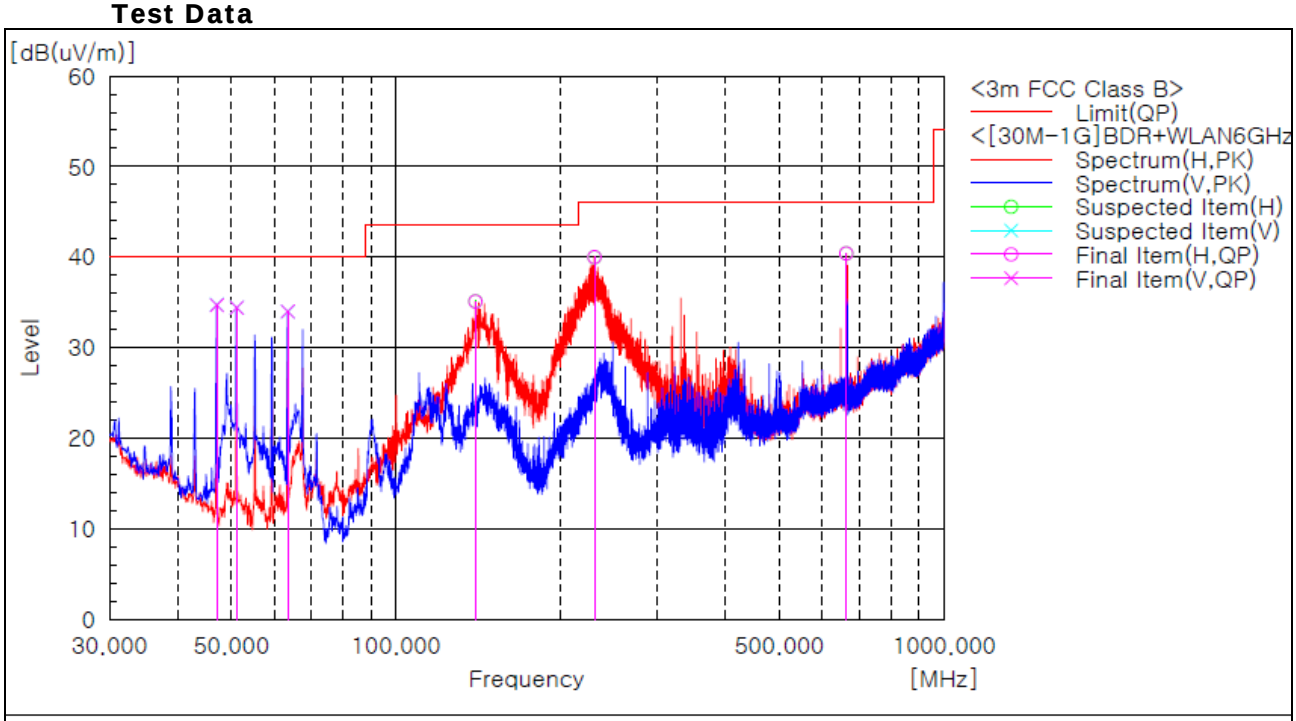
No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	47.096	V	49.9	-15.0	34.9	40.0	5.1	101.0	105.0
2	51.219	V	50.9	-16.3	34.6	40.0	5.4	101.0	121.0
3	63.465	V	52.6	-18.2	34.4	40.0	5.6	101.0	98.0
4	136.094	H	46.7	-11.6	35.1	43.5	8.4	206.0	21.0
5	228.244	H	51.7	-12.5	39.2	46.0	6.8	101.0	39.0
6	666.563	H	39.0	0.7	39.7	46.0	6.3	101.0	59.0

Remark :
1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in lie-down positon(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain

Test mode : Transmitter (simultaneous transmissions BDR + WLAN 6E)

The requirements are:
☒ Complies

Test Data



Final Result

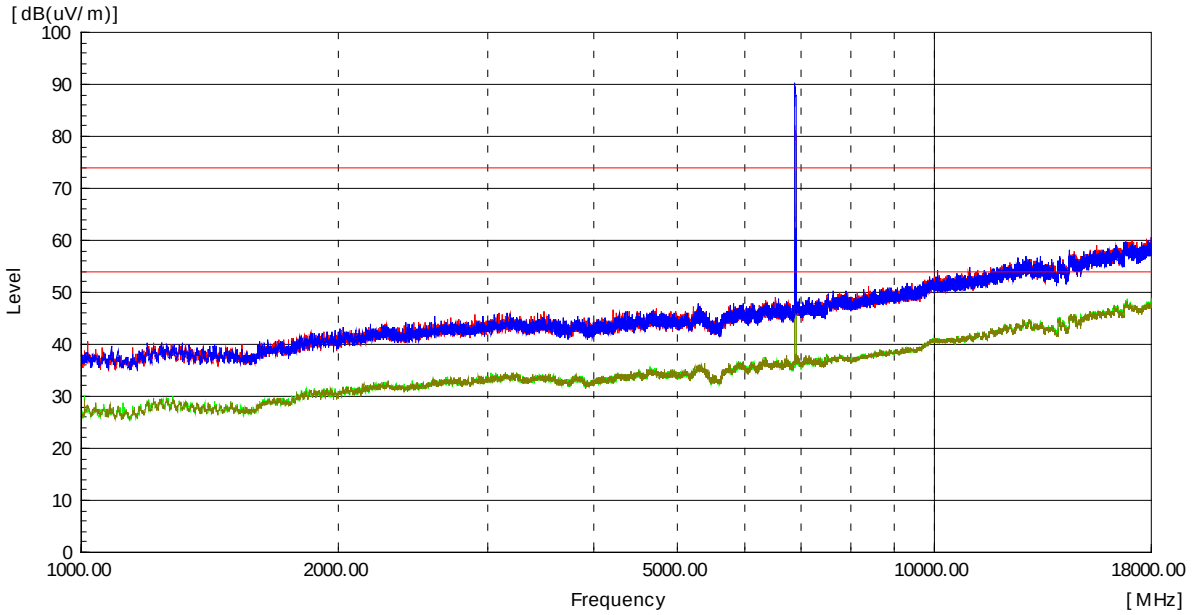
No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	47.096	V	49.7	-15.0	34.7	40.0	5.3	101.0	114.0
2	51.219	V	50.7	-16.3	34.4	40.0	5.6	101.0	144.0
3	63.465	V	52.2	-18.2	34.0	40.0	6.0	101.0	98.0
4	139.731	H	46.8	-11.7	35.1	43.5	8.4	206.0	350.0
5	230.426	H	52.3	-12.3	40.0	46.0	6.0	101.0	29.0
6	663.774	H	39.6	0.8	40.4	46.0	5.6	101.0	52.0

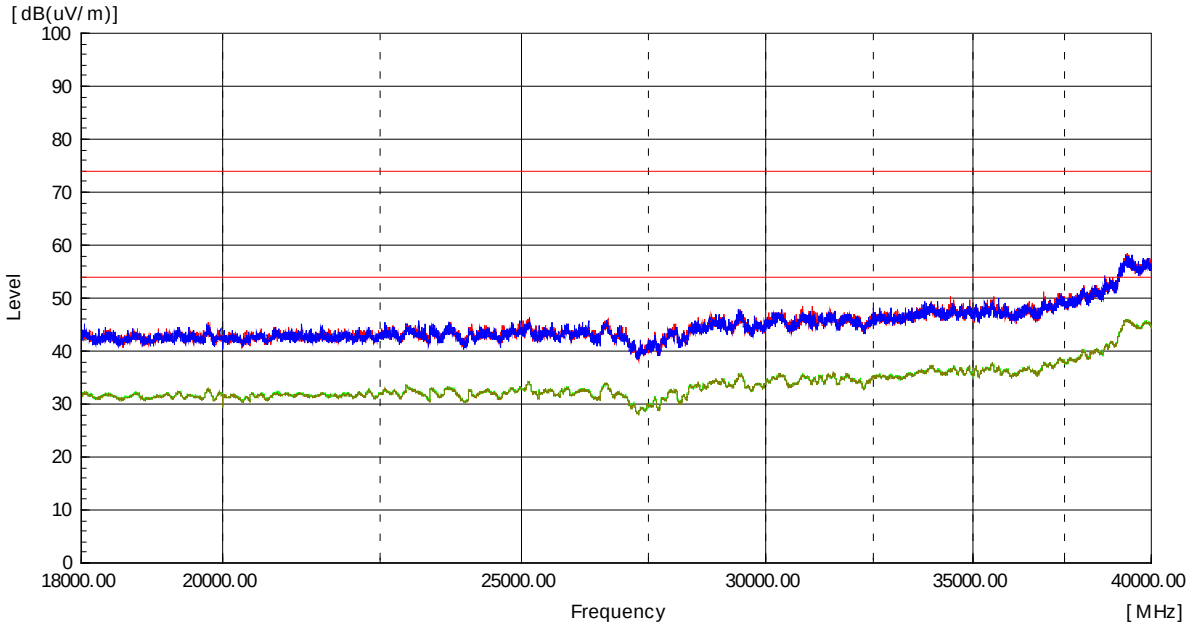
Remark :
1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in lie-down positon(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain

3) above 1 GHz

The requirements are:
☒ Complies

Test Data





Test mode : Transmitter, 802.11ax_HE20

The requirements are:
☒ Complies

Test Data

Ch.1(5 955 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.45(6 175 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.93(6 415 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.97(6 435 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.105(6 475 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.113(6 515 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.117(6 535 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.149(6 695 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.181(6 855 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.185(6 875 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.209(6 995 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
14 008.02	H	45.9	-----	11.4	-----	57.3	-----	74.0	-----	16.7	-----
14 002.66	H	-----	33.9	11.4	0.8	-----	46.1	-----	54.0	-----	7.9
13 996.42	V	46.0	-----	11.4	-----	57.4	-----	74.0	-----	16.6	-----
13 987.79	V	-----	35.3	11.4	0.8	-----	47.5	-----	54.0	-----	6.5

Ch.229(7 095 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
14 193.96	H	45.7	-----	11.5	-----	57.2	-----	74.0	-----	16.8	-----
14 186.52	H	-----	33.8	11.4	0.8	-----	46.0	-----	54.0	-----	8.0
14 179.08	V	47.1	-----	11.4	-----	58.5	-----	74.0	-----	15.5	-----
14 193.66	V	-----	35.9	11.5	0.8	-----	48.2	-----	54.0	-----	5.8

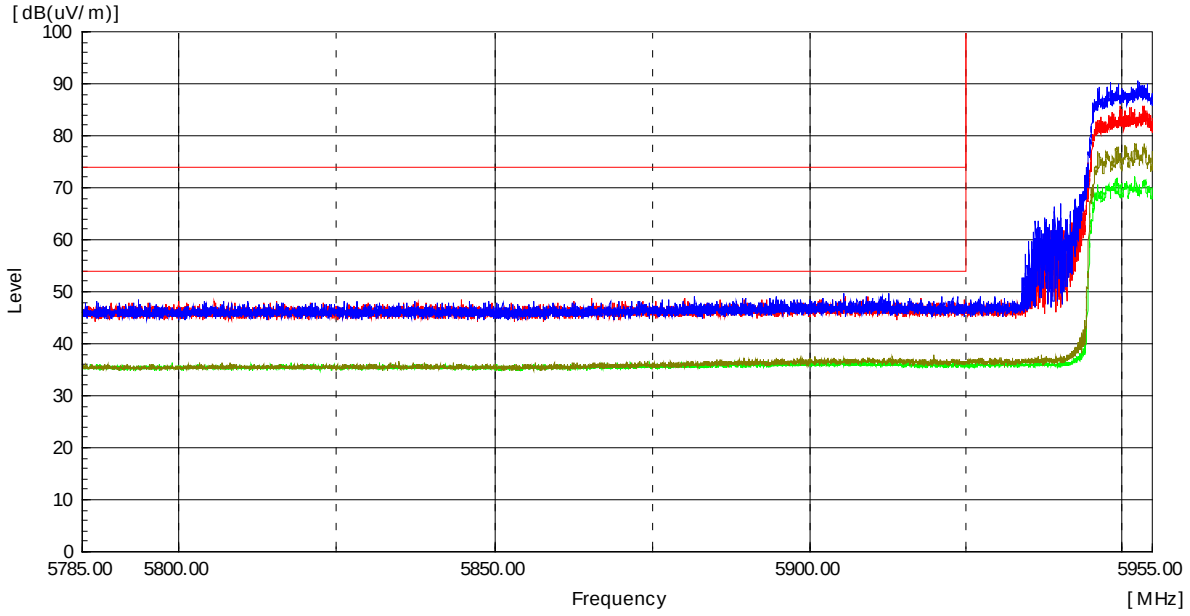
Ch.233(7 115 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Remarks

1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in lie-down positon(X axis) and the worst case was recorded.
2. Peak Result = Reading + c.f(Correction factor)
   Average Result = Reading + c.f(Correction factor) + Duty Cycle Factor
3. Correction factor = Antenna factor + Cable loss - Amp Gain

Worst Case Mode :	802.11ax_HE20
Worst Case Transfer Rate :	MCS 0
Distance of Measurements :	3 Meters
Operating Frequency :	5 955 MHz
Channel :	1

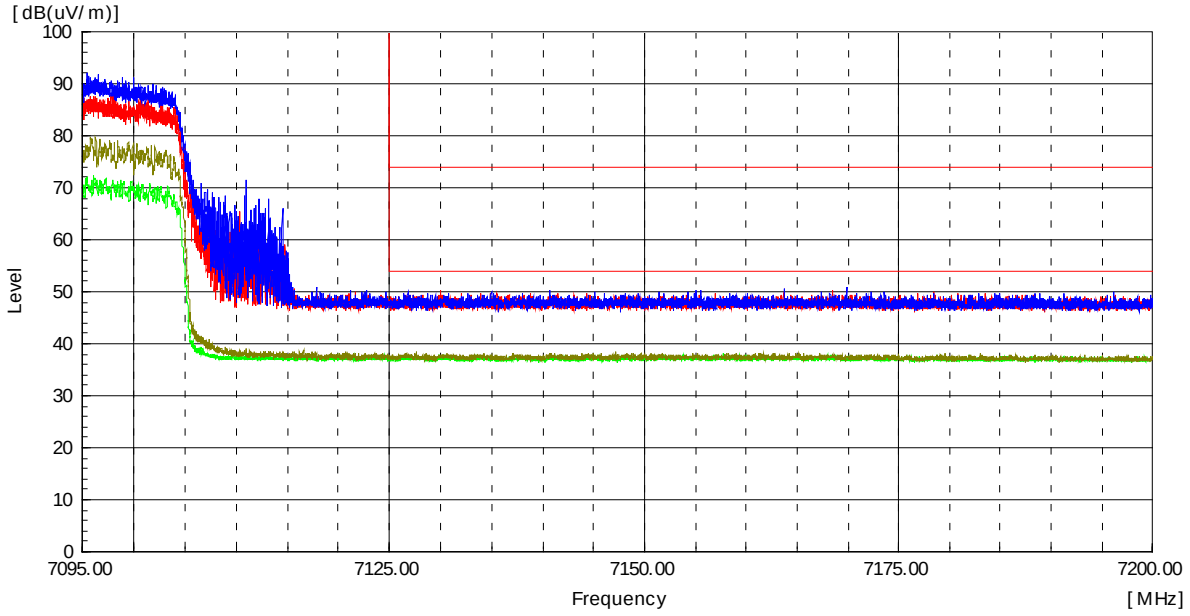


Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]

The emissions above 1 GHz were 20 dB lower than the limit.

Radiated Restricted Band Edge Plot

Worst Case Mode :	802.11ax_HE20
Worst Case Transfer Rate :	MCS 0
Distance of Measurements :	3 Meters
Operating Frequency :	7 095 MHz
Channel :	229

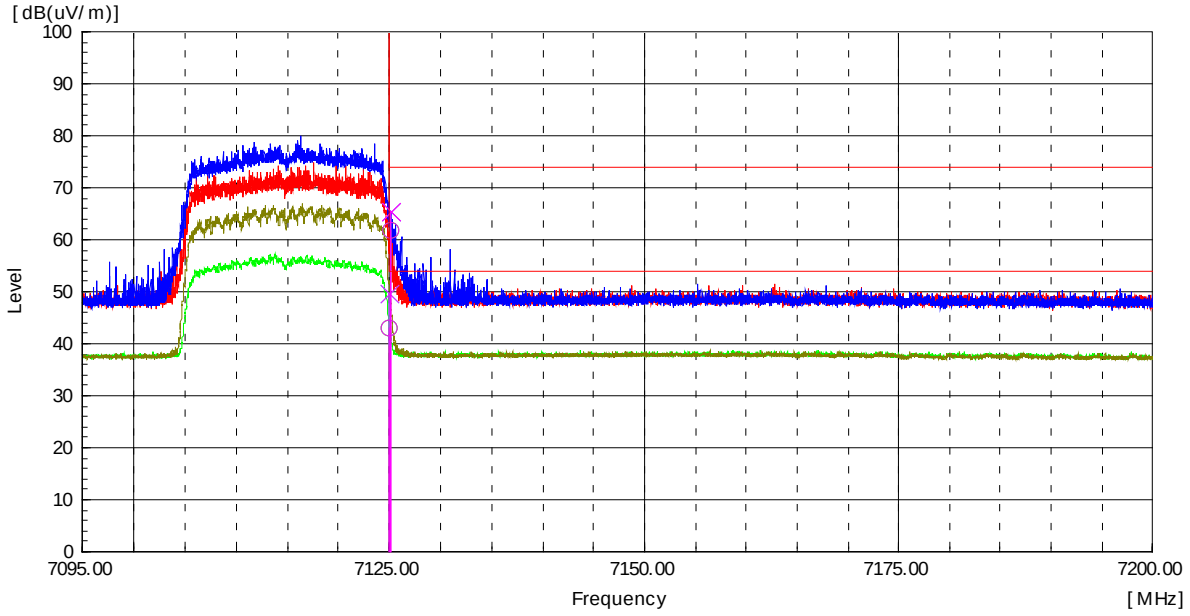


Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]

The emissions above 1 GHz were 20 dB lower than the limit.

Radiated Restricted Band Edge Plot

Worst Case Mode :	802.11ax_HE20
Worst Case Transfer Rate :	MCS 0
Distance of Measurements :	3 Meters
Operating Frequency :	7 115 MHz
Channel :	233



Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
7 125.07	H	57.6	-----	4.3	-----	61.9	-----	74.0	-----	12.1	-----
7 125.00	H	-----	38.8	4.3	0.8	-----	43.9	-----	54.0	-----	10.1
7 125.06	V	61.1	-----	4.3	-----	65.4	-----	74.0	-----	8.6	-----
7 125.00	V	-----	45.5	4.3	0.8	-----	50.6	-----	54.0	-----	3.4
7 125.06	V	61.1	-----	4.3	-----	65.4	-----	68.2	-----	2.8	-----

Radiated Restricted Band Edge Plot

Test mode : Transmitter, 802.11ax_HE40

The requirements are:
☒ Complies

Test Data

Ch.3(5 965 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.43(6 165 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.91(6 405 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.99(6 445 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.107(6 485 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.115(6 525 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.147(6 685 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.179(6 845 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.187(6 885 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.211(7 005 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
14 024.68	H	45.3	-----	11.5	-----	56.8	-----	74.0	-----	17.2	-----
14 042.53	H	-----	33.9	11.5	0.8	-----	46.2	-----	54.0	-----	7.8
14 016.05	V	48.7	-----	11.4	-----	60.1	-----	74.0	-----	13.9	-----
14 006.23	V	-----	37.7	11.4	0.8	-----	49.9	-----	54.0	-----	4.1

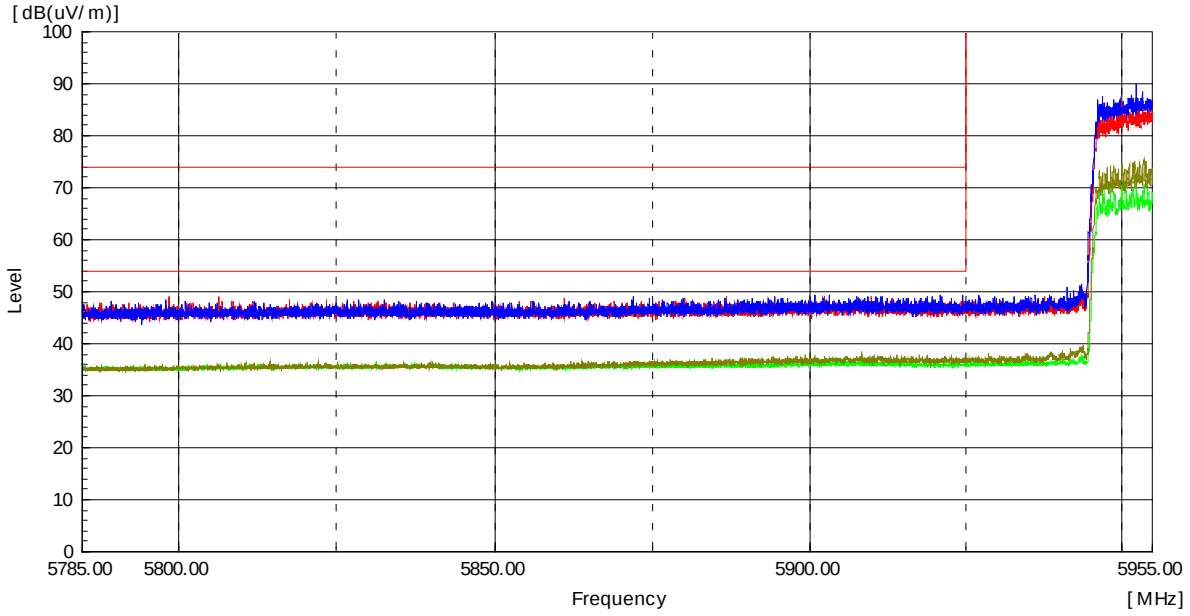
Ch.227(7 085 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
14 186.22	H	45.6	-----	11.4	-----	57.0	-----	74.0	-----	17.0	-----
14 212.10	H	-----	33.3	11.5	0.8	-----	45.6	-----	54.0	-----	8.4
14 178.19	V	48.2	-----	11.4	-----	59.6	-----	74.0	-----	14.4	-----
14 178.78	V	-----	35.8	11.4	0.8	-----	48.0	-----	54.0	-----	6.0

Remarks

1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in lie-down positon(X axis) and the worst case was recorded.
2. Peak Result = Reading + c.f(Correction factor)
   Average Result = Reading + c.f(Correction factor) + Duty Cycle Factor
3. Correction factor = Antenna factor + Cable loss - Amp Gain

Worst Case Mode :	802.11ax_HE40
Worst Case Transfer Rate :	MCS 0
Distance of Measurements :	3 Meters
Operating Frequency :	5 965 MHz
Channel :	3

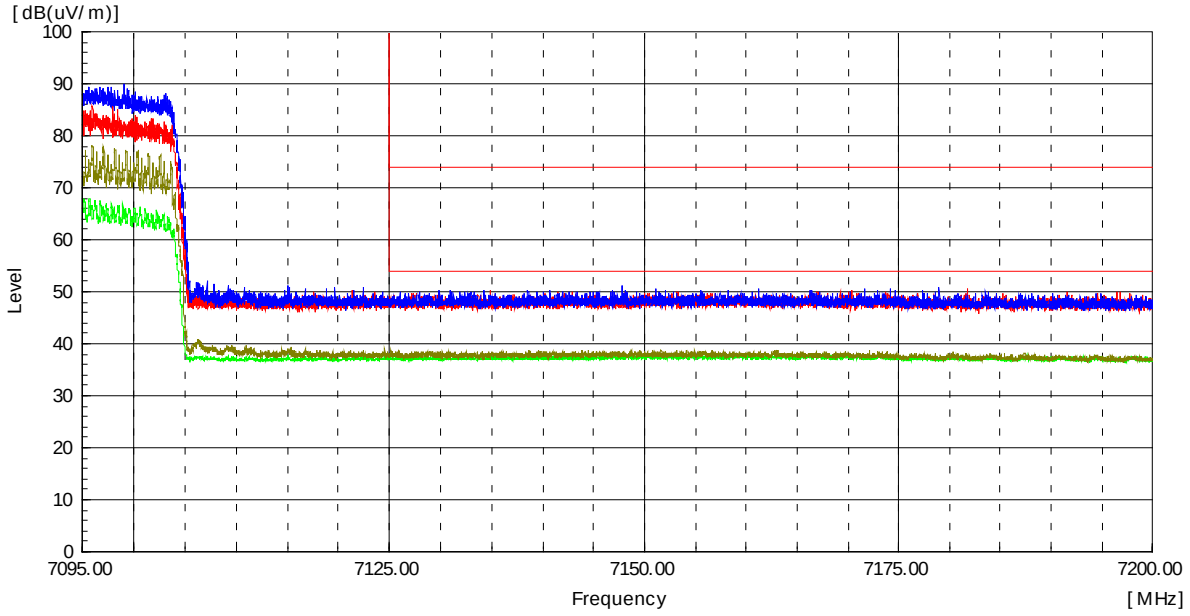


Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]

The emissions above 1 GHz were 20 dB lower than the limit.

Radiated Restricted Band Edge Plot

Worst Case Mode :	802.11ax_HE40
Worst Case Transfer Rate :	MCS 0
Distance of Measurements :	3 Meters
Operating Frequency :	7 085 MHz
Channel :	227



Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]

The emissions above 1 GHz were 20 dB lower than the limit.

Radiated Restricted Band Edge Plot

Test mode : Transmitter, 802.11ax_HE80

The requirements are:
☒ Complies

Test Data

Ch.7(5 985 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.39(6 145 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.87(6 385 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.103(6 465 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.119(6 545 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.151(6 705 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.183(6 865 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
The emissions above 1 GHz were 20 dB lower than the limit.											

Ch.199(6 945 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
13 873.55	H	42.8	-----	11.5	-----	54.3	-----	74.0	-----	19.7	-----
13 963.09	H	-----	30.8	11.4	0.9	-----	43.1	-----	54.0	-----	10.9
13 900.62	V	44.3	-----	11.9	-----	56.2	-----	74.0	-----	17.8	-----
13 900.32	V	-----	31.3	11.9	0.9	-----	44.1	-----	54.0	-----	9.9

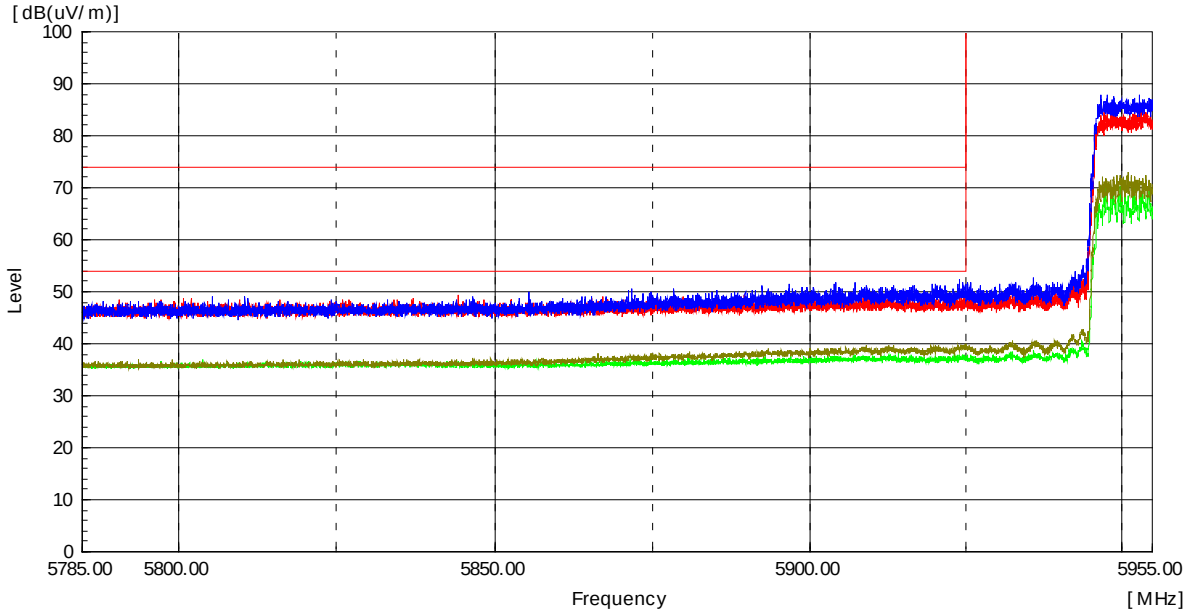
Ch.215(7 025 MHz)

Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
14 001.17	H	44.7	-----	11.4	-----	56.1	-----	74.0	-----	17.9	-----
14 000.58	H	-----	33.4	11.4	0.9	-----	45.7	-----	54.0	-----	8.3
14 071.09	V	50.2	-----	11.5	-----	61.7	-----	74.0	-----	12.3	-----
14 033.90	V	-----	36.1	11.5	0.9	-----	48.5	-----	54.0	-----	5.5

Remarks

1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in lie-down positon(X axis) and the worst case was recorded.
2. Peak Result = Reading + c.f(Correction factor)
   Average Result = Reading + c.f(Correction factor) + Duty Cycle Factor
3. Correction factor = Antenna factor + Cable loss - Amp Gain

Worst Case Mode :	802.11ax_HE80
Worst Case Transfer Rate :	MCS 0
Distance of Measurements :	3 Meters
Operating Frequency :	5 985 MHz
Channel :	7

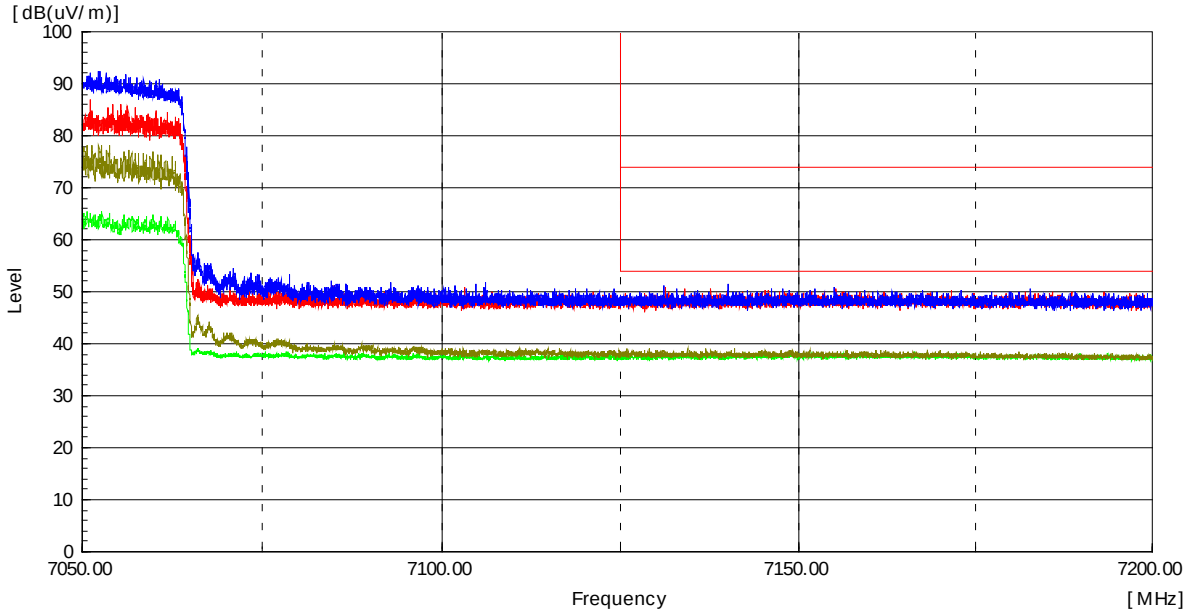


Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]

The emissions above 1 GHz were 20 dB lower than the limit.

Radiated Restricted Band Edge Plot

Worst Case Mode :	802.11ax_HE80
Worst Case Transfer Rate :	MCS 0
Distance of Measurements :	3 Meters
Operating Frequency :	7 025 MHz
Channel :	215



Frequency [MHz]	(P)	Reading PK [dBuV]	Reading AV [dBuV]	c.f [dB(1/m)]	Duty Cycle Factor [dB]	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]

The emissions above 1 GHz were 20 dB lower than the limit.

Radiated Restricted Band Edge Plot

4.8 AC Conducted Emissions

Test Location
Shielded Room

Frequency Range of Measurement
150 kHz to 30 MHz

Instrument Settings
IF Band Width: 9 kHz

Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.
Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit

- **15.207(a)**

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56*	56 to 46*
0.5 ~ 5	56	46
5 ~ 30	60	50

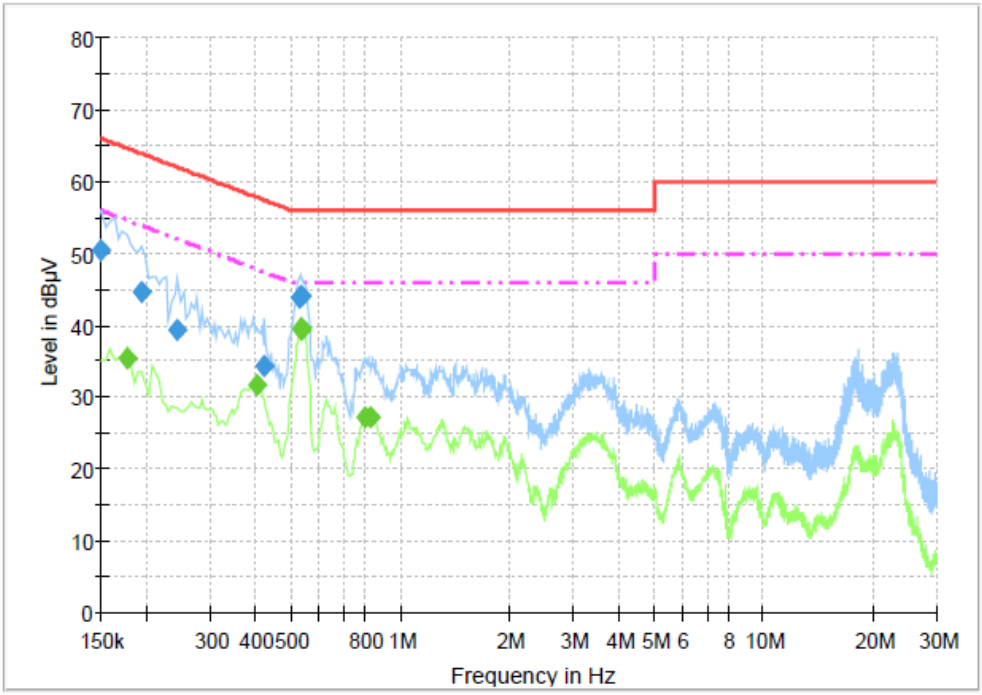
* Decreases with the logarithm of the frequency.

Test Results
The requirements are:

☒ Complies

Test Data

[LINE]
3CE_Class B_L1



Final Result 1

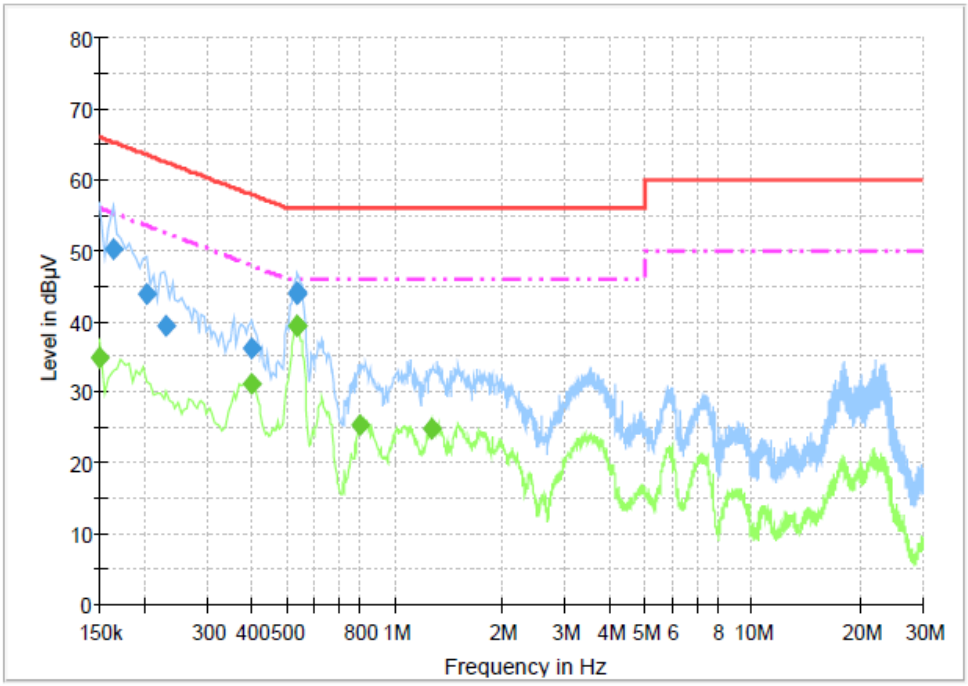
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	50.5	1000.0	9.000	On	L1	9.7	15.5	66.0
0.195000	44.7	1000.0	9.000	On	L1	9.9	19.1	63.8
0.244500	39.4	1000.0	9.000	On	L1	9.7	22.5	61.9
0.424500	34.4	1000.0	9.000	On	L1	9.9	23.0	57.4
0.528000	43.9	1000.0	9.000	On	L1	9.9	12.1	56.0
0.537000	44.1	1000.0	9.000	On	L1	9.9	11.9	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	35.3	1000.0	9.000	On	L1	10.0	19.4	54.6
0.402000	31.7	1000.0	9.000	On	L1	9.9	16.2	47.8
0.532500	39.5	1000.0	9.000	On	L1	9.9	6.5	46.0
0.537000	39.3	1000.0	9.000	On	L1	9.9	6.7	46.0
0.802500	27.1	1000.0	9.000	On	L1	9.8	18.9	46.0
0.829500	27.3	1000.0	9.000	On	L1	9.8	18.7	46.0

[NEUTRAL]

3CE_Class B_N



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	50.1	1000.0	9.000	On	N	10.0	15.2	65.3
0.204000	43.9	1000.0	9.000	On	N	9.8	19.5	63.4
0.231000	39.3	1000.0	9.000	On	N	9.7	23.1	62.4
0.397500	36.2	1000.0	9.000	On	N	9.9	21.7	57.9
0.532500	44.0	1000.0	9.000	On	N	9.9	12.0	56.0
0.537000	43.9	1000.0	9.000	On	N	9.9	12.1	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	34.9	1000.0	9.000	On	N	9.8	21.1	56.0
0.397500	31.2	1000.0	9.000	On	N	9.9	16.7	47.9
0.532500	39.4	1000.0	9.000	On	N	9.9	6.6	46.0
0.537000	39.3	1000.0	9.000	On	N	9.9	6.7	46.0
0.798000	25.4	1000.0	9.000	On	N	9.8	20.6	46.0
1.266000	24.8	1000.0	9.000	On	N	9.8	21.2	46.0

APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date
1	Signal Analyzer	Agilent	N9020A	MY50200512	2020-05-25	2021-05-25
2	Signal Analyzer	Agilent	N9020A	MY48011598	2020-10-12	2021-10-12
3	Signal Generator	Rohde & Schwarz	SMB100A	175528	2021-04-12	2022-04-12
4	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2020-10-20	2021-10-20
5	Bilog Antenna	Schaffner	CBL6111C	2551	2020-05-26	2022-05-26
6	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-126	2020-05-20	2022-05-20
7	6dB Attenuator	R&S	DNF	272.4110.50-2	2020-10-23	2021-10-23
8	6dB Attenuator	BIRD	5W 6dB	1744	2020-12-17	2021-12-17
9	AMPLIFIER	SONOMA	310	291721	2021-01-22	2022-01-22
10	EMI Test Receiver	Rohde & Schwarz	ESU40	100336	2021-01-12	2022-01-12
11	Preamplifier	Agilent	8449B	3008A01504	2020-12-17	2021-12-17
12	Horn Antenna	ETS-Lindgren	3117	00154525	2020-10-14	2021-10-14
13	Horn Antenna	SCHWARZBECK	BBHA9170	00967	2020-06-02	2021-06-02
14	Low Noise Amplifier	TESTEK	TK-PA1840H	200115-L	2020-05-29	2021-05-29
15	LISN	Rohde & Schwarz	ENV216	101235	2021-01-12	2022-01-12
16	Temp&Humi Chamber	ESPEC CORP.	SH-241	92000872	2021-01-21	2022-01-21
17	Combiner/Divider	Weinschel	1580-1	PE428	2020-09-14	2021-09-14
18	Vector Signal Generator	Rohde & Schwarz	SMW200A	102423	2021-04-07	2022-04-07
19	High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G -6SS	11	2020-05-18	2021-05-18

	Cable	Manufacturer	Model No.	Serial No.	Check Date
1	RF Cable	Canare Corporation	L-5D2W	N/A	2020-01-19
2	RF Cable	Junkosha Inc.	MWX221	1510S086	2021-03-31
3	RF Cable	Junkosha Inc.	MWX221	1510S087	2021-03-31
4	RF Cable	HUBER+SUHNER	SUCOFLEX 102	MY073/2	2021-02-20
5	RF Cable	HUBER+SUHNER	SUCOFLEX 104	MY27558/4	2021-02-20
6	RF Cable	HUBER+SUHNER	SUCOFLEX 104	N/A	2021-02-20
7	RF Cable	HUBER+SUHNER	SUCOFLEX 104	MY27573/4	2021-02-20
8	RF Cable	HUBER+SUHNER	SUCOFLEX 106	N/A	2021-02-20
9	RF Cable	HUBER+SUHNER	SUCOFLEX 102	803010/2	2021-02-20
10	RF Cable	HUBER+SUHNER	SUCOFLEX 102	803742/2	2021-02-20
11	RF Cable	HUBER+SUHNER	SUCOFLEX 102	MY2374/2	2021-02-20
12	RF Cable	HUBER+SUHNER	SUCOFLEX 102	MY4728/2	2021-02-20