

RF Exposure Statement

1. LIMITS

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

Frequency range (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
0.3 - 1.34.....	614	1.63	*(100)	30
1.34 - 30.....	824/f	2.19/f	*(180/ f ²)	30
30 - 300.....	27.5	0.073	0.2	30
300 - 1500.....			f/1500	30
1500 - 100.000.....			1.0	30

F = frequency in MHz

* = Plane-wave equivalent power density

2. MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

S = Power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

3. RESULTS

3-1. BT BAND

Max Average output Power at antenna input terminal (dBm)	9.74
Max Average output Power at antenna input terminal (mW)	9.419
Prediction distance (cm)	20.000
Prediction frequency (MHz)	2441.00
Antenna Gain(Peak) (dBi)	0.3100
Antenna Gain(numeric)	1.07399
Power density at prediction frequency (mW/cm ²)	0.002012
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

3-2. BT LE BAND

Max Average output Power at antenna input terminal (dBm)	6.005
Max Average output Power at antenna input terminal (mW)	3.986
Prediction distance (cm)	20.000
Prediction frequency (MHz)	2440.00
Antenna Gain(Peak) (dBi)	0.3100
Antenna Gain(numeric)	1.07399
Power density at prediction frequency (mW/cm ²)	0.000852
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

3-3. DTS (2.4GHz) BAND

Max Average output Power at antenna input terminal (dBm)	19.57
Max Average output Power at antenna input terminal (mW)	90.573
Prediction distance (cm)	20.000
Prediction frequency (MHz)	2412.000
Antenna Gain(Peak) (dBi)	4.43000
Antenna Gain(numeric)	2.77332
Power density at prediction frequency (mW/cm ²)	0.049972
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4. RESULTS (UNII 1 BAND)

4-1 802.11a (5180 ~5240)

Max Peak output Power at antenna input terminal (dBm)	14.9600
Max Peak output Power at antenna input terminal (mW)	31.333
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5240.000
Antenna Gain(typical) (dBi)	4.64000
Antenna Gain(numeric)	2.91072
Power density at prediction frequency (mW/cm ²)	0.018144
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4-2 802.11n 20MHz BW(5180 ~ 5240)

Max Peak output Power at antenna input terminal (dBm)	15.1600
Max Peak output Power at antenna input terminal (mW)	32.810
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5240.00
Antenna Gain(typical) (dBi)	4.64000
Antenna Gain(numeric)	2.91072
Power density at prediction frequency (mW/cm ²)	0.018999
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4-3 802.11n 40MHz BW (5190 ~ 5230)

Max Peak output Power at antenna input terminal (dBm)	17.2500
Max Peak output Power at antenna input terminal (mW)	53.088
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5230.000
Antenna Gain(typical) (dBi)	4.64000
Antenna Gain(numeric)	2.91072
Power density at prediction frequency (mW/cm ²)	0.030742
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4-4 802.11ac 20 MHz BW (5180 ~ 5240)

Max Peak output Power at antenna input terminal (dBm)	15.200
Max Peak output Power at antenna input terminal (mW)	33.113
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5240.00
Antenna Gain(typical) (dBi)	4.6400
Antenna Gain(numeric)	2.91072
Power density at prediction frequency (mW/cm ²)	0.019175
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4-5 802.11ac_40MHz BW (5190~5230)

Max Average output Power at antenna input terminal (dBm)	17.2500
Max Average output Power at antenna input terminal (mW)	53.088
Prediction distance (cm)	20.0000
Prediction frequency (MHz)	5230.000
Antenna Gain(Peak) (dBi)	4.64000
Antenna Gain(numeric)	2.91072
Power density at prediction frequency (mW/cm ²)	0.030742
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4-6 802.11ac_80MHz BW (5210)

Max Average output Power at antenna input terminal (dBm)	11.8700
Max Average output Power at antenna input terminal (mW)	15.382
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5210.00
Antenna Gain(Peak) (dBi)	4.6400
Antenna Gain(numeric)	2.91072
Power density at prediction frequency (mW/cm ²)	0.008907
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5. RESULTS (UNII 2A, 2C BAND)

5-1 802.11a (5260~5320) UNII 2A

Max Average output Power at antenna input terminal (dBm)	16.4500
Max Average output Power at antenna input terminal (mW)	44.157
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5320.00
Antenna Gain(Peak) (dBi)	4.5800
Antenna Gain(numeric)	2.87078
Power density at prediction frequency (mW/cm ²)	0.025219
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-2 802.11a (5500~5720) UNII 2C

Max Average output Power at antenna input terminal (dBm)	16.100
Max Average output Power at antenna input terminal (mW)	40.738
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5500.000
Antenna Gain(Peak) (dBi)	4.55000
Antenna Gain(numeric)	2.85102
Power density at prediction frequency (mW/cm ²)	0.023106
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-3 802.11n 20MHz BW(5260 ~5320) UNII 2A

Max Average output Power at antenna input terminal (dBm)	16.8500
Max Average output Power at antenna input terminal (mW)	48.417
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5320.000
Antenna Gain(Peak) (dBi)	4.58000
Antenna Gain(numeric)	2.87078
Power density at prediction frequency (mW/cm ²)	0.027652
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-4 802.11n 20MHz BW(5500~5270) UNII 2C

Max Average output Power at antenna input terminal (dBm)	16.1100
Max Average output Power at antenna input terminal (mW)	40.832
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5500.00
Antenna Gain(Peak) (dBi)	4.55000
Antenna Gain(numeric)	2.85102
Power density at prediction frequency (mW/cm ²)	0.023160
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-5 802.11ac_20MHz BW(5260~5320) UNII 2A

Max Average output Power at antenna input terminal (dBm)	16.8600
Max Average output Power at antenna input terminal (mW)	48.529
Prediction distance (cm)	20.0000
Prediction frequency (MHz)	5320.000
Antenna Gain(Peak) (dBi)	4.58000
Antenna Gain(numeric)	2.87078
Power density at prediction frequency (mW/cm ²)	0.027716
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-6 802.11ac_20MHz BW(5500~5720) UNII 2C

Max Average output Power at antenna input terminal (dBm)	14.7700
Max Average output Power at antenna input terminal (mW)	29.992
Prediction distance (cm)	20.0000
Prediction frequency (MHz)	5600.000
Antenna Gain(Peak) (dBi)	4.5500
Antenna Gain(numeric)	2.85102
Power density at prediction frequency (mW/cm ²)	0.017011
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-7 802.11n_40MHz BW(5270~5310) UNII 2A

Max Average output Power at antenna input terminal (dBm)	13.6900
Max Average output Power at antenna input terminal (mW)	23.388
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5270.000
Antenna Gain(Peak) (dBi)	4.58000
Antenna Gain(numeric)	2.87078
Power density at prediction frequency (mW/cm ²)	0.013358
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-8 802.11n_40MHz BW(5510~5710) UNII 2C

Max Average output Power at antenna input terminal (dBm)	16.4900
Max Average output Power at antenna input terminal (mW)	44.566
Prediction distance (cm)	20.0000
Prediction frequency (MHz)	5590.000
Antenna Gain(Peak) (dBi)	4.5500
Antenna Gain(numeric)	2.85102
Power density at prediction frequency (mW/cm ²)	0.025277
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-9 802.11ac 40MHz BW(5270~5310) UNII 2A

Max Average output Power at antenna input terminal (dBm)	17.440
Max Average output Power at antenna input terminal (mW)	55.463
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5270.00
Antenna Gain(Peak) (dBi)	4.58000
Antenna Gain(numeric)	2.87078
Power density at prediction frequency (mW/cm ²)	0.031676
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-10 802.11ac 40MHz BW(5510~5710) UNII 2C

Max Average output Power at antenna input terminal (dBm)	16.330
Max Average output Power at antenna input terminal (mW)	42.954
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5270.00
Antenna Gain(Peak) (dBi)	4.5500
Antenna Gain(numeric)	2.85102
Power density at prediction frequency (mW/cm ²)	0.024363
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-11 802.11ac 80MHz BW(5290) UNII 2A

Max Average output Power at antenna input terminal (dBm)	14.220
Max Average output Power at antenna input terminal (mW)	26.424
Prediction distance (cm)	20.0000
Prediction frequency (MHz)	5270.000
Antenna Gain(Peak) (dBi)	4.5800
Antenna Gain(numeric)	2.87078
Power density at prediction frequency (mW/cm ²)	0.015091
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

5-12 802.11ac 80MHz BW(5530~5690) UNII 2C

Max Average output Power at antenna input terminal (dBm)	16.800
Max Average output Power at antenna input terminal (mW)	47.863
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5610.0000
Antenna Gain(Peak) (dBi)	4.55000
Antenna Gain(numeric)	2.85102
Power density at prediction frequency (mW/cm ²)	0.027148
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

6. RESULTS (UNII 3 BAND)

6-1 802.11a (5745 ~5825)

Max Average output Power at antenna input terminal (dBm)	16.8700
Max Average output Power at antenna input terminal (mW)	48.641
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5785.000
Antenna Gain(Peak) (dBi)	4.44000
Antenna Gain(numeric)	2.77971
Power density at prediction frequency (mW/cm ²)	0.026899
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

6-2 802.11n 20MHz BW(5745 ~ 5825)

Max Average output Power at antenna input terminal (dBm)	14.5100
Max Average output Power at antenna input terminal (mW)	28.249
Prediction distance (cm)	20.0000
Prediction frequency (MHz)	5745.000
Antenna Gain(Peak) (dBi)	4.44000
Antenna Gain(numeric)	2.77971
Power density at prediction frequency (mW/cm ²)	0.015622
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

6-3 802.11n 40MHz BW (5755 ~ 5795)

Max Average output Power at antenna input terminal (dBm)	15.7500
Max Average output Power at antenna input terminal (mW)	37.584
Prediction distance (cm)	20.0000
Prediction frequency (MHz)	5755.000
Antenna Gain(Peak) (dBi)	4.44000
Antenna Gain(numeric)	2.77971
Power density at prediction frequency (mW/cm ²)	0.020784
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4-4 802.11ac 20 MHz BW (5745 ~ 5825)

Max Average output Power at antenna input terminal (dBm)	11.9900
Max Average output Power at antenna input terminal (mW)	15.812
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5745.00
Antenna Gain(Peak) (dBi)	4.4400
Antenna Gain(numeric)	2.77971
Power density at prediction frequency (mW/cm ²)	0.008744
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4-5 802.11ac_40MHz BW (5755~5795)

Max Average output Power at antenna input terminal (dBm)	15.8400
Max Average output Power at antenna input terminal (mW)	38.371
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5755.00
Antenna Gain(Peak) (dBi)	4.4400
Antenna Gain(numeric)	2.77971
Power density at prediction frequency (mW/cm ²)	0.021219
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

4-6 802.11ac_80MHz BW (5775)

Max Average output Power at antenna input terminal (dBm)	11.4200
Max Average output Power at antenna input terminal (mW)	13.868
Prediction distance (cm)	20.000
Prediction frequency (MHz)	5775.000
Antenna Gain(Peak) (dBi)	4.4400
Antenna Gain(numeric)	2.77971
Power density at prediction frequency (mW/cm ²)	0.007669
MPE limit for uncontrolled exposure at prediction frequency (mW/cm ²)	1.00000

1. The power density level at 20 cm is **0.049972 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm² at WLAN 2GHz BAND**
2. The power density level at 20 cm is **0.031676 mW/cm²**, which is below the uncontrolled exposure limit of **1.0 mW/cm² at WLAN 5GHz BAND**

->Simultaneous MPE 20cm is $(0.049972 / 1.0) + (0.031676 / 1.0) < 1$

* The Worst case Adapter 2 GHz 2TX MiMO: 19.57 dBm , 5 GHz 2Tx MiMo: 17.44 dBm is
Highest Power