RF exposure

According to FCC part 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in § 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength(V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Average time
(A) Limits for Occupational / Control Exposures				
300 – 1 500	--	--	f/300	6
1 500 - 100000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300 – 1 500	--	--	f/1500	6
1 500 – 100 000	--	--	1	30

f= frequency in MHz

Friis transmission formula: $Pd = (Pout \times G)/(4 \times pi \times R^2)$
 Where,
  Pd = power density in mW/cm²
  Pout = output power to antenna in mW
  G = gain of antenna in linear scale
  Pi = 3.1416
  R = distance between observation point and center of the radiator in cm
  Pd the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Results - Worst case
- 5.2G

Operation mode		Max tune-up Average power (dBm)	Antenna gain (dBi)	Power density at 20 cm(mW/cm²)	Limit (mW/cm²)
802.11ac(VHT20)	SISO	9.00	2.72	0.00296	1
802.11ac(VHT40)	SISO	7.50	2.72	0.00209	1
802.11ac(VHT80)	SISO	8.00	2.72	0.00235	1

- 5.3G

Operation mode		Max tune-up Average power (dBm)	Antenna gain (dBi)	Power density at 20 cm(mW/cm²)	Limit (mW/cm²)
802.11ac(VHT20)	SISO	7.50	2.72	0.00209	1
802.11ac(VHT40)	SISO	7.00	2.72	0.00187	1
802.11ac(VHT80)	SISO	6.50	2.72	0.00166	1

- 5.5G

Operation mode		Max tune-up Average power (dBm)	Antenna gain (dBi)	Power density at 20 cm(mW/cm²)	Limit (mW/cm²)
802.11ac(VHT20)	SISO	8.50	3.45	0.00312	1
802.11ac(VHT40)	SISO	8.50	3.45	0.00312	1
802.11ac(VHT80)	SISO	7.50	3.45	0.00248	1

- 5.8G

Operation mode		Max tune-up Average power (dBm)	Antenna gain (dBi)	Power density at 20 cm(mW/cm²)	Limit (mW/cm²)
802.11ac(VHT20)	SISO	11.00	5.63	0.00916	1
802.11ac(VHT40)	SISO	11.00	5.63	0.00916	1
802.11ac(VHT80)	SISO	10.50	5.63	0.00816	1