

RF EXPOSURE EVALUATION

According to FCC 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/cm ²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

11.1 Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

11.2 Measurement Result

Antenna gain: 5 dBi

802.11b

Channel	Channel Frequency (MHz)	Output Peak power (dBm)	Output Peak power (mW)	Antenna Gain (dBi)	Power density at 20cm (mW/ cm ²)	Power density Limits (mW/cm ²)
1	2412.00	12	15.85	5	0.010	1
6	2437.00	12.2	16.60	5	0.010	1
11	2462.00	12.27	16.87	5	0.011	1

802.11g

Channel	Channel Frequency (MHz)	Output Peak power (dBm)	Output Peak power (mW)	Antenna Gain (dBi)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412.00	15	31.62	5	0.020	1
6	2437.00	14.78	30.06	5	0.019	1
11	2462.00	14.7	29.51	5	0.019	1

802.11n HT20

Chain 0

Channel	Channel Frequency (MHz)	Output Peak power (dBm)	Output Peak power (mW)	Antenna Gain (dBi)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412.00	14.96	31.33	5	0.020	1
6	2437.00	14.67	29.31	5	0.018	1
11	2462.00	14.73	29.72	5	0.019	1

Chain 1

Channel	Channel Frequency (MHz)	Output Peak power (dBm)	Output Peak power (mW)	Antenna Gain (dBi)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
1	2412.00	15.87	38.64	5	0.024	1
6	2437.00	15.63	36.56	5	0.023	1
11	2462.00	15.91	38.99	5	0.025	1

Total

Channel	Channel Frequency (MHz)	Power density at 20cm (mW/cm ²)			Power density Limits (mW/cm ²)
		Chain 0	Chain 1	total	
1	2412.00	0.020	0.024	0.044	1
6	2437.00	0.018	0.023	0.041	1
11	2462.00	0.019	0.025	0.043	1

802.11n HT40

Chain 0

Channel	Channel Frequency (MHz)	Output Peak power (dBm)	Output Peak power (mW)	Antenna Gain (dBi)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
3	2422.00	14.23	26.49	5	0.017	1
6	2437.00	14.57	28.64	5	0.018	1
9	2452.00	14.45	27.86	5	0.018	1

Chain 1

Channel	Channel Frequency (MHz)	Output Peak power (dBm)	Output Peak power (mW)	Antenna Gain (dBi)	Power density at 20cm (mW/ cm ²)	Power density Limits (mW/cm ²)
3	2422.00	15.34	34.20	5	0.021	1
6	2437.00	15.48	35.32	5	0.022	1
9	2452.00	15.67	36.90	5	0.023	1

Total

Channel	Channel Frequency (MHz)	Power density at 20cm (mW/ cm ²)			Power density Limits (mW/cm ²)
		Chain 0	Chain 1	total	
3	2422.00	0.017	0.021	0.038	1
6	2437.00	0.018	0.022	0.04	1
9	2452.00	0.018	0.023	0.041	1