

MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §2.1091 and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission’s guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
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

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Mode	Frequency (MHz)	Antenna Gain		Tune Up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
5G WIFI	5250	6.98	4.99	14.8	30.20	20	0.0300	1.0
	5350	7.56	5.70	14.9	30.90	20	0.0351	1.0
	5725	8.50	7.08	16.3	42.66	20	0.0601	1.0
	5850	8.81	7.60	17.6	57.54	20	0.0870	1.0

Note 1: The tune-up conducted power is declared by the applicant.

Note 2: Antenna Gain: 5G WIFI Band 1: Directional gain=3.98dBi[#]+3dBi[#]=6.98dBi
5G WIFI Band 2: Directional gain=4.56dBi[#]+3dBi[#]=7.56dBi
5G WIFI Band 3: Directional gain=5.50dBi[#]+3dBi[#]=8.50dBi
5G WIFI Band 4: Directional gain=5.81dBi[#]+3dBi[#]=8.81dBi

Note 3: The Bluetooth and WIFI can't transmission simultaneously.

Note 4: The 2.4G Wi-Fi function can't transmit at the same time with the 5G Wi-Fi function.

To maintain compliance with the FCC’s RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance