

Maximum permissible exposure (MPE)

Requirements (15.247(i)):

According to FCC Part 15 C, Section 15.247(i)

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 levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this Chapter.

The maximum total power input to the antenna has been measured conducted as described in clause 5.3 of this document. Through the Friis transmission formula, the known maximum gain of the antenna and the maximum power, the MPE can be calculated in a defined distance away from the product.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
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

Friis transmission formula:
$$P_d = \frac{P_{out} * G}{4 * \prod * r^2}$$

Where

Pd =power density (mW/cm²)

Pout = output power to antenna (mW)

G = gain of antenna (linear scale)

r = distance between antenna and observation point (cm)

Test Data

Channel No.	Frequency	Max power output to antenna		Antenna gain	Power density	Limit of power density
	(MHz)	(dBm)	(mW)	dBi	mW/cm ²	mW/cm ²
CH00	902.75	25.86	385.47	5.5	0.272	0.602
CH24	914.75	25.28	337.29	5.5	0.238	0.610
CH49	927.25	25.48	353.18	5.5	0.249	0.618

According to FCC Rules 47CFR 2.1093(b) the EUT is not a portable device. The EUT is designed to be used that radiating structures are more than 20 cm outside of the body of the user. ($r = 20$ cm).

Note: The manufacturer shall state in the manual the minimum cable length for each antenna. Additionally this shall be stated on the label of the EUT.