1.1. EXPOSURE OF HUMANS TO RADIO FREQUENCY FIELDS [§ 2.1091]

The following criteria shall be used to evaluate the environmental impact of human exposure to RF radiation:

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

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	

f = frequency in MHz * = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi r^2} = \frac{EIRP}{4\pi r^2} \implies r = \sqrt{\frac{PG}{4\pi S}} = \sqrt{\frac{EIRP}{4\pi S}}$$

Where:

P: power input to the antenna in mW

EIRP: Equivalent (effective) isotropic radiated power.

S: power density mW/cm²

G: numeric gain of antenna relative to isotropic radiator

r: distance to center of radiation in cm

MPE Evaluation

Antenna Gain Limit specified by Manufacturer: 0 dBi

Frequency (MHz)	RF Output Power (Peak envelope Power) (Watts)	Duty Cycle for PTT Device
127.500	9.886	50 %

<u>Note 1</u>: RF EXPOSURE DISTANCE LIMITS: $r = (PG/4\Pi S)^{1/2} = (EIRP/4\Pi S)^{1/2}$ S = 1.0 mW/cm² (specified limits for Occupational/Controlled exposure)

$$r = \sqrt{\frac{EIRP}{4\pi S}} = \sqrt{\frac{9886 \cdot 0.5}{4\pi \cdot 1.0}} = 19.83 \approx 20 cm$$

Evaluation of RF Exposure Compliance Requirements			
RF Exposure Requirements	Compliance with FCC Rules		
Minimum calculated separation	Manufacturer's instruction for separation distance between		
distance between antenna and	antenna and persons required: 36 cm		
persons required: 20 cm			