5.8. RF EXPOSURE REQUIREMENTS [§§ 1.1310 & 2.1091] [RSS Gen Sec 5.6 & RSS-102]

5.8.1. Limits

§ **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).

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				
30-300	61.4	0.163	1.0	6
(B) Limits for General Population/Uncontrolled Exposure				
30-300	27.5	0.073	0.2	30

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

Note 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: 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 cannot exercise control over their exposure.

[RSS Gen Sec 5.6 & RSS-102]

RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Reference Period (minutes)
100-6000	$15.60\ f^{0.25}$	$0.04138\ f^{0.25}$	$0.6455 f^{0.5}$	6
Note: f is frequency in MHz.				

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Reference Period (minutes)
48-300	22.06	0.05852	1.291	6
Note: f is frequency in MHz.				

5.8.2. Method of Measurements

Calculation Method of RF Safety Distance:

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

Where, P: power input to the antenna in mW
EIRP: Equivalent (effective) isotropic radiated power.
S: power density mW/cm^2
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

$$r = \sqrt{\frac{PG}{4\pi \cdot S}} = \sqrt{\frac{EIRP}{4\pi \cdot S}}$$

FCC radio frequency exposure limits may be exceeded at distances closer than r cm from the antenna of this device.
Evaluation of RF Exposure Compliance Requirements

Maximum RF Power conducted, **$P_{conducted}$[W]:**	25
Maximum Antenna Gain, **G[dBi]**:	9
Maximum EIRP, **P_{EIRP}[W]**:	198.6
User-based time-average for PTT	50%
FCC MPE Limit for Occupational/Controlled Exposure, **$S_{controlled}$[mW/cm2]**:	1.0
ISED MPE Limit for Occupational/Controlled Exposure, **$S_{controlled}$[mW/cm2]**: $0.6455f^{0.5}$	0.75277
Min Calculated RF Safety Distance for Occupational/Controlled Exposure,**$r_{safety\_controlled}$[cm]**: FCC	45
Min Calculated RF Safety Distance for Occupational/Controlled Exposure, **$r_{safety\_controlled}$[m]**: ISED	0.52
FCC MPE Limit for General Population/Un-controlled Exposure, **$S_{UNcontrolled}$[mW/cm2]**:	0.2
ISED MPE Limit for General Population/Un-controlled Exposure, **$S_{UNcontrolled}$[mW/cm2]**: $0.6455f^{0.5}$	0.1291
Min Calculated RF Safety Distance for General populaton/Uncontrolled Exposure,**$r_{safety\_uncontrolled}$[cm]**: FCC	199
Min Calculated RF Safety Distance for General populaton/Uncontrolled Exposure, **$r_{safety\_uncontrolled}$[m]**: ISED	2.48

User manual specified distance (MPE Radius)=300cm
Calculated power density S for this distance=0.0878 mW/Cm^2 (0.88 W/m^2)