

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

### 5.13.1. 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 <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6

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 <sup>2</sup> )	Reference Period (minutes)
100-6000	15.60 f <sup>0.25</sup>	0.04138 f <sup>0.25</sup>	0.6455 f <sup>0.5</sup>	6
<b>Note:</b> f is frequency in MHz.				

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

### 5.13.2. 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<sup>2</sup>  
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.

### 5.13.3. Evaluation of RF Exposure Compliance Requirements

Note: EUT is specified OCCUPATION ENVIRONMENT ONLY no intended for general population/uncontrolled environment.

Maximum RF Power conducted, $P_{\text{conducted}}[\text{W}]$ :	50
Maximum Antenna Gain, $G[\text{dBi}]$ :	0
Maximum EIRP, $P_{\text{EIRP}}[\text{W}]$ :	50
User-based time-average for PTT	50%
FCC MPE Limit for Occupational/Controlled Exposure, $S_{\text{controlled}}[\text{mW/cm}^2]$ :	1.0
ISED MPE Limit for Occupational/Controlled Exposure, $S_{\text{controlled}}[\text{mW/cm}^2]$ : $0.6455f^{0.5}$	0.75277
Min Calculated RF Safety Distance for Occupational/Controlled Exposure, $r_{\text{safety controlled}}[\text{cm}]$ : FCC	<b>45</b>
Min Calculated RF Safety Distance for Occupational/Controlled Exposure, $r_{\text{safety controlled}}[\text{m}]$ : ISED	<b>0.52</b>

User manual specified distance=60cm

Calculated power density S for this distance=0.552 mW/Cm<sup>2</sup> (5.52 W/m<sup>2</sup>)