

Environmental Assessment

Per CFR 47, section 1.1307.b(1), Table 1, all applications for experimental operations with an ERP greater than 100 watts require evaluation for compliance with human exposure limits defined in section 1.1310, and if exceeded require submission of an Environmental Assessment as defined in section 1.1311.

The below calculations define the minimum safe working distance for both Occupational and General Public, which are based on the maximum permissible exposure limits of 5 mW/cm² and 1 mW/cm² respectively. These calculations were conducted using the highest gain antenna used in this operation.

TX Peak Power (mW)	25000000.00
TX Peak Power (dBm)	73.98
Maximum Antenna Gain dBi	31.00
EIRP (dBm)	104.98
Maximum Duty Cycle (Dc)	1.00
EIRP Watts	31473135.29
Avg EIRP Watts	31473135.29
TX Avg Power mW (Pavg)	
Pp*Dc	25000000.00

Non Dimensional Antenna Gain		
Gt = 10^{dBi/10}	1258.925412	
	Occupational	General Public
Minimum Safe Distance - Meters	225	510

Distance in Centimeters (R)	22500	51000
------------------------------------	-------	-------

AVG Power Density mW/CmCm		
Pd At distance=R		
(Pavg*Gt)/(4*Pi)*R²	4.947264254	0.962919081

Environmental Assessment

TX Peak Power (mW)	1000000.00
TX Peak Power (dBm)	60.00
Maximum Antenna Gain dBi	26.10
EIRP (dBm)	86.10
Maximum Duty Cycle (Dc)	1.00
EIRP Watts	407380.28
Avg EIRP Watts	407380.28
TX Avg Power mW (Pavg)	
Pp*Dc	1000000.00

Non Dimensional Antenna Gain		
Gt = $10^{\text{dBi}/10}$	407.3802778	
	Occupational	General Public
Minimum Safe Distance - Meters	25.5	59.5

Distance in Centimeters (R)	2550	5950
-----------------------------	------	------

AVG Power Density mW/CmCm		
Pd At distance=R		
$(P_{\text{avg}} * G_t) / (4 * \pi) * R^2$	4.985512105	0.915706305

The antenna will be onboard the aircraft in flight. Only authorized occupational workers will be allowed access to the area of operation. In addition the transmitter will be secured prior to conducting maintenance, and the area will be monitored during the operation to ensure that personnel are clear of any radiation hazard area.