

RADIATION HAZARD STATEMENT for Iridium AMS(R)S Systems

An Iridium AMS(R)S system operates at a total transmitter power that is less than that of existing Iridium handsets. The Maximum Permissible Exposure (MPE) for this mobile earth station at a distance of 0.3 meters is calculated as follows:

$$S = \text{EIRP} / 4 \pi R^2$$

Where S = Power Density (Watts / m²)
 EIRP = Radiated power (Watts)
 R = Distance from body (m)

EIRP = max transmit power x Duty cycle
 Transmitter power max = 39dBm (7.943Watts) at antenna
 Duty cycle = 4 time slots * 8.28 ms per transmission / 90 ms per frame = 0.368
 EIRP = 7.943 x 0.368 = 2.92 Watts

$$S = 2.92 \text{ Watts} / 4 \pi (0.3)(0.3) = 2.582 \text{ Watts} / \text{m}^2$$

At 0.3m the power density is less than the 10 Watts/m² requirement for the general population/uncontrolled exposure. All AMS(R)S antennas, which will be mounted on the exterior of airplanes, will be further than 0.3m from the user and the general public in all instances. Further, the AMS(R)S system will transmit only when the aircraft is in flight, so there is no chance of excess exposure to workers positioned on the exterior of the aircraft.

Alternatively, the minimum distance to ensure that the power density is below the 10 Watts/m² requirements for general population/uncontrolled exposure is calculated as follows.

$$R = \sqrt{\text{EIRP} / 4 \pi S} = \sqrt{(2.92 / 4 \pi \times 10)} = 0.152 \text{ meters.}$$