

Exhibit K – Radiation Exposure Information

This section affirms compliance with respect to controlled and uncontrolled exposure limits for MPE/SAR.

Requirements:

The rules concerning RF radiation exposure are covered in 47 CFR §1.1306, §1.1307, §1.1310, §2.1091 and §2.1093.

The TTR-4100 is licensed under 47 CFR Part 87 and therefore falls under 47 CFR §1.1306 which states:

“(a) Except as provided in § 1.1307 (c) and (d), Commission actions not covered by §1.1307 (a) and (b) are deemed individually and cumulatively to have no significant effect on the quality of the human environment and are categorically excluded from environmental processing.”

An Environmental Assessment (EA) is not required for the TTR-4100, however a short Radiation Hazard Assessment is provided below.

Radiation Hazard Assessment:

The TTR-4100 may be evaluated against 47 CFR §1.1310 Table 1 which defines the Maximum Permissible Exposure (MPE) power density limits for 1030 MHZ which falls in the frequency range from 300 to 1,500 MHz as follows:

(A) Occupational/Controlled Exposures	3.43 mW/cm ² over 6 min
(B) General Population/Uncontrolled Exposure	0.69 mW/cm ² over 30 min

The TTR-4100 system antennas are mounted along the fuselage of commercial aircraft. These locations are highly restricted to only airport maintenance personnel and are off limits to the general population. In addition, airline maintenance and ramp operating procedures do not allow the system to utilize the bottom mounted radiating antenna in the airport gate area where maintenance personnel have access to the aircraft. These limited access restrictions place the TTR-4100 under the definition of (A) Occupational/Controlled Exposures which requires a MPE power density limit of 3.43 mW/cm² averaged over a 6 minute time period. The minimum safe operating distance required to meet this limit is calculated below. A worst case scenario is used where the antenna beam from the directional antenna is always pointed in the same direction. In normal operation, this beam will only spend approximately one-quarter of the time in each of the four beam patterns.

$$R = \sqrt{\frac{P_t \times DF \times 10^{10}}{4 \times \pi \times P_D}} = 10.8cm = 0.354ft$$

Where: Peak Transmit Power $P_t = 251$ W
Duty Factor $DF = 2\%$
Antenna Gain $G_t = 0$ dB (Includes aircraft cable loss)
Power Density Limit $P_D = 3.43$ mW/cm²

Compliance Statement:

The TTR-4100 does not exceed the Minimum Permissible Exposure (MPE) limits of 3.43 mW/cm² contained in FCC Section 1.1310 Table 1 when the minimum safe operating distance is observed.