

EXHIBIT A - ANALYSIS OF NON-IONIZING RADIATION

HARMFUL LEVELS OF RADIATION WILL NOT EXIST IN REGIONS NORMALLY OCCUPIED BY PERSONNEL.

CRITERIA: ANSI SPECIFICATIONS REQUIRE THAT PERSONNEL NOT BE EXPOSED TO LEVELS OF NON-IONIZING RADIATION EXCEEDING 5 mW / cm².

THE FOLLOWING ANALYSES SUPPORT THIS DETERMINATION:

FAR FIELD ANALYSIS:

EFFICIENCY	= $\eta = G/(\pi*D/\lambda)^2 = 0.605$
ANTENNA GAIN	= 49.1 dBi (lin 81,283)
ANTENNA DIAMETER	= 2.4 Meters
LAMBDA	= $3*10^8 \text{ Meters} / 14.25*10^9 \text{ Hz} = 0.0210526$
POWER MAX AT FLANGE	= 8 Watts (9 dBW)
DISTANCE TO FAR FIELD	= $2*D^2/\lambda$ = 11.52 / 0.0210526 = 547 Meters
ON-AXIS POWER DENSITY	= $G*P/4*\pi*Far \text{ Field Distance}^2$ = $81,283 * 8 / 12.56637 * 299,209$ = 0.173 W/m ² = 0.017 mW/cm ²

LEVEL IS LESS THAN THE 5 mW/cm² MAXIMUM ANSI LEVEL PERMITTED

NEAR FIELD ANALYSIS (Parallel Beam Region & Transition Region):

PARALLEL BEAM REGION ANALYSIS:

DISTANCE TO END OF PARALLEL BEAM (CYLINDER) REGION:	= $\text{DIAMETER}^2 / 2.5 * \lambda$ = 5.76 / 0.0526315 = 109 Meters
POWER DENSITY AT END OF PARALLEL BEAM REGION	= P / CYLINDRICAL PARALLEL BEAM AREA = 8 / 4.52 = 1.77 W / m ² = 0.18 mW / cm ²

LEVEL IS LESS THAN THE 5 mW/m² MAXIMUM ANSI LEVEL PERMITTED

TRANSITION REGION ANALYSIS:

THIS REGION WILL DECREASE INVERSELY WITH DISTANCE BEGINNING AT THE END OF THE PARALLEL BEAM REGION AND REDUCE TO 0.017 mW / cm²

LEVEL IS LESS THAN THE 5 mW/m² MAXIMUM ANSI LEVEL PERMITTED

MAIN REFLECTOR ANALYSIS:

$$\begin{aligned} &= P / \text{REFLECTOR AREA} \\ &= 8 / 4.52 \\ &= 1.77 \text{ W / m}^2 \\ &= 0.177 \text{ mW/cm}^2 \end{aligned}$$

LEVEL IS LESS THAN THE 5 mW/m² MAXIMUM ANSI LEVEL PERMITTED

FEED TO SUB-REFLECTOR / REFLECTOR ANALYSIS:

$$\begin{aligned} \text{POWER DENSITY AT FEED FLANGE} &= P / \text{FEED AREA} \\ &= 8 / 0.2172 \\ &= 36.8 \text{ W/m}^2 \\ &= 3.68 \text{ mW/cm}^2 \end{aligned}$$

LEVEL IS LESS THAN THE 5 mW/m² MAXIMUM ANSI LEVEL PERMITTED

RF POWER WILL BE TURNED OFF DURING ANY ANTENNA MAINTENANCE REQUIRING PERSONNEL TO OCCUPY ANY HAZARDOUS REGION.

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