

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 = 49.0 dBi (lin 79,433)
ANTENNA DIAMETER = 2.4 Meters
LAMBDA = $3*10^8$ Meters / $14.25*10^9$ Hz = 0.0210526
POWER MAX AT FLANGE = 40 Watts (16.0 dBW)
DISTANCE TO FAR FIELD = $2*D^2/\lambda$
= 11.52 / 0.0210526
= 547 Meters
ON-AXIS POWER DENSITY = $G*P/4*\pi*Far\ Field\ Distance^2$
= $79,433 * 40 / 12.56637 * 299,209$
= 0.845 W/m²
= 0.085 mW/cm²

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:
= DIAMETER² / 2.5 * λ
= 5.76 / 0.0526315
= 109 Meters
POWER DENSITY AT END OF PARALLEL BEAM REGION
= P / CYLINDRICAL PARALLEL BEAM AREA
= 40 / 4.52
= 8.85 W / m²
= 0.089 mW / cm²

LEVEL IS LESS THAN THE 5 mW/cm² 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 0.085 mW / cm²

MAIN REFLECTOR ANALYSIS:

$$\begin{aligned} &= P / \text{REFLECTOR AREA} \\ &= 40 / 4.52 \\ &= 8.85 \text{ W / m}^2 \\ &= 0.089 \text{ mW/cm}^2 \end{aligned}$$

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

FEED TO SUB-REFLECTOR / REFLECTOR ANALYSIS:

$$\begin{aligned} \text{POWER DENSITY AT FEED FLANGE} &= P / \text{FEED AREA} \\ &= 40 / 0.2172 \\ &= 184 \text{ W/m}^2 \\ &= 18.4 \text{ mW/cm}^2 \end{aligned}$$

LEVEL IS GREATER THAN THE 5 mW/m² MAXIMUM ANSI LEVEL PERMITTED.
NO PERSONNEL WILL OCCUPY THE FEED TO SUB TO MAIN REFLECTOR
REGION DURING OPERATION.

**RF POWER WILL BE TURNED OFF DURING ANY ANTENNA MAINTENANCE
REQUIRING PERSONNEL TO OCCUPY ANY HAZARDOUS REGION BETWEEN
THE FEED HORN, SUB-REFLECTOR, REFLECTOR.**

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