

EXHIBIT A - ANALYSIS OF NON-IONIZING RADIATION, 2.4 Meters

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:

ANTENNA DIAMETER	= 2.4 Meters
ANTENNA GAIN	= 41.8 dBi (lin 15,135)
LAMBDA	= 3×10^8 Meters / 6.175×10^9 Hz = 0.048583
EFFICIENCY	= $\eta = G / (\pi \cdot D / \lambda)^2 = 0.63$
POWER MAX AT FLANGE	= 358 Watts (26.5 dBW)
DISTANCE TO FAR FIELD	= $2 \cdot D^2 / \lambda$ = 11.52 / 0.048583 = 237 Meters
ON-AXIS POWER DENSITY	= $G \cdot P / 4 \cdot \pi \cdot \text{Far Field Distance}^2$ = 15,135 * 358 / 12.56637 * 56,169 = 7.68 W/m ² = 0.768 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:
= $\text{DIAMETER}^2 / 2.5 \cdot \lambda$
= 5.76 / 0.12146
= 47.4 Meters

POWER DENSITY AT END OF PARALLEL BEAM REGION
= P / CYLINDRICAL PARALLEL BEAM AREA
= 358 / 4.52
= 79.14 W / m²
= 7.91 mW / cm²

LEVEL IS GREATER than 5 mW/m² MAXIMUM ANSI LEVEL PERMITTED
NO PERSONNEL WILL OCCUPY THIS REGION

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TRANSITION REGION ANALYSIS:

THIS REGION WILL DECREASE INVERSELY WITH DISTANCE BEGINNING AT THE END OF THE PARALLEL BEAM REGION AND WILL NOT EXCEED $7.92 \text{ mW} / \text{cm}^2$

MAIN REFLECTOR ANALYSIS:

$$= P / \text{REFLECTOR AREA}$$

$$= 358 / 4.52$$

$$= 79.2 \text{ W} / \text{m}^2$$

$$= 7.92 \text{ mW/cm}^2$$

LEVEL IS GREATER THAN THE 5 mW/m^2 MAXIMUM ANSI LEVEL PERMITTED.

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

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