EXHIBIT A - ANALYSIS OF NON-IONIZING RADIATION

EXHIBIT A1 - ANALYSES OF NON-IONIZING RADIATION, 2.4 m Ku

HARMFUL LEVELS OF NON-IONIZING 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	= 500 Watts (27.0 dBW)
DISTANCE TO FAR FIELD	= $2*D^2/\lambda$
	= 11.52 / 0.0210526
	= 547 Meters
ON-AXIS POWER DENSITY	= G*P/4*π*Far Field Distance^2
	= 79,433 * 500 / 12.56637 * 299,209
	= 10.56 W/m^2
	= 1.06 mW/cm^2

LEVEL IS LESS THAN THE 5 mW/cm^2 MAXIMUM ANSI LEVEL PERMITTED

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

PARALLEL BEAM REGION ANALYSIS:

DISTANCE TO END OF PARALLEL BEAM (CYLINDER) REGION:

= DIAMETER^2 / 2.5 * λ
= 5.76 / 0.0526315
= 109 Meters

POWER DENSITY AT END OF PARALLEL BEAM REGION

= P / CYLINDRICAL PARALLEL BEAM AREA
= 500 / 4.52
= 110.62 W / m^2
= 11.06 mW / cm^2

LEVEL IS GREATER THAN THE 5 mW/cm^2 MAXIMUM ANSI LEVEL PERMITTED
ANTENNA IS MOUNTED 10' IN THE AIR ON TRUCK, NO PERSONNEL WILL OCCUPY THE PARALLEL BEAM REGION DURING OPERATION.

TRANSITION REGION ANALYSIS:
THIS REGION WILL DECREASE INVERSELY WITH DISTANCE BEGINNING AT THE END OF THE PARALLEL BEAM REGION WITH 11.06 mW / cm^2 AND REDUCE TO 1.06 mW / cm^2

MAIN REFLECTOR ANALYSIS:

= P / REFLECTOR AREA
= 500 / 4.52
= 110.62 W / m^2
= 11.06 mW/cm^2

LEVEL IS GREATER THAN THE 5 mW/cm^2 MAXIMUM ANSI LEVEL PERMITTED ANTENNA IS MOUNTED 10' IN THE AIR ON TRUCK, NO PERSONNEL WILL OCCUPY THE PARALLEL BEAM 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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