RF RADIATION HAZARD ANALYSIS
Exhibit #B

Antenna Diameter, (D) = 1.8 meters / 5.906 Feet
Antenna Surface Area, (Sa) = 2.545 sq meters
Subreflector Diameter, (Ds) = 0 centimeters
KU Wavelength at 14.25 GHz (LAMBDA) = 0.0211 meters
Power at output of VPC flange = 23.01 dB
Path Loss to OMT (IL) = 0.2 dB
Power at OMT, (P) = 191 Watts
Antenna Gain at 14.250 GHz, (G)= 46.7 dBi (2 port antenna gain)
Antenna Gain given in Power Ratio, (Ges) = 4.677E+04
Antenna Aperture Efficiency (N) = 0.698

Region	Radiation Level	Hazard Assessment
Far Field, (Rf) = 92.133 meters / 302.287 Feet	8.375 mW/cm sq	Potential Hazard
Near Field, (Wf) = 38.389 meters / 125.953 Feet	20.962 mW/cm sq	Potential Hazard
Transition Region (Rt) Ru<Rt<Rf	equal to or less than 20.962 mW/cm sq	Potential Hazard
Between Main Reflector and Subreflector (Ws)	N/A (no subreflector)	
Main Reflector Region (Wm)	15.012 mW/cm sq	Potential Hazard
Power Density Between Reflector and Ground	7.506 mW/cm sq	Potential Hazard
Far Field Off Axis (WF)	0.084 mW/cm sq	Meets ANSI Requirements
Near Field Off Axis (WN)	0.21 mW/cm sq	Meets ANSI Requirements

Conclusion: Based on the above analysis, harmful areas of Radiation do exist in areas around the antenna and in the path of the antenna toward the satellite that it is pointed at. The Area occupied by the general public will not exceed the ANSI limit of 1 mW cm sq. because the antenna is mounted on top of the truck, which is at least 8 feet above the ground, and safety increases with look angles used by the Satellites in the United States on Dom. Sat. arch. The areas on the ground and behind the antenna are 100 times less power (20dB) when at a min. of the dia. of the reflector. This is reflected in the Off Axis figures as seen above (WF) & (WN). The SNG will be marked with the standard radiation hazard warnings, and on the antenna itself. The warning signs will warn personnel to avoid the area around and in front of the reflector when the transmitter is operating. To ensure compliance with safety limits, the earth station transmitter will be turned off and marked to remain off whenever maintenance and repair personnel are required to work in the areas of potential hazard as defined in the above study. Additionally the earth station personnel will be trained to insure that the antenna path is clear at all times while the transmitter is in operation. The only access to the roof of the truck is a stored ladder which will only be used when the transmitter is off and not accessible by the general public.

Note: See Exhibit #Ba for how the above calculations were made.

Exhibit Ba Analysis of Non-Ionizing Radiation

Antenna Diameter, (*D*) =	$D :=$ 1.8 meters	$D \cdot 3.281 =$	5.906 Feet
Antenna Surface Area, (*Sa*) =	$Sa := \pi \cdot \frac{D \cdot D}{4}$	$Sa =$	2.545 sq meters
Subreflector Diameter, (*Ds*) =	$Ds :=$ 0 cm	$Ds \cdot .3937 =$	0.000 Inches
Area of Subreflector, (*As*) =	$As := \pi \cdot \frac{Ds \cdot Ds}{4}$	$As =$	0.000 sq cm
Center Frequency, (*Cf*) =	$Cf :=$ 14.250 GHz		
Wavelength at (*Cf*), (*Lambda*) =	$Lambda :=$ 0.0211 meters C-Band = .049 Ku-Band = .0211		
Transmit Power at HPA or VPC Flange, (P1) =	P1 := 200.00 watts	$P2 := \log(P1) \cdot 10$	P2 = 23.010 dB
Path Loss from HPA or VPC to OMT, (IL) =	Loss := 0.2 dB		
Power at OMT, (*P*)=	P3 := P2 - Loss	P3 =	22.810 OMT Pwr in dB
	$P := 10^{\frac{P3}{10}}$	$P =$	191.00 OMT Pwr in watts
Antenna Gain at (*Cf*), (Gain)=	Gain := 46.70 dBi		
Antenna Gain Converted to Power Ratio, (*Ges*)=	$Ges := 10^{\frac{Gain}{10}}$	Ges =	4.677E+04 Ratio
Antenna Aperture Efficiency, (*n*)=	n := 0.6982		

Far Field (*Rf*)=	$Rf := \frac{.60 \cdot (D \cdot D)}{Lambda}$	$Rf =$ $Rf \cdot 3.281 =$	92.133 meters 302.29 feet
Far Field Power Density (*Wf*)=	$Wf := \frac{Ges \cdot P}{4 \cdot \pi \cdot (Rf \cdot Rf)} \cdot .1$	$Wf =$	8.375 mw sq cm
Near Field (*Rn*) =	$Rn := \frac{(D \cdot D)}{4 \cdot Lambda}$	$Rn =$ $Rf \cdot 3.281 =$	38.389 meters 125.953 feet
Near Field Power Density (*Wn*)=	$Wn := \frac{16 \cdot n \cdot P}{\pi \cdot (D \cdot D)} \cdot .1$	$Wn =$	20.962 mw sq cm
Transition Region (*Rt*)=	$Rt := Wn \cdot 1$	$Rt =$	20.962 mw sq cm (Equal to or less than)
Pwr Density at Sub Reflector (*Ws*)=	$Ws := \frac{2 \cdot P}{As} \cdot 1000$		N/A
Main Reflector Region Pwr Density (*Wm*)=	$Wm := \frac{2 \cdot P}{Sa} \cdot .1$	$Wm =$	15.012 mw sq cm
Pwr Density between main reflector and ground (*Wg*)=	$Wg := \frac{P}{Sa} \cdot .1$	$Wg =$	7.506 mw sq cm
Far Field Off Axis (*WF*)=	$WF := Wf \cdot .01$	$WF =$	0.084 mw sq cm
Near Field Off Axis (*WN*)=	$WN := Wn \cdot .01$	$WN =$	0.210 mw sq cm