RF RADIATION ANALYSIS
Exhibit A

Antenna Dia. (D) =	2.4 Meters	7.8744 Feet
Antenna Surface Area (SA) =	4.524 sq meters	
Subreflector Dia. (DS) =	N/A (prime focus offset)	
Subreflector Surface Area (AS) =	N/A	
KU Wavelength at 14.250 GHz (Lambda) =	0.0211 meters	
Power at output of HPA flange =	17.782 dB	
Path Loss to OMT (IL)	0.48 dB	
Power at OMT Flange (P) =	53.722 watts	
Antenna Gain at 14.250 GHz (G) =	49.2 dBi	
Antenna Gain given in Power Ratio (GES)=	8.318E+04	
Antenna Aperture Efficiency (N)=	0.6484	

Region			Radiation Level	Hazard Assessment
Far Field (Rf)	163.791 m	537.4 ft	1.325 mW/cm sq	Potential Hazard
Near Field (Wf)	68.246 m	223.917 ft	3.08 mW/cm sq	Potential Hazard
Transition Region (Rt) Ru<Rt<Rf			equal to or less than 3.08 mW/cm sq	Potential Hazard
Between Main Reflector and Subreflector (Ws)			N/A (no subreflector)	
Main Reflector Region (Wm)			2.375 mW/cm sq	Potential Hazard
Power Density Between Reflector and Ground			1.188 mW/cm sq	Potential Hazard
Far Field Off Axis (WF)			0.013 mW/cm sq	Meets ANSI Requirements
Near Field Off Axis (WN)			0.031 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 at which it is pointed. 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 a mast, which does not have access by the general public. The areas on the ground and behind the antenna are 100 times less power (20 dB) when at a min. of the dia. of the reflector, this is reflected in the Off Axis figures as seen above (WF) & (WN).
The antenna area 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.

See Exhibit B for how the calculations were made

ANALYSIS OF NON-IONIZING RADIATION
Exhibit B

Antenna Diameter (D)	D= 2.4 meters	7.874 Feet
Antenna Surface Area (Sa)	$Sa = \pi \cdot \frac{D \cdot D}{4}$	Sa= 4.524 sq meters
Subreflector diameter (Ds)	Ds=0 cm	Ds = 0 inches
Area of Subreflector (As)	$As = \pi \cdot \frac{Ds \cdot Ds}{4}$	As= 0 sq cm
Center Frequency (Cf)	CF = 14.250 GHz	
Wavelength at (Cf), (Lambda)	Lambda = 0.0211 meters	C band=0.049, Ku band=0.0211m
Transmit Power at HPA or VPC Flange (P1)	P1= 60 watts	$P2 = \log(P1) \cdot 10$ P2= 17.782 db
Path Loss from HPA or VPC to OMT (Loss)	Loss= 0.48 db	
Power at OMT (P)	P3=P2-Loss	P3= 17.302 db
Antenna Gain at (Cf), (Gain)	Gain= 49.2 dBi	
Antenna Gain Converted to Power Ratio, (Ges).	$Ges = 10^{\frac{Gain}{10}}$	Ges= 8.318E+04 Ratio
Antenna Aperature Efficiency (n)	0.6484	
Far Field (Rf)	$Rf = \frac{0.60 \cdot (D \cdot D)}{Lambda}$	Rf= 163.791 meters
Far Field Pwr Density (Wf)	$Wf = \frac{Ges \cdot P}{4 \cdot \pi \cdot (Rf \cdot Rf)} \cdot 0.1$	Wf= 1.325 mw sq cm
Near Field (Rn)	$Rn = \frac{D \cdot D}{4 \cdot Lambda}$	Rn= 68.246 meters
Near Field Pwd Density (Wn)	$Wn = \frac{16 \cdot n \cdot P}{\pi \cdot (D \cdot D)} \cdot 0.1$	Wn= 3.08 mw sq cm
Transition Region (Rt)	$Rt = Wn \cdot 1$	Rt= 3.08 mw sq cm (equal to or less than)
Pwr Density at Sub Reflector (Ws)	(N/A - No subreflector)	
Main Reflector Region Pwr Density (Wm)	$Wm := \frac{2 \cdot P}{Sa} \cdot 0.1$	Wm= 2.375 mw sq cm
Pwr Density between main reflector and ground (Wg)	$Wg := \frac{P}{Sa} \cdot 0.1$	Wg= 1.188 mw sq cm
Far Field Off Axis (WF)	$WF := Wf \cdot 0.01$	WF= 0.013 mw sq cm
Near Field Off Axis (WN)	$WN := Wn \cdot 0.01$	WN= 0.031 mw sq cm