## **Radiation Hazard Analysis**

Operator:	SES				
Location Designation:	Laredo		FCC Callsign:		
County:			SES ID:		
Town:	Laredo		STA:		
State/Zip:	Texas				
Input Values	Value	Unit		Band	Frequency
$D = Aperture \ Diameter$	6.30	Meters		L	1000-2000
d = Subreflector Diameter	0.7	Meters		S	2000-4000
G = Antenna Gain	62.8	dBi		С	4000-8000
FCC Designation	Ka	Band		X	8000-12500
F = Frequency	28.000	GHz		Ки	12500-18000
P = Transmitter Power Watts:	447	Watts		K	18000-25500
$R_{ua} = closest point to uncontrolled area$	50	meters		Ka	26500-40000
Elevation angle at closest point $R_{ua}$	10	Degrees		0	40000-50000
Height (AGL)	2.50	meters		V	50000-75000
OET 65 Calculated Values	Formula	Value	Unit		
<b>OET 65 Calculated Values</b> $\lambda = Wavelength$	Formula <u> c</u> F	Value           0.0107	Unit meters		
OET 65 Calculated Values λ= Wavelength G = Antenna Gain	<i>Formula</i> <i>C</i> <i>F</i> 10 <sup>(G/10)</sup>	Value 0.0107 1905460.718	Unit       meters       (W) linear		
OET 65 Calculated Values $\lambda = Wavelength$ $G = Antenna Gain$ $\eta = Apperture Efficiency$	Formula $\frac{C}{F}$ 10 (G/10) $\frac{G\lambda^2/4\pi}{\pi D^2/4}$	Value 0.0107 1905460.718 56%	Unit meters (W) linear percentage		
OET 65 Calculated Values $\lambda$ = Wavelength $G$ = Antenna Gain $\eta$ = Apperture Efficiency $A$ = Area of reflector	$Formula$ $\frac{c}{F}$ $10^{(G/10)}$ $\frac{G\lambda^{2}/4\pi}{\pi D^{2}/4}$ $\pi R^{2}$	Value 0.0107 1905460.718 56% 31.172	Unit meters (W) linear percentage meters <sup>2</sup>		
OET 65 Calculated Values $\lambda =$ Wavelength $G =$ Antenna Gain $\eta =$ Apperture Efficiency $A =$ Area of reflector $a =$ area of subreflector	$Formula$ $\frac{c}{F}$ $10^{(G/10)}$ $\frac{G\lambda^2/4\pi}{\pi D^2/4}$ $\pi R^2$ $\pi r^2$	Value           0.0107           1905460.718           56%           31.172           3848.451	Unit         meters         (W) linear         percentage         meters <sup>2</sup> cm <sup>2</sup>		
OET 65 Calculated Values $\lambda =$ Wavelength $G =$ Antenna Gain $\eta =$ Apperture Efficiency $A =$ Area of reflector $a =$ area of subreflector $B =$ Near Field Region	$Formula$ $\frac{c}{F}$ $10^{(G/10)}$ $\frac{G\lambda^2/4\pi}{\pi D^2/4}$ $\pi R^2$ $\pi r^2$ $D_2^2$	Value           0.0107           1905460.718           56%           31.172           3848.451           926.718	Unit         meters         (W) linear         percentage         meters <sup>2</sup> cm <sup>2</sup> meters		
OET 65 Calculated Values $\lambda$ = Wavelength $G$ = Antenna Gain $\eta$ = Apperture Efficiency $A$ = Area of reflector $a$ = area of subreflector $R_{nf}$ = Near-Field Region		Value           0.0107           1905460.718           56%           31.172           3848.451           926.718           161	Unit         meters         (W) linear         percentage         meters <sup>2</sup> cm <sup>2</sup> meters         Meters AGL		
OET 65 Calculated Values $\lambda$ = Wavelength         G = Antenna Gain $\eta$ = Apperture Efficiency         A = Area of reflector         a = area of subreflector         R <sub>nf</sub> = Near-Field Region         R = Transition Region	$\begin{tabular}{c} \hline F \\ \hline F \\ \hline 10 \\ \hline (G/10) \\ \hline \hline 0 \\ \hline (G/10) \\ \hline \hline 0 \\ \hline \hline 0 \\ \hline \hline 0 \\ \hline \hline 0 \\ \hline 0 \hline 0$	Value           0.0107           1905460.718           56%           31.172           3848.451           926.718           161           926.718	Unit         meters         (W) linear         percentage         meters <sup>2</sup> cm <sup>2</sup> meters         Meters AGL         >meters		
OET 65 Calculated Values $\lambda$ = Wavelength $G$ = Antenna Gain $\eta$ = Apperture Efficiency $A$ = Area of reflector $a$ = area of subreflector $R_{nf}$ = Near-Field Region $R_{t}$ = Transition Region	$\begin{tabular}{c} \hline F \\ \hline F \\ \hline 10 \\ \hline (G/10) \\ \hline \hline 0 \\ \hline (G/10) \\ \hline \hline 0 \\ \hline \hline 0 \\ \hline \hline 0 \\ \hline 0 \hline 0$	Value 0.0107 1905460.718 56% 31.172 3848.451 926.718 161 926.718 2224.123	Unit         meters         (W) linear         percentage         meters <sup>2</sup> cm <sup>2</sup> meters AGL         >meters <meters< td=""> <meters< td=""></meters<></meters<></meters<></meters<></meters<></meters<></meters<></meters<>		
OET 65 Calculated Values $\lambda$ = Wavelength $G$ = Antenna Gain $\eta$ = Apperture Efficiency $A$ = Area of reflector $a$ = area of subreflector $R_{nf}$ = Near-Field Region $R_{a}$ = Far Field Region	$\begin{tabular}{ c c c c }\hline \hline F \\ \hline F \\ \hline 10 & (G/10) \\\hline \hline 0 & (G/10) \\\hline \hline 10 & (G/10) \\\hline \hline 0 & (G/10) \\\hline 0 & (G/10) \hline\hline 0 & (G/10) \\\hline 0 & (G/10) \hline\hline 0 & (G/10) \\\hline 0 & (G/10) \hline\hline 0 & (G/10)$	Value           0.0107           1905460.718           56%           31.172           3848.451           926.718           161           926.718           2224.123           2224.123	Unit         meters         (W) linear         percentage         meters <sup>2</sup> cm <sup>2</sup> meters         Meters AGL         >meters <meters< td="">         meters         meters</meters<>		

Radiation Analysis Zone		Formula	Level	Value	Exposure Limits	
					General Public	Occupational
					<1mW/cm2	<5mW/cm2
1	1 Power Subreflector	<u>4P</u>	464.603	mW/cm2	>FCC MPE See	>FCC MPE See
-		а			Note 1	Note 2
2	Antonio - Courferen	<u>4P</u>	5.736	mW/cm2	>FCC MPE See	>FCC MPE See
	Antenna Surjace	Α			Note 1	Note 2
2	Main Poflactor Crownd	<u>P</u>	1.434	mW/cm2	>FCC MPE See	<fcc mpe<="" td=""></fcc>
3	3 Main Reflector Ground	Α			Note 1	
4	$S_{nf} = Near-Field Power Density$	<u>4η P</u>	3.199	mW/cm2	>FCC MPE See	<fcc mpe<="" td=""></fcc>
		Α			Note 1	
5	$S_t = Max$ Transition Power Density	$\leq S_{nf}$	3.199	mW/cm2	>FCC MPE See	FCC MDE
					Note 1	<pcc mfe<="" td=""></pcc>
6	$S_{ff} = Max Far field Power Density$	PG	1.370	mW/cm2	>FCC MPE See	
		$4\pi R_{\mu}^2$			Note 3	<fcc mpe<="" td=""></fcc>
7			0.02100	11/ 2	TCC MDE	ECC MDE
1	Off Access Level Near Field	ა <sub>nf</sub> - 20 მB	0.03199	mW/cm2	<fcc mpe<="" td=""><td><fcc mpe<="" td=""></fcc></td></fcc>	<fcc mpe<="" td=""></fcc>

Notes

1. The antenna is installed in a controlled location access is restricted to authorized personnel only. The antenna is marked with RF Radiation Hazard signage.

2. Inside the controlled area, MPE levels exceed the MPE exposure for occupational levels. The levels will be reduced to safe MPE by removing power to the transmitters when work is performed on or around the antenna. This area can only be accessed by qualified personnel.

3. The field develops 2.5 meters above ground level at the minimum elevation angle which is not accessable to the general public.