

Radiation Hazard Analysis

Operator: **SES**
 Location Designation: **HMBJ**
 County: **Wayne**
 Town: **Hawley**
 State/Zip: **PA 18428**

FCC Callsign: _____
 SES ID: _____
 STA: _____

Input Values	Value	Unit
$D = \text{Aperture Diameter}$	13.00	Meters
$d = \text{Subreflector Diameter}$	1.5	Meters
$G = \text{Antenna Gain}$	57.1	dBi
FCC Designation	C	Band
$F = \text{Frequency}$	6.000	GHz
$P = \text{Transmitter Power Watts}$	1500	Watts
$R_{ua} = \text{closest point to uncontrolled area}$	50	meters
Elevation angle at closest point R_{ua}	6.26	Degrees
Height (AGL)	33.10	meters

Band	Frequency
L	1000-2000
S	2000-4000
C	4000-8000
X	8000-12500
Ku	12500-18000
K	18000-25500
Ka	26500-40000
O	40000-50000
V	50000-75000

OET 65 Calculated Values	Formula	Value	Unit
$\lambda = \text{Wavelength}$	$\frac{c}{F}$	0.0500	meters
$G = \text{Antenna Gain}$	$10^{(G/10)}$	512861.384	(W) linear
$\eta = \text{Aperture Efficiency}$	$\frac{G\lambda^2/4\pi}{\pi D^2/4}$	77%	percentage
$A = \text{Area of reflector}$	πR^2	132.732	meters ²
$a = \text{area of subreflector}$	πr^2	17671.459	cm ²
$R_{nf} = \text{Near-Field Region}$	$\frac{D^2}{4\lambda}$	845.564	meters
		92	Meters AGL
$R_t = \text{Transition Region}$	$>R_{nf}$	845.564	>meters
	$<R_{ff}$	2029.353	<meters
$R_{ff} = \text{Far Field Region}$	$\frac{0.6D^2}{\lambda}$	2029.353	meters
		221	Meters AGL

Radiation Analysis Zone	Formula	Level	Value	Exposure Limits	
				General Public	Occupational
				<1mW/cm2	<5mW/cm2
1	Power Subreflector	$\frac{4P}{a}$	339.531	mW/cm2	>FCC MPE See Note 1 >FCC MPE See Note 2
2	Antenna Surface	$\frac{4P}{A}$	4.520	mW/cm2	>FCC MPE See Note 1 <FCC MPE
3	Main Reflector Ground	$\frac{P}{A}$	1.130	mW/cm2	>FCC MPE See Note 1 <FCC MPE
4	$S_{nf} = \text{Near-Field Power Density}$	$\frac{4\eta P}{A}$	3.470	mW/cm2	>FCC MPE See Note 1 <FCC MPE
5	$S_t = \text{Max Transition Power Density}$	$\leq S_{nf}$	3.470	mW/cm2	>FCC MPE See Note 1 <FCC MPE
6	$S_{ff} = \text{Max Far field Power Density}$	$\frac{PG}{4\pi R_{ff}^2}$	1.487	mW/cm2	>FCC MPE See Note 3 <FCC MPE
7	Off Access Level Near Field	$S_{nf} - 20 \text{ dB}$	0.03470	mW/cm2	<FCC MPE <FCC MPE

Notes

- The antenna is installed in a controlled location access is restricted to authorized personnel only. The antenna is marked with RF Radiation Hazard signage.
- 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.
- The field develops 33.1 meters above ground level at the minimum elevation angle which is not accessible to the general public.