

Radiation Hazard Analysis

Operator: **RRmedia DBA MX1**
 Location Designation: **Hawley Teleport**
 County: **Wayne**
 Town: **Hawley**
 State/Zip: **Pennsylvania 18428**

FCC Callsign: _____
 SES ID: _____
 STA: _____

Input Values	Value	Unit
D = Aperture Diameter	4.50	Meters
d = Subreflector Diameter	0.5	Meters
G = Antenna Gain	54.6	dBi
FCC Designation	Ku	Band
F = Frequency	14.125	GHz
P = Transmitter Power Watts:	800	Watts
R _{ua} = closest point to uncontrolled area	50	meters
Elevation angle at closest point R _{ua}	10	Degrees
Height (AGL)	5.50	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
λ = Wavelength	$\frac{c}{F}$	0.0212	meters
G = Antenna Gain	$10^{(G/10)}$	288403.1503	(W) linear
η = Aperture Efficiency	$\frac{G\lambda^2/4\pi}{\pi D^2/4}$	65%	percentage
A = Area of reflector	πR^2	15.904	meters ²
a = area of subreflector	πr^2	1963.495	cm ²
R _{nf} = Near-Field Region	$\frac{D^2}{4\lambda}$	238.518	meters
		41	Meters AGL
R _t = Transition Region	>R _{nf}	238.518	>meters
	<R _{ff}	572.444	<meters
R _{ff} = Far Field Region	$\frac{0.6D^2}{\lambda}$	572.444	meters
		99	Meters AGL

Radiation Analysis Zone	Formula	Level	Value	Exposure Limits		
				General Public	Occupational	
				<1mW/cm2	<5mW/cm2	
1	Power Subreflector	$\frac{4P}{a}$	1629.747	mW/cm2	>FCC MPE See Note 1	>FCC MPE See Note 2
2	Antenna Surface	$\frac{4P}{A}$	20.120	mW/cm2	>FCC MPE See Note 1	>FCC MPE See Note 2
3	Main Reflector Ground	$\frac{P}{A}$	5.030	mW/cm2	>FCC MPE See Note 1	FCC MPE See Note
4	S _{nf} = Near-Field Power Density	$\frac{4\eta P}{A}$	13.080	mW/cm2	>FCC MPE See Note 1	>FCC MPE See Note 2
5	S _t = Max Transition Power Density	≤ S _{nf}	13.080	mW/cm2	>FCC MPE See Note 1	>FCC MPE See Note 2
6	S _{ff} = Max Far field Power Density	$\frac{PG}{4\pi R_{ff}^2}$	5.603	mW/cm2	>FCC MPE See Note 3	FCC MPE See Note
7	Off Access Level Near Field	S _{nf} - 20 dB	0.13080	mW/cm2	<FCC MPE	<FCC MPE

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 5.5 meters above ground level at the minimum elevation angle which is not accessible to the general public.