

**Harris Corporation**  
**Request for Special Temporary Authority**  
**2.4m C Band Temporary Transportable Earth Station**

# **DATASHEET**

Micronet Communications, Inc.  
 720 F Avenue, Suite 100  
 Plano, Texas 75074  
 972-422-7200

File: M1527205

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TECHNICAL CHARACTERISTICS OF TRANSMIT RECEIVE EARTH STATION

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Company: HARRIS CORPORATION  
 Site Name, State: GDC\_ATSI, CT  
 Call Sign:  
 Latitude (NAD83) 41 30 22.9 N  
 Longitude (NAD83) 72 59 50.1 W  
 Elevation AMSL (ft/m) 799.00 243.54  
 Receive Frequency Range (MHz) 3700-4200  
 Transmit Frequency Range (MHz) 5925-6425  
 Range of Satellite Orbital Long. (deg W) 138.00 140.00  
 Range of Azimuths from North (deg) 252.83 254.29  
 Antenna Centerline (ft/m) 10.00 3.05  
 Antenna Elevation Angles (deg) 9.90 8.43

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Equipment Parameters		Receive	Transmit
Antenna Gain, Main Beam	(dbI)	38.00	42.20
15 DB Half Beamwidth	(deg)	1.50	1.00
Antennas	Receive: PRODELIN 2244 (2.4M) Transmit: PRODELIN 2244 (2.4M)		
Max Transmitter Power	(dbW/4KHz)		-11.70
Max EIRP Main Beam	(dbW/4KHz)		30.50
Modulation / Emission Designator	DIGITAL 136KG7W		

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Coordination Parameters		Receive	Transmit
Max Greater Circle Distances	(km)	256.29	136.89
Max Rain Scatter Distances	(km)	439.62	100.00
Max Interference Power Long Term	(dbW)	-140.60	-154.00
Max Interference Power Short Term	(dbW)	-118.40	-130.80
Rain Zone / Radio Zone		2	A

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# **RADIATION HAZARD ANALYSIS**

ANALYSIS OF NON-IONIZING RADIATION  
for HARRIS CORPORATION  
Site: GDC\_ATSI State: CT  
Latitude: 41 30 22.9 Longitude: 72 59 50.1 (NAD83)  
11-12-2015

The Office of Science and Technology Bulletin, No. 65, October 1985 and revised August 1997, specifies that the maximum level of non-ionizing radiation that a person may be exposed to over a six minute period is an average power density equal to 5 mW/cm\*\*2 (five milliwatts per centimeter squared) for a controlled environment. For an uncontrolled environment, the maximum level of non-ionizing radiation that a person may be exposed to over a thirty minute period is an average power density equal to 1 mW/cm\*\*2 (one milliwatt per centimeter squared). It is the purpose of this report to determine the maximum power flux densities of the earth station in the far zone, near zone, transition zone, at the main reflector surface, and between the antenna edge and the ground.

Parameters which were used in the calculations:

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Antenna Diameter, (D) = 2.4000 m  
Antenna Surface Area (Sa) =  $\pi(D^{**2})/4$  = 4.5239 m\*\*2  
Wavelength at 6.1750 GHz ( $\lambda$ ) = 0.0485 m  
Transmit Power at Flange (P) = 2.3000 Watts  
Antenna Gain at Earth Site (GES) = 42.2000 dBi = 16595.8691  
Power Ratio:  
AntiLog(GES/10)  
pi = 3.1415927  
Antenna Aperture Efficiency (n) = 0.6000

### 1. FAR ZONE CALCULATIONS

$$\text{Distance to the Far Zone} \quad (D_f) = \frac{(n) (D^{**2})}{\text{lambda}} = 71.2577 \text{ m}$$

$$\text{Far Zone Power Density} \quad (R_f) = \frac{(GES) (P)}{4 * \text{pi} * (D_f^{**2})} = 0.5982 \text{ W/m}^{**2}$$
$$= 0.0598 \text{ mW/cm}^{**2}$$

### 2. NEAR ZONE CALCULATIONS

Power Flux Density is considered to be at a maximum value throughout the entire length of this Zone. The Zone is contained within a cylindrical volume which has the same diameter as the antenna. Beyond the Near Zone, the Power Flux Density will decrease with distance from the Antenna.

$$\text{Distance to the Near Zone} \quad (D_n) = \frac{D^{**2}}{4 * \text{lambda}} = 29.6907 \text{ m}$$

$$\text{Near Zone Power Density} \quad (R_n) = \frac{16.0 (n) P}{\text{pi} (D^{**2})} = 1.2202 \text{ W/m}^{**2}$$
$$= 0.1220 \text{ mW/cm}^{**2}$$

### 3. TRANSITION ZONE CALCULATIONS

The Power Density begins to decrease with distance in the Transition Zone. While the Power Density decreases inversely with distance in the Transition Zone, the Power Density decreases inversely with the square of the distance in the Far Zone. Since the maximum Power Density in the Transition Zone will not exceed the Near Zone values, it is not calculated.

4. MAIN REFLECTOR ZONE  
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$$\begin{aligned} \text{Main Reflector Power Density} &= \frac{2(P)}{S_a} = 1.0168 \text{ W/m}^2 \\ &= 0.1017 \text{ mW/cm}^2 \end{aligned}$$

5. ZONE BETWEEN THE MAIN REFLECTOR AND THE GROUND  
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Applying uniform illumination of the Main Reflector Surface:

$$\begin{aligned} \text{Main to Ground Power Density} &= \frac{P}{S_a} = 0.5084 \text{ W/m}^2 \\ &= 0.0508 \text{ mW/cm}^2 \end{aligned}$$

CALCULATED SAFETY MARGINS SUMMARY  
AND EVALUATION

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Controlled Safety Margin = 5.0 - Calculated Zone Value (mW/cm\*\*2)  
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Zones	Safety Margins (mW/cm**2)	Conclusions
1. Far Zone	4.9402	Complies with ANSI
2. Near Zone	4.8780	Complies with ANSI
3. Transition Zone	Rf < Rt < Rn	Complies with ANSI
4. Main Reflector Surface	4.8983	Complies with ANSI
5. Main Reflector to Ground	4.9492	Complies with ANSI

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Uncontrolled Safety Margin = 1.0 - Calculated Zone Value (mW/cm\*\*2)  
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Zones	Safety Margins (mW/cm**2)	Conclusions
1. Far Zone	0.9402	Complies with ANSI
2. Near Zone	0.8780	Complies with ANSI
3. Transition Zone	Rf < Rt < Rn	Complies with ANSI
4. Main Reflector Surface	0.8983	Complies with ANSI
5. Main Reflector to Ground	0.9492	Complies with ANSI

6. EVALUATION  
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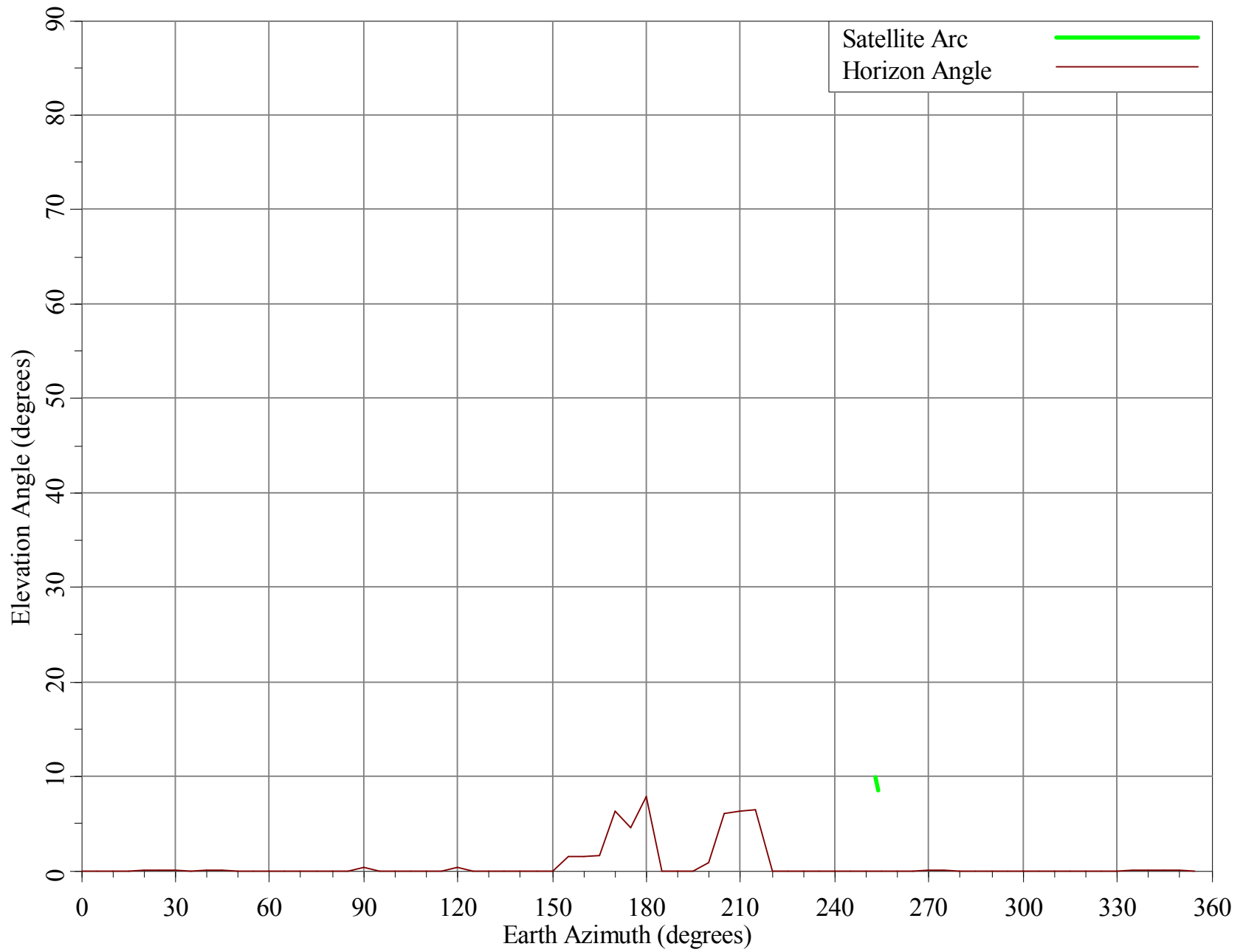
- A. Controlled Environment
  - B. Uncontrolled Environment
- All Zones comply with ANSI Standards.

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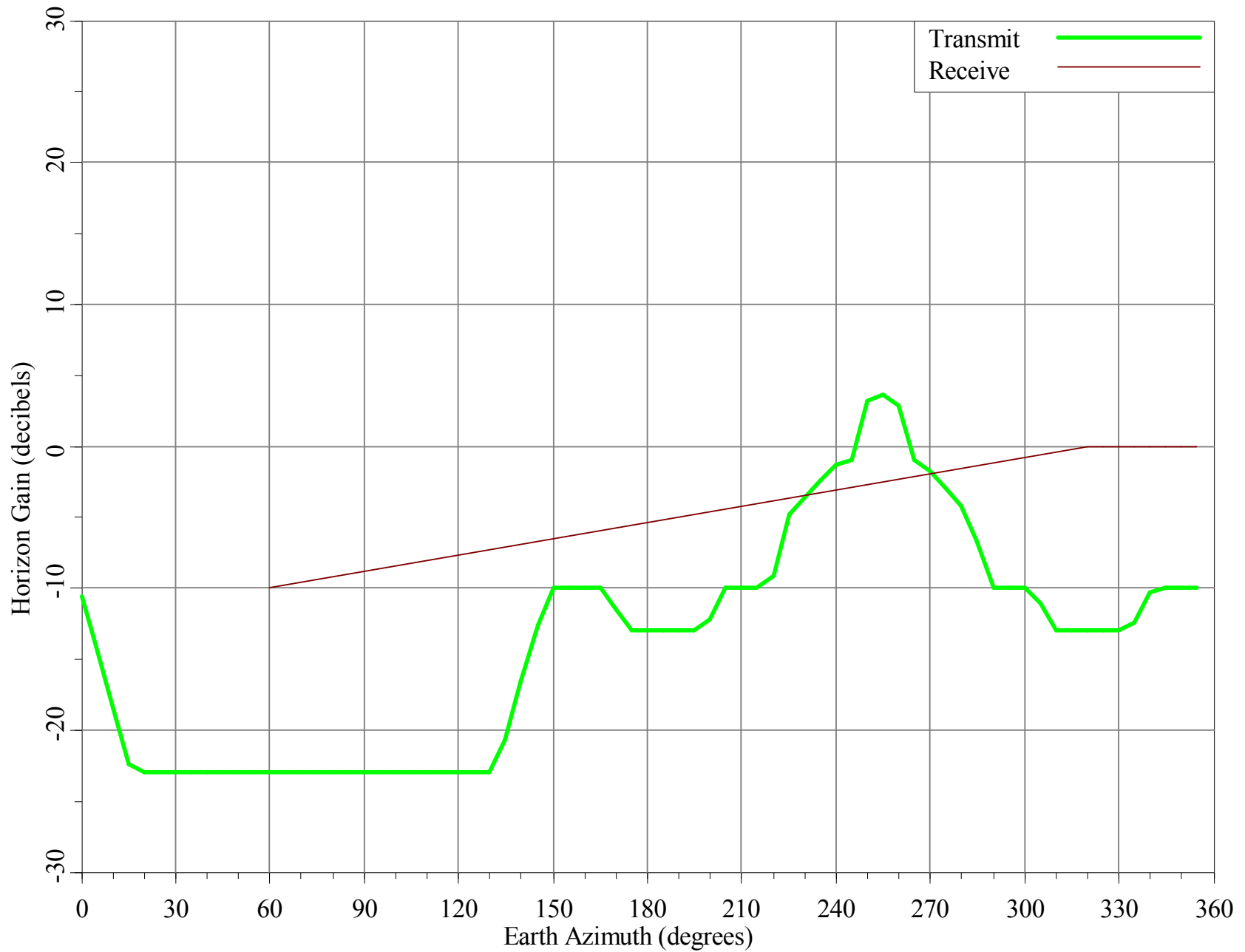
**GRAPHS**



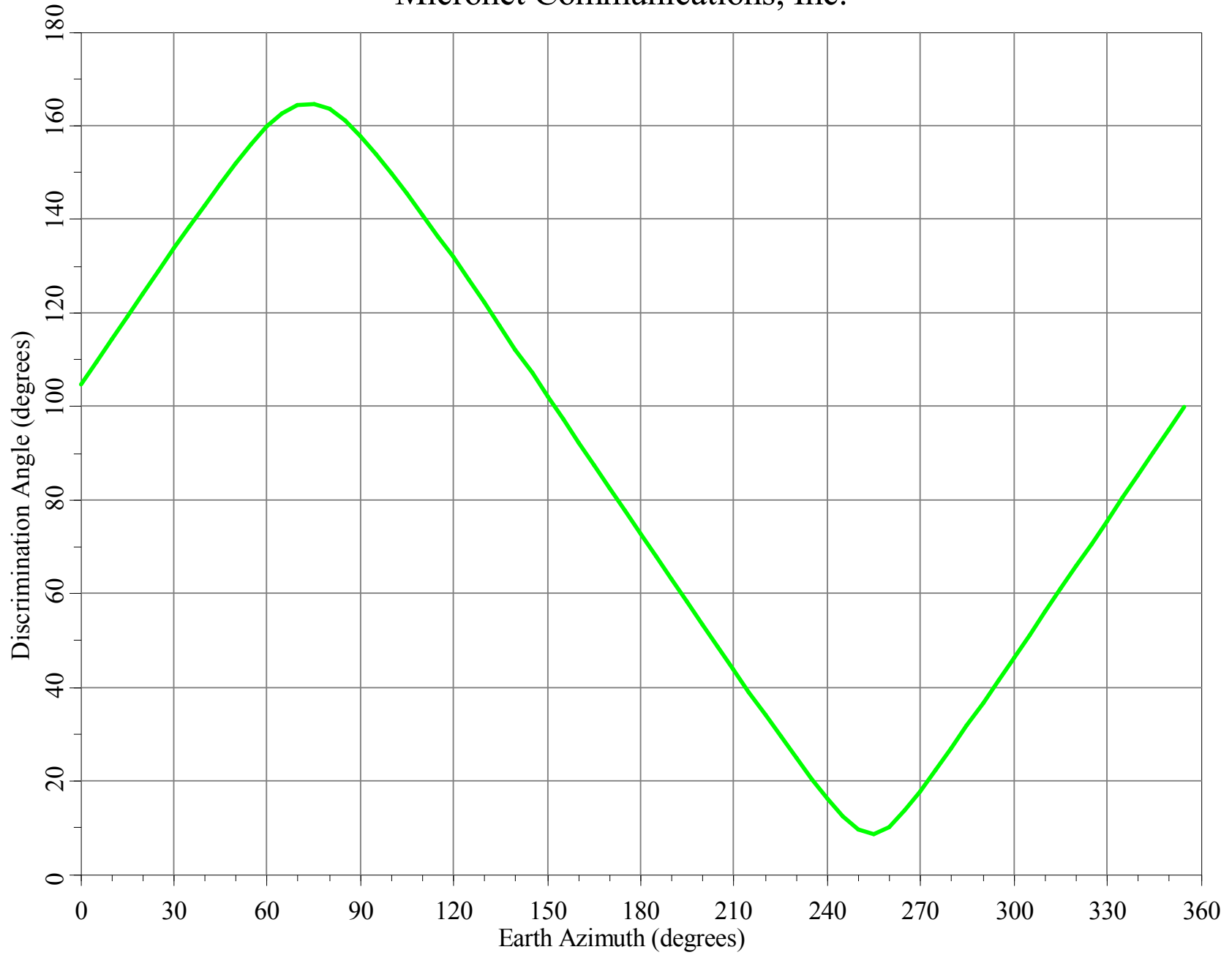
# Horizon Angle & Satellite Arc for GDC\_ATSI, CT Micronet Communications, Inc.



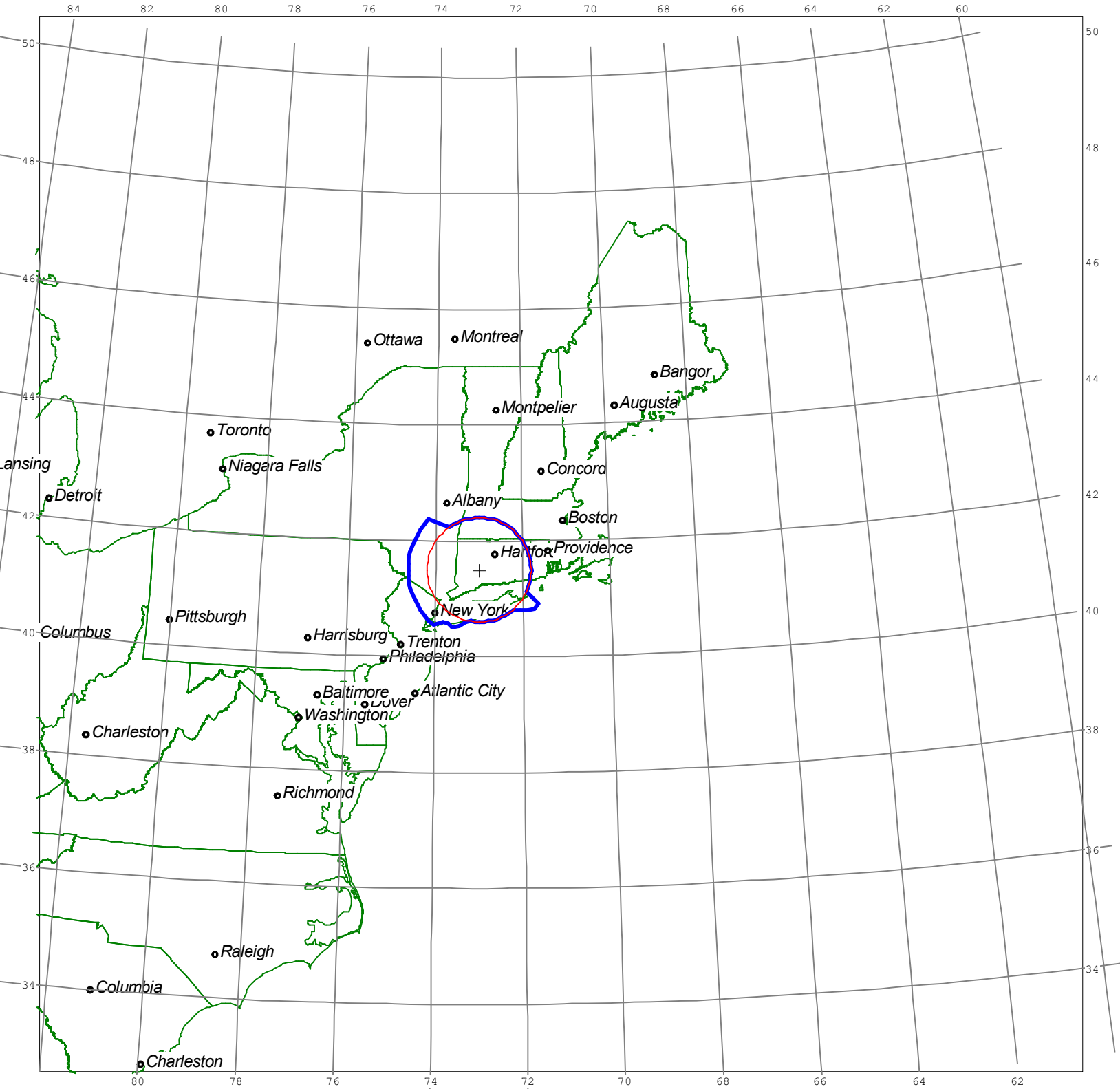
# Horizon Gain for GDC\_ATSI, CT Micronet Communications, Inc.



Minimum Discrimination Angles for GDC\_ATSI, CT  
Micronet Communications, Inc.



# Final Contour & Rain Scatter for GDC\_ATSI, CT - Transmit



# Final Contour & Rain Scatter for GDC ATSI, CT - Receive

SCALE - 1:10000000 1 inch = 157.8 miles

