

**Harris Corporation  
Request For Extension of Special Temporary Authority  
2.4m C Band Temporary Transportable Earth Station  
Anchorage, AK; Lat. 61-09-16.9 N, Long. 149-50-05.4 W**

**REQUEST FOR EXTENSION OF SPECIAL TEMPORARY AUTHORITY**

Harris Corporation ("Harris") hereby requests an additional extension of the FCC Special Temporary Authority ("STA") originally granted to Harris on January 11, 2016 under FCC File No. SES-STA-20151223-00962 and subsequently extended on February 2, 2016 (FCC File No. SES-STA-20160202-00113), and March 15, 2016 (FCC File No. SES-STA-20160308-00200). Harris requests an extension of **thirty days** from the existing STA expiration date of April 15, 2016.

As noted in the original STA request, Harris had proposed and has now deployed a temporary fixed AvL Technologies 2.4M SNG, 2.4 meter antenna C-Band terminal to a location in Anchorage, Alaska in order to support time-critical engineering development work on the FAA's<sup>1</sup> Alaska Satellite Telecommunication Infrastructure (ASTI) modernization program which serves to modernize the National Airspace (NAS) surveillance and FAA Air-to-Ground communications in Alaska. The temporary fixed AvL Technologies 2.4M SNG, 2.4 meter antenna C-Band terminal communicates with the AMC-8 Satellite.

Harris continues to experience technical issues with the multiplexer used in conjunction with the ASTI program which is resulting in timing and synch loss issues. The temporary installation of the AvL Technologies 2.4M SNG, 2.4 meter antenna C-Band terminal in Anchorage, Alaska will continue to provide a platform to evaluate the technical issues associated with the technologies that are being deployed as part of the ASTI program.

On November 19, 2015 Harris requested STA for a temporary fixed C-Band terminal located in Prospect, Connecticut (*See File No. SES-STA-20151119-00854*).<sup>2</sup> That request was also obtained to evaluate and rectify the technical issues associated with the technologies being deployed under the ASTI program. The Anchorage, Alaska temporary fixed C-Band terminal will continue to be utilized in conjunction with the Prospect, Connecticut C-Band terminal.

Harris submits that a grant of this application will serve the public interest because it will assist the FAA's mission of ensuring flight safety and will further the ASTI and NAS modernization programs.

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<sup>1</sup> Harris Corporation, serves as the current FAA Telecommunications Infrastructure contractor (see attached letter).

<sup>2</sup> This STA was most recently extended on March 15, 2016 under File No. SES-STA-20160308-00201 until April 15, 2016. An extension request of that STA is being contemporaneously with this request.

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**FAA CONCURRENCE**



U.S. Department  
of Transportation

800 Independence Ave., S.W.  
Washington, D.C. 20591

**Federal Aviation  
Administration**

ASU330-FTI-06-6219  
18 January 2006

Harris Corporation  
Attn: Elizabeth Briscoe  
Mail Stop F- 11A  
1025 West NASA Boulevard  
Melbourne, FL 32919

Subject: FAA Concurrence for Harris C-Band and Ku-Band License Submissions

Dear Ms. Briscoe:

This letter serves to affirm that Harris Corporation, the FAA Telecommunications Infrastructure contractor, requires C-Band and Ku-Band Satellite Frequency Licenses to meet the FAA's data and voice service requirements from remote locations. FAA Satellite communications are essential to the air traffic control and safety of flight within the National Airspace System (NAS). These licenses will also be used in response to emergency operations such as disaster recovery. Granting these licenses is considered in the best interest of the flying public.

If you have any questions regarding matter, please call me at 202.493.5963.

Sincerely,

//s//

Susan Eicher  
FTI Contracting Officer

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## **COORDINATION/DATA SHEET**

**Micronet Communications, Inc.**

720 F Avenue, Suite 100  
Plano, Texas 75074  
972-422-7200

SUPPLEMENTAL SHOWING PART 101.103(D)

File Number: M1532409  
Licensee: HARRIS CORPORATION

5.93 GHz

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Pursuant to Parts 25.203 and 101.103(d) of the FCC Rules and Regulations, a frequency coordination study was conducted by Micronet Communications, Inc. for the following proposed earth station:

CDLS, AK

The results of the study indicate that no unacceptable interference will result with existing, proposed or prior coordinated radio facilities.

Coordination was performed with existing, proposed and prior coordinated carriers within coordination range on the following dates:

12/07/2015 Original PCN (Expedited response requested by 12/21/2015)  
There were no unresolved interference objections.

The attached coordination data was forwarded on the latest date to the following parties within coordination range or their authorized coordination agents:

ACS LONG DISTANCE LICENSE SUB INC  
ACS OF ANCHORAGE LICENSE SUB INC  
ACS WIRELESS LICENSE SUB INC  
ALASCOM INC  
ALASKA ELECTRIC GENERATION AND TRANSMISSION INC.  
ALASKA PIPELINE COMPANY  
ALASKA PUBLIC TELECOMMUNICATIONS, INC  
ALASKA STATE OF  
AT&T ALASKA  
CHUGACH ELECTRIC ASSOCIATION INC.  
COMSEARCH INC  
ENSTAR NATURAL GAS CO  
GCI COMMUNICATION CORP  
GCI COMMUNICATION CORP.  
MATANUSKA SUSITNA, BOROUGH OF  
MATANUSKA TELEPHONE ASSOCIATION INC  
MICRONET COMMUNICATIONS INC  
MTA COMMUNICATIONS INC DBA MTA WIRELESS INC  
NEW CINGULAR WIRELESS PCS LLC - ALASKA  
NORSTAR PIPELINE COMPANY  
RADIO DYNAMICS  
SINCLAIR BOISE LICENSE LLC  
THE ALASKA WIRELESS NETWORK, LLC  
VERIZON WIRELESS (VAW) LLC  
WIRELESS APPLICATIONS CORP

**Micronet Communications, Inc.**

720 F Avenue, Suite 100  
Plano, Texas 75074  
972-422-7200

SUPPLEMENTAL SHOWING PART 101.103(D)

File Number: M1532409  
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5.93 GHz

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Respectfully Submitted,

A handwritten signature in black ink that reads "Jeremy B. Lewis". The signature is written in a cursive style with a large, sweeping initial 'J'.

Jeremy Lewis  
Systems Engineer

Attached: 1 data sheet

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

File: M1532409

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TECHNICAL CHARACTERISTICS OF TRANSMIT RECEIVE EARTH STATION

=====

Company:	HARRIS CORPORATION		
Site Name, State:	CDLS, AK		
Call Sign:			
Latitude	(NAD83)	61 9	16.9 N
Longitude	(NAD83)	149 50	5.4 W
Elevation AMSL	(ft/m)	186.00	56.69
Receive Frequency Range	(MHz)	3700-4200	
Transmit Frequency Range	(MHz)	5925-6065/6125-6425	
Range of Satellite Orbital Long.	(deg W)	138.00	140.00
Range of Azimuths from North	(deg)	166.55	168.80
Antenna Centerline	(ft/m)	10.00	3.05
Antenna Elevation Angles	(deg)	20.02	20.24

Equipment Parameters		Receive	Transmit
Antenna Gain, Main Beam	(dbI)	38.00	41.60
15 DB Half Beamwidth	(deg)	1.75	1.00
Antennas	Receive: AVL TECHNOLOGIES 2.4M Transmit: AVL TECHNOLOGIES 2.4M		
Max Transmitter Power	(dbW/4KHz)		-11.70
Max EIRP Main Beam	(dbW/4KHz)		29.90
Modulation / Emission Designator	DIGITAL	136KG7W	

Coordination Parameters		Receive	Transmit
Max Greater Circle Distances	(km)	310.17	168.48
Max Rain Scatter Distances	(km)	276.87	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		3	A

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## **RADIATION HAZARD ANALYSIS**



ANALYSIS OF NON-IONIZING RADIATION  
for HARRIS CORPORATION  
Site: CDLS State: AK  
Latitude: 61 9 16.9 Longitude: 149 50 5.4 (NAD83)  
12-22-2015

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:

=====

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) = 41.6000 dBi = 14454.3977  
Power Ratio:  
AntiLog(GES/10)  
pi = 3.1415927  
Antenna Aperture Efficiency (n) = 0.6000

### 1. FAR ZONE CALCULATIONS

=====

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

$$\text{Far Zone Power Density} \quad (R_f) = \frac{(GES) (P)}{4 * \text{pi} * (D_f^{**2})} = 0.5210 \text{ W/m}^{**2}$$
$$= 0.0521 \text{ mW/cm}^{**2}$$

### 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  
=====

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

5. ZONE BETWEEN THE MAIN REFLECTOR AND THE GROUND  
=====

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	4.9479	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	0.9479	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

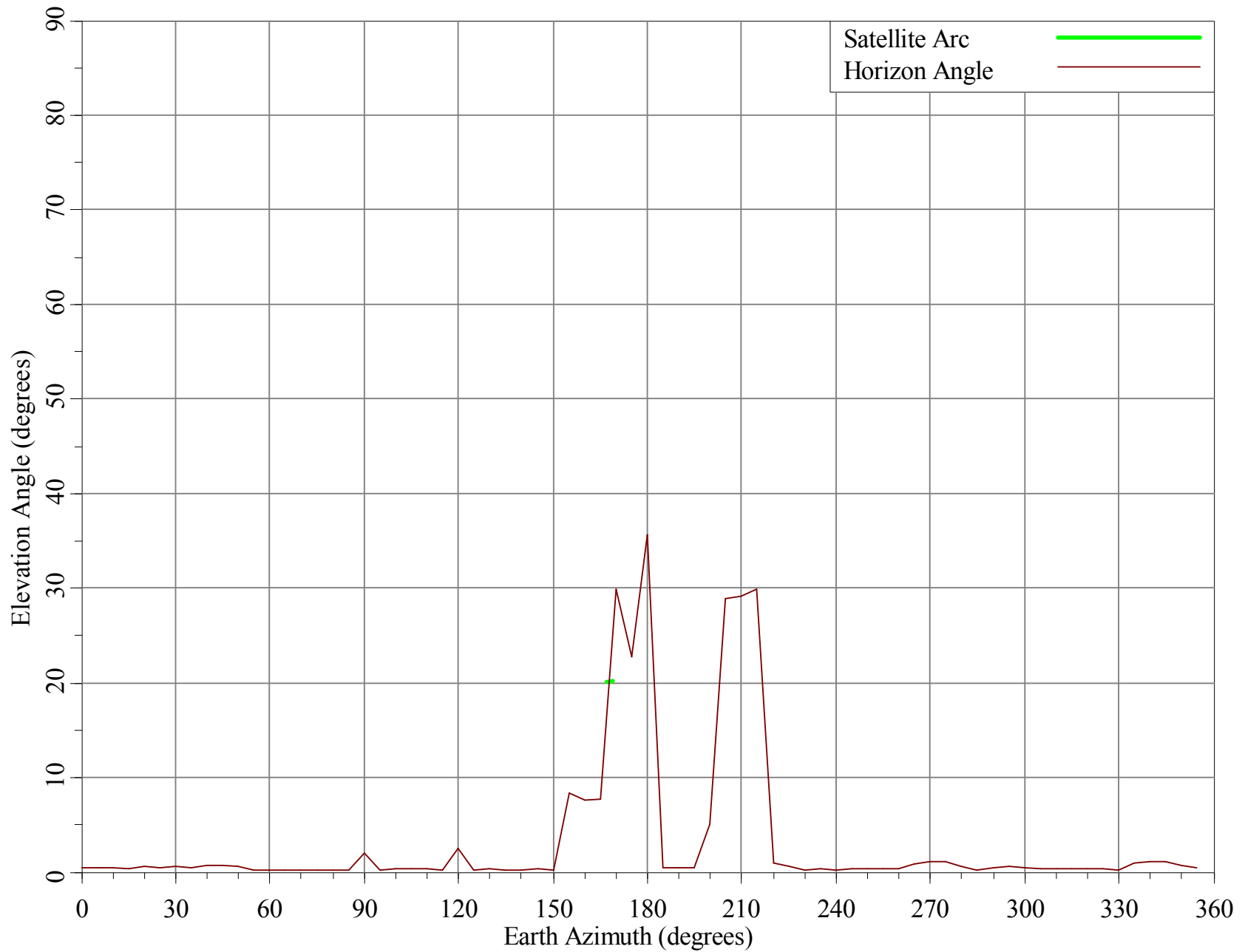
6. EVALUATION  
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- A. Controlled Environment
- B. Uncontrolled Environment
  - All Zones comply with ANSI Standards.

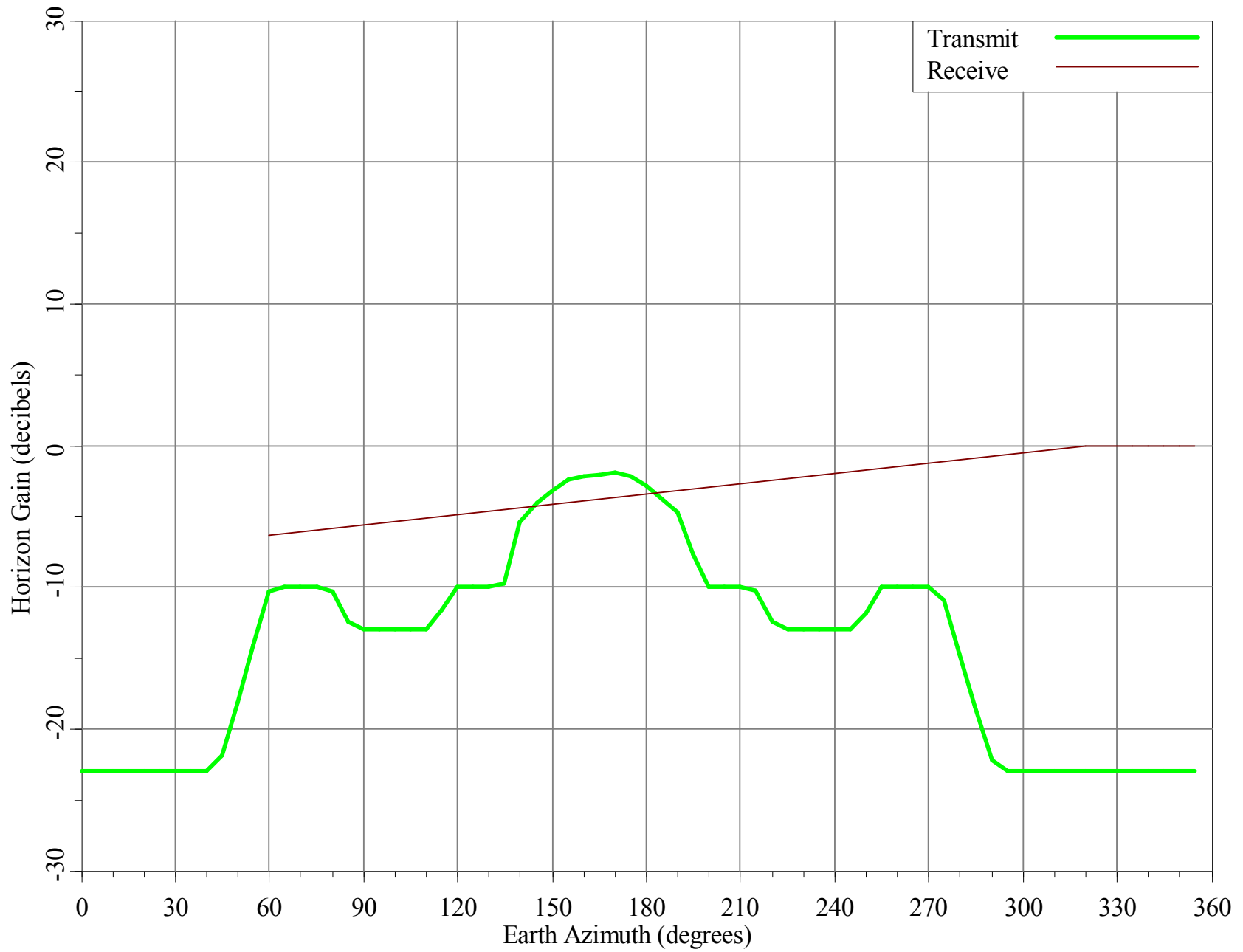
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## **GRAPHS**

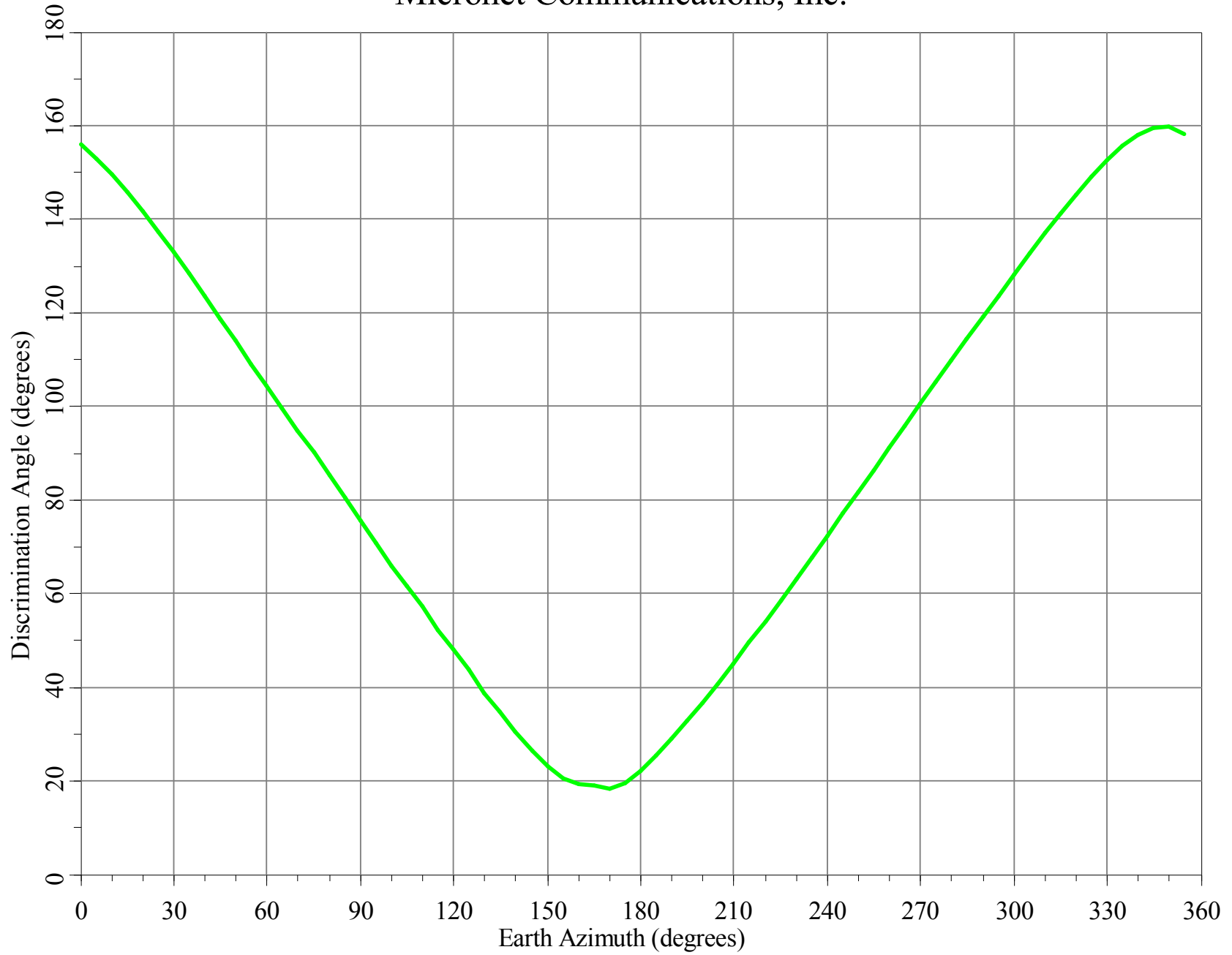
# Horizon Angle & Satellite Arc for CDLS, AK Micronet Communications, Inc.



Horizon Gain for CDLS, AK  
Micronet Communications, Inc.

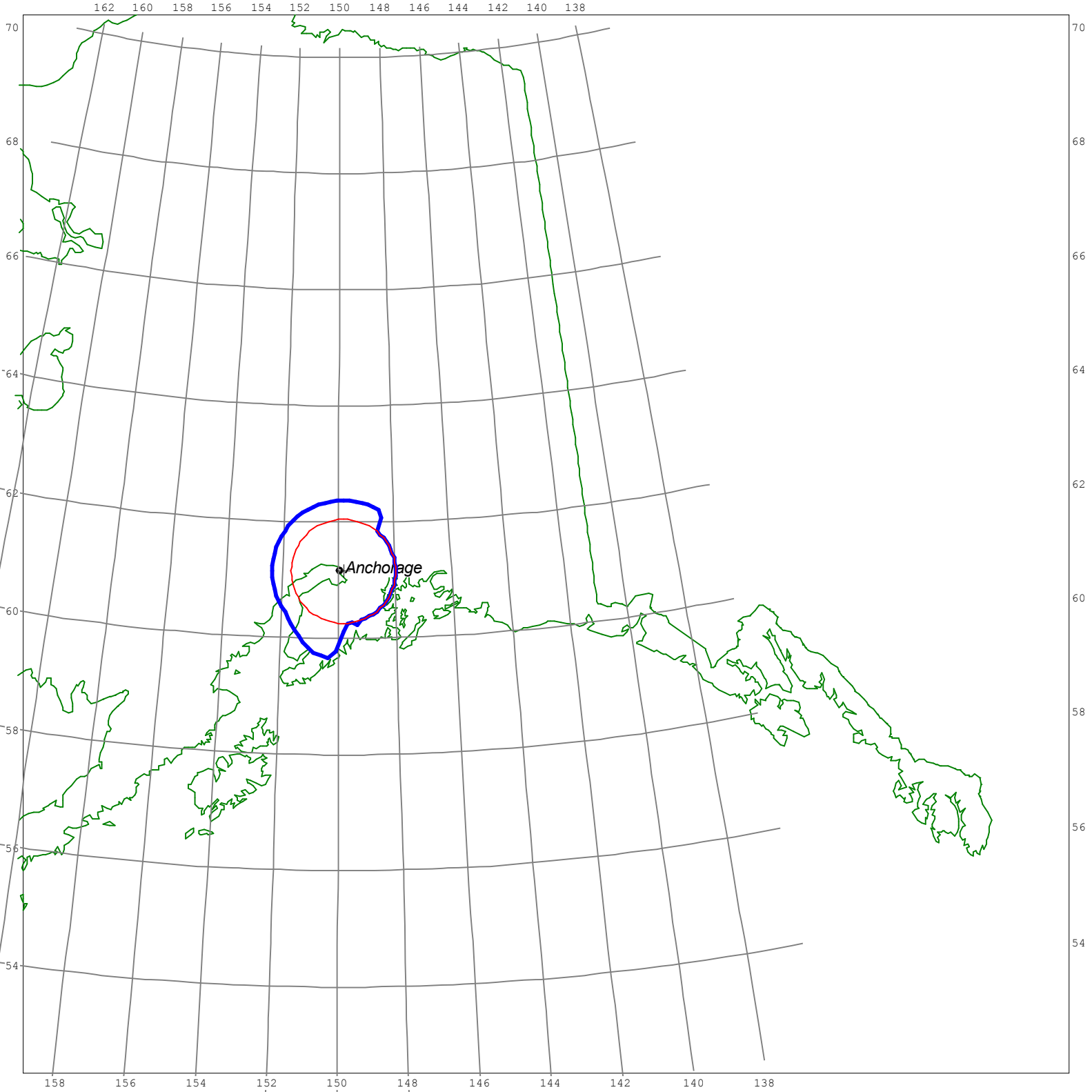
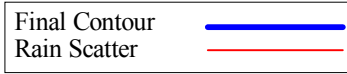


Minimum Discrimination Angles for CDLS, AK  
Micronet Communications, Inc.





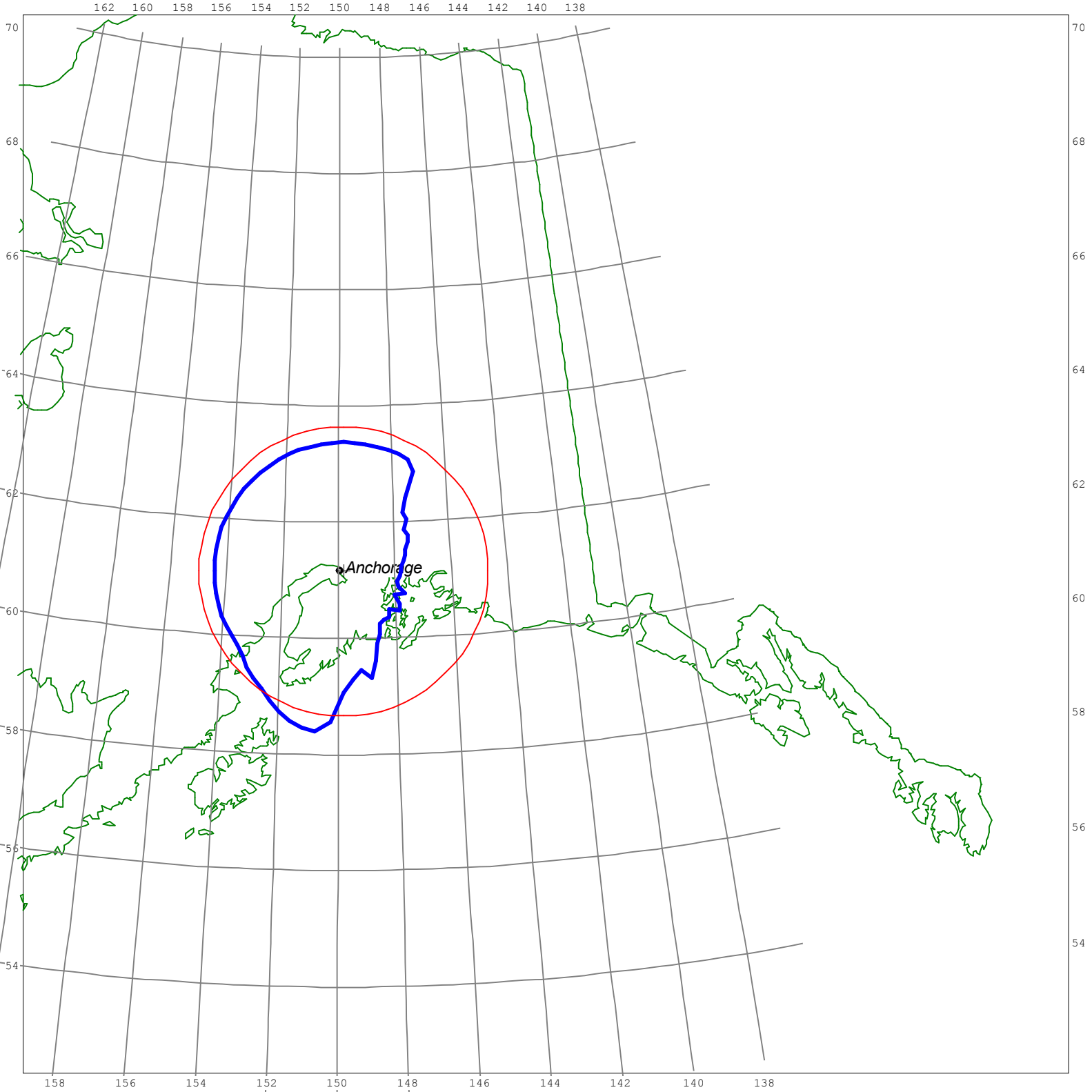
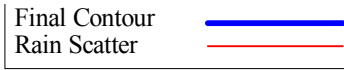
# Final Contour & Rain Scatter for CDLS, AK - Transmit



SCALE - 1:10000000 1 inch = 157.8 miles

# Final Contour & Rain Scatter for CDLS, AK - Receive

SCALE - 1:10000000 1 inch = 157.8 miles



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**NON-COMPLIANT**  
**ANTENNA STATEMENT**

**Harris Corporation  
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**Non-Compliant Antenna Statement**

Re: 2.4 Meter Temporary Fixed Earth Station  
C-Band: 3700 – 4200 MHz and 5925.0 – 6425.0 MHz

Harris Corporation ("Harris" or "Applicant") proposes to use a AvL Technologies model 2.4M SNG, 2.4 meter antenna for its proposed temporary fixed earth station located in Anchorage, AK at the coordinates of 61-09-16.9 N, 149-50-05.4 W. The AvL Technologies 2.4M SNG does not strictly comply with 25.209 of the FCC Rules and Regulations.

Pursuant to the *Part 25 Earth Station Fifth Report and Order*, the International Bureau (Bureau) provides a List of Approved Non-Routine Earth Station Antennas. Specifically the website <http://www.fcc.gov/ib/sd/nresa> lists non-routine earth station antennas licensed for use by one or more U.S. earth station operators since March 15, 2005.

“The Commission has ruled that an Earth station applicant proposing to use an antenna on this list may no longer be required to attach antenna radiation plots as an exhibit to their applications, as required by Section 25.132 (b)(3) of the Commission's rules, 47 C.F.R. § 25.132 (b)(3). Rather, they need only to provide an attachment to their applications citing the particular non-routine earth station antenna they plan to use, and an application file number and call sign of a license in which that type of non-routine antenna has been previously approved.”

Accordingly, Harris submits the application file number and call sign, **File No. SES-LIC-20070427-00529 (Call Sign: E070079)**, of a previously licensed AvL Technologies model 2.4M SNG 2.4 meter earth station, which indicates that the 2.4 meter antenna proposed in this application will operate without conflict.

The applicant agrees to accept any adjacent satellite interference in the 4 GHz receive band as a result of the performance of the antenna in the 1° to 1.5° region. The applicant understands that no adjacent satellite interference protection will be available in the 1° to 1.5° regions. The applicant understands that adjacent satellite interference protection applies only to the extent of the criteria set forth in §25.209. Should the use of this antenna cause interference to other systems; the applicant agrees to terminate transmission upon notice from the Commission.