

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:  
CDLS Anchorage, Alaska STA Extension Request September 2016

**I. Applicant**

**Name:** HARRIS CORPORATION **Phone Number:** 321-727-9234  
**DBA Name:** **Fax Number:** 321-727-9125  
**Street:** 1025 West Nasa Blvd. **E-Mail:** bfitc@harris.com  
**City:** Melbourne **State:** FL  
**Country:** USA **Zipcode:** 32919  
**Attention:** Bruce Fitch



File # SES-STA-2016-0913-00779  
E160127 Call Sign Grant Date 9-21-16  
(or other identifier) Term Dates  
From: 9-25-16 To: 10-25-16  
Approved: \_\_\_\_\_



File # 15-11704100415-00114  
Call Sign E160127 Grant Date 9-21-16  
(or other identifier)  
Term Dates  
From: 9-25-16 To: 10-25-16  
Approved: [Signature]

Applicant: HARRIS CORPORATION  
Call Sign: E160127  
File No.: SES-STA-20160913-00779  
Special Temporary Authority (STA)

Harris Corporation is granted extension of special temporary authority (STA) for 30 days, commencing September 25, 2016, to continue testing a Prodelin 2244, 2.4 meter antenna in Anchorage, Alaska at 61° 09' 16.9" N. L., 149° 50' 05.4" W.L. with AMC-8 satellite (S2379) at the 139° W.L. orbital location in the 5925-6425 MHz (Earth-to-space) and 3700-4200 MHz (space-to-Earth) frequency bands under the following conditions:

1. Operations will not exceed the operational power levels and parameters requested and coordinated.
2. Operations, shall not cause harmful interference to, and shall not claim protection from interference caused to it by any other lawfully operating station and it shall cease transmission(s) immediately upon notice of such interference and notify the FCC in writing.
3. Transmitter(s) must be turned off during antenna maintenance to ensure compliance with the FCC-specified safety guidelines for human exposure to radiofrequency radiation in the region between the antenna feed and the reflector. Appropriate measure must also be taken to restrict access to other regions in which the earth station's power flux density levels exceed the specified guidelines.
4. The licensee shall take all necessary measures to ensure that the antenna does not create potential exposure of humans to radiofrequency radiation in excess of the FCC exposure limits defined in 47 CFR 1.1307 (b) and 1.1310 wherever such exposures might occur. Measures must be taken to ensure compliance with limits for both occupational/controlled exposure and for general population/uncontrolled exposure, as defined in these rule sections. The FCC's OET Bulletin 65 (available on-line at [www.fcc.gov/oet/rfsafety](http://www.fcc.gov/oet/rfsafety)) provides information on predicting exposure levels and on methods for ensuring compliance, including the use of warning and alerting signs and protective equipment for workers.
5. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Harris Corporation's risk.

This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective upon release.

**2. Contact**

**Name:** William LeBeau      **Phone Number:** 202-955-3000  
**Company:** Holland & Knight LLP      **Fax Number:** 202-955-5564  
**Street:** 800 17th Street, NW      **E-Mail:** bill.lebeau@hklaw.com  
Suite 1100  
**City:** Washington      **State:** DC  
**Country:** USA      **Zipcode:** 20006  
**Attention:**      **Relationship:** Legal Counsel

(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)

3. Reference File Number SESSTA-2016071300648 <sup>incorporated</sup> or Submission ID

4a. Is a fee submitted with this application?

If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).

Governmental Entity       Noncommercial educational licensee

Other (please explain):

4b. Fee Classification      CGX – Fixed Satellite Transmit/Receive Earth Station

5. Type Request

Use Prior to Grant

Change Station Location

Other

6. Requested Use Prior Date  
09/25/2016

7. City/Anchorage

8. Latitude  
(dd mm ss.s h)      61 9 16.9 N

9. State AK	10. Longitude (dd mm ss.s h) 149 50 5.4 W
11. Please supply any need attachments. Attachment 1: STA Ext Request Attachment 2: Attachment 3:	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) Harris is requesting a sixty day extension of the previously granted STA to support time-critical engineering development work on the FAA ASTI program. Harris has filed a permanent authority application under File No. SES-LIC-20160712-00637	
13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; for these purposes. Yes <input checked="" type="radio"/> No <input type="radio"/>	
14. Name of Person Signing Harry Lo	15. Title of Person Signing Program Manager
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

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**THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.**



**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 SIXTY DAY 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), March 8, 2016 (FCC File No. SES-STA-20160308-00200), April 11, 2016 (FCC File No. SES-STA-20160411-00335), May 11, 2016 (FCC File No. SES-STA-20160511-00409), June 13, 2016 (FCC File No. SES-STA-20160613-00498), and July 15, 2016 (FCC File No. SES-STA-20160715-00661). Harris requests an extension of **sixty days** from the existing STA expiration date of September 24, 2016 pursuant to Section 25.120(b)(3) of the Commissions Rules. On July 12, 2016 Harris filed a request for regular authority to operate the temporary fixed earth station referenced herein (FCC File No. SES-LIC-20160712-00637). That application was accepted for filing on FCC Public Notice Report SES-01879 (released August 24, 2016) and remains pending.

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 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. As noted above, Harris has filed for permanent authority of the temporary fixed earth station and plans to utilize the station in conjunction with the ATSI 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. This terminal was no longer needed thus the STA for that was allowed to expire.

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 July 13, 2016 under File No. SES-STA-20160713-00648 until August 18, 2016.

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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



**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**

## **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)

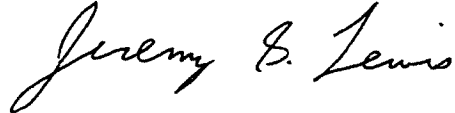
File Number: M1532409  
Licensee: HARRIS CORPORATION

5.93 GHz

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Respectfully Submitted,



Jeremy Lewis  
Systems Engineer

Attached: 1 data sheet

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

File: M1532409

=====

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

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

## **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

=====

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

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

### 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.

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

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

### 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

-----  
Controlled Safety Margin = 5.0 - Calculated Zone Value (mW/cm\*\*2)  
-----

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

-----  
Uncontrolled Safety Margin = 1.0 - Calculated Zone Value (mW/cm\*\*2)  
-----

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

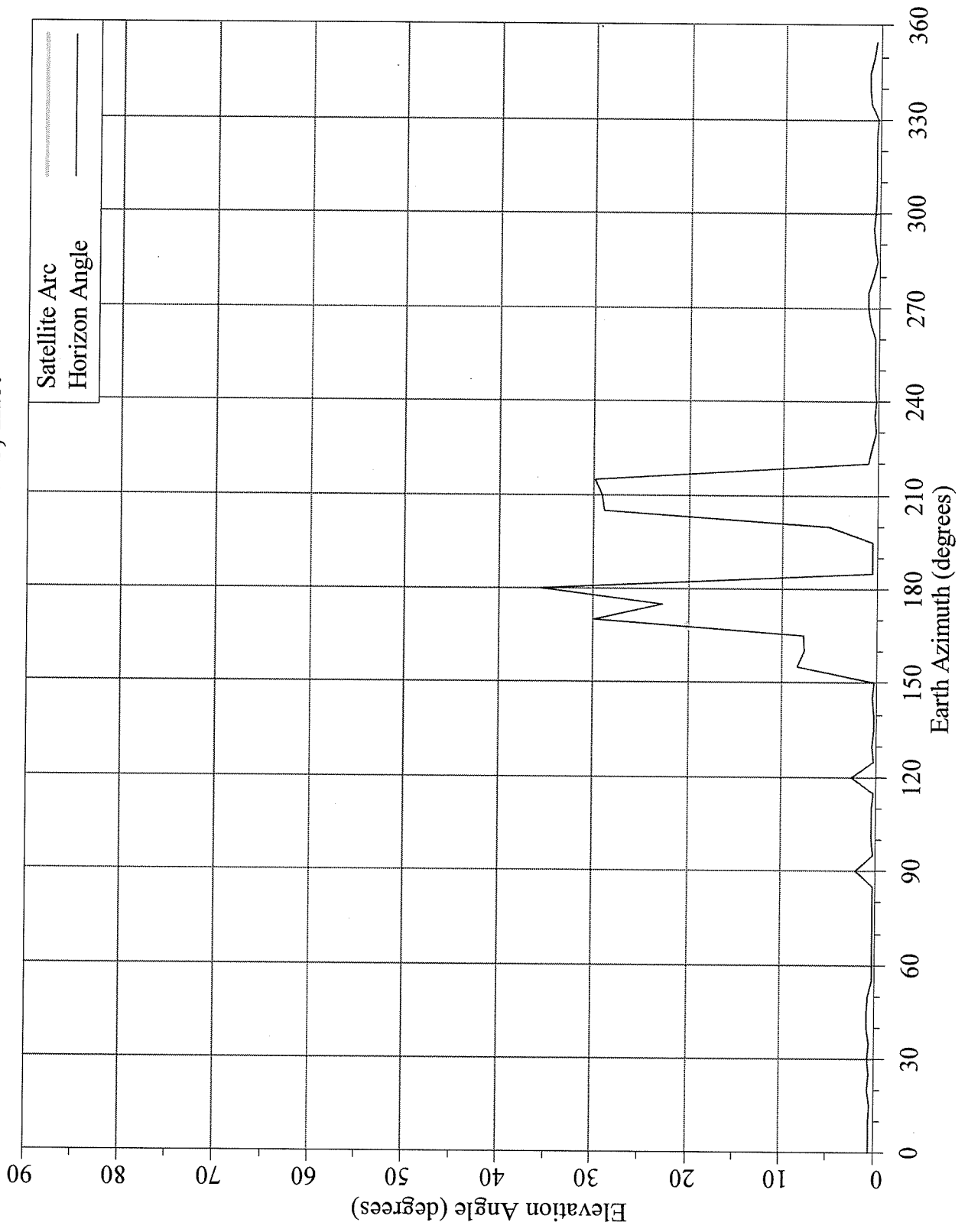
6. EVALUATION  
=====

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

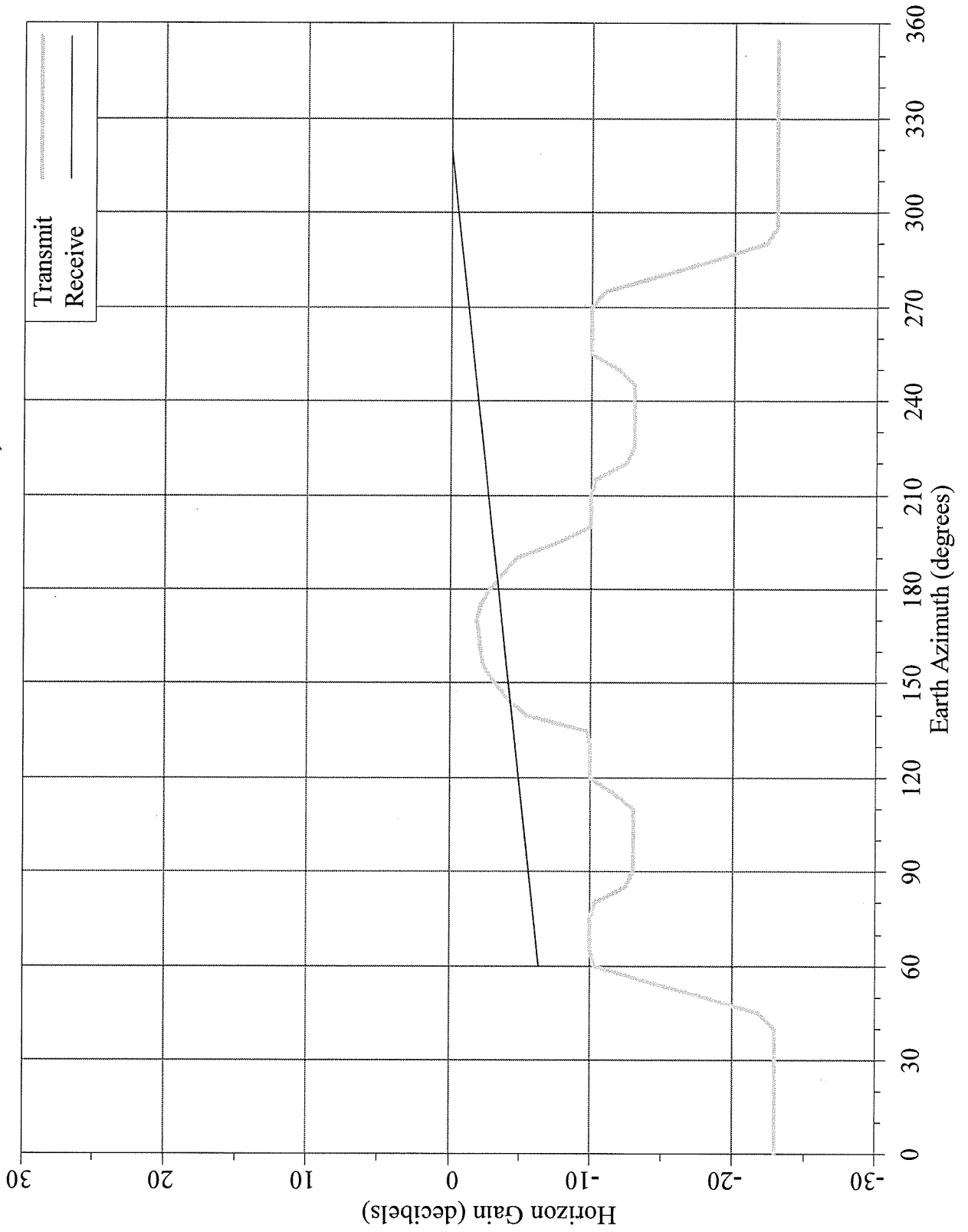
**Harris Corporation**  
**Request For Extension of Special Temporary Authority**  
**2.4m C Band Temporary Transportable Earth Station**  
**Anchorage, AK; Lat. 61-09-16.9 N, Long. 149-50-05.4 W**

## **GRAPHS**

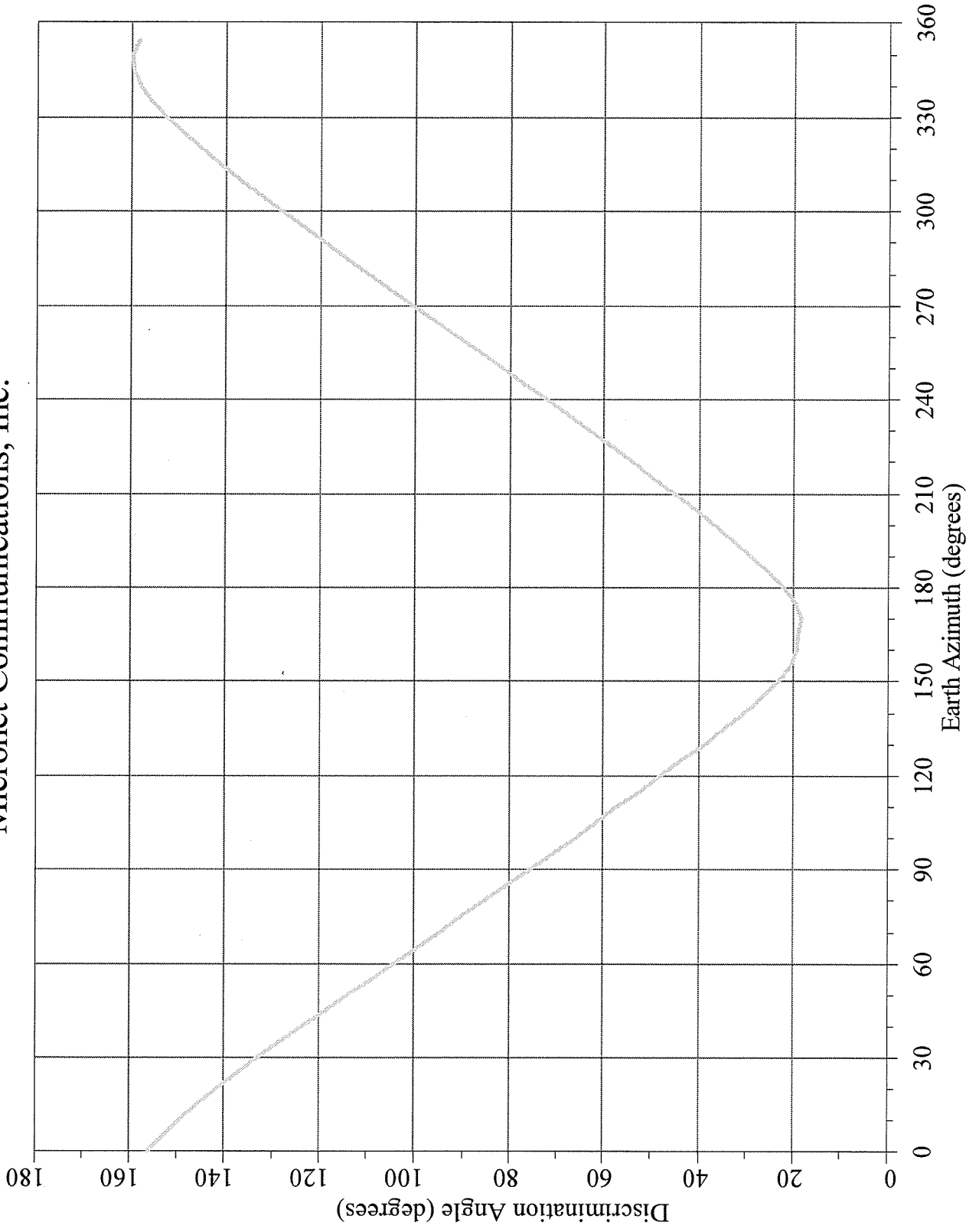
# Horizon Angle & Satellite Arc for CDLS, AK Micronet Communications, Inc.



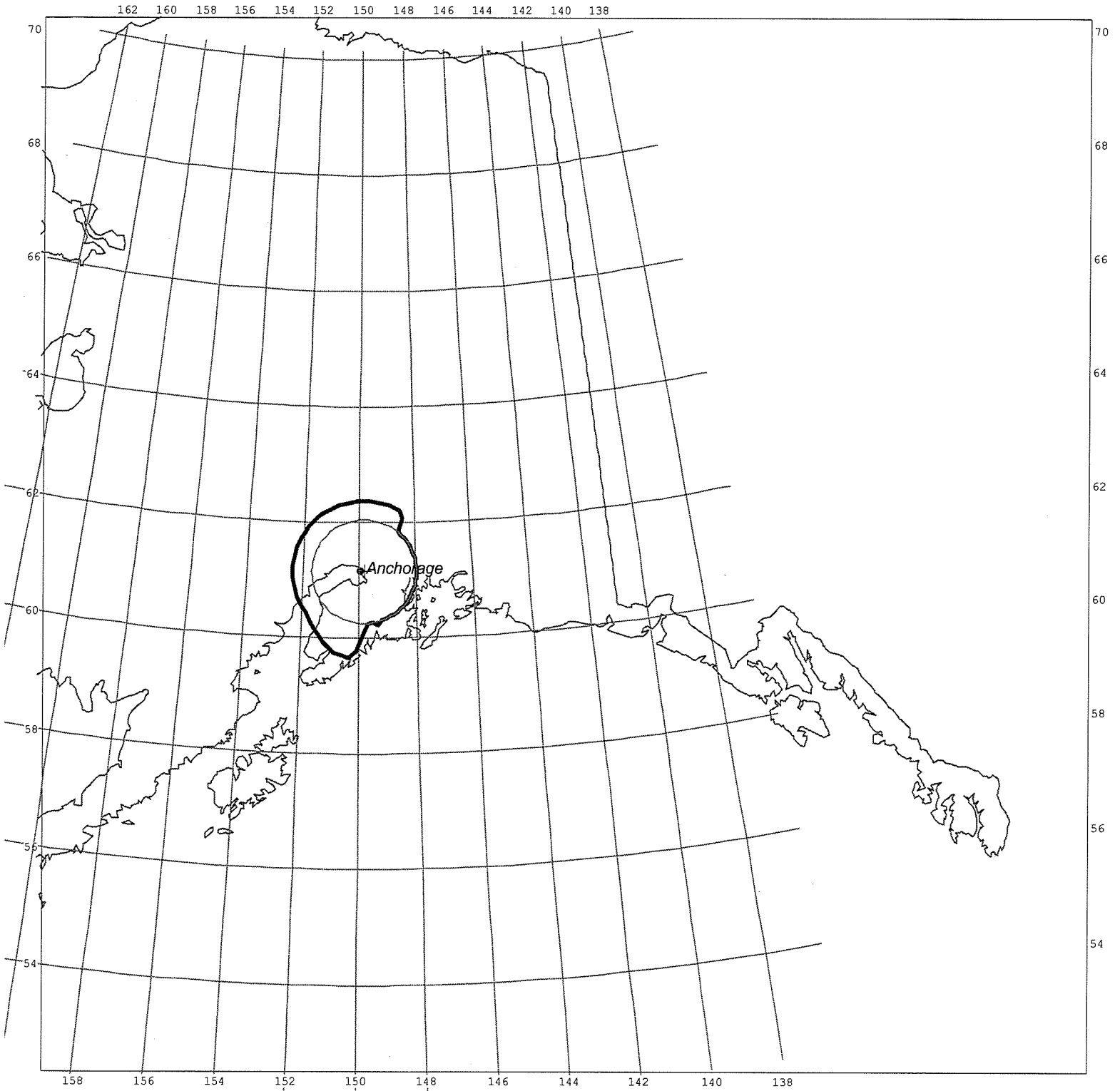
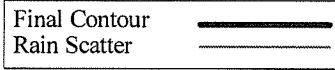
# Horizon Gain for CDLS, AK Micronet Communications, Inc.



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

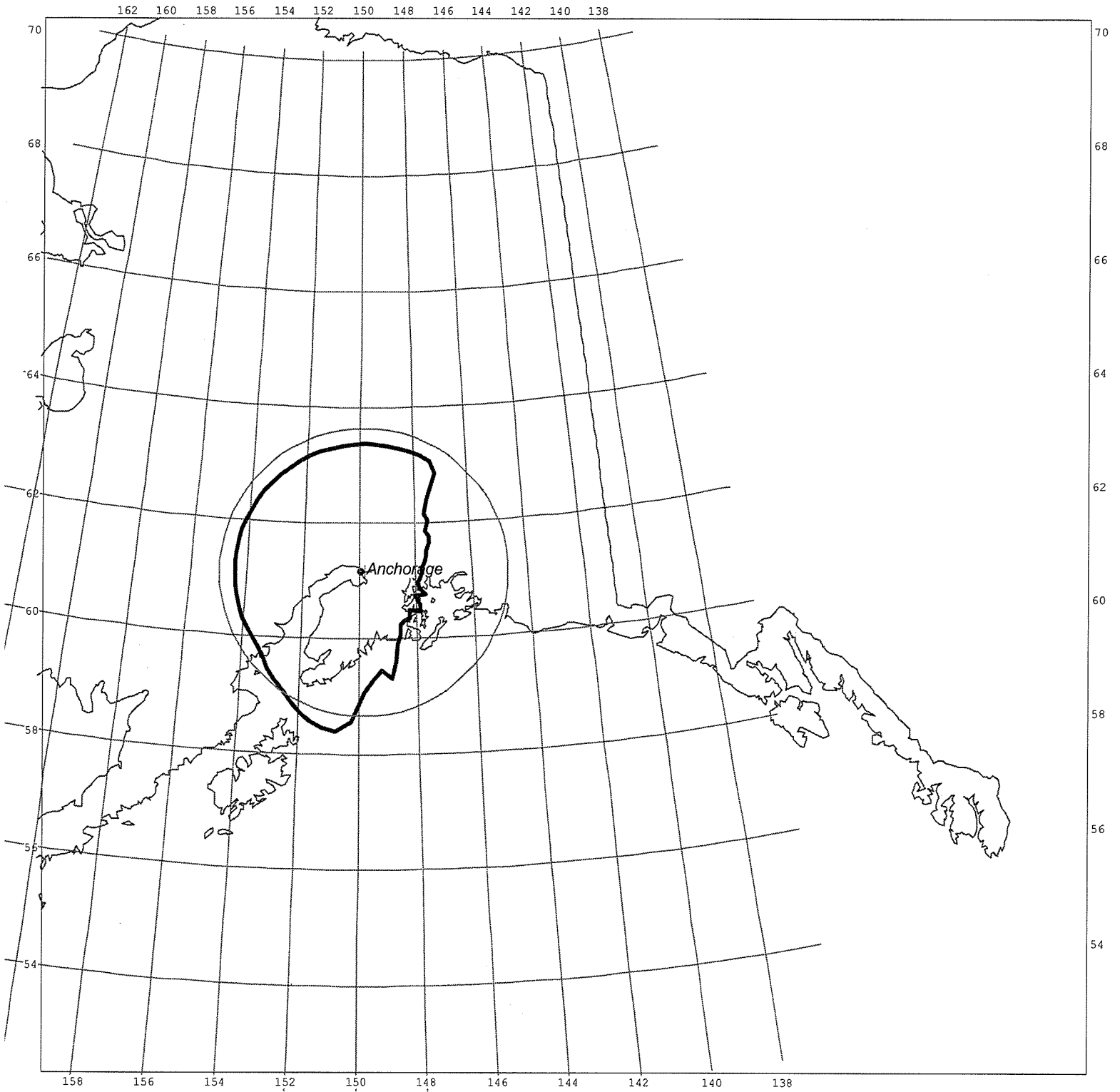


# Final Contour & Rain Scatter

## for CDLS, AK - Receive

SCALE - 1:10000000 1 inch = 157.8 miles

Final Contour	
Rain Scatter	



**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**

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

**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**

**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.