Approved by OMB
3060–0678

APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATIONEnter a description of this application to identify it on the main menu:
EDRS–STA

1. Applicant

Name:	Universal Space Network, Inc.	**Phone Number:**	215–328–9130
DBA Name:		**Fax Number:**	215–328–9132
Street:	417 Caredean Drive Suite A	**E–Mail:**	jgreet@uspacenet.com
City:	Horsham	**State:**	PA
Country:	USA	**Zipcode:**	19044 –
Attention:	Joanne Greet		

30days "With Conditions"

GRANTED
International Bureau

File # SES-STA-20190611-00777

Call Sign N/A Grant Date 08/07/2019
(or other identifier)

Term Dates
From: 08/07/2019 To: 09/06/2019

Approved: Paul E Flood

2. Contact

Name:	Universal Space Network, Inc.	**Phone Number:**	215-328-9130
Company:		**Fax Number:**	215-328-9132
Street:	417 Caredean Drive Suite A	E-Mail:	jgreet@uspacenet.com
City:	Horsham	**State:**	PA
Country:	USA	**Zipcode:**	19044 -
Attention:		**Relationship:**	Same

(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 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 07/25/2019	
7. CityNaalehu	8. Latitude (dd mm ss.s h) 19 0 50.3 N

9. State HI	10. Longitude (dd mm ss.s h) 155 39 46.6 W

11. Please supply any need attachments.

Attachment 1: FCC312 Attachment 2: Waiver and Analysis Attachment 3: Comsearch

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.)

Universal Space Network will support the LEOP and Geo-transfer orbit support for the European Data Relay Satellite (EDRS-C). This support will be conducted for 3 days from USN's Hawaii earth station.

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 ○ No

14. Name of Person Signing Joanne Greet	15. Title of Person Signing Compliance 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).

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD–PERM, Paperwork Reduction Project (3060–0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to PRA@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember – You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060–0678.

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.

Applicant: Universal Space Network
File No.: SES-STA-20190611-00777
Call Sign: None
Special Temporary Authority (STA)

Universal Space Network is granted special temporary authority to operate its Naalehu, HI earth station to support the launch and early operations phase (LEOP) and Geo-transfer orbit raising phase of the European Data Relay Satellite (EDRS-C) on center frequencies 2101.104 MHz (Earth-to-space), and 2285.000 MHz (space-to-Earth). Coordination is requested for 30 days under the following conditions:

1. All operations shall be on an unprotected and non-harmful interference basis, USN 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 must inform the Commission, in writing, immediately of such an event.

2. USN shall, always, take all necessary measures to ensure that operation of this (these) authorized earth station(s) 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. Physical 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. Compliance can be accomplished in most cases by appropriate restrictions, such as fencing. Requirements for restrictions can be determined by predictions based on calculations, modeling, or by field measurements. The FCC's OET Bulletin 65 (available on-line at 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.

3. Any action taken, or expense incurred as a result of operations pursuant to this STA is solely at USN's risk.

4. Emissions are limited to:

Frequency Band (MHz)	Emissions	eirp(dBW)	eirp density (dBW/4kHz)
2104.104	826KG2D		
2285.000	2M05G2D	68.0	44.8

5. Universal Space Network shall provide notification to the NASA GSFC Spectrum Management Office, Lisa Cacciatore at 301-286-7461 or LISA.E.CACCIATORE@NASA.GOV, at least 3 days prior to operations.

6. All operations shall be limited to Geo-transfer orbit raising phase of the European Data Relay Satellite (EDRS-C)

7. Universal Space Network must coordinate with the Naval Surface Warfare Center, Dahlgren Division (NSWCDD), Mr. James Moneyhon, (540)653-3477, or james.moneyhon@navy.mil, in order to mitigate harmful interference to Navy and Marine Corps operations.

30 days "With Conditions"

GRANTED
International Bureau

File # SES-STA-20190611-00777

Call Sign N/A Grant Date 08/07/2019
(or other identifier)

Term Dates
From: 08/07/2019 To: 09/06/2019

Approved: Paul E Blais

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Universal Space Network, Inc.
NAALEHU, HI
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
April 18, 2019

TABLE OF CONTENTS

1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. Further, there will be no restrictions of its operation due to interference considerations.

2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.

3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 03/21/2019.

Company
3G Wireless, LLC
AERIAL VIDEO SYSTEMS
Alascom Inc
Borgeson, Tom R.
Broadcast Sports Inc.
Casper, John
Chicago Comnet Corp
Cincinnati Bell Wireless LLC
Citywide News Network, Inc.
CP Communications, LLC
Cowboys Stadium LP
DCI II, INC.
Direct Broadcast Services, Inc.
Frontier California Inc.
Gray Televions Licensee, LLC (KTVF)
HF Enterprises, Inc
Hallco Unlimited, Inc.
Heiden, William
im360 Entertainment
Information & Display Systems, Inc.
Information Super Station, LLC
International Communications Group, Inc.
International Electronic Information Services, Inc.
Interlink Network Corp.
Loop, Inc.
MERCURY COMMUNICATIONS
Microwave Video systems, LLC
Moreen, Steven K
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
NSM Surveillance
Navajo Communications Company
Onboard Images
Penn Service Microwave Co., Inc.
Plateau Telecommunications, Inc.
Plum TV, LLC
Production & Satellite Services, Inc.
REMOTE FACILITIES CONSULTING SERVICES
RF Central, LLC
RF Film, Inc
Radiofone, Inc.
Randy Hermes Production

Remote Broadcasts, Inc.
SBE Coordinator
Speedshotz, Inc
TTWN Networks, LLC
Unisat, Inc.
United Telephone – Southeast
Vitec Broadcast Services, Inc
Vyvx, LLC
Westar Satellite Services LP
Winged Vision Inc
Wolfe Air Aviation

4. EARTH STATION COORDINATION DATA

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Date:	04/18/2019
Job Number:	190321COMSGE01

Administrative Information

Status	ENGINEER PROPOSAL
Call Sign	NAALEHU
Licensee Code	UNSPNE
Licensee Name	Universal Space Network, Inc.

Site Information — NAALEHU, HI

Venue Name	
Latitude (NAD 83)	19° 0' 50.3" N
Longitude (NAD 83)	155° 39' 46.6" W
Climate Zone	C
Rain Zone	4
Ground Elevation (AMSL)	355.09 m / 1165.0 ft

Link Information

Satellite Type	Low Earth Orbit
Mode	TO - Transmit-Only
Modulation	Digital
Minimum Elevation Angle	5.0°
Azimuth Range	0.0° to 360°
Antenna Centerline (AGL)	8.54 m / 28.0 ft

Antenna Information — Transmit - FCC32

Manufacturer		Datron
Model		1453
Gain / Diameter		45.9 dBi / 13.0 m
3-dB / 15-dB Beamwidth		0.76° / 1.46°
Max Available RF Power	(dBW/4 kHz)	-1.1
	(dBW/MHz)	22.9
Maximum EIRP	(dBW/4 kHz)	44.8
	(dBW/MHz)	68.8
	(dBW)	68.0
Interference Objectives:	Long Term	-154.0 dBW/4 kHz 20%
	Short Term	-131.0 dBW/4 kHz 0.0025%

Frequency Information — Transmit 2.0 GHz

Emission / Frequency Range (MHz)	826KG2D / 2104.104
Max Great Circle Coordination Distance	293.2 km / 182.2 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Coordination Values	**NAALEHU, HI**
Licensee Name	Universal Space Network, Inc.
Latitude (NAD 83)	19° 0' 50.3" N
Longitude (NAD 83)	155° 39' 46.6" W
Ground Elevation (AMSL)	355.09 m / 1165.0 ft
Antenna Centerline (AGL)	8.54 m / 28.0 ft
Antenna Model	Datron 13 meter
Antenna Mode	Transmit 2.0 GHz
Interference Objectives: Long Term	-154.0 dBW/4 kHz 20%
Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	-1.1 (dBW/4 kHz)

Transmit 2.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	2.94	76.42	4.50	293.25
5	2.79	74.70	4.50	293.25
10	2.59	73.03	4.50	293.25
15	2.48	71.52	4.50	293.25
20	2.30	70.08	4.50	293.25
25	2.09	68.75	4.50	293.25
30	1.85	67.52	4.50	293.25
35	1.08	65.97	4.50	293.25
40	0.70	64.92	4.50	293.25
45	0.44	64.17	4.50	293.25
50	0.00	63.44	4.50	293.25
55	0.00	63.37	4.50	293.25
60	0.00	63.51	4.50	293.25
65	0.00	63.87	4.50	293.25
70	0.00	64.44	4.50	293.25
75	0.00	65.22	4.50	293.25
80	0.00	66.19	4.50	293.25
85	0.00	67.34	4.50	293.25
90	0.00	68.67	4.50	293.25
95	0.00	70.15	4.50	293.25
100	0.00	71.77	4.50	293.25
105	0.00	73.53	4.50	293.25
110	0.00	75.39	4.50	293.25
115	0.00	77.35	4.50	293.25
120	0.00	79.39	4.50	293.25
125	0.00	81.51	4.50	293.25
130	0.00	83.67	4.50	293.25
135	0.00	85.87	4.50	293.25
140	0.00	88.10	4.50	293.25
145	0.00	90.34	4.50	293.25
150	0.00	92.58	4.50	293.25
155	0.00	94.80	4.50	293.25
160	0.00	96.99	4.50	293.25
165	0.00	99.14	4.50	293.25
170	0.00	101.24	4.50	293.25
175	0.00	103.26	4.50	293.25
180	0.00	105.19	4.50	293.25
185	0.00	107.02	4.50	293.25

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Coordination Values	**NAALEHU, HI**
Licensee Name	Universal Space Network, Inc.
Latitude (NAD 83)	19° 0' 50.3" N
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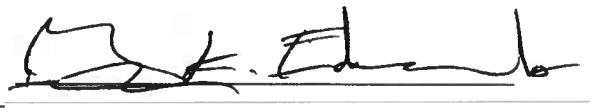
Antenna Model	Datron 13 meter
Antenna Mode	Transmit 2.0 GHz
Interference Objectives: Long Term	-154.0 dBW/4 kHz 20%
Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	-1.1 (dBW/4 kHz)

		Transmit 2.0 GHz		
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	108.73	4.50	293.25
195	0.00	110.32	4.50	293.25
200	0.00	111.75	4.50	293.25
205	0.00	113.03	4.50	293.25
210	0.00	114.13	4.50	293.25
215	0.21	114.85	4.50	293.25
220	0.32	115.45	4.50	293.25
225	0.47	115.80	4.50	293.25
230	0.68	115.88	4.50	293.25
235	0.87	115.76	4.50	293.25
240	1.06	115.43	4.50	293.25
245	1.28	114.88	4.50	293.25
250	1.44	114.18	4.50	293.25
255	1.62	113.29	4.50	293.25
260	1.74	112.28	4.50	293.25
265	1.92	111.06	4.50	293.25
270	2.05	109.73	4.50	293.25
275	2.21	108.25	4.50	293.25
280	2.34	106.68	4.50	293.25
285	2.40	105.05	4.50	293.25
290	2.42	103.34	4.50	293.25
295	2.42	101.56	4.50	293.25
300	2.41	99.70	4.50	293.25
305	2.41	97.77	4.50	293.25
310	2.36	95.80	4.50	293.25
315	2.52	93.76	4.50	293.25
320	2.62	91.72	4.50	293.25
325	2.69	89.69	4.50	293.25
330	2.80	87.68	4.50	293.25
335	2.86	85.68	4.50	293.25
340	2.90	83.72	4.50	293.25
345	2.95	81.81	4.50	293.25
350	3.34	80.10	4.50	293.25
355	3.11	78.22	4.50	293.25

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: 

Gary K. Edwards
Senior Manager
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: April 18, 2019

FCC 312
Schedule B

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS
Technical and Operational Description)

(Place an "X" in one of the blocks below)

☐ License of New Station ☐ Registration of new Domestic Receive-Only Station ☐ Amendment to a Pending Application ☐ Modification of License/Registration ☐ Notification of Minor Modification

B1. Location of Earth Station Site. If temporary-fixed, mobile, or VSAT remote facility, specify area of operation and point of contact. If VSAT hub station, give its location For VSAT networks attach individual Schedule B, Page 1 sheets for each hub station and each remote station. Individually provide the Location, Points of Communications, and Destination Points for each hub and remote station.

B1a. Station Call Sign	B1b. Site identifier (HUB, REMOTE1, etc.)	B1c. Telephone Number	B1j. Geographic Coordinates N/S, Deg. - Min. - Sec. - E/W	B1k. Lat./Lon. Coordinates are:
	USHI01	(808) 929-8069	Lat. 19° 00' 50.3" N Lon. 155° 39' 46.6" W	☐ NAD-27 ☒ NAD-83
B1d. Mailing Street Address of Station or Area of Operation		B1e. Name of Contact Person		
93-1704 South Point Road		Joanne Greet		

B1f. City	B1g. County	B1h. State	B1i. Zip Code	B1l. Site Elevation (AMSL)
Naalehu	Ka'u	HI	96772-0842	378.0 meters

B2. Points of Communications: List the names and orbit locations of all satellites with which this earth station will communicate. The entry "ALSAT" is sufficient to identify the names and locations of all satellite facilities licensed by the U.S. All non-U.S. licensed satellites must be listed individually.

Satellite Name and Orbit Location	Satellite Name and Orbit Location	Satellite Name and Orbit Location
EDRS-C Geosynhronous transfer orbit to 31East		

B3. Destination points for communications using non-U.S. licensed satellites. For each non-U.S. licensed satellite facility identified in section B2 above, specify the destination point(s) (countries) where the services will be provided by this earth station via each non-U.S. license satellite system. Use additional sheets as needed.

Satellite Name	List of Destination Points
EDRS-31E	DLR Germany

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS
FCC Form 312 - Schedule B: (Technical and Operational Description)

B4. Earth Station Antenna Facilities: Use additional pages as needed.

(a) Site ID*	(b) Antenna ID**	(c) Quantity	(d) Manufacturer	(e) Model	(f) Antenna Size (meters)	(g) Antenna Gain Transmit and/or Receive (____dBi at____GHz)
USHI01	HI-13M	1	Datron	1453	13.0	46.9 dBi at 2.245 GHz
						45.9 dBi at 2.067 GHz

B5. Antenna Heights and Maximum Power Limits: (The corresponding Antenna ID in tables B4 and B5 applies to the same antenna)

(a) Antenna ID**	(b) Antenna Structure Registration No.	Maximum Antenna Height (c) Above Ground Level (meters)	Maximum Antenna Height (d) Above Mean Sea Level (meters)	(e) Building Height Above Ground Level (meters)***	(f) Maximum Antenna Height Above Rooftop (meters)***	(g) Total Input Power at antenna flange (Watts)	(h) Total EIRP for all carriers (dBW)
HI-13M		20.0	398.0			200.0	68.9

Notes: * If this is an application for a VSAT network, identify the site (Item B1b, Schedule B, Page 1) where each antenna is located. Also include this Site-ID on Schedule B, Page 5.
** Identify each antenna in VSAT network or multi-antenna station with a unique identifier, such as HUB, REMOTE1, A1, A2, 10M, 12M, 7M, etc. Use this same antenna ID throughout tables B4, B5, B6, and B7 when referring to the same antenna.
*** Attach sketch of site or exemption, See 47 CFR Part 17.

APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS
FCC Form 312 - Schedule B: (Technical and Operational Description)

B6. Frequency Coordination Limits: Use additional pages as needed.

(a) Antenna ID*	(b) Frequency Limits (MHz)	(c) Range of Satellite Arc Eastern Limit**	(d) Range of Satellite Arc Western Limit**	(e) Antenna Elevation Angle Eastern Limit	(f) Antenna Elevation Angle Western Limit	(g) Earth Station Azimuth Angle Eastern Limit	(h) Earth Station Azimuth Angle Western Limit	(i) Maximum EIRP Density toward the Horizon (dBW/4kHz)
HI-13M	2285.000	0.0 W.L.	360.0 W.L.	5.0	5.0			
HI-13M	2104.104	0.0° W.L.	360.0° W.L.	5.0°	5.0°			4.8

Notes: * Provide the ANTENNA-ID from table B4 to identify the antenna to which each frequency band and orbital arc range is associated.

** If operating with geostationary satellites, give the orbital arc limits and the associated elevation and azimuth angles. If operating with non-geostationary satellites, give the notation "NON-GEO" for the satellite arc and give the minimum operational elevation angle and the maximum azimuth angle range.

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS
FCC Form 312 - Schedule B: (Technical and Operational Description)

B7. Particulars of Operation (Full particulars are required for each r.f. carrier): Use additional pages as needed.

(a) Antenna ID*	(b) Frequency Limits (MHz)	(c) T/R Mode **	(d) Antenna Polarization (H,V,L,R)	(e) Emission Designator	(f) Maximum EIRP per Carrier (dBW)	(g) Maximum EIRP Density per Carrier (dBW/4kHz)	(h) Description of Modulation and Services
HI-13M	2285.000	R	L, R	2M05G2D			1024 kbps data is PM modulated with 413 kHz major ranging tones
HI-13M	2104.104	T	L, R	826KG2D	68.0	44.8	1 kbps data PSK modulated onto an 8 kHz subcarrier with 413 kHz major ranging tones

Notes: * Provide the ANTENNA-ID from table B4 to identify the antenna to which each frequency band and emission is associated. For VSAT networks, include frequencies and emissions for all HUB and REMOTE units.

** Indicate whether the earth station transmits or receives in each frequency band.

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS
FCC Form 312 - Schedule B: (Technical and Operational Description)

If VSAT Network, provide the SITE-ID (Item B1b) of the station that B8-B13 are in response to (HUB, REMOTE1, etc.): _____

B8. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with **geostationary** satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a) and (b) as demonstrated by the manufacturer's qualification measurements? If NO, provide as an exhibit, a technical analysis showing compliance with two-degree spacing policy.	☐ YES	☐ NO	N/A
B9. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with **non-geostationary** satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurement?	☒ YES	☐ NO	
B10. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	☒ YES	☐ NO	

Remote Control Point Location:

B10a. Street Address: 417 Caredean Drive Suite A			
B10b. City: Horsham	B10c. County: Montgomery	B10.d. State/Country: PA	B10e. Zip Code: 19044
B10f. Telephone Number: 215-328-9130	B10g. Call Sign of Control Station (if appropriate):		

B11. Is frequency coordination required? If YES, attach a frequency coordination report as an exhibit.	☒ YES	☐ NO
B12. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as an exhibit.	☐ YES	☒ NO
B13. FAA Notification - (See 47 CFT Part 17and 47 CFT Part 25.113(c)) **Where FAA notification is required, have you attached a copy of a completed FCC Form 854 and/or the FAA's study regarding the potential hazard of the structure to aviation?** **FAILURE TO COMPLY WITH 47 CFT PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION**	☐ YES	☒ NO

Exhibit C
PETITION FOR WAIVER OF SECTION 25.137 AND 25.114 AND OF THE U.S. TABLE OF FREQUENCY ALLOCATIONS

I. TO THE EXTENT THEY APPLY, GOOD CAUSE EXISTS FOR A WAIVER OF CERTAIN PORTIONS OF SECTIONS 25.137 AND 25.114

Universal Space Network, Inc. (USN) is provided limited legal and technical information for the EDRS-C, one spacecraft member of the European Data Relay to Earth.[1] Pursuant to Section 25.137 of the Federal Communications Commission's ("Commission" or "FCC") rules, the same technical information required by Section 25.114 for U.S.-licensed space station, and certain legal information, must be submitted by earth station applicants "requesting authority to operate with a non-U.S. licensed space station to serve the United States..."[2] USN seeks authority to support the needed Telemetry, Tracking, and Control ("TT&C") during LEOP orbit raising of the EDRS-C spacecraft from initial earth orbit to geo parking orbit , not commercial service to the United States, and thus believes that Section 25.137 does not apply.

To the extent the Commission determines, however, that USN's request for authority to provide LEOP on a special temporary basis is a request to serve the United States with a non-U.S-licensed satellite, USN respectfully requests a waiver of Sections 25.137 and 25.114 of the Commission's rules, to the extent that USN has not herein provided the information required by these rules. [3] The Commission may grant a waiver for good cause shown.[4] A waiver is therefore appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.

In this case, good cause for a waiver of portions of Section 25.114 exists. USN seeks authority only to conduct LEOP support for EDRS-C. Thus, any information sought by Section 25.114 that is not relevant to the LEOP – e.g., antenna patterns, energy and propulsion and orbital debris - USN does not have. In addition, USN would not easily be able to obtain such information because USN is not the operator of the EDRS-C satellite, nor is USN in contractual privity with that operator. Rather, USN has contracted with Swedish Space Corporation, Solona Sweden (SSC) to support the LEOP orbit raising portion in S-Band of the satellite prior to its operation.

As evidenced by the Comsearch report attached to this request, USN has coordinated the LEOP of the EDRS-C satellites with potentially affected terrestrial operators. Moreover, as with any STA, USN will conduct the LEOP orbit raising on an unprotected, non-interference basis to government operations.

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[1] FCC Form 312 Section B

[2] 47 C.F.R. § 25.137(a)

[3] 47 C.F.R. §§25.137 and 25.114

[4] 47 C.F.R. §1.3

Because it is not relevant to the service for which USN seeks authorization, and because obtaining the information would be a hardship, USN seeks a waiver of all the technical and legal information required by Section 25.114, to the extent it is not provided herein. As noted above, USN has provided the required information to the extent that it is relevant to the LEOP service for which USN seeks authorization.

Good cause also exists to waive portions of Section 25.137, to the extent the information required is not herein provided. Section 25.137 is designed to ensure that "U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services" in other countries. Here, there is no service being provided by the satellite; USN is providing TT&C while the satellite is on the way to it's medium earth orbit. Thus, the purpose of the information required by Section 25.137 is not implicated here. For example, Section 25.137(d) requires earth station applicants requesting authority to operate with a non-U.S.-licensed space station that is not in orbit and operating to post a bond. [5] The underlying purpose in having to post a bond – i.e., to prevent warehousing of orbital locations by operators seeking to serve the United States – would not be served by requiring USN to post a bond in order to conduct 3 days of LEOP support of the EDRS-C satellite.

It is USN's understanding that EDRS-C is licensed by ESA (European Space Agency). EDRS-C. The spacecraft family is primarily meant to serve the EU. Thus, the purpose of Section 25.137 – to ensure that U.S. satellite operators enjoy "effective competitive opportunities" to serve foreign markets and to prevent warehousing of orbital locations service the United States – will not be undermined by grant of this waiver request.

Finally, USN notes that it expects to communicate with the EDRS-C satellite using its U.S. earth station for a period of 3 days. Requiring USN to obtain technical and legal information from an unrelated party, where there is no risk of interference and the operation will cease within 3 days would pose undue hardship without serving underlying policy objectives. Given these particular facts, the waiver sought herein is appropriate.

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[5] 47 C.F.R. §25.137(d)(4)

II. GOOD CAUSE EXISTS FOR A WAIVER OF THE UNITED STATES TABLE OF FREQUENCY ALLOCATIONS

USN further requests a waiver of the United States Table of Frequency Allocations ("U.S. Table") as described in section 2.106 of the rules for the frequency bands 2025 – 2110 MHz (Earth-to-Space) and 2200 – 2290 MHz (Space-to-Earth).[6] Section footnotes allow for non-federal Government use of these bands in the United States on a case-by-case non-interference basis. Such use by USN necessitates a waiver of the U.S. Table.

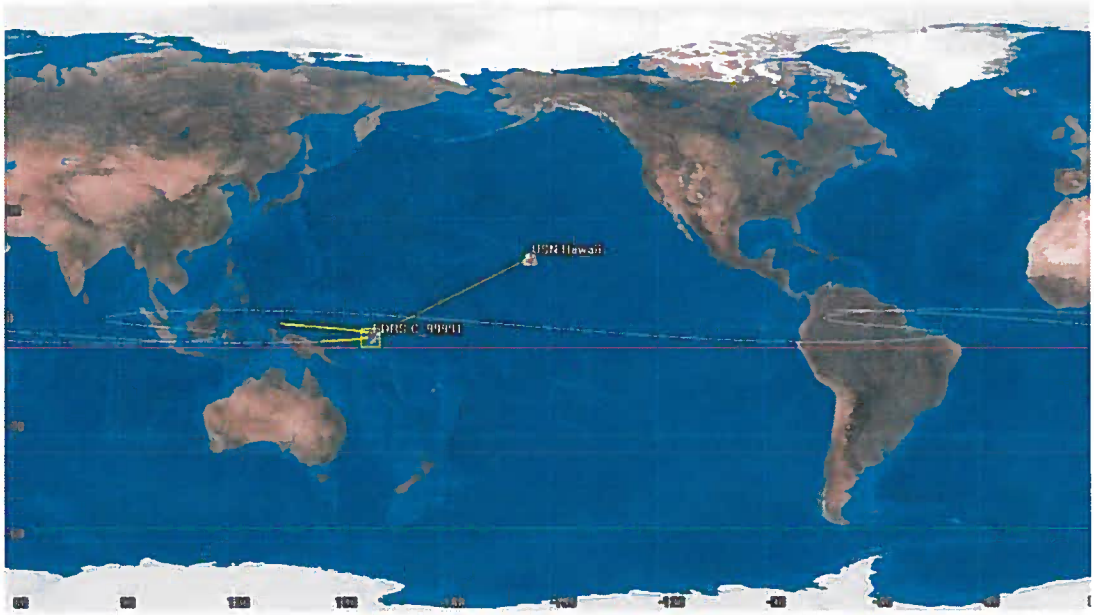
Good cause exists to grant USN a limited waiver of the U.S. Table to allow LEOP of the EDRS-C satellite. In considering request for case-by-case spectrum uses, the Commission has indicated that is would generally grant such waivers "where there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the case-by-case operator accepts any interference from authorized services." [7] USN will coordinate with other parties operating communication systems in compliance with the Table of Frequency Allocations to ensure that no harmful interference is caused. USN seeks to operate only pursuant to special temporary authorization and thus agrees to accept any interference from authorized services. In summary, USN's operation on a non-interference, non-protected basis support waiver of the U.S. Table.

[6] 47 C.F.R. §2.106

[7] Previously approved STA's for Universal Space Network SES-STA-20020725-01174; SES-STA-20021112-02008; SES-STA-20040315-00475

Orbit Raising support of the European Data Relay Satellite (EDRS-C) from USN's Hawaii ground station

EDRS-C will place its satellite in Geo-Synchronous orbit for European space data relay to earth. The launch is expected to occurred on July 24th , 2019 from French Guiana on an Ariane 5 ES vehicle. USN has been contracted to support the EDRS spacecraft orbital maneuvering to parking orbit for a period of 3 days and a total of 3 passes.



EDRS coverage in geo-transfer orbit and Hawaii coverage

The below analysis covers all possible visibilities from USN Hawaii, but not all visibilities will be supported. The RF frequencies are shown in table below.

	Downlink	Uplink
EDRS-C	2285.000 MHz	2104.104 MHz

EDRS-C-Injection orbit
1 99991U 19991Z 19205.83582870 +.00000000 00000-0 +00000+0 0 00006
2 99991 4.4663 63.4457 7294013 177.9601 8.1598 2.26950273000005

EDRS-C Initial Orbit pass

Access	Start Time (UTCG)	Stop Time (UTCG)
1	25 Jul 2019 17:42:46	25 Jul 2019 22:42:00*

*Note that the spacecraft stays in view of Hawaii during the AMF-1 maneuver, and the pass continues into #2

EDRS-C post AMF-1 maneuver and possible support times pass # 2

EDRS-C-Post AMF1
1 99991U 19991ZZZ 19206.94561343 +.00000000 00000-0 +00000+0 0 0001
2 99991 2.9782 63.7074 5010815 178.9242 192.5475 1.8425031200006

Access	Start Time (UTCG)	Stop Time (UTCG)
2	25 Jul 2019 22:42:00	26 Jul 2019 05:13:01

EDRS-C post AMF-2 maneuver and possible support times pass # 3

EDRS-C
1 99991U 19991Z 19208.04250000 +.00000000 00000-0 +00000+0 0 0009
2 99991 0.7756 59.9819 1471215 181.0200 194.8707 1.23156910002

Access	Start Time (UTCG)	Stop Time (UTCG)
3	27 Jul 2019 01:01:00	27 Jul 2019 09:27:15

Flux Density impinging on the ground in Hawaii from EDRS-C

The Flux density is calculated as:

$$\boldsymbol{Flux\ density = EIRP \div (4\,\pi\, Rse^2)}$$

Where $\boldsymbol{Rse}$ is the distance from spacecraft to the ground?
Where $\boldsymbol{EIRP}$ is the Effective Isotropic Radiated Power of the spacecraft?

Data from the spacecraft vendor indicates that the nominal EIRP of EDRS spacecraft is -1.10 dBW. Being an elliptical geo-transfer orbit the closest slant range to Hawaii occurs during pass #2 after AMF-1 maneuver which is = 8,537 Km.

Converting -1.10 dBW to scalar watts = 0.776 watts transmitted at 2285.0 MHz

Therefor:

$$\boldsymbol{Flux\ density = 0.776 \div (4\,\pi * 8{,}537{,}000\ meters^2)}$$

Flux density = 8.473 x 10^{-16} Watts/meter^2
Or
Flux density = 8.473 x 10^{-17} mW/cm^2