



UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

RADIO STATION AUTHORIZATION

Name: Denali 20020, LLC

Call Sign: E990066

Authorization Type: Modification of License

File Number: SES-MOD-20181019-03055

Non Common Carrier

Grant date: 06/08/2020

Expiration Date: 06/24/2024

Nature of Service: Fixed Satellite Service

Class of Station: Fixed Earth Stations

A) Site Location(s)

#	Site ID	Address	Latitude	Longitude	Elevation (Meters)	Special Provisions NAD (Refer to Section H)
1)	1	66C USE DRIVE BREWSTER, OKANOGAN, WA 98812	48°8'44.0"N	119°42'9.2"W	382.8	83

Licensee certifies antenna(s) comply with gain patterns specified in Section 25.209

Subject to the provisions of the Communications Act of 1934, The Communications Satellite Act of 1962, subsequent acts and treaties, and all present and future regulations made by this Commission, and further subject to the conditions and requirements set forth in this license, the grantee is authorized to construct, use and operate the radio facilities described below for radio communications for the term beginning June 8, 2020 (3 AM Eastern Standard Time) and ending June 24, 2024 (3 AM Eastern Standard Time) . The required date of completion of construction and commencement of operation is 00/00/0000. Grantee must file with the Commission a certification upon completion of construction and commencement of operation.

B) Particulars of Operations

The General Provision 1010 applies to all receiving frequency bands.

The General Provision 1900 applies to all transmitting frequency bands.

For the text of these provisions, refer to Section H.

#	Frequency (MHz)	Polarization Code	Emission	Tx/Rx Mode	Max EIRP /Carrier (dBW)	Max EIRP Density /Carrier (dBW/4kHz)	Associated Antenna	Special Provisions (Refer to Section H)	Modulation/ Services
1)	8496.2500-8496.2500	H, V, L, R	2M30G7W	Rx			BREW-2		DIGITAL
2)	8166.5850-8233.4150	H, V, L, R	66M8G1D	Rx			BREW-2		DIGITAL
3)	8099.5850-8166.4150	H, V, L, R	66M8G1D	Rx			BREW-2		DIGITAL
4)	7071.9000-7073.9000	L, R	250KG2D	Rx			BREW-2		TT&C
5)	7071.9000-7073.9000	L, R	250KG9D	Rx			BREW-2		TT&C
6)	7071.2000-7071.2000	R	NON	Rx			BREW-2		AFC
7)	7068.3000-7068.5000	L, R	75K0G1D	Rx			BREW-2		SRMS TELEMETRY
8)	7068.3000-7068.5000	L, R	75K0G1W	Rx			BREW-2		SRMS TELEMETRY
9)	7068.3000-7068.5000	L, R	75K0G7D	Rx			BREW-2		SRMS TELEMETRY



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10)	7068.3000-7068.5000	L,R	75K0G7W	Rx			BREW-2		SRMS TELEMETRY
11)	7017.3000-7017.5000	L,R	75K0G1D	Rx			BREW-2		SRMS TELEMETRY
12)	7017.3000-7017.5000	L,R	75K0G1W	Rx			BREW-2		SRMS TELEMETRY
13)	7017.3000-7017.5000	L,R	75K0G7D	Rx			BREW-2		SRMS TELEMETRY
14)	7017.3000-7017.5000	L,R	75K0G7W	Rx			BREW-2		SRMS TELEMETRY
15)	7015.1000-7015.1000	L,R	NON	Rx			BREW-2		AFC
16)	7011.0000-7013.0000	L,R	250KG2D	Rx			BREW-2		TT&C
17)	7011.0000-7013.0000	L,R	250KG9D	Rx			BREW-2		TT&C
18)	5242.5000-5244.5000	L,R	1M00F2D	Tx	81.00	70.20	BREW-2		TT&C-EMERGENCY ONLY
19)	5242.5000-5244.5000	L,R	1M00F9D	Tx	81.00	70.20	BREW-2		TT&C-EMERGENCY ONLY
20)	5242.5000-5244.5000	L,R	1M00F2D	Tx	66.00	55.20	BREW-2		TT&C-NORMAL OPERATION
21)	5242.5000-5244.5000	L,R	1M00F9D	Tx	66.00	55.20	BREW-2		TT&C-NORMAL OPERATION
22)	5241.2000-5241.2000	R	NON	Tx	42.00	42.00	BREW-2		AFC
23)	5237.3000-5238.2000	L,R	100KG1D	Tx	58.30	44.30	BREW-2		HPN COMMAND-DIGITAL
24)	5237.3000-5238.2000	L,R	100KG1W	Tx	58.30	44.30	BREW-2		HPN COMMAND-DIGITAL
25)	5237.3000-5238.2000	L,R	100KG7D	Tx	58.30	44.30	BREW-2		HPN COMMAND-DIGITAL
26)	5237.3000-5238.2000	L,R	100KG7W	Tx	58.30	44.30	BREW-2		HPN COMMAND-DIGITAL
27)	5236.9000-5237.3000	L,R	100KG1D	Tx	58.30	44.30	BREW-2		SRMS COMMAND-DIGITAL
28)	5236.9000-5237.3000	L,R	100KG1W	Tx	58.30	44.30	BREW-2		SRMS COMMAND-DIGITAL
29)	5236.9000-5237.3000	L,R	100KG7D	Tx	58.30	44.30	BREW-2		SRMS COMMAND-DIGITAL
30)	5236.9000-5237.3000	L,R	100KG7W	Tx	58.30	44.30	BREW-2		SRMS COMMAND-DIGITAL
31)	5186.7000-5187.1000	L,R	100KG1D	Tx	58.30	44.30	BREW-2		SRMS COMMAND-DIGITAL
32)	5186.7000-5187.1000	L,R	100KG1W	Tx	58.30	44.30	BREW-2		SRMS COMMAND-DIGITAL
33)	5186.7000-5187.1000	L,R	100KG7D	Tx	58.30	44.30	BREW-2		SRMS COMMAND-DIGITAL



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34)	5186.7000-5187.1000	L, R	100KG7W	Tx	58.30	44.30	BREW-2		SRMS COMMAND-DIGITAL
35)	5185.8000-5186.7000	L, R	100KG1D	Tx	58.30	44.30	BREW-2		HPN COMMAND-DIGITAL
36)	5185.8000-5186.7000	L, R	100KG1W	Tx	58.30	44.30	BREW-2		HPN COMMAND-DIGITAL
37)	5185.8000-5186.7000	L, R	100KG7D	Tx	58.30	44.30	BREW-2		HPN COMMAND-DIGITAL
38)	5185.8000-5186.7000	L, R	100KG7W	Tx	58.30	44.30	BREW-2		HPN COMMAND-DIGITAL
39)	5185.1000-5185.1000	L	NON	Tx	42.00	42.00	BREW-2		AFC
40)	5179.5000-5181.5000	L, R	1M00F2D	Tx	81.00	70.20	BREW-2		TT&C-EMERGENCY ONLY
41)	5179.5000-5181.5000	L, R	1M00F9D	Tx	81.00	70.20	BREW-2		TT&C-EMERGENCY ONLY
42)	5179.5000-5181.5000	L, R	1M00F2D	Tx	66.00	55.20	BREW-2		TT&C-NORMAL OPERATION
43)	5179.5000-5181.5000	L, R	1M00F9D	Tx	66.00	55.20	BREW-2		TT&C-NORMAL OPERATION
44)	2082.0000-2082.0000	H, V	410KG7W	Tx	53.80	33.70	BREW-2		DIGITAL DATA CARRIER
45)	2055.3450-2056.5500	H, V, L, R	1M31F1D	Tx	49.01	23.90	BREW-2		DIGITAL DATA CARRIER
46)	449.9700-450.0300	L, R	60K0F1D	Tx	36.50	24.74	UHF-YAGI		DIGITAL, TT&C GFSK
47)	401.2700-401.3300	L, R	60K0F1D	Rx			UHF-YAGI		DIGITAL

C) Frequency Coordination Limits

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
1)	5179.5000-5181.5000			05.0-05.0		-360.0		21.4	BREW-2
2)	5242.5000-5244.5000			05.0-05.0		-360.0		21.4	BREW-2
3)	7011.0000-7013.0000			05.0-05.0		-360.0			BREW-2
4)	7071.9000-7073.9000			05.0-05.0		-360.0			BREW-2
5)	7017.3000-7017.5000			05.0-05.0					BREW-2
6)	7068.3000-7068.5000			05.0-05.0					BREW-2
7)	7015.1000			05.0-05.0					BREW-2



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C) Frequency Coordination Limits

#	Frequency Limits (MHz)	Satellite Arc (Deg. Long.)		Elevation (Degrees)		Azimuth (Degrees)		Max EIRP Density toward Horizon (dBW/4kHz)	Associated Antenna(s)
		East Limit	West Limit	East Limit	West Limit	East Limit	West Limit		
8)	7071.2000		NGSO		05.0-05.0				BREW-2
9)	5185.1000		NGSO		05.0-05.0				BREW-2
10)	5241.2000		NGSO		05.0-05.0				BREW-2
11)	5185.8000-5186.7000		NGSO		05.0-05.0				BREW-2
12)	5186.7000-5187.1000		NGSO		05.0-05.0				BREW-2
13)	5236.9000-5237.3000		NGSO		05.0-05.0				BREW-2
14)	5237.3000-5238.2000		NGSO		05.0-05.0				BREW-2
15)	2055.3450-2056.6550		NGSO		05.0-05.0		-360.0	-17.6	BREW-2
16)	8099.5850-8166.4150		NGSO		05.0-05.0		-360.0		BREW-2
17)	8166.5850-8233.4150		NGSO		05.0-05.0		-360.0		BREW-2
18)	2082.0000-2082.0000		NGSO		05.0-05.0			-11.6	BREW-2
19)	8496.2500-8496.2500		NGSO		05.0-05.0		-360.0		BREW-2
20)	449.9700-450.0300		NGSO		05.0-05.0		-360.0	19.72	UHF-YAGI
21)	401.2700-401.3300		NGSO		05.0-05.0		-360.0	0	UHF-YAGI

D) Points of Communications

The following stations located in the Satellite orbits consistent with Sections B and C of this Entry:

- 1) 1 to ICO MEO constellation of the United Kingdom satellite system. (Non-U.S.-licensed)
- 2) 1 to Planet Labs (S2912) satellites (NGSO) Earth Exploration Satellite Service (Flocks 1-3)
- 3) 1 to Athena NGSO satellite (WJ2XUG) (US licensed) in the 500x550 km sun-synchronous orbit

E) Antenna Facilities

Site ID	Antenna ID	Units	Diameter (meters)	Manufacturer	Model number	Site Elevation (Meters)	Max Antenna Height (Meters)	Special Provisions (Refer to Section H)
1	BREW-2	1	7.6	NEC	G2573C	382.8	11.6 AGL/ 394.7 AMSL	
Max Gains(s):		53.4 dBi @	8.1000 GHz	41.5 dBi @	2.0560 GHz	50.3 dBi @		
		2.0820 GHz						
Maximum total input power at antenna flange (Watts) =					1,175.00			
Maximum aggregate output EIRP for all carriers (dBW) =					81.00			



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Site ID	Antenna ID	Units	Diameter (meters)	Manufacturer	Model number	Site Elevation (Meters)	Max Antenna Height (Meters)	Special Provisions (Refer to Section H)
1	UHF-YAGI	1	2.7	M2INC	450CP34/400	382.8	386.6 AGL	
Max Gains(s):		16.5 dBi @	0.4010 GHz	16.5 dBi @	0.4500 GHz			
Maximum total input power at antenna flange (Watts) =					100.00			
Maximum aggregate output EIRP for all carriers (dBW) =					36.50			

G) Antenna Structure marking and lighting requirements:

None unless otherwise specified under Special and General Provisions

H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

4 --- Licensee must ensure that a current listing of the name, title, mailing address, email address, and telephone number of the responsible point of contact are on file at the FCC. Any changes must be filed electronically in the International Bureau Filing System (MyIBFS) using the "Pleadings and Comments" link on the MyIBFS homepage within 10 days of the change.

5 --- Licensee must notify the Commission when this earth station is no longer operational or when it has not been used to provide any service during any 6-month operation.

6 --- Licensee must comply with the license modification and notification requirements of 47 CFR § 25.118 to change the coordinates of its authorized earth station.

3212 --- The licensee shall take extraordinary measures to ensure that multiple antennas co-located at the same site do not create potential exposure to radiofrequency radiation in excess of FCC safety guidelines. Antennas shall be surrounded by a fence, at least 2 meters tall with a locked gate, to prevent human exposure in excess of the FCC-specified safety limit of 1 mW/cm². Warning signs, such as those discussed in the FCC's OET Bulletin 65, shall be posted informing members of the public to keep outside the locked area. All operations must be in compliance with Section 1.1307 (b)(3) of the Commission's Rules. (See 47 CFR 1.1307 (b) (3)).

90398 --- Changes to previously authorized transmitting facilities, operations and devices regulated by the Commission that may have significant environmental impact, and are not excluded by §1.1306, require the preparation of an Environmental Assessment (EA) by the licensee. (See 47 C.F.R. §§1.1307, 1.1308 and 1.1311)



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H) Special and General Provisions

A) This RADIO STATION AUTHORIZATION is granted subject to the following special provisions and general conditions:

90399 --- The licensee shall, at all times, 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.



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B) This RADIO STATION AUTHORIZATION is granted subject to the additional conditions specified below:

This authorization is issued on the grantee's representation that the statements contained in the application are true and that the undertakings described will be carried out in good faith.

This authorization shall not be construed in any manner as a finding by the Commission on the question of marking or lighting of the antenna system should future conditions require. The grantee expressly agrees to install such marking or lighting as the Commission may require under the provisions of Section 303(q) of the Communications Act. 47 U.S.C. § 303(q).

Neither this authorization nor the right granted by this authorization shall be assigned or otherwise transferred to any person, firm, company or corporation without the written consent of the Commission. This authorization is subject to the right of use or control by the government of the United States conferred by Section 706 of the Communications Act. 47 U.S.C. § 706. Operation of this station is governed by Part 25 of the Commission's Rules. 47 C.F.R. Part 25.

This authorization shall not vest in the licensee any right to operate this station nor any right in the use of the designated frequencies beyond the term of this license, nor in any other manner than authorized herein.

This authorization is issued on the grantee's representation that the station is in compliance with environmental requirements set forth in Section 1.1307 of the Commission's Rules. 47 C.F.R. § 1.1307.

This authorization is issued on the grantee's representation that the station is in compliance with the Federal Aviation Administration (FAA) requirements as set forth in Section 17.4 of the Commission's Rules. 47 C.F.R. § 17.4.

The following condition applies when this authorization permits construction of or modifies the construction permit of a radio station.

This authorization shall be automatically forfeited if the station is not ready for operation by the required date of completion of construction unless an application for modification of authorization to request additional time to complete construction is filed by that date, together with a showing that failure to complete construction by the required date was due to factors not under control of the grantee.

Licensees are required to pay annual regulatory fees related to this authorization. The requirement to collect annual regulatory fees from regulatees is contained in Public Law 103-66, "The Omnibus Budget Reconciliation Act of 1993." These regulatory fees, which are likely to change each fiscal year, are used to offset costs associated with the Commission's enforcement, public service, international and policy and rulemaking activities. The Commission issues a Report and Order each year, setting the new regulatory fee rates. Receive only earth stations are exempt from payment of regulatory fees.