



UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION
RADIO STATION AUTHORIZATION

Telesat Network Services, Inc.

Call Sign: E060351

Authorization Type: Renewal of License

File Number: SES-RWL-20210923-01623

Non Common Carrier

Grant date: 10/01/2021

Expiration Date: 12/12/2036

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)	4.6 T14	1305 INDUSTRIAL PARK ROAD MT. JACKSON, SHENANDOAH, VA 22842	38°43'47.5"N	78°39'30.1"W	275	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 December 12, 2021 (3 AM Eastern Standard Time) and ending December 12, 2036 (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)	14000.5000-14499.5000	H,V	700KF9D	Tx	79.50	57.10	4.6 T14		TT&C AND RANGING
2)	14000.0000-14500.0000	H,V	1M22G1D	Tx	59.80	35.00	4.6 T14		1300 KBPS QPSK, FEC TPC .553 SCPC
3)	14000.0000-14500.0000	H,V	2M13G1D	Tx	61.80	34.50	4.6 T14		2110 KBPS QPSK, FEC TPC .495 SCPC
4)	13800.0000-14500.0000	H,V	13M8G7W	Tx	77.20	41.82	4.6 T14		9.913 MBPS QPSK, FEC TPC, 0.431, SCPC
5)	13800.0000-14500.0000	H,V	76K8G7W	Tx	77.20	64.36	4.6 T14		31.68 KBPS BPSK, FEC TPC, 0.495, SCPC
6)	13800.0000-14500.0000	H,V	76K8G7W	Tx	77.20	64.36	4.6 T14		63.36 KBPS QPSK, FEC TPC, 0.495, SCPC
7)	13800.0000-14500.0000	H,V	13M8G7W	Tx	77.20	41.82	4.6 T14		11.385 MBPS QPSK, FEC TPC, 0.495, SCPC



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8)	13800.0000-14500.0000	H, V	13M8G7W	Tx	77.20	41.82	4.6 T14		12.259 MBPS QPSK, FEC TPC, 0.533, SCPC
9)	13800.0000-14500.0000	H, V	13M8G7W	Tx	77.20	41.82	4.6 T14		18.239 MBPS QPSK, FEC TPC, 0.793, SCPC
10)	13800.0000-14500.0000	H, V	13M8G7W	Tx	77.20	41.82	4.6 T14		20.217 MBPS QPSK, FEC TPC, 0.879, SCPC
11)	13800.0000-14500.0000	H, V	13M8G7W	Tx	77.20	41.82	4.6 T14		9.1195 MBPS BPSK, FEC TPC, 0.793, SCPC
12)	13800.0000-14500.0000	H, V	6M90G7W	Tx	77.20	44.83	4.6 T14		5.6925 MBPS QPSK, FEC TPC, 0.495, SCPC
13)	13800.0000-14500.0000	H, V	6M90G7W	Tx	77.20	44.83	4.6 T14		9.1195 MBPS QPSK, FEC TPC, 0.793, SCPC
14)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		27.584 KBPS BPSK, FEC TPC, 0.431, SCPC
15)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		34.112 KBPS BPSK, FEC TPC, 0.533, SCPC
16)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		50.752 KBPS BPSK, FEC TPC, 0.793, SCPC
17)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		55.168 KBPS QPSK, FEC TPC, 0.431, SCPC
18)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		56.256 KBPS BPSK, FEC TPC, 0.879, SCPC
19)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		68.224 KBPS QPSK, FEC TPC, 0.533, SCPC
20)	13800.0000-14500.0000	H, V	13M8G7W	Tx	77.20	41.82	4.6 T14		10.1085 MBPS BPSK, FEC TPC, 0.879, SCPC
21)	13800.0000-14500.0000	H, V	13M8G7W	Tx	77.20	41.82	4.6 T14		27.3585 MBPS 8PSK, FEC TPC, 0.793, SCPC
22)	13800.0000-14500.0000	H, V	13M8G7W	Tx	77.20	41.82	4.6 T14		30,3255 MBPS 8PSK, FEC TPC, 0.879, SCPC
23)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		101.504 KBPS QPSK, FEC TPC, 0.793, SCPC
24)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		112.512 KBPS QPSK, FEC TPC, 0.879, SCPC
25)	13800.0000-14500.0000	H, V	76K8G7W	Tx	77.20	64.36	4.6 T14		152.256 KBPS 8PSK, FEC TPC, 0.793, SCPC



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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
26)	13800.0000-14500.0000	H,V	76K8G7W	Tx	77.20	64.36	4.6 T14		168.768 KBPS 8PSK, FEC TPC, 0.879, SCPC
27)	11700.0000-12200.0000	H,V	138KGXD	Rx			4.6 T14		TT&C AND RANGING
28)	11700.0000-12200.0000	H,V	1M07G7D	Rx			4.6 T14		1695 KBPS QPSK, FEC TPC .793 TDMA
29)	11700.0000-12200.0000	H,V	1M22G1D	Rx			4.6 T14		1300 KBPS QPSK, FEC TPC .553 SCPC
30)	11700.0000-12200.0000	H,V	319KG7D	Rx			4.6 T14		425 KBPS QPSK, FEC TPC .667 TDMA
31)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		3.795 MBPS QPSK, FEC TPC, 0.66, TDMA
32)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		12.72 KBPS 8PSK, FEC TPC, 0.66, TDMA
33)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		42.24 KBPS BPSK, FEC TPC, 0.66, TDMA
34)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		84.48 KBPS QPSK, FEC TPC, 0.66, TDMA
35)	11700.0000-12200.0000	H,V	2M13G1D	Rx			4.6 T14		2110 KBPS QPSK, FEC TPC .495 SCPC
36)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		1.8975 MBPS BPSK, FEC TPC, 0.66, TDMA
37)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		5.6925 MBPS BPSK, FEC TPC, 0.66, TDMA
38)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		4.9565 MBPS BPSK, FEC TPC, 0.431, SCPC
39)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		5.6925 MBPS BPSK, FEC TPC, 0.495, SCPC
40)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		6.1295 MBPS BPSK, FEC TPC, 0.533, SCPC
41)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		9.1195 MBPS BPSK, FEC TPC, 0.793M SCPC
42)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		27.584 KBPS BPSK, FEC TPC, 0.431, TDMA
43)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		34.112 KBPS BPSK, FEC TPC, 0.533, TDMA



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#	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
44)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		50.752 KBPS BPSK, FEC TPC, 0.793, TDMA
45)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		55.166 KBPS QPSK, FEC TPC, 0.431, TDMA
46)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		68.224 KBPS QPSK, FEC TPC, 0.533, TDMA
47)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		1.532375 MBPS BPSK, FEC TPC, 0.533 TDMA
48)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		2.47825 MBPS QPSK, FEC TPC, 0.431, TDMA
49)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		3.06475 MBPS QPSK, FEC TPC, 0.533, TDMA
50)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		4.55975 MBPS QPSK, FEC TPC, 0.793, TDMA
51)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		101.504 KBPS QPSK, FEC TPC, 0.793, TDMA
52)	11700.0000-12200.0000	H,V	76K8G7W	Rx			4.6 T14		152.256 KBPS 8PSK, FEC TPC, 0.793, TDMA
53)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		1.239125 MBPS BPSK, FEC TPC, 0.431, TDMA
54)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		2.279875 MBPS BPSK, FEC TPC, 0.793, TDMA
55)	11700.0000-12200.0000	H,V	3M45G1W	Rx			4.6 T14		6.839625 MBPS BPSK, FEC TPC, 0.793, TDMA
56)	11700.0000-12200.0000	H,V	480KG7D	Rx	0.00	0.00	4.6 T14		640 KBPS QPSK, FEC TPC .667 TDMA

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)	11700.0000-12200.0000	7.0W-148.0W		05.6-07.3		101.7-256.7		0	4.6 T14
2)	14000.0000-14500.0000	7.0W-148.0W		05.6-07.3		101.7-256.7		-24.28	4.6 T14
3)	13800.0000-14500.0000	7.0W-148.0W		05.6-07.3		101.7-256.7		-24.28	4.6 T14



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D) Points of Communications

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

- 1) 4.6 T14 to Permitted Space Station List
- 2) 4.6 T14 to Estrela do Sul 2 (S2821) @ 63 degrees W.L. (Brazil-licensed)
- 3) 4.6 T14 to MSAT-1 @ 107.5 degrees W.L. (Canadian Licensed) (Non-U.S.-licensed)
- 4) 4.6 T14 to MSAT-2 satellite (AMSC-1) @ 106.5 degrees W.L. satellite (U.S.-licensed)

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)
4.6 T14	4.6 T14	1	4.6	VERTEX	4.6M KPC	275	2.2606 AGL/ 275 AMSL	
Max Gains(s): 54.8 dBi @ 14.2500 GHz 53.3 dBi @ 11.9500 GHz Maximum total input power at antenna flange (Watts) = 750.00 Maximum aggregate output EIRP for all carriers (dBW) = 79.50								

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.
- 181 --- The user must provide the Naval Electromagnetic Spectrum Center (703-325-2750) a 24hr phone number (240-447-9573) which would be contacted when national defense and US naval operation requirements necessitate immediate cessation of operations. The applicant is aware that they would be required to temporarily cease satellite operations on these frequencies until notified otherwise.



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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:

5689 --- Fixed, temporary fixed, and mobile earth terminals authorized under a VSAT or other blanket license shall comply, as appropriate, with the notification and advance consultation provisions of Section 25.203(e), (f), (g), and (i) with the installation of each individual earth terminal falling within the protected radio zones defined in 25.203. This portion of the FCC Rules and Regulations provide protection from harmful interference to certain sensitive radio facilities located within the USA. These protected facilities include the National Radio Astronomy Observatory at Green Bank, West Virginia (25.203(f); Arecibo Observatory, Arecibo, Puerto Rico (25.203(i)); the Department of Commerce's research laboratories located within the Table Mountain Radio Receiving Zone, Boulder County, Colorado (25.203(e)); and the Federal Communications Commission's monitoring stations (25.203(g)).

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)

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.

90405 --- Operations with PERMITTED LIST satellite must comply with §25.212 levels and operations above these levels must coordinate with satellite operators prior to operations.



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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:

900407 --- The Permitted Space Station List (Permitted List) is a list of all geostationary space stations providing fixed-satellite service pursuant to a Commission license or grant of U.S. market access. The Permitted List currently includes the following frequency bands per §25.103 and §25.115(k)(1):

- 3600-4200 MHz (space-to-Earth)
- 5850-6725 MHz (Earth-to-space)
- 10.95-11.2 GHz (space-to-Earth)
- 11.45-12.2 GHz (space-to-Earth)
- 13.75-14.5 GHz (Earth-to-space)
- 18.3-18.8 GHz (space-to-Earth)
- 19.7-20.2 GHz (space-to-Earth)
- 24.75-25.25 GHz (Earth-to-space)
- 28.35-28.6 GHz (Earth-to-space)
- 29.25-30.0 GHz (Earth-to-space).

Earth stations with "Permitted List" designated as a point of communication may access any space station on the Permitted List, provided the operations comply with the applicable "routine" uplink and downlink limits, are within the specific frequency bands authorized in the earth station license, have completed coordination with terrestrial stations pursuant to §25.203, and otherwise comply with all terms and conditions of both the earth station license and the space station grant.



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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 does not meet each required construction deadline by the required date of completion unless, before such date(s), a specific application is timely filed to request an extension of the construction deadline(s), supported with good cause why that failure to construct 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.