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:
T12V antenna testing STA 4.6–m Mt. Jackson – 30 days

1. Applicant

Name:	Telesat Network Services, Inc.	**Phone Number:**	613–748–8700
DBA Name:		**Fax Number:**	613–748–8712
Street:	135 Routes 202/206	**E–Mail:**	JForsey@telesat.com
City:	Bedminster	**State:**	NJ
Country:	USA	**Zipcode:**	07921 –1538
Attention:	Mr John Forsey		

FEDERAL COMMUNICATIONS COMMISSION
GRANTED
International Bureau

File # SES-STA-20160219-00155
E150128
Call Sign ____ Grant Date 2-26-16
(or other identifier)
Term Dates
From: 3-1-16 To: 3-31-16
Approved: Paul E Blaes

GRANTED
International Bureau

File # SES-STA-20160219-00155
Call Sign E150128 Grant Date 2-26-16
(or other identifier)
Term Dates
From: 3-1-16 To: 3-31-16
Approved:

Applicant: Telesat Network Services, Inc.
Call Sign: E150128
File No.: SES-STA-20160219-00155
Special Temporary Authority

Telesat Network Services, Inc. ("Telesat") is granted Special Temporary Authority ("STA") for 30 days, starting March 1, 2016, to operate a temporary-fixed earth station using a 4.6 meter antenna at 38° 43' 44" N.L./078° 39' 24" W.L., Mount Jackson, Virginia to communicate with U.S. licensed GSO satellite Telstar 12V (S2933) at orbital location 15 degrees W.L in the 18306-19103 MHz, 19700-20070 MHz (space-to-Earth) and 28350- 28872 MHz, 29300-29500 MHz (Earth-to-space) frequency bands. This grant of STA is subject to the following conditions:

1) Operations will not exceed the operational power levels and parameters requested and coordinated.

2) Operations under this STA 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.

3) Use of the frequency bands, 18.3-19.1 GHz and 19.7-20.2 GHz, by the earth station at Mount Jackson, Virginia, must be in accordance with the US334 coordination agreement between Skynet Satellite Corporation (Skynet) as the operator of Telstar 12 VANTAGE (T12V) (S2933) satellite network and the U.S. government as the operator of the U.S. government satellite networks operating in the Ka-band frequencies.

4) 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 measures must also be taken to restrict access to other regions in which the antennas' power flux-density levels exceed the specified guidelines.

5) 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. 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.

6) Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Telesat'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 immediately.

2. Contact

Name:	Ryan N. Terry	**Phone Number:**	202–429–4900
Company:	Goldberg, Godles, Wiener & Wright LLP	**Fax Number:**	202–429–4912
Street:	1229 19th Street, N.W.	E–Mail:	rterry@g2w2.com
City:	Washington	**State:**	DC
Country:	USA	**Zipcode:**	20036 –
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 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	
03/01/2016	

7. CityMount Jackson	8. Latitude (dd mm ss.s h) 38 43 44.4 N
9. State VA	10. Longitude (dd mm ss.s h) 78 39 24.1 W

11. Please supply any need attachments.

Attachment 1: Request for STA Attachment 2: Rad Haz 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.)

Telesat Network Services, Inc., pursuant to Section 25.120 of the Commission's rules, hereby requests Special Temporary Authority to operate a temporary-fixed 4.6-m mobile antenna at its Mt. Jackson, VA teleport, for a 30-day period to begin on March 1, 2016, to permit testing of facilities that will communicate with the Telstar 12 Vantage satellite.

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 R. John Forsey	15. Title of Person Signing Director, Corporate Development

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.

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

EXPEDITED TREATMENT REQUESTED

Telesat Network Services, Inc. ("Telesat"), pursuant to Section 25.120 of the Commission's rules, hereby requests Special Temporary Authority ("STA") to operate a temporary-fixed 4.6-m antenna at its Mt. Jackson, VA teleport in the manner described herein. Telesat respectfully requests that its STA begin on March 1, 2016, and have a term of thirty (30) days, consistent with 47 C.F.R. 25.120(b)(4) of the Commission's rules.[1]

The instant STA request is sought to permit testing of facilities that will communicate with the Telstar 12 Vantage ("Telstar 12V") satellite. The T12V satellite was launched on November 24, 2015. The Commission has authorized Skynet Satellite Corporation, a Telesat affiliate, to operate the Telstar 12V satellite at 15°W.L.[2]

Since the launch of Telstar 12V, Telesat has been actively working to transition services from the Telstar 12 satellite and to commence new services, including those planned for communication with a recently authorized 9.4-m antenna in the Ka-band.[3] Owing to unforeseen delays in the installation and commissioning of that 9.4-m antenna, Telesat is required to utilize a temporary-fixed 4.6-m antenna to commence critical testing that would otherwise have been conducted using the primary 9.4-m antenna.

Specifically, the antenna will be used to test a bidirectional link between Mt. Jackson and a ship-mounted earth station off the coast of Brazil. The testing over the link with Brazil is critical to verify whether Telesat can transition certain services from Telstar 12 to Telstar 12V while minimizing outage time.

The subject 4.6-m antenna will be located within a secured perimeter at the Mt. Jackson teleport to which only authorized employees would have access. Telesat is also providing herewith a radiation hazard report.

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[1] Telesat notes that it is concurrently filing herewith a second STA request to continue operation of the subject facility for an additional 60 days. Telesat anticipates that it will require a period through May 30, 2016 to complete the subject testing and to make the appropriate network calibrations, and is thus submitting two requests to facilitate expedited treatment of this initial STA request. Telesat has no plans to license the 4.6-m antenna on a permanent basis.

[2] Call Sign S2933 (FCC File No. SAT-LOA-20141010-00107).

[3] Call Sign E150128 (FCC File Nos. SES-LIC-20151014-00689 and SES-AMD-20151209-00922), granted Jan. 11, 2016.

In addition, Telesat is providing a Frequency Coordination Report to demonstrate that coordination has been successfully completed with terrestrial operators in the 28 GHz band.[4]

Finally, Telesat is attaching to this request a completed Schedule B in which it furnishes the technical details that relate to the proposed operations.

Grant of this application will serve the public interest, convenience, and necessity by allowing Telesat to test and calibrate its ground network system to support a newly launched satellite. Accordingly, and for good cause shown, Telesat respectfully requests that its STA be granted in time for it to commence testing under this 30-day STA as soon as possible.

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[4] Telesat is submitting herewith a Frequency Coordination Report that was generated for an immediately adjacent 2.4-m antenna with which Telesat is also performing tests of the new antenna infrastructure at Mt. Jackson. (*See* FCC File No. SES-STA-20151218-00955.) Given the urgency in commencing operation of the subject 4.6-m antenna, and the fact that the testing period is for a relatively short duration, Telesat is submitting the same Frequency Coordination Report with the instant request, understanding that (a) this request for authority is to operate on the same frequency bands; (b) the proposed operations will be bound by the same EIRP density limits; and (c) as a larger antenna, the subject 4.6-m antenna will have lower sidelobe emissions. As it stated in its 2.4-m STA request, Telesat herein also notes that it has not sought frequency protection for its proposed temporary receive operations and is willing to accept any interference it receives during the testing.

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

Location of Earth Station Site E1: Site Identifier: Mt. Jackson E5. Call Sign: E2: Contact Name: Todd Sypolt E6. Phone Number: 540-477-5540 E3. Street: 1305 Industrial Park Road E7. City: Mt. Jackson		
E4. State: VA E8. County: Shenandoah E9. Zip Code: 22842 E10. Area of Operation: Fixed E11. Latitude: 38-43-44.4 N E12. Longitude: 78-39-24.1 W E13. Lat/Lon Coordinates are:	○ NAD-27	◉ NAD-83
E14. Site Elevation (AMSL): 282.24 meters		N/A
E15. 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 measurement? If NO, provide a technical analysis showing compliance with two-degree spacing policy.	◉ Yes ○ No	N/A
E16. 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 measurements?	○ Yes ○ No	◉ N/A
E17. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.	○ Yes	◉ No
E18. Is frequency coordination required? If YES, attach a frequency coordination report as	◉ Yes	○ No
E19. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as	○ Yes	◉ No
E20. FAA Notification - (See 47 CFR Part 17 and 47 CFR 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 CFR PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION.**	○ Yes	◉ No

POINTS OF COMMUNICATION

Satellite Name: | | Eq. If you selected OTHER, please enter the following:	
E21. Common Name:	E22. ITU Name:
E23. Orbit Location: TELSTAR 12 VANTAGE (TELSTAR 12V)	E24. Country:

POINTS OF COMMUNICATION (Destination Points)

E25. Site Identifier:

E26. Common Name:	E27. Country:

ANTENNA

Site ID	E28. Antenna Id	E29. Quantity	E30. Manufacturer	E31. Model	E32. Antenna Size	E41/42. Antenna Gain Transmit and/or Receive (____dBi at_____GHz)
Mt. Jackson	Temp-1	1	Andrews	4.6	4.6	54.7 dBi at 28.5 GHz 51.0 dBi at 18.7 GHz

E28. Antenna Id	E33/34. Diameter Minor/Major(meters)	E35. Above Ground Level (meters)	E36. Above Sea Level (meters)	E37. Building Height Above Ground Level (meters)	E38. Total Input Power at antenna flange (Watts)	E39. Maximum Antenna Height Above Rooftop (meters)	E40. Total EIRP for al carriers (dBW)
Temp-1	0/0	6.0	288.24	0	7.4	0	63.4

FREQUENCY

E28. Antenna Id	E43/44. Frequency Bands(MHz)	E45. T/R Mode	E46. Antenna Polarization(H,V,L,R)	E47. Emission Designator	E48. Maximum EIRP per Carrier(dBW)	E49. Maximum ERIP Density per Carrier(dBW/4kHz)
Temp 1	28350-28872	T	Horizontal and Vertical	2M50G7D	61.9	33.9
E50. Modulation and Services : Data						
Temp 1	28350-28872	T	Horizontal and Vertical	500KG7D	54.9	33.9
E50. Modulation and Services : Data						
Temp 1	28350-28872	T	Horizontal and Vertical	10K0N0N	37.9	33.9
E50. Modulation and Services : CW pilot carrier						
Temp 1	29300-29500	T	Horizontal and Vertical	2M50G7D	61.9	33.9
E50. Modulation and Services : Data						
Temp 1	29300-29500	T	Horizontal and Vertical	500KG7D	54.9	33.9
E50. Modulation and Services : Data						
Temp 1	29300-29500	T	Horizontal and Vertical	10K0N0N	37.9	33.9
E50. Modulation and Services : CW pilot carrier						
Temp 1	18306-19103	R	Horizontal and Vertical	500KG7D	0.0	0.0
E50. Modulation and Services : Data						
Temp 1	18306-19103	R	Horizontal and Vertical	500KN0N	0.0	0.0
E50. Modulation and Services : CW pilot carrier						

Temp 1	19700-20070	R	Horizontal and Vertical	500KG7D	0.0	0.0
E50. Modulation and Services : Data						
Temp 1	19700-20070	R	Horizontal and Vertical	500KN0N	0.0	0.0
E50. Modulation and Services : CW pilot carrier						

FREQUENCY COORDINATION

E28. Antenna Id	E51. Satellite Orbit Type	E52/53. Frequency Limits(MHz)	E54/55. Range of Satellite Arc E/W Limit	E56. Earth Station Azimuth Angle Eastern Limit	E57. Antenna Elevation Angle Eastern Limit	E58. Earth Station Azimuth Angle Western Limit	E59. Antenna Elevation Angle Western Limit	E60. Maximum EIRP Density toward the Horizon(dBW/4kHz)
Temp-1	Geostationary	28350-29500	15.0/15.0	107.2	11.7	107.2	11.7	-18.5
Temp-1	Geostationary	18306-20070	15.0/15.0	107.2	11.7	107.2	11.7	0

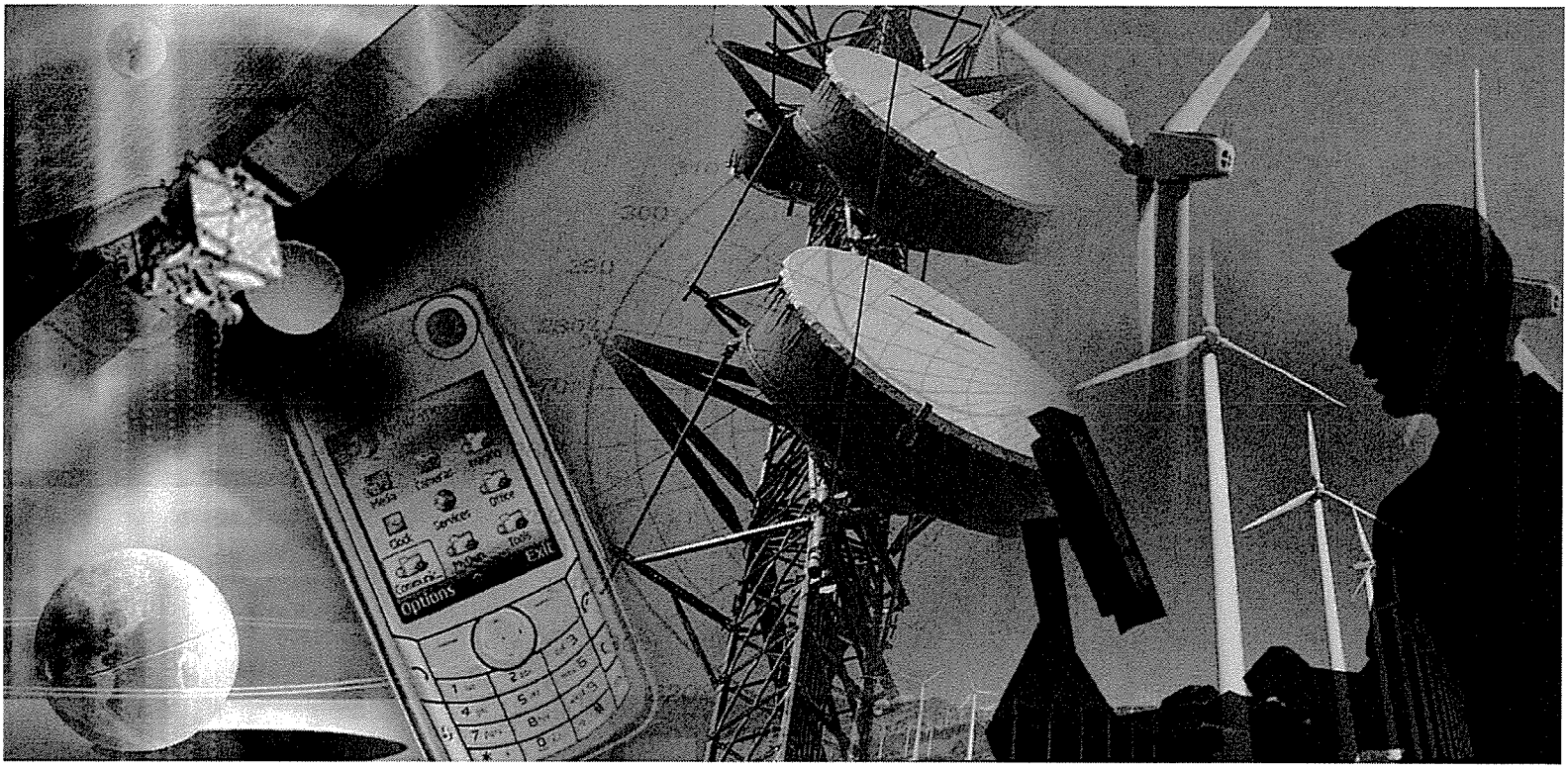
REMOTE CONTROL POINT LOCATION

E61. Call Sign NOTE: Please enter the callsign of the controlling station, not the callsign for which this application is being filed.			E65. Phone Number
E62. Street Address			
E63. City	E67. County	E64/68. State/Country	E66. Zip Code

Ka-Band Earth Station – Mt. Jackson, VA

Frequency Coordination Report

28 GHz



Prepared on Behalf of
Telesat Canada

November 4, 2015

COMSEARCH
A CommScope Company

Table of Contents

1. Summary of Results

On behalf of Telesat Canada, Comsearch performed a coordination notice for all existing and proposed terrestrial licenses within the coordination contours of their proposed Ka-Band earth station in Mt. Jackson, Virginia, which will transmit at 28 GHz[1]. Prior-notification letters were sent to the licensees and a copy of the notification data is provided in section four of this report. The earth station coordination was finalized on November 4, 2015.

No objections were received from any of the incumbent 28 GHz licensees.

2. 28 GHz Common Carrier and LTTS Coordination

In accordance with FCC Rules and Regulations, the Ka-Band earth station in Mt. Jackson, Virginia was prior-coordinated by Comsearch. A notification letter and datasheet for this earth station were sent to the following 28 GHz common carrier fixed microwave licensee on November 2, 2015. This licensee is authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Verizon	Continental US

A notification letter and datasheets for the Ka-Band earth station in Mt. Jackson, Virginia were also sent to the following 28 GHz local television transmission licensee on November 2, 2015. This licensee is authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Information Super Station, LLC	Continental US

No objections were received from the common carrier or local television transmission service incumbents.

[1] The proposed earth station will operate in the 28.35 – 29.5 GHz portion of the Ka-Band.

3. 28 GHz LMDS Coordination

The proposed earth station will not operate on frequencies that overlap Block A of the LMDS service. Therefore, no LMDS coordination was necessary.

The total frequency allocation for Block A of the LMDS spectrum appears below.

Block A: 27.500-28.350 GHz
29.100-29.250 GHz
31.075-31.225 GHz

4. Earth Station Coordination Data

This section presents the data pertinent to the proposed Ka-Band earth station in Mt. Jackson, Virginia. This data was circulated to all incumbent licensees in the shared 28 GHz frequency ranges.

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5662 http://www.comsearch.com

Date:	11/02/2015
Job Number:	<PCNJobCode>

Administrative Information

Status	ENGINEER PROPOSAL
Call Sign	<PCNCallSign>
Licensee Code	IC0236
Licensee Name	Telesat Canada -

Site Information — MT JACKSON, VA

Venue Name	
Latitude (NAD 83)	38° 43' 44.4" N
Longitude (NAD 83)	78° 39' 24.1" W
Climate Zone	A
Rain Zone	2
Ground Elevation (AMSL)	282.24 m / 926.0 ft

Link Information

Satellite Type	Geostationary
Mode	TO - Transmit-Only
Modulation	Digital
Satellite Arc	15° W to 15° West Longitude
Azimuth Range	107.2° to 107.2°
Corresponding Elevation Angles	11.7° / 11.7°
Antenna Centerline (AGL)	2.74 m / 9.0 ft

Antenna Information — Transmit - FCC32

Manufacturer		Andrew
Model		2.4 Meter
Gain / Diameter		55.1 dBi / 2.4 m
3-dB / 15-dB Beamwidth		0.32° / 0.64°
Max Available RF Power	(dBW/4 kHz)	8.3
	(dBW/MHz)	32.3
Maximum EIRP	(dBW/4 kHz)	63.4
	(dBW/MHz)	87.4
Interference Objectives:	Long Term	-151.0 dBW/4 kHz 20%
	Short Term	-128.0 dBW/4 kHz 0.0025%

Frequency Information — Transmit 28.0 GHz

Emission / Frequency Range (MHz)	500KG7D - N0N / 28350.0 - 28872.0
	500KG7D - N0N / 29256.0 - 29500.0
Max Great Circle Coordination Distance	155.0 km / 96.3 mi
Precipitation Scatter Contour Radius	220.3 km / 136.9 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5662 http://www.comsearch.com

Coordination Values	**MT JACKSON, VA**
Licensee Name	Telesat Canada -
Latitude (NAD 83)	38° 43' 44.4" N
Longitude (NAD 83)	78° 39' 24.1" W
Ground Elevation (AMSL)	282.24 m / 926.0 ft
Antenna Centerline (AGL)	2.74 m / 9.0 ft
Antenna Model	Andrew 2.4 meter
Antenna Mode	Transmit 28.0 GHz
Interference Objectives: Long Term	-151.0 dBW/4 kHz 20%
Short Term	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	8.3 (dBW/4 kHz)

			Transmit 28.0 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.64	106.88	-10.00	124.45
5	0.60	101.98	-10.00	125.37
10	0.91	97.09	-10.00	113.69
15	0.65	92.17	-10.00	124.09
20	0.62	87.27	-10.00	125.44
25	0.36	82.37	-10.00	140.15
30	0.00	77.49	-10.00	154.98
35	0.00	72.60	-10.00	154.98
40	0.00	67.72	-10.00	154.98
45	0.00	62.84	-10.00	154.98
50	0.00	57.98	-10.00	154.98
55	0.32	53.09	-10.00	143.73
60	0.76	48.18	-10.00	119.80
65	1.30	43.25	-8.90	105.48
70	2.45	38.19	-7.55	100.00
75	3.93	33.05	-5.98	100.00
80	4.12	28.18	-4.25	100.00
85	4.36	23.35	-2.21	100.00
90	4.85	18.50	0.32	100.00
95	4.83	14.01	3.34	100.00
100	4.75	10.03	6.96	100.00
105	3.38	8.65	8.58	127.85
110	3.58	8.62	8.62	119.46
115	3.57	11.27	5.70	109.71
120	3.38	15.24	2.43	100.99
125	3.57	19.52	-0.26	100.00
130	3.61	24.12	-2.56	100.00
135	3.49	28.89	-4.52	100.00
140	3.05	33.79	-6.22	100.00
145	1.93	38.85	-7.74	100.00
150	1.47	43.77	-9.03	101.02
155	0.80	48.72	-10.00	117.87
160	0.45	53.62	-10.00	133.12
165	0.27	58.50	-10.00	147.86
170	0.25	63.37	-10.00	149.69
175	0.22	68.26	-10.00	152.35
180	0.21	73.14	-10.00	154.52
185	0.30	78.03	-10.00	144.82

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5662 http://www.comsearch.com

Coordination Values	**MT JACKSON, VA**
Licensee Name	Telesat Canada -
Latitude (NAD 83)	38° 43' 44.4" N
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Antenna Model	Andrew 2.4 meter
Antenna Mode	Transmit 28.0 GHz
Interference Objectives: Long Term	-151.0 dBW/4 kHz 20%
Short Term	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	8.3 (dBW/4 kHz)

Transmit 28.0 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.29	82.93	-10.00	146.17
195	0.00	87.83	-10.00	154.98
200	0.00	92.73	-10.00	154.98
205	0.27	97.63	-10.00	147.36
210	1.01	102.56	-10.00	109.59
215	1.20	107.48	-10.00	104.93
220	1.10	112.37	-10.00	107.25
225	0.58	117.22	-10.00	126.11
230	1.25	122.17	-10.00	103.74
235	1.55	127.09	-10.00	100.00
240	1.01	131.86	-10.00	109.65
245	1.13	136.72	-10.00	106.72
250	0.90	141.46	-10.00	113.75
255	1.15	146.27	-10.00	106.02
260	2.14	151.27	-10.00	100.00
265	2.56	156.05	-10.00	100.00
270	1.21	159.90	-10.00	104.75
275	1.22	163.93	-10.00	104.33
280	1.14	167.20	-10.00	106.31
285	1.22	169.25	-10.00	104.50
290	1.57	169.46	-10.00	100.00
295	1.92	167.50	-10.00	100.00
300	1.72	163.81	-10.00	100.00
305	1.49	159.55	-10.00	100.00
310	1.34	155.07	-10.00	101.38
315	1.45	150.52	-10.00	100.00
320	1.55	145.84	-10.00	100.00
325	1.59	141.07	-10.00	100.00
330	1.88	136.31	-10.00	100.00
335	1.74	131.43	-10.00	100.00
340	1.52	126.53	-10.00	100.00
345	1.13	121.60	-10.00	106.53
350	0.99	116.70	-10.00	110.06
355	0.66	111.78	-10.00	123.97

5. Contact Information

For questions or information regarding the 28 GHz Frequency Coordination Report, please contact:

Contact person:	Joanna Lynch
Title:	Manager, Spectrum & Data Solutions
Company:	Comsearch
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EXHIBIT A
Radiation Hazard Study
4.6 meter Ka-Band

INTRODUCTION

The FCC adopted new guidelines and procedures in 1996 for evaluating environmental effects of radio frequency (RF) emissions. In order to provide assistance in determining whether proposed or existing transmitting facilities comply with the new guidelines, the FCC Office of Engineering and Technology revised OET Bulletin 65. The revised version updates limits for Maximum Permissible Exposure (MPE) in terms of electric and magnetic field strength and power density for transmitters operating at frequencies between 300 kHz and 100 GHz. This bulletin was adopted by the FCC in their General Docket No. 97-303 on August 25, 1997. In order to comply with the requirements of the Report and Order, calculations to determine the power flux densities in the far field, near field, and reflector regions of the earth station antenna have been made and are contained in this study.

The FCC guidelines incorporate two separate tiers of exposure limits that are dependent on the situation in which the exposure takes place and the status of the individuals who are subject to exposure. The earth station transmitting equipment and antenna are located within a controlled area and not accessible to the general public. Entry is restricted to employees who have been made fully aware of the potential for human exposure and can exercise control over their exposure. Therefore occupational / controlled exposure maximum power density limits are used in this study.

The FCC Office of Engineering and Technology suggests a method for calculating the maximum values of the power densities emanating from an aperture antenna in OET bulletin 65. This method is used to determine the power densities associated with the satellite antenna.

The 4.6 m Ka-Band satellite earth station at Mount Jackson will be configured to receive a maximum input power of 10 watts from the amplifier at the antenna flange. The subsequent calculations are based on this configuration.

Antenna Surface: The maximum power density directly in front of the antenna may be expressed as:

$$S_{surface} = \frac{4P}{A}$$

where: $S_{surface}$ = maximum power density at the antenna surface
P = power fed to the antenna
A = physical area of the aperture antenna

Using the parameters for the Mount Jackson antenna:

$S_{surface}$ = 4 (10 Watts) / (π (4.6 meters / 2)^2)
$S_{surface}$ = 40 Watts / 16.6 m^2
$S_{surface}$ = 2.4 Watts / m^2
$S_{surface}$ = 0.2 mW / cm^2

Near- Field Region: In the near field of the main beam the power density can reach a maximum before it begins to decrease with distance. The extent of the near field can be described by the following equation:

$$R_{nf} = \frac{D^2}{4\lambda}$$

where: R_{nf} = extent of near field
D = diameter of antenna
λ = wavelength

Using the parameters for this antenna:

λ = 0.01 meters @ 29500 MHz
R_{nf} = (4.6 meters)^2 / 4(0.01 meters)
R_{nf} = 21.2 / .04 meters
R_{nf} = 520 meters

The magnitude of the on axis power density varies according to location in the near field. However, the maximum value of the near field, on axis, power density can be expressed by the following equation:

$$S_{nf} = \frac{16\eta P}{\pi D^2}$$

where: S_{nf} = maximum near field power density
η = aperture efficiency
P = power fed to the antenna
D = antenna diameter
Using the parameters for this antenna:

η = .45
P = 10 Watts
S_{nf} = 16 (.45) (10 Watts) / π (4.6 meters)^2
S_{nf} = 72 Watts / 66.5 meter^2
S_{nf} = 1.1 Watts / meter^2
S_{nf} = 0.1 mW / cm^2

Far Field Region: For purposes of evaluating RF exposure, the distance to the beginning of the far field region can be approximated by the following equation:

$$R_{ff} = \frac{0.6D^2}{\lambda}$$

where: R_{ff} = distance to the beginning of far field
D = diameter of antenna
λ = wavelength

Using the parameters for this antenna:
R_{ff} = 0.6 (4.6 meters)^2 / .01 meter
R_{ff} = 1248 meters

The power density in the far field region of the antenna pattern decreases inversely as the square of the distance. The power density in the far field region of the radiation pattern can be estimated by the equation:

$$S_{ff} = PG / 4\pi R^2$$

where: S_{ff} = power density (on axis)
P = power fed to antenna
G = power gain of the antenna in the direction of interest
R = distance to the point of interest

Using the parameters for this antenna:

S_{ff} = 10 Watts ($10^{(59.7\ dBi/10)}$) / 4 (π) $(1248)^2$

S_{ff} = 9332543 / 19572173

S_{ff} = 0.5 Watts / meter^2

S_{ff} = 0.05 mW / cm^2

Region between Feed and Reflector: The RF energy radiated from the feed system is confined to a conical shape whose vertex is located at the feed and extends outward to the sub-reflector and is directed back to the main reflector surface. The power density at any point in this region is expressed by the equation:

$$S_{feed} = P/A$$

where:

A = Cross section area of the conical region in meter^2

P = Radiated transmitted power in watts

At the sub-reflector surface the power density is:

S_{feed} = P/A = 10 / (π (0.1/ 2)^2) = 80 Watts/meter^2

S_{feed} = 8 mW / cm^2

CONCLUSION

The results of the above calculations are summarized in the following table.

Region	Power Density	Remarks
Antenna Surface	0.2 mW/cm^2	Safe Level
Main Reflector Sub-reflector Region	8 mW/cm^2	**Hazardous**
Near Field < 520 meters	0.1 mW/cm^2	Safe Level
Far Field > 1248 meters	0.05 mW/cm^2	Safe Level

Results of this hazard study indicate that the 5 mW/cm^2 MPE limit for Occupational/Controlled Exposure in the 1500 – 100,000 MHz range is not exceeded in areas directly in front of the antenna in the far field. The region where this limit may be exceeded will be the region between the reflector and the feed horn. This area is not readily accessible to personnel and whenever personnel are required to work on the radiating or reflecting parts of the antenna structure, the transmitter will be turned off. Signs to this effect will be posted at the transmitter site.

Based on this study of predicted radio frequency levels, it is concluded that operation of this satellite earth station meets OET Bulletin 65 maximum permissible exposure limits and that no harmful effects will occur to station personnel or anyone within proximity of the station.

Therefore, in accordance with 47 CFR § 1.1307 (b) of the Commission's Rules, preparation and submission of an Environmental Assessment (EA) is not required.