Ka-Band Earth Station – Middletown, VA

Frequency Coordination Report

28 GHz

Prepared on Behalf of
Telesat Canada

July 8, 2016

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 Middletown, 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 July 8, 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 Middletown, 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 licensees on June 6, 2016. These licensees are authorized to operate temporary fixed operations from 27.5 to 29.5 GHz on a statewide or nationwide basis.

Licensee	Authorized Geographic Area
Frontier	Continental US
Verizon	Statewide: Virginia

A notification letter and datasheets for the Ka-Band earth station in Middletown, Virginia were also sent to the following 28 GHz local television transmission licensee on June 6, 2016. 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 27.6 – 28.6 GHz and 29.25 – 30.0 GHz portions of the Ka-Band.

3. 28 GHz LMDS Coordination

A Notification letter was sent to the following 28 GHz LMDS licensees on June 6, 2016. The proposed earth station will operate on frequencies that overlap Block A of the LMDS service. 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

Licensee	Market	Market Name
Nextlink / XO	BTA374	Richmond-Petersburg, VA
Nextlink / XO	BTA461	Washington, DC

No objections were received from the LMDS incumbents.

4. Earth Station Coordination Data

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

Date:	06/02/2016
Job Number:	160602COMSGE02

Administrative Information	
Status	ENGINEER PROPOSAL
Call Sign	
Licensee Code	TELSAT
Licensee Name	Telesat Canada

Site Information	**MIDDLETOWN, VA**
Venue Name	
Latitude (NAD 83)	39° 1' 1.0" N
Longitude (NAD 83)	78° 17' 28.8" W
Climate Zone	A
Rain Zone	2
Ground Elevation (AMSL)	217.92 m / 715.0 ft

Link Information	
Satellite Type	Geostationary
Mode	TR - Transmit-Receive
Modulation	Digital
Satellite Arc	63° W to 63° West Longitude
Azimuth Range	156.5° to 156.5°
Corresponding Elevation Angles	42.1° / 42.1°
Antenna Centerline (AGL)	5.49 m / 18.0 ft

Antenna Information	**Receive - FCC32**	**Transmit - FCC32**
Manufacturer	ASC Signal	ASC Signal
Model	9.4 Meter	9.4 Meter
Gain / Diameter	63.0 dBi / 9.4 m	66.5 dBi / 9.4 m
3-dB / 15-dB Beamwidth	0.10° / 0.20°	0.07° / 0.14°
Max Available RF Power (dBW/4 kHz)		-21.0
(dBW/MHz)		3.0
Maximum EIRP (dBW/4 kHz)		45.5
(dBW/MHz)		69.5

Interference Objectives:				
	Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz 20%
	Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz 0.0025%

Frequency Information	**Receive 18.0 GHz**	**Transmit 28.0 GHz**
Emission / Frequency Range (MHz)	500KG7D - 112MG7D / 18300.0 - 18800.0	500KG7D - 112MG7D / 27600.0 - 28600.0
	500KG7D - 112MG7D / 19700.0 - 20200.0	500KG7D - 112MG7D / 29250.0 - 30000.0
Max Great Circle Coordination Distance	140.1 km / 87.0 mi	100.0 km / 62.1 mi
Precipitation Scatter Contour Radius	100.0 km / 62.1 mi	100.0 km / 62.1 mi

Coordination Values	**MIDDLETOWN, VA**			
Licensee Name	Telesat Canada			
Latitude (NAD 83)	39° 1' 1.0" N			
Longitude (NAD 83)	78° 17' 28.8" W			
Ground Elevation (AMSL)	217.92 m / 715.0 ft			
Antenna Centerline (AGL)	5.49 m / 18.0 ft			
Antenna Model	ASC Signal 9.4 meter			
Antenna Mode	Receive 18.0 GHz		Transmit 28.0 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz	0.0025%
Max Available RF Power		-21.0 (dBW/4 kHz)		

			Receive 18.0 GHz		Transmit 28.0 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.28	133.13	-10.00	129.41	-10.00	100.00
5	0.00	130.71	-10.00	136.18	-10.00	100.00
10	0.32	128.47	-10.00	127.16	-10.00	100.00
15	0.29	125.70	-10.00	128.91	-10.00	100.00
20	0.28	122.74	-10.00	129.71	-10.00	100.00
25	0.00	119.47	-10.00	136.18	-10.00	100.00
30	0.00	116.21	-10.00	136.18	-10.00	100.00
35	0.00	112.83	-10.00	136.18	-10.00	100.00
40	0.00	109.35	-10.00	136.18	-10.00	100.00
45	0.00	105.80	-10.00	136.18	-10.00	100.00
50	0.00	102.19	-10.00	136.18	-10.00	100.00
55	0.00	98.53	-10.00	136.18	-10.00	100.00
60	0.00	94.84	-10.00	136.18	-10.00	100.00
65	0.00	91.13	-10.00	136.18	-10.00	100.00
70	0.00	87.42	-10.00	136.18	-10.00	100.00
75	0.00	83.72	-10.00	136.18	-10.00	100.00
80	0.00	80.05	-10.00	136.18	-10.00	100.00
85	0.00	76.40	-10.00	136.18	-10.00	100.00
90	0.00	72.81	-10.00	136.18	-10.00	100.00
95	0.00	69.29	-10.00	136.18	-10.00	100.00
100	0.00	65.84	-10.00	136.18	-10.00	100.00
105	0.00	62.51	-10.00	136.18	-10.00	100.00
110	0.00	59.30	-10.00	136.18	-10.00	100.00
115	0.00	56.26	-10.00	136.18	-10.00	100.00
120	0.00	53.40	-10.00	136.18	-10.00	100.00
125	0.00	50.77	-10.00	136.18	-10.00	100.00
130	0.00	48.41	-10.00	136.18	-10.00	100.00
135	0.00	46.35	-9.65	137.14	-9.65	100.00
140	0.00	44.66	-9.25	138.26	-9.25	100.00
145	0.00	43.37	-8.93	139.16	-8.93	100.00
150	0.00	42.51	-8.71	139.77	-8.71	100.00
155	0.00	42.12	-8.61	140.05	-8.61	100.00
160	0.00	42.22	-8.64	139.99	-8.64	100.00
165	0.00	42.79	-8.78	139.57	-8.78	100.00
170	0.00	43.82	-9.04	138.84	-9.04	100.00
175	0.00	45.27	-9.40	137.85	-9.40	100.00
180	0.00	47.11	-9.83	136.65	-9.83	100.00
185	0.34	49.02	-10.00	125.67	-10.00	100.00

Coordination Values	**MIDDLETOWN, VA**			
Licensee Name	Telesat Canada			
Latitude (NAD 83)	39° 1' 1.0" N			
Longitude (NAD 83)	78° 17' 28.8" W			
Ground Elevation (AMSL)	217.92 m / 715.0 ft			
Antenna Centerline (AGL)	5.49 m / 18.0 ft			
Antenna Model	ASC Signal 9.4 meter			
Antenna Mode	Receive 18.0 GHz		Transmit 28.0 GHz	
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-151.0 dBW/4 kHz	20%
Short Term	-146.0 dBW/MHz	0.01%	-128.0 dBW/4 kHz	0.0025%
Max Available RF Power		-21.0 (dBW/4 kHz)		

			Receive 18.0 GHz		Transmit 28.0 GHz	
Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	1.60	50.64	-10.00	100.00	-10.00	100.00
195	1.67	53.42	-10.00	100.00	-10.00	100.00
200	2.98	55.74	-10.00	100.00	-10.00	100.00
205	3.08	59.00	-10.00	100.00	-10.00	100.00
210	3.09	62.45	-10.00	100.00	-10.00	100.00
215	2.12	66.38	-10.00	100.00	-10.00	100.00
220	0.67	70.43	-10.00	106.75	-10.00	100.00
225	0.00	74.20	-10.00	136.18	-10.00	100.00
230	0.00	77.81	-10.00	136.18	-10.00	100.00
235	0.00	81.47	-10.00	136.18	-10.00	100.00
240	0.00	85.16	-10.00	136.18	-10.00	100.00
245	0.00	88.87	-10.00	136.18	-10.00	100.00
250	0.00	92.58	-10.00	136.18	-10.00	100.00
255	0.00	96.28	-10.00	136.18	-10.00	100.00
260	0.00	99.95	-10.00	136.18	-10.00	100.00
265	0.00	103.60	-10.00	136.18	-10.00	100.00
270	0.00	107.19	-10.00	136.18	-10.00	100.00
275	0.00	110.71	-10.00	136.18	-10.00	100.00
280	0.23	114.25	-10.00	133.61	-10.00	100.00
285	0.23	117.60	-10.00	133.56	-10.00	100.00
290	0.21	120.81	-10.00	135.19	-10.00	100.00
295	0.24	123.89	-10.00	133.08	-10.00	100.00
300	0.22	126.75	-10.00	134.47	-10.00	100.00
305	0.00	129.23	-10.00	136.18	-10.00	100.00
310	0.22	131.77	-10.00	134.94	-10.00	100.00
315	0.00	133.65	-10.00	136.18	-10.00	100.00
320	0.00	135.34	-10.00	136.18	-10.00	100.00
325	0.00	136.63	-10.00	136.18	-10.00	100.00
330	0.22	137.70	-10.00	134.89	-10.00	100.00
335	0.22	138.10	-10.00	134.44	-10.00	100.00
340	0.26	138.05	-10.00	131.04	-10.00	100.00
345	0.37	137.57	-10.00	123.66	-10.00	100.00
350	0.43	136.59	-10.00	119.17	-10.00	100.00
355	0.36	135.05	-10.00	124.68	-10.00	100.00

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
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5711
Fax:	703-726-5599
Email:	jlynch@comsearch.com
Web site:	www.comsearch.com