

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Telesat Canada
MIDDLETOWN, VA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
September 21, 2015

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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 07/02/2015.

Company

ALLEGANY COUNTY GOVERNMENT
APC Realty and Equipment CO LLC
Adams County Department of Emergency Svc
Affiniti PA, LLC
Airband Communications Inc
Arlington County Emergency Comm Ctr
B.F. SAUL COMPANY
Believe Wireless, LLC
Blaze Broadband
CBS Broadcasting Inc
CBS Communication Services Inc
Calvert County Government
Calvert, County of
Clearwire Spectrum Holdings III, LLC
ECW Wireless, LLC
Enoch Pratt Free Library
Franklin County Dept. of Emergency Servi
Fundamental Broadcasting LLC
George Washington University
Loudoun, County of
Maryland Port Administration
Maryland, State Of - MDOT-MTA
NBC Telemundo License LLC
New Cingular Wireless PCS, LLC - PA
Pennsylvania Turnpike Commission
Prince William, County of
Radio One Inc
RapidDSL & Wireless, Inc.
Red Zebra Broadcasting Licensee, LLC
SHIPPENSBURG AREA SCHOOL DISTRICT
Shenandoah Personal Communications, LLC
Somerset, County of
Sprint Spectrum L.P.
Telegia Communications Inc.
Virginia Everywhere, LLC
Virginia PCS Alliance, L.C.
WASHINGTON CABLE SYSTEMS INC
WKYSFM, INC
Washington Metro Area Transit Police Dep
West Virginia PCS Alliance, L.C.
Western PA Internet Access, Inc.
World Class Wireless, LLC

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: 09/21/2015
Job Number: 150702COMSGE04

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' 0.8" N
Longitude (NAD 83) 78° 17' 29.0" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 217.82 m / 714.6 ft

Link Information

Satellite Type Geostationary
Mode TR - Transmit-Receive
Modulation Digital
Satellite Arc 15° W to 15° West Longitude
Azimuth Range 107.6° to 107.6°
Corresponding Elevation Angles 11.9° / 11.9°
Antenna Centerline (AGL) 5.49 m / 18.0 ft

Antenna Information

Manufacturer ASC Signal
Model 9.4 Meter
Gain / Diameter 63.0 dBi / 9.4 m
3-dB / 15-dB Beamwidth 0.10° / 0.20°

Receive - FCC32

Transmit - FCC32

ASC Signal
9.4 Meter
66.5 dBi / 9.4 m
0.07° / 0.14°

Max Available RF Power (dBW/4 kHz) -30.0
(dBW/MHz) -6.0

Maximum EIRP (dBW/4 kHz) 36.5
(dBW/MHz) 60.5

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

Emission / Frequency Range (MHz)
500KG7D - 112MG7D / 18306.0 - 19103.0
500KG7D - 112MG7D / 19700.0 - 20070.0

Receive 18.0 GHz

Transmit 28.0 GHz

500KG7D - 112MG7D / 28361.0 - 28872.0
500KG7D - 112MG7D / 29256.0 - 29868.0

Max Great Circle Coordination Distance 185.9 km / 115.5 mi 100.2 km / 62.2 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi 100.0 km / 62.1 mi

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Coordination Values

MIDDLETOWN, VA

Licensee Name Telesat Canada
Latitude (NAD 83) 39° 1' 0.8" N
Longitude (NAD 83) 78° 17' 29.0" W
Ground Elevation (AMSL) 217.82 m / 714.6 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 -30.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.29	107.20	-10.00	129.32	-10.00	100.00
5	0.00	102.30	-10.00	136.18	-10.00	100.00
10	0.33	97.42	-10.00	126.92	-10.00	100.00
15	0.29	92.52	-10.00	128.72	-10.00	100.00
20	0.28	87.63	-10.00	129.55	-10.00	100.00
25	0.00	82.74	-10.00	136.18	-10.00	100.00
30	0.00	77.85	-10.00	136.18	-10.00	100.00
35	0.00	72.97	-10.00	136.18	-10.00	100.00
40	0.00	68.09	-10.00	136.18	-10.00	100.00
45	0.00	63.22	-10.00	136.18	-10.00	100.00
50	0.00	58.36	-10.00	136.18	-10.00	100.00
55	0.00	53.52	-10.00	136.18	-10.00	100.00
60	0.00	48.70	-10.00	136.18	-10.00	100.00
65	0.00	43.91	-9.06	138.78	-9.06	100.00
70	0.00	39.16	-7.82	142.33	-7.82	100.00
75	0.00	34.47	-6.43	146.44	-6.43	100.00
80	0.00	29.86	-4.88	151.24	-4.88	100.00
85	0.00	25.39	-3.12	156.91	-3.12	100.00
90	0.00	21.14	-1.13	164.04	-1.13	100.00
95	0.00	17.27	1.07	171.53	1.07	100.00
100	0.00	14.10	3.27	179.24	3.27	100.00
105	0.00	12.20	4.84	184.87	4.84	100.00
110	0.00	12.17	4.87	185.93	4.87	100.19
115	0.00	14.02	3.33	179.46	3.33	100.00
120	0.00	17.16	1.14	171.78	1.14	100.00
125	0.00	21.01	-1.06	164.26	-1.06	100.00
130	0.00	25.25	-3.06	157.10	-3.06	100.00
135	0.00	29.72	-4.83	151.41	-4.83	100.00
140	0.00	34.32	-6.39	146.58	-6.39	100.00
145	0.00	39.01	-7.78	142.45	-7.78	100.00
150	0.00	43.76	-9.03	138.88	-9.03	100.00
155	0.00	48.55	-10.00	136.18	-10.00	100.00
160	0.00	53.37	-10.00	136.18	-10.00	100.00
165	0.00	58.21	-10.00	136.18	-10.00	100.00
170	0.00	63.07	-10.00	136.18	-10.00	100.00
175	0.00	67.94	-10.00	136.18	-10.00	100.00
180	0.00	72.81	-10.00	136.18	-10.00	100.00
185	0.34	77.68	-10.00	126.26	-10.00	100.00

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Coordination Values

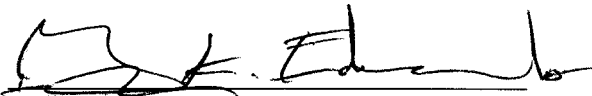
MIDDLETOWN, VA

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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			-30.0 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 18.0 GHz		Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	1.60	82.55	-10.00	100.00	-10.00	100.00
195	1.69	87.46	-10.00	100.00	-10.00	100.00
200	3.01	92.39	-10.00	100.00	-10.00	100.00
205	3.07	97.33	-10.00	100.00	-10.00	100.00
210	3.07	102.27	-10.00	100.00	-10.00	100.00
215	2.10	107.16	-10.00	100.00	-10.00	100.00
220	0.66	111.97	-10.00	107.23	-10.00	100.00
225	0.00	116.78	-10.00	136.18	-10.00	100.00
230	0.00	121.64	-10.00	136.18	-10.00	100.00
235	0.00	126.48	-10.00	136.18	-10.00	100.00
240	0.00	131.30	-10.00	136.18	-10.00	100.00
245	0.00	136.09	-10.00	136.18	-10.00	100.00
250	0.00	140.84	-10.00	136.18	-10.00	100.00
255	0.00	145.53	-10.00	136.18	-10.00	100.00
260	0.00	150.14	-10.00	136.18	-10.00	100.00
265	0.00	154.61	-10.00	136.18	-10.00	100.00
270	0.00	158.86	-10.00	136.18	-10.00	100.00
275	0.00	162.73	-10.00	136.18	-10.00	100.00
280	0.23	166.09	-10.00	133.80	-10.00	100.00
285	0.23	168.03	-10.00	133.36	-10.00	100.00
290	0.22	168.04	-10.00	134.80	-10.00	100.00
295	0.24	166.18	-10.00	133.03	-10.00	100.00
300	0.23	163.00	-10.00	134.02	-10.00	100.00
305	0.20	159.10	-10.00	136.13	-10.00	100.00
310	0.22	154.84	-10.00	134.88	-10.00	100.00
315	0.00	150.28	-10.00	136.18	-10.00	100.00
320	0.00	145.68	-10.00	136.18	-10.00	100.00
325	0.00	140.99	-10.00	136.18	-10.00	100.00
330	0.22	136.29	-10.00	134.18	-10.00	100.00
335	0.22	131.49	-10.00	134.36	-10.00	100.00
340	0.26	126.67	-10.00	131.46	-10.00	100.00
345	0.37	121.84	-10.00	123.66	-10.00	100.00
350	0.43	116.98	-10.00	119.11	-10.00	100.00
355	0.35	112.09	-10.00	125.27	-10.00	100.00

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: September 21, 2015