

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Telesat Network Services, Inc.**  
**MT JACKSON, VA**  
**(KA399)**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
December 30, 2016

## TABLE OF CONTENTS

1. CONCLUSIONS .....	3
2. SUMMARY OF RESULTS .....	4
3. SUPPLEMENTAL SHOWING .....	5
4. EARTH STATION COORDINATION DATA.....	8
5. CERTIFICATION.....	12

## 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.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

Shenandoah Personal Communications, LLC

No other carriers reported potential interference cases.

### 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 12/30/2016.

#### Company

ALLEGANY COLLEGE OF MARYLAND  
ALLEGANY COUNTY GOVERNMENT  
AT&T Communications of Virginia, LLC  
AT&T Corp.  
AT&T Wireless Services 3 LLC - NM, N TX  
Access MLP Operating LLC  
Adams County Department of Emergency Svc  
Affiniti PA, LLC  
Albermarle, County of, Virginia  
Argos Engineering, LLC  
Atlantic Broadband (Penn), LLC  
B2x Online Inc  
BLAIR COUNTY 911  
Baltimore Gas and Electric Company  
Bedford, County of  
Berkeley, County of  
Blaze Broadband  
Blue Ridge Carriers  
Buggs Island Telephone Cooperative, Inc.  
CNG Transmission Corporation  
Cambria, County of  
Caroline County, VA  
Cellco Partnership - Bridgeville, PA/WV  
Cellco Partnership - Southern Virginia  
Cellco Partnership- PA Region  
Central Virginia Electric Cooperative  
Chesterfield, County of  
Citynet  
Clearwire Spectrum Holdings II, LLC  
Clearwire Spectrum Holdings III, LLC  
Clearwire Spectrum Holdings LLC  
Commonwealth of Pennsylvania-Radio Proj.  
Comprehensive Wireless LLC  
Conterra Ultra Broadband, LLC  
County of Dinwiddie, Virginia  
County of Franklin, VA  
County of Westmoreland  
County of York  
Cumberland, County of  
ECW Wireless, LLC

Eduro Networks LLC  
Enoch Pratt Free Library  
FELHC, INC  
FiberTower Network Services Corp.-DIP  
Franklin County Dept. of Emergency Servi  
Frederick County  
Fundamental Broadcasting LLC  
GEORGE MASON UNIVERSITY INSTR FNDTION  
Global Telecom & Technology Americas  
Goochland, County of  
Grant, County of  
Gray Television Licensee LLC (Gray TV)  
Gray Television Licensee, LLC  
Hardy Cellular Telephone Company  
Hardy Telecommunications  
Harrisonburg-Rockingham ECC  
Hilltower Tower Leasing, Inc  
Huntingdon, County of  
Juniata County Emergency Services  
King George County  
Loudoun County Public Schools  
Loudoun, County of  
MIT LINCOLN LABORATORY  
MLS Engineering  
Maryland Public Broadcasting Commission  
Maryland, State of - DNR  
Micrologic, Inc  
Middle East Broadcasting Networks, Inc.  
Mifflin County  
Montgomery, County of  
Morgan, County of  
NOROC Broadband LLC  
National Radio Astronomy Observatory  
Nelson, County of  
Netrepid, Inc.  
New Cingular Wireless PCS - Maryland  
New Cingular Wireless PCS LLC - DC  
New Cingular Wireless PCS LLC - Georgia  
New Cingular Wireless PCS LLC - VA  
New Cingular Wireless PCS LLC - WV,NC,SC  
New Cingular Wireless PCS, LLC - PA  
Nextlink Wireless, LLC  
Northern Virginia Electric Cooperative  
Old Dominion LLC  
PEG Bandwidth, LLC  
Page County Broadband Authority  
Pennsylvania Sports Entertainment Netwo.  
Pennsylvania Turnpike Commission  
Prince William, County of  
Public Broadcasting Service  
R. Fritz Enterprises Inc  
RAPPAHANNOCK ELECTRIC COOPERATIVE  
RCTC Wholesale Corporation  
RapidDSL & Wireless, Inc.  
Roanoke County of  
Rockbridge Reg. Pub Safety Comm Ctr

Rural Broadband Network Services LLC  
Shenandoah Personal Communications, LLC  
Somerset, County of  
South Central Task Force (SCTFNET)  
Southern Maryland Electric Cooperative I  
Southside Electric Cooperative  
Spotsylvania, County of  
Sprint Spectrum L.P.  
Sprintcom, Inc  
St. Mary's County of (MD)  
Stafford, County of  
State of Maryland, MIEMSS  
T-Mobile License LLC  
TWO WAY RADIO INC.  
Telecom Transport Management, Inc  
Telegia Communications Inc.  
Thought Transmissions, LLC  
USCOC of Cumberland, Inc.  
USCOC of Virginia RSA #2, Inc.  
USCOC of Virginia RSA #3, Inc.  
Valley Rural Electric Cooperative, Inc.  
Verizon Virginia, Inc.  
Verizon Wireless (VAW) LLC - Maryland  
Verizon Wireless (VAW) LLC - W/B/V Mkts  
Verizon Wireless (VAW) LLC-Pennsylvania  
Verizon Wireless VAW LLC - West Virginia  
Verizon Wireless VAW LLC-Southern VA  
Virginia Broadband, LLC  
Virginia Department of State Police  
Virginia Electric & Power Company  
Virginia Everywhere, LLC  
Virginia PCS Alliance, L.C.  
Virginia Region 2000 Local Govt Council  
Virginia Tech Foundation , Inc.  
WEST VIRGINIA RADIO CORPORATION  
WGAL Hearst Television, Inc  
WV DHHR BPH, Office of EMS, Com. Div.  
Warrenton Fauquier Joint Communications  
Washington County Board of Education  
Washington County Public Schools  
Washington Gas Light Company  
Washington Suburban Sanitary Commission  
West Virginia PCS Alliance, L.C.  
Williamson Enterprise LLC  
Winchester, City of  
World Class Wireless, LLC  
XO Communications, 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: 12/30/2016  
Job Number: 160615COMSGE01

---

### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign KA399  
Licensee Code TELNET  
Licensee Name Telesat Network Services, Inc.

---

### Site Information MT JACKSON, VA

Venue Name  
Latitude (NAD 83) 38° 43' 42.0" N  
Longitude (NAD 83) 78° 39' 25.0" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 283.22 m / 929.2 ft

---

### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Analog and Digital  
Satellite Arc 15° W to 110° West Longitude  
Azimuth Range 107.2° to 224.2°  
Corresponding Elevation Angles 11.7° / 34.6°  
Antenna Centerline (AGL) 8.0 m / 26.2 ft

---

### Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		Vertex		Vertex	
Model		15 KPK		15 KPK	
Gain / Diameter		62.9 dBi / 15.0 m		64.5 dBi / 15.0 m	
3-dB / 15-dB Beamwidth		0.80° / 1.40°		0.80° / 1.40°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-14.0 10.0	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			50.5 74.5	
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 11.0 GHz	Transmit 14.0 GHz
Emission / Frequency Range (MHz)	200KG7W - 54M0G7W / 10950.0 - 11200.0 200KG7W - 54M0G7W / 11450.0 - 11700.0	600KG7W - 54M0G7W / 13750.0 - 14500.0
Max Great Circle Coordination Distance	238.7 km / 148.3 mi	119.9 km / 74.5 mi
Precipitation Scatter Contour Radius	522.9 km / 324.9 mi	100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### MT JACKSON, VA

Licensee Name Telesat Network Services, Inc.  
Latitude (NAD 83) 38° 43' 42.0" N  
Longitude (NAD 83) 78° 39' 25.0" W  
Ground Elevation (AMSL) 283.22 m / 929.2 ft  
Antenna Centerline (AGL) 8.0 m / 26.2 ft  
Antenna Model Vertex 15 Meter  
Antenna Mode Receive 11.0 GHz Transmit 14.0 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 -14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.45	106.87	-10.00	208.61	-10.00	100.00
5	0.44	101.97	-10.00	209.17	-10.00	100.00
10	0.49	97.08	-10.00	205.04	-10.00	100.00
15	0.39	92.17	-10.00	213.36	-10.00	100.94
20	0.51	87.27	-10.00	203.83	-10.00	100.00
25	0.26	82.37	-10.00	225.21	-10.00	110.85
30	0.00	77.49	-10.00	231.37	-10.00	115.80
35	0.00	72.60	-10.00	231.37	-10.00	115.80
40	0.00	67.72	-10.00	231.37	-10.00	115.80
45	0.00	62.84	-10.00	231.37	-10.00	115.80
50	0.00	57.98	-10.00	231.37	-10.00	115.80
55	0.30	53.09	-10.00	221.58	-10.00	107.87
60	0.79	48.17	-10.00	192.37	-10.00	100.00
65	1.39	43.23	-8.90	174.34	-8.90	100.00
70	2.48	38.19	-7.55	146.53	-7.55	100.00
75	3.85	33.07	-5.98	127.54	-5.98	100.00
80	4.16	28.17	-4.25	129.60	-4.25	100.00
85	4.43	23.33	-2.20	133.04	-2.20	100.00
90	4.83	18.51	0.31	138.00	0.31	100.00
95	4.85	14.00	3.35	152.71	3.35	100.00
100	4.53	10.19	6.80	181.20	6.80	100.00
105	3.39	8.63	8.60	222.83	8.60	105.32
110	3.51	8.68	8.53	205.92	8.53	100.00
115	3.50	11.32	5.66	194.46	5.66	100.00
120	3.27	15.08	2.54	183.48	2.54	100.00
125	3.51	18.45	0.35	162.97	0.35	100.00
130	3.60	21.80	-1.46	151.22	-1.46	100.00
135	3.42	25.19	-3.03	147.24	-3.03	100.00
140	3.03	28.59	-4.40	149.07	-4.40	100.00
145	1.98	32.30	-5.73	171.53	-5.73	100.00
150	1.36	35.47	-6.75	185.70	-6.75	100.00
155	0.70	38.43	-7.62	204.52	-7.62	100.00
160	0.48	40.70	-8.24	213.26	-8.24	100.00
165	0.22	42.64	-8.74	235.38	-8.74	117.70
170	0.00	44.10	-9.11	235.29	-9.11	118.02
175	0.00	44.89	-9.30	234.44	-9.30	117.54
180	0.00	45.15	-9.37	234.16	-9.37	117.38
185	0.26	44.64	-9.24	229.30	-9.24	113.37

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

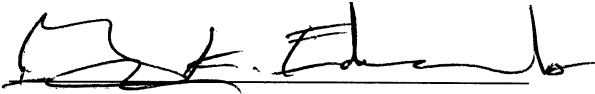
### MT JACKSON, VA

Licensee Name Telesat Network Services, Inc.  
Latitude (NAD 83) 38° 43' 42.0" N  
Longitude (NAD 83) 78° 39' 25.0" W  
Ground Elevation (AMSL) 283.22 m / 929.2 ft  
Antenna Centerline (AGL) 8.0 m / 26.2 ft  
Antenna Model Vertex 15 Meter  
Antenna Mode Receive 11.0 GHz Transmit 14.0 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 -14.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 14.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.27	43.84	-9.05	228.36	-9.05	112.40
195	0.00	42.83	-8.79	236.72	-8.79	118.81
200	0.00	41.12	-8.35	238.73	-8.35	119.93
205	0.24	38.82	-7.73	238.02	-7.73	118.69
210	0.80	36.37	-7.02	204.45	-7.02	100.00
215	0.87	34.85	-6.56	203.02	-6.56	100.00
220	0.92	33.95	-6.27	202.12	-6.27	100.00
225	0.47	34.17	-6.34	222.50	-6.34	104.46
230	1.04	34.03	-6.30	197.08	-6.30	100.00
235	1.51	34.64	-6.49	182.37	-6.49	100.00
240	1.03	36.73	-7.12	193.82	-7.12	100.00
245	0.82	39.02	-7.78	200.32	-7.78	100.00
250	0.90	41.50	-8.45	193.48	-8.45	100.00
255	0.95	44.36	-9.17	187.96	-9.17	100.00
260	1.90	46.96	-9.79	150.40	-9.79	100.00
265	2.80	49.96	-10.00	129.73	-10.00	100.00
270	1.46	54.28	-10.00	163.68	-10.00	100.00
275	1.06	58.20	-10.00	179.53	-10.00	100.00
280	0.97	62.09	-10.00	183.32	-10.00	100.00
285	1.04	66.00	-10.00	180.27	-10.00	100.00
290	1.11	69.99	-10.00	177.94	-10.00	100.00
295	1.46	74.00	-10.00	163.38	-10.00	100.00
300	1.58	78.11	-10.00	159.60	-10.00	100.00
305	1.35	82.30	-10.00	169.92	-10.00	100.00
310	1.13	86.48	-10.00	177.27	-10.00	100.00
315	1.19	90.64	-10.00	175.28	-10.00	100.00
320	1.19	94.81	-10.00	175.41	-10.00	100.00
325	1.16	98.97	-10.00	176.32	-10.00	100.00
330	1.42	103.14	-10.00	167.71	-10.00	100.00
335	1.52	107.28	-10.00	161.38	-10.00	100.00
340	1.24	111.28	-10.00	173.84	-10.00	100.00
345	0.84	115.16	-10.00	190.13	-10.00	100.00
350	0.79	116.68	-10.00	192.37	-10.00	100.00
355	0.58	111.77	-10.00	202.77	-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: December 30, 2016