

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Harte Satellite Consultants
VIRGINIA BCH, VA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 25, 2021

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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 05/12/2021.

Company

3G Wireless, LLC
Aerial Video Systems
Alascom Inc
Albemarle, County of
Allfirst Bank
Altius Communications
Anne Arundel, County of
Arlington County, VA
Ascent Media Network Services, LLC
AT&T Wireless Services 3 LLC - NM
B2x Online Inc
Baltimore County of Maryland
Baltimore Gas and Electric Company
Beasley Media Group Licenses, LLC
Beasley Media Group, LLC
Believe Wireless, LLC
Bellsouth Telecommunications, Inc.
Blaze Broadband
Bloosurf
Blue Ridge Electric Membership Corp.
Blue Ridge Internet Service Company, LLC
Borgeson, Tom R.
Broadcast Sports Inc.
Brunswick County Sheriff's Office
Buggs Island Telephone Cooperative, Inc.
Burke, County of
Business Only Broadband, LLC
Cabarrus County Sheriff Office
Calvert, County of
Campbell, County of
Cape May County, MIS Department
Capitol Region Airport Commission
Carolina Telephone and Telegraph Co
Carolina West Wireless, Inc.
Caroline County, VA
Casper, John
Catawba County Government
CCO Fiberlink LLC
Cellco Partnership - NC/SC
Cellco Partnership-Southern VA, North NC

Cellco Partnership-WDC/Baltimore
 Cellco Prtnrshp - Phil. Tri-State Rgn
 Central Virginia Electric Cooperative
 Central Virginia Planning District Com
 CenturyTel of the Southwest, Inc.
 Charles, County of
 Charlotte Mecklenburg Police Dept
 Charlotte, City of
 Chesterfield, County of
 Chicago Comnet Corp
 Cincinnati Bell Wireless LLC
 City of Durham, NC
 City of Hampton, Virginia
 City of Laurel
 City of Newport News Information Tech
 City of Ocean City, MD
 City of Portsmouth VA
 City of Raleigh
 City of Rocky Mount
 Citywide News Network, Inc.
 Clearwire Spectrum Holdings II, LLC
 Clearwire Spectrum Holdings III, LLC
 Clearwire Spectrum Holdings LLC
 Cloudwyze, Inc
 CMG Coastal Carolina, LLC
 Complete Residential & Comm Contracting
 Conterra Ultra Broadband, LLC
 County of Culpeper
 County of Franklin, VA
 County of King William, Virginia
 County of Stanly
 County of York (VA)
 Cowboys Stadium LP
 Currituck, County of
 Danville, City of - VA
 Dare County of
 Dasia.Net, LLC
 Data Stream Mobile Technology Inc.
 DC2A LLC
 DCI II, INC.
 Delaware Division of Communications
 Delaware River & Bay Authority
 Digital Consultants, LLC
 Direct Broadcast Services, Inc.
 Duke Energy Business Services, LLC.
 East Carolina Broadband
 Eastern Shore of Virginia Broadband Auth
 Egg Harbor Township, Board of Education
 Electronics Service Co. of Hamlet, LLC
 EnergyUnited EMC
 Enoch Pratt Free Library
 Entercom License, LLC
 Etcom, LLC
 Franklin County Schools
 Franklin, County of
 Frontier California Inc.

Garden State Transmissions
GCSEAC, Inc
Global Telecom & Technology Americas, In
Globecomm License Sub LLC
Goochland, County of
Gray Television Licensee LLC (Gray TV)
Greensboro, City of
GWETA, Inc.
Hallco Unlimited, Inc.
Hampton Road Sanitation District
Hampton Roads Planning District Comm
Hanover, County of
Harrisonburg-Rockingham ECC
Hawaiian Telecom Inc.
Heiden, William
Henrico County
Henry, County of
HF Enterprises, Inc
High Mountain Farm, LLC
Illinois Bell Telephone Company
Indiana Bell Telephone Company
Information & Display Systems, Inc.
Information Super Station, LLC
International Communications Group, Inc.
iSignal
Isle of Wight, County of
Jacksonville Cellular Telephone Company
Kentucky RSA #3 Cellular General Partner
Kentucky RSA #4 Cellular General Partner
King George County
Learning Tree Farms
Lenoir, County of
Loudoun County Public Schools
Loudoun, County of
Louisa County of
Maritime Applied Physics Corporation
Maryland Port Administration
Maryland Public Broadcasting Commission
Maryland State Highway Administration
Maryland, State of - Dept.of Info & Tech
Maryland, State of - MDOT-MTA
Maryland-National Capital Park & Plannin
Mel Wheeler, Inc
MERCURY COMMUNICATIONS
Metify Inc
MGW Networks, LLC
Michigan Bell Telephone Company
Microspace Communications Corporation
MIT Lincoln Laboratory
Montgomery, County of
Monticello Media LLC
Moore County of
Moreen, Steven K
Nash, County of
Navajo Communications Company
Nelson, County of

New Cingular Wireless PCS - Maryland
New Cingular Wireless PCS LLC - DC
New Cingular Wireless PCS LLC - VA
New Cingular Wireless PCS LLC - WV,NC,SC
New Cingular Wireless PCS LLC-DE/NH/RI
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
New Jersey, Division of State Police
New Kent County
NewConnect
Nexstar Media Inc.
Norfolk, City of
North Carolina State Highway Patrol
North Carolina Wireless, LLC
North Carolina, State of DFS
Northern Virginia Electric Cooperative
NorthWest Suburbs Community Access Corp
Novec Solutions, Inc
NSM Surveillance
Ocean City, City of
Ohio Bell GTelephone Company
Olympic Wireless, LLC
Onboard Images
One Ring Networks, Inc.
Onslow County E-911 Communications
Onslow Water and Sewer Authority
Onslow, County of
Open Broadband, LLC
Pacific Bell Tel Com dba AT&T California
Page County Broadband Authority
Page, County of (VA)
Patrick County of
Penn Service Microwave Co., Inc.
Petersburg Police Department
PhillieCo, L.P.
Plateau Telecommunications, Inc.
Plum TV, LLC
Pontis Communications, Inc.
Port Networks, Inc
Powhatan,County of
Prince George's, County of
Prince William, County of
Production & Satellite Services, Inc.
Public Broadcasting Service
Quick Link Connections Inc.
Qwest Corporation
Radio One Inc
Radio One of North Carolina, LLC
Radio One, Inc. - MD
Radiofone, Inc.
Randy Hermes Production
RapidDSL & Wireless, Inc.
Rappahannock Electric Cooperative
RCC Minnesota Inc. - MN NE ND SD
Remote Broadcasts, Inc.
REMOTE FACILITIES CONSULTING SERVICES
RF Central, LLC

RF Film, Inc
Richmond, City of
Richmond, County of
Riverstreet Networks
RiverStreet Wireless of North Carolina
RiverStreet Wireless of Virginia, Inc.
Roanoke County of
Rockbridge Reg. Pub Safety Comm Ctr
Rowan County of
Rural Broadband Network Services LLC
RUTHERFORD ELECTRIC MEMBERSHIP CORP
Salem City of
Salisbury, City of
Shenandoah Cable Television, LLC
Shenandoah Personal Communications, LLC
Skyrunner, Inc
SmartSky Microwave, LLC
SMLW, Inc.
Somerset County, Maryland
Southern Maryland Electric Cooperative I
Southside Electric Cooperative
Southwestern Bell Telephone L.P.
Speedshotz, Inc
Spotsylvania, County of
Sprint Spectrum LLC
Sprintcom, Inc
St. Mary's County of (MD)
Stafford, County of
State of Maryland, MIEMSS
Sussex County
Sussex County Government
Telecom Transport Management, Inc
Telegia Communications Inc.
The Wired Road Authority
T-Mobile License LLC
Town of Cary, NC
TTWN Networks, LLC
UNC Charlotte Police Department
Unisat, Inc.
United Telephone - Southeast
Uniti Fiber LLC
USCOC of Greater North Carolina, LLC
USCOC of North Carolina RSA #7, Inc.
USCOC of Virginia RSA #2, Inc.
USCOC of Virginia RSA #3, Inc.
Vector Data Systems, LLC
Velocity Broadband Inc.
Verizon Maryland, Inc.
Verizon New England Inc.
Verizon New Jersey, Inc.
Verizon New York, Inc.
Verizon North Inc.
Verizon Northwest Inc.
Verizon Pennsylvania, Inc.
VERIZON SOUTH INC.
Verizon Virginia, Inc.

Verizon Washington DC, Inc.
Verizon Wireless (VAW) LLC - W/B/V Mkts
Verizon Wireless (VAW) LLC-NC&SC Mkts
Verizon Wireless VAW LLC-Southern VA
Virginia Air Networks, LLC
Virginia Beach City of
Virginia Broadband, LLC
Virginia Department of State Police
Virginia Electric & Power Company
Virginia Everywhere, LLC
Virginia Tech Foundation , Inc.
Virginia Tech Foundation, Inc. (WVTF-FM)
Visual Link Internet LLC
VYVX, LLC
Wake, County of
Warren County, VA
Warrenton Fauquier Joint Communications
Washington Gas Light Company
Washington Suburban Sanitary Commission
Westar Satellite Services LP
Westmoreland, County of
Wicomico Board of Education
Wicomico County
Widmo Holdings LLC
Williamson Enterprise LLC
Winged Vision Inc
Wisconsin Bell Telephone Company
Wolfe Air Aviation
WS/FC Interagency Communications
WUNC Public Radio, LLC
X1 Communications, Inc.
XO Communications, LLC
Yadkin, County of

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: 05/12/2021
Job Number: 210512COMSGE14

Administrative Information

Status: ENGINEER PROPOSAL
Call Sign:
Licensee Code: HARSAT
Licensee Name: Harte Satellite Consultants

Site Information

VIRGINIA BCH, VA

Venue Name:
Latitude (NAD 83): 36° 48' 52.2" N
Longitude (NAD 83): 75° 59' 19.7" W
Climate Zone: B
Rain Zone: 1
Ground Elevation (AMSL): 2.81 m / 9.2 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 4° W to 148° West Longitude
Azimuth Range: 101.0° to 259.0°
Corresponding Elevation Angles: 5.7° / 5.7°
Antenna Centerline (AGL): 1.49 m / 4.9 ft

Antenna Information

Receive - FCC32

Transmit - FCC32

Manufacturer	TTI	TTI
Model	27E01-1000-A	27E01-1000-A
Gain / Diameter	30.1 dBi / 0.45 m	30.6 dBi / 0.45 m
3-dB / 15-dB Beamwidth	4.40° / 9.00°	3.9° / 7.6°
Max Available RF Power (dBW/4 kHz)	-20.1	-20.1
(dBW/MHz)	3.9	3.9
Maximum EIRP (dBW/4 kHz)	10.5	10.5
(dBW/MHz)	34.5	34.5
Interference Objectives:	Long Term	-156.0 dBW/MHz 20%
	Short Term	-146.0 dBW/MHz 0.01%
		-151.0 dBW/4 kHz 20%
		-128.0 dBW/4 kHz 0.0025%

Frequency Information

Receive 11.0 GHz

Transmit 13.0 GHz

Emission / Frequency Range (MHz)	25M0G7W / 10700.0 - 10950.0 25M0G7W / 11200.0 - 11450.0	7M00G7W / 12750.0 - 13250.0
Max Great Circle Coordination Distance	580.4 km / 360.6 mi	198.6 km / 123.4 mi
Precipitation Scatter Contour Radius	656.4 km / 407.8 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

VIRGINIA BCH, VA

Licensee Name	Harte Satellite Consultants				
Latitude (NAD 83)	36° 48' 52.2" N				
Longitude (NAD 83)	75° 59' 19.7" W				
Ground Elevation (AMSL)	2.81 m / 9.2 ft				
Antenna Centerline (AGL)	1.49 m / 4.9 ft				
Antenna Model	TTI 0.45 meter				
Antenna Mode	Receive 11.0 GHz		Transmit 13.0 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			-20.1 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	100.96	-10.00	307.68	-10.00	106.21
5	0.00	96.00	-10.00	307.68	-10.00	106.21
10	0.00	91.02	-10.00	307.68	-10.00	106.21
15	0.00	86.05	-10.00	307.68	-10.00	106.21
20	0.00	81.07	-10.00	307.68	-10.00	106.21
25	0.00	76.10	-10.00	307.68	-10.00	106.21
30	0.00	71.12	-10.00	307.68	-10.00	106.21
35	0.00	66.15	-10.00	307.68	-10.00	106.21
40	0.00	61.18	-10.00	307.68	-10.00	106.21
45	0.00	56.22	-10.00	307.68	-10.00	106.21
50	0.00	51.25	-10.00	307.68	-10.00	106.21
55	0.00	46.30	-9.64	310.68	-9.64	107.24
60	0.00	41.35	-8.41	321.15	-8.41	110.83
65	0.00	36.41	-7.03	333.15	-7.03	115.24
70	0.00	31.49	-5.45	347.76	-5.45	120.14
75	0.00	26.60	-3.62	365.64	-3.62	126.02
80	0.00	21.75	-1.43	388.18	-1.43	133.30
85	0.00	16.98	1.25	417.73	1.25	142.64
90	0.00	12.39	4.68	456.59	4.68	153.75
95	0.00	8.27	9.06	516.18	9.06	174.24
100	0.00	5.77	12.97	579.79	12.97	198.40
105	0.00	6.92	10.99	545.10	10.99	184.61
110	0.00	10.54	6.43	479.43	6.43	161.45
115	0.00	14.39	3.05	436.60	3.05	147.21
120	0.00	18.17	0.52	409.45	0.52	140.05
125	0.00	21.87	-1.50	387.54	-1.50	133.10
130	0.00	25.46	-3.15	370.42	-3.15	127.58
135	0.00	28.92	-4.53	356.64	-4.53	123.08
140	0.00	32.23	-5.71	345.38	-5.71	119.35
145	0.00	35.33	-6.70	336.11	-6.70	116.24
150	0.00	38.20	-7.55	328.72	-7.55	113.66
155	0.00	40.78	-8.26	322.47	-8.26	111.28
160	0.00	43.01	-8.84	317.47	-8.84	109.57
165	0.00	44.83	-9.29	313.64	-9.29	108.26
170	0.00	46.18	-9.61	310.91	-9.61	107.32
175	0.00	47.02	-9.81	309.29	-9.81	106.76
180	0.00	47.30	-9.87	308.75	-9.87	106.58
185	0.00	47.02	-9.81	309.29	-9.81	106.76

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

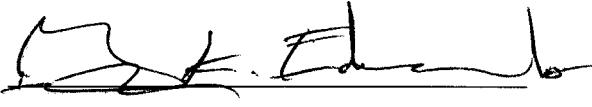
VIRGINIA BCH, VA

Licensee Name	Harte Satellite Consultants				
Latitude (NAD 83)	36° 48' 52.2" N				
Longitude (NAD 83)	75° 59' 19.7" W				
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Antenna Centerline (AGL)	1.49 m / 4.9 ft				
Antenna Model	TTI 0.45 meter				
Antenna Mode	Receive 11.0 GHz		Transmit 13.0 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			-20.1 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 11.0 GHz		Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	46.18	-9.61	310.91	-9.61	107.32
195	0.00	44.83	-9.29	313.64	-9.29	108.26
200	0.00	43.00	-8.84	317.47	-8.84	109.57
205	0.00	40.78	-8.26	322.47	-8.26	111.28
210	0.00	38.20	-7.55	328.72	-7.55	113.66
215	0.00	35.33	-6.70	336.11	-6.70	116.24
220	0.00	32.23	-5.71	345.38	-5.71	119.35
225	0.00	28.92	-4.53	356.64	-4.53	123.08
230	0.00	25.46	-3.15	370.42	-3.15	127.58
235	0.00	21.87	-1.50	387.53	-1.50	133.09
240	0.00	18.17	0.52	409.45	0.52	140.05
245	0.00	14.39	3.05	436.59	3.05	147.21
250	0.00	10.54	6.43	479.42	6.43	161.45
255	0.00	6.92	11.00	545.26	11.00	184.66
260	0.00	5.75	13.01	580.40	13.01	198.62
265	0.00	8.25	9.09	516.61	9.09	174.40
270	0.00	12.37	4.69	456.82	4.69	153.83
275	0.00	16.96	1.27	417.87	1.27	142.69
280	0.00	21.73	-1.43	388.28	-1.43	133.33
285	0.00	26.58	-3.61	365.71	-3.61	126.05
290	0.00	31.47	-5.45	347.82	-5.45	120.16
295	0.00	36.40	-7.03	333.19	-7.03	115.26
300	0.00	41.33	-8.41	321.19	-8.41	110.84
305	0.00	46.28	-9.64	310.72	-9.64	107.25
310	0.00	51.24	-10.00	307.68	-10.00	106.21
315	0.00	56.20	-10.00	307.68	-10.00	106.21
320	0.00	61.17	-10.00	307.68	-10.00	106.21
325	0.00	66.14	-10.00	307.68	-10.00	106.21
330	0.00	71.11	-10.00	307.68	-10.00	106.21
335	0.00	76.08	-10.00	307.68	-10.00	106.21
340	0.00	81.06	-10.00	307.68	-10.00	106.21
345	0.00	86.03	-10.00	307.68	-10.00	106.21
350	0.00	91.01	-10.00	307.68	-10.00	106.21
355	0.00	95.98	-10.00	307.68	-10.00	106.21

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: August 25, 2021