

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Intelsat License LLC
Hagerstown, Maryland
(Call Sign: E030071)**

Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
February 10, 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 most cases.

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 and transmit power restrictions are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the existing E030071 earth station.

Company

None

No 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.

Expedited coordination data for this earth station was emailed and sent to the below listed carriers with a letter dated January 5, 2015.

Company

Adams County Department of Emergency Svc
Affiniti PA, LLC
Anne Arundel, County of
Appalachia Engineering Services
Baltimore County of Maryland
Baltimore Gas and Electric Company
Bedford, County of
CBS Communication Services Inc
CTAB Holdings LLC
Capital Communications of America
Carroll, County of
Columbia Gas Transmission Corporation
Commonwealth of Pennsylvania-Radio Proj.
Comprehensive Wireless
County of Culpeper
Cumberland, County of
ECW Wireless, LLC
Eastern MLG LLC
FELHC
Franklin County Dept. of Emergency Servi
Fundamental Broadcasting LLC
George Washington University
Hardy Cellular Telephone Company
Howard, County of
Loudoun, County of
MARYLAND EMERG MANAGEMENT AGENCY COMM
Maryland State Highway Administration
Maryland, State Of - MDOT - MTA
Montgomery, County of
Morgan, County of
New Cingular Wireless PCS LLC - VA
New Cingular Wireless PCS LLC- WV/NC/SC
New Cingular Wireless PCS, LLC - PA
Norfolk Southern Railway

Company (Continued)

Old Dominion LLC
Pennsylvania State Police
Pennsylvania Turnpike Commission
Potomac Electric Power Company
Prince William, County of
RCYM Holdings LLC
State of Maryland, MIEMSS
Texas Eastern Communications, LLC
Thought Transmissions, LLC
Transcontinental Gas Pipeline Corp.
Triangle Communications, Inc.
US Cellular Operating Company, LLC (WI)
USCOC of Cumberland, Inc.
USOC of Pennsylvania RSA No 10 B2 Inc.
Virginia Department of State Police
Virginia Electric & Power Company
WV DHHR BPH, Office of EMS, Com. Div.
Warrenton Fauquier Joint Communications
Washington Gas Light Company
Washington Suburban Sanitary Commission
World Class Wireless, LLC
3G Wireless, LLC
AERIAL VIDEO SYSTEMS
AT&T California
Alascom Inc
Ascent Media Network Services, LLC
Bellsouth Telecommunications, Inc.
BFI Licenses, LLC
Borgeson, Tom R.
Broadcast Sports Inc.
C-SPAN
CBS Broadcasting Inc
CBS TELEVISION LICENSES LLC
CNG Communications, Inc.
Carolina Telephone and Telegraph Co
Casper, John
CenturyTel of the Southwest, Inc.
Chicago Comnet Corp
Cincinnati Bell Wireless LLC
Citywide News Network, Inc.
Cohen, Elena
County of Fairfax, Virginia
Cowboys Stadium LP
CP Communications, LLC
DCI II, INC.
Direct Broadcast Services, Inc.
GOODYEAR TIRE AND RUBBER COMPANY
GSN New, Inc
Global Microwave Systems Inc

Company (Continued)

HF Enterprises, Inc
Hallco Unlimited, Inc.
Hawaiian Telcom, Inc.
Heiden, William
Illinois Bell Telephone Company
Indiana Bell Telephone Company
Information & Display Systems, Inc.
Information Super Station, LLC
International Communications Group, Inc.
Kentucky RSA #3 Cellular General Partner
Kentucky RSA #4 Cellular General Partner
Loop, Inc.
MERCURY COMMUNICATIONS
Metro Networks Communications, Inc.
Metrosat Communications, Inc.
Michigan Bell Telephone Company
Microwave Video Systems, LLC
Moreen, Steven K
National Football League
NBC Telemundo License LLC
NEW ENGLAND DIGITAL DISTRIBUTION, INC.
NEW ENGLAND SATELLITE SYSTEMS INC
NSM Surveillance
National Cable Satellite Corporation
Navajo Communications Company
NorthWest Suburbs Community Access Corp
OHIO BELL TELEPHONE COMPANY
On Scene Video Production
Onboard Images
Pacific Television Center
Penn Service Microwave Co., Inc.
Plateau Telecommunications, Inc.
Plum TV, LLC
Production & Satellite Services, Inc.
Proxy Aviation
Public Television Communications Center
QUICK LINK CONNECTIONS INC
Qwest Corporation
RCC Minnesota Inc. - MN NE ND SD
REMOTE FACILITIES CONSULTING SERVICES
RF Central, LLC
RF Film, Inc
RF Technology, LLC
Radiofone, Inc.
Randy Hermes Production
Regulus Media Services, Inc.
Remote Broadcasts, Inc.
Southwestern Bell Telephone L.P.
Speedshotz, Inc

Company (Continued)

Texas A&M University, Athletic Department
Total RF Marketing Inc
Unisat, Inc.
United Telephone - Southeast
VERIZON SOUTH INC.
Verizon California 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 Virginia, Inc.
Verizon Washington DC, Inc.
Village Video Productions Inc
Vitec Broadcast Services, Inc.
Vyvx, LLC
Westar Satellite Services LP
Western Technical Services
Wexler Video, Inc.
Winged Vision Inc
Wisconsin Bell, Inc.
Wolfe Air Aviation

Society of Broadcast Engineers' Coordinators

District of Columbia:

Maryland: Entire State

Pennsylvania: So. Central Region
Western/Pittsburgh Region

Virginia: DC Area Region

West Virginia: Entire State

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: 01/21/2015
Job Number: 150105COMSJC01

Administrative Information

Status ENGINEER PROPOSAL
Call Sign E030071
Licensee Code INTELS
Licensee Name Intelsat License LLC

Site Information HAGERSTOWN, MARYLAND

Venue Name
Latitude (NAD 83) 39° 35' 57.9" N
Longitude (NAD 83) 77° 45' 17.3" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 163.06 m / 535.0 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Analog and Digital
Satellite Arc 49.9° W to 50.1° West Longitude
Azimuth Range 140.3° to 140.6°
Corresponding Elevation Angles 35.9° / 36.0°
Antenna Centerline (AGL) 8.23 m / 27.0 ft

Antenna Information

Transmit

Manufacturer Vertex Communications
Model 16.4 Meter THC
Gain / Diameter 59.0 dBi / 16.4 m
3-dB / 15-dB Beamwidth 0.38° / 0.76°

Max Available RF Power (dBW/4 kHz) SEE ATTACHMENT 1
(dBW/MHz) SEE ATTACHMENT 1

Maximum EIRP (dBW/4 kHz) SEE ATTACHMENT 1
(dBW/MHz) SEE ATTACHMENT 1
(dBW) SEE ATTACHMENT 1

Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%

Frequency Information

Transmit 6.7 GHz

Emission / Frequency Range (MHz) SEE ATTACHMENT 1

Max Great Circle Coordination Distance 102.3 km / 63.6 mi
Precipitation Scatter Contour Radius 100.0 km / 62.1 mi

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ATTACHMENT 1

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Vertex Communications:
Model: 16.4 Meter THC

6 GHz Gain: 59.0 dBi

Satellite Arc: 49.9 – 50.1 West Longitude

Transmit Band: 6425.0 to 6669.0 MHz

<u>Emission</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP/Carrier (dBW)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
800KFXW	-29.0	53.0	30.0
36M0F8W	-29.0	57.0	30.0
72M0G7W	-29.0	72.6	30.0

Transmit Band: 6669.0 to 6681.0.0 MHz

<u>Emission</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP/Carrier (dBW)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
800KFXW	-32.0	50.0	27.0
11M0F8W	-32.0	54.0	27.0
11M0G7W	-32.0	61.4	27.0

Transmit Band: 6681.0.0 to 6725.0 MHz

<u>Emission</u>	<u>RF Power Density (dBW/4 kHz)</u>	<u>EIRP/Carrier (dBW)</u>	<u>EIRP Density (dBW/ 4 kHz)</u>
800KFXW	-29.0	53.0	30.0
36M0F8W	-29.0	57.0	30.0
43M0G7W	-29.0	70.3	30.0

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Coordination Values

HAGERSTOWN, MD

Licensee Name Intelsat License LLC
Latitude (NAD 83) 39° 35' 57.9" N
Longitude (NAD 83) 77° 45' 17.3" W
Ground Elevation (AMSL) 163.06 m / 535.0 ft
Antenna Centerline (AGL) 8.23 m / 27.0 ft
Antenna Model Vertex Communications 16.4 Meter THC
Antenna Mode Transmit 6.7 GHz
Interference Objectives: Long Term -154.0 dBW/4 kHz 20%
Short Term -131.0 dBW/4 kHz 0.0025%
Max Available RF Power -29.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.31	128.76	-10.00	100.00
5	0.28	125.32	-10.00	100.00
10	0.30	121.76	-10.00	100.00
15	0.30	118.05	-10.00	100.00
20	0.32	114.26	-10.00	100.00
25	0.30	110.36	-10.00	100.00
30	0.29	106.41	-10.00	100.00
35	0.42	102.44	-10.00	100.00
40	0.52	98.42	-10.00	100.00
45	0.38	94.35	-10.00	100.00
50	0.40	90.28	-10.00	100.00
55	0.28	86.21	-10.00	100.00
60	0.25	82.16	-10.00	100.00
65	0.30	78.13	-10.00	100.00
70	0.25	74.14	-10.00	100.00
75	0.28	70.18	-10.00	100.00
80	0.27	66.29	-10.00	100.00
85	0.32	62.45	-10.00	100.00
90	0.24	58.77	-10.00	100.00
95	0.00	55.30	-10.00	100.00
100	0.00	51.88	-10.00	100.00
105	0.00	48.64	-10.00	100.00
110	0.00	45.65	-9.49	100.00
115	0.00	42.94	-8.82	100.00
120	0.00	40.58	-8.21	100.00
125	0.00	38.64	-7.67	100.36
130	0.00	37.17	-7.26	101.38
135	0.00	36.25	-6.98	102.05
140	0.00	35.91	-6.88	102.30
145	0.00	36.17	-6.96	102.11
150	0.00	37.01	-7.21	101.50
155	0.00	38.41	-7.61	100.52
160	0.00	40.28	-8.13	100.00
165	0.00	42.56	-8.73	100.00
170	0.00	45.21	-9.38	100.00
175	0.00	48.14	-10.00	100.00
180	0.00	51.33	-10.00	100.00
185	0.00	54.71	-10.00	100.00

COMSEARCH

Earth Station Data Sheet

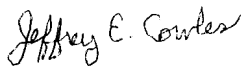
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Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	-29.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.7 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	58.25	-10.00	100.00
195	0.00	61.92	-10.00	100.00
200	0.00	65.70	-10.00	100.00
205	0.00	69.56	-10.00	100.00
210	0.00	73.48	-10.00	100.00
215	0.32	77.40	-10.00	100.00
220	0.47	81.41	-10.00	100.00
225	0.52	85.46	-10.00	100.00
230	0.41	89.53	-10.00	100.00
235	0.46	93.60	-10.00	100.00
240	0.55	97.66	-10.00	100.00
245	0.56	101.70	-10.00	100.00
250	0.68	105.74	-10.00	100.00
255	0.73	109.72	-10.00	100.00
260	0.66	113.62	-10.00	100.00
265	0.50	117.39	-10.00	100.00
270	0.42	121.09	-10.00	100.00
275	0.40	124.68	-10.00	100.00
280	0.36	128.11	-10.00	100.00
285	0.25	131.29	-10.00	100.00
290	0.30	134.35	-10.00	100.00
295	0.28	137.07	-10.00	100.00
300	0.36	139.53	-10.00	100.00
305	0.46	141.60	-10.00	100.00
310	0.36	143.01	-10.00	100.00
315	0.25	143.86	-10.00	100.00
320	0.24	144.22	-10.00	100.00
325	0.29	144.04	-10.00	100.00
330	0.44	143.36	-10.00	100.00
335	0.42	141.95	-10.00	100.00
340	0.38	140.03	-10.00	100.00
345	0.32	137.65	-10.00	100.00
350	0.37	135.00	-10.00	100.00
355	0.34	132.00	-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.



Jeffrey E. Cowles
Engineer III, Telecommunications
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Va. 20147

DATED: February 10, 2015