

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for

**Intelsat License LLC
Hagerstown, Maryland**

Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
September 26, 2014

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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.

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-only 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 September 5, 2014.

Company

3G Wireless, LLC
ACC License, LLC
AERIAL VIDEO SYSTEMS
AT&T California
Alascom Inc
American Broadcasting Companies, Inc.
Antietam Cable Television
Ascent Media Network Services, LLC
Bellsouth Telecommunications, Inc.
Borgeson, Tom R.
Broadcast Sports Inc.
CBS TELEVISION LICENSES LLC
CNG Communications, Inc.
CTVN HARRISBURG, LLC
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
Cowboys Stadium LP
DCI II, INC.
Detroit Free Press, Inc.
Direct Broadcast Services, Inc.
Entravision Holdings, LLC
F Corporation
GEORGE MASON UNIVERSITY INSTR FNDTION
GOODYEAR TIRE AND RUBBER COMPANY
GSN New, Inc
Global Microwave Systems Inc
HF Enterprises, Inc
HOWARD UNIVERSITY TELEVISION - (WHUT-TV)
Hallco Unlimited, Inc.
Hawaiian Telcom, Inc.
Heiden, William

Company (Continued)

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
MERCURY COMMUNICATIONS
Maryland Public Broadcasting Commission
Metro Networks Communications, Inc.
Michigan Bell Telephone Company
Moreen, Steven K
Multimedia Holdings Corporation
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 and Southern Company, Inc.
Penn Service Microwave Co., Inc.
Pennsylvania Educational Comm Systems
Plateau Telecommunications, Inc.
Plum TV, LLC
Production & Satellite Services, Inc.
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
Radiofone, Inc.
Randy Hermes Production
Regulus Media Services, Inc.
Remote Broadcasts, Inc.
Southwestern Bell Telephone L.P.
Speedshotz, Inc
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.

Company (Continued)

Verizon North Inc.
Verizon Northwest Inc.
Verizon Pennsylvania, Inc.
Verizon Virginia, Inc.
Verizon Washington DC, Inc.
Village Video Productions Inc
Vyvx, LLC
WBAL HEARST-ARGYLE TV, INC. (CA CORP.)
WDCW, LLC
WGAL Hearst Television, Inc
WMTM, 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: 09/26/2014
Job Number: 140905COMSJC03

Administrative Information

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

Site Information HAGERSTOWN, MARYLAND

Venue Name
Latitude (NAD 83) 39° 35' 53.1" N
Longitude (NAD 83) 77° 45' 22.3" W
Climate Zone A
Rain Zone 2
Ground Elevation (AMSL) 170.08 m / 558.0 ft

Link Information

Satellite Type Geostationary
Mode TO - Transmit-Only
Modulation Digital
Satellite Arc 49° W to 51° West Longitude
Azimuth Range 139.3° to 141.7°
Corresponding Elevation Angles 35.4° / 36.5°
Antenna Centerline (AGL) 9.14 m / 30.0 ft

Antenna Information

Transmit

Manufacturer Viasat
Model 13.5 Meter
Gain / Diameter 63.3 dBi / 13.5 m
3-dB / 15-dB Beamwidth 0.12° / 0.22°

2M00G7W to 40M0G7W

Max Available RF Power (dBW/4 kHz) -29.0 -29.0
(dBW/MHz) -5.0 -5.0

Maximum EIRP (dBW/4 kHz) 34.3 34.3
(dBW/MHz) 58.3 58.3
(dBW) 61.3 74.3

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

Frequency Information

Transmit 13.0 GHz

Emission / Frequency Range (MHz) 2M00G7W - 40M0G7W / 12825.0 - 13250.0

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

COMSEARCH

Earth Station Data Sheet

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Coordination Values

HAGERSTOWN, MD

Licensee Name Intelsat License LLC
Latitude (NAD 83) 39° 35' 53.1" N
Longitude (NAD 83) 77° 45' 22.3" W
Ground Elevation (AMSL) 170.08 m / 558.0 ft
Antenna Centerline (AGL) 9.14 m / 30.0 ft
Antenna Model Viasat 13.5 Meter
Antenna Mode Transmit 13.0 GHz
Interference Objectives: Long Term -151.0 dBW/4 kHz 20%
 Short Term -128.0 dBW/4 kHz 0.0025%
Max Available RF Power -29.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	128.14	-10.00	100.00
5	0.00	124.68	-10.00	100.00
10	0.00	121.06	-10.00	100.00
15	0.00	117.32	-10.00	100.00
20	0.00	113.49	-10.00	100.00
25	0.00	109.58	-10.00	100.00
30	0.00	105.61	-10.00	100.00
35	0.00	101.59	-10.00	100.00
40	0.00	97.55	-10.00	100.00
45	0.00	93.48	-10.00	100.00
50	0.00	89.41	-10.00	100.00
55	0.00	85.34	-10.00	100.00
60	0.00	81.28	-10.00	100.00
65	0.00	77.24	-10.00	100.00
70	0.00	73.24	-10.00	100.00
75	0.00	69.28	-10.00	100.00
80	0.00	65.39	-10.00	100.00
85	0.00	61.59	-10.00	100.00
90	0.00	57.88	-10.00	100.00
95	0.00	54.30	-10.00	100.00
100	0.00	50.88	-10.00	100.00
105	0.00	47.67	-9.96	100.00
110	0.00	44.69	-9.26	100.00
115	0.00	42.02	-8.59	100.00
120	0.00	39.71	-7.97	100.00
125	0.00	37.83	-7.45	100.00
130	0.00	36.45	-7.04	100.00
135	0.00	35.64	-6.80	100.00
140	0.00	35.42	-6.73	100.00
145	0.00	35.81	-6.85	100.00
150	0.00	36.80	-7.15	100.00
155	0.00	38.33	-7.59	100.00
160	0.00	40.26	-8.12	100.00
165	0.00	42.43	-8.69	100.00
170	0.00	44.96	-9.32	100.00
175	0.00	47.81	-9.99	100.00
180	0.00	50.91	-10.00	100.00
185	0.00	54.22	-10.00	100.00

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Antenna Model	Viasat 13.5 Meter
Antenna Mode	Transmit 13.0 GHz
Interference Objectives: Long Term	-151.0 dBW/4 kHz 20%
Short Term	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	-29.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 13.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	57.70	-10.00	100.00
195	0.00	61.32	-10.00	100.00
200	0.00	65.04	-10.00	100.00
205	0.00	68.86	-10.00	100.00
210	0.00	72.74	-10.00	100.00
215	0.00	76.68	-10.00	100.00
220	0.00	80.65	-10.00	100.00
225	0.00	84.65	-10.00	100.00
230	0.00	88.67	-10.00	100.00
235	0.00	92.69	-10.00	100.00
240	0.00	96.70	-10.00	100.00
245	0.00	100.69	-10.00	100.00
250	0.00	104.65	-10.00	100.00
255	0.00	108.57	-10.00	100.00
260	0.00	112.44	-10.00	100.00
265	0.00	116.22	-10.00	100.00
270	0.00	119.92	-10.00	100.00
275	0.00	123.49	-10.00	100.00
280	0.00	126.92	-10.00	100.00
285	0.00	130.16	-10.00	100.00
290	0.00	133.18	-10.00	100.00
295	0.00	135.93	-10.00	100.00
300	0.00	138.35	-10.00	100.00
305	0.00	140.37	-10.00	100.00
310	0.00	141.94	-10.00	100.00
315	0.00	142.99	-10.00	100.00
320	0.00	143.48	-10.00	100.00
325	0.00	143.38	-10.00	100.00
330	0.00	142.70	-10.00	100.00
335	0.00	141.47	-10.00	100.00
340	0.00	139.66	-10.00	100.00
345	0.00	137.24	-10.00	100.00
350	0.00	134.47	-10.00	100.00
355	0.23	131.57	-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: September 26, 2014