

# 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  
October 24, 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 22, 2014.

#### Company

3G Wireless, LLC  
AERIAL VIDEO SYSTEMS  
AT&T California  
Alascom Inc  
Anne Arundel, County of  
Ascent Media Network Services, LLC  
Bellsouth Telecommunications, Inc.  
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  
DCI II, INC.  
Direct Broadcast Services, Inc.  
GOODYEAR TIRE AND RUBBER COMPANY  
GSN New, Inc  
Global Microwave Systems Inc  
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.

Company (Continued)

Kentucky RSA #3 Cellular General Partner  
Kentucky RSA #4 Cellular General Partner  
MERCURY COMMUNICATIONS  
Metro Networks Communications, Inc.  
Michigan Bell Telephone Company  
Moreen, Steven K  
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  
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  
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 Delaware 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  
Vyvx, LLC

Company (Continued)

Westar Satellite Services LP  
Western Technical Services  
Wexler Video, Inc.  
Winged Vision Inc  
Wisconsin Bell, Inc.  
Wolfe Air Aviation  
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 LLC  
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  
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.

Company (Continued)

US Cellular Operating Company, LLC (WI)  
USCOC of Cumberland, 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  
Waterleaf International LLC  
BFI Licenses, LLC  
Cohen, Elena  
CP Communications, LLC  
Loop Inc.  
Metrosat Communications Inc.  
Microwave Video Systems, LLC  
Pacific Television Center  
RF Technology, LLC  
Texas A&M University, Athletic Department  
Vitec Broadcast Services, Inc.

Society of Broadcast Engineers (SBE) Coordinators

Maryland, Virginia, and District of Columbia:  
James Snyder - Maryland (Entire State) and DC Area

Pennsylvania:  
Matt Lightner – South Central Region  
Otto Schellin - Western/Pittsburgh Region  
Rick Markey - Central Region

West Virginia:  
Randy Kerbawy – 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: 10/24/2014  
Job Number: 140922COMSJC09

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### Administrative Information

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

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### Site Information HAGERSTOWN, MARYLAND

Venue Name  
Latitude (NAD 83) 39° 35' 53.5" N  
Longitude (NAD 83) 77° 45' 23.0" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 169.99 m / 557.7 ft

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### 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) 10.67 m / 35.0 ft

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### Antenna Information

#### Transmit

Manufacturer GD Satcom  
Model 16.4 Meter  
Gain / Diameter 59.0 dBi / 16.4 m  
3-dB / 15-dB Beamwidth 0.19° / 0.40°

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%

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### Frequency Information

#### Transmit 6.0 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

# COMSEARCH

## Earth Station Data Sheet

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ATTACHMENT 1

Page 1 of 1

GD SATCOM Technologies:  
Model: 16.4 Meter

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

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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

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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

# COMSEARCH

## Earth Station Data Sheet

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<b>Coordination Values</b>		<b>HAGERSTOWN, MD</b>
Licensee Name		Intelsat License LLC
Latitude (NAD 83)		39° 35' 53.5" N
Longitude (NAD 83)		77° 45' 23.0" W
Ground Elevation (AMSL)		169.99 m / 557.7 ft
Antenna Centerline (AGL)		10.67 m / 35.0 ft
Antenna Model		GD Satcom 16.4 Meter
Antenna Mode		Transmit 6.0 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 6.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	128.58	-10.00	100.00
5	0.00	125.18	-10.00	100.00
10	0.00	121.62	-10.00	100.00
15	0.00	117.94	-10.00	100.00
20	0.00	114.15	-10.00	100.00
25	0.00	110.28	-10.00	100.00
30	0.00	106.35	-10.00	100.00
35	0.00	102.37	-10.00	100.00
40	0.00	98.36	-10.00	100.00
45	0.00	94.32	-10.00	100.00
50	0.00	90.27	-10.00	100.00
55	0.00	86.23	-10.00	100.00
60	0.00	82.19	-10.00	100.00
65	0.00	78.17	-10.00	100.00
70	0.00	74.19	-10.00	100.00
75	0.00	70.25	-10.00	100.00
80	0.00	66.37	-10.00	100.00
85	0.00	62.57	-10.00	100.00
90	0.00	58.87	-10.00	100.00
95	0.00	55.30	-10.00	100.00
100	0.00	51.87	-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	42.57	-8.73	100.00
170	0.00	45.21	-9.38	100.00
175	0.00	48.15	-10.00	100.00
180	0.00	51.33	-10.00	100.00

# COMSEARCH

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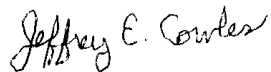
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Interference Objectives: Long Term	-154.0 dBW/4 kHz 20%
Short Term	-131.0 dBW/4 kHz 0.0025%
Max Available RF Power	-29.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
185	0.00	54.71	-10.00	100.00
190	0.00	58.25	-10.00	100.00
195	0.00	61.93	-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	0.00	77.45	-10.00	100.00
220	0.00	81.46	-10.00	100.00
225	0.00	85.49	-10.00	100.00
230	0.00	89.53	-10.00	100.00
235	0.00	93.58	-10.00	100.00
240	0.00	97.61	-10.00	100.00
245	0.00	101.62	-10.00	100.00
250	0.00	105.60	-10.00	100.00
255	0.00	109.54	-10.00	100.00
260	0.00	113.41	-10.00	100.00
265	0.00	117.21	-10.00	100.00
270	0.00	120.91	-10.00	100.00
275	0.00	124.48	-10.00	100.00
280	0.00	127.91	-10.00	100.00
285	0.00	131.14	-10.00	100.00
290	0.00	134.14	-10.00	100.00
295	0.00	136.85	-10.00	100.00
300	0.00	139.22	-10.00	100.00
305	0.00	141.18	-10.00	100.00
310	0.00	142.67	-10.00	100.00
315	0.00	143.62	-10.00	100.00
320	0.00	143.98	-10.00	100.00
325	0.00	143.75	-10.00	100.00
330	0.00	142.94	-10.00	100.00
335	0.00	141.57	-10.00	100.00
340	0.00	139.71	-10.00	100.00
345	0.00	137.40	-10.00	100.00
350	0.00	134.74	-10.00	100.00
355	0.00	131.78	-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: October 24, 2014