

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Harte Satellite Consultants**  
**TAMPA, FL**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
June 12, 2019

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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 04/24/2019.

#### Company

3G Wireless, LLC  
AB Indiana, LLC  
AERIAL VIDEO SYSTEMS  
Affiniti LLC  
Alascom Inc  
Alltel Communications LLC - S Florida  
Alternative Choice Wireless, LLC  
Altius Communications  
Ascent Media Network Services, LLC  
AT&T Corp.  
Beasley Media Group Licenses, LLC  
Beasley Media Group, LLC  
Bellsouth Telecommunications, Inc.  
Bethesda Memorial Hospital  
Borgeson, Tom R.  
Brevard County Sheriffs Office  
Brevard, County of  
Bright House Networks, LLC  
Broadcast Sports Inc.  
Broward County Board of Commissioners  
Broward County Telecommunications Div  
Business Only Broadband, LLC  
Cape Coral, City of  
Carolina Telephone and Telegraph Co  
Casper, John  
Cbs Operations Inc.  
CenturyTel of the Southwest, Inc.  
Charlotte County Board of County Comm  
Chesapeake-Portsmouth Broadcasting Corp  
Chicago Comnet Corp  
Cincinnati Bell Wireless LLC  
Citrus County Sheriff's Office  
City of Hollywood, Florida  
City of Melbourne  
City of Miami Beach  
City of Palm Bay  
City of Pompano Beach Florida  
Citywide News Network, Inc.  
Clay County of (FL)  
Clear Channel Broadcasting Licenses, Inc

Clearsurf International  
Clearwater, City of  
Clearwire Spectrum Holdings II, LLC  
Clearwire Spectrum Holdings III, LLC  
Clearwire Spectrum Holdings LLC  
Coconut Creek, City of  
COLLIER, COUNTY OF  
Compass BroadBand Networks  
Computer Office Solutions, Inc.  
Conterra Ultra Broadband, LLC  
Coral Gables, City of  
Cowboys Stadium LP  
Cox Radio Inc. (Jacksonville, FL)  
Cox Radio, Inc. (Hollywood, FL)  
DCI II, INC.  
Direct Broadcast Services, Inc.  
Echo Technologies  
Embarq Florida, Inc.  
Entercom License, LLC  
FiberX LLC  
Fixed Wireless Holdings, LLC  
FL Courts 18th Judicial Circuit  
Florida High Speed Internet  
Florida Mobile Telecom, Inc.  
Florida Rural Broadband Alliance, LLC  
Florida, State of  
Fort Lauderdale City Florida  
Frontier California Inc.  
Gigabit Squared Telecom LLC  
Global Telecom & Technology Americas, In  
Graham Media Group, Florida, Inc.  
Greater Orlando Public Safety Coop  
Hallco Unlimited, Inc.  
Hardee County - IDA  
Harris Corporation - Florida  
Hawaiian Telcom, Inc.  
Hearst Properties Inc.  
Heiden, William  
HF Enterprises, Inc  
Hialeah Housing Authority  
Highlands County  
Hillsborough County Sheriffs Office  
HiQ Data Corporation  
Illinois Bell Telephone Company  
Indian River Community College  
Indian River, County of  
Indiana Bell Telephone Company  
Information & Display Systems, Inc.  
Information Super Station, LLC  
International Communications Group, Inc.  
Jacksonville, City of  
Kentucky RSA #3 Cellular General Partner  
Kentucky RSA #4 Cellular General Partner  
Lee County - BOCC  
Manatee, County of  
Mb Development I/C Grand Beach Hotel

MERCURY COMMUNICATIONS  
Miami City of  
Miami-Dade County  
Michigan Bell Telephone Company  
Moreen, Steven K  
Mosaic Fertilizer LLC  
Mun Public Safety Comm Consortium(MPSCC)  
Navajo Communications Company  
NBC Telemundo License LLC  
New Cingular Wireless PCS LLC - N FL  
New Cingular Wireless PCS LLC - S FL  
NEW ENGLAND DIGITAL DISTRIBUTION, INC.  
New World Communications of Tampa, Inc.  
Nexogy, Inc  
NEXSTAR BROADCASTING, INC.  
Nextlink Wireless, LLC  
North Florida Broadband Authority  
NorthWest Suburbs Community Access Corp  
NSM Surveillance  
Ohio Bell GTelephone Company  
Okeechobee County Fire Department  
Olympic Wireless, LLC  
Onboard Images  
Orange County Government  
Orlando City Police Department  
Orlando Telephone Company Inc.  
Orlando Utilities Commission  
Pacific and Southern, LLC  
Pacific Bell Tel Com dba AT&T California  
Palm Beach, County of  
Pdmnet Inc.  
Penn Service Microwave Co., Inc.  
Pinellas Park Police Department  
Pinellas, County of  
Plantation, City of  
Plateau Telecommunications, Inc.  
Plum TV, LLC  
POLK COUNTY SHERIFF'S OFFICE  
Polk, County of  
Production & Satellite Services, Inc.  
Quick Link Connections Inc.  
Qwest Corporation  
Radiofone, Inc.  
Randy Hermes Production  
Rapid Systems, Inc  
RCC Minnesota Inc. - MN NE ND SD  
Reedy Creek Improvement District  
Remote Broadcasts, Inc.  
REMOTE FACILITIES CONSULTING SERVICES  
RF Central, LLC  
RF Film, Inc  
Saga South Communications, LLC  
SBE Coordinator  
Scripps Media, Inc. - WFTS TV  
Sling Broadband, LLC  
South Florida Water Management District

Southeastern Construction & Maintenance  
Southern Company Services, Inc.  
Southern Light, LLC  
Southwestern Bell Telephone L.P.  
Speedshotz, Inc  
Sprint Communications Company, LP  
Sprint Spectrum L.P.  
Sprintcom, Inc  
St. Lucie County Fire District  
Sumter County Board of County Commission  
Sun Hydraulics Corp  
Tampa City of  
T-Mobile License LLC  
Towerstream Corp.  
TTWN Networks, LLC  
Unisat, Inc.  
United States Sugar Corporation  
United Telephone - Southeast  
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 - S Florida  
Verizon Wireless Personal Comm, LP(S FL)  
Vyvx, LLC  
Webpass Inc.  
West Palm Beach, City of  
Westar Satellite Services LP  
Winged Vision Inc  
Wisconsin Bell Telephone Company  
Wolfe Air Aviation  
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: 06/12/2019  
Job Number: 190424COMSGE04

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### Administrative Information

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

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### Site Information TAMPA, FL

Venue Name  
Latitude (NAD 83) 27° 59' 59.3" N  
Longitude (NAD 83) 82° 32' 54.9" W  
Climate Zone B  
Rain Zone 1  
Ground Elevation (AMSL) 4.73 m / 15.5 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 30° W to 61° West Longitude  
Azimuth Range 109.8° to 139.9°  
Corresponding Elevation Angles 24.6° / 49.6°  
Antenna Centerline (AGL) 7.01 m / 23.0 ft

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### Antenna Information

		Receive -			Transmit -
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° / 9.0°			3.90° / 7.60°
Max Available RF Power	(dBW/4 kHz)				-20.1
	(dBW/MHz)				3.9
Maximum EIRP	(dBW/4 kHz)				10.5
	(dBW/MHz)				34.5
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%

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### Frequency Information

	Receive 11.0 GHz	Transmit 13.0 GHz
Emission / Frequency Range (MHz)	36M0G7W / 10700.0 - 10950.0 36M0G7W / 11200.0 - 11450.0	7M00G7W / 12750.0 - 13250.0
Max Great Circle Coordination Distance	374.4 km / 232.6 mi	128.9 km / 80.1 mi
Precipitation Scatter Contour Radius	531.4 km / 330.2 mi	100.0 km / 62.1 mi

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### TAMPA, FL

Licensee Name Harte Satellite Consultants  
Latitude (NAD 83) 27° 59' 59.3" N  
Longitude (NAD 83) 82° 32' 54.9" W  
Ground Elevation (AMSL) 4.73 m / 15.5 ft  
Antenna Centerline (AGL) 7.01 m / 23.0 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	107.93	-14.82	285.3	-14.82	100
5	0	103.42	-14.36	285.5	-14.36	100
10	0	98.89	-13.87	287.7	-13.87	100
15	0	94.35	-13.36	291.2	-13.36	100
20	0	89.8	-12.83	293.6	-12.83	100
25	0	85.25	-12.26	295.3	-12.26	100
30	0	80.71	-11.67	297.8	-11.67	100
35	0	76.19	-11.04	298.1	-11.04	100
40	0	71.68	-10.38	300.4	-10.38	106.2
45	0	67.2	-9.68	301.2	-9.68	107.1
50	0	62.76	-8.94	302.5	-8.94	107.4
55	0	58.37	-8.15	303.5	-8.15	108.1
60	0	54.04	-7.31	304.1	-7.31	109.2
65	0	49.79	-6.42	305.2	-6.42	110.4
70	0	45.66	-5.48	306.7	-5.48	111.5
75	0	41.67	-4.49	309.6	-4.49	112.3
80	0	37.87	-3.45	310.2	-3.45	115.9
85	0	34.34	-2.39	311.4	-2.39	118.3
90	0	31.15	-1.33	314.1	-1.33	121.2
95	0	28.43	-0.34	316.6	-0.34	125.6
100	0	26.33	0.48	318.2	0.48	129.6
105	0	25	1.05	319.5	1.05	130.4
110	0	24.57	1.23	320.2	1.23	133.5
115	0	25.08	1.01	319.4	1.01	130.4
120	0	26.49	0.42	318.2	0.42	129.2
125	0	28.65	-0.42	316.4	-0.42	125.1
130	0	31.41	-1.42	314.2	-1.42	120.9
135	0	34.64	-2.48	314.1	-2.48	118.4
140	0	38.2	-3.55	310.5	-3.55	115.8
145	0	41.91	-4.55	309.2	-4.55	112.3
150	0	45.41	-5.42	306.5	-5.42	111.3
155	0	48.64	-6.17	305.2	-6.17	110.3
160	0	51.51	-6.79	307.5	-6.79	110.5
165	0	53.92	-7.29	304.5	-7.29	109.2
170	0	55.87	-7.67	303.6	-7.67	109.4
175	0	57.95	-8.07	303.1	-8.07	108.5
180	0	60.25	-8.49	302.5	-8.49	107.6
185	0	62.75	-8.94	302.5	-8.94	107.4

# COMSEARCH

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### Coordination Values

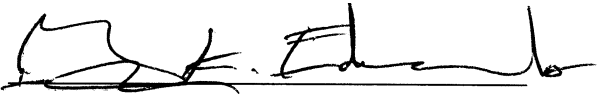
### TAMPA, FL

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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	65.41	-9.22	301.2	-9.22	107.3
195	0	68.21	-9.84	301.3	-9.84	107.4
200	0	71.12	-10.29	300.4	-10.29	100
205	0	74.14	-10.75	300.7	-10.75	100
210	0	77.23	-11.19	298.1	-11.19	100
215	0	80.38	-11.62	296.6	-11.62	100
220	0	83.58	-12.05	296.8	-12.05	100
225	0	86.8	-12.46	295.3	-12.46	100
230	0	90.04	-12.86	293.6	-12.86	100
235	0	93.28	-13.24	291.6	-13.24	100
240	0	96.51	-13.61	288.4	-13.61	100
245	0	99.7	-13.96	287.3	-13.96	100
250	0	102.85	-14.3	285.5	-14.3	100
255	0	105.94	-14.62	285.1	-14.62	100
260	0	108.95	-14.93	284.2	-14.93	100
265	0	111.87	-15.21	283.4	-15.21	100
270	0	114.67	-15.48	282.8	-15.48	100
275	0	117.32	-15.73	282.1	-15.73	100
280	0	119.81	-15.96	281.9	-15.96	100
285	0	122.11	-16.16	280.5	-16.16	100
290	0	124.18	-16.35	280.3	-16.35	100
295	0	126.01	-16.51	279.9	-16.51	100
300	0	127.55	-16.64	279.3	-16.64	100
305	0	128.79	-16.74	279.1	-16.74	100
310	0	129.69	-16.82	278.8	-16.82	100
315	0	130.24	-16.86	278.2	-16.86	100
320	0	130.42	-16.88	278.1	-16.88	100
325	0	130.23	-16.86	278.8	-16.86	100
330	0	129.67	-16.82	279.1	-16.82	100
335	0	128.76	-16.74	279.5	-16.74	100
340	0	125.59	-16.47	279.3	-16.47	100
345	0	121.25	-16.09	280.3	-16.09	100
350	0	116.85	-15.69	281.8	-15.69	100
355	0	112.41	-15.27	283.4	-15.27	100

## 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: June 12, 2019