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**VIA ELECTRONIC FILING**

November 14, 2018

Marlene H. Dortch  
Office of the Secretary  
Federal Communications Commission  
445 12th Street, SW  
Washington, DC 20554

Re: AT&T Corp. Application for Modification of Call Sign WA33 to Add New Antennas, IBFS  
File No. SES-MOD-INTR2018-09337

Dear Ms. Dortch:

AT&T Corp., by its undersigned counsel, respectfully notifies the Federal Communications Commission that the coordination process for the above-captioned earth station modification application has been completed. Attached are the final Frequency Coordination and Interference Analysis Reports for inclusion in the FCC's files for the above-referenced earth station application.

Should you have any questions regarding this filing, please do not hesitate to contact me.

Respectfully Submitted,

*/s/ Jennifer D. Hindin*

Jennifer D. Hindin  
*Counsel for AT&T Corp.*

**Attachment 1**

**Coordination Report for 11.1-meter Antenna**

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**AT&T Corp -  
ROARING CRK, PA  
Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
October 31, 2018

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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-receive earth station.

### Company

Weblin Holdings LLC  
xWave Engineering LLC  
Kryptick Technologies  
Northumberland County DPS/911

No other 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.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 10/15/2018.

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AB Services LLC  
AQ2AT LLC  
AT&T Corp.  
AT&T Wireless Services 3 LLC - PA  
Affiniti PA, LLC  
Agile Network Builders LLC  
Algonquin Gas Transmission, LLC  
Allentown SMSA Limited Partnership  
Alltel Communications LLC - Western PA  
Alltel Communications LLC-E OH WV  
American Electric Power Service Corp  
Auburn Data Systems, LLC  
Beaver Springs Faith Baptist Church, Inc  
Bedford County of  
Berks County Department of Emergency Ser  
Binghamton MSA Limited Partnership(NY)  
Blair County 911  
Blue Ridge Carriers  
Blueline Communications  
Bradford County  
Bucks County Dept. of Emergency Comm  
Cambria, County of  
Capital Communications of America  
Carbon, County of 911 Center  
Cellco Partnership - Bridgeville, PA/WV  
Cellco Partnership- PA Region  
Chemung County  
City of New York  
Clearfield, County of  
Clinton, County of  
Commonwealth of Pennsylvania-Radio Proj.  
Comprehensive Wireless LLC  
Consolidated Edison Company of New York  
Conterra Ultra Broadband, LLC  
County of Centre  
County of Lycoming  
County of Pike  
County of Tioga  
County of Warren, NJ  
County of York  
DSRC Networks

Dauphin County Emergency Management  
Direct Broadcast Services, Inc.  
Dominion Energy Transmission, Inc.  
ECW Wireless, LLC  
EMS of Northeast Pennsylvania  
East Ohio Gas Company  
Eastern MLG LLC  
Eastern Pennsylvania EMS Council  
Electric Railroad, LLC  
Essex County Sheriff's Office (NJ)  
Exelon Generation Company, LLC  
FELHC, Inc.  
GTT America LLC  
Garden State Transmissions  
Getwireless.Net  
Hammarlund Research LLC  
High Voltage Communications LLC (CFN)  
Higher Ground LLC  
Highway Networks, LLC  
Huntingdon, County of  
Indiana, County of  
Jefferson Microwave, LLC  
Jefferson, County Of  
Juniata County Emergency Services  
Kryptick Technologies  
Lackawanna, County of  
Lancaster County-Wide Communications  
Limitless Mobile, LLC  
Luzerne County of PA  
McKean, County of  
Middlesex, County of  
Mifflin County  
Monmouth, County of  
Monroe County Control Center (PA)  
Montgomery County Of  
Morris, County of  
Mountain State Communications, llc  
NYNEX Mobile of New York LP  
Nassau County Police Department  
New Cingular Wireless PCS LLC - NJ  
New Cingular Wireless PCS, LLC (NY)  
New Cingular Wireless PCS, LLC - PA  
New Jersey State Police  
New Jersey Transit Rail Operations, Inc.  
New Jersey, State of -NJ Transit  
New Line Networks, LLC  
New York City Police Department  
New York RSA No. 3 Cellular Partnership  
New York State Electric & Gas Corp  
Norfolk Southern Railway  
Northeast Pennsylvania SMSA LTD Prtnrsh  
Northumberland County DPS/911  
Office of Emergency Telecom Services, NJ  
Ohio Networks  
Orange County Dept of Emergency Services  
Orange and Rockland Utilities, Inc.



PSEG Services Corporation  
Peco Energy Company  
Pennsylvania 3 Sector 2, L.P. - PA Regn  
Pennsylvania Turnpike Commission  
Perry, County of  
Pike County Commissioners  
Pittsburgh SMSA Limited Partnership  
Port Authority of New York & New Jersey  
Potter County of (PA)  
Qoncept Holdings LLC  
Radio License Holding CBC, LLC  
SW Networks  
Schuyler, County of  
Shenandoah Personal Communications, LLC  
Snyder, County of  
Somerset County Dept. of Emergency Servi  
South Central Task Force (SCTFNET)  
Sullivan, County of  
T-Mobile License LLC  
Texas Eastern Communications, LLC  
Tioga, County of  
Tompkins, County Dept of Emergency Respo  
Torellco LLC  
Transcontinental Gas Pipeline Corp.  
Transwave Communication Systems, Inc.  
Uniti Fiber PEG, LLC  
Verizon Wireless (VAW) LLC-Pennsylvania  
WV DHHR BPH, Office of Ems, Com. Div.  
Weblin Holdings LLC  
Westmoreland, County of  
Williams Energy Services  
Wireless Internetwork LLC  
World Class Wireless, LLC  
iSignal  
xWave Engineering 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: 10/31/2018  
Job Number: 181015COMSGE09

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign WA33  
Licensee Code P1175P  
Licensee Name AT&T Corp -

---

### Site Information ROARING CRK, PA

Venue Name  
Latitude (NAD 83) 40° 53' 37.8" N  
Longitude (NAD 83) 76° 26' 20.6" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 295.96 m / 971.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 4.6° W to 148.2° West Longitude  
Azimuth Range 102.1° to 257.8°  
Corresponding Elevation Angles 5.0° / 5.0°  
Antenna Centerline (AGL) 5.49 m / 18.0 ft

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### Antenna Information

		<b>Receive - FCC32</b>		<b>Transmit - FCC32</b>	
Manufacturer		Gen Dynamics		Gen Dynamics	
Model		Satcom		Satcom	
Gain / Diameter		51.9 dBi / 11.1 m		55.6 dBi / 11.1 m	
3-dB / 15-dB Beamwidth		0.40° / 0.90°		0.30° / 0.60°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-2.7 21.3	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			52.9 76.9	
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

---

### Frequency Information

	<b>Receive 4.0 GHz</b>	<b>Transmit 6.1 GHz</b>
Emission / Frequency Range (MHz)	54K6G7W - 72M0G7W / 3625.0 - 4200.0	54K6G7W - 72M0G7W / 5850.0 - 6425.0
Max Great Circle Coordination Distance	714.9 km / 444.2 mi	429.1 km / 266.6 mi
Precipitation Scatter Contour Radius	621.4 km / 386.1 mi	101.8 km / 63.2 mi

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### ROARING CRK, PA

Licensee Name AT&T Corp -  
Latitude (NAD 83) 40° 53' 37.8" N  
Longitude (NAD 83) 76° 26' 20.6" W  
Ground Elevation (AMSL) 295.96 m / 971.0 ft  
Antenna Centerline (AGL) 5.49 m / 18.0 ft  
Antenna Model Gen Dynamics 11.1 meter  
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%  
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%  
Max Available RF Power -2.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	102.08	-10.00	285.28	-10.00	170.66
5	1.50	97.11	-10.00	205.56	-10.00	104.66
10	2.37	92.12	-10.00	186.03	-10.00	100.00
15	2.57	87.12	-10.00	181.49	-10.00	100.00
20	2.27	82.13	-10.00	188.34	-10.00	100.00
25	2.08	77.14	-10.00	192.61	-10.00	100.00
30	1.97	72.15	-10.00	195.23	-10.00	100.00
35	1.63	67.16	-10.00	204.62	-10.00	101.55
40	1.32	62.18	-10.00	210.61	-10.00	109.27
45	1.01	57.21	-10.00	220.05	-10.00	117.42
50	1.13	52.22	-10.00	216.15	-10.00	114.12
55	1.06	47.25	-9.86	219.09	-9.86	116.44
60	1.50	42.24	-8.64	211.87	-8.64	108.73
65	1.12	37.29	-7.29	230.56	-7.29	122.57
70	0.59	32.39	-5.76	270.10	-5.76	149.29
75	0.44	27.47	-3.97	295.60	-3.97	169.37
80	0.29	22.59	-1.85	331.15	-1.85	193.55
85	0.00	17.81	0.74	362.27	0.74	210.39
90	0.35	12.96	4.19	370.07	4.19	210.28
95	0.00	8.67	8.55	425.97	8.55	245.15
100	0.21	5.20	14.10	714.89	14.10	429.11
105	0.62	5.21	14.08	546.51	14.08	312.57
110	1.05	8.44	8.85	352.51	8.85	191.17
115	1.64	11.62	5.37	298.25	5.37	155.13
120	2.06	14.83	2.72	262.43	2.72	133.16
125	2.04	18.26	0.46	247.23	0.46	126.50
130	1.71	21.80	-1.46	245.58	-1.46	127.37
135	1.58	25.06	-2.98	240.54	-2.98	125.27
140	1.77	27.91	-4.14	227.38	-4.14	116.41
145	2.20	30.34	-5.05	210.97	-5.05	103.60
150	2.40	32.69	-5.86	205.16	-5.86	100.00
155	2.70	34.65	-6.49	195.66	-6.49	100.00
160	3.31	35.98	-6.90	180.33	-6.90	100.00
165	3.15	37.61	-7.38	181.32	-7.38	100.00
170	3.37	38.48	-7.63	175.11	-7.63	100.00
175	3.27	39.24	-7.84	176.33	-7.84	100.00
180	3.12	39.61	-7.95	179.24	-7.95	100.00
185	2.85	39.65	-7.96	185.09	-7.96	100.00

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

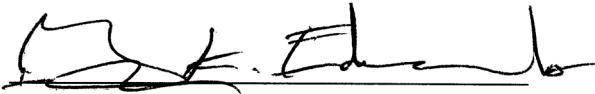
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Max Available RF Power			-2.7 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	2.85	38.99	-7.77	186.04	-7.77	100.00
195	2.43	38.29	-7.58	196.29	-7.58	100.00
200	2.23	36.96	-7.19	202.54	-7.19	100.00
205	2.06	35.22	-6.67	206.36	-6.67	101.29
210	2.25	32.81	-5.90	205.66	-5.90	100.00
215	2.08	30.43	-5.08	213.50	-5.08	105.86
220	1.77	27.91	-4.14	227.46	-4.14	116.48
225	1.55	25.08	-2.98	241.27	-2.98	125.82
230	1.15	22.21	-1.66	264.22	-1.66	139.46
235	0.89	19.09	-0.02	289.29	-0.02	156.39
240	1.02	15.56	2.20	297.68	2.20	159.70
245	1.79	11.51	5.48	293.40	5.48	151.31
250	2.15	7.68	9.87	318.40	9.87	161.88
255	2.20	3.99	16.98	538.81	16.98	305.29
260	1.87	3.82	17.44	712.20	17.44	427.09
265	0.87	8.29	9.04	365.37	9.04	200.04
270	0.34	13.03	4.12	370.55	4.12	210.73
275	0.23	17.81	0.73	358.70	0.73	207.80
280	0.26	22.66	-1.88	334.75	-1.88	196.29
285	0.34	27.55	-4.00	307.92	-4.00	179.56
290	0.31	32.48	-5.79	299.32	-5.79	175.52
295	0.00	37.47	-7.34	302.76	-7.34	180.97
300	0.00	42.42	-8.69	293.76	-8.69	175.75
305	0.00	47.38	-9.89	285.98	-9.89	171.09
310	0.00	52.35	-10.00	285.28	-10.00	170.66
315	0.00	57.32	-10.00	285.28	-10.00	170.66
320	0.00	62.29	-10.00	285.28	-10.00	170.66
325	0.00	67.27	-10.00	285.28	-10.00	170.66
330	0.00	72.25	-10.00	285.28	-10.00	170.66
335	0.00	77.23	-10.00	285.28	-10.00	170.66
340	0.00	82.21	-10.00	285.28	-10.00	170.66
345	0.00	87.19	-10.00	285.28	-10.00	170.66
350	0.00	92.17	-10.00	285.28	-10.00	170.66
355	0.00	97.15	-10.00	285.28	-10.00	170.66

## 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: October 31, 2018

**Attachment 2**

**Coordination Report for 13.1-meter Antenna**

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**AT&T Corp -  
ROARING CRK, PA  
Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
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October 31, 2018



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xWave Engineering LLC  
Kryptick Technologies  
Northumberland County DPS/911

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Allentown SMSA Limited Partnership  
Alltel Communications LLC - Western PA  
Alltel Communications LLC-E OH WV  
American Electric Power Service Corp  
Auburn Data Systems, LLC  
Beaver Springs Faith Baptist Church, Inc  
Bedford County of  
Berks County Department of Emergency Ser  
Binghamton MSA Limited Partnership(NY)  
Blair County 911  
Blue Ridge Carriers  
Blueline Communications  
Bradford County  
Bucks County Dept. of Emergency Comm  
Cambria, County of  
Capital Communications of America  
Carbon, County of 911 Center  
Cellco Partnership - Bridgeville, PA/WV  
Cellco Partnership- PA Region  
Chemung County  
City of New York  
Clearfield, County of  
Clinton, County of  
Commonwealth of Pennsylvania-Radio Proj.  
Comprehensive Wireless LLC  
Consolidated Edison Company of New York  
Conterra Ultra Broadband, LLC  
County of Centre  
County of Fayette  
County of Lycoming  
County of Pike  
County of Tioga  
County of Warren, NJ  
County of York

DSRC Networks  
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Dominion Energy Transmission, Inc.  
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EMS of Northeast Pennsylvania  
East Ohio Gas Company  
Eastern MLG LLC  
Eastern Pennsylvania EMS Council  
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Exelon Generation Company, LLC  
FELHC, Inc.  
GTT America LLC  
Garden State Transmissions  
Getwireless.Net  
Hammarlund Research LLC  
High Voltage Communications LLC (CFN)  
Higher Ground LLC  
Highway Networks, LLC  
Huntingdon, County of  
Indiana, County of  
Jefferson Microwave, LLC  
Jefferson, County Of  
Juniata County Emergency Services  
Kryptick Technologies  
Lackawanna, County of  
Lancaster County-Wide Communications  
Limitless Mobile, LLC  
Luzerne County of PA  
McKean, County of  
Middlesex, County of  
Mifflin County  
Monmouth, County of  
Monroe County Control Center (PA)  
Montgomery County Of  
Morris, County of  
Mountain State Communications, llc  
NYNEX Mobile of New York LP  
Nassau County Police Department  
New Cingular Wireless PCS LLC - NJ  
New Cingular Wireless PCS, LLC (NY)  
New Cingular Wireless PCS, LLC - PA  
New Jersey State Police  
New Jersey Transit Rail Operations, Inc.  
New Jersey, State of -NJ Transit  
New Line Networks, LLC  
New York City Police Department  
New York RSA No. 3 Cellular Partnership  
New York State Electric & Gas Corp  
Norfolk Southern Railway  
Northeast Pennsylvania SMSA LTD Prtnrsh  
Northumberland County DPS/911  
Office of Emergency Telecom Services, NJ  
Ohio Networks  
Orange County Dept of Emergency Services

Orange and Rockland Utilities, Inc.  
PSEG Services Corporation  
Peco Energy Company  
Pennsylvania 3 Sector 2, L.P. - PA Regn  
Pennsylvania Turnpike Commission  
Perry, County of  
Pike County Commissioners  
Pittsburgh SMSA Limited Partnership  
Port Authority of New York & New Jersey  
Potter County of (PA)  
Qoncept Holdings LLC  
Radio License Holding CBC, LLC  
SW Networks  
Schuyler, County of  
Shenandoah Personal Communications, LLC  
Snyder, County of  
Somerset County Dept. of Emergency Servi  
South Central Task Force (SCTFNET)  
Sullivan, County of  
T-Mobile License LLC  
Texas Eastern Communications, LLC  
Tioga, County of  
Tompkins, County Dept of Emergency Respo  
Torelco LLC  
Transcontinental Gas Pipeline Corp.  
Transwave Communication Systems, Inc.  
Uniti Fiber PEG, LLC  
Verizon Wireless (VAW) LLC-Pennsylvania  
WV DHHR BPH, Office of Ems, Com. Div.  
Weblin Holdings LLC  
Westmoreland, County of  
Williams Energy Services  
Wireless Internetwork LLC  
World Class Wireless, LLC  
iSignal  
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## **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.

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## Earth Station Data Sheet

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### Administrative Information

Status ENGINEER PROPOSAL  
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Licensee Code P1175P  
Licensee Name AT&T Corp -

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Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 295.96 m / 971.0 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 4.6° W to 148.2° West Longitude  
Azimuth Range 102.1° to 257.8°  
Corresponding Elevation Angles 5.0° / 5.0°  
Antenna Centerline (AGL) 5.49 m / 18.0 ft

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### Antenna Information

		Receive - FCC32		Transmit - FCC32	
Manufacturer		Gen Dynamics		Gen Dynamics	
Model		Satcom		Satcom	
Gain / Diameter		53.5 dBi / 13.1 m		57.3 dBi / 13.1 m	
3-dB / 15-dB Beamwidth		0.38° / 0.76°		0.26° / 0.52°	
Max Available RF Power	(dBW/4 kHz) (dBW/MHz)			-2.7 21.3	
Maximum EIRP	(dBW/4 kHz) (dBW/MHz)			54.6 78.6	
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

---

### Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	54K6G7W - 72M0G7W / 3625.0 - 4200.0	54K6G7W - 72M0G7W / 5850.0 - 6425.0
Max Great Circle Coordination Distance	743.1 km / 461.7 mi	448.0 km / 278.3 mi
Precipitation Scatter Contour Radius	621.4 km / 386.1 mi	101.8 km / 63.2 mi



# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5500 <http://www.comsearch.com>

### Coordination Values

### ROARING CRK, PA

Licensee Name AT&T Corp -  
Latitude (NAD 83) 40° 53' 37.8" N  
Longitude (NAD 83) 76° 26' 20.6" W  
Ground Elevation (AMSL) 295.96 m / 971.0 ft  
Antenna Centerline (AGL) 5.49 m / 18.0 ft  
Antenna Model Gen Dynamics 13.1 meter  
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%  
Short Term -146.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%  
Max Available RF Power -2.7 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	102.08	-10.00	285.28	-10.00	170.66
5	1.50	97.11	-10.00	205.56	-10.00	104.66
10	2.37	92.12	-10.00	186.03	-10.00	100.00
15	2.57	87.12	-10.00	181.49	-10.00	100.00
20	2.27	82.13	-10.00	188.34	-10.00	100.00
25	2.08	77.14	-10.00	192.61	-10.00	100.00
30	1.97	72.15	-10.00	195.23	-10.00	100.00
35	1.63	67.16	-10.00	204.62	-10.00	101.55
40	1.32	62.18	-10.00	210.61	-10.00	109.27
45	1.01	57.21	-10.00	220.05	-10.00	117.42
50	1.13	52.22	-10.00	216.15	-10.00	114.12
55	1.06	47.25	-9.86	219.09	-9.86	116.44
60	1.50	42.24	-8.64	211.87	-8.64	108.73
65	1.12	37.29	-7.29	230.56	-7.29	122.57
70	0.59	32.39	-5.76	270.10	-5.76	149.29
75	0.44	27.47	-3.97	295.60	-3.97	169.37
80	0.29	22.59	-1.85	331.15	-1.85	193.55
85	0.00	17.81	0.74	362.27	0.74	210.39
90	0.35	12.96	4.19	370.07	4.19	210.28
95	0.00	8.67	8.55	425.97	8.55	245.15
100	0.21	5.20	14.10	743.11	14.10	448.01
105	0.62	5.21	14.08	561.79	14.08	322.71
110	1.05	8.44	8.85	352.51	8.85	191.17
115	1.64	11.62	5.37	298.25	5.37	155.13
120	2.06	14.83	2.72	262.43	2.72	133.16
125	2.04	18.26	0.46	247.23	0.46	126.50
130	1.71	21.80	-1.46	245.58	-1.46	127.37
135	1.58	25.06	-2.98	240.54	-2.98	125.27
140	1.77	27.91	-4.14	227.38	-4.14	116.41
145	2.20	30.34	-5.05	210.97	-5.05	103.60
150	2.40	32.69	-5.86	205.16	-5.86	100.00
155	2.70	34.65	-6.49	195.66	-6.49	100.00
160	3.31	35.98	-6.90	180.33	-6.90	100.00
165	3.15	37.61	-7.38	181.32	-7.38	100.00
170	3.37	38.48	-7.63	175.11	-7.63	100.00
175	3.27	39.24	-7.84	176.33	-7.84	100.00
180	3.12	39.61	-7.95	179.24	-7.95	100.00
185	2.85	39.65	-7.96	185.09	-7.96	100.00

# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

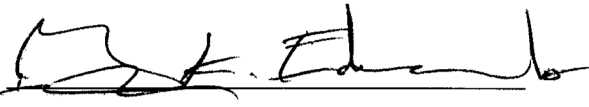
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Max Available RF Power			-2.7 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	2.85	38.99	-7.77	186.04	-7.77	100.00
195	2.43	38.29	-7.58	196.29	-7.58	100.00
200	2.23	36.96	-7.19	202.54	-7.19	100.00
205	2.06	35.22	-6.67	206.36	-6.67	101.29
210	2.25	32.81	-5.90	205.66	-5.90	100.00
215	2.08	30.43	-5.08	213.50	-5.08	105.86
220	1.77	27.91	-4.14	227.46	-4.14	116.48
225	1.55	25.08	-2.98	241.27	-2.98	125.82
230	1.15	22.21	-1.66	264.22	-1.66	139.46
235	0.89	19.09	-0.02	289.29	-0.02	156.39
240	1.02	15.56	2.20	297.68	2.20	159.70
245	1.79	11.51	5.48	293.40	5.48	151.31
250	2.15	7.68	9.87	318.40	9.87	161.88
255	2.20	3.99	16.98	555.17	16.98	316.11
260	1.87	3.82	17.44	740.37	17.44	445.91
265	0.87	8.29	9.04	365.37	9.04	200.04
270	0.34	13.03	4.12	370.55	4.12	210.73
275	0.23	17.81	0.73	358.70	0.73	207.80
280	0.26	22.66	-1.88	334.75	-1.88	196.29
285	0.34	27.55	-4.00	307.92	-4.00	179.56
290	0.31	32.48	-5.79	299.32	-5.79	175.52
295	0.00	37.47	-7.34	302.76	-7.34	180.97
300	0.00	42.42	-8.69	293.76	-8.69	175.75
305	0.00	47.38	-9.89	285.98	-9.89	171.09
310	0.00	52.35	-10.00	285.28	-10.00	170.66
315	0.00	57.32	-10.00	285.28	-10.00	170.66
320	0.00	62.29	-10.00	285.28	-10.00	170.66
325	0.00	67.27	-10.00	285.28	-10.00	170.66
330	0.00	72.25	-10.00	285.28	-10.00	170.66
335	0.00	77.23	-10.00	285.28	-10.00	170.66
340	0.00	82.21	-10.00	285.28	-10.00	170.66
345	0.00	87.19	-10.00	285.28	-10.00	170.66
350	0.00	92.17	-10.00	285.28	-10.00	170.66
355	0.00	97.15	-10.00	285.28	-10.00	170.66

## 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: October 31, 2018