

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Comcast Cable Communications, LLC**  
**MONTICELLO, FL**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
July 17, 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**

No great circle interference cases were identified during the interference study of the proposed earth station.

### 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 07/17/2018.

Company

Comsearch

## **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: 07/17/2018  
Job Number: 180717COMSTW12

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code ZCATEC  
Licensee Name Comcast Cable Communications, LLC

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### Site Information

**MONTICELLO, FL**  
Venue Name  
Latitude (NAD 83) 30° 32' 50.4" N  
Longitude (NAD 83) 83° 53' 0.5" W  
Climate Zone A  
Rain Zone 1  
Ground Elevation (AMSL) 59.56 m / 195.4 ft

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### Link Information

Satellite Type Geostationary  
Mode RO - Receive-Only  
Modulation Digital  
Satellite Arc 60° W to 143° West Longitude  
Azimuth Range 138.9° to 253.1°  
Corresponding Elevation Angles 45.9° / 18.0°  
Antenna Centerline (AGL) 0.91 m / 3.0 ft

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### Antenna Information

Manufacturer MICRODYNE  
Model 3.0 METER  
Gain / Diameter 39.5 dBi / 3.0 m  
3-dB / 15-dB Beamwidth 1.70° / 3.40°

Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

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### Frequency Information

**Receive 4.0 GHz**  
Emission / Frequency Range (MHz) 36M0G7W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 361.1 km / 224.3 mi  
Precipitation Scatter Contour Radius 586.6 km / 364.4 mi

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### MONTICELLO, FL

Licensee Name Comcast Cable Communications, LLC  
Latitude (NAD 83) 30° 32' 50.4" N  
Longitude (NAD 83) 83° 53' 0.5" W  
Ground Elevation (AMSL) 59.56 m / 195.4 ft  
Antenna Centerline (AGL) 0.91 m / 3.0 ft  
Antenna Model MICRODYNE 3.0 METER  
Antenna Mode Receive 4.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	1.44	106.19	-10.00	207.16
5	1.41	110.96	-10.00	208.07
10	1.24	115.69	-10.00	213.07
15	1.10	113.34	-10.00	217.11
20	0.95	110.02	-10.00	223.03
25	0.68	106.61	-10.00	238.37
30	0.54	103.18	-10.00	246.95
35	0.42	99.72	-10.00	258.57
40	0.29	96.24	-10.00	273.84
45	0.32	92.76	-10.00	270.18
50	0.31	89.26	-10.00	272.00
55	0.00	85.79	-10.00	285.28
60	0.00	82.33	-10.00	285.28
65	0.00	78.90	-10.00	285.28
70	0.22	75.46	-10.00	282.91
75	0.25	72.12	-10.00	278.38
80	0.44	68.79	-10.00	256.16
85	0.54	65.57	-10.00	247.23
90	0.51	62.54	-10.00	249.37
95	0.46	59.66	-10.00	253.79
100	0.47	56.93	-10.00	253.66
105	0.61	54.30	-10.00	242.43
110	0.71	51.93	-10.00	236.58
115	0.72	49.90	-10.00	236.30
120	0.61	48.30	-10.00	243.00
125	0.41	47.14	-9.83	261.00
130	0.52	46.07	-9.59	250.95
135	0.35	45.70	-9.50	270.41
140	0.00	45.92	-9.55	288.16
145	0.00	46.22	-9.62	287.70
150	0.00	46.93	-9.79	286.64
155	0.00	48.04	-10.00	285.28
160	0.00	49.51	-10.00	285.28
165	0.22	51.14	-10.00	283.36
170	0.00	53.00	-10.00	285.28
175	0.00	54.05	-10.00	285.28
180	0.00	54.40	-10.00	285.28
185	0.00	54.05	-10.00	285.28



# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### MONTICELLO, FL

Licensee Name Comcast Cable Communications, LLC  
Latitude (NAD 83) 30° 32' 50.4" N  
Longitude (NAD 83) 83° 53' 0.5" W  
Ground Elevation (AMSL) 59.56 m / 195.4 ft  
Antenna Centerline (AGL) 0.91 m / 3.0 ft  
Antenna Model MICRODYNE 3.0 METER  
Antenna Mode Receive 4.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	52.99	-10.00	285.28
195	0.00	51.31	-10.00	285.28
200	0.00	49.09	-10.00	285.28
205	0.00	46.43	-9.67	287.40
210	0.00	43.40	-8.94	292.13
215	0.00	40.08	-8.07	297.83
220	0.00	36.53	-7.07	304.62
225	0.00	32.81	-5.90	313.33
230	0.00	28.95	-4.54	322.96
235	0.00	25.28	-3.07	333.61
240	0.00	22.10	-1.61	344.42
245	0.00	19.65	-0.33	354.07
250	0.00	18.22	0.49	360.35
255	0.00	18.06	0.58	361.07
260	0.00	19.21	-0.09	355.95
265	0.00	21.44	-1.28	346.87
270	0.28	24.28	-2.63	326.26
275	0.38	27.82	-4.11	301.34
280	0.51	31.71	-5.53	276.60
285	0.64	35.87	-6.87	259.23
290	0.81	40.18	-8.10	241.48
295	1.06	44.60	-9.23	222.23
300	1.19	49.15	-10.00	214.41
305	1.24	53.79	-10.00	213.07
310	1.28	58.47	-10.00	211.77
315	1.22	63.20	-10.00	213.55
320	1.30	67.93	-10.00	211.30
325	1.38	72.69	-10.00	208.98
330	1.46	77.46	-10.00	206.83
335	1.44	82.25	-10.00	207.39
340	1.46	87.04	-10.00	206.71
345	1.45	91.83	-10.00	206.94
350	1.45	96.62	-10.00	207.05
355	1.45	101.41	-10.00	206.94

## 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: \_\_\_\_\_

Twila Meyer  
DB Technician IV  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: July 17, 2018

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Comcast Cable Communications, LLC**  
**MONTICELLO, FL**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
June 21, 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**

No great circle interference cases were identified during the interference study of the proposed earth station.

### 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 06/21/2018.

Company  
COMSEARCH

## **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: 06/21/2018  
Job Number: 180621COMSJE35

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code ZCATEC  
Licensee Name Comcast Cable Communications, LLC

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### Site Information

**MONTICELLO, FL**  
Venue Name  
Latitude (NAD 83) 30° 32' 50.4" N  
Longitude (NAD 83) 83° 53' 0.5" W  
Climate Zone A  
Rain Zone 1  
Ground Elevation (AMSL) 59.56 m / 195.4 ft

---

### Link Information

Satellite Type Geostationary  
Mode RO - Receive-Only  
Modulation Digital  
Satellite Arc 60° W to 143° West Longitude  
Azimuth Range 138.9° to 253.1°  
Corresponding Elevation Angles 45.9° / 18.0°  
Antenna Centerline (AGL) 2.74 m / 9.0 ft

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### Antenna Information

**Receive - F40701**  
Manufacturer MICRODYNE CORPORATION  
Model PR 23  
Gain / Diameter 46.6 dBi / 7.0 m  
3-dB / 15-dB Beamwidth 0.74° / 1.50°

Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

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### Frequency Information

**Receive 4.0 GHz**  
Emission / Frequency Range (MHz) 36M0G7W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 350.1 km / 217.5 mi  
Precipitation Scatter Contour Radius 586.6 km / 364.4 mi

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### MONTICELLO, FL

Licensee Name Comcast Cable Communications, LLC  
Latitude (NAD 83) 30° 32' 50.4" N  
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Antenna Centerline (AGL) 2.74 m / 9.0 ft  
Antenna Model MICRODYNE CORPORATION PR 23  
Antenna Mode Receive 4.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.70	106.13	-10.40	234.95
5	0.67	110.87	-10.40	236.89
10	0.49	115.58	-10.40	248.01
15	0.36	113.02	-10.40	263.18
20	0.21	109.75	-10.40	281.92
25	0.00	106.40	-10.40	282.75
30	0.00	103.05	-10.40	282.75
35	0.00	99.65	-10.40	282.75
40	0.00	96.21	-10.40	282.75
45	0.25	92.75	-10.40	275.92
50	0.24	89.26	-10.40	277.80
55	0.00	85.79	-10.40	282.75
60	0.00	82.33	-10.40	282.75
65	0.00	78.90	-10.40	282.75
70	0.00	75.52	-10.40	282.75
75	0.00	72.20	-10.40	282.75
80	0.36	68.82	-10.40	263.20
85	0.46	65.61	-10.40	252.30
90	0.42	62.58	-10.40	256.02
95	0.38	59.71	-10.40	260.74
100	0.37	56.99	-10.40	261.80
105	0.52	54.36	-10.40	246.02
110	0.60	52.01	-10.40	240.82
115	0.61	49.99	-10.40	240.53
120	0.48	48.41	-10.40	249.38
125	0.27	47.27	-10.40	274.30
130	0.00	46.58	-10.40	282.75
135	0.00	46.04	-10.40	282.75
140	0.00	45.92	-10.40	282.75
145	0.00	46.22	-10.40	282.75
150	0.00	46.93	-10.40	282.75
155	0.00	48.04	-10.40	282.75
160	0.00	49.51	-10.40	282.75
165	0.00	51.31	-10.40	282.75
170	0.00	53.00	-10.40	282.75
175	0.00	54.05	-10.40	282.75
180	0.00	54.40	-10.40	282.75
185	0.00	54.05	-10.40	282.75

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### MONTICELLO, FL

Licensee Name Comcast Cable Communications, LLC  
Latitude (NAD 83) 30° 32' 50.4" N  
Longitude (NAD 83) 83° 53' 0.5" W  
Ground Elevation (AMSL) 59.56 m / 195.4 ft  
Antenna Centerline (AGL) 2.74 m / 9.0 ft  
Antenna Model MICRODYNE CORPORATION PR 23  
Antenna Mode Receive 4.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	52.99	-10.40	282.75
195	0.00	51.31	-10.40	282.75
200	0.00	49.09	-10.40	282.75
205	0.00	46.43	-10.40	282.75
210	0.00	43.40	-10.08	284.78
215	0.00	40.08	-9.42	289.02
220	0.00	36.53	-8.01	298.23
225	0.00	32.81	-6.52	308.36
230	0.00	28.95	-5.19	318.33
235	0.00	25.28	-4.46	323.56
240	0.00	22.10	-3.24	332.37
245	0.00	19.65	-2.12	340.64
250	0.00	18.22	-0.98	349.19
255	0.00	18.06	-0.85	350.14
260	0.00	19.21	-1.76	343.26
265	0.00	21.44	-2.98	334.28
270	0.00	24.48	-4.19	325.47
275	0.00	28.05	-5.01	319.61
280	0.00	31.98	-6.19	310.66
285	0.00	36.15	-7.86	299.26
290	0.00	40.48	-9.50	288.50
295	0.32	44.83	-10.37	268.17
300	0.45	49.35	-10.40	253.03
305	0.49	53.95	-10.40	248.01
310	0.54	58.61	-10.40	244.93
315	0.48	63.31	-10.40	249.78
320	0.56	68.02	-10.40	243.90
325	0.64	72.76	-10.40	238.86
330	0.71	77.51	-10.40	234.23
335	0.69	82.28	-10.40	235.44
340	0.72	87.05	-10.40	233.99
345	0.71	91.82	-10.40	234.47
350	0.71	96.60	-10.40	234.71
355	0.71	101.37	-10.40	234.47

## 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: \_\_\_\_\_

Jennifer Lokey  
Coordinator III, Data  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: June 21, 2018

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Comcast Cable Communications, LLC**  
**MONTICELLO, FL**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
July 17, 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**

No great circle interference cases were identified during the interference study of the proposed earth station.



### 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 07/17/2018.

Company

Comsearch

## **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: 07/17/2018  
Job Number: 180717COMSTW13

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### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign  
Licensee Code ZCATEC  
Licensee Name Comcast Cable Communications, LLC

---

### Site Information

**MONTICELLO, FL**  
Venue Name  
Latitude (NAD 83) 30° 32' 50.4" N  
Longitude (NAD 83) 83° 53' 0.5" W  
Climate Zone A  
Rain Zone 1  
Ground Elevation (AMSL) 59.56 m / 195.4 ft

---

### Link Information

Satellite Type Geostationary  
Mode RO - Receive-Only  
Modulation Digital  
Satellite Arc 60° W to 143° West Longitude  
Azimuth Range 138.9° to 253.1°  
Corresponding Elevation Angles 45.9° / 18.0°  
Antenna Centerline (AGL) 0.91 m / 3.0 ft

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### Antenna Information

**Receive - F40504**  
Manufacturer MICRODYNE CORPORATION  
Model SATRO 5-METER  
Gain / Diameter 44.0 dBi / 5.0 m  
3-dB / 15-dB Beamwidth 1.02° / 2.20°

Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

---

### Frequency Information

**Receive 4.0 GHz**  
Emission / Frequency Range (MHz) 36M0G7W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 359.6 km / 223.4 mi  
Precipitation Scatter Contour Radius 586.6 km / 364.4 mi

# COMSEARCH

## Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
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### Coordination Values

### MONTICELLO, FL

Licensee Name Comcast Cable Communications, LLC  
Latitude (NAD 83) 30° 32' 50.4" N  
Longitude (NAD 83) 83° 53' 0.5" W  
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Antenna Model MICRODYNE CORPORATION SATRO 5-METER  
Antenna Mode Receive 4.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	1.44	106.19	-14.00	191.29
5	1.41	110.96	-14.00	192.23
10	1.24	115.69	-14.00	197.24
15	1.10	113.34	-14.00	201.07
20	0.95	110.02	-14.00	206.41
25	0.68	106.61	-14.00	217.60
30	0.54	103.18	-14.00	225.36
35	0.42	99.72	-14.00	235.89
40	0.29	96.24	-14.00	250.29
45	0.32	92.76	-14.00	246.72
50	0.31	89.26	-14.00	248.43
55	0.00	85.79	-14.00	261.12
60	0.00	82.33	-14.00	261.12
65	0.00	78.90	-14.00	261.12
70	0.22	75.46	-14.00	258.87
75	0.25	72.12	-14.00	254.57
80	0.44	68.79	-14.00	233.67
85	0.54	65.57	-14.00	225.61
90	0.51	62.54	-14.00	227.57
95	0.46	59.66	-13.93	231.84
100	0.47	56.93	-13.39	234.59
105	0.61	54.30	-12.86	226.99
110	0.71	51.93	-12.39	223.94
115	0.72	49.90	-11.98	225.75
120	0.61	48.30	-11.66	233.85
125	0.41	47.14	-11.43	251.62
130	0.52	46.07	-11.21	241.54
135	0.35	45.70	-11.14	260.47
140	0.00	45.92	-11.18	277.86
145	0.00	46.22	-11.24	277.49
150	0.00	46.93	-11.39	276.62
155	0.00	48.04	-11.61	275.26
160	0.00	49.51	-11.90	273.47
165	0.22	51.14	-12.23	269.65
170	0.00	53.00	-12.60	269.29
175	0.00	54.05	-12.81	268.04
180	0.00	54.40	-12.88	267.62
185	0.00	54.05	-12.81	268.05

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### MONTICELLO, FL

Licensee Name Comcast Cable Communications, LLC  
Latitude (NAD 83) 30° 32' 50.4" N  
Longitude (NAD 83) 83° 53' 0.5" W  
Ground Elevation (AMSL) 59.56 m / 195.4 ft  
Antenna Centerline (AGL) 0.91 m / 3.0 ft  
Antenna Model MICRODYNE CORPORATION SATRO 5-METER  
Antenna Mode Receive 4.0 GHz  
Interference Objectives: Long Term -156.0 dBW/MHz 20%  
Short Term -146.0 dBW/MHz 0.01%

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	52.99	-12.60	269.29
195	0.00	51.31	-12.26	271.30
200	0.00	49.09	-11.82	273.98
205	0.00	46.43	-11.29	277.24
210	0.00	43.40	-10.36	283.01
215	0.00	40.08	-9.03	291.51
220	0.00	36.53	-7.61	300.92
225	0.00	32.81	-6.12	311.14
230	0.00	28.95	-4.58	322.68
235	0.00	25.28	-3.11	333.30
240	0.00	22.10	-1.26	347.05
245	0.00	19.65	0.07	357.15
250	0.00	18.22	0.36	359.34
255	0.00	18.06	0.39	359.58
260	0.00	19.21	0.16	357.82
265	0.00	21.44	-0.87	350.01
270	0.28	24.28	-2.57	326.72
275	0.38	27.82	-4.13	301.20
280	0.51	31.71	-5.69	275.58
285	0.64	35.87	-7.35	256.27
290	0.81	40.18	-9.07	235.99
295	1.06	44.60	-10.84	214.27
300	1.19	49.15	-11.83	205.86
305	1.24	53.79	-12.76	202.84
310	1.28	58.47	-13.69	197.36
315	1.22	63.20	-14.00	197.71
320	1.30	67.93	-14.00	195.50
325	1.38	72.69	-14.00	193.16
330	1.46	77.46	-14.00	190.94
335	1.44	82.25	-14.00	191.53
340	1.46	87.04	-14.00	190.81
345	1.45	91.83	-14.00	191.06
350	1.45	96.62	-14.00	191.17
355	1.45	101.41	-14.00	191.05

## 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: \_\_\_\_\_

Twila Meyer  
DB Technician IV  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: July 17, 2018