

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**Comcast Cable Communications, LLC**  
**BERLIN, CT**  
**Satellite Earth Station**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
May 22, 2018

## TABLE OF CONTENTS

|   |    |
|---|----|
| 1. CONCLUSIONS .....                    | 3  |
| 2. SUMMARY OF RESULTS .....             | 4  |
| 3. SUPPLEMENTAL SHOWING .....           | 5  |
| 4. EARTH STATION COORDINATION DATA..... | 6  |
| 5. CERTIFICATION.....                   | 14 |

## 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 05/22/2018.

| <u>Company</u> |
|----------------|
| 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: 05/22/2018  
Job Number: 180522COMSGE04

---

### Administrative Information

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

---

### Site Information BERLIN, CT

Venue Name  
Latitude (NAD 83) 41° 35' 50.4" N  
Longitude (NAD 83) 72° 45' 11.3" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 49.17 m / 161.3 ft

---

### Link Information

Satellite Type Geostationary  
Mode RO - Receive-Only  
Modulation Digital  
Satellite Arc 60° W to 143° West Longitude  
Azimuth Range 161.2° to 256.6°  
Corresponding Elevation Angles 40.2° / 6.0°  
Antenna Centerline (AGL) 2.74 m / 9.0 ft

---

### Antenna Information Receive - V40611

Manufacturer VERTEX COMMUNICATIONS  
Model 6.1 KPC  
Gain / Diameter 46.5 dBi / 6.1 m  
3-dB / 15-dB Beamwidth 0.85° / 1.70°

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 461.4 km / 286.7 mi  
Precipitation Scatter Contour Radius 599.2 km / 372.3 mi

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### BERLIN, CT

Licensee Name Comcast Cable Communications, LLC  
Latitude (NAD 83) 41° 35' 50.4" N  
Longitude (NAD 83) 72° 45' 11.3" W  
Ground Elevation (AMSL) 49.17 m / 161.3 ft  
Antenna Centerline (AGL) 2.74 m / 9.0 ft  
Antenna Model VERTEX COMMUNICATIONS 6.1 KPC  
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           | 0.00                  | 103.34                     | -18.17             | 238.57                     |
| 5           | 0.00                  | 108.31                     | -19.16             | 233.65                     |
| 10          | 0.00                  | 113.28                     | -20.16             | 228.90                     |
| 15          | 0.00                  | 118.24                     | -20.50             | 227.30                     |
| 20          | 0.00                  | 123.21                     | -21.14             | 224.36                     |
| 25          | 0.00                  | 123.44                     | -21.19             | 224.15                     |
| 30          | 0.25                  | 120.31                     | -20.56             | 221.39                     |
| 35          | 0.29                  | 116.92                     | -20.50             | 218.17                     |
| 40          | 0.42                  | 113.44                     | -20.19             | 207.29                     |
| 45          | 0.56                  | 109.86                     | -19.47             | 202.35                     |
| 50          | 0.99                  | 106.25                     | -18.75             | 183.60                     |
| 55          | 1.15                  | 102.50                     | -18.00             | 181.71                     |
| 60          | 0.93                  | 98.63                      | -16.95             | 194.34                     |
| 65          | 0.92                  | 94.78                      | -15.37             | 201.87                     |
| 70          | 0.75                  | 90.91                      | -13.05             | 218.33                     |
| 75          | 0.76                  | 87.05                      | -11.32             | 226.45                     |
| 80          | 1.46                  | 83.13                      | -10.50             | 204.44                     |
| 85          | 2.21                  | 79.15                      | -10.50             | 187.45                     |
| 90          | 2.72                  | 75.16                      | -10.50             | 175.38                     |
| 95          | 2.95                  | 71.25                      | -10.50             | 169.96                     |
| 100         | 3.41                  | 67.29                      | -10.50             | 157.81                     |
| 105         | 3.90                  | 63.35                      | -10.50             | 147.66                     |
| 110         | 4.17                  | 59.54                      | -10.50             | 143.05                     |
| 115         | 4.50                  | 55.79                      | -10.50             | 138.31                     |
| 120         | 5.33                  | 51.87                      | -10.50             | 129.69                     |
| 125         | 5.94                  | 48.15                      | -10.50             | 123.84                     |
| 130         | 6.21                  | 44.82                      | -10.50             | 120.93                     |
| 135         | 6.04                  | 42.05                      | -10.50             | 122.80                     |
| 140         | 5.96                  | 39.57                      | -10.50             | 123.69                     |
| 145         | 6.16                  | 37.27                      | -10.50             | 121.53                     |
| 150         | 6.64                  | 35.17                      | -10.50             | 116.30                     |
| 155         | 7.13                  | 33.58                      | -10.50             | 110.94                     |
| 160         | 6.79                  | 33.43                      | -10.50             | 114.68                     |
| 165         | 6.73                  | 33.66                      | -10.50             | 115.25                     |
| 170         | 6.39                  | 34.76                      | -10.50             | 118.94                     |
| 175         | 6.05                  | 35.70                      | -10.50             | 122.74                     |
| 180         | 5.19                  | 36.75                      | -10.50             | 131.03                     |
| 185         | 4.23                  | 37.51                      | -10.50             | 142.24                     |



# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### BERLIN, CT

Licensee Name Comcast Cable Communications, LLC  
Latitude (NAD 83) 41° 35' 50.4" N  
Longitude (NAD 83) 72° 45' 11.3" W  
Ground Elevation (AMSL) 49.17 m / 161.3 ft  
Antenna Centerline (AGL) 2.74 m / 9.0 ft  
Antenna Model VERTEX COMMUNICATIONS 6.1 KPC  
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<br>Elevation (°) | Antenna<br>Discrimination (°) | Receive 4.0 GHz       |                               |
|-------------|--------------------------|-------------------------------|-----------------------|-------------------------------|
|             |                          |                               | Horizon<br>Gain (dBi) | Coordination<br>Distance (km) |
| 190         | 4.25                     | 36.86                         | -10.50                | 141.92                        |
| 195         | 3.50                     | 36.53                         | -10.50                | 155.79                        |
| 200         | 1.77                     | 36.67                         | -10.50                | 198.48                        |
| 205         | 1.26                     | 35.24                         | -10.50                | 209.94                        |
| 210         | 0.78                     | 33.42                         | -10.50                | 229.56                        |
| 215         | 0.39                     | 31.22                         | -10.50                | 259.21                        |
| 220         | 0.00                     | 28.76                         | -10.50                | 282.12                        |
| 225         | 0.33                     | 25.53                         | -10.50                | 266.49                        |
| 230         | 1.16                     | 21.77                         | -10.50                | 212.83                        |
| 235         | 0.91                     | 18.69                         | -9.98                 | 225.44                        |
| 240         | 1.40                     | 14.95                         | -8.50                 | 215.48                        |
| 245         | 1.31                     | 11.54                         | -7.04                 | 225.92                        |
| 250         | 1.35                     | 7.96                          | -3.50                 | 245.23                        |
| 255         | 1.40                     | 4.85                          | -1.21                 | 461.38                        |
| 260         | 1.03                     | 6.02                          | -2.52                 | 263.15                        |
| 265         | 0.79                     | 9.88                          | -5.38                 | 258.94                        |
| 270         | 0.73                     | 14.39                         | -8.50                 | 244.05                        |
| 275         | 0.77                     | 19.11                         | -10.15                | 232.51                        |
| 280         | 0.75                     | 23.96                         | -10.50                | 231.44                        |
| 285         | 0.82                     | 28.84                         | -10.50                | 227.65                        |
| 290         | 1.45                     | 33.68                         | -10.50                | 204.84                        |
| 295         | 1.31                     | 38.65                         | -10.50                | 208.72                        |
| 300         | 1.23                     | 43.62                         | -10.50                | 211.05                        |
| 305         | 0.95                     | 48.61                         | -10.50                | 220.49                        |
| 310         | 0.84                     | 53.58                         | -10.50                | 226.43                        |
| 315         | 0.64                     | 58.56                         | -10.50                | 237.93                        |
| 320         | 0.39                     | 63.55                         | -10.50                | 258.69                        |
| 325         | 0.57                     | 68.51                         | -10.50                | 242.36                        |
| 330         | 0.00                     | 73.50                         | -10.50                | 282.12                        |
| 335         | 0.00                     | 78.48                         | -10.50                | 282.12                        |
| 340         | 0.00                     | 83.45                         | -10.50                | 282.12                        |
| 345         | 0.00                     | 88.42                         | -11.87                | 273.68                        |
| 350         | 0.00                     | 93.39                         | -14.54                | 258.08                        |
| 355         | 0.00                     | 98.37                         | -16.85                | 245.37                        |

# COMSEARCH

## Earth Station Data Sheet

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

# COMSEARCH

## Earth Station Data Sheet

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

Date: 06/08/2018  
Job Number: 180608COMSGE04

---

### Administrative Information

Status ENGINEER PROPOSAL  
Call Sign E070237  
Licensee Code UNICTI  
Licensee Name COMCAST OF CONNECTICUT, INC.

---

### Site Information

**BERLIN, CT**  
Venue Name  
Latitude (NAD 83) 41° 35' 50.4" N  
Longitude (NAD 83) 72° 45' 11.3" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 48.77 m / 160.0 ft

---

### Link Information

Satellite Type Geostationary  
Mode RO - Receive-Only  
Modulation Digital  
Satellite Arc 60° W to 143° West Longitude  
Azimuth Range 161.2° to 256.6°  
Corresponding Elevation Angles 40.2° / 6.0°  
Antenna Centerline (AGL) 2.13 m / 7.0 ft

---

### Antenna Information

**Receive - S40452**  
Manufacturer SCIENTIFIC-ATLANTA, INC  
Model 8345 4.5 METER  
Gain / Diameter 43.3 dBi / 4.5 m  
3-dB / 15-dB Beamwidth 1.20° / 2.50°

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 449.8 km / 279.4 mi  
Precipitation Scatter Contour Radius 599.2 km / 372.3 mi

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

### BERLIN, CT

Licensee Name COMCAST OF CONNECTICUT, INC.  
Latitude (NAD 83) 41° 35' 50.4" N  
Longitude (NAD 83) 72° 45' 11.3" W  
Ground Elevation (AMSL) 48.77 m / 160.0 ft  
Antenna Centerline (AGL) 2.13 m / 7.0 ft  
Antenna Model SCIENTIFIC-ATLANTA, INC 8345 4.5 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           | 0.00                  | 103.34                     | -9.70              | 287.20                     |
| 5           | 0.00                  | 108.31                     | -10.36             | 282.99                     |
| 10          | 0.00                  | 113.28                     | -13.32             | 265.04                     |
| 15          | 0.00                  | 118.24                     | -16.00             | 250.02                     |
| 20          | 0.00                  | 123.21                     | -17.98             | 239.51                     |
| 25          | 0.00                  | 123.44                     | -18.08             | 239.03                     |
| 30          | 0.26                  | 120.32                     | -16.83             | 238.55                     |
| 35          | 0.39                  | 116.96                     | -15.49             | 231.44                     |
| 40          | 0.52                  | 113.48                     | -13.48             | 229.32                     |
| 45          | 0.66                  | 109.89                     | -10.68             | 235.66                     |
| 50          | 1.09                  | 106.28                     | -9.96              | 217.78                     |
| 55          | 1.25                  | 102.51                     | -9.70              | 214.14                     |
| 60          | 1.03                  | 98.64                      | -9.70              | 220.73                     |
| 65          | 1.02                  | 94.78                      | -9.70              | 221.12                     |
| 70          | 0.86                  | 90.91                      | -9.70              | 229.79                     |
| 75          | 0.87                  | 87.04                      | -9.70              | 229.16                     |
| 80          | 1.54                  | 83.12                      | -9.70              | 205.79                     |
| 85          | 2.29                  | 79.14                      | -9.70              | 189.39                     |
| 90          | 2.81                  | 75.15                      | -9.70              | 177.48                     |
| 95          | 3.04                  | 71.22                      | -9.70              | 172.13                     |
| 100         | 3.51                  | 67.26                      | -9.70              | 159.50                     |
| 105         | 4.00                  | 63.31                      | -9.70              | 149.28                     |
| 110         | 4.28                  | 59.49                      | -9.70              | 145.02                     |
| 115         | 4.60                  | 55.74                      | -9.70              | 140.21                     |
| 120         | 5.43                  | 51.81                      | -9.70              | 131.84                     |
| 125         | 6.04                  | 48.09                      | -9.70              | 125.94                     |
| 130         | 6.31                  | 44.75                      | -9.70              | 122.96                     |
| 135         | 6.14                  | 41.97                      | -9.70              | 124.82                     |
| 140         | 6.06                  | 39.49                      | -9.70              | 125.77                     |
| 145         | 6.24                  | 37.20                      | -9.70              | 123.78                     |
| 150         | 6.72                  | 35.09                      | -9.70              | 118.57                     |
| 155         | 7.22                  | 33.50                      | -9.70              | 113.22                     |
| 160         | 6.87                  | 33.35                      | -9.70              | 116.93                     |
| 165         | 6.80                  | 33.60                      | -9.73              | 117.54                     |
| 170         | 6.46                  | 34.69                      | -10.38             | 118.66                     |
| 175         | 6.11                  | 35.64                      | -10.70             | 121.32                     |
| 180         | 5.24                  | 36.71                      | -10.70             | 129.81                     |
| 185         | 4.26                  | 37.47                      | -10.70             | 140.85                     |

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

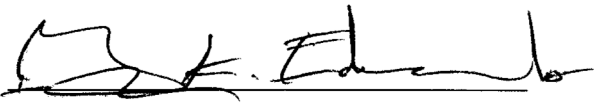
### BERLIN, CT

Licensee Name COMCAST OF CONNECTICUT, INC.  
Latitude (NAD 83) 41° 35' 50.4" N  
Longitude (NAD 83) 72° 45' 11.3" W  
Ground Elevation (AMSL) 48.77 m / 160.0 ft  
Antenna Centerline (AGL) 2.13 m / 7.0 ft  
Antenna Model SCIENTIFIC-ATLANTA, INC 8345 4.5 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         | 4.28                  | 36.83                      | -12.06             | 134.93                     |
| 195         | 3.53                  | 36.51                      | -12.70             | 144.93                     |
| 200         | 1.79                  | 36.65                      | -12.70             | 187.49                     |
| 205         | 1.29                  | 35.22                      | -12.70             | 201.74                     |
| 210         | 0.84                  | 33.38                      | -12.08             | 218.60                     |
| 215         | 0.44                  | 31.18                      | -9.88              | 257.06                     |
| 220         | 0.00                  | 28.76                      | -8.70              | 293.68                     |
| 225         | 0.34                  | 25.52                      | -8.70              | 276.42                     |
| 230         | 1.17                  | 21.76                      | -8.70              | 221.49                     |
| 235         | 0.92                  | 18.68                      | -8.44              | 233.20                     |
| 240         | 1.41                  | 14.95                      | -7.65              | 219.57                     |
| 245         | 1.32                  | 11.53                      | -4.70              | 238.95                     |
| 250         | 1.35                  | 7.96                       | -3.53              | 244.78                     |
| 255         | 1.41                  | 4.85                       | 4.30               | 449.75                     |
| 260         | 1.04                  | 6.01                       | 1.29               | 289.84                     |
| 265         | 0.81                  | 9.87                       | -4.57              | 263.10                     |
| 270         | 0.74                  | 14.38                      | -7.08              | 251.53                     |
| 275         | 0.78                  | 19.11                      | -8.52              | 240.93                     |
| 280         | 0.76                  | 23.96                      | -8.70              | 240.82                     |
| 285         | 0.83                  | 28.84                      | -8.70              | 236.88                     |
| 290         | 1.46                  | 33.68                      | -9.70              | 208.19                     |
| 295         | 1.32                  | 38.65                      | -9.70              | 212.19                     |
| 300         | 1.23                  | 43.62                      | -9.70              | 214.61                     |
| 305         | 0.96                  | 48.61                      | -9.70              | 224.10                     |
| 310         | 0.86                  | 53.58                      | -9.70              | 229.68                     |
| 315         | 0.65                  | 58.56                      | -9.70              | 241.84                     |
| 320         | 0.40                  | 63.55                      | -9.70              | 262.59                     |
| 325         | 0.58                  | 68.51                      | -9.70              | 246.24                     |
| 330         | 0.00                  | 73.50                      | -9.70              | 287.20                     |
| 335         | 0.00                  | 78.48                      | -9.70              | 287.20                     |
| 340         | 0.00                  | 83.45                      | -9.70              | 287.20                     |
| 345         | 0.00                  | 88.42                      | -9.70              | 287.20                     |
| 350         | 0.00                  | 93.39                      | -9.70              | 287.20                     |
| 355         | 0.00                  | 98.37                      | -9.70              | 287.20                     |

## 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: May 22, 2018