

# FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for  
**RCN License Subsidiary, Inc.**  
**CHARLES TOWN, WV**  
**Satellite Earth Station**

**Call Sign: E000578**

Prepared By:  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147  
June 26, 2017

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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

Hardy Cellular Telephone Company  
New Cingular Wireless PCS LLC - VA  
Norfolk Southern Railway  
Washington Gas Light Company

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 05/10/2017.

Company

AT&T Communications of Virginia, LLC  
AT&T Corp.  
Adams County Department of Emergency Svc  
Affiniti PA, LLC  
Appalachia Engineering Services  
Argos Engineering, LLC  
Atlantic Broadband (Penn), LLC  
Baltimore County of Maryland  
Baltimore Gas and Electric Company  
Bedford County of  
Believe Wireless, LLC  
Blair County 911  
Capital Communications of America  
Caroline County, VA  
Carroll, County of  
Cellco Partnership - Bridgeville, PA/WV  
Cellco Partnership-WDC/Baltimore  
Charles, County of  
City of Fredericksburg  
Columbia Gas Transmission, LLC  
Commonwealth of Pennsylvania-Radio Proj.  
Comprehensive Wireless LLC  
Conterra Ultra Broadband, LLC  
County of Culpeper  
County of Fayette  
County of Frederick  
County of York  
Dauphin County Emergency Management  
ECW Wireless, LLC  
Eastern MLG LLC  
Enoch Pratt Free Library  
FELHC, Inc.  
Frederick County  
Fulton County of (PA)  
Fundamental Broadcasting LLC  
Garden State Transmissions  
Hardy Cellular Telephone Company  
Hardy County OEM/E911  
Huntingdon County, Pa  
Juniata County Emergency Services  
Loudoun, County of  
MCI Communications Services Inc.  
Maryland Public Broadcasting Commission  
Maryland State Highway Administration  
Maryland, State of - Dept. of Info & Tech  
New Cingular Wireless PCS - Maryland

New Cingular Wireless PCS LLC - DC  
New Cingular Wireless PCS LLC - VA  
New Cingular Wireless PCS LLC - WV,NC,SC  
New Cingular Wireless PCS, LLC - PA  
Norfolk Southern Railway  
PA Communications  
Pennsylvania Turnpike Commission  
Perseus Technology Holdings USA Inc.  
Prince George's County  
Prince William, County of  
Radio One Inc  
Rappahannock Electric Cooperative  
Shenandoah Personal Communications, LLC  
Shenandoah Valley Electric Cooperative  
Somerset, County of  
South Central Task Force (SCTFNET)  
Southern Maryland Electric Cooperative I  
Spotsylvania, County of  
Stafford, County of  
State of Maryland, MIEMSS  
T-Mobile License LLC  
Texas Eastern Communications, LLC  
Thought Transmissions, LLC  
US Cellular Operating Company, LLC (WI)  
USCOC of Cumberland, Inc.  
USOC of Pennsylvania RSA No 10 B2 Inc.  
Uniti Fiber PEG, LLC  
Verizon Wireless (VAW) LLC - W/B/V Mkts  
Verizon Wireless (VAW) LLC-Pennsylvania  
Virginia Broadband, LLC  
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  
Weblin Holdings LLC  
World Class Wireless, LLC  
YAB Mobile  
iSignal

## **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: 06/26/2017  
Job Number: 170510COMSTC03

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### Administrative Information

Call Sign E000578  
Licensee Name RCN License Subsidiary, Inc.

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### Site Information

#### CHARLES TOWN, WV

Latitude (NAD 83) 39° 17' 40.2" N  
Longitude (NAD 83) 77° 51' 5.7" W  
Climate Zone A  
Rain Zone 2  
Ground Elevation (AMSL) 158.66 m / 520.5 ft

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### Link Information

Satellite Type Geostationary  
Mode TR - Transmit-Receive  
Modulation Digital  
Satellite Arc 69° W to 140° West Longitude  
Azimuth Range 166.2° to 251.5°  
Corresponding Elevation Angles 43.6° / 12.7°  
Antenna Centerline (AGL) 3.66 m / 12.0 ft

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### Antenna Information

#### Receive

Manufacturer PRODELIN  
Model 1381  
Gain / Diameter 43.3 dBi / 3.8 m  
3-dB / 15-dB Beamwidth 1.20° / 2.40°

#### Transmit

PRODELIN  
1381  
46.0 dBi / 3.8 m  
1.00° / 2.00°

		<u>1M20G7W - 36M0G7W</u>			
Max Available RF Power	(dBW/4 kHz)	-14.0	-16.0		
	(dBW/MHz)	10.0	8.0		
Maximum EIRP	(dBW/4 kHz)	32.0	30.0		
	(dBW/MHz)	56.0	54.0		
	(dBW)	56.77	69.5		
Interference Objectives:	Long Term	-140.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-130.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

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### Frequency Information

#### Receive 4.0 GHz

Emission / Frequency Range (MHz) 1M20G7W - 36M0G7W / 3700.0 - 4200.0

#### Transmit 6.1 GHz

1M20G7W - 36M0G7W / 5925.0 - 6425.0

Max Great Circle Coordination Distance 274.8 km / 170.8 mi 182.4 km / 113.3 mi  
Precipitation Scatter Contour Radius 397.5 km / 246.9 mi 100.0 km / 62.1 mi



# COMSEARCH

## Earth Station Data Sheet

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### Coordination Values

### CHARLES TOWN, WV

Licensee Name RCN License Subsidiary, Inc.  
Latitude (NAD 83) 39° 17' 40.2" N  
Longitude (NAD 83) 77° 51' 5.7" W  
Ground Elevation (AMSL) 158.66 m / 520.5 ft  
Antenna Centerline (AGL) 3.66 m / 12.0 ft  
Antenna Mode Receive 4.0 GHz Transmit 6.1 GHz  
Interference Objectives: Long Term -140.0 dBW/MHz 20% -154.0 dBW/4 kHz 20%  
Short Term -130.0 dBW/MHz 0.01% -131.0 dBW/4 kHz 0.0025%  
Max Available RF Power -14.0 (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	108.03	-10.00	206.75	-10.00	132.84
5	0.00	112.89	-10.00	206.75	-10.00	132.84
10	0.00	117.74	-10.00	206.75	-10.00	132.84
15	0.00	122.58	-10.00	206.75	-10.00	132.84
20	0.00	127.00	-10.00	206.75	-10.00	132.84
25	0.00	124.36	-10.00	206.75	-10.00	132.84
30	0.00	121.51	-10.00	206.75	-10.00	132.84
35	0.00	118.49	-10.00	206.75	-10.00	132.84
40	0.00	115.32	-10.00	206.75	-10.00	132.84
45	0.00	112.03	-10.00	206.75	-10.00	132.84
50	0.00	108.64	-10.00	206.75	-10.00	132.84
55	0.00	105.18	-10.00	206.75	-10.00	132.84
60	0.00	101.65	-10.00	206.75	-10.00	132.84
65	0.00	98.08	-10.00	206.75	-10.00	132.84
70	0.00	94.48	-10.00	206.75	-10.00	132.84
75	0.00	90.86	-10.00	206.75	-10.00	132.84
80	0.00	87.24	-10.00	206.75	-10.00	132.84
85	0.00	83.63	-10.00	206.75	-10.00	132.84
90	0.00	80.04	-10.00	206.75	-10.00	132.84
95	0.00	76.49	-10.00	206.75	-10.00	132.84
100	0.00	73.00	-10.00	206.75	-10.00	132.84
105	0.00	69.57	-10.00	206.75	-10.00	132.84
110	0.30	66.11	-10.00	197.32	-10.00	124.63
115	0.50	62.76	-10.00	178.03	-10.00	108.73
120	0.80	59.47	-10.00	158.91	-10.00	100.00
125	0.32	56.77	-10.00	195.16	-10.00	122.79
130	0.00	54.23	-10.00	206.75	-10.00	132.84
135	0.00	51.71	-10.00	206.75	-10.00	132.84
140	0.40	49.14	-10.00	187.88	-10.00	116.70
145	0.42	47.15	-9.84	186.05	-9.84	115.08
150	0.00	45.93	-9.55	206.05	-9.55	134.05
155	0.00	44.72	-9.26	207.15	-9.26	133.58
160	0.00	43.94	-9.07	207.88	-9.07	134.11
165	0.00	43.60	-8.99	208.21	-8.99	134.34
170	0.00	43.72	-9.02	208.09	-9.02	134.25
175	0.00	44.26	-9.15	207.58	-9.15	133.89
180	0.00	44.52	-9.21	207.34	-9.21	133.72
185	0.20	44.06	-9.10	207.39	-9.10	133.69

# COMSEARCH

## Earth Station Data Sheet

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

### Coordination Values

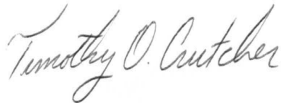
### CHARLES TOWN, WV

Licensee Name	RCN License Subsidiary, Inc.			
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Longitude (NAD 83)	77° 51' 5.7" W			
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Antenna Centerline (AGL)	3.66 m / 12.0 ft			
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz	
Interference Objectives: Long Term	-140.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
Short Term	-130.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-14.0 (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	0.57	42.94	-8.82	179.05	-8.82	108.57
195	0.96	41.35	-8.41	157.08	-8.41	100.00
200	0.87	39.79	-8.00	164.17	-8.00	100.00
205	0.71	37.89	-7.46	177.44	-7.46	106.02
210	1.13	35.16	-6.65	158.77	-6.65	100.00
215	1.31	32.37	-5.75	157.49	-5.75	100.00
220	1.36	29.42	-4.72	160.66	-4.72	100.00
225	1.45	26.26	-3.48	163.56	-3.48	100.00
230	1.04	23.27	-2.17	184.18	-2.17	106.33
235	0.69	20.10	-0.58	205.77	-0.58	126.22
240	0.32	16.84	1.34	243.79	1.34	156.69
245	0.21	14.06	3.30	267.14	3.30	177.06
250	0.00	12.80	4.32	274.83	4.32	182.37
255	0.23	12.96	4.19	270.13	4.19	178.49
260	0.00	15.26	2.41	263.50	2.41	174.99
265	0.00	18.46	0.34	251.85	0.34	165.30
270	0.00	22.32	-1.72	240.84	-1.72	157.56
275	0.22	26.45	-3.56	229.20	-3.56	148.75
280	0.00	30.99	-5.28	223.73	-5.28	145.39
285	0.24	35.49	-6.75	213.25	-6.75	137.19
290	0.23	40.18	-8.10	208.77	-8.10	134.24
295	0.28	44.90	-9.31	202.16	-9.31	128.35
300	0.40	49.66	-10.00	188.06	-10.00	116.85
305	0.33	54.48	-10.00	194.81	-10.00	122.49
310	0.27	59.33	-10.00	200.11	-10.00	127.03
315	0.37	64.16	-10.00	191.09	-10.00	119.36
320	0.34	69.03	-10.00	193.19	-10.00	121.13
325	0.37	73.90	-10.00	190.27	-10.00	118.69
330	0.33	78.78	-10.00	194.80	-10.00	122.48
335	0.30	83.66	-10.00	196.96	-10.00	124.32
340	0.36	88.54	-10.00	191.87	-10.00	120.02
345	0.31	93.42	-10.00	196.66	-10.00	124.06
350	0.22	98.30	-10.00	204.85	-10.00	131.17
355	0.25	103.18	-10.00	201.63	-10.00	128.34

## 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.



Timothy O. Crutcher  
Frequency Planner  
COMSEARCH  
19700 Janelia Farm Boulevard  
Ashburn, VA 20147

DATED: June 26, 2017