

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Comcast Cable Communications, LLC
PORTALES, NM
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 02, 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 08/02/2018.

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: 08/02/2018
Job Number: 180802COMSTW15

Administrative Information

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

Site Information

PORTALES, NM
Venue Name
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 140° West Longitude
Azimuth Range 130.5° to 233.0°
Corresponding Elevation Angles 36.8° / 34.4°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Manufacturer ANDREW
Model 5.0 METER
Gain / Diameter 43.5 dBi / 5.0 m
3-dB / 15-dB Beamwidth 1.80° / 4.00°

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) 36M0F9W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 309.0 km / 192.0 mi
Precipitation Scatter Contour Radius 384.8 km / 239.1 mi

COMSEARCH

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Coordination Values

PORTALES, NM

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model ANDREW 5.0 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	0.00	119.79	-10.00	285.28
5	0.00	117.71	-10.00	285.28
10	0.00	113.98	-10.00	285.28
15	0.00	110.16	-10.00	285.28
20	0.00	106.28	-10.00	285.28
25	0.00	102.35	-10.00	285.28
30	0.00	98.38	-10.00	285.28
35	0.00	94.39	-10.00	285.28
40	0.00	90.39	-10.00	285.28
45	0.00	86.39	-10.00	285.28
50	0.00	82.39	-10.00	285.28
55	0.00	78.42	-10.00	285.28
60	0.00	74.48	-10.00	285.28
65	0.00	70.59	-10.00	285.28
70	0.00	66.76	-10.00	285.28
75	0.00	63.01	-10.00	285.28
80	0.00	59.36	-10.00	285.28
85	0.00	55.84	-10.00	285.28
90	0.00	52.47	-10.00	285.28
95	0.00	49.29	-10.00	285.28
100	0.00	46.35	-9.65	287.51
105	0.00	43.69	-9.01	291.65
110	0.00	41.38	-8.42	295.53
115	0.00	39.47	-7.91	298.94
120	0.00	38.04	-7.50	301.65
125	0.00	37.12	-7.24	303.43
130	0.00	36.78	-7.14	304.13
135	0.00	37.01	-7.21	303.66
140	0.00	37.82	-7.44	302.07
145	0.00	39.15	-7.82	299.53
150	0.00	40.97	-8.31	296.24
155	0.20	43.05	-8.85	292.39
160	0.28	45.37	-9.42	278.47
165	0.32	47.30	-9.87	271.20
170	0.20	48.87	-10.00	284.97
175	0.00	49.98	-10.00	285.28
180	0.00	50.29	-10.00	285.28
185	0.00	49.98	-10.00	285.28

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Coordination Values

PORTALES, NM

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Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model ANDREW 5.0 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	49.06	-10.00	285.28
195	0.21	47.40	-9.89	284.99
200	0.23	45.41	-9.43	284.82
205	0.26	42.99	-8.83	284.65
210	0.29	40.35	-8.15	285.98
215	0.27	38.08	-7.52	293.12
220	0.00	36.50	-7.06	304.69
225	0.22	35.01	-6.60	305.35
230	0.22	34.31	-6.39	306.47
235	0.00	34.47	-6.44	308.95
240	0.00	35.05	-6.62	307.72
245	0.00	36.22	-6.97	305.26
250	0.00	37.93	-7.48	301.84
255	0.00	40.12	-8.09	297.75
260	0.00	42.71	-8.76	293.26
265	0.00	45.63	-9.48	288.60
270	0.00	48.81	-10.00	285.28
275	0.00	52.22	-10.00	285.28
280	0.00	55.79	-10.00	285.28
285	0.00	59.50	-10.00	285.28
290	0.00	63.33	-10.00	285.28
295	0.00	67.24	-10.00	285.28
300	0.00	71.23	-10.00	285.28
305	0.00	75.26	-10.00	285.28
310	0.00	79.33	-10.00	285.28
315	0.00	83.44	-10.00	285.28
320	0.00	87.55	-10.00	285.28
325	0.00	91.68	-10.00	285.28
330	0.00	95.80	-10.00	285.28
335	0.00	99.90	-10.00	285.28
340	0.00	103.98	-10.00	285.28
345	0.00	108.03	-10.00	285.28
350	0.00	112.02	-10.00	285.28
355	0.00	115.95	-10.00	285.28

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: August 02, 2018

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3. SUPPLEMENTAL SHOWING

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4. EARTH STATION COORDINATION DATA

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COMSEARCH

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(703)726-5500 <http://www.comsearch.com>

Date: 08/02/2018
Job Number: 180802COMSTW21

Administrative Information

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

Site Information

PORTALES, NM
Venue Name
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 140° West Longitude
Azimuth Range 130.5° to 233.0°
Corresponding Elevation Angles 36.8° / 34.4°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Receive - P40381
Manufacturer PRODELIN CORPORATION
Model 3.8 METER
Gain / Diameter 42.1 dBi / 3.8 m
3-dB / 15-dB Beamwidth 1.40° / 2.80°

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) 36M0F9W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 307.2 km / 190.9 mi
Precipitation Scatter Contour Radius 384.8 km / 239.1 mi

COMSEARCH

Earth Station Data Sheet

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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	119.79	-9.90	285.92
5	0.00	117.71	-9.90	285.92
10	0.00	113.98	-9.90	285.92
15	0.00	110.16	-9.90	285.92
20	0.00	106.28	-9.90	285.92
25	0.00	102.35	-9.90	285.92
30	0.00	98.38	-9.90	285.92
35	0.00	94.39	-9.90	285.92
40	0.00	90.39	-9.90	285.92
45	0.00	86.39	-9.90	285.92
50	0.00	82.39	-9.90	285.92
55	0.00	78.42	-9.90	285.92
60	0.00	74.48	-9.90	285.92
65	0.00	70.59	-9.90	285.92
70	0.00	66.76	-9.90	285.92
75	0.00	63.01	-9.90	285.92
80	0.00	59.36	-9.90	285.92
85	0.00	55.84	-9.90	285.92
90	0.00	52.47	-9.90	285.92
95	0.00	49.29	-9.76	286.82
100	0.00	46.35	-9.17	290.61
105	0.00	43.69	-8.64	294.09
110	0.00	41.38	-8.18	297.15
115	0.00	39.47	-7.79	299.70
120	0.00	38.04	-7.51	301.63
125	0.00	37.12	-7.32	302.87
130	0.00	36.78	-7.26	303.34
135	0.00	37.01	-7.30	303.02
140	0.00	37.82	-7.46	301.93
145	0.00	39.15	-7.73	300.12
150	0.00	40.97	-8.09	297.69
155	0.20	43.05	-8.51	294.62
160	0.28	45.37	-8.97	281.30
165	0.32	47.30	-9.36	274.38
170	0.20	48.87	-9.67	287.05
175	0.00	49.98	-9.90	285.94
180	0.00	50.29	-9.90	285.92
185	0.00	49.98	-9.90	285.94

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Antenna Mode Receive 4.0 GHz
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Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	49.06	-9.71	287.11
195	0.21	47.40	-9.38	288.29
200	0.23	45.41	-8.98	287.69
205	0.26	42.99	-8.50	286.82
210	0.29	40.35	-7.97	287.13
215	0.27	38.08	-7.52	293.13
220	0.00	36.50	-7.20	303.72
225	0.22	35.01	-6.90	303.31
230	0.22	34.31	-6.62	304.83
235	0.00	34.47	-6.69	307.21
240	0.00	35.05	-6.91	305.70
245	0.00	36.22	-7.14	304.10
250	0.00	37.93	-7.49	301.77
255	0.00	40.12	-7.92	298.82
260	0.00	42.71	-8.44	295.38
265	0.00	45.63	-9.03	291.55
270	0.00	48.81	-9.66	287.43
275	0.00	52.22	-9.90	285.92
280	0.00	55.79	-9.90	285.92
285	0.00	59.50	-9.90	285.92
290	0.00	63.33	-9.90	285.92
295	0.00	67.24	-9.90	285.92
300	0.00	71.23	-9.90	285.92
305	0.00	75.26	-9.90	285.92
310	0.00	79.33	-9.90	285.92
315	0.00	83.44	-9.90	285.92
320	0.00	87.55	-9.90	285.92
325	0.00	91.68	-9.90	285.92
330	0.00	95.80	-9.90	285.92
335	0.00	99.90	-9.90	285.92
340	0.00	103.98	-9.90	285.92
345	0.00	108.03	-9.90	285.92
350	0.00	112.02	-9.90	285.92
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Date: 08/02/2018
Job Number: 180802COMSTW20

Administrative Information

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

Site Information

PORTALES, NM
Venue Name
Latitude (NAD 83) 34° 9' 48.0" N
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Rain Zone 5
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Link Information

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Azimuth Range 130.5° to 233.0°
Corresponding Elevation Angles 36.8° / 34.4°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Manufacturer PATRIOT
Model 3.8 METER
Gain / Diameter 42.9 dBi / 3.8 m
3-dB / 15-dB Beamwidth 1.40° / 2.80°

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

Frequency Information

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Emission / Frequency Range (MHz) 36M0F9W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 309.0 km / 192.0 mi
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20	0.00	106.28	-10.00	285.28
25	0.00	102.35	-10.00	285.28
30	0.00	98.38	-10.00	285.28
35	0.00	94.39	-10.00	285.28
40	0.00	90.39	-10.00	285.28
45	0.00	86.39	-10.00	285.28
50	0.00	82.39	-10.00	285.28
55	0.00	78.42	-10.00	285.28
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65	0.00	70.59	-10.00	285.28
70	0.00	66.76	-10.00	285.28
75	0.00	63.01	-10.00	285.28
80	0.00	59.36	-10.00	285.28
85	0.00	55.84	-10.00	285.28
90	0.00	52.47	-10.00	285.28
95	0.00	49.29	-10.00	285.28
100	0.00	46.35	-9.65	287.51
105	0.00	43.69	-9.01	291.65
110	0.00	41.38	-8.42	295.53
115	0.00	39.47	-7.91	298.94
120	0.00	38.04	-7.50	301.65
125	0.00	37.12	-7.24	303.43
130	0.00	36.78	-7.14	304.13
135	0.00	37.01	-7.21	303.66
140	0.00	37.82	-7.44	302.07
145	0.00	39.15	-7.82	299.53
150	0.00	40.97	-8.31	296.24
155	0.20	43.05	-8.85	292.39
160	0.28	45.37	-9.42	278.47
165	0.32	47.30	-9.87	271.20
170	0.20	48.87	-10.00	284.97
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185	0.00	49.98	-10.00	285.28

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205	0.26	42.99	-8.83	284.65
210	0.29	40.35	-8.15	285.98
215	0.27	38.08	-7.52	293.12
220	0.00	36.50	-7.06	304.69
225	0.22	35.01	-6.60	305.35
230	0.22	34.31	-6.39	306.47
235	0.00	34.47	-6.44	308.95
240	0.00	35.05	-6.62	307.72
245	0.00	36.22	-6.97	305.26
250	0.00	37.93	-7.48	301.84
255	0.00	40.12	-8.09	297.75
260	0.00	42.71	-8.76	293.26
265	0.00	45.63	-9.48	288.60
270	0.00	48.81	-10.00	285.28
275	0.00	52.22	-10.00	285.28
280	0.00	55.79	-10.00	285.28
285	0.00	59.50	-10.00	285.28
290	0.00	63.33	-10.00	285.28
295	0.00	67.24	-10.00	285.28
300	0.00	71.23	-10.00	285.28
305	0.00	75.26	-10.00	285.28
310	0.00	79.33	-10.00	285.28
315	0.00	83.44	-10.00	285.28
320	0.00	87.55	-10.00	285.28
325	0.00	91.68	-10.00	285.28
330	0.00	95.80	-10.00	285.28
335	0.00	99.90	-10.00	285.28
340	0.00	103.98	-10.00	285.28
345	0.00	108.03	-10.00	285.28
350	0.00	112.02	-10.00	285.28
355	0.00	115.95	-10.00	285.28

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: August 02, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Comcast Cable Communications, LLC
PORTALES, NM
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 02, 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 08/02/2018.

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: 08/02/2018
Job Number: 180802COMSTW19

Administrative Information

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

Site Information

PORTALES, NM
Venue Name
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 140° West Longitude
Azimuth Range 130.5° to 233.0°
Corresponding Elevation Angles 36.8° / 34.4°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Manufacturer DH
Model 3.6 METER
Gain / Diameter 40.7 dBi / 3.6 m
3-dB / 15-dB Beamwidth 2.94° / 4.00°

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) 36M0F9W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 309.0 km / 192.0 mi
Precipitation Scatter Contour Radius 384.8 km / 239.1 mi

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

PORTALES, NM

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model DH 3.6 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	119.79	-10.00	285.28
5	0.00	117.71	-10.00	285.28
10	0.00	113.98	-10.00	285.28
15	0.00	110.16	-10.00	285.28
20	0.00	106.28	-10.00	285.28
25	0.00	102.35	-10.00	285.28
30	0.00	98.38	-10.00	285.28
35	0.00	94.39	-10.00	285.28
40	0.00	90.39	-10.00	285.28
45	0.00	86.39	-10.00	285.28
50	0.00	82.39	-10.00	285.28
55	0.00	78.42	-10.00	285.28
60	0.00	74.48	-10.00	285.28
65	0.00	70.59	-10.00	285.28
70	0.00	66.76	-10.00	285.28
75	0.00	63.01	-10.00	285.28
80	0.00	59.36	-10.00	285.28
85	0.00	55.84	-10.00	285.28
90	0.00	52.47	-10.00	285.28
95	0.00	49.29	-10.00	285.28
100	0.00	46.35	-9.65	287.51
105	0.00	43.69	-9.01	291.65
110	0.00	41.38	-8.42	295.53
115	0.00	39.47	-7.91	298.94
120	0.00	38.04	-7.50	301.65
125	0.00	37.12	-7.24	303.43
130	0.00	36.78	-7.14	304.13
135	0.00	37.01	-7.21	303.66
140	0.00	37.82	-7.44	302.07
145	0.00	39.15	-7.82	299.53
150	0.00	40.97	-8.31	296.24
155	0.20	43.05	-8.85	292.39
160	0.28	45.37	-9.42	278.47
165	0.32	47.30	-9.87	271.20
170	0.20	48.87	-10.00	284.97
175	0.00	49.98	-10.00	285.28
180	0.00	50.29	-10.00	285.28
185	0.00	49.98	-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

PORTALES, NM

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model DH 3.6 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	49.06	-10.00	285.28
195	0.21	47.40	-9.89	284.99
200	0.23	45.41	-9.43	284.82
205	0.26	42.99	-8.83	284.65
210	0.29	40.35	-8.15	285.98
215	0.27	38.08	-7.52	293.12
220	0.00	36.50	-7.06	304.69
225	0.22	35.01	-6.60	305.35
230	0.22	34.31	-6.39	306.47
235	0.00	34.47	-6.44	308.95
240	0.00	35.05	-6.62	307.72
245	0.00	36.22	-6.97	305.26
250	0.00	37.93	-7.48	301.84
255	0.00	40.12	-8.09	297.75
260	0.00	42.71	-8.76	293.26
265	0.00	45.63	-9.48	288.60
270	0.00	48.81	-10.00	285.28
275	0.00	52.22	-10.00	285.28
280	0.00	55.79	-10.00	285.28
285	0.00	59.50	-10.00	285.28
290	0.00	63.33	-10.00	285.28
295	0.00	67.24	-10.00	285.28
300	0.00	71.23	-10.00	285.28
305	0.00	75.26	-10.00	285.28
310	0.00	79.33	-10.00	285.28
315	0.00	83.44	-10.00	285.28
320	0.00	87.55	-10.00	285.28
325	0.00	91.68	-10.00	285.28
330	0.00	95.80	-10.00	285.28
335	0.00	99.90	-10.00	285.28
340	0.00	103.98	-10.00	285.28
345	0.00	108.03	-10.00	285.28
350	0.00	112.02	-10.00	285.28
355	0.00	115.95	-10.00	285.28

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: August 02, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Comcast Cable Communications, LLC
PORTALES, NM
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 02, 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 08/02/2018.

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: 08/02/2018
Job Number: 180802COMSTW18

Administrative Information

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

Site Information

PORTALES, NM
Venue Name
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 140° West Longitude
Azimuth Range 130.5° to 233.0°
Corresponding Elevation Angles 36.8° / 34.4°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Manufacturer COMTECH ANTENNA SYSTEMS
Model 945 7573 16
Gain / Diameter 42.9 dBi / 3.8 m
3-dB / 15-dB Beamwidth 1.40° / 2.80°

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) 36M0F9W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 311.3 km / 193.4 mi
Precipitation Scatter Contour Radius 384.8 km / 239.1 mi

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

PORTALES, NM

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model COMTECH ANTENNA SYSTEMS 945 7573 16
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	119.79	-10.02	285.17
5	0.00	117.71	-9.18	290.52
10	0.00	113.98	-8.10	297.65
15	0.00	110.16	-8.10	297.65
20	0.00	106.28	-8.10	297.65
25	0.00	102.35	-8.10	297.65
30	0.00	98.38	-8.10	297.65
35	0.00	94.39	-8.10	297.65
40	0.00	90.39	-8.10	297.65
45	0.00	86.39	-8.10	297.65
50	0.00	82.39	-8.10	297.65
55	0.00	78.42	-8.10	297.65
60	0.00	74.48	-8.10	297.65
65	0.00	70.59	-8.10	297.65
70	0.00	66.76	-8.10	297.65
75	0.00	63.01	-8.10	297.65
80	0.00	59.36	-8.10	297.65
85	0.00	55.84	-8.10	297.65
90	0.00	52.47	-8.10	297.65
95	0.00	49.29	-8.10	297.65
100	0.00	46.35	-8.10	297.65
105	0.00	43.69	-8.10	297.65
110	0.00	41.38	-7.65	300.65
115	0.00	39.47	-6.99	305.12
120	0.00	38.04	-6.71	307.09
125	0.00	37.12	-6.52	308.35
130	0.00	36.78	-6.46	308.83
135	0.00	37.01	-6.50	308.51
140	0.00	37.82	-6.66	307.39
145	0.00	39.15	-6.93	305.55
150	0.00	40.97	-7.49	301.75
155	0.20	43.05	-8.32	295.87
160	0.28	45.37	-9.17	280.03
165	0.32	47.30	-9.56	273.13
170	0.20	48.87	-9.87	285.77
175	0.00	49.98	-10.10	284.67
180	0.00	50.29	-10.10	284.64
185	0.00	49.98	-10.10	284.67

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

PORTALES, NM

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model COMTECH ANTENNA SYSTEMS 945 7573 16
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	49.06	-9.91	285.84
195	0.21	47.40	-9.58	287.00
200	0.23	45.41	-9.18	286.40
205	0.26	42.99	-8.30	288.14
210	0.29	40.35	-7.24	291.96
215	0.27	38.08	-6.72	298.51
220	0.00	36.50	-6.40	309.22
225	0.22	35.01	-6.10	308.83
230	0.22	34.31	-6.10	308.46
235	0.00	34.47	-6.10	311.30
240	0.00	35.05	-6.11	311.24
245	0.00	36.22	-6.34	309.60
250	0.00	37.93	-6.69	307.23
255	0.00	40.12	-7.15	304.06
260	0.00	42.71	-8.10	297.65
265	0.00	45.63	-8.10	297.65
270	0.00	48.81	-8.10	297.65
275	0.00	52.22	-8.10	297.65
280	0.00	55.79	-8.10	297.65
285	0.00	59.50	-8.10	297.65
290	0.00	63.33	-8.10	297.65
295	0.00	67.24	-8.10	297.65
300	0.00	71.23	-8.10	297.65
305	0.00	75.26	-8.10	297.65
310	0.00	79.33	-8.10	297.65
315	0.00	83.44	-8.10	297.65
320	0.00	87.55	-8.10	297.65
325	0.00	91.68	-8.10	297.65
330	0.00	95.80	-8.10	297.65
335	0.00	99.90	-8.10	297.65
340	0.00	103.98	-8.10	297.65
345	0.00	108.03	-8.10	297.65
350	0.00	112.02	-8.10	297.65
355	0.00	115.95	-8.48	295.14

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: August 02, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Comcast Cable Communications, LLC
PORTALES, NM
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
August 02, 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 08/02/2018.

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: 08/02/2018
Job Number: 180802COMSTW17

Administrative Information

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

Site Information

PORTALES, NM
Venue Name
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Climate Zone A
Rain Zone 5
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Digital
Satellite Arc 70° W to 140° West Longitude
Azimuth Range 130.5° to 233.0°
Corresponding Elevation Angles 36.8° / 34.4°
Antenna Centerline (AGL) 2.74 m / 9.0 ft

Antenna Information

Manufacturer COMTECH ANTENNA SYSTEMS
Model 945 6446
Gain / Diameter 42.9 dBi / 3.8 m
3-dB / 15-dB Beamwidth 1.40° / 2.80°

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) 36M0F9W / 3700.0 - 4200.0

Max Great Circle Coordination Distance 311.3 km / 193.4 mi
Precipitation Scatter Contour Radius 384.8 km / 239.1 mi

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

PORTALES, NM

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model COMTECH ANTENNA SYSTEMS 945 6446
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	119.79	-10.02	285.17
5	0.00	117.71	-9.18	290.52
10	0.00	113.98	-8.10	297.65
15	0.00	110.16	-8.10	297.65
20	0.00	106.28	-8.10	297.65
25	0.00	102.35	-8.10	297.65
30	0.00	98.38	-8.10	297.65
35	0.00	94.39	-8.10	297.65
40	0.00	90.39	-8.10	297.65
45	0.00	86.39	-8.10	297.65
50	0.00	82.39	-8.10	297.65
55	0.00	78.42	-8.10	297.65
60	0.00	74.48	-8.10	297.65
65	0.00	70.59	-8.10	297.65
70	0.00	66.76	-8.10	297.65
75	0.00	63.01	-8.10	297.65
80	0.00	59.36	-8.10	297.65
85	0.00	55.84	-8.10	297.65
90	0.00	52.47	-8.10	297.65
95	0.00	49.29	-8.10	297.65
100	0.00	46.35	-8.10	297.65
105	0.00	43.69	-8.10	297.65
110	0.00	41.38	-7.65	300.65
115	0.00	39.47	-6.99	305.12
120	0.00	38.04	-6.71	307.09
125	0.00	37.12	-6.52	308.35
130	0.00	36.78	-6.46	308.83
135	0.00	37.01	-6.50	308.51
140	0.00	37.82	-6.66	307.39
145	0.00	39.15	-6.93	305.55
150	0.00	40.97	-7.49	301.75
155	0.20	43.05	-8.32	295.87
160	0.28	45.37	-9.17	280.03
165	0.32	47.30	-9.56	273.13
170	0.20	48.87	-9.87	285.77
175	0.00	49.98	-10.10	284.67
180	0.00	50.29	-10.10	284.64
185	0.00	49.98	-10.10	284.67

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

PORTALES, NM

Licensee Name Comcast Cable Communications, LLC
Latitude (NAD 83) 34° 9' 48.0" N
Longitude (NAD 83) 103° 20' 20.0" W
Ground Elevation (AMSL) 1224.42 m / 4017.1 ft
Antenna Centerline (AGL) 2.74 m / 9.0 ft
Antenna Model COMTECH ANTENNA SYSTEMS 945 6446
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	49.06	-9.91	285.84
195	0.21	47.40	-9.58	287.00
200	0.23	45.41	-9.18	286.40
205	0.26	42.99	-8.30	288.14
210	0.29	40.35	-7.24	291.96
215	0.27	38.08	-6.72	298.51
220	0.00	36.50	-6.40	309.22
225	0.22	35.01	-6.10	308.83
230	0.22	34.31	-6.10	308.46
235	0.00	34.47	-6.10	311.30
240	0.00	35.05	-6.11	311.24
245	0.00	36.22	-6.34	309.60
250	0.00	37.93	-6.69	307.23
255	0.00	40.12	-7.15	304.06
260	0.00	42.71	-8.10	297.65
265	0.00	45.63	-8.10	297.65
270	0.00	48.81	-8.10	297.65
275	0.00	52.22	-8.10	297.65
280	0.00	55.79	-8.10	297.65
285	0.00	59.50	-8.10	297.65
290	0.00	63.33	-8.10	297.65
295	0.00	67.24	-8.10	297.65
300	0.00	71.23	-8.10	297.65
305	0.00	75.26	-8.10	297.65
310	0.00	79.33	-8.10	297.65
315	0.00	83.44	-8.10	297.65
320	0.00	87.55	-8.10	297.65
325	0.00	91.68	-8.10	297.65
330	0.00	95.80	-8.10	297.65
335	0.00	99.90	-8.10	297.65
340	0.00	103.98	-8.10	297.65
345	0.00	108.03	-8.10	297.65
350	0.00	112.02	-8.10	297.65
355	0.00	115.95	-8.48	295.14

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: August 02, 2018