

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
KTBS INC
SHREVEPORT, LA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
May 30, 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

There were no great circle interference cases 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 on 05/30/2018.

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: 05/30/2018
Job Number: 180530COMSTC18

Administrative Information

Call Sign E050191
Licensee Name KTBS INC

Site Information SHREVEPORT, LA

Venue Name KTBS
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 51.98 m / 170.5 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Analog and Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 128.8° to 245.2°
Corresponding Elevation Angles 37.7° / 25.6°
Antenna Centerline (AGL) 2.44 m / 8.0 ft

Antenna Information

Receive

Manufacturer Patriot
Model PRT-450
Gain / Diameter 42.6 dBi / 4.2 m
3-dB / 15-dB Beamwidth 1.20° / 2.40°

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) 36M0F3F / 3700.0 - 4200.0
36M0G7F / 3700.0 - 4200.0

Max Great Circle Coordination Distance 310.6 km / 193.0 mi
Precipitation Scatter Contour Radius 567.7 km / 352.7 mi

COMSEARCH

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Coordination Values

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Licensee Name KTBS INC
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Ground Elevation (AMSL) 51.98 m / 170.5 ft
Antenna Centerline (AGL) 2.44 m / 8.0 ft
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	1.01	112.44	-10.00	220.02
5	0.97	116.50	-10.00	222.08
10	0.80	112.68	-10.00	231.31
15	0.36	108.73	-10.00	266.16
20	0.33	104.86	-10.00	268.71
25	0.41	100.96	-10.00	260.41
30	0.33	97.00	-10.00	269.05
35	0.29	93.03	-10.00	274.49
40	0.21	89.06	-10.00	283.79
45	0.25	85.09	-10.00	279.52
50	0.00	81.17	-10.00	285.28
55	0.00	77.26	-10.00	285.28
60	0.00	73.38	-10.00	285.28
65	0.00	69.56	-10.00	285.28
70	0.00	65.81	-10.00	285.28
75	0.00	62.15	-10.00	285.28
80	0.00	58.59	-10.00	285.28
85	0.00	55.18	-10.00	285.28
90	0.00	51.93	-10.00	285.28
95	0.00	48.89	-10.00	285.28
100	0.00	46.10	-9.59	287.89
105	0.00	43.61	-8.99	291.78
110	0.00	41.49	-8.45	295.35
115	0.00	39.78	-7.99	298.38
120	0.00	38.55	-7.65	300.67
125	0.00	37.85	-7.45	302.02
130	0.00	37.70	-7.41	302.31
135	0.00	38.11	-7.53	301.50
140	0.00	39.07	-7.80	299.69
145	0.00	40.53	-8.19	297.03
150	0.00	42.44	-8.70	293.72
155	0.00	44.75	-9.27	289.97
160	0.00	47.23	-9.86	286.20
165	0.00	49.32	-10.00	285.28
170	0.00	50.89	-10.00	285.28
175	0.00	51.87	-10.00	285.28
180	0.00	52.20	-10.00	285.28
185	0.00	51.87	-10.00	285.28

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Coordination Values

SHREVEPORT, LA

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Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Ground Elevation (AMSL) 51.98 m / 170.5 ft
Antenna Centerline (AGL) 2.44 m / 8.0 ft
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	50.89	-10.00	285.28
195	0.00	49.32	-10.00	285.28
200	0.24	47.04	-9.81	281.66
205	0.00	44.71	-9.26	290.03
210	0.23	41.66	-8.49	290.79
215	0.23	38.49	-7.63	296.71
220	0.29	35.07	-6.62	295.74
225	0.35	31.87	-5.58	295.15
230	0.28	29.22	-4.64	310.65
235	0.61	26.82	-3.71	282.35
240	0.55	25.50	-3.16	290.40
245	0.75	24.81	-2.86	278.72
250	0.45	25.53	-3.18	300.39
255	0.57	26.72	-3.67	285.05
260	0.42	28.93	-4.53	294.28
265	0.51	31.53	-5.47	277.68
270	0.72	34.54	-6.46	256.72
275	0.93	37.93	-7.48	237.98
280	1.05	41.67	-8.49	226.62
285	1.29	45.55	-9.46	214.01
290	1.43	49.65	-10.00	207.61
295	1.43	53.92	-10.00	207.68
300	1.19	58.34	-10.00	214.44
305	1.08	62.77	-10.00	217.86
310	1.25	67.18	-10.00	212.83
315	1.40	71.65	-10.00	208.52
320	1.48	76.16	-10.00	206.16
325	1.16	80.73	-10.00	215.37
330	1.26	85.28	-10.00	212.49
335	1.37	89.83	-10.00	209.33
340	1.22	94.39	-10.00	213.46
345	1.24	98.94	-10.00	213.09
350	1.17	103.47	-10.00	215.20
355	1.08	107.97	-10.00	217.87

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: May 30, 2018

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Date: 05/30/2018
Job Number: 180530COMSTC17

Administrative Information

Call Sign E050191
Licensee Name KTBS INC

Site Information

SHREVEPORT, LA

Venue Name KTBS
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 51.98 m / 170.5 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Analog and Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 128.8° to 245.2°
Corresponding Elevation Angles 37.7° / 25.6°
Antenna Centerline (AGL) 2.44 m / 8.0 ft

Antenna Information

Receive - A40451

Manufacturer ANDREW CORPORATION
Model ESA45-46A
Gain / Diameter 43.9 dBi / 4.5 m
3-dB / 15-dB Beamwidth 1.20° / 2.40°

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) 36M0F3F / 3700.0 - 4200.0
36M0G7F / 3700.0 - 4200.0

Max Great Circle Coordination Distance 311.3 km / 193.4 mi
Precipitation Scatter Contour Radius 567.7 km / 352.7 mi

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Antenna Model Andrew Corporation ESA45-46A
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	1.01	112.44	-11.08	214.73
5	0.97	116.50	-13.00	207.61
10	0.80	112.68	-11.17	225.17
15	0.36	108.73	-9.08	271.80
20	0.33	104.86	-6.10	293.91
25	0.41	100.96	-6.10	285.13
30	0.33	97.00	-6.10	294.26
35	0.29	93.03	-6.10	299.99
40	0.21	89.06	-6.10	309.74
45	0.25	85.09	-6.10	305.27
50	0.00	81.17	-6.10	311.30
55	0.00	77.26	-6.10	311.30
60	0.00	73.38	-6.10	311.30
65	0.00	69.56	-6.10	311.30
70	0.00	65.81	-6.10	311.30
75	0.00	62.15	-6.10	311.30
80	0.00	58.59	-6.10	311.30
85	0.00	55.18	-6.10	311.30
90	0.00	51.93	-6.10	311.30
95	0.00	48.89	-6.10	311.30
100	0.00	46.10	-6.10	311.30
105	0.00	43.61	-6.10	311.30
110	0.00	41.49	-6.10	311.30
115	0.00	39.78	-6.10	311.30
120	0.00	38.55	-6.10	311.30
125	0.00	37.85	-6.10	311.30
130	0.00	37.70	-6.10	311.30
135	0.00	38.11	-6.10	311.30
140	0.00	39.07	-6.10	311.30
145	0.00	40.53	-6.10	311.30
150	0.00	42.44	-6.36	309.50
155	0.00	44.75	-9.05	291.40
160	0.00	47.23	-9.55	288.18
165	0.00	49.32	-9.96	285.51
170	0.00	50.89	-10.10	284.64
175	0.00	51.87	-10.10	284.64
180	0.00	52.20	-10.10	284.64
185	0.00	51.87	-10.10	284.64

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

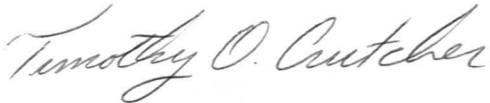
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Antenna Model Andrew Corporation ESA45-46A
Antenna Mode Receive 4.0 GHz
Interference Objectives: Long Term -156.0 dBW/MHz 20%
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Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	50.89	-10.10	284.64
195	0.00	49.32	-9.96	285.51
200	0.24	47.04	-9.51	283.59
205	0.00	44.71	-9.04	291.45
210	0.23	41.66	-8.43	291.19
215	0.23	38.49	-7.80	295.61
220	0.29	35.07	-7.11	292.44
225	0.35	31.87	-5.85	293.35
230	0.28	29.22	-4.94	308.51
235	0.61	26.82	-4.46	277.24
240	0.55	25.50	-4.20	283.22
245	0.75	24.81	-4.02	270.88
250	0.45	25.53	-4.21	293.14
255	0.57	26.72	-4.44	279.77
260	0.42	28.93	-4.89	291.85
265	0.51	31.53	-5.71	276.06
270	0.72	34.54	-6.10	258.95
275	0.93	37.93	-6.10	246.04
280	1.05	41.67	-6.10	240.01
285	1.29	45.55	-6.10	231.63
290	1.43	49.65	-6.10	227.26
295	1.43	53.92	-6.10	227.34
300	1.19	58.34	-6.10	235.03
305	1.08	62.77	-6.10	238.88
310	1.25	67.18	-6.10	233.21
315	1.40	71.65	-6.10	228.30
320	1.48	76.16	-6.10	225.60
325	1.16	80.73	-6.10	236.08
330	1.26	85.28	-6.10	232.83
335	1.37	89.83	-6.10	229.23
340	1.22	94.39	-6.10	233.92
345	1.24	98.94	-6.10	233.50
350	1.17	103.47	-6.10	235.89
355	1.08	107.97	-8.48	225.66

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

A handwritten signature in cursive script that reads "Timothy O. Crutcher".

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

DATED: May 30, 2018

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Site Information SHREVEPORT, LA

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Rain Zone 1
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Link Information

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Mode RO - Receive-Only
Modulation Analog and Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 128.8° to 245.2°
Corresponding Elevation Angles 37.7° / 25.6°
Antenna Centerline (AGL) 2.44 m / 8.0 ft

Antenna Information

Receive

Manufacturer Patroit
Model PRT-350
Gain / Diameter 41.7 dBi / 3.7 m
3-dB / 15-dB Beamwidth 1.40° / 2.40°

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) 36M0F3F / 3700.0 - 4200.0
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125	0.00	37.85	-7.45	302.02
130	0.00	37.70	-7.41	302.31
135	0.00	38.11	-7.53	301.50
140	0.00	39.07	-7.80	299.69
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175	0.00	51.87	-10.00	285.28
180	0.00	52.20	-10.00	285.28
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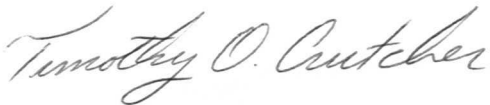
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195	0.00	49.32	-10.00	285.28
200	0.24	47.04	-9.81	281.66
205	0.00	44.71	-9.26	290.03
210	0.23	41.66	-8.49	290.79
215	0.23	38.49	-7.63	296.71
220	0.29	35.07	-6.62	295.74
225	0.35	31.87	-5.58	295.15
230	0.28	29.22	-4.64	310.65
235	0.61	26.82	-3.71	282.35
240	0.55	25.50	-3.16	290.40
245	0.75	24.81	-2.86	278.72
250	0.45	25.53	-3.18	300.39
255	0.57	26.72	-3.67	285.05
260	0.42	28.93	-4.53	294.28
265	0.51	31.53	-5.47	277.68
270	0.72	34.54	-6.46	256.72
275	0.93	37.93	-7.48	237.98
280	1.05	41.67	-8.49	226.62
285	1.29	45.55	-9.46	214.01
290	1.43	49.65	-10.00	207.61
295	1.43	53.92	-10.00	207.68
300	1.19	58.34	-10.00	214.44
305	1.08	62.77	-10.00	217.86
310	1.25	67.18	-10.00	212.83
315	1.40	71.65	-10.00	208.52
320	1.48	76.16	-10.00	206.16
325	1.16	80.73	-10.00	215.37
330	1.26	85.28	-10.00	212.49
335	1.37	89.83	-10.00	209.33
340	1.22	94.39	-10.00	213.46
345	1.24	98.94	-10.00	213.09
350	1.17	103.47	-10.00	215.20
355	1.08	107.97	-10.00	217.87

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.

A handwritten signature in cursive script that reads "Timothy O. Crutcher".

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

DATED: May 30, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
KTBS INC
SHREVEPORT, LA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
May 30, 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

There were no great circle interference cases 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 on 05/30/2018.

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: 05/30/2018
Job Number: 180530COMSTC19

Administrative Information

Call Sign E050191
Licensee Name KTBS INC

Site Information

SHREVEPORT, LA

Venue Name KTBS
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 51.98 m / 170.5 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Analog and Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 128.8° to 245.2°
Corresponding Elevation Angles 37.7° / 25.6°
Antenna Centerline (AGL) 2.44 m / 8.0 ft

Antenna Information

Receive

Manufacturer Andrew Corp
Gain / Diameter 46.5 dBi / 6.1 m
3-dB / 15-dB Beamwidth 1.20° / 2.40°

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) 36M0F3F / 3700.0 - 4200.0
36M0G7F / 3700.0 - 4200.0

Max Great Circle Coordination Distance 310.6 km / 193.0 mi
Precipitation Scatter Contour Radius 567.7 km / 352.7 mi

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

SHREVEPORT, LA

Licensee Name KTBS INC
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Ground Elevation (AMSL) 51.98 m / 170.5 ft
Antenna Centerline (AGL) 2.44 m / 8.0 ft
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	1.01	112.44	-10.00	220.02
5	0.97	116.50	-10.00	222.08
10	0.80	112.68	-10.00	231.31
15	0.36	108.73	-10.00	266.16
20	0.33	104.86	-10.00	268.71
25	0.41	100.96	-10.00	260.41
30	0.33	97.00	-10.00	269.05
35	0.29	93.03	-10.00	274.49
40	0.21	89.06	-10.00	283.79
45	0.25	85.09	-10.00	279.52
50	0.00	81.17	-10.00	285.28
55	0.00	77.26	-10.00	285.28
60	0.00	73.38	-10.00	285.28
65	0.00	69.56	-10.00	285.28
70	0.00	65.81	-10.00	285.28
75	0.00	62.15	-10.00	285.28
80	0.00	58.59	-10.00	285.28
85	0.00	55.18	-10.00	285.28
90	0.00	51.93	-10.00	285.28
95	0.00	48.89	-10.00	285.28
100	0.00	46.10	-9.59	287.89
105	0.00	43.61	-8.99	291.78
110	0.00	41.49	-8.45	295.35
115	0.00	39.78	-7.99	298.38
120	0.00	38.55	-7.65	300.67
125	0.00	37.85	-7.45	302.02
130	0.00	37.70	-7.41	302.31
135	0.00	38.11	-7.53	301.50
140	0.00	39.07	-7.80	299.69
145	0.00	40.53	-8.19	297.03
150	0.00	42.44	-8.70	293.72
155	0.00	44.75	-9.27	289.97
160	0.00	47.23	-9.86	286.20
165	0.00	49.32	-10.00	285.28
170	0.00	50.89	-10.00	285.28
175	0.00	51.87	-10.00	285.28
180	0.00	52.20	-10.00	285.28
185	0.00	51.87	-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

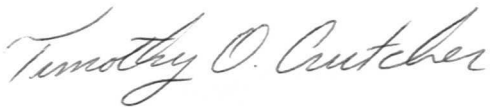
SHREVEPORT, LA

Licensee Name KTBS INC
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Ground Elevation (AMSL) 51.98 m / 170.5 ft
Antenna Centerline (AGL) 2.44 m / 8.0 ft
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	50.89	-10.00	285.28
195	0.00	49.32	-10.00	285.28
200	0.24	47.04	-9.81	281.66
205	0.00	44.71	-9.26	290.03
210	0.23	41.66	-8.49	290.79
215	0.23	38.49	-7.63	296.71
220	0.29	35.07	-6.62	295.74
225	0.35	31.87	-5.58	295.15
230	0.28	29.22	-4.64	310.65
235	0.61	26.82	-3.71	282.35
240	0.55	25.50	-3.16	290.40
245	0.75	24.81	-2.86	278.72
250	0.45	25.53	-3.18	300.39
255	0.57	26.72	-3.67	285.05
260	0.42	28.93	-4.53	294.28
265	0.51	31.53	-5.47	277.68
270	0.72	34.54	-6.46	256.72
275	0.93	37.93	-7.48	237.98
280	1.05	41.67	-8.49	226.62
285	1.29	45.55	-9.46	214.01
290	1.43	49.65	-10.00	207.61
295	1.43	53.92	-10.00	207.68
300	1.19	58.34	-10.00	214.44
305	1.08	62.77	-10.00	217.86
310	1.25	67.18	-10.00	212.83
315	1.40	71.65	-10.00	208.52
320	1.48	76.16	-10.00	206.16
325	1.16	80.73	-10.00	215.37
330	1.26	85.28	-10.00	212.49
335	1.37	89.83	-10.00	209.33
340	1.22	94.39	-10.00	213.46
345	1.24	98.94	-10.00	213.09
350	1.17	103.47	-10.00	215.20
355	1.08	107.97	-10.00	217.87

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: May 30, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
KTBS INC
SHREVEPORT, LA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
May 30, 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

There were no great circle interference cases 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 on 05/30/2018.

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: 05/30/2018
Job Number: 180530COMSTC22

Administrative Information

Call Sign E050191
Licensee Name KTBS INC

Site Information SHREVEPORT, LA

Venue Name KTBS
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 51.98 m / 170.5 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Analog and Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 128.8° to 245.2°
Corresponding Elevation Angles 37.7° / 25.6°
Antenna Centerline (AGL) 2.44 m / 8.0 ft

Antenna Information

Receive

Manufacturer Patriot
Gain / Diameter 40.0 dBi / 3.0 m
3-dB / 15-dB Beamwidth 1.40° / 2.40°

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) 36M0F3F / 3700.0 - 4200.0
36M0G7F / 3700.0 - 4200.0

Max Great Circle Coordination Distance 310.6 km / 193.0 mi
Precipitation Scatter Contour Radius 567.7 km / 352.7 mi

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

SHREVEPORT, LA

Licensee Name KTBS INC
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Ground Elevation (AMSL) 51.98 m / 170.5 ft
Antenna Centerline (AGL) 2.44 m / 8.0 ft
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	1.01	112.44	-10.00	220.02
5	0.97	116.50	-10.00	222.08
10	0.80	112.68	-10.00	231.31
15	0.36	108.73	-10.00	266.16
20	0.33	104.86	-10.00	268.71
25	0.41	100.96	-10.00	260.41
30	0.33	97.00	-10.00	269.05
35	0.29	93.03	-10.00	274.49
40	0.21	89.06	-10.00	283.79
45	0.25	85.09	-10.00	279.52
50	0.00	81.17	-10.00	285.28
55	0.00	77.26	-10.00	285.28
60	0.00	73.38	-10.00	285.28
65	0.00	69.56	-10.00	285.28
70	0.00	65.81	-10.00	285.28
75	0.00	62.15	-10.00	285.28
80	0.00	58.59	-10.00	285.28
85	0.00	55.18	-10.00	285.28
90	0.00	51.93	-10.00	285.28
95	0.00	48.89	-10.00	285.28
100	0.00	46.10	-9.59	287.89
105	0.00	43.61	-8.99	291.78
110	0.00	41.49	-8.45	295.35
115	0.00	39.78	-7.99	298.38
120	0.00	38.55	-7.65	300.67
125	0.00	37.85	-7.45	302.02
130	0.00	37.70	-7.41	302.31
135	0.00	38.11	-7.53	301.50
140	0.00	39.07	-7.80	299.69
145	0.00	40.53	-8.19	297.03
150	0.00	42.44	-8.70	293.72
155	0.00	44.75	-9.27	289.97
160	0.00	47.23	-9.86	286.20
165	0.00	49.32	-10.00	285.28
170	0.00	50.89	-10.00	285.28
175	0.00	51.87	-10.00	285.28
180	0.00	52.20	-10.00	285.28
185	0.00	51.87	-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

SHREVEPORT, LA

Licensee Name KTBS INC
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Ground Elevation (AMSL) 51.98 m / 170.5 ft
Antenna Centerline (AGL) 2.44 m / 8.0 ft
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	50.89	-10.00	285.28
195	0.00	49.32	-10.00	285.28
200	0.24	47.04	-9.81	281.66
205	0.00	44.71	-9.26	290.03
210	0.23	41.66	-8.49	290.79
215	0.23	38.49	-7.63	296.71
220	0.29	35.07	-6.62	295.74
225	0.35	31.87	-5.58	295.15
230	0.28	29.22	-4.64	310.65
235	0.61	26.82	-3.71	282.35
240	0.55	25.50	-3.16	290.40
245	0.75	24.81	-2.86	278.72
250	0.45	25.53	-3.18	300.39
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260	0.42	28.93	-4.53	294.28
265	0.51	31.53	-5.47	277.68
270	0.72	34.54	-6.46	256.72
275	0.93	37.93	-7.48	237.98
280	1.05	41.67	-8.49	226.62
285	1.29	45.55	-9.46	214.01
290	1.43	49.65	-10.00	207.61
295	1.43	53.92	-10.00	207.68
300	1.19	58.34	-10.00	214.44
305	1.08	62.77	-10.00	217.86
310	1.25	67.18	-10.00	212.83
315	1.40	71.65	-10.00	208.52
320	1.48	76.16	-10.00	206.16
325	1.16	80.73	-10.00	215.37
330	1.26	85.28	-10.00	212.49
335	1.37	89.83	-10.00	209.33
340	1.22	94.39	-10.00	213.46
345	1.24	98.94	-10.00	213.09
350	1.17	103.47	-10.00	215.20
355	1.08	107.97	-10.00	217.87

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A handwritten signature in cursive script that reads "Timothy O. Crutcher".

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

DATED: May 30, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
KTBS INC
SHREVEPORT, LA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
May 30, 2018

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1. CONCLUSIONS

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Coordination data for this earth station was sent on 05/30/2018.

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: 05/30/2018
Job Number: 180530COMSTC20

Administrative Information

Call Sign E050191
Licensee Name KTBS INC

Site Information SHREVEPORT, LA

Venue Name KTBS
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 51.98 m / 170.5 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Analog and Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 128.8° to 245.2°
Corresponding Elevation Angles 37.7° / 25.6°
Antenna Centerline (AGL) 2.44 m / 8.0 ft

Antenna Information

Receive

Manufacturer DH Satellite
Gain / Diameter 41.7 dBi / 3.7 m
3-dB / 15-dB Beamwidth 1.40° / 2.40°

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) 36M0F3F / 3700.0 - 4200.0
36M0G7F / 3700.0 - 4200.0

Max Great Circle Coordination Distance 310.6 km / 193.0 mi
Precipitation Scatter Contour Radius 567.7 km / 352.7 mi

COMSEARCH

Earth Station Data Sheet

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

Coordination Values

SHREVEPORT, LA

Licensee Name KTBS INC
Latitude (NAD 83) 32° 28' 56.5" N
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Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	1.01	112.44	-10.00	220.02
5	0.97	116.50	-10.00	222.08
10	0.80	112.68	-10.00	231.31
15	0.36	108.73	-10.00	266.16
20	0.33	104.86	-10.00	268.71
25	0.41	100.96	-10.00	260.41
30	0.33	97.00	-10.00	269.05
35	0.29	93.03	-10.00	274.49
40	0.21	89.06	-10.00	283.79
45	0.25	85.09	-10.00	279.52
50	0.00	81.17	-10.00	285.28
55	0.00	77.26	-10.00	285.28
60	0.00	73.38	-10.00	285.28
65	0.00	69.56	-10.00	285.28
70	0.00	65.81	-10.00	285.28
75	0.00	62.15	-10.00	285.28
80	0.00	58.59	-10.00	285.28
85	0.00	55.18	-10.00	285.28
90	0.00	51.93	-10.00	285.28
95	0.00	48.89	-10.00	285.28
100	0.00	46.10	-9.59	287.89
105	0.00	43.61	-8.99	291.78
110	0.00	41.49	-8.45	295.35
115	0.00	39.78	-7.99	298.38
120	0.00	38.55	-7.65	300.67
125	0.00	37.85	-7.45	302.02
130	0.00	37.70	-7.41	302.31
135	0.00	38.11	-7.53	301.50
140	0.00	39.07	-7.80	299.69
145	0.00	40.53	-8.19	297.03
150	0.00	42.44	-8.70	293.72
155	0.00	44.75	-9.27	289.97
160	0.00	47.23	-9.86	286.20
165	0.00	49.32	-10.00	285.28
170	0.00	50.89	-10.00	285.28
175	0.00	51.87	-10.00	285.28
180	0.00	52.20	-10.00	285.28
185	0.00	51.87	-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

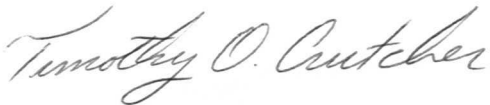
SHREVEPORT, LA

Licensee Name KTBS INC
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Ground Elevation (AMSL) 51.98 m / 170.5 ft
Antenna Centerline (AGL) 2.44 m / 8.0 ft
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	50.89	-10.00	285.28
195	0.00	49.32	-10.00	285.28
200	0.24	47.04	-9.81	281.66
205	0.00	44.71	-9.26	290.03
210	0.23	41.66	-8.49	290.79
215	0.23	38.49	-7.63	296.71
220	0.29	35.07	-6.62	295.74
225	0.35	31.87	-5.58	295.15
230	0.28	29.22	-4.64	310.65
235	0.61	26.82	-3.71	282.35
240	0.55	25.50	-3.16	290.40
245	0.75	24.81	-2.86	278.72
250	0.45	25.53	-3.18	300.39
255	0.57	26.72	-3.67	285.05
260	0.42	28.93	-4.53	294.28
265	0.51	31.53	-5.47	277.68
270	0.72	34.54	-6.46	256.72
275	0.93	37.93	-7.48	237.98
280	1.05	41.67	-8.49	226.62
285	1.29	45.55	-9.46	214.01
290	1.43	49.65	-10.00	207.61
295	1.43	53.92	-10.00	207.68
300	1.19	58.34	-10.00	214.44
305	1.08	62.77	-10.00	217.86
310	1.25	67.18	-10.00	212.83
315	1.40	71.65	-10.00	208.52
320	1.48	76.16	-10.00	206.16
325	1.16	80.73	-10.00	215.37
330	1.26	85.28	-10.00	212.49
335	1.37	89.83	-10.00	209.33
340	1.22	94.39	-10.00	213.46
345	1.24	98.94	-10.00	213.09
350	1.17	103.47	-10.00	215.20
355	1.08	107.97	-10.00	217.87

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: May 30, 2018

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
KTBS INC
SHREVEPORT, LA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
May 30, 2018

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4. EARTH STATION COORDINATION DATA.....	6
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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

There were no great circle interference cases 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 on 05/30/2018.

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: 05/30/2018
Job Number: 180530COMSTC23

Administrative Information

Call Sign E050191
Licensee Name KTBS INC

Site Information SHREVEPORT, LA

Venue Name KTBS
Latitude (NAD 83) 32° 28' 56.5" N
Longitude (NAD 83) 93° 43' 34.3" W
Climate Zone A
Rain Zone 1
Ground Elevation (AMSL) 51.98 m / 170.5 ft

Link Information

Satellite Type Geostationary
Mode RO - Receive-Only
Modulation Analog and Digital
Satellite Arc 60° W to 143° West Longitude
Azimuth Range 128.8° to 245.2°
Corresponding Elevation Angles 37.7° / 25.6°
Antenna Centerline (AGL) 2.44 m / 8.0 ft

Antenna Information Receive - C40381

Manufacturer COMTECH ANTENNA SYSTEMS
Model 3.8 METER PF
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) 36M0F3F / 3700.0 - 4200.0
36M0G7F / 3700.0 - 4200.0

Max Great Circle Coordination Distance 307.6 km / 191.1 mi
Precipitation Scatter Contour Radius 567.7 km / 352.7 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

SHREVEPORT, LA

Licensee Name KTBS INC
Latitude (NAD 83) 32° 28' 56.5" N
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Ground Elevation (AMSL) 51.98 m / 170.5 ft
Antenna Centerline (AGL) 2.44 m / 8.0 ft
Antenna Model COMTECH ANTENNA SYSTEMS 3.8 METER PF
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	1.01	112.44	-8.10	229.96
5	0.97	116.50	-8.70	228.88
10	0.80	112.68	-8.10	241.87
15	0.36	108.73	-8.10	278.04
20	0.33	104.86	-8.10	280.66
25	0.41	100.96	-8.10	272.11
30	0.33	97.00	-8.10	281.01
35	0.29	93.03	-8.10	286.60
40	0.21	89.06	-8.10	296.13
45	0.25	85.09	-8.10	291.76
50	0.00	81.17	-8.10	297.65
55	0.00	77.26	-8.10	297.65
60	0.00	73.38	-8.10	297.65
65	0.00	69.56	-8.10	297.65
70	0.00	65.81	-8.10	297.65
75	0.00	62.15	-8.10	297.65
80	0.00	58.59	-8.10	297.65
85	0.00	55.18	-8.10	297.65
90	0.00	51.93	-8.10	297.65
95	0.00	48.89	-8.10	297.65
100	0.00	46.10	-8.10	297.65
105	0.00	43.61	-8.10	297.65
110	0.00	41.49	-7.69	300.37
115	0.00	39.78	-7.06	304.70
120	0.00	38.55	-6.81	306.38
125	0.00	37.85	-6.67	307.35
130	0.00	37.70	-6.64	307.56
135	0.00	38.11	-6.72	306.99
140	0.00	39.07	-6.91	305.67
145	0.00	40.53	-7.31	302.95
150	0.00	42.44	-8.08	297.81
155	0.00	44.75	-9.00	291.73
160	0.00	47.23	-9.55	288.18
165	0.00	49.32	-9.96	285.51
170	0.00	50.89	-10.10	284.64
175	0.00	51.87	-10.10	284.64
180	0.00	52.20	-10.10	284.64
185	0.00	51.87	-10.10	284.64

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values

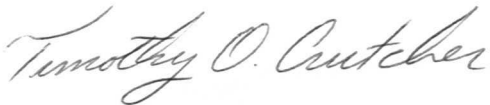
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Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	50.89	-10.10	284.64
195	0.00	49.32	-9.96	285.51
200	0.24	47.04	-9.51	283.59
205	0.00	44.71	-8.98	291.83
210	0.23	41.66	-7.76	295.60
215	0.23	38.49	-6.80	302.36
220	0.29	35.07	-6.11	299.22
225	0.35	31.87	-6.10	291.63
230	0.28	29.22	-5.79	302.60
235	0.61	26.82	-4.83	274.81
240	0.55	25.50	-4.30	282.54
245	0.75	24.81	-4.02	270.88
250	0.45	25.53	-4.31	292.40
255	0.57	26.72	-4.79	277.46
260	0.42	28.93	-5.67	286.50
265	0.51	31.53	-6.10	273.53
270	0.72	34.54	-6.10	258.95
275	0.93	37.93	-6.69	242.55
280	1.05	41.67	-7.77	230.55
285	1.29	45.55	-8.10	220.83
290	1.43	49.65	-8.10	216.72
295	1.43	53.92	-8.10	216.80
300	1.19	58.34	-8.10	224.03
305	1.08	62.77	-8.10	227.67
310	1.25	67.18	-8.10	222.32
315	1.40	71.65	-8.10	217.70
320	1.48	76.16	-8.10	215.17
325	1.16	80.73	-8.10	225.02
330	1.26	85.28	-8.10	221.95
335	1.37	89.83	-8.10	218.57
340	1.22	94.39	-8.10	222.98
345	1.24	98.94	-8.10	222.59
350	1.17	103.47	-8.10	224.84
355	1.08	107.97	-8.10	227.67

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.

A handwritten signature in cursive script that reads "Timothy O. Crutcher".

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

DATED: May 30, 2018