

Ka-Band Earth Station – Bismarck, ND

Frequency Coordination Report

28 GHz



Prepared on Behalf of
HUGHES NETWORK
SYSTEMS LIMITED

September 2, 2020



COMSEARCH
A CommScope Company

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1. Summary of Results

On behalf of HUGHES NETWORK SYSTEMS LIMITED, Comsearch performed a coordination notice under Section 25.203(c) and Section 25.136(a)(4) of the FCC’s rules for all existing and proposed terrestrial licenses within the coordination contours of their proposed Ka-Band earth station in Bismarck, ND, which will transmit at 28 GHz¹. Prior-notification letters were sent to the licensees and a copy of the notification data is provided in section four of this report. The earth station coordination was finalized on September 2, 2020.

No objections were received from any of the incumbent 28 GHz licensees.

2. 28 GHz Common Carrier and LTTS Coordination

In accordance with FCC Rules and Regulations, the Ka-Band earth station in Bismarck, ND was prior-coordinated by Comsearch. A notification letter and datasheets for this earth station were sent to the following 28 GHz common carrier fixed microwave licensees. These licensees are authorized to operate temporary fixed operations from 27.5 – 29.5 GHz on a nationwide basis or local basis.

Licensee	Authorized Geographic Area
Frontier	Nationwide

A notification letter and datasheets for the Ka-Band earth station in Bismarck, ND were also sent to the following 28 GHz local television transmission licensee. This licensee is authorized to operate temporary fixed operations from 27.5 – 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Information Super Station, LLC	Continental US

No objections were received from the common carrier or local television transmission service incumbents.

¹ The proposed earth station will operate in the 27.5 – 28.35 GHz & 28.35 – 29.1 GHz portion of the Ka-Band.

3. 28 GHz UMFUS Coordination

There were five 28 GHz UMFUS licensees identified within the coordination distance of the proposed earth station. The proposed earth station will operate on frequencies that overlap Channel L1 & L2 of the UMFUS service. The total frequency allocation for Channels L1 & L2 of the UMFUS spectrum appears below.

Channel: **L1** 27.500 - 27.925 GHz
 L2 27.925 - 28.350 GHz

Licensee	Authorized Geographic Area
AT&T	Market-Based
DISH Networks	Market-Based
SRT Communications	Market-Based
T-Mobile	Market-Based
Verizon	Market-Based

No objections were received from the UMFUS incumbents.



4. Earth Station Coordination Data

This section presents the data pertinent to the proposed Ka-Band earth station in Bismarck, ND. This data was circulated to all incumbent licensees in the shared 28 GHz frequency ranges.



Job Number: 200807COMSDJ01

Administrative Information

Status ENGINEER PROPOSAL
 Call Sign E170169
 Licensee Code HUNESY
 Licensee Name HUGHES NETWORK SYSTEMS LIMITED

Site Information BISMARCK, ND

Venue Name
 Latitude (NAD 83) 46° 51' 6.0" N
 Longitude (NAD 83) 100° 46' 58.5" W
 Climate Zone A
 Rain Zone 5
 Ground Elevation (AMSL) 583.94 m / 1915.8 ft

Link Information

Satellite Type Geostationary
 Mode TO - Transmit-Only
 Modulation Digital
 Satellite Arc 95.2° W to 95.2° West Longitude
 Azimuth Range 172.4° to 172.4°
 Corresponding Elevation Angles 35.9° / 35.9°
 Antenna Centerline (AGL) 7.0 m / 23.0 ft

Antenna Information Transmit - FCC32

Manufacturer SED
 Model 10.0 meter
 Gain / Diameter 67.9 dBi / 10.0 m
 3-dB / 15-dB Beamwidth 0.08° / 0.16°

Max Available RF Power (dBW/4 kHz) -41.8
 (dBW/MHz) -17.8

Maximum EIRP (dBW/4 kHz) 26.1
 (dBW/MHz) 50.1

Interference Objectives: Long Term -151.0 dBW/4 kHz 20%
 Short Term -128.0 dBW/4 kHz 0.0025%

Frequency Information Transmit 28.0 GHz

Emission / Frequency Range (MHz) 455MG7W - 470MG7W / 27500.0 - 28350.0
 455MG7W - 470MG7W / 28350.0 - 29100.0

Max Great Circle Coordination Distance 100.0 km / 62.1 mi
 Precipitation Scatter Contour Radius 100.0 km / 62.1 mi



HUGHES NETWORK SYSTEMS LIMITED
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28 GHz

Coordination Values

BISMARCK, ND

Licensee Name	HUGHES NETWORK SYSTEMS LIMITED	
Latitude (NAD 83)	46° 51' 6.0" N	
Longitude (NAD 83)	100° 46' 58.5" W	
Ground Elevation (AMSL)	583.94 m / 1915.8 ft	
Antenna Centerline (AGL)	7.0 m / 23.0 ft	
Antenna Model	SED 10.0 meter	
Antenna Mode	Transmit 28.0 GHz	
Interference Objectives: Long Term	-151.0 dBW/4 kHz	20%
	Short Term	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	-41.8 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	143.45	-10.00	100.00
5	0.00	142.27	-10.00	100.00
10	0.00	140.57	-10.00	100.00
15	0.00	138.43	-10.00	100.00
20	0.00	135.90	-10.00	100.00
25	0.00	133.05	-10.00	100.00
30	0.00	129.94	-10.00	100.00
35	0.00	126.61	-10.00	100.00
40	0.00	123.11	-10.00	100.00
45	0.00	119.47	-10.00	100.00
50	0.00	115.72	-10.00	100.00
55	0.00	111.88	-10.00	100.00
60	0.00	107.97	-10.00	100.00
65	0.00	104.00	-10.00	100.00
70	0.00	100.00	-10.00	100.00
75	0.00	95.97	-10.00	100.00
80	0.00	91.92	-10.00	100.00
85	0.00	87.87	-10.00	100.00
90	0.00	83.82	-10.00	100.00
95	0.00	79.79	-10.00	100.00
100	0.00	75.79	-10.00	100.00
105	0.00	71.83	-10.00	100.00
110	0.00	67.92	-10.00	100.00
115	0.00	64.09	-10.00	100.00
120	0.00	60.34	-10.00	100.00
125	0.00	56.71	-10.00	100.00
130	0.00	53.22	-10.00	100.00
135	0.00	49.90	-10.00	100.00
140	0.00	46.80	-9.76	100.00
145	0.00	43.96	-9.08	100.00
150	0.00	41.45	-8.44	100.00
155	0.00	39.33	-7.87	100.00
160	0.00	37.66	-7.40	100.00
165	0.00	36.50	-7.06	100.00
170	0.00	35.92	-6.88	100.00
175	0.00	35.94	-6.89	100.00
180	0.00	36.55	-7.07	100.00
185	0.00	37.73	-7.42	100.00



Coordination Values	BISMARCK, ND
Licensee Name	HUGHES NETWORK SYSTEMS LIMITED
Latitude (NAD 83)	46° 51' 6.0" N
Longitude (NAD 83)	100° 46' 58.5" W
Ground Elevation (AMSL)	583.94 m / 1915.8 ft
Antenna Centerline (AGL)	7.0 m / 23.0 ft
Antenna Model	SED 10.0 meter
Antenna Mode	Transmit 28.0 GHz
Interference Objectives: Long Term	-151.0 dBW/4 kHz 20%
Short Term	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	-41.8 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	39.43	-7.89	100.00
195	0.00	41.57	-8.47	100.00
200	0.00	44.10	-9.11	100.00
205	0.00	46.95	-9.79	100.00
210	0.00	50.06	-10.00	100.00
215	0.00	53.39	-10.00	100.00
220	0.00	56.89	-10.00	100.00
225	0.00	60.53	-10.00	100.00
230	0.00	64.28	-10.00	100.00
235	0.00	68.12	-10.00	100.00
240	0.00	72.03	-10.00	100.00
245	0.00	76.00	-10.00	100.00
250	0.00	80.00	-10.00	100.00
255	0.00	84.03	-10.00	100.00
260	0.00	88.08	-10.00	100.00
265	0.00	92.13	-10.00	100.00
270	0.00	96.18	-10.00	100.00
275	0.29	100.24	-10.00	100.00
280	0.32	104.27	-10.00	100.00
285	0.26	108.23	-10.00	100.00
290	0.27	112.16	-10.00	100.00
295	0.00	115.91	-10.00	100.00
300	0.00	119.66	-10.00	100.00
305	0.00	123.29	-10.00	100.00
310	0.00	126.78	-10.00	100.00
315	0.00	130.10	-10.00	100.00
320	0.00	133.20	-10.00	100.00
325	0.00	136.04	-10.00	100.00
330	0.00	138.55	-10.00	100.00
335	0.00	140.67	-10.00	100.00
340	0.00	142.34	-10.00	100.00
345	0.00	143.50	-10.00	100.00
350	0.00	144.08	-10.00	100.00
355	0.00	144.06	-10.00	100.00



5. Contact Information

For questions or information regarding the 28 GHz Frequency Coordination Report, please contact:

Contact person:	Dennis Jimeno
Title:	Engineer III, Telecommunications
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5858
Fax:	703-726-5599
Email:	DJimeno@Comsearch.com
Web site:	www.comsearch.com

Ka-Band Earth Station – Bismarck, ND

Frequency Coordination Report

48 GHz



Prepared on Behalf of
HUGHES NETWORK
SYSTEMS LIMITED

September 2, 2020



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1. Summary of Results

On behalf of HUGHES NETWORK SYSTEMS LIMITED, Comsearch performed a coordination notice under Section 25.203(c) and Section 25.136(a)(4) of the FCC’s rules for all existing and proposed terrestrial licenses within the coordination contours of their proposed Ka-Band earth station in Bismarck, ND, which will transmit at 48 GHz¹. Prior-notification letters were sent to the licensees and a copy of the notification data is provided in section four of this report. The earth station coordination was finalized on September 2, 2020.

No objections were received from any of the incumbent 48 GHz licensees.

2. 48 GHz UMFUS Coordination

There were two 48 GHz UMFUS licensees identified within the coordination distance of the proposed earth station. The proposed earth station will operate on frequencies that overlap the UMFUS service band of 47.2 - 48.2 GHz.

Licensee	Authorized Geographic Area
DISH Network	Market-Based
T-Mobile	Market-Based

No objections were received from the UMFUS incumbents.

¹ The proposed earth station will operate in the 47.2 – 48.2 GHz portion of the Ka-Band.



3. Earth Station Coordination Data

This section presents the data pertinent to the proposed Ka-Band earth station in Bismarck, ND. This data was circulated to all incumbent licensees in the shared 48 GHz frequency ranges.



Job Number: 200807COMSDJ01

Administrative Information

Status ENGINEER PROPOSAL
 Call Sign E170169
 Licensee Code HUNESY
 Licensee Name HUGHES NETWORK SYSTEMS LIMITED

Site Information BISMARCK, ND

Venue Name
 Latitude (NAD 83) 46° 51' 6.0" N
 Longitude (NAD 83) 100° 46' 58.5" W
 Climate Zone A
 Rain Zone 5
 Ground Elevation (AMSL) 583.94 m / 1915.8 ft

Link Information

Satellite Type Geostationary
 Mode TO - Transmit-Only
 Modulation Digital
 Satellite Arc 95.2° W to 95.2° West Longitude
 Azimuth Range 172.4° to 172.4°
 Corresponding Elevation Angles 35.9° / 35.9°
 Antenna Centerline (AGL) 7.0 m / 23.0 ft

Antenna Information Transmit - FCC32

Manufacturer SED
 Model 10.0 meter
 Gain / Diameter 71.6 dBi / 10.0 m
 3-dB / 15-dB Beamwidth 0.08° / 0.16°

Max Available RF Power (dBW/4 kHz) -46.5
 (dBW/MHz) - 22.5

Maximum EIRP (dBW/4 kHz) 25.1
 (dBW/MHz) 49.1

Interference Objectives: Long Term -151.0 dBW/4 kHz 20%
 Short Term -128.0 dBW/4 kHz 0.0025%

Frequency Information Transmit 48.0 GHz

Emission / Frequency Range (MHz) 455MG7W - 470MG7W /47200.0 – 48200.0

Max Great Circle Coordination Distance 100.0 km / 62.1 mi
 Precipitation Scatter Contour Radius 100.0 km / 62.1 mi



Coordination Values BISMARCK, ND

Licensee Name HUGHES NETWORK SYSTEMS LIMITED
 Latitude (NAD 83) 46° 51' 6.0" N
 Longitude (NAD 83) 100° 46' 58.5" W
 Ground Elevation (AMSL) 583.94 m / 1915.8 ft
 Antenna Centerline (AGL) 7.0 m / 23.0 ft
 Antenna Model SED 10.0 meter
 Antenna Mode Transmit 48.0 GHz
 Interference Objectives: Long Term -151.0 dBW/4 kHz 20%
 Short Term -128.0 dBW/4 kHz 0.0025%
 Max Available RF Power -46.5 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 48.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	143.45	-10.00	100.00
5	0.00	142.27	-10.00	100.00
10	0.00	140.57	-10.00	100.00
15	0.00	138.43	-10.00	100.00
20	0.00	135.90	-10.00	100.00
25	0.00	133.05	-10.00	100.00
30	0.00	129.94	-10.00	100.00
35	0.00	126.61	-10.00	100.00
40	0.00	123.11	-10.00	100.00
45	0.00	119.47	-10.00	100.00
50	0.00	115.72	-10.00	100.00
55	0.00	111.88	-10.00	100.00
60	0.00	107.97	-10.00	100.00
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70	0.00	100.00	-10.00	100.00
75	0.00	95.97	-10.00	100.00
80	0.00	91.92	-10.00	100.00
85	0.00	87.87	-10.00	100.00
90	0.00	83.82	-10.00	100.00
95	0.00	79.79	-10.00	100.00
100	0.00	75.79	-10.00	100.00
105	0.00	71.83	-10.00	100.00
110	0.00	67.92	-10.00	100.00
115	0.00	64.09	-10.00	100.00
120	0.00	60.34	-10.00	100.00
125	0.00	56.71	-10.00	100.00
130	0.00	53.22	-10.00	100.00
135	0.00	49.90	-10.00	100.00
140	0.00	46.80	-9.76	100.00
145	0.00	43.96	-9.08	100.00
150	0.00	41.45	-8.44	100.00
155	0.00	39.33	-7.87	100.00
160	0.00	37.66	-7.40	100.00
165	0.00	36.50	-7.06	100.00
170	0.00	35.92	-6.88	100.00
175	0.00	35.94	-6.89	100.00
180	0.00	36.55	-7.07	100.00
185	0.00	37.73	-7.42	100.00



Coordination Values

BISMARCK, ND

Licensee Name HUGHES NETWORK SYSTEMS LIMITED
 Latitude (NAD 83) 46° 51' 6.0" N
 Longitude (NAD 83) 100° 46' 58.5" W
 Ground Elevation (AMSL) 583.94 m / 1915.8 ft
 Antenna Centerline (AGL) 7.0 m / 23.0 ft
 Antenna Model SED 10.0 meter
 Antenna Mode Transmit 48.0 GHz
 Interference Objectives: Long Term -151.0 dBW/4 kHz 20%
 Short Term -128.0 dBW/4 kHz 0.0025%
 Max Available RF Power -46.5 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 48.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	39.43	-7.89	100.00
195	0.00	41.57	-8.47	100.00
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220	0.00	56.89	-10.00	100.00
225	0.00	60.53	-10.00	100.00
230	0.00	64.28	-10.00	100.00
235	0.00	68.12	-10.00	100.00
240	0.00	72.03	-10.00	100.00
245	0.00	76.00	-10.00	100.00
250	0.00	80.00	-10.00	100.00
255	0.00	84.03	-10.00	100.00
260	0.00	88.08	-10.00	100.00
265	0.00	92.13	-10.00	100.00
270	0.00	96.18	-10.00	100.00
275	0.29	100.24	-10.00	100.00
280	0.32	104.27	-10.00	100.00
285	0.26	108.23	-10.00	100.00
290	0.27	112.16	-10.00	100.00
295	0.00	115.91	-10.00	100.00
300	0.00	119.66	-10.00	100.00
305	0.00	123.29	-10.00	100.00
310	0.00	126.78	-10.00	100.00
315	0.00	130.10	-10.00	100.00
320	0.00	133.20	-10.00	100.00
325	0.00	136.04	-10.00	100.00
330	0.00	138.55	-10.00	100.00
335	0.00	140.67	-10.00	100.00
340	0.00	142.34	-10.00	100.00
345	0.00	143.50	-10.00	100.00
350	0.00	144.08	-10.00	100.00
355	0.00	144.06	-10.00	100.00



4. Contact Information

For questions or information regarding the 48 GHz Frequency Coordination Report, please contact:

Contact person:	Dennis Jimeno
Title:	Engineer III, Telecommunications
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5858
Fax:	703-726-5599
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