



April 22, 2015

**VIA IBFS**

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 Twelfth Street, SW  
Washington, DC 20554

Re: Supplement to HNS License Sub, LLC Modification Application – SES-MFS-  
20150401-00185

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Dear Ms. Dortch:

HNS License Sub, LLC (Hughes) hereby supplements its application – IBFS File No. SES-MFS-20150401-00185 to provide evidence that frequency coordination has been completed for the proposed 9.2m earth stations in Gilbert, AZ and Cheyenne, WY.<sup>1</sup> Enclosed Hughes provides the frequency coordination documents provided by Comsearch.

Please contact the undersigned with any questions.

Sincerely,

/s/ Jesse Jachman

Jesse Jachman  
Senior Counsel, Regulatory Affairs  
HNS License Sub, LLC  
11717 Exploration Lane  
Germantown, MD 20876  
(301)428-5975

Enclosures

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<sup>1</sup> See IBFS File No. SES-MFS-20150401-00185, Attachment 1 at 5, fn. 4 (filed Apr. 1, 2015) (stating that Hughes will supplement this application when frequency coordination has been completed for 9.2m antennas in Gilbert, AZ and Cheyenne, WY).

# Ka-Band Earth Station – Cheyenne, WY

## Frequency Coordination Report

28 GHz



Prepared on Behalf of  
Hughes Network  
Systems Limited

April 17, 2015



**COMSEARCH**  
A CommScope Company



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## 1. Summary of Results

On behalf of Hughes Network Systems, Comsearch performed a coordination notice for all existing and proposed terrestrial licenses within the coordination contours of their proposed Ka-Band earth station in Cheyenne, WY, which will transmit at 28 GHz<sup>1</sup>. 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 April 16, 2015.

No objections were received from any of the incumbent 28 GHz licensees. Our notification to the LMDS incumbents was performed under the assumption that the earth station would be operating on a secondary basis to LMDS Block A operations and a contact at Hughes Network Systems has been provided in case any concerns may arise in the future.

## 2. 28 GHz Common Carrier and LTTTS Coordination

In accordance with FCC Rules and Regulations, the Ka-Band earth station in Cheyenne, WY was prior-coordinated by Comsearch. A notification letter and datasheet for this earth station were sent to the following 28 GHz common carrier fixed microwave licensee on March 16, 2015. This licensee is authorized to operate temporary fixed operations from 27.5 – 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
Verizon	Continental US

A notification letter and datasheet for the Ka-Band earth station in Cheyenne, WY were also sent to the following 28 GHz local television transmission licensee on March 16, 2015. 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.

<sup>1</sup> The proposed earth station will operate in the 27.5 – 28.4 GHz portion of the Ka-Band.

### **3. 28 GHz LMDS Coordination**

A Notification letter was sent to the following 28 GHz LMDS licensees on March 16, 2015. The proposed earth station will operate on frequencies that overlap Block A of the LMDS service. The total frequency allocation for Block A of the LMDS spectrum appears below.

**Block A:** 27.500-28.350 GHz  
29.100-29.250 GHz  
31.075-31.225 GHz

<b>Licensee</b>	<b>Market</b>	<b>Market Name</b>
Alta Wireless	BTA077 <sup>2</sup>	Cheyenne, WY
Nextlink/XO	BTA110	Denver, CO

No objections were received from the LMDS incumbents.

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<sup>2</sup> The proposed earth station will be located inside BTA077.



## **4. Earth Station Coordination Data**

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

**COMSEARCH****Earth Station Data Sheet**

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
 (703)726-5662 <http://www.comsearch.com>

Date: 03/16/2015  
 Job Number: <PCNJobCode>

**Administrative Information**

Status ENGINEER PROPOSAL  
 Call Sign <PCNCallSign>  
 Licensee Code HUNESY  
 Licensee Name HUGHES NETWORK SYSTEMS LIMITED

**Site Information CHEYENNE, WY**

Venue Name  
 Latitude (NAD 83) 41° 7' 55.2" N  
 Longitude (NAD 83) 104° 44' 9.6" W  
 Climate Zone A  
 Rain Zone 2  
 Ground Elevation (AMSL) 1811.88 m / 5944.5 ft

**Link Information**

Satellite Type Geostationary  
 Mode TO - Transmit-Only  
 Modulation Digital  
 Satellite Arc 97° W to 97° West Longitude  
 Azimuth Range 168.3° to 168.3°  
 Corresponding Elevation Angles 41.8° / 41.8°  
 Antenna Centerline (AGL) 5.49 m / 18.0 ft

**Antenna Information Transmit - FCC32**

Manufacturer GD Satcom  
 Model 9.2 Meter  
 Gain / Diameter 66.1 dBi / 9.2 m  
 3-dB / 15-dB Beamwidth 0.09° / 0.18°

Max Available RF Power (dBW/4 kHz) -38.0  
 (dBW/MHz) -14.0

Maximum EIRP (dBW/4 kHz) 28.1  
 (dBW/MHz) 52.1

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) 250MG7D / 27500.0 - 28350.0

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

**COMSEARCH****Earth Station Data Sheet**

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
(703)726-5662 <http://www.comsearch.com>

<b>Coordination Values</b>	<b>CHEYENNE, WY</b>
Licensee Name	HUGHES NETWORK SYSTEMS LIMITED
Latitude (NAD 83)	41° 7' 55.2" N
Longitude (NAD 83)	104° 44' 9.6" W
Ground Elevation (AMSL)	1811.88 m / 5944.5 ft
Antenna Centerline (AGL)	5.49 m / 18.0 ft
Antenna Model	GD Satcom 9.2 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	-38.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.79	137.65	-10.00	100.00
5	0.82	136.32	-10.00	100.00
10	0.86	134.58	-10.00	100.00
15	0.80	132.41	-10.00	100.00
20	0.81	129.97	-10.00	100.00
25	0.80	127.26	-10.00	100.00
30	0.84	124.34	-10.00	100.00
35	0.72	121.15	-10.00	100.00
40	0.68	117.85	-10.00	100.00
45	0.64	114.44	-10.00	100.00
50	0.61	110.93	-10.00	100.00
55	0.48	107.30	-10.00	100.00
60	0.42	103.65	-10.00	100.00
65	0.37	99.96	-10.00	100.00
70	0.32	96.23	-10.00	100.00
75	0.31	92.50	-10.00	100.00
80	0.36	88.75	-10.00	100.00
85	0.39	85.01	-10.00	100.00
90	0.41	81.28	-10.00	100.00
95	0.00	77.66	-10.00	100.00
100	0.00	74.03	-10.00	100.00
105	0.00	70.46	-10.00	100.00
110	0.00	66.96	-10.00	100.00
115	0.28	63.44	-10.00	100.00
120	0.47	60.05	-10.00	100.00
125	0.56	56.84	-10.00	100.00
130	0.57	53.85	-10.00	100.00
135	0.64	51.02	-10.00	100.00
140	0.71	48.44	-10.00	100.00
145	0.64	46.27	-9.63	100.00
150	0.73	44.31	-9.16	100.00
155	0.81	42.74	-8.77	100.00
160	0.83	41.67	-8.49	100.00
165	0.74	41.17	-8.37	100.00
170	0.81	41.02	-8.33	100.00
175	0.83	41.42	-8.43	100.00
180	0.81	42.33	-8.67	100.00
185	0.87	43.63	-8.99	100.00



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**Coordination Values****CHEYENNE, WY**

Licensee Name HUGHES NETWORK SYSTEMS LIMITED  
 Latitude (NAD 83) 41° 7' 55.2" N  
 Longitude (NAD 83) 104° 44' 9.6" W  
 Ground Elevation (AMSL) 1811.88 m / 5944.5 ft  
 Antenna Centerline (AGL) 5.49 m / 18.0 ft  
 Antenna Model GD Satcom 9.2 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 -38.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.95	45.34	-9.41	100.00
195	0.93	47.49	-9.91	100.00
200	0.95	49.92	-10.00	100.00
205	0.84	52.72	-10.00	100.00
210	0.79	55.69	-10.00	100.00
215	0.97	58.72	-10.00	100.00
220	1.03	61.98	-10.00	100.00
225	0.70	65.54	-10.00	100.00
230	0.72	69.04	-10.00	100.00
235	0.88	72.59	-10.00	100.00
240	0.58	76.31	-10.00	100.00
245	0.68	79.99	-10.00	100.00
250	0.44	83.75	-10.00	100.00
255	0.62	87.49	-10.00	100.00
260	0.77	91.26	-10.00	100.00
265	1.13	95.05	-10.00	100.00
270	1.10	98.82	-10.00	100.00
275	1.28	102.59	-10.00	100.00
280	1.27	106.30	-10.00	100.00
285	1.07	109.88	-10.00	100.00
290	0.98	113.41	-10.00	100.00
295	0.82	116.80	-10.00	100.00
300	0.81	120.12	-10.00	100.00
305	0.86	123.33	-10.00	100.00
310	0.63	126.19	-10.00	100.00
315	0.70	129.02	-10.00	100.00
320	0.57	131.45	-10.00	100.00
325	0.56	133.66	-10.00	100.00
330	0.64	135.61	-10.00	100.00
335	0.79	137.24	-10.00	100.00
340	0.87	138.37	-10.00	100.00
345	0.81	138.89	-10.00	100.00
350	0.83	139.00	-10.00	100.00
355	0.84	138.60	-10.00	100.00



## **5. Contact Information**

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

Contact person:	Joanna Lynch
Title:	Manager, Spectrum & Data Solutions
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5711
Fax:	703-726-5599
Email:	<a href="mailto:jlynch@comsearch.com">jlynch@comsearch.com</a>
Web site:	<a href="http://www.comsearch.com">www.comsearch.com</a>

# Ka-Band Earth Station – Gilbert, AZ

## Frequency Coordination Report

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April 17, 2015



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## 1. Summary of Results

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No objections were received from any of the incumbent 28 GHz licensees. Our notification to the LMDS incumbents was performed under the assumption that the earth station would be operating on a secondary basis to LMDS Block A operations and a contact at Hughes Network Systems has been provided in case any concerns may arise in the future.

## 2. 28 GHz Common Carrier and LTTTS Coordination

In accordance with FCC Rules and Regulations, the Ka-Band earth station in Gilbert, AZ was prior-coordinated by Comsearch. A notification letter and datasheet for this earth station were sent to the following 28 GHz common carrier fixed microwave licensee on March 16, 2015. This licensee is authorized to operate temporary fixed operations from 27.5 – 29.5 GHz on a nationwide basis.

Licensee	Authorized Geographic Area
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Information Super Station, LLC	Continental US

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

<sup>1</sup> The proposed earth station will operate in the 27.5 – 28.4 GHz portion of the Ka-Band.

### **3. 28 GHz LMDS Coordination**

A Notification letter was sent to the following 28 GHz LMDS licensees on March 16, 2015. The proposed earth station will operate on frequencies that overlap Block A of the LMDS service. The total frequency allocation for Block A of the LMDS spectrum appears below.

**Block A:** 27.500-28.350 GHz  
29.100-29.250 GHz  
31.075-31.225 GHz

<b>Licensee</b>	<b>Market</b>	<b>Market Name</b>
Alta Wireless	BTA347 <sup>2</sup>	Phoenix, AZ
Nextlink/XO <sup>3</sup>	BTA347	Phoenix, AZ
Nextlink/XO	BTA447	Tucson, AZ

No objections were received from the LMDS incumbents.

<sup>2</sup> The proposed earth station will be located inside BTA077.

<sup>3</sup> Nextlink/XO is leasing spectrum from Alta Wireless in the Phoenix, AZ Basic Trading Area.



## **4. Earth Station Coordination Data**

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

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 (703)726-5662 <http://www.comsearch.com>

Date: 03/16/2015  
 Job Number: <PCNJobCode>

**Administrative Information**

Status ENGINEER PROPOSAL  
 Call Sign <PCNCallSign>  
 Licensee Code HUNESY  
 Licensee Name HUGHES NETWORK SYSTEMS LIMITED

**Site Information****GILBERT, AZ**

Venue Name  
 Latitude (NAD 83) 33° 21' 55.8" N  
 Longitude (NAD 83) 111° 48' 50.4" W  
 Climate Zone A  
 Rain Zone 5  
 Ground Elevation (AMSL) 372.13 m / 1220.9 ft

**Link Information**

Satellite Type Geostationary  
 Mode TO - Transmit-Only  
 Modulation Digital  
 Satellite Arc 97° W to 97° West Longitude  
 Azimuth Range 154.3° to 154.3°  
 Corresponding Elevation Angles 48.0° / 48.0°  
 Antenna Centerline (AGL) 5.49 m / 18.0 ft

**Antenna Information****Transmit - FCC32**

Manufacturer GD Satcom  
 Model 9.2 Meter  
 Gain / Diameter 66.1 dBi / 9.2 m  
 3-dB / 15-dB Beamwidth 0.09° / 0.18°

Max Available RF Power (dBW/4 kHz) -38.0  
 (dBW/MHz) -14.0

Maximum EIRP (dBW/4 kHz) 28.1  
 (dBW/MHz) 52.1

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) 250MG7D / 27500.0 - 28350.0

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



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Interference Objectives: Long Term	-151.0 dBW/4 kHz 20%
Short Term	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	-38.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.00	127.05	-10.00	100.00
5	0.00	125.10	-10.00	100.00
10	0.00	122.89	-10.00	100.00
15	0.00	120.47	-10.00	100.00
20	0.00	117.85	-10.00	100.00
25	0.00	115.07	-10.00	100.00
30	0.00	112.15	-10.00	100.00
35	0.00	109.11	-10.00	100.00
40	0.00	105.98	-10.00	100.00
45	0.00	102.78	-10.00	100.00
50	0.00	99.52	-10.00	100.00
55	0.00	96.22	-10.00	100.00
60	0.00	92.89	-10.00	100.00
65	0.00	89.55	-10.00	100.00
70	0.00	86.21	-10.00	100.00
75	0.00	82.88	-10.00	100.00
80	0.00	79.59	-10.00	100.00
85	0.00	76.34	-10.00	100.00
90	0.00	73.16	-10.00	100.00
95	0.00	70.05	-10.00	100.00
100	0.00	67.05	-10.00	100.00
105	0.00	64.16	-10.00	100.00
110	0.00	61.42	-10.00	100.00
115	0.00	58.85	-10.00	100.00
120	0.00	56.48	-10.00	100.00
125	0.00	54.34	-10.00	100.00
130	0.00	52.46	-10.00	100.00
135	0.00	50.88	-10.00	100.00
140	0.00	49.62	-10.00	100.00
145	0.00	48.72	-10.00	100.00
150	0.00	48.19	-10.00	100.00
155	0.00	48.05	-10.00	100.00
160	0.00	48.29	-10.00	100.00
165	0.00	48.93	-10.00	100.00
170	0.00	49.93	-10.00	100.00
175	0.00	51.28	-10.00	100.00
180	0.00	52.95	-10.00	100.00
185	0.00	54.90	-10.00	100.00

**COMSEARCH****Earth Station Data Sheet**

19700 Janelia Farm Boulevard, Ashburn, VA 20147  
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<b>Coordination Values</b>	<b>GILBERT, AZ</b>
Licensee Name	HUGHES NETWORK SYSTEMS LIMITED
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Antenna Centerline (AGL)	5.49 m / 18.0 ft
Antenna Model	GD Satcom 9.2 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	-38.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	57.11	-10.00	100.00
195	0.00	59.53	-10.00	100.00
200	0.00	62.15	-10.00	100.00
205	0.00	64.93	-10.00	100.00
210	0.00	67.85	-10.00	100.00
215	0.00	70.89	-10.00	100.00
220	0.00	74.02	-10.00	100.00
225	0.00	77.22	-10.00	100.00
230	0.00	80.48	-10.00	100.00
235	0.00	83.78	-10.00	100.00
240	0.00	87.11	-10.00	100.00
245	0.00	90.45	-10.00	100.00
250	0.00	93.79	-10.00	100.00
255	0.00	97.12	-10.00	100.00
260	0.00	100.41	-10.00	100.00
265	0.00	103.66	-10.00	100.00
270	0.00	106.84	-10.00	100.00
275	0.00	109.95	-10.00	100.00
280	0.00	112.95	-10.00	100.00
285	0.00	115.84	-10.00	100.00
290	0.00	118.58	-10.00	100.00
295	0.00	121.15	-10.00	100.00
300	0.00	123.52	-10.00	100.00
305	0.00	125.66	-10.00	100.00
310	0.00	127.54	-10.00	100.00
315	0.00	129.12	-10.00	100.00
320	0.00	130.38	-10.00	100.00
325	0.00	131.28	-10.00	100.00
330	0.00	131.81	-10.00	100.00
335	0.00	131.95	-10.00	100.00
340	0.00	131.71	-10.00	100.00
345	0.00	131.07	-10.00	100.00
350	0.00	130.07	-10.00	100.00
355	0.00	128.72	-10.00	100.00



## **5. Contact Information**

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

Contact person:	Joanna Lynch
Title:	Manager, Spectrum & Data Solutions
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5711
Fax:	703-726-5599
Email:	<a href="mailto:jlynch@comsearch.com">jlynch@comsearch.com</a>
Web site:	<a href="http://www.comsearch.com">www.comsearch.com</a>