

Ka-Band Earth Station – Nuevo, CA

Frequency Coordination Report

28 GHz



Prepared on Behalf of
Intelsat License LLC

March 7, 2017



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1. Summary of Results

On behalf of Intelsat, Comsearch performed a coordination notice for all existing and proposed terrestrial licenses within the coordination contours of their proposed Ka-Band earth station in Nuevo, California, 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 March 7, 2017.

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 Nuevo, California 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 licensees on January 24, 2017. These licensees are authorized to operate temporary fixed operations from 27.5 – 29.5 GHz over a designated geographic area.

Licensee	Authorized Geographic Area
Frontier	Continental US
M.U.T. Licensing, LLC	Statewide: California

A notification letter and datasheet for the Ka-Band earth station in Nuevo, California were also sent to the following 28 GHz local television transmission licensee on January 24, 2017. 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 29.22 – 29.24 GHz portion of the Ka-Band.

3. 28 GHz LMDS Coordination

A Notification letter was sent to the following 28 GHz LMDS licensees on January 24, 2017. 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

Licensee	Market	Market Name
EchoStar	BTA347	Phoenix, AZ
EchoStar	BTA402	San Diego, CA
Nextlink Wireless ²	BTA245	Las Vegas, NV
Nextlink Wireless	BTA262 ³	Los Angeles, CA
Nextlink Wireless	BTA347	Phoenix, AZ
Nextlink Wireless	BTA402	San Diego, CA
Nextlink Wireless	BTA405	San Luis Obispo, CA
Nextlink Wireless	BTA406	Santa Barbara—Santa Maria, CA
TelePacific Communications ⁴	BTA262	Los Angeles, CA
Verizon ⁵	BTA245	Las Vegas, NV
Verizon	BTA262	Los Angeles, CA
Verizon	BTA405	San Luis Obispo, CA
Verizon	BTA406	Santa Barbara—Santa Maria, CA

No objections were received from the LMDS incumbents.

² Nextlink Wireless is leasing spectrum from EchoStar in the Phoenix, AZ and San Diego, CA Basic Trading Areas (BTAs).

³ The proposed earth station will be located inside BTA262.

⁴ TelePacific is leasing spectrum from Nextlink Wireless in the Los Angeles, CA BTA.

⁵ Verizon is leasing spectrum from Nextlink Wireless in the Las Vegas, NV, Los Angeles, CA, San Luis Obispo, CA, and Santa Barbara—Santa Maria, CA BTAs.

4. Earth Station Coordination Data

This section presents the data pertinent to the proposed Ka-Band earth station in Nuevo, California. 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: 01/23/2017
 Job Number: <PCNJobCode>

Administrative Information

Status: TEMPORARY (Operation from 03/21/2017 to 03/31/2017)
 Call Sign: <PCNCallSign>
 Licensee Code: INTELS
 Licensee Name: Intelsat License LLC

Site Information**NUEVO, CA**

Venue Name
 Latitude (NAD 83): 33° 47' 42.7" N
 Longitude (NAD 83): 117° 5' 22.5" W
 Climate Zone: A
 Rain Zone: 4
 Ground Elevation (AMSL): 571.87 m / 1876.2 ft

Link Information

Satellite Type: Geostationary
 Mode: TO - Transmit-Only
 Modulation: Digital
 Satellite Arc: 45° W to 170° West Longitude
 Azimuth Range: 100.2° to 247.2°
 Corresponding Elevation Angles: 6.2° / 22.0°
 Antenna Centerline (AGL): 8.7 m / 28.5 ft

Antenna Information**Transmit - FCC32**

Manufacturer: General Dynamics
 Model: 9.2 Meter
 Gain / Diameter: 65.4 dBi / 9.2 m
 3-dB / 15-dB Beamwidth: 0.11° / 0.22°

Max Available RF Power (dBW/4 kHz): 3.0
 (dBW/MHz): 27.0

Maximum EIRP (dBW/4 kHz): 68.4
 (dBW/MHz): 92.4

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): 800KGXD / 29220.0 - 29240.0

Max Great Circle Coordination Distance: 342.4 km / 212.7 mi
 Precipitation Scatter Contour Radius: 119.4 km / 74.2 mi

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

Coordination Values	NUEVO, CA
Licensee Name	Intelsat License LLC
Latitude (NAD 83)	33° 47' 42.7" N
Longitude (NAD 83)	117° 5' 22.5" W
Ground Elevation (AMSL)	571.87 m / 1876.2 ft
Antenna Centerline (AGL)	8.7 m / 28.5 ft
Antenna Model	General Dynamics 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	3.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.48	100.14	-10.00	117.76
5	1.72	95.18	-10.00	100.00
10	1.65	90.19	-10.00	100.00
15	2.00	85.21	-10.00	100.00
20	2.41	80.21	-10.00	100.00
25	2.83	75.22	-10.00	100.00
30	3.49	70.22	-10.00	100.00
35	3.11	65.23	-10.00	100.00
40	3.23	60.24	-10.00	100.00
45	3.17	55.25	-10.00	100.00
50	2.74	50.28	-10.00	100.00
55	2.46	45.31	-9.41	100.00
60	2.51	40.33	-8.14	100.00
65	3.34	35.29	-6.69	100.00
70	3.01	30.34	-5.05	100.00
75	2.97	25.38	-3.11	100.00
80	3.77	20.33	-0.70	100.00
85	3.08	15.50	2.24	100.00
90	3.02	10.66	6.31	102.03
95	2.53	6.33	11.96	129.18
100	2.67	3.49	18.42	342.38
105	3.35	5.56	13.37	121.27
110	3.58	9.45	7.62	100.00
115	3.61	13.41	3.82	100.00
120	3.78	17.22	1.10	100.00
125	3.54	21.21	-1.16	100.00
130	4.05	24.61	-2.78	100.00
135	3.62	28.47	-4.36	100.00
140	4.02	31.62	-5.50	100.00
145	3.88	34.92	-6.58	100.00
150	2.51	38.90	-7.75	100.00
155	3.56	40.74	-8.25	100.00
160	4.04	42.58	-8.73	100.00
165	4.62	43.83	-9.04	100.00
170	5.61	44.13	-9.12	100.00
175	5.62	44.85	-9.29	100.00
180	6.48	44.23	-9.14	100.00
185	7.29	43.19	-8.89	100.00

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Coordination Values	NUEVO, CA
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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	3.0 (dBW/4 kHz)

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 28.0 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	6.30	43.47	-8.95	100.00
195	5.56	42.96	-8.83	100.00
200	5.35	41.45	-8.44	100.00
205	5.66	39.03	-7.79	100.00
210	5.81	36.38	-7.02	100.00
215	6.43	33.04	-5.98	100.00
220	6.32	30.00	-4.93	100.00
225	6.48	26.54	-3.60	100.00
230	5.81	23.46	-2.26	100.00
235	5.85	20.15	-0.61	100.00
240	5.67	17.82	0.73	100.00
245	5.50	16.65	1.46	100.00
250	5.48	16.77	1.39	100.00
255	4.44	19.18	-0.07	100.00
260	4.40	21.67	-1.39	100.00
265	4.23	24.96	-2.93	100.00
270	4.20	28.65	-4.43	100.00
275	3.88	32.80	-5.90	100.00
280	4.22	36.85	-7.16	100.00
285	4.09	41.26	-8.39	100.00
290	2.58	46.23	-9.62	100.00
295	1.95	50.89	-10.00	100.00
300	0.80	55.70	-10.00	103.75
305	0.00	60.40	-10.00	138.27
310	0.00	64.94	-10.00	138.27
315	0.00	69.50	-10.00	138.27
320	0.00	74.10	-10.00	138.27
325	0.00	78.71	-10.00	138.27
330	0.00	83.34	-10.00	138.27
335	0.00	87.97	-10.00	138.27
340	0.00	92.60	-10.00	138.27
345	0.00	97.24	-10.00	138.27
350	0.00	101.86	-10.00	138.27
355	0.00	105.10	-10.00	138.27



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:	jlynch@comsearch.com
Web site:	www.comsearch.com

Exhibit B

PETITION FOR WAIVER OF SECTIONS 25.137 AND 25.114

Pursuant to Section 25.137 of the Federal Communications Commission's ("Commission" or "FCC") rules, earth station applicants "requesting authority to operate with a non-U.S. licensed space station *to serve the United States*" must demonstrate that effective competitive opportunities exist and must provide the same technical information required by Section 25.114 for U.S.-licensed space stations.¹ Intelsat License LLC ("Intelsat") herein seeks authority to provide launch and early orbit phase ("LEOP") services—not commercial services—to the United States, and thus believes that Section 25.137 does not apply.²

To the extent the Commission determines, however, that Intelsat's request for authority to provide LEOP services on a special temporary basis is a request to serve the United States with a non U.S.-licensed satellite, Intelsat respectfully requests a waiver of Sections 25.137 and 25.114 of the Commission's rules.³ The Commission may grant a waiver for good cause shown.⁴ The Commission typically grants a waiver where the particular facts make strict compliance inconsistent with the public interest.⁵ In granting a waiver, the Commission may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis.⁶ Waiver is therefore appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.

In this case, good cause exists for a waiver of both Section 25.137 and Section 25.114. With respect to Section 25.114, Intelsat seeks authority only to provide LEOP services for the SGDC-1 satellite. The information sought by Section 25.114 is not relevant to LEOP services. Moreover, Intelsat does not have—and would not easily be able to obtain—such information because Intelsat is not the operator of the SGDC-1 satellite, nor is Intelsat in contractual privity with that operator. Rather, an affiliate of Intelsat has a contract with the Thales Alenia Space, the manufacturer of the SGDC-1 satellite, to conduct LEOP services for the satellite.

¹ 47 C.F.R. § 25.137 (emphasis added).

² See *EchoStar Satellite Operating Company Application for Special Temporary Authority Related to Moving the EchoStar 6 Satellite from the 77° W.L. Orbital Location to the 96.2° W.L. Orbital Location, and to Operate at the 96.2° W.L. Orbital Location*, DA 13-593, File No. SAT-STA-20130220-00023 (released Apr. 1, 2013) (noting that operating TT&C earth stations in the United States with a foreign-licensed satellite does not constitute "DBS service").

³ 47 C.F.R. §§ 25.137 and 25.114.

⁴ 47 C.F.R. § 1.3.

⁵ *N.E. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) ("*Northeast Cellular*").

⁶ *WAIT Radio v. FCC*, 419 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

The information that Intelsat is not including is not required to determine potential harmful interference. The Schedule S information for this satellite would pertain to the operation of the SGDC-1 satellite at its final orbital location. However, the present application for LEOP services involves communications *prior* to the satellite attaining its final location in the geostationary orbit. In other words, during the LEOP mission, the earth station will not be communicating with a satellite located in the geostationary orbit. Rather, it will be transmitting to a satellite traveling on its “transfer orbit” or “LEOP path,” which starts immediately following its separation from a launch vehicle, and ends when the satellite reaches its geostationary orbital location. Moreover, as with any STA, Intelsat will perform the LEOP services on a non-interference basis.

Because it is not relevant to the service for which Intelsat seeks authorization, and because obtaining the information would be a hardship, Intelsat seeks a waiver of all the information required by Section 25.114. Intelsat has provided in this STA request the required technical information that is relevant to the LEOP services for which Intelsat seeks authorization.

Good cause also exists to waive Section 25.137. Section 25.137 is designed to ensure that “U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services” in other countries. Here, there is no service being provided by the satellite; it is simply being placed in its orbital location after separating from the launch vehicle. Thus, the purpose of the information required by Section 25.137 is not implicated here. For example, Section 25.137(d) requires earth station applicants requesting authority to operate with a non-U.S.-licensed space station that is not in orbit and operating to post a bond.⁷ The underlying purpose in having to post a bond—*i.e.*, to prevent warehousing of orbital locations by operators seeking to serve the United States—would not be served by requiring Intelsat to post a bond in order to provide approximately 10 days of LEOP services to the SGDC-1 satellite.

It is Intelsat’s understanding that SGDC-1 is licensed by Brazil, which is a WTO-member country. Thus, the purposes of Section 25.137—to ensure that U.S. satellite operators enjoy “effective competitive opportunities” to serve foreign markets and to prevent warehousing of orbital locations serving the United States—will not be undermined by grant of this waiver request.

Finally, Intelsat notes that it expects to operate with the SGDC-1 satellite using its U.S. earth station for a period of approximately 10 days. Requiring Intelsat to obtain copious technical and legal information from an unrelated party, where there is no risk of harmful interference and the operations will cease after approximately 10 days, would pose undue hardship without serving underlying policy objectives. Given these particular facts, the waiver sought herein is plainly appropriate.

⁷ See 47 C.F.R. §25.137(d)(4).

Exhibit C

Request for Waiver of Footnote NG165 to the U.S. Table of Allocations

To the extent necessary, Intelsat requests a waiver of footnote NG165 to the U.S. Table of Frequency Allocations, which limits the use of the 18.8-19.3 GHz frequency band to systems in non-geosynchronous orbit (“NGSO”).¹ Intelsat seeks waiver to permit its 9.2m Ka-band antenna, located in Riverside, California, to communicate with the SGDC-1 satellite during its launch and early orbit phase (“LEOP”) mission.

The Commission may grant a waiver for good cause shown.² The Commission typically grants a waiver where the particular facts make strict compliance inconsistent with the public interest.³ In granting a waiver, the Commission may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis.⁴ Waiver is therefore appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.

Good cause exists to waive, for purposes of the SGDC-1 LEOP mission, the designation of the 18.8-19.3 GHz frequency band for NGSO operations only. Although the antenna will communicate with a satellite that ultimately will be geostationary, during LEOP the SGDC-1 satellite will be in non-geosynchronous orbit. Specifically, the antenna will be transmitting to the satellite as it travels on its non-geosynchronous “transfer orbit” or “LEOP path,” which starts immediately following its separation from a launch vehicle, and ends when the satellite reaches its geostationary orbital location. Moreover, Intelsat’s operations will be on a non-protected, non-interference basis.

Grant of this waiver is consistent with the Commission’s precedent. A waiver of the Table of Allocations is generally granted “when there is little potential interference into any service authorized under the Table of Frequency allocations and when the nonconforming operator accepts any interference from authorized services.”⁵ Intelsat expects to communicate with the SGDC-1 satellite intermittently over a period of approximately 10 days using only two frequencies in the 18.8-19.3 GHz band. As such, this use poses a negligible risk of potential interference to co-frequency operations in the 18.8-19.3 GHz frequency band.

Given these particular facts, the waiver sought herein is plainly appropriate.

¹ See 47 C.F.R. § 2.106 fn. NG165.

² 47 C.F.R. §1.3.

³ *N.E. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) (“*Northeast Cellular*”).

⁴ *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

⁵ See *The Boeing Company*, Order and Authorization, 16 FCC Rcd 22645, 22651 (Int’l Bur. & OET 2001); *Application of Fugro-Chance, Inc. for Blanket Authority to Construct and Operate a Private Network of Receive-Only Mobile Earth Stations*, Order and Authorization, 10 FCC Rcd 2860 (Int’l Bur. 1995) (authorizing MSS in the C-band); see also *Application of Motorola Satellite Communications, Inc. for Modification of License*, Order and Authorization, 11 FCC Rcd 13952-13956 (Int’l Bur. 1996) (authorizing service to fixed terminals in bands allocated the mobile satellite service).