

Exhibit C
PETITION FOR WAIVER OF SECTION 25.137 AND 25.114 AND OF
THE U.S. TABLE OF FREQUENCY ALLOCATIONS

I. TO THE EXTENT THEY APPLY, GOOD CAUSE EXISTS FOR A WAIVER OF CERTAIN PORTIONS OF SECTIONS 25.137 AND 25.114

Universal Space Network, Inc. (USN) is provided limited legal and technical information for the GALILEO (FOC10 and FOC11), tenth and eleventh spacecraft of the “Full Operational Capability” series) Satellites.¹ Pursuant to Section 25.137 of the Federal Communications Commission’s (“Commission” or “FCC”) rules, the same technical information required by Section 25.114 for U.S.-licensed space station, and certain legal information, must be submitted by earth station applicants “requesting authority to operate with a non-U.S. licensed space station to serve the United States...”² USN seeks authority to support the needed Telemetry, Tracking, and Control (“TT&C”) during launch and early orbit support (“LEOP”) of the GALILEO (FOC10 and FOC11) spacecraft from launch to medium earth orbit, not commercial service to the United States, and thus believes that Section 25.137 does not apply.

To the extent the Commission determines, however, that USN’s request for authority to provide LEOP on a special temporary basis is a request to serve the United States with a non-U.S.-licensed satellite, USN respectfully requests a waiver of Sections 25.137 and 25.114 of the Commission’s rules, to the extent that USN has not herein provided the information required by these rules.³ The Commission may grant a waiver for good cause shown.⁴ A 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 for a waiver of portions of Section 25.114 exists. USN seeks authority only to conduct LEOP support for GALILEO (FOC10 and FOC11). Thus, any information sought by Section 25.114 that is not relevant to the LEOP – e.g., antenna patterns, energy and propulsion and orbital debris - USN does not have. In addition, USN would not easily be able to obtain such information because USN is not the operator of the GALILEO (FOC10 and FOC11) satellites, nor is USN in contractual privity with that operator. Rather, USN has contracted with Swedish Space Corporation, Solona Sweden (SSC) to support the Launch and Early Orbit (LEOP) portion in S-Band of the satellite prior to its operation.

As evidenced by the Comsearch report attached to this request, USN has coordinated the LEOP of the GALILEO (FOC10 and FOC11) satellites with potentially affected terrestrial operators. Moreover, as with any STA, USN will conduct the LEOP on an unprotected, non-interference basis to government operations.

¹ FCC Form 312 Section B

² 47 C.F.R. § 25.137(a)

³ 47 C.F.R. §§25.137 and 25.114

⁴ 47 C.F.R. §1.3

Because it is not relevant to the service for which USN seeks authorization, and because obtaining the information would be a hardship, USN seeks a waiver of all the technical and legal information required by Section 25.114, to the extent it is not provided herein. As noted above, USN has provided the required information to the extent that it is relevant to the LEOP service for which USN seeks authorization.

Good cause also exists to waive portions of Section 25.137, to the extent the information required is not herein provided. 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; USN is providing TT&C while the satellite is on the way to its medium earth orbit. 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.⁵ 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 USN to post a bond in order to conduct 14 days of LEOP support of the GALILEO (FOC10 and FOC11) satellite.

It is USN’s understanding that GALILEO (FOC10 and FOC11) is licensed by ESA (European Space Agency). GALILEO (FOC10 and FOC11) are the third and fourth spacecraft of the European navigation constellation. The spacecraft family is primarily meant to serve the EU. Thus, the purpose 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 service the United States – will not be undermined by grant of this waiver request.

Finally, USN notes that it expects to communicate with the GALILEO (FOC10 and FOC11) satellite using its U.S. earth station for a period of 14 days. Requiring USN to obtain technical and legal information from an unrelated party, where there is no risk of interference and the operation will cease within 14 days would pose undue hardship without serving underlying policy objectives. Given these particular facts, the waiver sought herein is appropriate.

⁵ 47 C.F.R. §25.137(d)(4)

II. GOOD CAUSE EXISTS FOR A WAIVER OF THE UNITED STATES TABLE OF FREQUENCY ALLOCATIONS

USN further requests a waiver of the United States Table of Frequency Allocations ("U.S. Table") as described in section 2.106 of the rules for the frequency bands 2025 – 2110 MHz (Earth-to-Space) and 2200 – 2290 MHz (Space-to-Earth).⁶ Section footnotes allow for non-federal Government use of these bands in the United States on a case-by-case non-interference basis. Such use by USN necessitates a waiver of the U.S. Table.

Good cause exists to grant USN a limited waiver of the U.S. Table to allow LEOP of the GALILEO (FOC10 and FOC11) satellites. In considering request for case-by-case spectrum uses, the Commission has indicated that it would generally grant such waivers "where there is little potential for interference into any service authorized under the Table of Frequency Allocations and when the case-by-case operator accepts any interference from authorized services."⁷ USN will coordinate with other parties operating communication systems in compliance with the Table of Frequency Allocations to ensure that no harmful interference is caused. USN seeks to operate only pursuant to special temporary authorization and thus agrees to accept any interference from authorized services. In summary, USN's operation on a non-interference, non-protected basis support waiver of the U.S. Table.

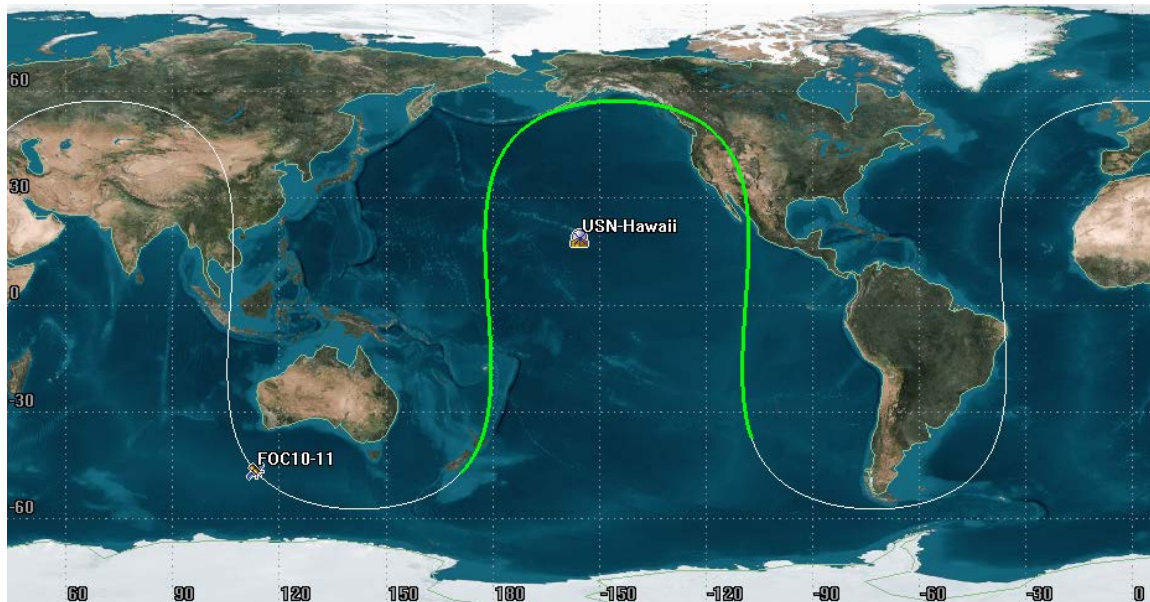
⁶ 47 C.F.R. §2.106

⁷ Previously approved STA's for Universal Space Network SES-STA-20020725-01174; SES-STA-20021112-02008; SES-STA-20040315-00475

LEOP support of Galileo Constellation (FOC10 and FOC11) from USN's Hawaii ground station

Galileo FOC10 and FOC11 are the tenth and eleventh spacecraft of the "Full Operational Capability" of the Galileo navigation constellation for the EU. The launch consists of 2 spacecraft (FOC10 and FOC11) that will be launched from French Guiana on a Soyuz vehicle on May 24th 2016 at 08:48:42 UTC. USN has been contracted to support the Galileo spacecraft LEOP(s) for a period of up to 14 days.

The spacecraft(s) are a Medium Earth Orbiting (MEO) spacecraft in a high mid-latitude orbit (55 degrees) with a near circular orbit of altitude of 23400 Km. This orbit allows a nominal 1 visibility over the USN Hawaii station every day. Each spacecraft contact is on the order of 1 to 16 hours.



FOC10 and FOC11 nominal orbit and Hawaii coverage

The spacecrafts will be supported from injection and three subsequent orbital maneuvers for spacing of FOC10 and FOC11. The below analysis covers all possible visibilities from USN Hawaii, but not all visibilities will be supported.

FOC10 and FOC11 injection and coverage of pass #1-5

Both spacecraft are still in same antenna beamwidth after injection for the first several passes and then begin to drift apart. For the first several passes FOC10 and FOC11 are supported by selecting different RF frequencies. Subsequent to the first several hours the spacecraft(s) are supported separately. Post maneuver TLE's and maximum visibilities are shown below for each event and each spacecraft.

	Downlink	Uplink
FOC10	2221.956 MHz	2046.051 MHz
FOC11	2228.094 MHz	2051.703 MHz

GFOC10-injection

```
1 99994 50999A 16145.52545833 +.00000000 +00000-9 +00000-9 3 00008
2 99994 057.4137 322.3859 0005145 260.9208 338.5112 01.67807025000002
```

GFOC11-injection

```
1 99995 50999A 16145.52545833 +.00000000 +00000-9 +00000-9 3 00008
2 99995 057.4137 322.3859 0003931 030.9348 208.5070 01.680142370000008
```

FOC10

Access	Start Time (UTCG)	Stop Time (UTCG)
-----	-----	-----
1	24 May 2016 14:59:36	25 May 2016 02:23:58
2	26 May 2016 00:35:48	26 May 2016 08:01:25
3	26 May 2016 10:21:36	26 May 2016 15:57:55
4	27 May 2016 14:25:09	28 May 2016 01:27:30*

* Note that spacecraft stays in view of Hawaii during TLE update V1 below, therefore visibility continues into pass #5.

FOC11

1	24 May 2016 14:59:36	25 May 2016 02:22:16
2	26 May 2016 00:31:15	26 May 2016 07:58:37
3	26 May 2016 10:21:40	26 May 2016 15:52:03

FOC10 Maneuvers and possible support times pass # 5 - 17

GFOC10-V1

1 99994 50999A 16149.06076572 +.00000000 +00000-9 +00000-9 3 00000
2 99994 057.4098 322.2922 0004376 338.0190 237.1270 01.67963143000003

Access	Start Time (UTCG)	Stop Time (UTCG)
5	28 May 2016 01:27:30	28 May 2016 01:44:30
6	28 May 2016 23:50:39	29 May 2016 07:31:59
7	29 May 2016 10:10:35	29 May 2016 13:32:24*

* Note that spacecraft stays in view of Hawaii during TLE update V2 below, therefore visibility continues into pass #8.

GFOC10-V2

1 99994 50999A 16150.56417517 +.00000000 +00000-9 +00000-9 3 00005
2 99994 057.4073 322.2510 0006206 265.6389 138.5797 01.68119570000004

Access	Start Time (UTCG)	Stop Time (UTCG)
8	29 May 2016 13:32:24	29 May 2016 15:17:02
9	30 May 2016 13:45:23	30 May 2016 17:18:42*

* Note that spacecraft stays in view of Hawaii during TLE update V3 below, therefore visibility continues into pass #10.

GFOC10-V3

1 99994 50999A 16151.72131782 +.00000000 +00000-9 +00000-9 3 00001
2 99994 057.4065 322.2207 0006446 260.4769 124.0878 01.68133660000005

Access	Start Time (UTCG)	Stop Time (UTCG)
10	30 May 2016 17:18:42	31 May 2016 00:52:14
11	31 May 2016 22:48:30	1 Jun 2016 06:54:18
12	1 Jun 2016 10:03:10	1 Jun 2016 14:26:39
13	2 Jun 2016 13:01:47	2 Jun 2016 23:49:06
14	3 Jun 2016 21:28:28	4 Jun 2016 06:14:21
15	4 Jun 2016 09:59:33	4 Jun 2016 13:34:17
16	5 Jun 2016 05:24:10	5 Jun 2016 07:27:31
17	5 Jun 2016 12:19:05	5 Jun 2016 17:18:42

FOC11 Maneuvers and possible support times pass # 4 - 15

GFOC11-V1

1 99995 50999A 16147.79331889 +.00000000 +00000-9 +00000-9 3 00003
2 99995 057.4104 322.3270 0039849 350.0065 181.1919 01.68949754000007

Access	Start Time (UTCG)	Stop Time (UTCG)
4	27 May 2016 14:11:30	28 May 2016 01:17:43

GFOC11-V2

1 99995 50999A 16149.87025233 +.00000000 +00000-9 +00000-9 3 00007
2 99995 057.4095 322.2720 0002780 000.2083 354.2798 01.69896070000004

Access	Start Time (UTCG)	Stop Time (UTCG)
5	28 May 2016 23:00:38	29 May 2016 07:00:22
6	29 May 2016 10:17:51	29 May 2016 14:22:56

GFOC11-V3

1 99995 50999A 16151.06295049 +.00000000 +00000-9 +00000-9 3 00005
2 99995 057.4088 322.2401 0001012 192.2617 171.7298 01.69991491000004

Access	Start Time (UTCG)	Stop Time (UTCG)
7	30 May 2016 06:01:48	30 May 2016 07:46:14
8	30 May 2016 12:45:11	30 May 2016 22:37:52
9	31 May 2016 19:11:36	1 Jun 2016 05:26:41
10	1 Jun 2016 11:06:25	1 Jun 2016 11:45:13
11	2 Jun 2016 03:43:57	2 Jun 2016 08:12:45
12	2 Jun 2016 11:12:42	2 Jun 2016 18:57:42
13	3 Jun 2016 16:36:10	4 Jun 2016 03:44:42
14	5 Jun 2016 01:45:04	5 Jun 2016 07:59:36
15	5 Jun 2016 09:59:26	5 Jun 2016 16:43:30

Flux Density impinging on the ground in Hawaii from Galileo FOC10 and FOC11

The Flux density is calculated as:

$$\text{Flux density} = \text{EIRP} \div (4 \pi Rse^2)$$

Where **Rse** is the distance from spacecraft to the ground?

Where **EIRP** is the Effective Isotropic Radiated Power of the spacecraft?

Data from the spacecraft vendor indicates that the nominal EIRP of each FOC spacecraft is -1.10 dBW. Being a near circular orbit, the altitude (and thus the closest distance to earth during an overhead pass) is = 23,400 Km.

Converting -1.10 dBW to scalar watts = 0.776 watts transmitted at 2221.9 MHz

Therefor:

$$\text{Flux density} = 0.776 \div (4 \pi * 23,400,000 \text{ meters}^2)$$

$$\text{Flux density} = 1.127 \times 10^{-16} \text{ Watts/meter}^2$$

Or

$$\text{Flux density} = 1.127 \times 10^{-17} \text{ mW/cm}^2$$