

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 (FOC5 and FOC6), third and fourth 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 (FOC5 and FOC6) 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 (FOC5 and FOC6). 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 (FOC5 and FOC6) satellites, nor is USN in contractual privity with that operator. Rather, USN has contracted with Swedish Space Corporation, Solna 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 (FOC5 and FOC6) 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 (FOC5 and FOC6) satellite.

It is USN’s understanding that GALILEO (FOC5 and FOC6) is licensed by ESA (European Space Agency). GALILEO (FOC5 and FOC6) 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 (FOC5 and FOC6) 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 (FOC5 and FOC6) 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.

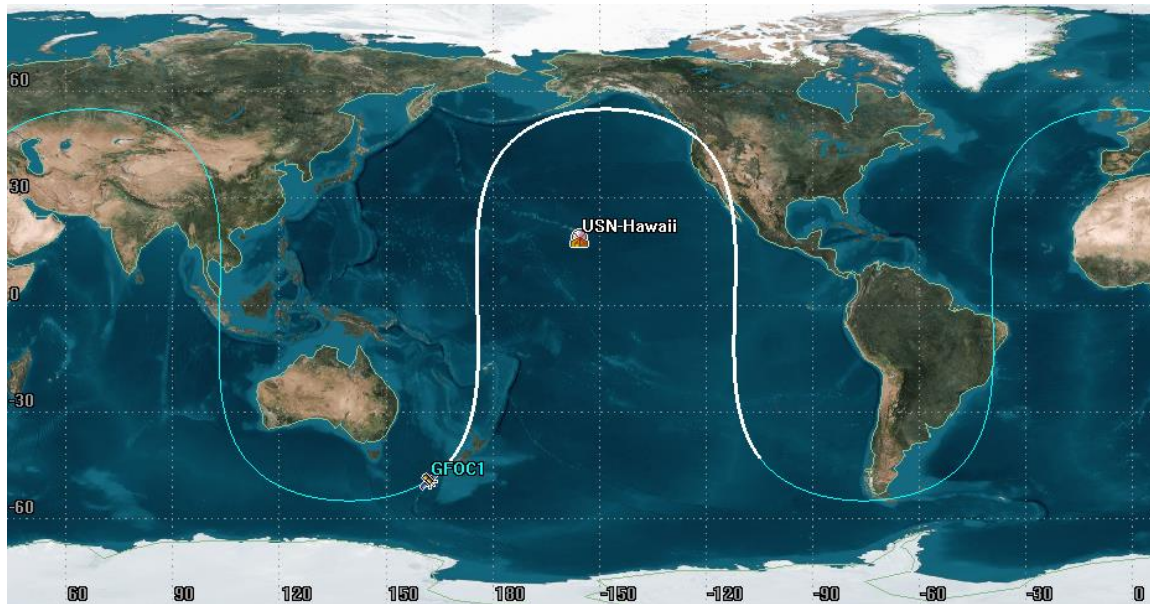
⁶ 47 C.F.R. §2.106

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 (FOC5 and FOC6) from USN's Hawaii ground station

Galileo FOC5 and FOC6 are the fifth and sixth spacecraft of the “Full Operational Capability” of the Galileo navigation constellation for the EU. The launch consists of 2 spacecraft (FOC5 and FOC6) that will be launched from French Guiana on a Soyuz vehicle on September 11th 2015 at 02:08:12 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.



FOC5 and FOC6 nominal orbit and Hawaii coverage

The spacecrafts will be supported from injection and three subsequent orbital maneuvers for spacing of FOC5 and FOC6. The below analysis covers all possible visibilities from USN Hawaii, but not all visibilities will be supported.

FOC5 and FOC6 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 FOC5 and FOC6 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
FOC5	2215.818 MHz	2040.399 MHz
FOC6	2221.956 MHz	2046.051 MHz

GFOC5-injection

```
1 99995 50999B 15254.24732986 +.00000000 +00000-9 +73175-3 2 00002
2 99996 057.3754 329.6342 0003922 031.1599 208.3556 01.68014375000002
```

GFOC6-injection

```
1 99996 50999B 15254.24732986 +.00000000 +00000-9 +73175-3 2 00002
2 99996 057.3754 329.6342 0003922 031.1599 208.3556 01.68014375000002
```

FOC5

Access	Start Time (UTCG)	Stop Time (UTCG)
-----	-----	-----
1	11 Sep 2015 08:19:06	11 Sep 2015 19:41:46
2	12 Sep 2015 17:50:44	13 Sep 2015 01:18:09
3	13 Sep 2015 03:41:08	13 Sep 2015 09:11:33
4	14 Sep 2015 07:37:55	14 Sep 2015 18:53:20
5	15 Sep 2015 16:57:28	16 Sep 2015 00:44:45
6	16 Sep 2015 03:30:57	16 Sep 2015 05:25:00*

* Note that spacecraft stays in view of Hawaii during TLE update V1 below, therefore visibility continues into pass #7.

FOC6

1	11 Sep 2015 08:19:06	11 Sep 2015 19:41:46
2	12 Sep 2015 17:50:44	13 Sep 2015 01:18:09
3	13 Sep 2015 03:41:08	13 Sep 2015 09:11:33
4	14 Sep 2015 07:37:55	14 Sep 2015 17:12:00*

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

FOC5 Maneuvers and possible support times pass # 7 - 17

GFOC5-V1

1 99995 50999A 15259.22512407 +.00000000 +00000-9 +73175-3 2 00008
2 99995 057.3684 329.4993 0005608 263.4153 103.2199 01.67804257000003

Access	Start Time (UTCG)	Stop Time (UTCG)
7	16 Sep 2015 05:25:00	16 Sep 2015 08:39:54
8	17 Sep 2015 07:10:45	17 Sep 2015 18:22:39

GFOC5-V2

1 99995 50999A 15260.79539571 +.00000000 +00000-9 +73175-3 2 00003
2 99995 057.3674 329.4494 0006433 266.0367 328.9993 01.67727798000003

Access	Start Time (UTCG)	Stop Time (UTCG)
9	18 Sep 2015 16:28:49	18 Sep 2015 17:44:00*

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

GFOC5-V3

1 99995 50999A 15261.73889206 +.00000000 +00000-9 +73175-3 2 00001
2 99995 057.3727 329.4384 0005624 258.1781 186.5840 01.67703123000008

Access	Start Time (UTCG)	Stop Time (UTCG)
10	18 Sep 2015 17:44:00	19 Sep 2015 00:25:15
11	19 Sep 2015 03:19:59	19 Sep 2015 08:04:30
12	20 Sep 2015 06:40:12	20 Sep 2015 17:43:59
13	21 Sep 2015 15:44:10	21 Sep 2015 23:57:52
14	22 Sep 2015 03:11:16	22 Sep 2015 07:30:10
15	23 Sep 2015 06:10:11	23 Sep 2015 17:02:09
16	24 Sep 2015 14:53:38	24 Sep 2015 23:29:55
17	25 Sep 2015 03:03:47	25 Sep 2015 06:55:15

FOC6 Maneuvers and possible support times pass # 5 - 18

GFOC6-V1

1 99996 50999B 15257.71675530 +.00000000 +00000-9 +69797-3 2 00003
2 99996 057.4041 329.5345 0040643 356.9493 181.0867 01.68962492000000

Access	Start Time (UTCG)	Stop Time (UTCG)
5	14 Sep 2015 17:12:00	14 Sep 2015 18:53:36
6	15 Sep 2015 16:40:20	16 Sep 2015 00:34:41
7	16 Sep 2015 03:33:38	16 Sep 2015 08:04:38
8	17 Sep 2015 06:33:29	17 Sep 2015 09:53:00*

*Note that spacecraft stays in view of Hawaii during TLE update V2 below, therefore visibility continues into pass #9.

GFOC6-V2

1 99996 50999B 15260.41213912 +.00000000 +00000-9 +69797-3 2 00006
2 99996 057.3995 329.4623 0012011 287.0529 090.7477 01.69970827000002

Access	Start Time (UTCG)	Stop Time (UTCG)
9	17 Sep 2015 09:53:00	17 Sep 2015 17:03:36

GFOC6-V3

1 99996 50999B 15261.39409459 +.00000000 +00000-9 +69797-3 2 00007
2 99996 057.4040 329.4314 0011336 295.2992 323.3172 01.69987289000002

Access	Start Time (UTCG)	Stop Time (UTCG)
10	18 Sep 2015 13:46:34	18 Sep 2015 23:14:49
11	19 Sep 2015 03:49:15	19 Sep 2015 06:08:58
12	19 Sep 2015 21:40:44	20 Sep 2015 01:24:54
13	20 Sep 2015 04:58:09	20 Sep 2015 13:10:58
14	21 Sep 2015 10:36:27	21 Sep 2015 21:35:32
15	22 Sep 2015 19:40:06	23 Sep 2015 01:23:37
16	23 Sep 2015 03:36:02	23 Sep 2015 10:41:00
17	24 Sep 2015 08:31:59	24 Sep 2015 19:48:11
18	25 Sep 2015 17:39:22	25 Sep 2015 23:27:00

Flux Density impinging on the ground in Hawaii from Galileo FOC5 and FOC6

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

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