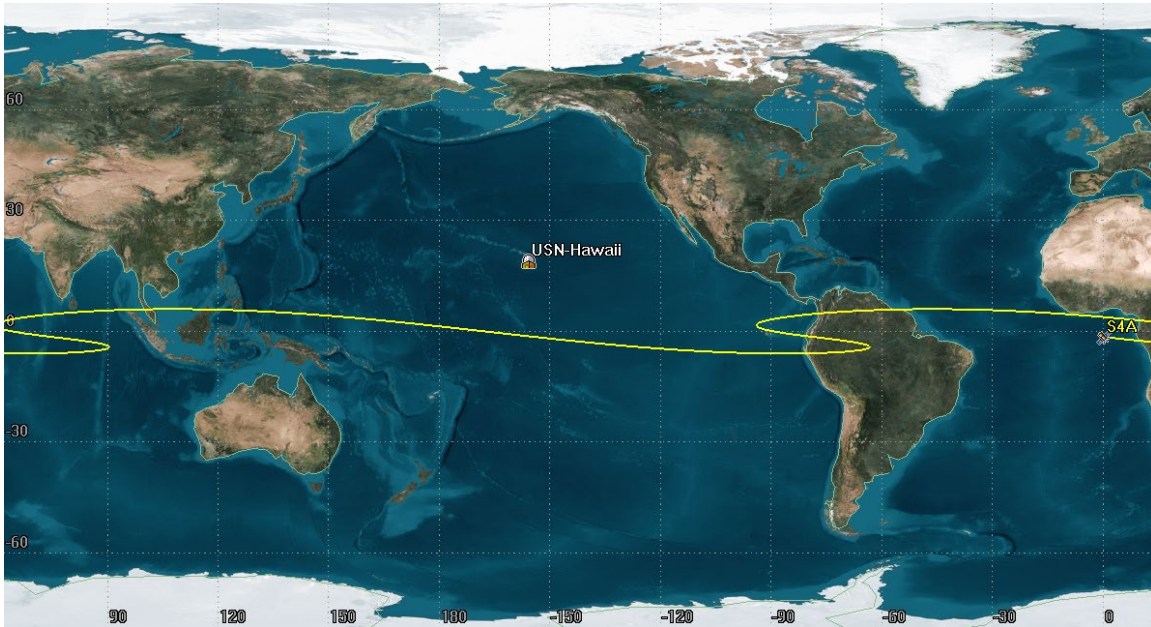


LEOP support of Syracuse4A a French Communication satellite from USN's Hawaii ground station

By this application, SSC Space US, Inc. dba Universal Space Network (collectively, "USN"),¹ a Delaware Corporation, seeks FCC approval to support the Launch and Early Orbit (LEOP) support of the Syracuse4A spacecraft on its way to geosynchronous parking position at 46 degrees east. The spacecraft will be launched from French Guiana on an Ariane vehicle no earlier than October 15th, 2021 at 00:15:00 UTC. USN has been contracted to support the Syracuse4A spacecraft LEOP for a period of up to 30 days.

The spacecraft will be injected into a highly elliptical orbit at inclination of about 6 degrees. The spacecraft will begin electrical propulsion after initial orbit checkout to raise the orbit. Additional authorization may be requested to support electrical propulsion beyond 30 days. Each spacecraft contact can range from a few minutes at perigee to as much as 9 hours at apogee. All potential visibilities from Hawaii are shown below but not all pass time or passes will be supported.



Syracuse4A initial highly elliptical orbit

	Downlink	Uplink
Syracuse 4A Primary TT&C	2230.000 MHz	2053.460 MHz
Syracuse 4A Secondary TT&C	2231.200 MHz	2054.560 MHz

¹ USN also is engaging counsel to update the entity's FRN information to reflect its corporate name, SSC Space US, Inc., rather than its former and d/b/a name. However, given the pressing nature of this request, this request is being submitted under the entity's current registration.

Spacecraft injection

SYR4a

1 12345A 21000U 21288.04166667 .00000000 00000-0 29650-2 0 09

2 12345 5.9585 204.4377 7227496 164.8522 3.5069 2.34500573 03

Access	Start Time (UTCG)	Stop Time (UTCG)
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1	15 Oct 2021 11:14:48	15 Oct 2021 11:18:13
2	15 Oct 2021 16:33:16	15 Oct 2021 20:14:39
3	15 Oct 2021 22:38:31	16 Oct 2021 02:10:16
4	16 Oct 2021 07:19:15	16 Oct 2021 07:31:59
5	16 Oct 2021 18:15:22	17 Oct 2021 03:53:02
6	17 Oct 2021 14:30:00	18 Oct 2021 00:07:47
7	18 Oct 2021 16:44:32	18 Oct 2021 19:42:13
8	18 Oct 2021 22:06:48	19 Oct 2021 02:24:23
9	19 Oct 2021 06:52:13	19 Oct 2021 07:09:15
10	19 Oct 2021 17:51:25	20 Oct 2021 03:29:44
11	20 Oct 2021 14:06:35	20 Oct 2021 23:43:14
12	21 Oct 2021 17:02:43	21 Oct 2021 19:01:51
13	21 Oct 2021 21:35:56	22 Oct 2021 02:39:03
14	22 Oct 2021 06:22:17	22 Oct 2021 06:45:25
15	22 Oct 2021 17:26:27	23 Oct 2021 03:05:11
16	23 Oct 2021 13:42:04	23 Oct 2021 23:17:17
17	24 Oct 2021 21:05:13	25 Oct 2021 02:56:23
18	25 Oct 2021 05:47:51	25 Oct 2021 06:20:24
19	25 Oct 2021 17:00:25	26 Oct 2021 02:39:28
20	26 Oct 2021 13:16:26	26 Oct 2021 22:49:54
21	27 Oct 2021 20:34:19	28 Oct 2021 03:22:02
22	28 Oct 2021 05:03:41	28 Oct 2021 05:54:15
23	28 Oct 2021 16:33:19	29 Oct 2021 02:12:36
24	29 Oct 2021 12:49:46	29 Oct 2021 22:21:04
25	30 Oct 2021 20:03:07	31 Oct 2021 05:27:01
26	31 Oct 2021 16:05:17	1 Nov 2021 01:44:37
27	1 Nov 2021 12:22:10	1 Nov 2021 21:50:43
28	2 Nov 2021 19:31:32	3 Nov 2021 04:58:45
29	3 Nov 2021 15:36:18	4 Nov 2021 01:15:31
30	4 Nov 2021 11:53:35	4 Nov 2021 12:39:51
31	4 Nov 2021 14:01:19	4 Nov 2021 21:18:33
32	5 Nov 2021 18:59:25	6 Nov 2021 04:29:22
33	6 Nov 2021 15:06:17	7 Nov 2021 00:45:07
34	7 Nov 2021 11:23:57	7 Nov 2021 11:48:54
35	7 Nov 2021 14:29:28	7 Nov 2021 20:44:08
36	8 Nov 2021 18:26:34	9 Nov 2021 03:58:45
37	9 Nov 2021 14:35:11	10 Nov 2021 00:13:23
38	10 Nov 2021 10:53:26	10 Nov 2021 11:07:11
39	10 Nov 2021 14:48:38	10 Nov 2021 20:07:02
40	10 Nov 2021 22:56:15	11 Nov 2021 00:15:03
41	11 Nov 2021 07:03:37	11 Nov 2021 07:06:35
42	11 Nov 2021 17:52:58	12 Nov 2021 03:27:01
43	12 Nov 2021 14:03:07	12 Nov 2021 23:40:26
44	13 Nov 2021 10:22:56	13 Nov 2021 10:27:08
45	13 Nov 2021 15:06:55	13 Nov 2021 19:26:21
46	13 Nov 2021 21:50:10	14 Nov 2021 00:58:14

Flux Density impinging on the ground in Hawaii from Syracuse4A

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 Syracuse4A spacecraft is -2.10 dBW. Being a highly elliptical orbit, the perigee is the closest point to earth is = 400 Km.

Converting -2.10 dBW to scalar watts = 0.616 watts transmitted at 2230.0 MHz

Therefore:

$$\text{Flux density} = 0.616 \div (4 \pi * 400,000 \text{ meters}^2)$$

Flux density = 3.066 x 10⁻¹³ Watts/meter²

Or

Flux density = 3.066 x 10⁻¹⁴ mW/cm²

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 (USN) is provided limited legal and technical information for the Syracuse4A, a French Communications satellite to be parked at 46 degrees east.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 Syracuse4A spacecraft from launch to geosynchronous parking 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 Syracuse4A. 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 Syracuse4A 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 Syracuse4A 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 geosynchronous parking 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 30 days of LEOP support of the Syracuse4A satellites.

It is USN’s understanding that Syracuse4A is licensed by France. Syracuse4A is a geosynchronous communications satellite. The spacecraft is exclusively meant to serve France. 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 Syracuse4A satellite using its U.S. earth station for a period of 30 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 30 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 Syracuse4A 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