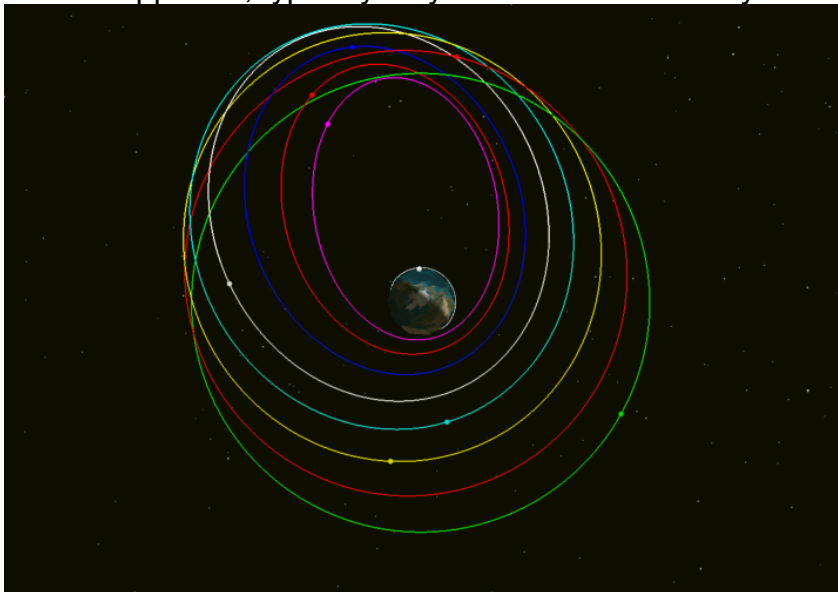


Orbit raising support of Syracuse4A a French communication satellite from USN's Hawaii ground station

By this application, SSC Space US, Inc. dba Universal Space Network (collectively, "USN"),¹ a Delaware corporation, seeks an extension of existing FCC authorization to support the electrical propulsion orbit raising support of the Syracuse4A spacecraft on its way to geosynchronous parking position at 46 degrees east. The spacecraft was launched on October 23, 2021 from French Guiana on an Ariane vehicle. The Commission previously authorized LEOP support on October 19, 2021 for a 30-day period for this French communications satellite. See FCC File No. SES-STA-20210809-01355. This request for a further extension is for up to 180 days – or until May 7, 2022 – which is currently expected to be sufficient for completion of the requested support. The proposed service will provide important support to the orbit raising and parking of the satellite and thus enhance public safety by allowing for more contact with spacecraft to assure trajectory and is otherwise consistent with the public interest.

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 (shown below). Each spacecraft potential visibility can range from a few hours to as much as 42 hours towards the end of orbit raising. All potential visibilities from Hawaii are shown below but not all pass time or passes will be supported, typically only a few hours each day.



Syracuse4A Orbit raising method

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.

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

Spacecraft Orbit Raising

SYR4A

1 22U 21888Z 21305.0000000 +.0000000 +00000-9 +15226-9 2 00001

2 22U 005.9238 261.8303 7186638 173.3780 024.6603 02.26230500000005

Access	Start Time (UTCG)	Stop Time (UTCG)
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1	20 Nov 2021 00:30:18.386	20 Nov 2021 05:10:42.988
2	20 Nov 2021 09:41:10.860	20 Nov 2021 09:59:23.594
3	20 Nov 2021 21:07:37.710	21 Nov 2021 07:06:35.632
4	21 Nov 2021 18:08:02.114	22 Nov 2021 04:10:59.807
5	22 Nov 2021 15:13:51.064	23 Nov 2021 01:06:56.103
6	23 Nov 2021 23:50:28.714	24 Nov 2021 05:27:14.714
7	24 Nov 2021 09:01:30.876	24 Nov 2021 09:27:28.664
8	24 Nov 2021 20:34:09.240	25 Nov 2021 06:34:25.366
9	25 Nov 2021 17:35:40.152	26 Nov 2021 03:38:11.506
10	26 Nov 2021 14:41:53.921	26 Nov 2021 15:25:32.827
11	26 Nov 2021 17:01:57.906	27 Nov 2021 00:31:46.898
12	27 Nov 2021 23:12:35.593	28 Nov 2021 05:46:59.505
13	28 Nov 2021 08:16:36.694	28 Nov 2021 08:55:26.141
14	28 Nov 2021 20:00:49.131	29 Nov 2021 06:02:05.899
15	29 Nov 2021 17:03:16.723	30 Nov 2021 03:05:09.947
16	30 Nov 2021 14:09:57.811	30 Nov 2021 14:35:32.017
17	30 Nov 2021 17:22:46.493	30 Nov 2021 23:55:52.863

SYR4B

1 22U 21888Z 21335.0000000 +.0000000 +00000-9 +15226-9 2 00004
 2 22U 005.5663 258.0897 6582530 185.6916 031.8070 01.92645053000009

Access	Start Time (UTCG)	Stop Time (UTCG)
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1	1 Dec 2021 00:48:10.980	1 Dec 2021 03:15:23.399
2	1 Dec 2021 11:02:42.394	1 Dec 2021 11:38:57.690
3	1 Dec 2021 18:45:51.151	1 Dec 2021 22:20:34.306
4	2 Dec 2021 12:06:53.621	2 Dec 2021 12:47:28.850
5	2 Dec 2021 17:40:39.176	2 Dec 2021 23:44:38.226
6	3 Dec 2021 13:08:34.792	3 Dec 2021 14:15:25.782
7	3 Dec 2021 16:28:46.516	4 Dec 2021 00:55:06.003
8	4 Dec 2021 14:09:04.046	5 Dec 2021 02:00:23.528
9	5 Dec 2021 15:09:02.704	6 Dec 2021 03:03:02.233
10	6 Dec 2021 16:08:57.241	7 Dec 2021 04:04:09.183
11	7 Dec 2021 17:09:09.049	8 Dec 2021 05:04:20.818
12	8 Dec 2021 18:10:00.996	9 Dec 2021 06:04:00.605
13	9 Dec 2021 19:12:04.322	10 Dec 2021 07:03:26.905
14	10 Dec 2021 20:16:10.797	11 Dec 2021 08:02:58.061
15	11 Dec 2021 21:24:03.373	12 Dec 2021 05:02:54.145
16	12 Dec 2021 07:59:02.172	12 Dec 2021 09:02:58.174
17	12 Dec 2021 22:40:09.409	13 Dec 2021 03:48:13.710
18	13 Dec 2021 09:23:19.050	13 Dec 2021 10:04:07.745
19	14 Dec 2021 00:29:23.756	14 Dec 2021 02:16:43.963
20	14 Dec 2021 10:31:58.751	14 Dec 2021 11:07:50.119
21	14 Dec 2021 17:52:38.192	14 Dec 2021 21:54:18.328
22	15 Dec 2021 11:35:38.867	15 Dec 2021 12:17:47.878
23	15 Dec 2021 16:49:16.791	15 Dec 2021 23:14:56.975
24	16 Dec 2021 12:37:04.079	16 Dec 2021 13:55:32.613
25	16 Dec 2021 15:28:25.645	17 Dec 2021 00:24:19.882
26	17 Dec 2021 13:37:24.961	18 Dec 2021 01:29:06.750
27	18 Dec 2021 14:37:20.036	19 Dec 2021 02:31:28.683
28	19 Dec 2021 15:37:14.667	20 Dec 2021 03:32:26.005
29	20 Dec 2021 16:37:30.041	21 Dec 2021 04:32:32.312
30	21 Dec 2021 17:38:29.542	22 Dec 2021 05:32:09.714
31	22 Dec 2021 18:40:46.068	23 Dec 2021 06:31:36.005
32	23 Dec 2021 19:45:15.607	24 Dec 2021 07:31:09.766
33	24 Dec 2021 20:53:53.025	25 Dec 2021 04:10:39.690
34	25 Dec 2021 07:33:24.099	25 Dec 2021 08:31:16.676
35	25 Dec 2021 22:11:53.710	26 Dec 2021 02:58:16.218
36	26 Dec 2021 08:53:36.396	26 Dec 2021 09:32:41.727
37	27 Dec 2021 00:24:34.775	27 Dec 2021 01:04:24.014
38	27 Dec 2021 10:01:11.139	27 Dec 2021 10:37:00.861
39	27 Dec 2021 17:00:25.024	27 Dec 2021 21:26:59.944
40	28 Dec 2021 11:04:21.914	28 Dec 2021 11:48:46.700
41	28 Dec 2021 15:57:40.409	28 Dec 2021 22:44:58.688
42	29 Dec 2021 12:05:31.534	29 Dec 2021 23:53:25.352
43	30 Dec 2021 13:05:44.157	31 Dec 2021 00:57:44.527
44	31 Dec 2021 14:05:35.701	1 Jan 2022 01:59:50.799

SYR4C

1 22U 21888Z 22001.00000000 +.00000000 +00000-9 +15226-9 2 00005
2 22U 004.3049 253.2544 5891085 194.7166 211.1356 01.59234826000000

Access	Start Time (UTCG)	Stop Time (UTCG)
1	1 Jan 2022 01:59:51.000	1 Jan 2022 06:15:52.122
2	2 Jan 2022 12:17:47.600	3 Jan 2022 03:05:58.576
3	3 Jan 2022 19:38:58.052	4 Jan 2022 02:56:48.776
4	4 Jan 2022 08:52:02.261	4 Jan 2022 10:28:43.724
5	4 Jan 2022 15:11:48.415	4 Jan 2022 23:47:19.577
6	5 Jan 2022 16:12:46.322	6 Jan 2022 06:58:52.858
7	7 Jan 2022 13:00:48.625	8 Jan 2022 03:48:19.557
8	8 Jan 2022 20:39:22.193	9 Jan 2022 01:41:40.544
9	9 Jan 2022 09:43:32.833	9 Jan 2022 11:51:36.387
10	9 Jan 2022 13:37:51.020	10 Jan 2022 00:34:31.119
11	10 Jan 2022 16:57:17.311	11 Jan 2022 07:43:08.846
12	11 Jan 2022 16:36:24.668	11 Jan 2022 20:46:43.968
13	12 Jan 2022 13:43:23.111	13 Jan 2022 04:30:24.359
14	13 Jan 2022 22:17:27.290	13 Jan 2022 23:54:10.668
15	14 Jan 2022 10:30:18.704	15 Jan 2022 01:19:23.416
16	15 Jan 2022 17:44:13.053	16 Jan 2022 03:20:41.526
17	16 Jan 2022 06:41:38.119	16 Jan 2022 08:30:37.419
18	16 Jan 2022 15:22:34.206	16 Jan 2022 21:51:13.265
19	17 Jan 2022 14:26:15.296	18 Jan 2022 05:12:47.415
20	19 Jan 2022 11:14:40.566	20 Jan 2022 02:02:44.306
21	20 Jan 2022 18:35:18.554	21 Jan 2022 01:59:41.627
22	21 Jan 2022 07:48:10.051	21 Jan 2022 09:25:00.817
23	21 Jan 2022 14:13:00.422	21 Jan 2022 22:43:36.445
24	22 Jan 2022 15:09:32.584	23 Jan 2022 05:55:36.653
25	24 Jan 2022 11:57:36.340	25 Jan 2022 02:45:02.153
26	25 Jan 2022 19:34:51.469	26 Jan 2022 00:44:43.729
27	26 Jan 2022 08:40:06.027	26 Jan 2022 10:45:08.417
28	26 Jan 2022 12:41:28.567	26 Jan 2022 23:31:02.337
29	27 Jan 2022 15:53:57.862	28 Jan 2022 06:39:50.075
30	28 Jan 2022 15:38:42.622	28 Jan 2022 19:41:38.227
31	29 Jan 2022 12:40:15.231	30 Jan 2022 03:27:12.371
32	30 Jan 2022 21:07:45.928	30 Jan 2022 23:02:26.049
33	31 Jan 2022 09:26:59.945	1 Feb 2022 00:15:57.703

SYR4D

1 22U 21888Z 22032.00000000 +.00000000 +00000-9 +15226-9 2 00009
2 22U 003.0992 249.0141 5120253 200.7908 078.2636 01.30680011000006

Access	Start Time (UTCG)	Stop Time (UTCG)
1	1 Feb 2022 15:09:43.487	2 Feb 2022 01:56:20.719
2	2 Feb 2022 07:40:30.326	3 Feb 2022 03:02:28.750
3	3 Feb 2022 17:05:34.228	3 Feb 2022 18:17:39.631
4	4 Feb 2022 17:19:51.866	5 Feb 2022 00:04:29.874
5	5 Feb 2022 09:51:03.472	6 Feb 2022 04:57:55.711
6	6 Feb 2022 14:22:16.025	6 Feb 2022 21:36:46.495
7	8 Feb 2022 11:47:39.631	9 Feb 2022 07:07:39.685
8	9 Feb 2022 12:36:39.675	9 Feb 2022 23:42:41.427
9	11 Feb 2022 13:43:09.752	12 Feb 2022 02:06:34.229
10	12 Feb 2022 05:55:47.344	13 Feb 2022 01:38:02.610
11	14 Feb 2022 15:46:20.262	15 Feb 2022 00:04:55.299
12	15 Feb 2022 08:23:14.680	16 Feb 2022 03:32:12.985
13	16 Feb 2022 14:23:17.430	16 Feb 2022 19:59:44.415
14	17 Feb 2022 18:26:52.693	17 Feb 2022 21:54:50.129
15	18 Feb 2022 10:22:43.834	19 Feb 2022 05:34:00.200
16	19 Feb 2022 12:35:54.959	19 Feb 2022 22:15:27.543
17	21 Feb 2022 12:17:33.123	22 Feb 2022 08:33:00.350
18	22 Feb 2022 10:07:59.047	23 Feb 2022 00:13:08.192
19	24 Feb 2022 14:16:20.227	25 Feb 2022 00:04:19.306
20	25 Feb 2022 06:51:56.101	26 Feb 2022 02:06:57.097
21	26 Feb 2022 14:36:03.925	26 Feb 2022 18:09:08.482
22	27 Feb 2022 16:34:14.182	27 Feb 2022 22:11:06.675
23	28 Feb 2022 08:56:56.663	1 Mar 2022 04:04:26.863

SYR4E

1 22U 21888Z 22060.00000000 +.00000000 +00000-9 +15226-9 2 00000
2 22U 002.1881 245.7739 4138931 204.8076 270.9178 01.17386413000007

Access	Start Time (UTCG)	Stop Time (UTCG)
1	1 Mar 2022 04:04:27.000	2 Mar 2022 01:36:33.789
2	2 Mar 2022 13:29:50.787	2 Mar 2022 20:07:15.673
3	5 Mar 2022 11:55:27.638	6 Mar 2022 00:08:10.152
4	6 Mar 2022 06:24:28.415	7 Mar 2022 06:47:05.640
5	7 Mar 2022 09:05:02.896	8 Mar 2022 00:29:19.801
6	8 Mar 2022 13:50:02.438	8 Mar 2022 18:43:01.658
7	10 Mar 2022 17:34:14.805	10 Mar 2022 19:15:33.020
8	11 Mar 2022 10:47:46.719	12 Mar 2022 00:30:41.750
9	12 Mar 2022 05:00:02.988	13 Mar 2022 05:02:51.078
10	13 Mar 2022 09:46:14.217	13 Mar 2022 23:22:39.811
11	14 Mar 2022 14:34:47.125	14 Mar 2022 16:54:16.052
12	16 Mar 2022 15:34:00.772	16 Mar 2022 20:12:16.763
13	17 Mar 2022 09:40:24.396	18 Mar 2022 01:25:41.397
14	18 Mar 2022 03:02:05.288	19 Mar 2022 03:40:54.954
15	19 Mar 2022 10:05:05.959	19 Mar 2022 22:15:09.137
16	22 Mar 2022 14:06:50.517	22 Mar 2022 20:35:51.540
17	23 Mar 2022 08:32:37.008	25 Mar 2022 02:26:01.607
18	25 Mar 2022 10:18:02.993	25 Mar 2022 21:07:06.917
19	28 Mar 2022 12:49:29.997	28 Mar 2022 20:51:31.835
20	29 Mar 2022 07:24:26.126	31 Mar 2022 01:15:06.831
21	31 Mar 2022 10:28:30.396	31 Mar 2022 19:57:16.949

SYR4F

1 22U 21888Z 22091.00000000 +.00000000 +00000-9 +15226-9 2 00004
2 22U 001.3723 240.7195 2880967 209.3062 300.5172 01.09488511000007

Access	Start Time (UTCG)	Stop Time (UTCG)
1	1 Apr 2022 08:22:00.000	2 Apr 2022 23:59:11.007
2	3 Apr 2022 10:25:53.865	3 Apr 2022 19:57:26.812
3	9 Apr 2022 09:50:46.430	9 Apr 2022 21:08:56.555
4	10 Apr 2022 05:44:40.231	13 Apr 2022 04:21:23.593
5	13 Apr 2022 05:37:26.414	13 Apr 2022 22:47:21.055
6	14 Apr 2022 10:08:51.309	14 Apr 2022 18:43:04.403
7	19 Apr 2022 13:45:44.439	19 Apr 2022 16:43:22.251
8	20 Apr 2022 08:38:15.546	20 Apr 2022 20:53:07.580
9	21 Apr 2022 04:28:39.118	24 Apr 2022 02:19:10.625
10	24 Apr 2022 06:06:11.741	24 Apr 2022 21:35:42.145
11	25 Apr 2022 09:53:02.089	25 Apr 2022 17:26:49.923
12	30 Apr 2022 12:04:35.998	30 Apr 2022 16:51:03.888
13	1 May 2022 07:26:18.698	1 May 2022 20:39:26.352

SYR4G

1 22U 21888Z 22121.00000000 +.00000000 +00000-9 +15226-9 2 00008
2 22U 000.7131 240.0067 1474514 209.5893 338.9513 01.04350481000007

Access	Start Time (UTCG)	Stop Time (UTCG)
1	1 May 2022 20:39:27.000	4 May 2022 23:18:25.478
2	5 May 2022 06:34:46.129	5 May 2022 19:52:57.988
3	6 May 2022 09:59:25.005	6 May 2022 16:18:16.952

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

Therefor:

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

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

SSC Space US, Inc. d/b/a 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 electrical orbit raising post-LEOP Telemetry, Tracking, and Control ("TT&C") 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 orbit raising 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 orbit raising support for Syracuse4A. Thus, any information sought by Section 25.114 that is not relevant to the orbit raising – 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 orbit raising 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 orbit raising of the Syracuse4A satellites with potentially affected terrestrial operators. Moreover, as with any STA, USN will conduct the orbit raising 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 orbit raising 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 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 180 days of orbit raising support of the Syracuse4A satellites.

Finally, USN notes that it expects to communicate with the Syracuse4A satellite using its U.S. earth station for a period of 180 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 180 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 orbit raising 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