

**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 (GSAT207, GSAT212, GSAT213, and GSAT214), twelfth thru fifteenth spacecraft of the “Full Operational Capability” series) Satellites.<sup>1</sup> 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...”<sup>2</sup> USN seeks authority to support the needed Telemetry, Tracking, and Control (“TT&C”) during launch and early orbit support (“LEOP”) of the GALILEO (GSAT207, GSAT212, GSAT213, and GSAT214) 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.<sup>3</sup> The Commission may grant a waiver for good cause shown.<sup>4</sup> 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 (GSAT207, GSAT212, GSAT213, and GSAT214). 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 (GSAT207, GSAT212, GSAT213, and GSAT214) 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 (GSAT207, GSAT212, GSAT213, and GSAT214) 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.

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<sup>1</sup> FCC Form 312 Section B

<sup>2</sup> 47 C.F.R. § 25.137(a)

<sup>3</sup> 47 C.F.R. §§25.137 and 25.114

<sup>4</sup> 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.<sup>5</sup> 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 (GSAT207, GSAT212, GSAT213, and GSAT214) satellites.

It is USN’s understanding that GALILEO (GSAT207, GSAT212, GSAT213, and GSAT214) is licensed by ESA (European Space Agency). GALILEO (GSAT207, GSAT212, GSAT213, and GSAT214) are the twelfth thru fifteenth 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 (GSAT207, GSAT212, GSAT213, and GSAT214) 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.

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<sup>5</sup> 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).<sup>6</sup> 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 (GSAT207, GSAT212, GSAT213, and GSAT214) 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."<sup>7</sup> 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.

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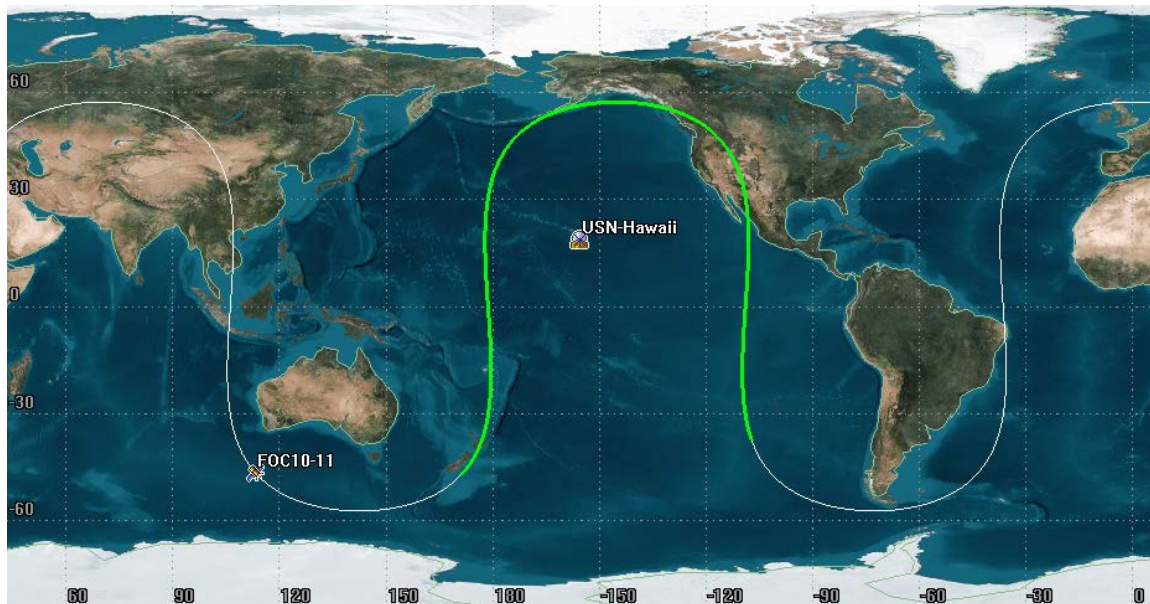
<sup>6</sup> 47 C.F.R. §2.106

<sup>7</sup> 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 Launch Flight #8 (GSAT207, GSAT212, GSAT213, and GSAT214 vehicles) from USN's Hawaii ground station

Galileo Flight #8 will place the 12<sup>th</sup>, 13<sup>th</sup>, 14<sup>th</sup>, and 15<sup>th</sup> spacecraft of the “Full Operational Capability” in their operational orbit of the Galileo navigation constellation for the EU. The launch consists of 4 spacecraft that will be launched from French Guiana on a Ariane 5 ES vehicle on November 17<sup>th</sup> 2016 at 13:06:48 UTC. USN has been contracted to support the Galileo spacecraft LEOP(s) for a period of up to 14 days and then a subsequent period of 30 days early in 2017 for orbit raising subject to a future analysis.

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.



GSAT207, GSAT212, GSAT213, and GSAT214 nominal orbit and Hawaii coverage

The spacecraft's will be supported from injection and three initial orbital maneuvers for spacing. A subsequent orbital plane change campaign will take place in early 2017 to place satellites in their operational orbits. USN will apply for a separate authorization for the orbital plane campaign. The below analysis covers all possible visibilities from USN Hawaii, but not all visibilities will be supported.

## Spacecraft injection

All four spacecraft are still in same antenna beamwidth after injection for passes one thru four (1 – 4) and then begin to drift apart. For the first four passes the spacecraft's are supported by selecting different RF frequencies. Subsequent to the first four passes the spacecraft(s) are supported separately. Post maneuver TLE's and maximum visibilities are shown below for each event and each spacecraft.

	Downlink	Uplink
GSAT207	2215.818 MHz	2040.399 MHz
GSAT212	2234.232 MHz	2057.355 MHz
GSAT213	2228.094 MHz	2051.703 MHz
GSAT214	2221.956 MHz	2046.051 MHz

### GSAT207-injection

1 99990 50998A 16322.69620370 +.00000000 +00000-9 +73176-3 2 00005  
2 99990 054.5692 198.3038 0004407 222.4578 348.4632 01.73021111000003

### GSAT212-injection

1 99991 50998B 16322.71010417 +.00000000 +00000-9 +73176-3 2 00004  
2 99991 054.5696 198.2987 0002654 050.8234 168.7477 01.73204599000007

### GSAT213-injection

1 99992 50998C 16322.69620370 +.00000000 +00000-9 +73174-3 2 00005  
2 99992 054.5692 198.3038 0003720 016.7508 194.1702 01.73227232000005

### GSAT214-injection

1 99993 50998D 16322.71010417 +.00000000 +00000-9 +73173-3 2 00003  
2 99993 054.5696 198.2987 0003576 263.6476 315.9581 01.73070239000009

## GSAT207 Injection

Access	Start Time (UTCG)	Stop Time (UTCG)
1	17 Nov 2016 20:30:14	18 Nov 2016 07:29:35
2	19 Nov 2016 04:40:55	19 Nov 2016 12:12:02
3	19 Nov 2016 14:14:24	19 Nov 2016 19:21:49
4	20 Nov 2016 17:02:46	21 Nov 2016 02:40:06

## GSAT207 Maneuvers and possible support times pass # 5 - 16

### GSAT207-V1

1 99990 50998A 16326.34652778 +.00000000 +00000-9 +73536-3 2 00008  
2 99990 054.5958 198.1740 0054838 319.6903 005.0076 01.71584678000008

Access	Start Time (UTCG)	Stop Time (UTCG)
5	21 Nov 2016 22:46:55	22 Nov 2016 09:21:04

### GSAT207-V2

1 99990 50998A 16327.79027778 +.00000000 +00000-9 +73854-3 2 00007  
2 99990 054.5956 198.1331 0005950 353.7550 142.7821 01.70311803000004

Access	Start Time (UTCG)	Stop Time (UTCG)
6	23 Nov 2016 07:16:11	23 Nov 2016 12:51:08
7	23 Nov 2016 14:39:55	23 Nov 2016 22:19:20

### GSAT207-V3

1 99990 50998A 16329.07361111 +.00000000 +00000-9 +73885-3 2 00006  
2 99990 054.5953 198.0974 0002791 299.7552 263.6479 01.70186096000000

Access	Start Time (UTCG)	Stop Time (UTCG)
8	24 Nov 2016 20:00:40	25 Nov 2016 07:16:33
9	26 Nov 2016 05:04:17	26 Nov 2016 12:23:39
10	26 Nov 2016 13:37:42	26 Nov 2016 20:04:11
11	27 Nov 2016 18:01:02	28 Nov 2016 05:06:15
12	29 Nov 2016 02:30:11	29 Nov 2016 10:48:53
13	29 Nov 2016 13:47:15	29 Nov 2016 17:52:39
14	30 Nov 2016 09:46:49	30 Nov 2016 11:19:34
15	30 Nov 2016 16:10:18	1 Dec 2016 02:01:39
16	1 Dec 2016 22:36:38	1 Dec 2016 23:46:00

## GSAT212 Injection

Access	Start Time (UTCG)	Stop Time (UTCG)
1	17 Nov 2016 20:30:14	18 Nov 2016 07:28:21
2	19 Nov 2016 04:37:02	19 Nov 2016 12:09:10
3	19 Nov 2016 14:15:18	19 Nov 2016 19:16:44
4	20 Nov 2016 16:57:22	21 Nov 2016 02:23:56
5	21 Nov 2016 22:20:04	22 Nov 2016 08:54:10
6	23 Nov 2016 06:20:49	23 Nov 2016 12:52:30
7	23 Nov 2016 14:01:23	23 Nov 2016 20:54:56
8	24 Nov 2016 18:17:33	25 Nov 2016 05:02:39

## GSAT212 Maneuvers and possible support times pass # 9 - 17

### GSAT212-V1

1 99991 50998B 16330.32430556 +.00000000 +00000-9 +73309-3 2 00008  
2 99991 054.5703 198.0733 0019225 294.5282 352.9226 01.72663522000008

Access	Start Time (UTCG)	Stop Time (UTCG)
9	26 Nov 2016 01:31:32	26 Nov 2016 10:19:12
10	26 Nov 2016 14:26:28	26 Nov 2016 16:50:44

### GSAT212-V2

1 99991 50998B 16331.79652778 +.00000000 +00000-9 +73442-3 2 00000  
2 99991 054.5703 198.0310 0003074 180.2169 302.3666 01.72123551000009

Access	Start Time (UTCG)	Stop Time (UTCG)
11	27 Nov 2016 08:18:30	27 Nov 2016 12:16:47
12	27 Nov 2016 15:15:00	27 Nov 2016 22:56:00*

\* Note that spacecraft stays in view of Hawaii during TLE update V3 below, therefore visibility continues into pass #13.

### GSAT212-V3

1 99991 50998B 16332.95555556 +.00000000 +00000-9 +73453-3 2 00007  
2 99991 054.5703 197.9979 0004145 159.7131 321.0737 01.72081877000009

Access	Start Time (UTCG)	Stop Time (UTCG)
13	27 Nov 2016 22:56:00	27 Nov 2016 23:19:12
14	28 Nov 2016 20:24:42	29 Nov 2016 07:25:38
15	30 Nov 2016 04:55:29	30 Nov 2016 12:06:13
16	30 Nov 2016 13:22:13	30 Nov 2016 19:39:28
17	1 Dec 2016 17:18:46	1 Dec 2016 23:56:00

## GSAT213 Injection

Access	Start Time (UTCG)	Stop Time (UTCG)
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1	17 Nov 2016 20:30:10	18 Nov 2016 07:28:12
2	19 Nov 2016 04:36:22	19 Nov 2016 12:08:47
3	19 Nov 2016 14:15:29	19 Nov 2016 19:15:58
4	20 Nov 2016 16:56:41	21 Nov 2016 02:21:51
5	21 Nov 2016 22:18:26	22 Nov 2016 08:53:02
6	23 Nov 2016 06:19:06	23 Nov 2016 12:52:15
7	23 Nov 2016 14:00:46	23 Nov 2016 20:53:01
8	24 Nov 2016 18:15:47	25 Nov 2016 05:00:09

## GSAT213 Maneuvers and possible support times pass # 9 - 16

### GSAT213-V1

1 99992 50998C 16330.86111111 +.00000000 +00000-9 +73243-3 2 00008  
 2 99992 054.5696 198.0741 0009193 284.2631 338.5940 01.72954846000001

Access	Start Time (UTCG)	Stop Time (UTCG)
9	26 Nov 2016 01:19:03	26 Nov 2016 10:12:24
10	26 Nov 2016 14:32:41	26 Nov 2016 16:37:56

### GSAT213-V2

1 99992 50998C 16332.33055556 +.00000000 +00000-9 +73310-3 2 00007  
 2 99992 054.5696 198.0317 0001719 053.7790 044.0237 01.72678403000001

Access	Start Time (UTCG)	Stop Time (UTCG)
11	27 Nov 2016 08:02:11	27 Nov 2016 12:21:52
12	27 Nov 2016 15:02:02	27 Nov 2016 22:52:40

### GSAT213-V3

1 99992 50998C 16333.50902778 +.00000000 +00000-9 +73317-3 2 00001  
 2 99992 054.5697 197.9978 0002564 076.2143 034.1903 01.72649846000003

Access	Start Time (UTCG)	Stop Time (UTCG)
13	28 Nov 2016 19:58:23	29 Nov 2016 06:58:57
14	30 Nov 2016 04:17:23	30 Nov 2016 11:42:18
15	30 Nov 2016 13:25:52	30 Nov 2016 18:59:07
16	1 Dec 2016 16:39:48	1 Dec 2016 23:13:00



## GSAT214 Injection

Access	Start Time (UTCG)	Stop Time (UTCG)
1	17 Nov 2016 20:30:09	18 Nov 2016 07:29:15
2	19 Nov 2016 04:39:40	19 Nov 2016 12:11:14
3	19 Nov 2016 14:14:40	19 Nov 2016 19:20:18
4	20 Nov 2016 17:01:17	21 Nov 2016 02:35:49
5	21 Nov 2016 22:28:57	22 Nov 2016 00:07:00*

\* Note that spacecraft stays in view of Hawaii during TLE update V1 below, therefore visibility continues into pass #6.

## GSAT214 Maneuvers and possible support times pass # 6 - 17

### GSAT214-V1

1 99993 50998D 16327.00486111 +.00000000 +00000-9 +73423-3 2 00006  
2 99993 054.5676 198.1733 0038419 010.0633 005.4801 01.72051080000006

Access	Start Time (UTCG)	Stop Time (UTCG)
6	22 Nov 2016 00:07:00	22 Nov 2016 09:06:03
7	23 Nov 2016 06:44:44	23 Nov 2016 10:57:00*

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

### GSAT214-V2

1 99993 50998D 16328.45625000 +.00000000 +00000-9 +73663-3 2 00004  
2 99993 054.5672 198.1319 0002378 299.2869 255.2525 01.71084280000004

Access	Start Time (UTCG)	Stop Time (UTCG)
8	23 Nov 2016 10:57:00	23 Nov 2016 12:55:07
9	23 Nov 2016 14:16:18	23 Nov 2016 21:36:42

### GSAT214-V3

1 99993 50998D 16329.63541667 +.00000000 +00000-9 +73684-3 2 00004  
2 99993 054.5670 198.0987 0003708 238.6630 322.1578 01.71000816000008

Access	Start Time (UTCG)	Stop Time (UTCG)
10	24 Nov 2016 19:14:19	25 Nov 2016 06:25:00
11	26 Nov 2016 03:54:20	26 Nov 2016 11:39:21
12	26 Nov 2016 13:46:14	26 Nov 2016 18:54:23
13	27 Nov 2016 16:53:47	28 Nov 2016 03:14:48
14	28 Nov 2016 23:32:35	29 Nov 2016 09:31:06
15	30 Nov 2016 07:35:36	30 Nov 2016 12:13:02
16	30 Nov 2016 14:43:34	30 Nov 2016 22:40:45
17	1 Dec 2016 20:04:15	1 Dec 2016 23:15:00

## Flux Density impinging on the ground in Hawaii from Galileo GSAT207, GSAT212, GSAT213, and GSAT214

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 GSAT 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

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