

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 EDRS-C, one spacecraft member of the European Data Relay to Earth.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 LEOP orbit raising of the EDRS-C spacecraft from initial earth orbit to geo 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 EDRS-C. 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 EDRS-C satellite, nor is USN in contractual privity with that operator. Rather, USN has contracted with Swedish Space Corporation, Solona Sweden (SSC) to support the LEOP 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 LEOP of the EDRS-C satellites with potentially affected terrestrial operators. Moreover, as with any STA, USN will conduct the LEOP 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 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 3 days of LEOP support of the EDRS-C satellite.

It is USN’s understanding that EDRS-C is licensed by ESA (European Space Agency). EDRS-C. 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 EDRS-C satellite using its U.S. earth station for a period of 3 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 3 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.

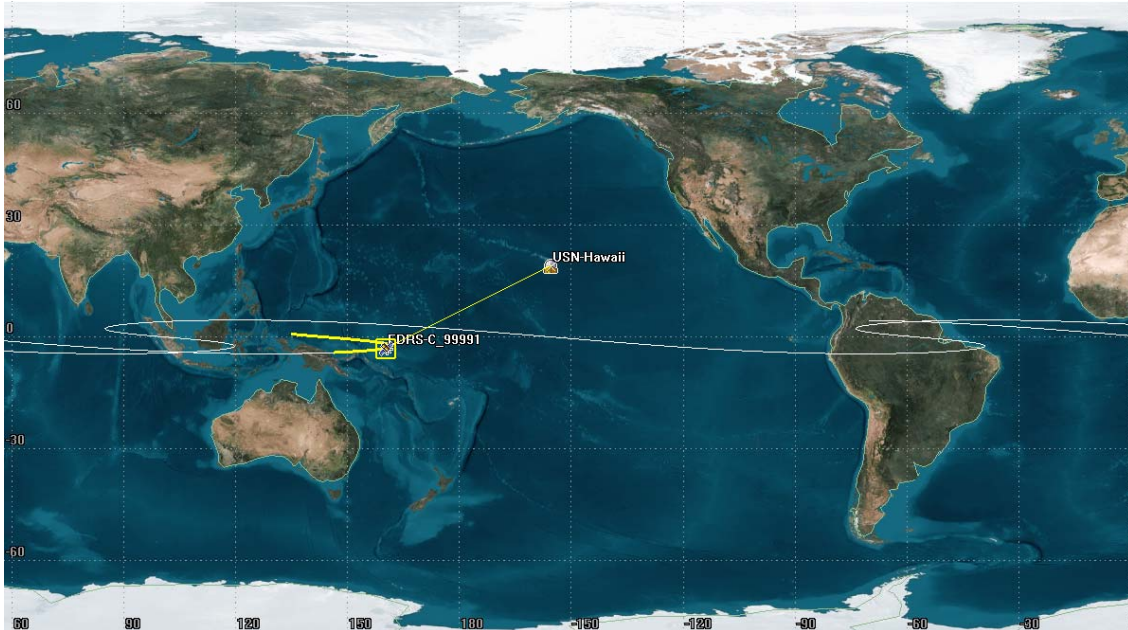
Good cause exists to grant USN a limited waiver of the U.S. Table to allow LEOP of the EDRS-C satellite. In considering request for case-by-case spectrum uses, the Commission has indicated that it would generally grant such waivers "where there is little potential for interference into any service authorized 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

Orbit Raising support of the European Data Relay Satellite (EDRS-C) from USN's Hawaii ground station

EDRS-C will place its satellite in Geo-Synchronous orbit for European space data relay to earth. The launch is expected to occurred on July 24th , 2019 from French Guiana on an Ariane 5 ES vehicle. USN has been contracted to support the EDRS spacecraft orbital maneuvering to parking orbit for a period of 3 days and a total of 3 passes.



EDRS coverage in geo-transfer orbit and Hawaii coverage

The below analysis covers all possible visibilities from USN Hawaii, but not all visibilities will be supported. The RF frequencies are shown in table below.

| | Downlink | Uplink |
|--------|--------------|--------------|
| EDRS-C | 2285.000 MHz | 2104.104 MHz |

EDRS-C-Injection orbit

```
1 99991U 19991Z 19205.83582870 +.00000000 00000-0 +00000+0 0 00006
2 99991 4.4663 63.4457 7294013 177.9601 8.1598 2.26950273000005
```

EDRS-C Initial Orbit pass

| Access | Start Time (UTCG) | Stop Time (UTCG) |
|------------|-------------------------------|--------------------------------|
| ----- 1 | ----- 25 Jul 2019 17:42:46 | ----- 25 Jul 2019 22:42:00* |

*Note that the spacecraft stays in view of Hawaii during the AMF-1 maneuver, and the pass continues into #2

EDRS-C post AMF-1 maneuver and possible support times pass # 2

EDRS-C-Post AMF1

1 99991U 19991ZZZ 19206.94561343 +.00000000 00000-0 +00000+0 0 0001
2 99991 2.9782 63.7074 5010815 178.9242 192.5475 1.8425031200006

| Access | Start Time (UTCG) | Stop Time (UTCG) |
|------------|-------------------------------|-------------------------------|
| ----- 2 | ----- 25 Jul 2019 22:42:00 | ----- 26 Jul 2019 05:13:01 |

EDRS-C post AMF-2 maneuver and possible support times pass # 3

EDRS-C

1 99991U 19991Z 19208.04250000 +.00000000 00000-0 +00000+0 0 0009
2 99991 0.7756 59.9819 1471215 181.0200 194.8707 1.23156910002

| Access | Start Time (UTCG) | Stop Time (UTCG) |
|------------|-------------------------------|-------------------------------|
| ----- 3 | ----- 27 Jul 2019 01:01:00 | ----- 27 Jul 2019 09:27:15 |

Flux Density impinging on the ground in Hawaii from EDRS-C

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 EDRS spacecraft is -1.10 dBW. Being an elliptical geo-transfer orbit the closest slant range to Hawaii occurs during pass #2 after AMF-1 maneuver which is = 8,537 Km.

Converting -1.10 dBW to scalar watts = 0.776 watts transmitted at 2285.0 MHz

Therefor:

$$\text{Flux density} = 0.776 \div (4 \pi * 8,537,000 \text{ meters}^2)$$

Flux density = 8.473×10^{-16} Watts/meter²

Or

Flux density = 8.473×10^{-17} mW/cm²