

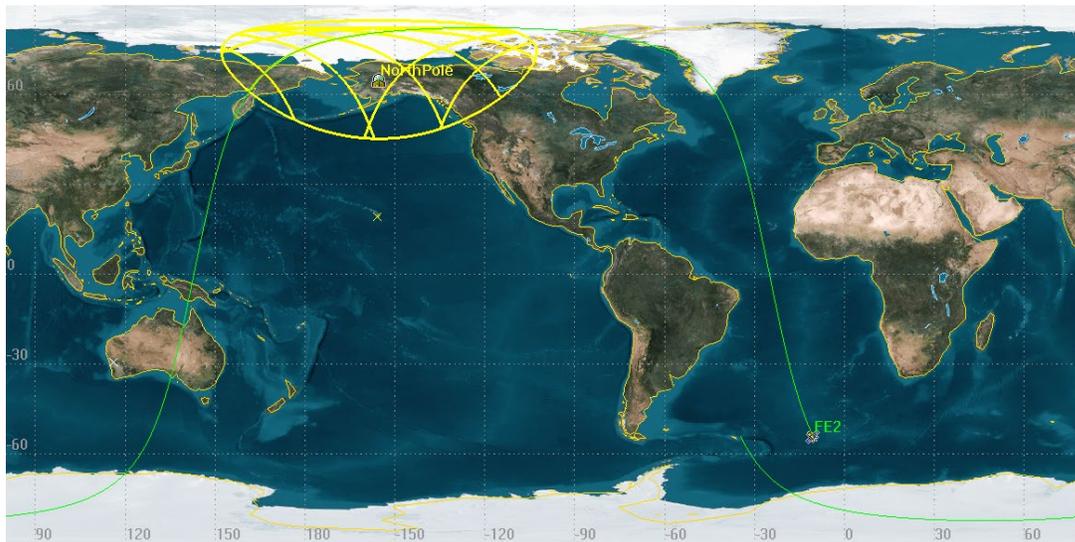
# USN orbital checkout support for Falconeye-2 from Alaska

Falconeye-2 is the second generation earth observation satellites launched by UAE to serve the European Union. Falconeye-2 was launched from the Kourou space center on Dec 1st , 2020. The Falconeye-2 spacecraft will be supported by the USN Alaska ground station using a downlink frequency = 2264.500 MHz and uplink = 2085.200 MHz, and has been fully coordinated by Comsearch.

Universal Space Network (USN) has made a long term application to support TT&C of the mission throughout the lifetime of the spacecraft. This pending application is: SES-LIC-20201222-01427 call sign E202207. USN is requesting that this STA application be approved to continue the orbital checkout of the spacecraft for a period of 60 days and to remain valid until such time the commission takes action on the above referenced application. The first day of support for this STA would be January 11<sup>th</sup>, 2021. The first opportunities of TT&C support are shown below.

## Falconeye-2

1 98765U 18123A 20334.25000000 .00000000 00000-0 +12043-8 2 13  
2 98765 97.8625 46.0046 0000609 310.9014 311.8760 14.90311960 18



USN Alaska coverage of Falconeye-2 (typical coverage each day) Jan 2021

## USN Alaska possible passes for Falconeye-2 9 Dec 2020 UTC

Pass	Start Time (UTCG)	Stop Time (UTCG)
1	11 Jan 2021 01:17:04	11 Jan 2021 01:23:33
2	11 Jan 2021 02:51:53	11 Jan 2021 02:56:46
3	11 Jan 2021 04:25:03	11 Jan 2021 04:31:39
4	11 Jan 2021 05:58:15	11 Jan 2021 06:07:24
5	11 Jan 2021 07:32:52	11 Jan 2021 07:43:16
6	11 Jan 2021 09:09:36	11 Jan 2021 09:18:52
7	11 Jan 2021 10:50:48	11 Jan 2021 10:52:09
8	11 Jan 2021 19:05:35	11 Jan 2021 19:09:48
9	11 Jan 2021 20:39:57	11 Jan 2021 20:49:35
10	11 Jan 2021 22:15:37	11 Jan 2021 22:25:57
11	11 Jan 2021 23:51:30	12 Jan 2021 00:00:00

## Flux Density impinging on the ground in Alaska from Falconeye-2

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 maximum EIRP of Falconeye-2 is -1.10 dBW. The altitude (and thus the closest distance to earth during an overhead pass) is = 590 Km.

Converting -1.10 dBW to scalar watts = 0.776 watts transmitted at 2264.500 MHz

Therefore:

$$\text{Flux density} = 0.776 \div (4 \pi * 590,000 \text{ meters}^2)$$

**Flux density = 1.773 x 10<sup>-13</sup> Watts/meter<sup>2</sup>**

Or

**Flux density = 1.773 x 10<sup>-14</sup> mW/cm<sup>2</sup>**

**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 Falconeye-2 Satellite.<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 commissioning and orbital checkout of the spacecraft for TT&C only of Falconeye-2, 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 orbital checkout 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 orbital commissioning support for Falconeye-2. Thus, any information sought by Section 25.114 that is not relevant to the spacecraft testing – 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 Falconeye-2 satellite, nor is USN in contractual privity with that operator. Rather, USN has contracted with Swedish Space Corporation, Solona Sweden (SSC) to support the checkout portion in S-Band of the Falconeye-2 satellite.

As evidenced by the Comsearch report attached to this request, USN has coordinated the checkout of the Falconeye-2 satellite with potentially affected terrestrial operators. Moreover, as with any STA, USN will conduct the test 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 checkout 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 being commissioned. 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 the 60 days of commissioning and checkout and orbital commissioning support of the Falconeye-2 satellite.

It is USN’s understanding that Falconeye-2 is licensed by UAE Space Agency. Falconeye-2 is the second of the series spacecraft meant to serve the UAE. 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 Falconeye-2 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 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 checkout support of the Falconeye-2 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."<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