

USN North Pole / Alaska Earth station Support for Metop-B&C Routine TT&C Operations

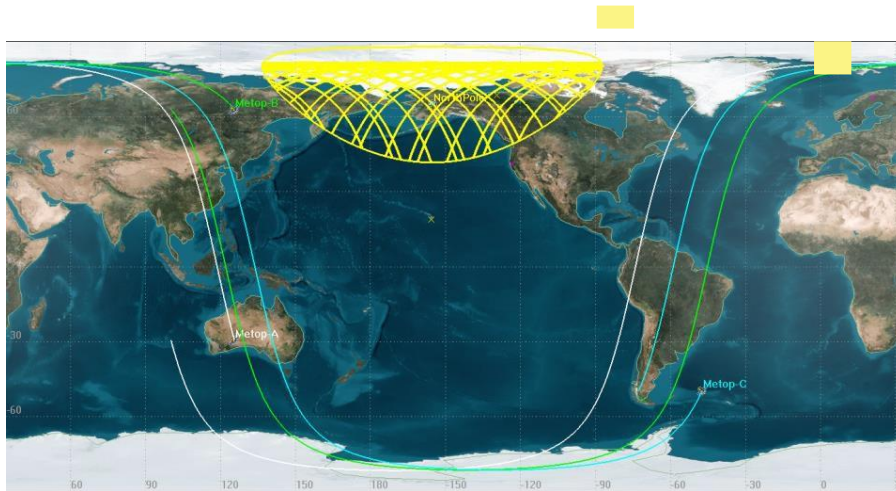
By this application, SSC Space (dba USN) seeks FCC approval to support ongoing Metop-B&C routine TT&C operations. The Metop family has been in orbit for many years operated by Eumetsat and forecast data is shared and downloaded at NOAA earth stations in collaboration with ESA under the Joint Polar System Program.

USN is requesting a 180 day STA to commence on August 4th, 2026.

On Dec. 6th 2023, a long-term license application was submitted to the FCC. The Metop spacecraft(s) would be supported by the USN Alaska ground station using a downlink frequency = 2230.000 MHz and uplink = 2053.458 MHz. Metop-B/C is a near circular orbit at 817 Km with inclination of 98.47 degrees.

This is continuation of SES-STA-20250925-00947.

A new frequency coordination report will be submitted as soon as it is ready.



USN Alaska coverage METOP-B/C a typical day

1 38771U 12049A 21189.13999133 .00000006 00000-0 22934-4 0 9991
2 38771 98.7137 248.9544 0000767 31.1070 357.4229 14.21486555456818

METOP-C

1 43689U 18087A 21189.10114010 .00000003 00000-0 21499-4 0 9995
2 43689 98.6846 249.1384 0001744 345.9594 14.1535 14.21499978138385

USN Alaska possible passes for Metop-B typical day visibilities

Access	Start Time (UTCG)	Stop Time (UTCG)
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-----1	17 Jan 2022 00:19:53-----	17 Jan 2022 00:29:52-----
2	17 Jan 2022 01:58:45	17 Jan 2022 02:07:51
3	17 Jan 2022 03:36:35	17 Jan 2022 03:46:59
4	17 Jan 2022 05:14:42	17 Jan 2022 05:26:58
5	17 Jan 2022 06:54:21	17 Jan 2022 07:07:14
6	17 Jan 2022 08:36:23	17 Jan 2022 08:47:19
7	17 Jan 2022 17:21:39	17 Jan 2022 17:22:28
8	17 Jan 2022 18:58:55	17 Jan 2022 19:09:53
9	17 Jan 2022 20:39:00	17 Jan 2022 20:51:54
10	17 Jan 2022 22:19:17	17 Jan 2022 22:31:32

USN Alaska possible passes for Metop-C typical day visibilities

1	17 Jan 2022 01:09:48	17 Jan 2022 01:19:02
2	17 Jan 2022 02:48:02	17 Jan 2022 02:57:34
3	17 Jan 2022 04:25:49	17 Jan 2022 04:37:14
4	17 Jan 2022 06:04:37	17 Jan 2022 06:17:26
5	17 Jan 2022 07:45:23	17 Jan 2022 07:57:41
6	17 Jan 2022 09:29:11	17 Jan 2022 09:37:17
7	17 Jan 2022 18:09:34	17 Jan 2022 18:18:00
8	17 Jan 2022 19:49:14	17 Jan 2022 20:01:37
9	17 Jan 2022 21:29:29	17 Jan 2022 21:42:16
10	17 Jan 2022 23:09:40	17 Jan 2022 23:20:59

Flux Density impinging on the ground in Alaska from Metop-B, 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 maximum EIRP of Metop-B, C is -1.40 dBW. The altitude (and thus the closest distance to earth during an overhead pass) is = 817 Km.

Converting -1.40 dBW to scalar watts = 0.724 watts transmitted at 2230.000 MHz Therefor:

$$\text{Flux density} = 0.724 \div (4 \pi * 817,000 \text{ meters}^2)$$

$$\text{Flux density} = 8.631 \times 10^{-14} \text{ Watts/meter}^2$$

Or

$$\text{Flux density} = 8.631 \times 10^{-15} \text{ mW/cm}^2$$

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 Metop-B, and C Satellites.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 conduct LEOP TT&C support to the future LEOP of the Metop-SG series using Metop-B and C for baseline testing and compatibility with USN's Alaska earth station for TT&C, 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 testing and preparation for de-orbit 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 to conduct LEOP support using Metop-B, and C. 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 Metop-B, and C satellites, nor is USN in contractual privity with that operator. Rather, USN has contracted with Swedish Space Corporation, Solna Sweden (SSC) to support the pre-LEOP testing in S-Band of the Metop-B, and C satellites.

As evidenced by the Comsearch report attached to this request and the new Comsearch report ordered will be delivered the soonest in a pleading. USN has coordinated the support of the Metop-B, and C satellites with potentially affected terrestrial operators. Moreover, as with any STA, USN will conduct the test 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 testing 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 and LEOP support. 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 the 180 days of testing support of the Metop-B, and C satellites.

It is USN’s understanding that Metop-B, and C is licensed by France for the European Space Agency. Metop-B, and C are also supported in the US by NOAA by collaborative agreement. 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 Metop-B, and C satellites 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 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 footnote US96 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 support using Metop-B, and C 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

With respect to Space Launch Services

Pursuant to Section 1.3 of the Commission's rules (47 CFR § 1.3), USN respectfully requests a waiver of certain provisions of Part 25 and Part 26 of the Commission's rules to permit the licensing and operation of a satellite earth station using the 2025–2110 MHz and 2200–2290 MHz frequency bands for Part 25, telemetry, tracking, and command (TTC) operations of its low Earth orbit (LEO) satellite.

Under 47 CFR § 1.3, the Commission may waive its rules for good cause shown. USN submits that:

The proposed earth station will support climate monitoring and weather forecast, which cannot be accommodated in other bands due to technical/operational constraints. Besides these bands have been used in all previous STA applications for this spacecraft, they are also technically suitable due to their propagation characteristics and compatibility with existing ground infrastructure.

These bands have been partially reallocated to space launch services under Part 26.

As per 47 CFR § 25 section 2.106, this application would not comply without a waiver due to limitations on non-federal use or non-space launch service in these bands which currently restrict or limit the use of the referenced bands due to the reallocation referenced above.

USN believe this is in the public interest, technically feasible, non-disruptive to existing services, improves weather forecast, climate monitoring.

It is also consistent with the FCC's goals of promoting innovation, efficient use of spectrum and being in line with FCC orders and rulemakings that support flexible use of these bands (e.g., the FCC's 2023 Report and Order on commercial space launch operations 1).

This request is also consistent with prior FCC-authorized STAs, including:

- Lynk Global, Inc. (File No. SES-STA-20220512-00477), which was granted temporary authority for TT&C in both bands;
- Space Telecommunications, Inc. (CTC-0 CubeSat, File Number: 1082-EX-ST-2024) which was granted temporary authority for TT&C in both bands.
- Geometric Energy Corporation, which received STA for TT&C in these bands for a lunar mission via a UK-based earth station

These precedents demonstrate the FCC's established practice of granting temporary, coordinated use of these bands for TT&C under appropriate conditions.

USN request a waiver to permit temporary earth station operations and continued use of the referenced bands for Part 25 TT&C satellite communications. A waiver is necessary due to the relocation of these bands.

Summary of Technical Information
For Coordination with NTIA/FAS/IRAC

Applicant: Universal Space Network, Inc.
File No.: _____
Call Sign: No Call Sign
Special Temporary Authority ("STA")

Purpose of operation: Support testing and calibration for LEOP of Metop-SG and future de-orbit of the Metop-B and -C spacecrafts.

Start Date: 4 Aug. 2026

End Date: 31 Jan. 2027

Location: North Pole, AK

Latitude: 64 deg 48' 15.268" N
Longitude: (NAD-83) 147 deg 30' 0.771"
W (NAD-83)

Transmit frequency: 2053.458 MHz

Polarization: R, L

Antenna manufacturer: Datron

Antenna Size in meter: 13m

Antenna model: 1453

Antenna Gain Transmit: 46.3 dBi @ 2053 MHz

<u>Frequency Band</u> (MHz)	<u>Emissions</u>	<u>Max.eirp</u> (dBW)	<u>Max.eirp density</u> (dBW/4KHz)
2053.458	200KG2D	68	51

Satellite: Metop B, C