

Narrative
SSC Space US (dba USN) Support TT&C Operations
of METOP-SG A1 and B1 from its Alaska Station.

Eumetsat Polar System-2nd Generation (EPS-SG) is the European half of the Europe-USA JPS (Joint Polar-Orbiting System) program.

Eumetsat cooperation with NOAA is the JPS agreement that can be found in this link (Agreement Between the United States National Oceanic and Atmospheric Administration and The European Organization for The Exploitation of Meteorological Satellites on A Joint Polar System, noaa.gov) from NOAA's website.

The EPS-SG program consists of a series of six polar orbiting Metop-SG satellites, developed by the European Space Agency (ESA) and operated by the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) the first of which is to be launched in September 2025.

However, this application covers only Metop-SG A1 & B1.

The Metop satellites fly in a Low Earth polar orbit at an altitude of 823-848 km corresponding to local 'morning', while the US is responsible for 'afternoon' coverage. It contributes to climate monitoring. The data they collect are essential for weather forecasting and climate monitoring. Due to its low orbit, the special instruments on board can provide significantly more accurate details about atmospheric temperature and humidity profiles than a geostationary satellite can.

This application is to support TT&C operations for a period of 180 days commencing on Jan. 2nd, 2027. This is an extension of SES-STA-20260223-00928.

On Oct. 7th, 2024, a long-term license application for Metop-SG was submitted, SES-LIC-20241007-02057.

S/C	Downlink (MHz)	Uplink (MHz)
Metop-SG A1&B1	2227.700-2229.1 2230.9-2232.3 2231.0685-2234.1315	2051.4850-2052.4850 2054.4317-2055.4317

Flux Density impinging on the ground in Alaska from Metop-SG A1&B1

The Flux density is calculated as:

$$\text{flux density} = \text{EIRP} / (4\pi \text{RSE}^2)$$

where RSE is the distance from spacecraft to the ground,
and EIRP is the Effective Isotropic Radiated Power of the spacecraft.

Data from the spacecraft vendor indicates that the nominal EIRP of the Metop-SG A1&B1 spacecraft is -9.0 dBW. The closest distance to earth during an overhead pass is = 832 km.

Converting -9.0 dBW to scalar watts = 0.125893 Watts transmitted at 2231.6 MHz.

Therefore:

$$\text{flux density} = 0.125893 / (4\pi(832000)^2)$$

$$\text{Flux density} = 1.446 \times 10^{-14} \text{ Watts/meter}^2$$

Or

$$\text{Flux density} = 1.446 \times 10^{-15} \text{ mW/cm}^2$$

Inclination: 98.7 ° degrees

Apogee: 845 km

Perigee: 832 km

Number of Orbital Planes: 1

Waiver 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 (dba USN) is provided limited legal and technical information for the Matop-SG A1&B1 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 support TT&C operations of Metop-SG A1&B1, and 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 TT&C support 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. The US public interest is supported by the sharing of collected data with the NOAA.

In this case, good cause for a waiver of portions of Section 25.114 exists. USN seeks authority to conduct TT&C support for Metop-SG A1&B1 satellites. Thus, any information sought by Section 25.114 that is not relevant to the support – 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-SG A1&B1 satellites, nor is USN in contractual privity with that operator. Rather, USN has contracted with Swedish Space Corporation, Solna Sweden (SSC) to support the TT&C operations in S-Band of the Metop-SG A1&B1 satellites.

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 commercial service being provided by the satellite; USN provides only TT&C 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 TT&C support of the Metop-SG A1&B1 satellites.

It is USN’s understanding that Metop-SG A1&B1 is licensed by the country of Germany. Metop-SG A1&B1 is a spacecraft meant to serve advanced weather forecasting and climate monitoring, with data shared with the US. 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-SG A1&B1 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. Given these particular facts, the waiver sought herein is appropriate.

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 support of TT&C operations for the Metop-SG A1&B1 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.

⁵ 47 C.F.R. §25.137(d)(4)

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; SES-STA-20220512-00477

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 constellation.

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

The proposed earth station will support TT&C operations of Metop-SG A1&B1, 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 climate monitoring and weather forecasting.

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 TT&C Operations

Start Date: Jan. 2nd, 2027

End Date: July. 1st 2027

Site Location: North Pole, AK

Longitude: 64 deg 48' 15.268" N (NAD-83)

Latitude: 147 deg 30' 0.771" W (NAD-83)

Transmit frequency: 2054.9317 / 2051.9850 MHz
Polarization: CR, CL
Antenna manufacturer: Datron
Antenna Size in meter: 13m
Antenna model: 1453
Antenna Gain Transmit: 45.9 dBi @ 2054.9317 / 2051.9850 MHz

<u>Frequency Band</u> (MHz)	<u>Emissions</u>	<u>Max. EIRP</u> (dBW)	<u>Max. EIRP Density</u> (dBW/4KHz)
2054.4317-2055.4317	1M00G1D--	68	44
2051.4850-2052.4850	1M00G1D--	68	44

Satellite: Metop-SG A1&B1