

Linking space to user needs

Superseded

OSNMA Status after Testing Completion

02/09/2024



OSNMA Main Applicable Documents

<https://www.gsc-europa.eu/electronic-library/programme-reference-documents#OSNMA>

- **OSNMA SIS ICD (v1.1, Oct 2023)**: Together with the OS SIS ICD, contains all information on the OSNMA SIS and specifies the interface between the Galileo Space and User Segments.
- **OSNMA Receiver Guidelines (v1.3, Jan 2024)**: Complements OSNMA SIS ICD with user implementation guidelines. Specifies user capabilities and steps to verify the authenticity of the Galileo navigation message.
- **OSNMA IDD ICD (v1.1, Jan 2024)**: Specifies how to retrieve the cryptographic data (Public Key and Merkle Tree) via the Internet. Supported by Public Key Infrastructure (PKI) certificates.

These document versions are the ones to be used for entry into operation.

OSNMA Certificates and Other Cryptographic Material



<https://www.euspa.europa.eu/about/corporate-documents/pki-public-key-infrastructure/pki-policy>

- **CP-CPS for RCA 001 (v1.1, Jan 2024):** Describes EUSPA certification policy and practices for issuing digital certificates from EUSPA RCA (Root Certificate Authority) to SCA (Subordinate Certificate Authority).
- **CP-CPS for SCA 001 (v1.1, Jan 2024):** Describes EUSPA certification policy and practices for issuing digital certificates from EUSPA SCA to ICA (Issuing Certificate Authority).

<https://www.euspa.europa.eu/about/corporate-documents/pki-public-key-infrastructure/pki-products>

- OSNMA applicable certificates and revocation lists of RCA and SCA.

<https://www.gsc-europa.eu/gsc-products/pki>

- **CP-CPS for ICA 001 (v1.1, Jan 2024):** Describes EUSPA certification policy and practices for issuing digital certificates from EUSPA ICA to OSNMA End Entity.
- OSNMA applicable certificates and revocation lists of ICA.

<https://www.gsc-europa.eu/gsc-products/OSNMA/MT> (*)

- OSNMA certificates and revocation lists of Merkle Tree (MT) ('End Entity' certificate).
- **OSNMA Merkle Tree (MT) applicable root and leaves**, since Jan 2024.

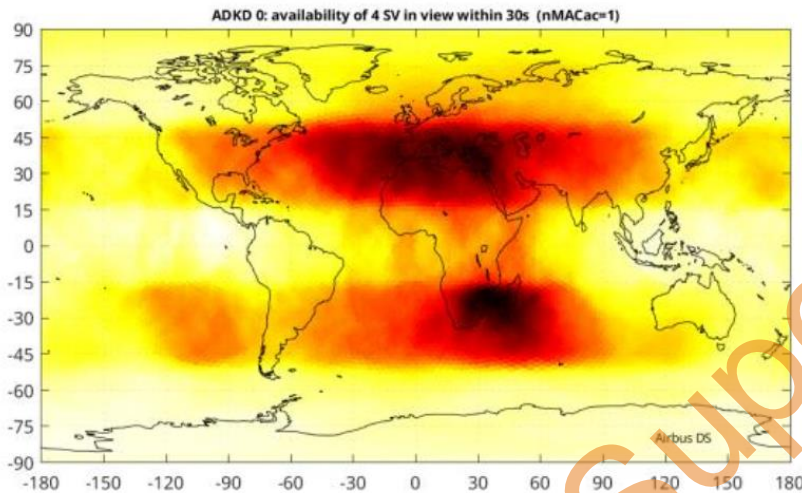
<https://www.gsc-europa.eu/gsc-products/OSNMA/PKI> (*)

- OSNMA certificates and revocation lists of OSNMA Public Key (PK) ('End Entity' certificate).
- **OSNMA Public Key (PK) applicable**, since Jan 2024.

These OSNMA operational certificates, cryptographic material and associated documentation are the ones to be used for entry into operation.

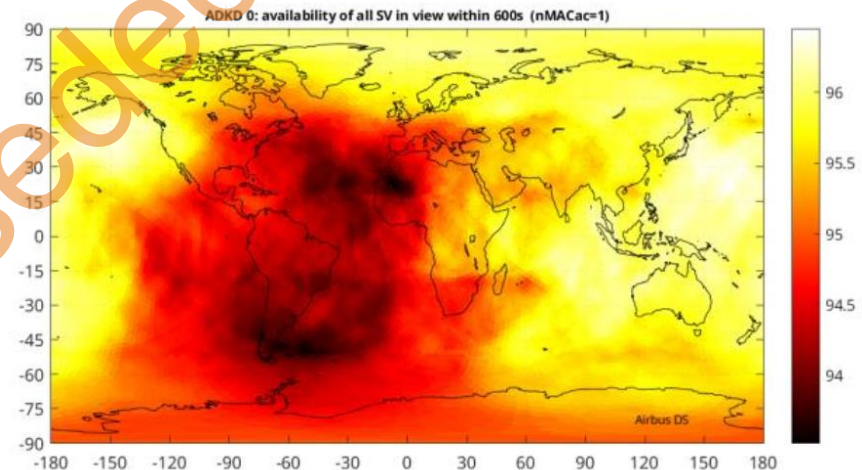
OSNMA Performance – Tag Availability (I)

Availability of ADKD0 (authentication for Galileo I/NAV orbit and clock data, Word Types 1 – 5) over 5° elevation, from 1st to 31st May 2024.



ADKD0 for 4 or more satellites in view within 1 subframe (30s)

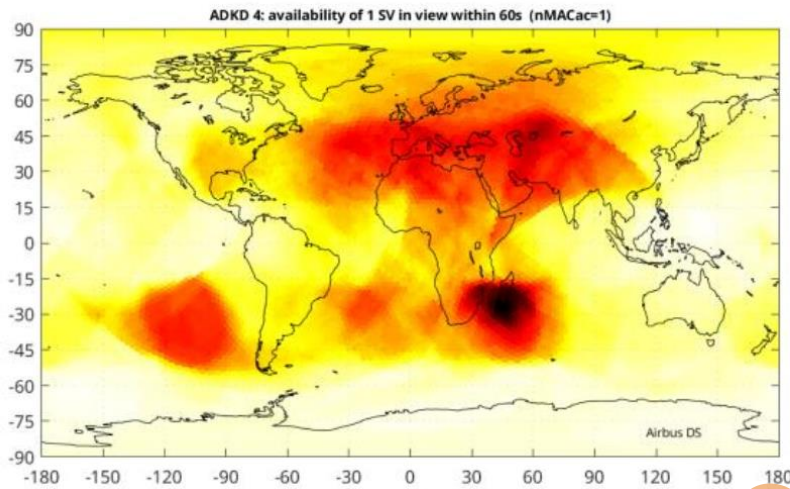
min: 97.73% | mean: 98.90% | max: 99.40%



ADKD0 for *all* satellites in view within 600s

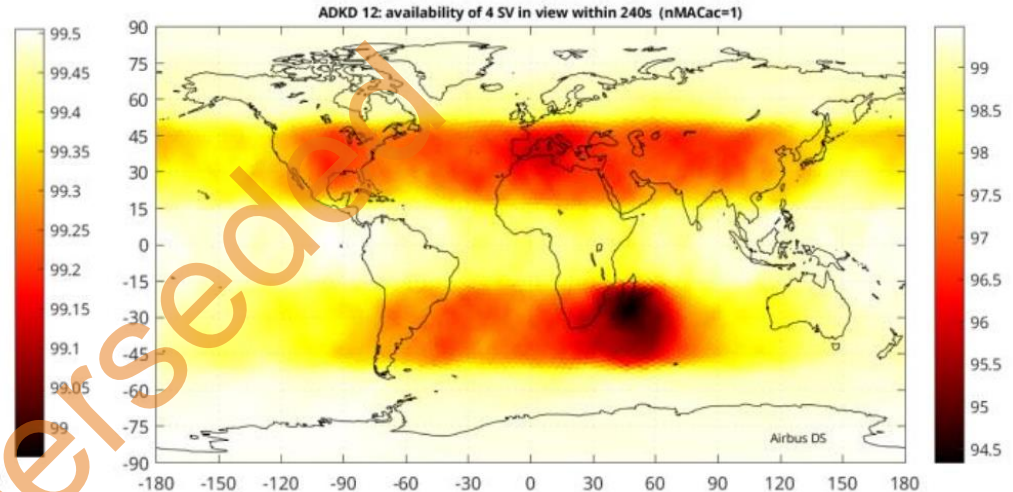
min: 93.52% | mean: 95.27% | max: 96.45%

OSNMA Performance –Tag Availability (II)



Availability of ADKD4 (authentication of Galileo I/NAV timing data, Word Types 6 and 10) over 5° elevation, from 1st to 31st May 2024, within 60s from 1+ satellites

min: 98.96% | mean: 99.38% | max: 99.50%



Availability ADKD12 (authentication of Galileo I/NAV orbit/clock data, Word Types 1-5, with a 5-min delayed key wrt. ADKD0 for loose time sync.) over 5° elevation, from 1st to 31st May 2024, within 240 s from 4+ satellites

min: 94.34% | mean: 98.38% | max: 99.48%

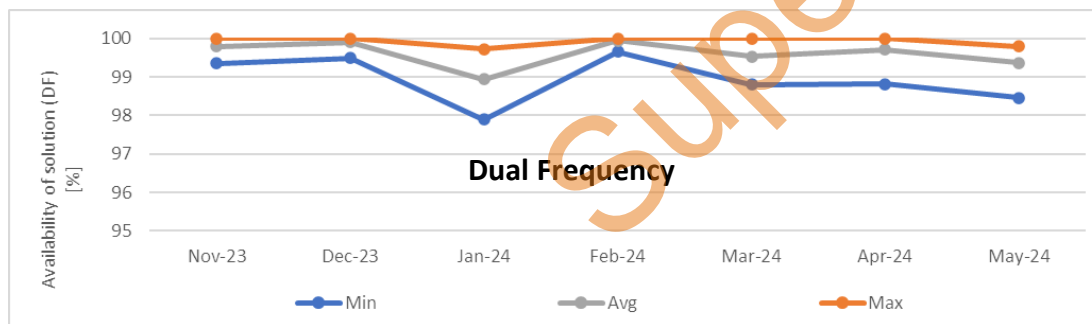
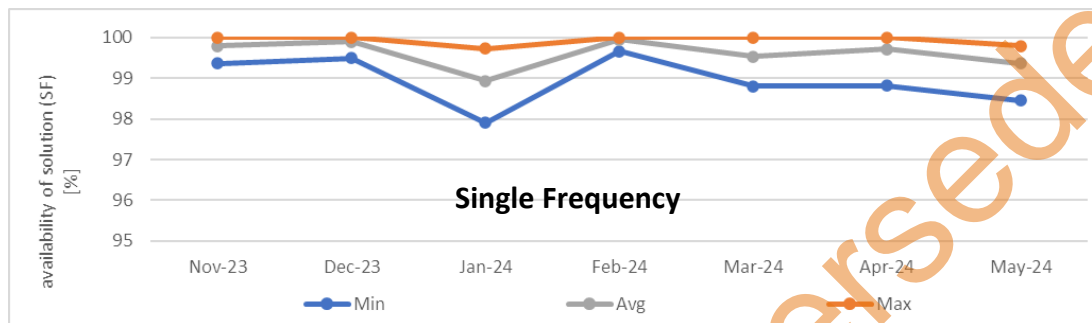
OSNMA Performance –Tag Availability (III)

Measured Tag	Average of Monthly Availabilities at WUL 1 st January – 31 st May 2024
ADKDO - All SVs in view, 600s	96.3154%
ADKDO – At least 4 SVs in view, 30s	98.7157%
ADKD 4 – At least 1 SV in view, 60s	99.2567%
ADKD12– At least 4 SVs in view, 240s	97.5368%

Similar or even higher tag availability is expected for entry into operation.

OSNMA Performance – Position Availability

Availability of OSNMA position solution (ADKD0) users vs. Galileo OS users. Defined as percentage of time when OSNMA and Galileo OS position solutions use the same satellites.

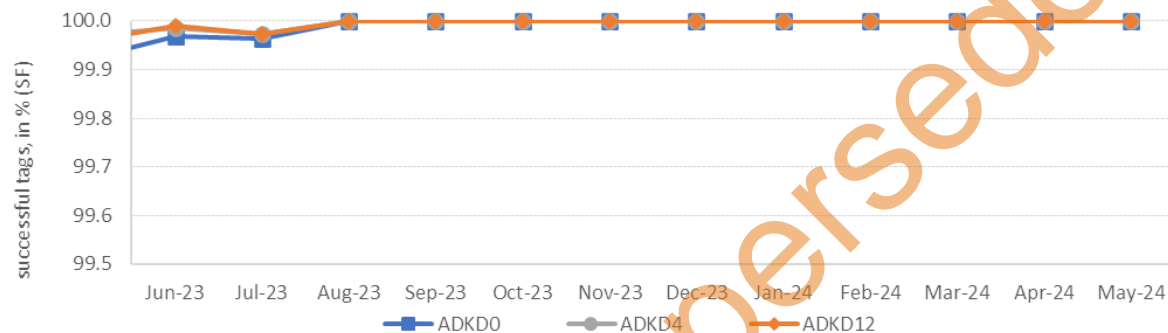


	Yearly Availability at WUL (January – May 2024)
Single Frequency Users	≥ 99.0233%
Dual Frequency Users	≥ 99.0233%

Similar or even higher position availability is expected for entry into operation.

OSNMA Performance - Tag Verification

100% success rate since February 2024. Previous unsuccessful events linked to change in DVS status flag. Behavior in line with OSNMA SIS ICD.



Successful tag verification for single/dual frequency

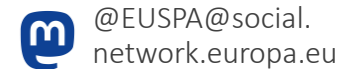
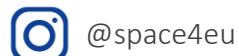
Full success rate expected for entry into operation, except for very sporadic ($<10^{-7}$) potential DVS flag changes in specific satellites, as per OSNMA SIS ICD.



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Get in touch with us

www.euspa.europa.eu



Pending a formal declaration of OSNMA Initial Service from the European Commission, the OSNMA capability is delivered as a Public Observation Test Phase and no minimum performance commitments are guaranteed