



Monthly Performance Report

January 2023



ESSP-DRD-32240

Iss. 01-00

Date: 07.02.2023

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EXECUTIVE SUMMARY

This report presents the EGNOS services performance during January 2023. The report contains global results for the reported period, including maps and tables with the performance observed at different locations in Europe using GEO-combined values for EGNOS operational GEOs. A list of the stations analysed in this report, including their location, can be found in Appendix A. Additional and more detailed information about EGNOS performance can be found at the EGNOS User Support website (<https://egnos-user-support.essp-sas.eu>).

Safety of Life Service (SoL)

The percentage¹ of ECAC landmasses within the SDD commitment covered by APV-I and LPV200 Availability (99% performance was 89.41% for APV-I (section 3.2.1) and 85.39% for LPV200 (section 3.3.1). The achieved coverage for Continuity (5×10^{-4} /15s) against the SDD commitment was 91.83% for APV-I (section 3.2.2) and 78.02% for LPV200 (section 3.3.2).

The performance at all airports with approach operations based on the APV-I or LPV200 service levels (Appendix B and Appendix C) presented Availability and Continuity values in line with their respective commitments as defined in the SoL SDD [RD-2], except for:

- APV-I Availability at BIAR / Akureyri, BIGR / Grimsey, BIHU / Husavik, BIVO / Vopnafjordur, EFET / Enontekiö, EFIV / Ivalo, EFKS / Kuusamo, EFKT / Kittilä, EFLA / Lahti-Vesivehmaa, EFRO / Rovaniemi, ENAN / Andøya/Andenes, ENAT / Alta, ENBS / Båtsfjord, ENBV / Berlevåg, ENDU / Bardufoss, ENKR / Kirkenes/Hoybuktmoen, ENMH / Mehamn, ENNA / Lakselv/Banak, ENSR / Sorkjosen, ENSS / Vardø/Svartnes, ENTU / Tromsø Univeristy Hospital, GCLA / La Palma, GCRR / Lanzarote AD, LPPS / Porto Santo, XZBK / Bjarkoy, XZFI / Finnsnes, XZKA / Kautokeino, XZKS / Karasjok, XZSC / Skjervøy and XZSO / Storsteinnes.
- APV-I Continuity at BIVO / Vopnafjordur, EFHA / Halli, EFIV / Ivalo, EFJY / Jyväskylä, EFKE / Kemi-Tornio, EFKK / Kokkola-Pietarsaari, EFKS / Kuusamo, EFKU / Kuopio, EFLA / Lahti-Vesivehmaa, EFOU / Oulu, EFVA / Vaasa, ENAN / Andøya/Andenes, ENAT / Alta, ENBN / Brønnøysund/Brønnøy, ENBO / Bodo, ENDU / Bardufoss, ENEV / Evenes, ENLK / Leknes, ENMS / Mosjøen/Kjærstad, ENMS / Mosjøen/Kjærstad, ENRS / Røst, ENSH / Svolvær/Helle, ENSK / Stokmarknes/Skagen, ENSR / Sorkjosen, ESNG / Lapland Airport, ESNS / Skellefteå Airport, ESNX / Arvidsjaur, ESUP / Pajala, ESUT / Hemavan Tärnaby Airport AB, GCLA / La Palma, GCRR / Lanzarote AD, LPPS / Porto Santo, XZBK / Bjarkoy, XZES / Evenskjaer, XZFI / Finnsnes, XZIH / Innhavet, XZKA / Kautokeino, XZKS / Karasjok, XZLK / Lofoten Hospital, XZMK / Mosjøen, XZNK / Narvik, XZSO / Storsteinnes and XZSS / Sandnessjøen Hospital.
- LPV200 Availability at ENEV / Harstad/Narvik/Evenes and ENHK/Hasvik.
- LPV200 Continuity at EEPU / Pärnu, EETN / Lennart Meri Tallinn, EETU / Tartu, EFTP/ Tampere-Pirkkala, ENEV/Harstad/Narvik/Evenes, ENNM / Namsos, ENOL / Ørland, ENRM / Rørvik/Ryum, ENST/Sandnessjøen/Stokka, ENVA / Trondheim/Værnes, LICD / Lampedusa and LMML / Luqa.

The Horizontal and Vertical Safety Indexes remained below 0.50 and 0.36, respectively for both APV-I (section 3.2.3) and LPV200 (section 3.3.3) service levels at all the analysed sites, which represents a good integrity margin.

NPA Availability above 99% (section 3.1.1) was delivered in the 99.73% of the NPA service area (limited by the boundaries defined by MT27).

Open Service

The monitored stations presented an Open Service Availability higher than 99% for this month being most of them equal or close to 100% (section 2.2) except RIMS LPI (92.57%), CNR (91.98%), AGA (95.81%), HFA (98.35%), JME (98.57) and KIR (98.74%)

¹ The coverage percentages presented represent the ratio of area after applying the mapping projection, there may be a difference compared to the actual geographical area.



The horizontal and vertical accuracy results for all the sites remained below 3 meters (95%) and 2.8 meters (95%) respectively, which represents a good level of accuracy (section 2.1), except for RIMS CNRA and LPIA with horizontal accuracy of 3.5 m.

EDAS Service

In terms of availability and latency, the observed performance for all the EDAS services fulfilled the targets (section 4) [RD-3].

EGNOS Time Service

The EGNOS Time Service availability presented for the combination of both operational GEOs was almost 100% for all days of the month, except on January 3rd with 98.4% (Section 5).

The offset between the EGNOS Network Time and GPS time remained below 14 nanoseconds over the three previous months: October 2022 to December 2022.





1 EGNOS SIS AVAILABILITY

In this document, **EGNOS SIS Availability** is defined as the percentage of time in the month during which at least one geostationary satellite broadcasts EGNOS messages.

In addition to the individual SIS Availability for PRN123 and PRN136, the following values are also reported:

- percentage of time in the month during which at least one geostationary satellite broadcasts EGNOS messages (PRN123 or PRN136);
- percentage of time in the month during which both operational geostationary satellites broadcast EGNOS messages.

EGNOS SIS monitoring for January 2023, reports the following reception percentage of an SBAS message:

- SIS – PRN123 or PRN136: **100%**
- SIS – PRN123 and PRN136: **99.99%**
- PRN123 Availability: **99.99%**
- PRN136 Availability: **100%**

The following figure presents the Availability of the signal in both EGNOS GEO satellites (PRN123 and PRN136). Red lines correspond to unavailability periods:

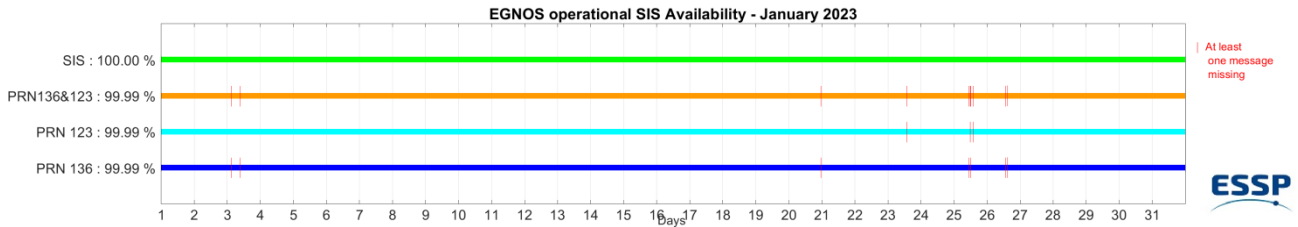


Figure 1 – EGNOS SIS & PRN Availability for January 2023

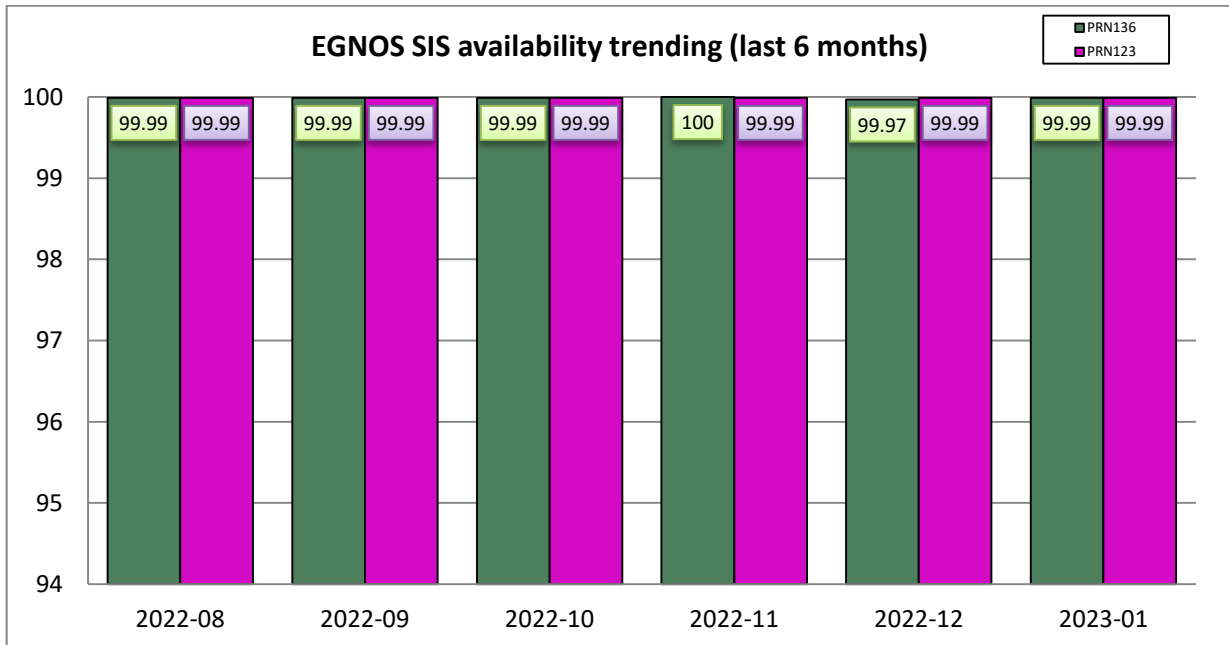


Figure 2 – Trend of EGNOS SIS Availability per GEO



| Availability (%) | 2022-08 | 2022-09 | 2022-10 | 2022-11 | 2022-12 | 2023-01 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| PRN123 | 99.99 | 99.99 | 99.99 | 99.99 | 99.99 | 99.99 |
| PRN136 | 99.99 | 99.99 | 99.99 | 100 | 99.97 | 99.99 |
| At least one EGNOS GEO satellite | 100 | 100 | 100 | 100 | 100 | 100 |

Table 1 – EGNOS SIS Availability (%) on EGNOS GEO satellites



2 OPEN SERVICE (OS)

2.1 Open Service Horizontal and Vertical Accuracy

Accuracy is a measure of the position error, which is the difference between the estimated navigation position and the actual position.

EGNOS OS Horizontal (resp. Vertical) Accuracy is reported as the 95th percentile of the Horizontal (resp. Vertical) Navigation System Error – HNSE (resp. VNSE) over the month, at the monitored sites when applying EGNOS messages.

The next table provides the values of accuracy (95%) in meters measured for this month. See Appendix A for further details of the stations where OS Accuracy is reported.

| Station | HNSE 95% (m) | VNSE 95% (m) |
|-------------------|--------------|--------------|
| Agadir | 2.9 | 2.0 |
| Aalborg | 0.9 | 1.8 |
| Athens | 0.9 | 1.3 |
| Berlin | 1.0 | 1.6 |
| Canary Islands | 3.5 | 2.7 |
| Cork | 1.0 | 1.6 |
| Catania | 0.9 | 1.2 |
| Djerba | 1.3 | 1.3 |
| Egilsstadir | 1.2 | 2.2 |
| Glasgow | 1.0 | 1.7 |
| Golbasi | 1.0 | 1.5 |
| Gavle | 0.9 | 2.1 |
| Haifa | 1.5 | 2.3 |
| Jan Mayen | 1.6 | 2.7 |
| Kirkenes | 1.3 | 2.3 |
| Lappeenranta | 1.0 | 2.1 |
| La Palma | 3.5 | 2.5 |
| Lisbon | 1.2 | 1.5 |
| Madeira | 1.5 | 1.5 |
| Malaga | 1.1 | 1.2 |
| Palma de Mallorca | 0.9 | 1.1 |
| Reykjavik | 1.5 | 2.4 |
| Rome | 0.9 | 1.4 |
| S. de Compostela | 1.1 | 1.1 |
| Sofia | 1.3 | 2.0 |
| Swanwick | 1.2 | 1.7 |
| Toulouse | 1.0 | 1.3 |
| Trondheim | 0.9 | 1.9 |
| Tromsoe | 1.4 | 2.5 |
| Warsaw | 1.0 | 1.9 |
| Zurich | 0.9 | 1.5 |

Table 2 – EGNOS Open Service accuracy (95%)

The next figures show the histogram and cumulative distribution function of HNSE (Horizontal Navigation System Error) and VNSE (Vertical Navigation System Error), which are computed at the previous stations for each second over the current month.

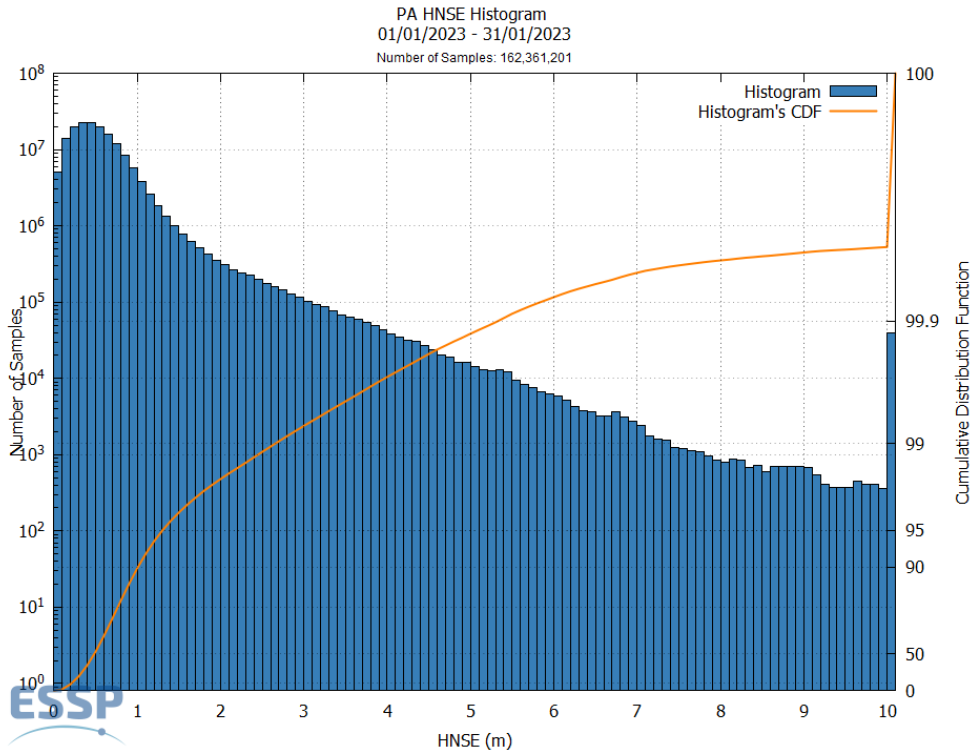


Figure 3 – EGNOS Open Service HNSE Histogram and Cumulative Probability

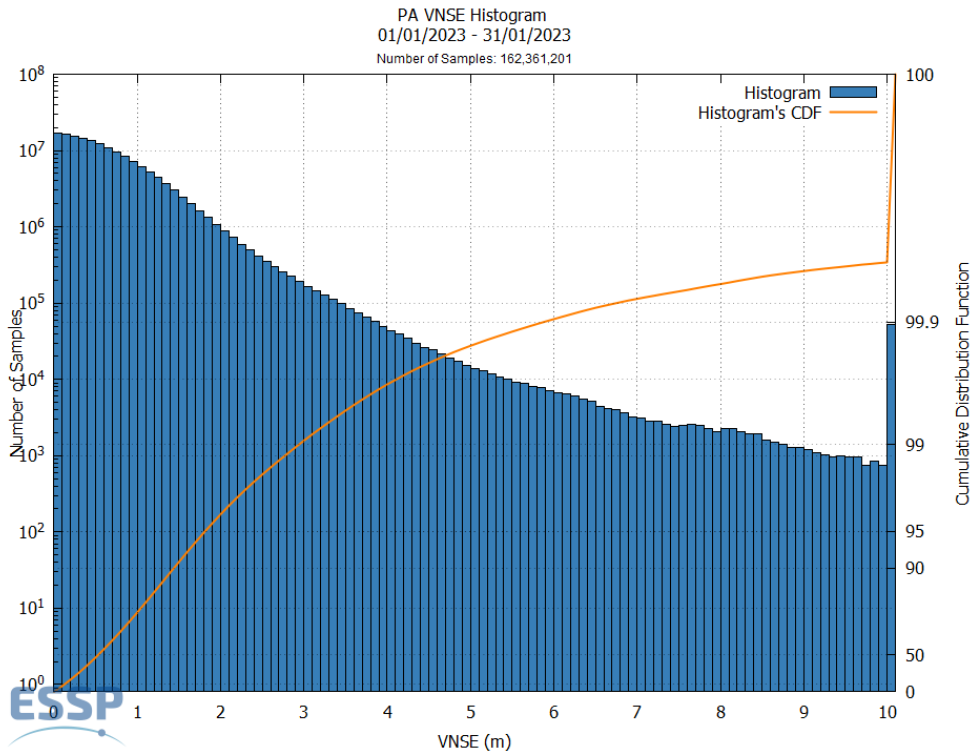


Figure 4 – EGNOS Open Service VNSE Histogram and Cumulative Probability



2.2 EGNOS Open Service Availability

EGNOS OS Availability performance is defined in the present document as the percentage of time when the instantaneous HNSE is lower than 3 meters and the instantaneous VNSE is lower than 4 meters over the total number of samples with valid PA navigation solution

The following figures present the Open Service Availability measured in the monitoring stations for the reported month (RIMS sites with OS Availability lower than 99%, if any, are shown in red). See Appendix A for further details of the stations where OS Accuracy is reported.

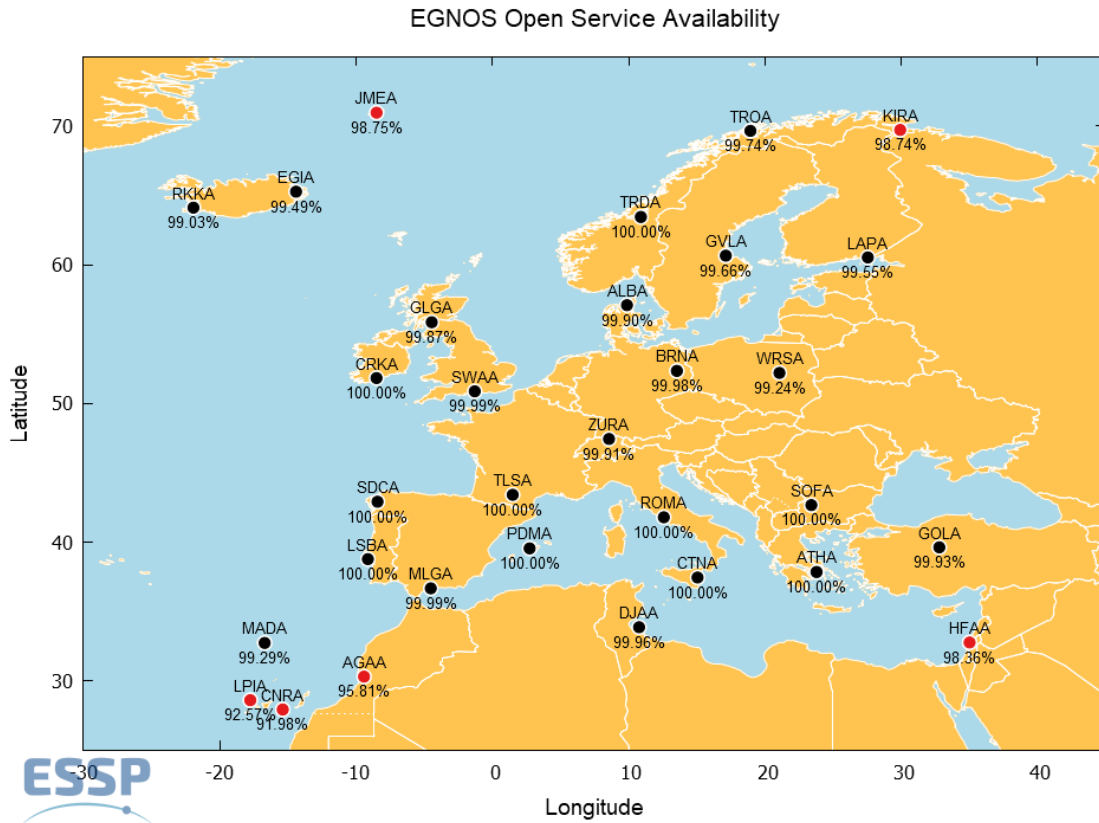


Figure 5 – EGNOS Open Service Availability at reference stations



3 SAFETY-OF-LIFE SERVICE (SOL)

3.1 EGNOS Non Precision Approach (NPA)

3.1.1 EGNOS NPA Availability

EGNOS NPA Availability is defined as the percentage of samples in which the Horizontal Protection Level is below Alert Limit for NPA (HPL below 556m) over the total period. This value corresponds to the performance obtained under fault-free conditions using all satellites in view.

The following figure presents EGNOS NPA Availability over the current month. It must be noted that NPA Availability considering RAIM is not taken into account in this report.

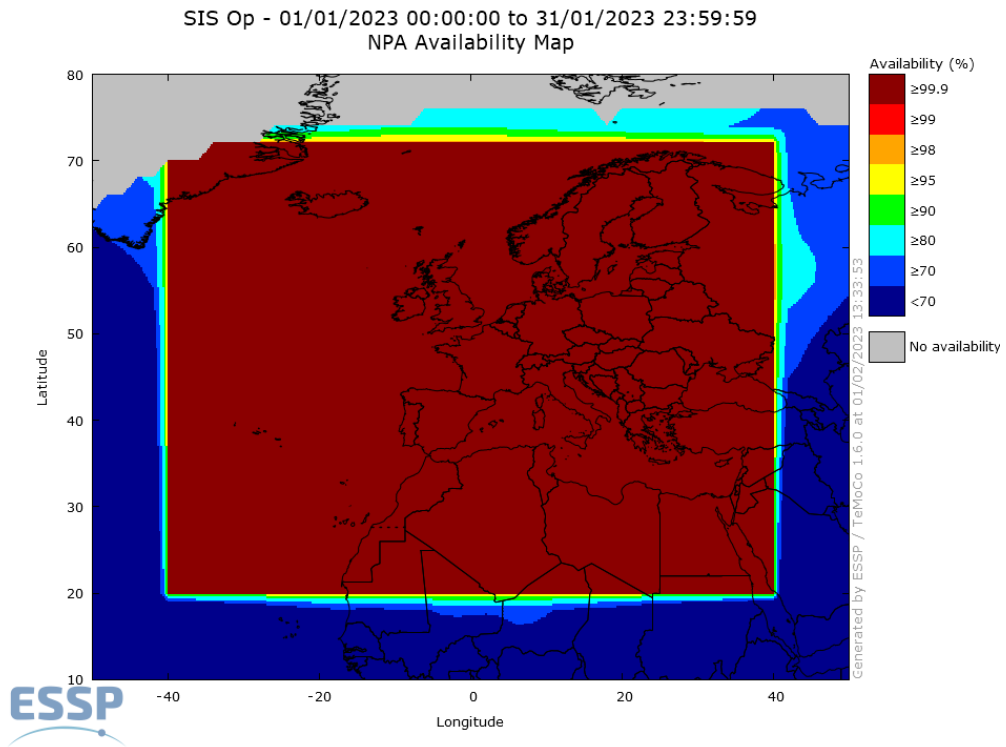


Figure 6 – EGNOS NPA Availability



3.1.2 EGNOS NPA Continuity

EGNOS NPA Continuity is reported as the result of dividing the total number of single continuity events using a time-sliding window of 1 hour by the number samples with valid and available NPA navigation solution. A single continuity event occurs if the system is available at the start of the operation and in at least one second inside the following time-sliding window of 1 hour the system becomes not available. This value corresponds to the performance obtained under fault-free conditions using all satellites in view.

The following picture presents the EGNOS NPA Continuity Risk measured for the last 6 months (in order to observe the minimum NPA Continuity performance committed in the SoL SDD -1×10^{-3} /hour-, at least 6 months of data need to be evaluated due to the discrete nature of discontinuity events). It must be noted that NPA Continuity is computed in this report using only the EGNOS NPA solution and not considering the GPS RAIM solution when the EGNOS one is not available.

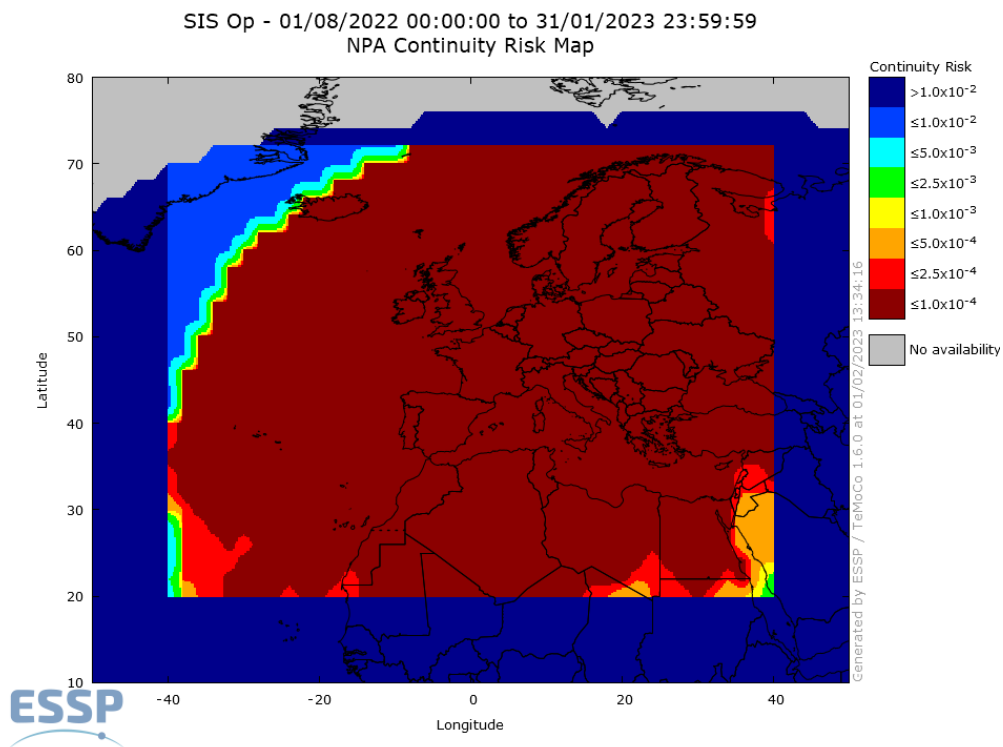
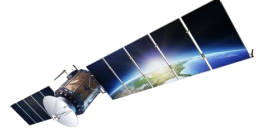


Figure 7 – EGNOS NPA Continuity over the last 6 months



3.1.3 EGNOS NPA Integrity Events

EGNOS NPA Integrity Event is defined as an event when the Navigation System Error is greater or equal to the corresponding Protection Level for NPA.

No integrity event was detected.

Safety Index is defined as the relation between Navigation System Error and Protection Level (assuming NPA algorithms to compute $xNSE$ and xPL) for each second. Case of ratio $xNSE/xPL$ is over 1, it indicates that a Misleading Information situation has occurred.

The next histogram shows the distribution of HSI (Horizontal Safety Index), which is computed at the different EGNOS stations for each second over the current month. This histogram takes into account the epochs in which the NPA service was available (Protection Level < NPA Alarm Limit).

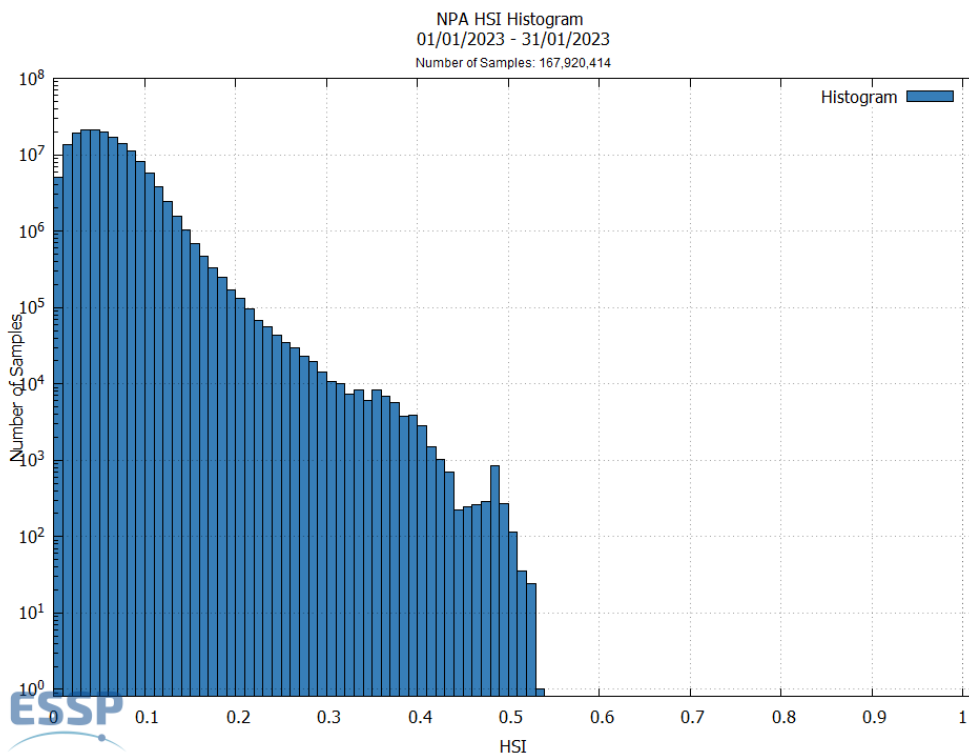


Figure 8 – EGNOS NPA Horizontal Safety Index of the month



3.1.4 EGNOS NPA Accuracy

EGNOS NPA Accuracy is reported as the 95th percentile of the Horizontal Navigation System Error (HNSE) over the month, at the monitored sites when the NPA service is available (HPL below 556 m).

This table shows the NPA Accuracy values in meters. See Appendix A for further details of the stations where NPA Accuracy is reported.

| Station | HNSE 95% (meters) | % of samples in NPA mode |
|-------------------|-------------------|--------------------------|
| Azores | 4.4 | 100.00% |
| Agadir | 4.2 | 100.00% |
| Aalborg | 0.9 | 100.00% |
| Athens | 0.9 | 100.00% |
| Berlin | 1.0 | 100.00% |
| Canary Islands | 4.6 | 100.00% |
| Cork | 1.0 | 100.00% |
| Catania | 0.9 | 100.00% |
| Djerba | 1.7 | 100.00% |
| Egilsstadir | 1.2 | 100.00% |
| Glasgow | 1.0 | 100.00% |
| Golbasi | 1.0 | 100.00% |
| Gavle | 0.9 | 100.00% |
| Haifa | 2.3 | 100.00% |
| Jan Mayen | 1.7 | 100.00% |
| Kirkenes | 1.3 | 100.00% |
| Lappeenranta | 1.0 | 100.00% |
| La Palma | 4.4 | 100.00% |
| Lisbon | 1.2 | 100.00% |
| Madeira | 1.7 | 100.00% |
| Malaga | 1.2 | 100.00% |
| Palma de Mallorca | 0.9 | 100.00% |
| Reykjavik | 1.5 | 100.00% |
| Rome | 0.9 | 100.00% |
| S. de Compostela | 1.1 | 100.00% |
| Sofia | 1.3 | 100.00% |
| Swanwick | 1.2 | 100.00% |
| Toulouse | 1.0 | 100.00% |
| Trondheim | 0.9 | 100.00% |
| Tromsoe | 1.4 | 100.00% |
| Warsaw | 1.0 | 100.00% |
| Zurich | 0.9 | 100.00% |

Table 3 – EGNOS NPA Horizontal Accuracy (95%) and percentage of time in NPA mode

The following figure shows the histogram and cumulative probability function of HNSE (Horizontal Navigation System Error), which are computed at RIMS sites for each second over the current month.

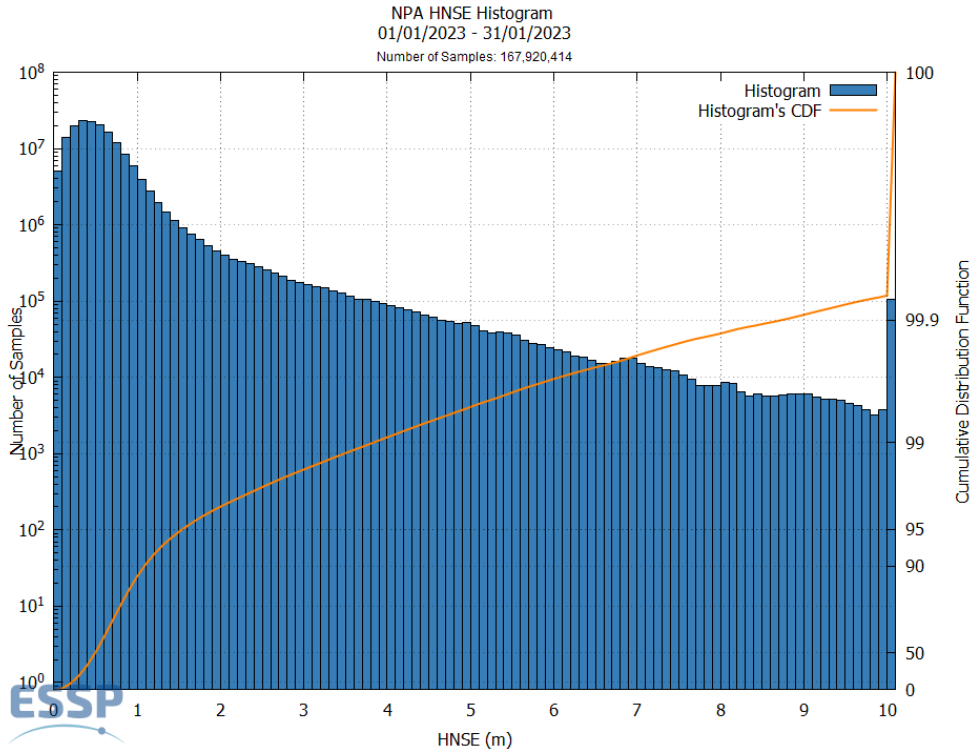
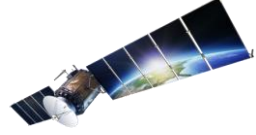


Figure 9 – EGNOS NPA HNSE Histogram and Cumulative Probability



3.2 EGNOS Approach with Vertical guidance (APV-I)

3.2.1 EGNOS APV-I Availability

EGNOS APV-I Availability is defined as the percentage of epochs in a month in which the Protection Level are below Alert Limits for this APV-I service (HPL<40m and VPL<50m) over the total period. This value corresponds to the performance obtained under fault-free conditions using all satellites in view.

The following picture presents the EGNOS APV-I Availability over the current month using GEO-combined maps for the operational EGNOS GEOs.

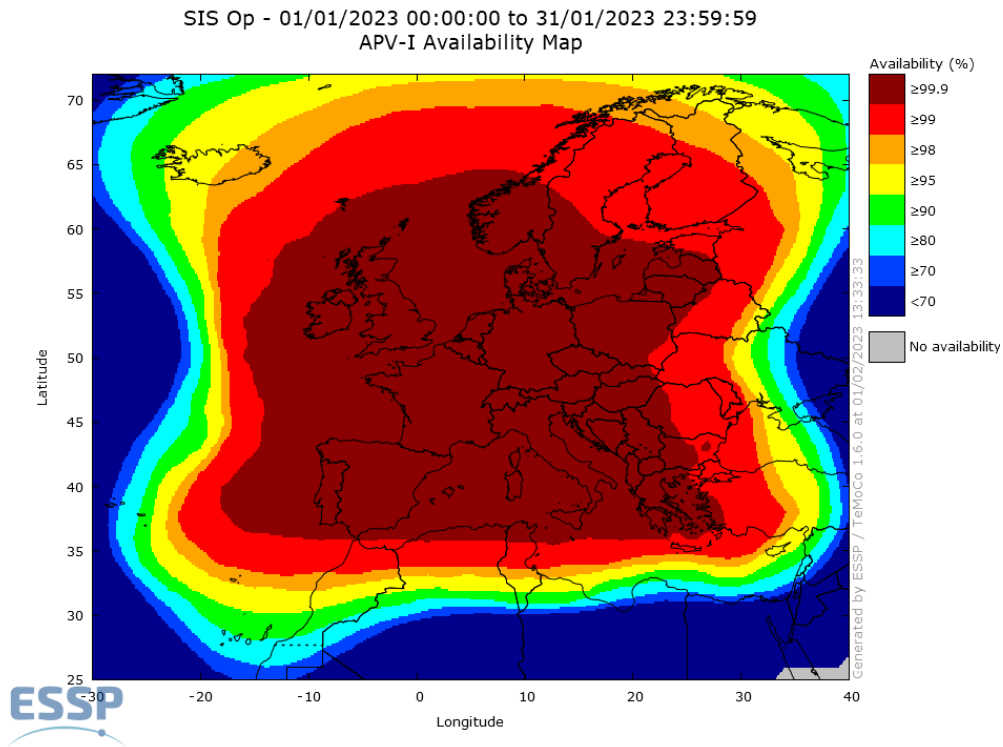


Figure 10 – EGNOS APV-I Availability

Below, the evolution of the daily APV-I Availability (99%) compliance area is presented. The percentage is computed with respect to ECAC Landmasses within the SDD commitment. The information is presented for the last 3 months.

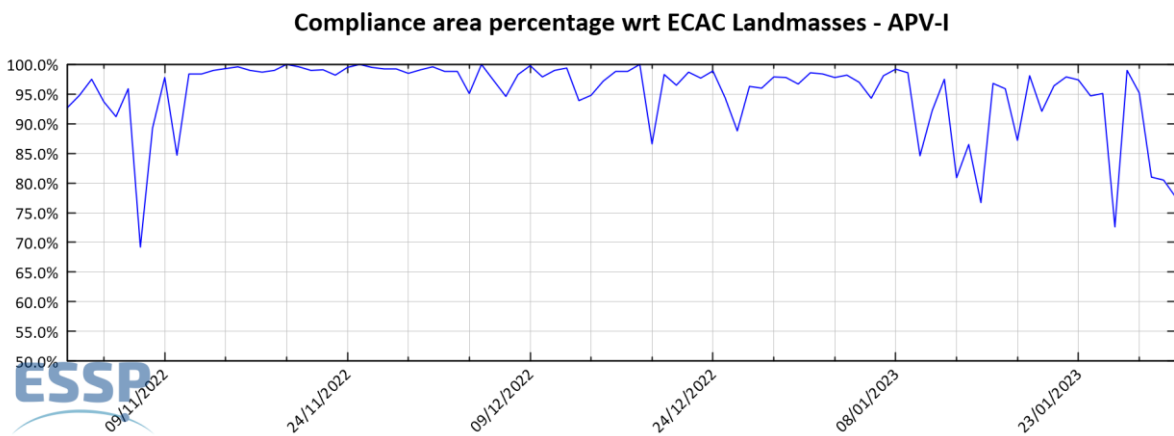


Figure 11 – EGNOS APV-I Availability compliance trend



3.2.2 EGNOS APV-I Continuity Risk

EGNOS APV-I Continuity Risk is defined as the result of dividing the total number of single continuity events using a time-sliding window of 15 seconds by the number of samples with valid and available APV-I navigation solution. A single continuity event occurs if the system is available at the start of the operation and in at least one of the following 15 seconds the system becomes not available. This value corresponds to the performance obtained under fault-free conditions using all satellites in view.

The following picture presents the EGNOS APV-I Continuity over the current month using GEO-combined maps for the operational EGNOS GEOs.

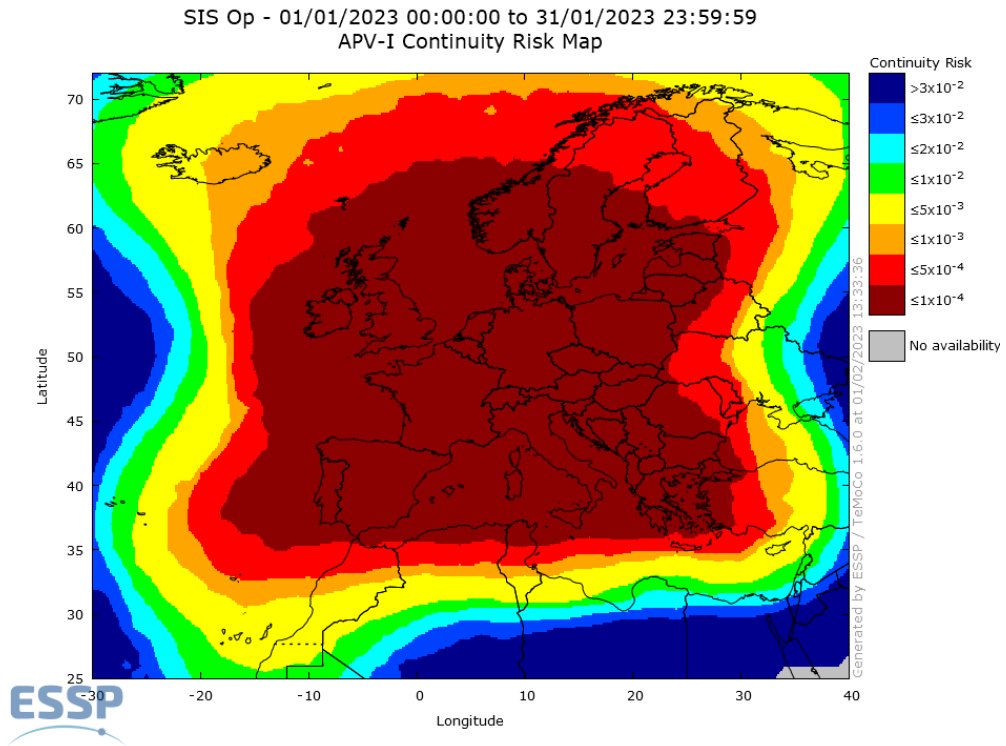


Figure 12 – EGNOS APV-I Continuity



3.2.3 EGNOS APV-I Integrity

EGNOS APV-I Integrity Event is defined as an event when the Navigation System Error is greater or equal to the corresponding Protection Level for APV-I.

No integrity event was detected.

Safety Index is defined as the relation between Navigation System Error versus Protection Level (assuming PA algorithms to compute $xNSE$ and xPL) for each second. In case of ratio xPE/xPL is over 1; it indicates that a Misleading Information situation has occurred.

The next figures provide the histogram for HSI (Horizontal Safety Index) and VSI (Vertical Safety Index) for each second when accumulating measurements from the different EGNOS stations over the current month. These histograms have considered that Protection Level is below APV-I Alarm Limit.

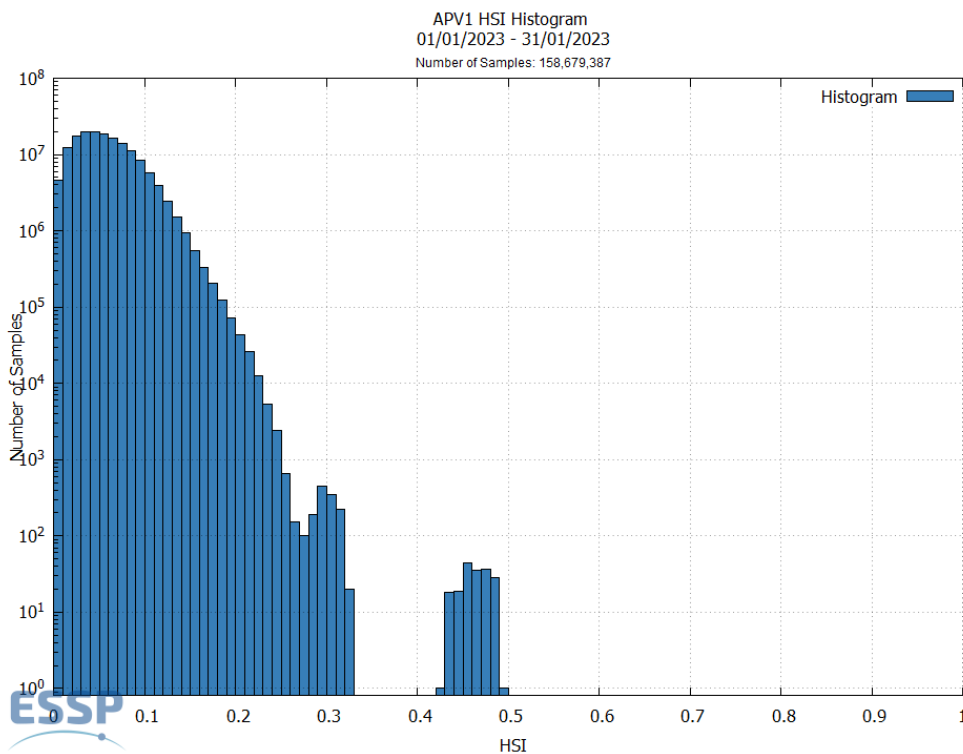


Figure 13 – EGNOS APV-I Horizontal Safety Index of the month

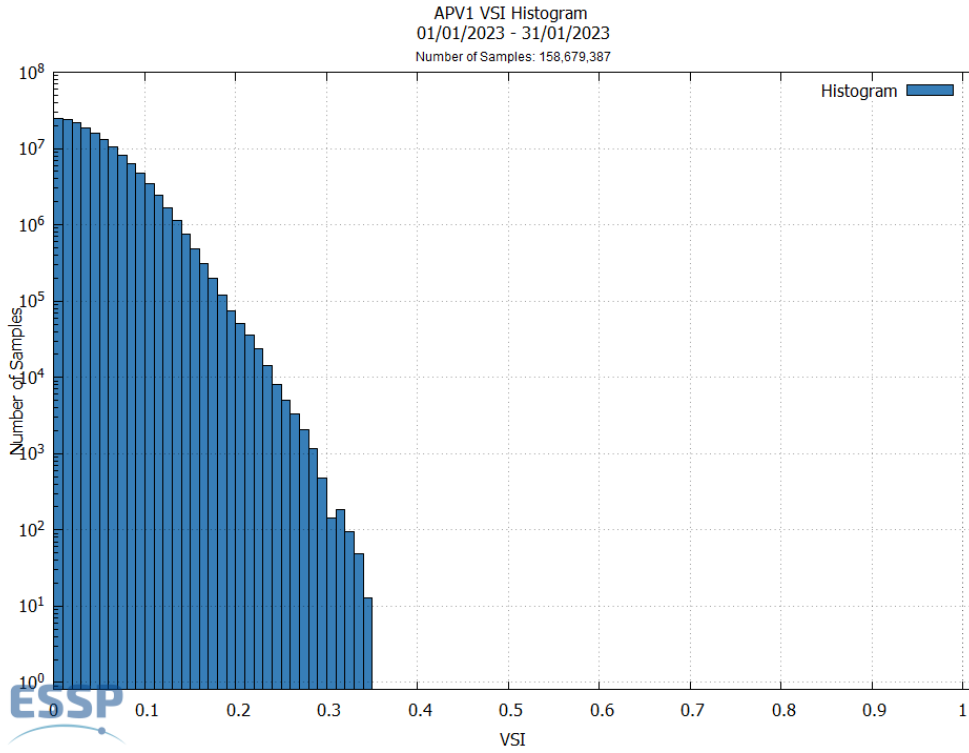


Figure 14 – EGNOS APV-I Vertical Safety Index of the month



3.2.4 EGNOS APV-I Accuracy

EGNOS APV-I Accuracy is reported as the 95th percentile of the Horizontal and Vertical Navigation System Error over the month, at the monitored sites when the APV-I service is available (HPL<40m and VPL<50m).

The following table shows the monthly APV-I Accuracy values in meters for the combined GEO satellite signal. See Appendix A for further details of the stations where APV-I Accuracy is reported.

| Station | HNSE 95% (meters) | VNSE 95% (meters) | % of samples with APV-I service available |
|-------------------|-------------------|-------------------|---|
| Agadir | 2.4 | 1.8 | 94.81% |
| Aalborg | 0.9 | 1.8 | 100.00% |
| Athens | 0.9 | 1.3 | 99.97% |
| Berlin | 1.0 | 1.6 | 100.00% |
| Canary Islands | 2.7 | 2.2 | 89.40% |
| Cork | 1.0 | 1.6 | 100.00% |
| Catania | 0.9 | 1.2 | 99.95% |
| Djerba | 1.3 | 1.3 | 99.33% |
| Egilsstadir | 1.1 | 2.1 | 98.54% |
| Glasgow | 1.0 | 1.7 | 100.00% |
| Golbasi | 1.0 | 1.4 | 98.88% |
| Gavle | 0.9 | 2.0 | 99.87% |
| Haifa | 1.2 | 1.9 | 81.01% |
| Jan Mayen | 1.5 | 2.6 | 97.12% |
| Kirkenes | 1.2 | 2.1 | 96.85% |
| Lappeenranta | 1.0 | 2.0 | 99.68% |
| La Palma | 2.4 | 2.0 | 89.36% |
| Lisbon | 1.2 | 1.5 | 100.00% |
| Madeira | 1.4 | 1.4 | 98.29% |
| Malaga | 1.1 | 1.2 | 99.95% |
| Palma de Mallorca | 0.9 | 1.1 | 100.00% |
| Reykjavik | 1.3 | 2.1 | 96.40% |
| Roma | 0.9 | 1.4 | 99.97% |
| S. de Compostela | 1.1 | 1.1 | 100.00% |
| Sofia | 1.3 | 2.0 | 99.97% |
| Swanwick | 1.2 | 1.7 | 100.00% |
| Toulouse | 1.0 | 1.3 | 100.00% |
| Trondheim | 0.9 | 1.9 | 99.91% |
| Tromsoe | 1.3 | 2.5 | 98.77% |
| Warsaw | 1.0 | 1.9 | 99.96% |
| Zurich | 0.9 | 1.5 | 100.00% |

Table 4 – EGNOS APV-I Accuracy (95%) and percentage of time in APV-I mode at reference stations



The next figures show the histogram and cumulative distribution function of HNSE (Horizontal Navigation System Error) and VNSE (Vertical Navigation System Error), which are computed at RIMS sites for each second over the current month.

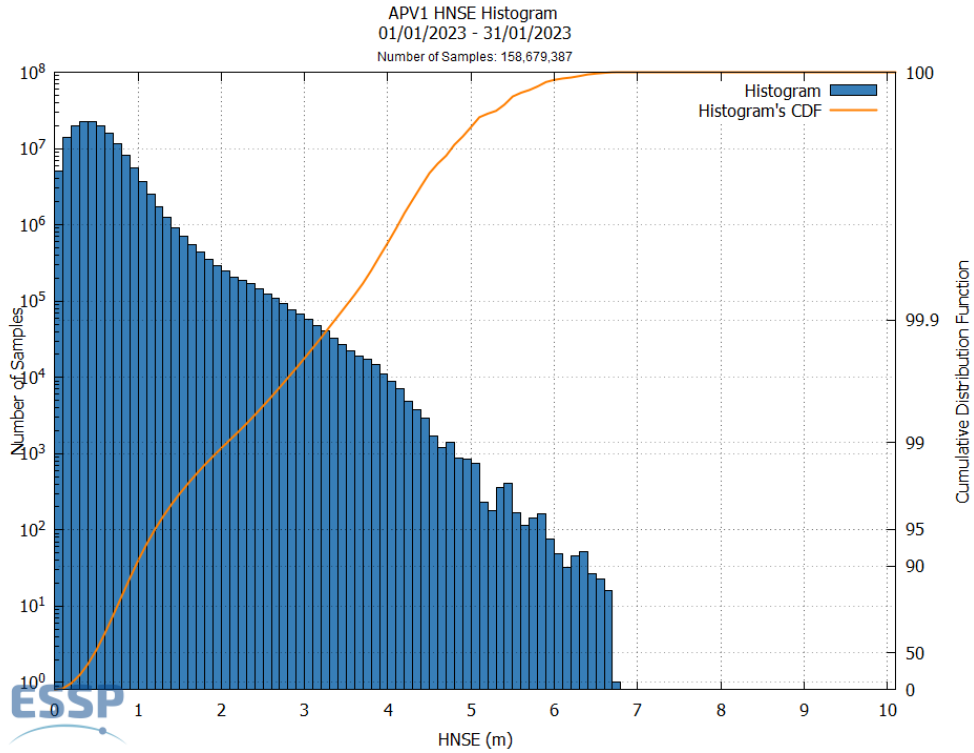


Figure 15 – EGNOS APV-I HNSE Histogram and Cumulative Probability

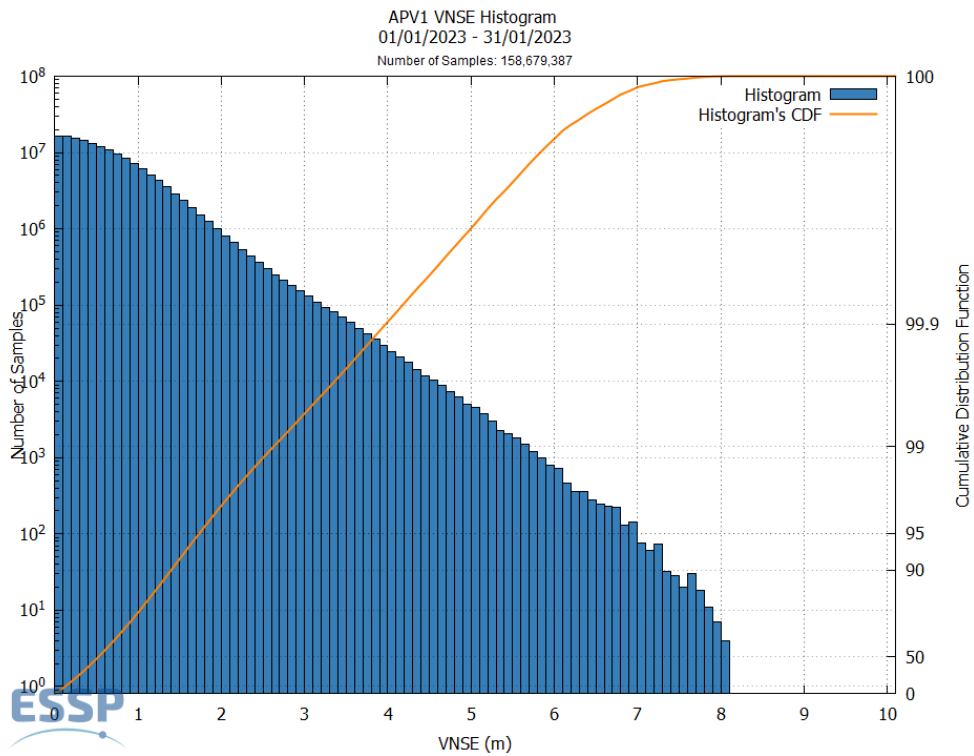


Figure 16 – EGNOS APV-I VNSE Histogram and Cumulative Probability



3.2.5 EGNOS APV-I Performance at airports

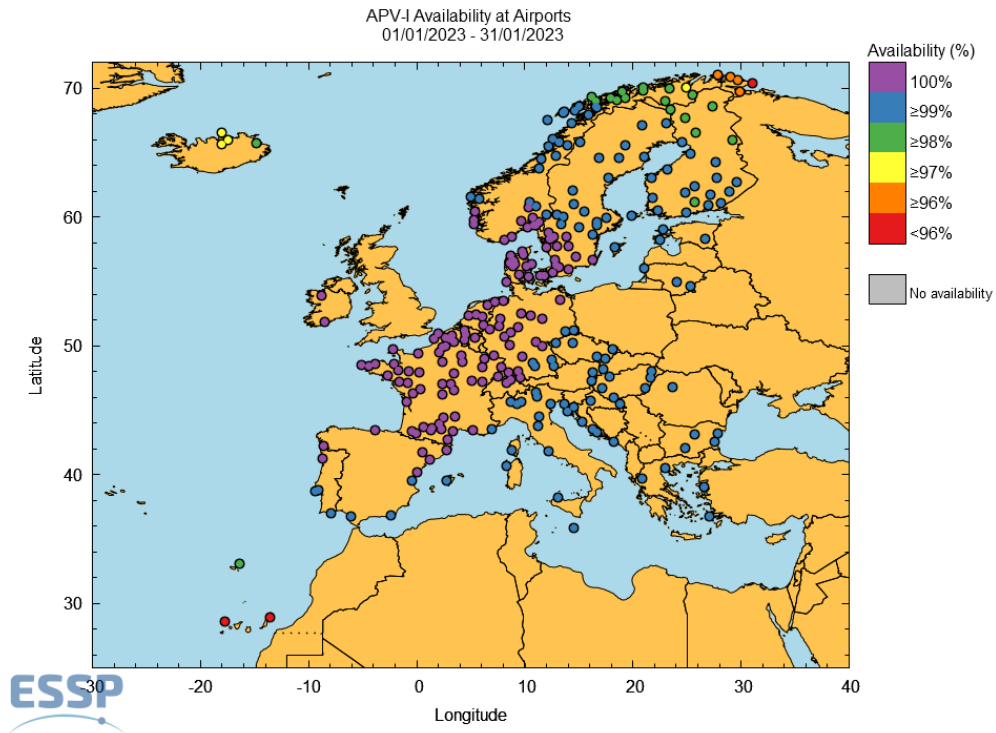


Figure 17 – EGNOS APV-I Availability at airports

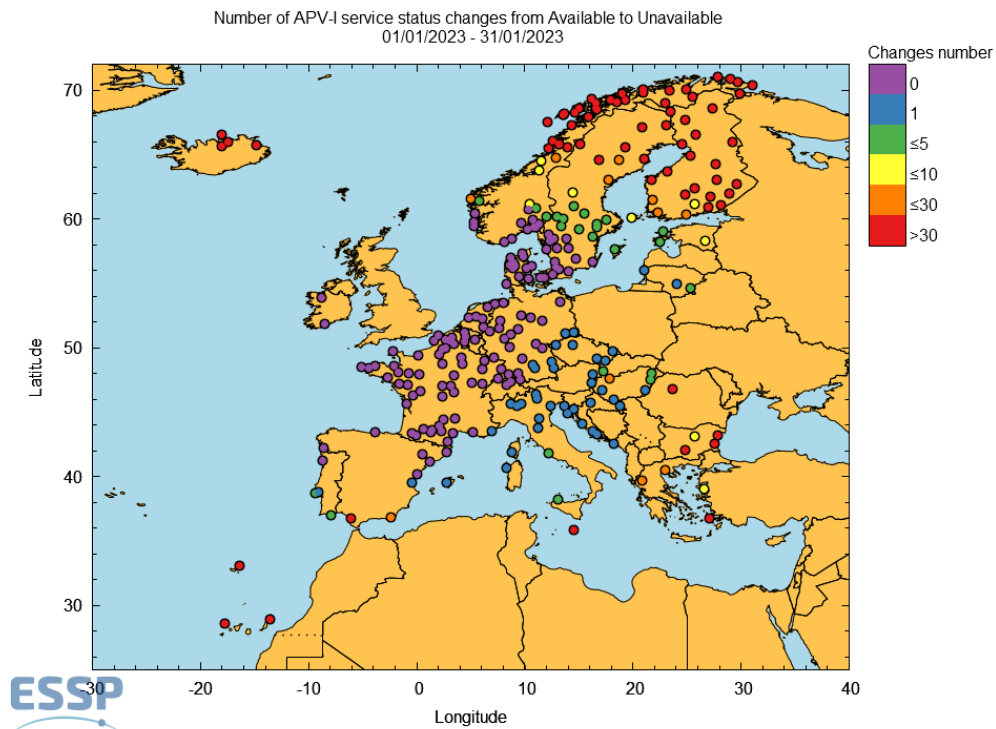


Figure 18 – EGNOS APV-I outages

See Appendix B for details of the APV-I Availability and Continuity at airports with published procedures using EGNOS.



3.3 EGNOS Localizer Performance with Vertical Guidance to a decision altitude of 200ft (LPV-200)

3.3.1 EGNOS LPV-200 Availability

EGNOS LPV-200 Availability is defined as the percentage of epochs in a month in which the Protection Level are below Alert Limits for this LPV-200 service (HPL<40m and VPL<35m) over the total period. This value corresponds to the performance obtained under fault-free conditions using all satellites in view.

The following picture presents the EGNOS LPV-200 Availability over the current month using GEO-combined maps for the operational EGNOS GEOs.

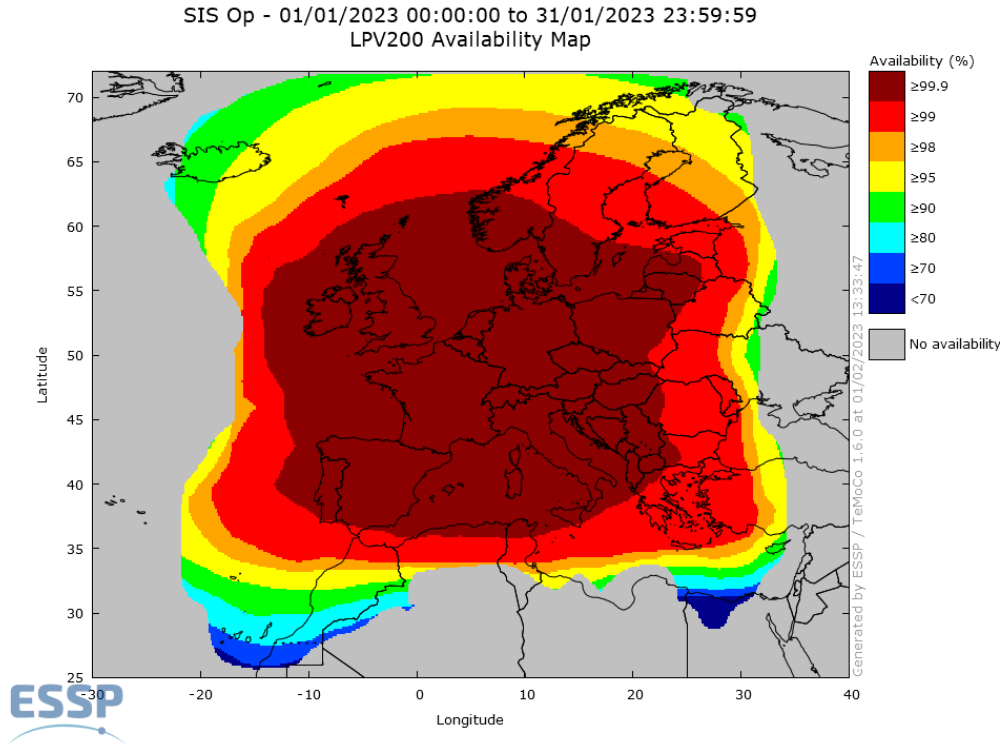


Figure 19 – EGNOS LPV-200 Availability

Below, the evolution of the daily LPV200 Availability (99%) compliance area is presented. The percentage is computed with respect to ECAC Landmasses within the SDD commitment area. The information is presented for the last 3 months.

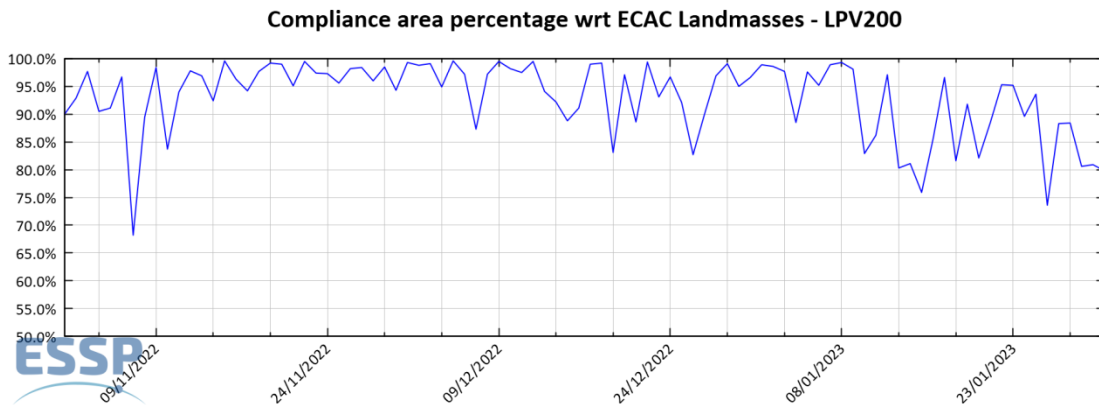


Figure 20 – EGNOS LPV-200 Availability compliance trend



3.3.2 EGNOS LPV-200 Continuity Risk

EGNOS LPV-200 Continuity Risk is defined as the result of dividing the total number of single continuity events using a time-sliding window of 15 seconds by the number of samples with valid and available LPV-200 navigation solution. A single continuity event occurs if the system is available at the start of the operation and in at least one of the following 15 seconds the system becomes not available. This value corresponds to the performance obtained under fault-free conditions using all satellites in view.

The following picture presents the EGNOS LPV-200 Continuity over the current month using GEO-combined maps for the operational EGNOS GEOs.

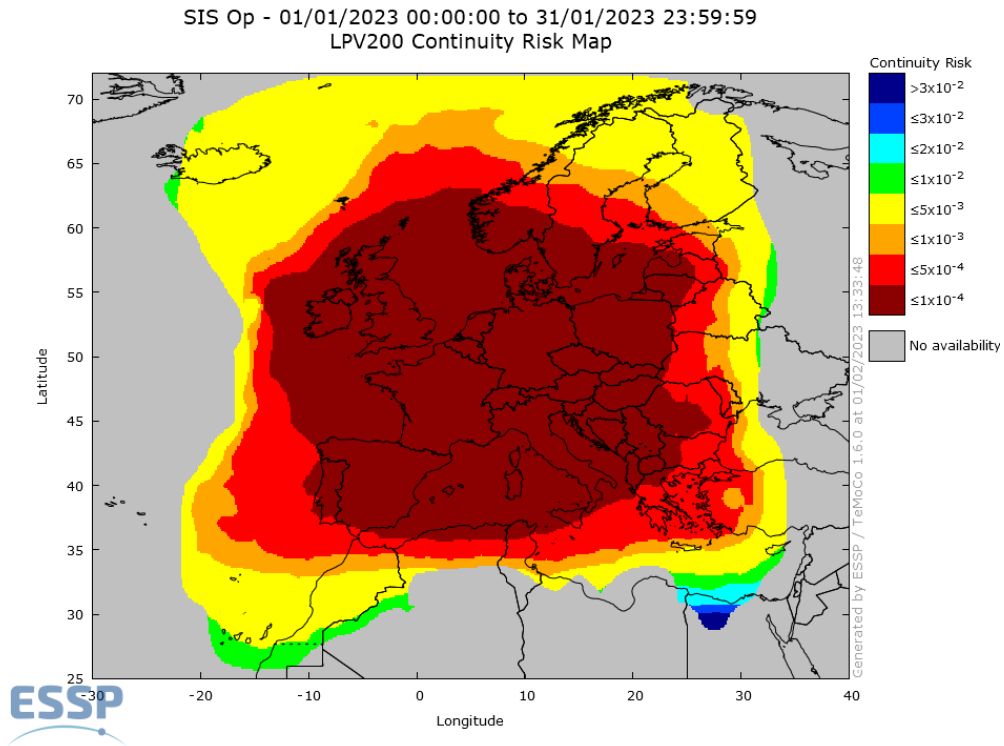


Figure 21 – EGNOS LPV-200 Continuity²

² The lack of additional performance levels in grey areas is due to the non-compliance in this region with the accuracy requirements imposed to LPV-200 service level. For more details please refer to section 6.3.3.1 of the EGNOS Safety of Life SDD [RD-2].



3.3.3 EGNOS LPV-200 Integrity

EGNOS LPV-200 Integrity Event is defined as an event when the Navigation System Error is greater or equal to the corresponding Protection Level for LPV-200.

No integrity event was detected.

Safety Index is defined as the relation between Navigation System Error versus Protection Level (assuming PA algorithms to compute $xNSE$ and xPL) for each second. In case of ratio xPE/xPL is over 1; it indicates that a Misleading Information situation has occurred.

The next figures provide the histogram for HSI (Horizontal Safety Index) and VSI (Vertical Safety Index) for each second when accumulating measurements from the different EGNOS stations over the current month. These histograms have considered that Protection Level is below LPV-200 Alarm Limit.

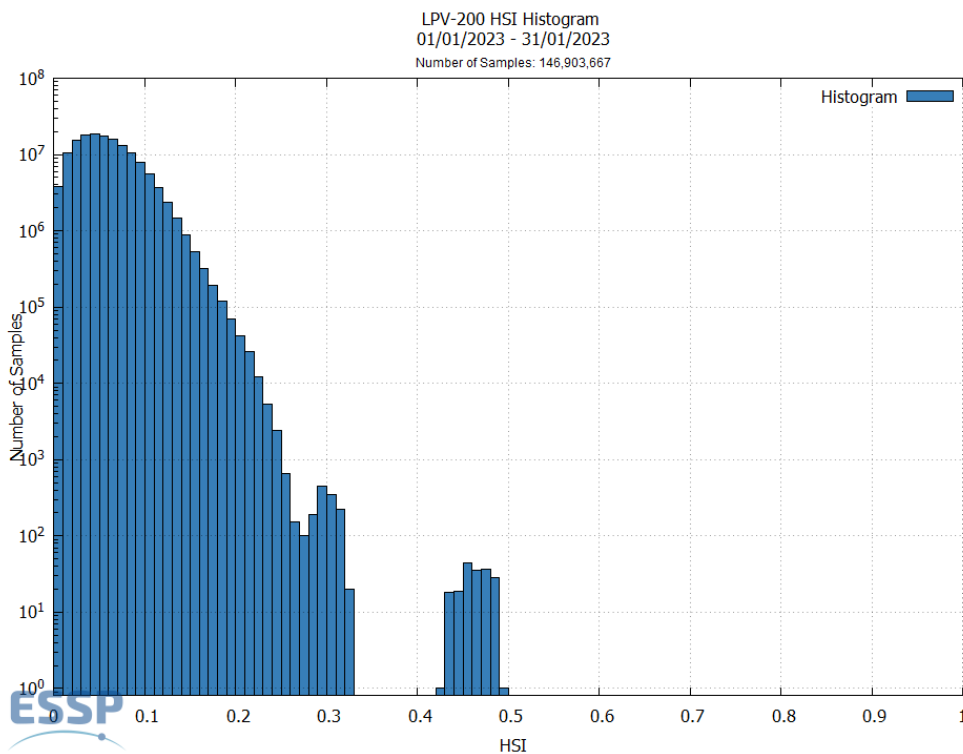


Figure 22 – EGNOS LPV-200 Horizontal Safety Index of the month

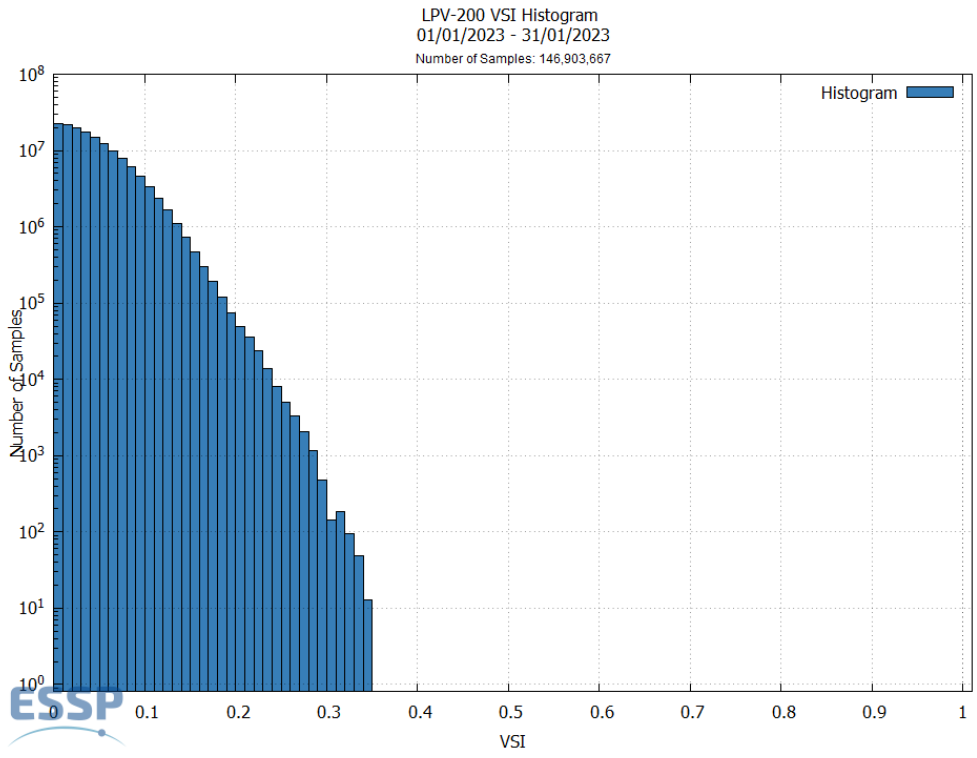


Figure 23 – EGNOS LPV-200 Vertical Safety Index of the month

If printed, make sure it is the applicable version



3.3.4 EGNOS LPV-200 Accuracy

EGNOS LPV-200 Accuracy is reported as the 95th percentile of the Horizontal and Vertical Navigation System Error over the month, at the monitored sites when the LPV-200 service is available (HPL<40m and VPL<35m).

The following table shows the monthly LPV-200 Accuracy values in meters for the combined GEO satellite signal. See Appendix A for further details of the stations where LPV-200 Accuracy are reported.

| Station | HNSE 95% (meters) | VNSE 95% (meters) | % of samples with LPV-200 service available |
|-------------------|-------------------|-------------------|---|
| Agadir | 2.2 | 1.7 | 91.02% |
| Aalborg | 0.9 | 1.8 | 100.00% |
| Athens | 0.9 | 1.3 | 99.87% |
| Berlin | 1.0 | 1.6 | 100.00% |
| Canary Islands | 2.5 | 1.9 | 81.76% |
| Cork | 1.0 | 1.6 | 100.00% |
| Catania | 0.9 | 1.2 | 99.94% |
| Djerba | 1.3 | 1.3 | 99.11% |
| Egilsstadir | 1.1 | 2.0 | 96.09% |
| Glasgow | 1.0 | 1.7 | 100.00% |
| Golbasi | 1.0 | 1.4 | 97.62% |
| Gavle | 0.9 | 2.0 | 99.77% |
| Jan Mayen | 1.5 | 2.5 | 93.77% |
| Lappeenranta | 0.9 | 2.0 | 99.13% |
| La Palma | 2.1 | 1.8 | 80.98% |
| Lisboa | 1.2 | 1.5 | 99.97% |
| Madeira | 1.4 | 1.4 | 95.50% |
| Malaga | 1.1 | 1.2 | 99.91% |
| Palma de Mallorca | 0.9 | 1.1 | 100.00% |
| Reykjavik | 1.2 | 2.0 | 90.62% |
| Rome | 0.9 | 1.4 | 99.97% |
| S. de Compostela | 1.1 | 1.1 | 99.99% |
| Sofia | 1.3 | 2.0 | 99.93% |
| Swanwick | 1.2 | 1.7 | 100.00% |
| Toulouse | 1.0 | 1.3 | 100.00% |
| Trondheim | 0.9 | 1.9 | 99.72% |
| Tromsoe | 1.3 | 2.4 | 97.01% |
| Warsaw | 1.0 | 1.9 | 99.95% |
| Zurich | 0.9 | 1.5 | 100.00% |

Table 5 – EGNOS LPV-200 Accuracy (95%) and percentage of time in LPV-200 mode at reference stations

The next figures show the histogram and cumulative distribution function of HNSE (Horizontal Navigation System Error) and VNSE (Vertical Navigation System Error), which are computed at RIMS sites for each second over the current month.

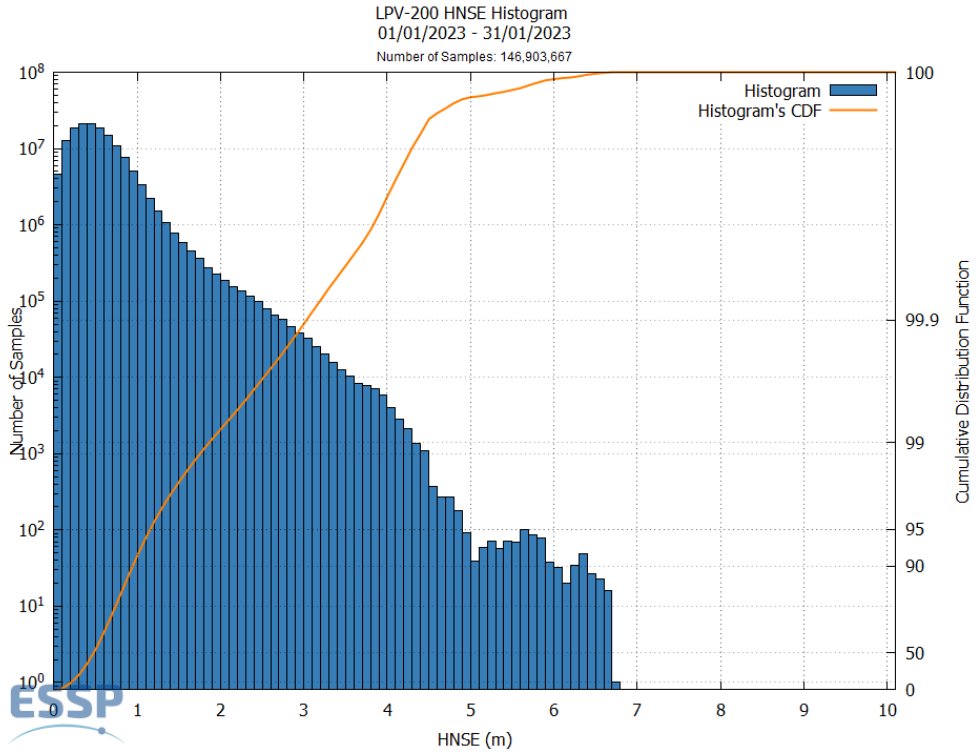


Figure 24 – EGNOS LPV-200 HNSE Histogram and Cumulative Probability

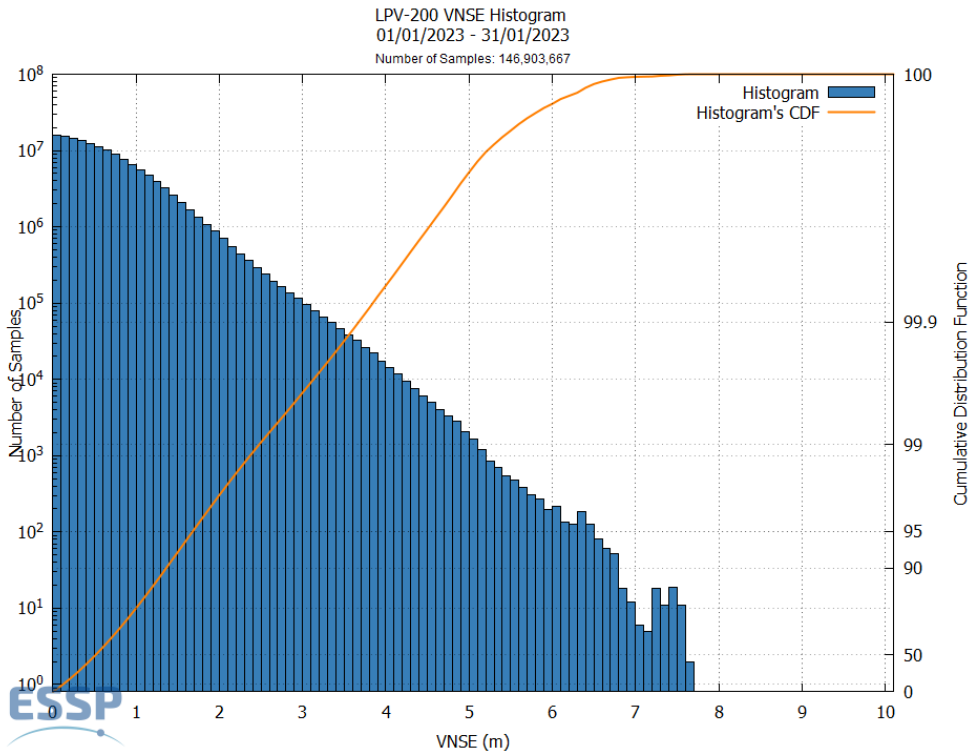


Figure 25 – EGNOS LPV-200 VNSE Histogram and Cumulative Probability



3.3.5 EGNOS LPV-200 Performance at airports

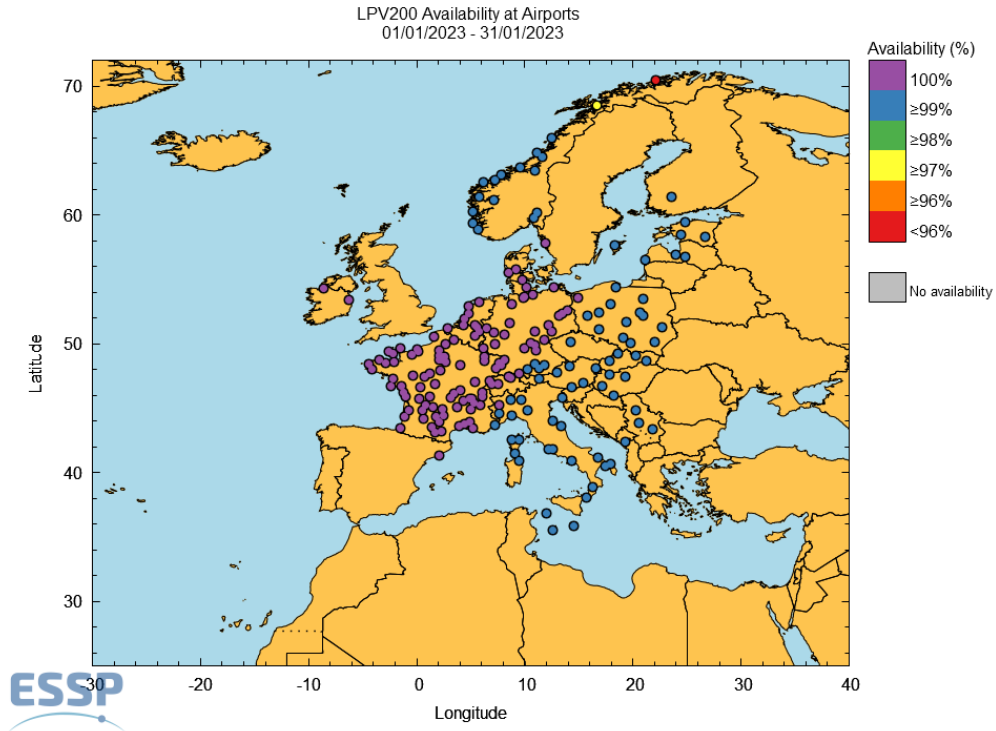


Figure 26 – EGNOS LPV-200 Availability at airports

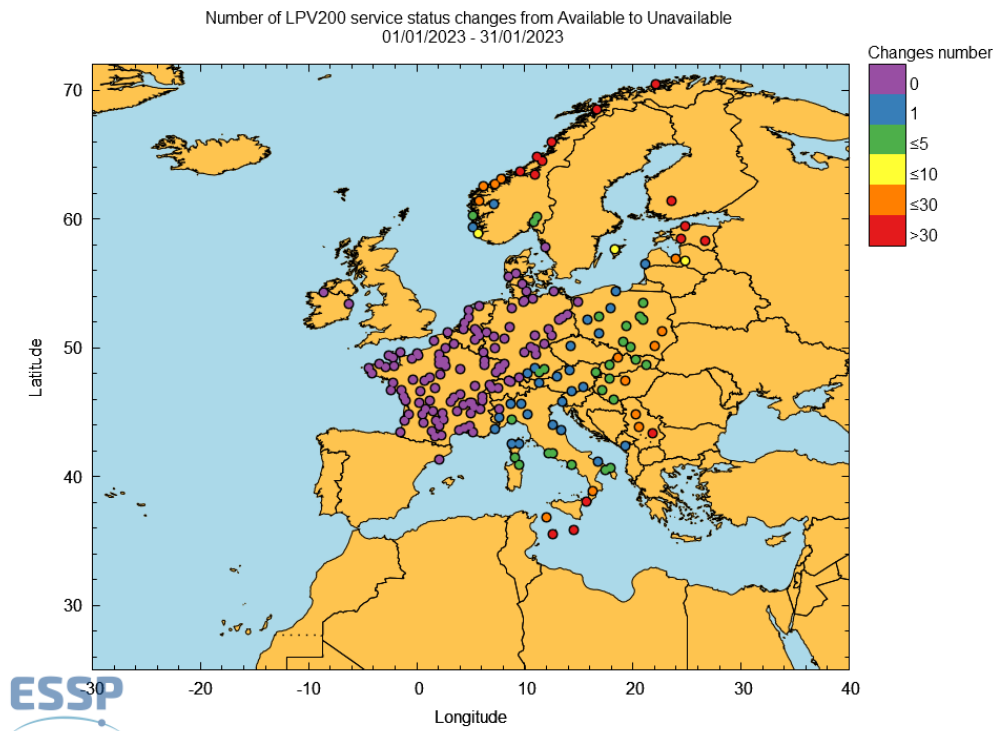


Figure 27 – EGNOS LPV-200 outages

See Appendix C for details of the LPV-200 Availability and Continuity at airports with published procedures using EGNOS.



3.3.6 EGNOS LPV-200 accuracy extrapolated at $10^{-7}/150s$

This section presents the results of extrapolating the accuracy results for every station to $10^{-7}/150$ sec. This consists on the characterization of the accuracy distribution tails by means of a Gaussian extrapolation applied to the vertical navigation error.

This information will be updated every six months within the monthly reports of January and July and containing the reporting period corresponding to each semester of the year.

The following results present the values obtained from 1st July 2022 to 31st December 2022. For this period, all the RIMS within LPV-200 service area present extrapolated accuracy values within the requirement: $Pr(VNSE > 10m) < 10^{-7}/150s$.

Next map show this information from a geographical point of view:

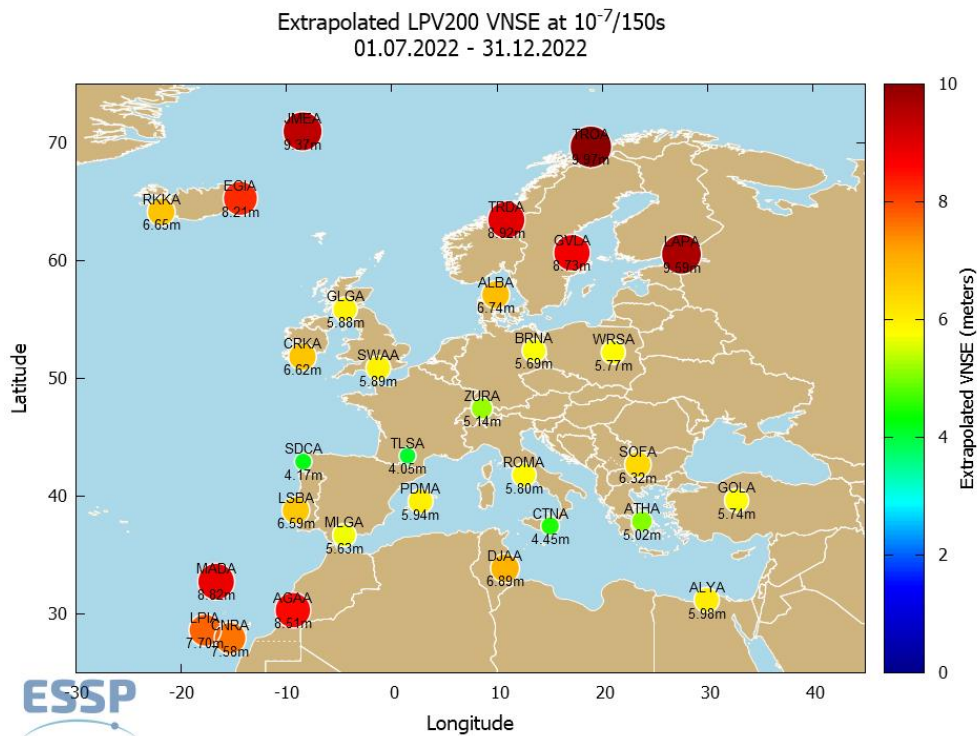


Figure 28 – Extrapolated VNSE at $10^{-7}/150s$ in the RIMS within the LPV200 commitment

For detailed information of VNSE histogram data extrapolated at $10^{-7}/150s$ for each RIMS location, please refer to Appendix F.



4 EGNOS DATA ACCESS SERVICE (EDAS)

EDAS (EGNOS Data Access Service) offers internet-based access to EGNOS data [RD-3]. It is the single point of access for the data collected and generated by the EGNOS infrastructure composed of ground stations distributed over Europe and North Africa.

The main data provided by EDAS are:

- Raw GPS, GLONASS and EGNOS GEO observations and navigation data collected by the entire network of Ranging and Integrity Monitoring Stations (RIMS) and Navigation Land Earth Stations (NLES).
- EGNOS augmentation messages, as normally received by users via the EGNOS Geostationary satellites.

These data are provided through different EDAS Services in different formats in order to meet different set of applications and needs. For a description of the EDAS services, please refer to the EDAS SDD [RD-3].

Additional information on the EDAS services is available at the EDAS specific section of the EGNOS User Support website (<https://egnos-user-support.essp-sas.eu>), including the [EDAS services status in real-time](#).

Below, the performance of EDAS Services (please refer to the EDAS SDD [RD-3] for definition details) corresponding to January 2023 is presented:

- Availability: Percentage of time during which the service provides the data according to the specifications.
- Latency: Average of the percentile 95% latencies monitored for every 5 minutes period within the month.

| EDAS Service | | Availability | Latency (ms) |
|-------------------------------|-------------------|--------------|--------------|
| Service Level 0 | - | 100.00% | 681.35 |
| Service Level 2 | - | 100.00% | 681.81 |
| Ntrip Service | - | 100.00% | 633.06 |
| SISNeT Service | GEO Operational 1 | 99.99% | 60.77 |
| | GEO Operational 2 | 99.98% | 61.13 |
| Data Filtering Service | RIMS A | 100.00% | 586.90 |
| | Central | 100.00% | 444.20 |
| | MEDA | 100.00% | 511.32 |
| | North-East | 100.00% | 198.16 |
| | North-West | 100.00% | 498.90 |
| | South-West | 100.00% | 578.52 |
| FTP Service | - | 100.00% | N/A |

Table 6 – Performance of EDAS Services



5 EGNOS TIME SERVICE

The EGNOS Time Service supports timing application by providing specific corrections that allow the tracing of EGNOS Network Time (ENT) to the physical realisation of the Coordinated Universal Time by Observatoire de Paris, UTC (OP).

The **EGNOS Time Service Availability³** is computed as the percentage of time per day in which it is possible to obtain the time solution referred to UTC scale by applying a valid offset between the EGNOS Network Time (ENT) and the UTC scale, provided through the EGNOS Message Type 12.

The EGNOS Time Service availability presented for the combination of both operational GEOs was almost 100% for all the month except on January 3rd with 98.4%.

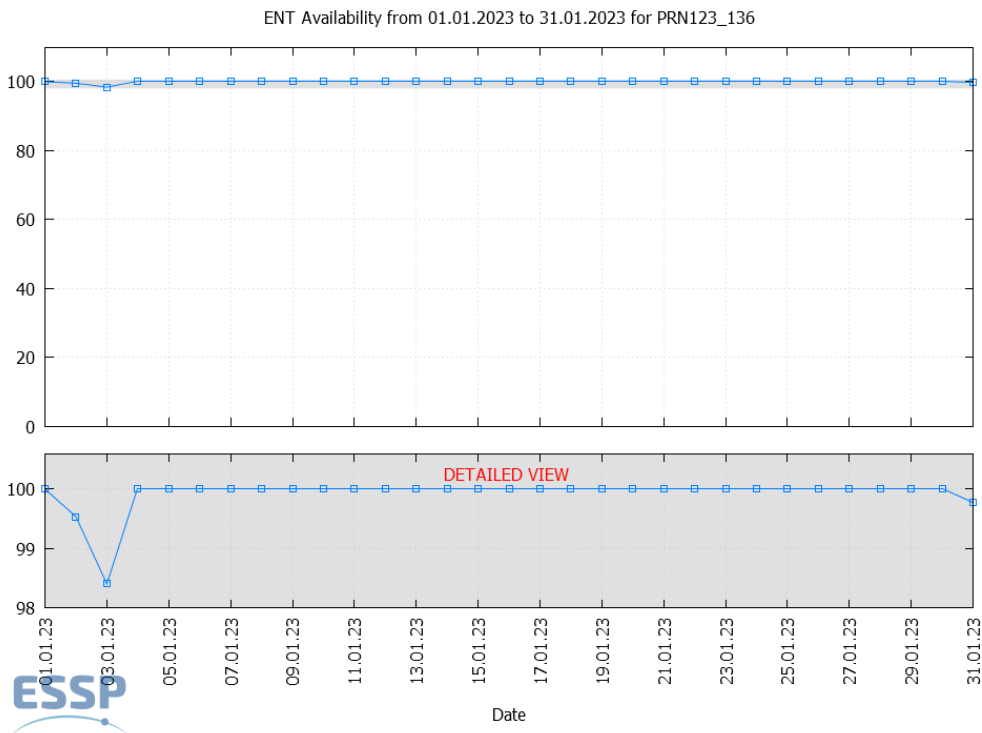


Figure 29 – EGNOS Time Service availability

The EGNOS Network Time is computed assuring its alignment with the GPS timescale, due to this requirement it must be satisfied that the offset between both timescales is below 50ns. The next figure shows the relative consistency of both ENT and GPS timescales from October 2022 to December 2022. It can be observed that the offset between them remains below 14 nanoseconds.

³ EGNOS Time Service Availability is computed taking into account that it is not possible to obtain the time solution if the navigation solution cannot be computed. Therefore, if a SiS outage longer than 3 seconds happens the MT12 data will be set as invalid in order to simulate the unavailability of the receiver to compute the PVT solution and no Time Service will be available until a new valid MT12 is received. In order to take into account the user capability of switching from one operational GEO to the other in case of SiS outage, the EGNOS Time Service availability is computed over the combination of both GEOs.

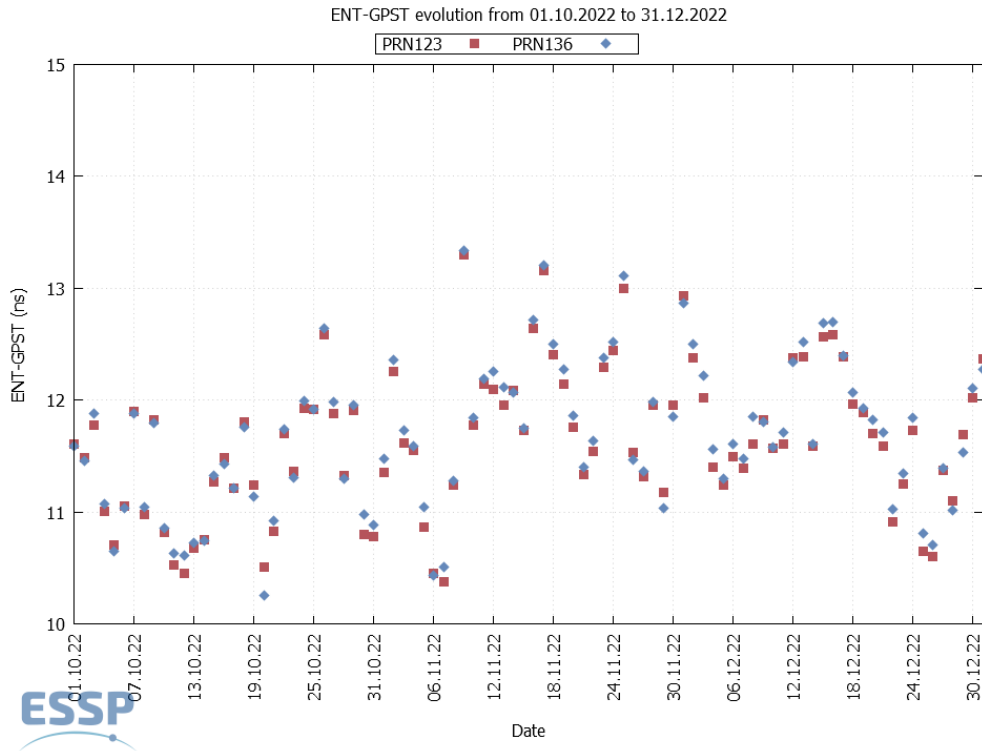


Figure 30 – ENT-GPS offset evolution



FOR MORE INFORMATION

To get more information about EGNOS performance:

Please visit the EGNOS User Support website:

<https://egnos-user-support.essp-sas.eu>

or

Contact the EGNOS helpdesk:

egnos-helpdesk@essp-sas.eu

+34 911 236 555

Or

Download the EGNOS app from the [App Store](#) or [Google Play](#)

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APPENDIX A RECEIVER MONITORING NETWORK

The receiver network used to report EGNOS performances in this document is based on the EGNOS monitoring stations (RIMS).

Next map shows the location of this receiver monitoring network, used in this report to present the EGNOS performances:

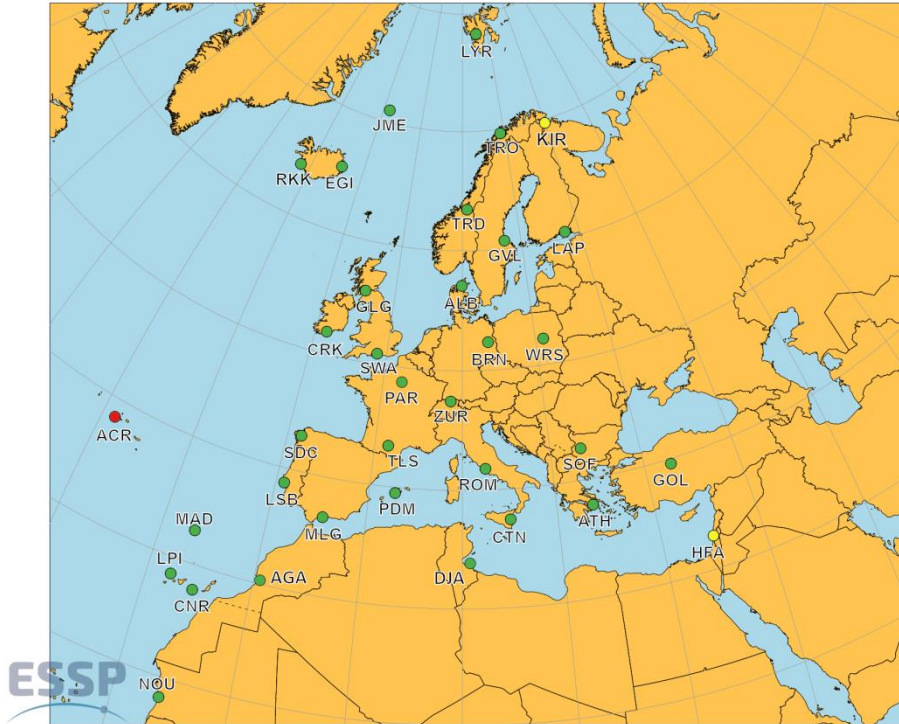


Figure 31 – EGNOS RIMS sites used in this report

The stations in green colour are used to report LPV-200.

The stations in green and yellow colour are used to report APV-I.

The stations in green and yellow are used to report Open Service results.

Performances corresponding to NPA include all the stations (green, yellow and red colours).

Next table shows the name and location of each one, also represents which service is used in each of them.



| Id | Location name | Country | APV-I | LPV-200 | OS | NPA |
|-----|------------------------|----------------|-------|---------|----|-----|
| ACR | RIMS Azores | Portugal | | | | X |
| ALB | RIMS Aalborg | Denmark | X | X | X | X |
| AGA | RIMS Agadir | Morocco | X | X | X | X |
| ATH | RIMS Athens | Greece | X | X | X | X |
| BRN | RIMS Berlin | Germany | X | X | X | X |
| CNR | RIMS Canary Isl. | Spain | X | X | X | X |
| CRK | RIMS Cork | Ireland | X | X | X | X |
| CTN | RIMS Catania | Italy | X | X | X | X |
| DJA | RIMS Djerba | Tunisia | X | X | X | X |
| EGI | RIMS Egilsstadir | Iceland | X | X | X | X |
| GLG | RIMS Glasgow | United Kingdom | X | X | X | X |
| GOL | RIMS Golbasi | Turkey | X | X | X | X |
| GVL | RIMS Gavle | Sweden | X | X | X | X |
| HFA | RIMS Haifa | Israel | X | | X | X |
| JME | RIMS Jan Mayen | Norway | X | X | X | X |
| KIR | RIMS Kirkenes | Norway | X | | X | X |
| LAP | RIMS Lappeenranta | Finland | X | X | X | X |
| LPI | RIMS La Palma | Spain | X | X | X | X |
| LSB | RIMS Lisbon | Portugal | X | X | X | X |
| MAD | RIMS Madeira | Portugal | X | X | X | X |
| MLG | RIMS Malaga | Spain | X | X | X | X |
| PDM | RIMS Palma de Mallorca | Spain | X | X | X | X |
| RKK | RIMS Reykjavik | Iceland | X | X | X | X |
| ROM | RIMS Rome | Italy | X | X | X | X |
| SDC | RIMS S. de Compostela | Spain | X | X | X | X |
| SOF | RIMS Sofia | Bulgaria | X | X | X | X |
| SWA | RIMS Swanwick | United Kingdom | X | X | X | X |
| TLS | RIMS Toulouse | France | X | X | X | X |
| TRD | RIMS Trondheim | Norway | X | X | X | X |
| TRO | RIMS Tromsoe | Norway | X | X | X | X |
| WRS | RIMS Warsaw | Poland | X | X | X | X |
| ZUR | RIMS Zurich | Switzerland | X | X | X | X |

Table 7 – List of sites where performances are reported

Note that for the computation of the different histograms presented in this document, some periods may have been removed, corresponding to stations presenting bad quality of data linked to local environment.



APPENDIX B EGNOS APV-I PERFORMANCE AT AIRPORTS

The table reports APV-I Availability and Continuity at airports with published procedures using EGNOS. These values correspond to the performance obtained under fault-free conditions using all satellites in view:

| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|-----------------------------------|---------|----------------------------|-------------------------------|---------|---|--|---|
| BIAR / Akureyri | Iceland | 97.82% | 7.91E-04 | 347 | 21/05/2020 | 99.01% | 5.93E-04 |
| BIGR / Grimsey | Iceland | 97.44% | 1.06E-03 | 560 | 22/04/2021 | 99.08% | 5.65E-04 |
| BIHU / Husavik | Iceland | 97.86% | 7.06E-04 | 268 | 29/03/2019 | 99.13% | 5.52E-04 |
| BIVO / Vopnafjordur | Iceland | 98.38% | 5.43E-04 | 212 | 22/04/2021 | 99.57% | 2.58E-04 |
| EBAW / Antwerpen / Deurne | Belgium | 100.00% | 0.00E+00 | 0 | 10/12/2015 | 99.99% | 6.91E-06 |
| EBBR / Brussels-National | Belgium | 100.00% | 0.00E+00 | 0 | 02/03/2017 | 99.99% | 6.17E-06 |
| EBCI / Charleroi / Brussels South | Belgium | 100.00% | 0.00E+00 | 0 | 31/03/2016 | 99.99% | 5.22E-06 |
| EBKT / Kortrijk/Wevelgem | Belgium | 100.00% | 0.00E+00 | 0 | 09/11/2017 | 99.99% | 6.32E-06 |
| EBLG / Liège | Belgium | 100.00% | 0.00E+00 | 0 | 13/10/2016 | 99.99% | 5.25E-06 |
| EDAB / Bautzen | Germany | 99.97% | 5.60E-06 | 1 | 27/04/2017 | 99.94% | 1.36E-05 |
| EDBM / Magdeburg/City | Germany | 100.00% | 0.00E+00 | 0 | 13/12/2012 | 99.94% | 1.40E-05 |
| EDBN / Neubrandenburg | Germany | 100.00% | 0.00E+00 | 0 | 02/04/2015 | 99.99% | 1.02E-05 |
| EDDC / Dresden | Germany | 99.97% | 5.60E-06 | 1 | 15/12/2011 | 99.94% | 1.26E-05 |
| EDDF / Frankfurt Main | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.95% | 1.07E-05 |
| EDDG / Münster/Osnabrück | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.94% | 1.26E-05 |
| EDDL / Düsseldorf | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.94% | 1.08E-05 |
| EDDR / Saarbrücken | Germany | 100.00% | 0.00E+00 | 0 | 01/03/2018 | 99.99% | 4.44E-06 |
| EDDV / Hannover | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.94% | 1.35E-05 |
| EDFQ / Allendorf/Eder | Germany | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.95% | 1.09E-05 |
| EDGS / Siegerland | Germany | 100.00% | 0.00E+00 | 0 | 12/10/2017 | 99.99% | 5.95E-06 |
| EDLV / Niederrhein | Germany | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.99% | 6.25E-06 |
| EDLW / Dortmund | Germany | 100.00% | 0.00E+00 | 0 | 12/12/2013 | 99.94% | 1.18E-05 |
| EDMA / Augsburg | Germany | 99.97% | 5.60E-06 | 1 | 15/12/2011 | 99.94% | 1.29E-05 |
| EDME / Eggenfelden | Germany | 99.97% | 5.60E-06 | 1 | 11/12/2014 | 99.94% | 1.39E-05 |
| EDMS / Straubing | Germany | 99.97% | 5.60E-06 | 1 | 11/12/2014 | 99.94% | 1.19E-05 |
| EDPR / Donauwörth | Germany | 99.99% | 5.60E-06 | 1 | 08/12/2016 | 99.99% | 4.97E-06 |
| EDQC / Coburg-Brandensteinebene | Germany | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.95% | 9.85E-06 |
| EDQD / Bayreuth | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.95% | 1.03E-05 |
| EDTD / Donaueschingen- | Germany | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.95% | 1.29E-05 |



| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|---------------------------------------|---------|----------------------------|-------------------------------|---------|---|--|---|
| Villingen | | | | | | | |
| EDTL / Lahr | Germany | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.99% | 6.43E-06 |
| EDTM / Mengen-Hohentengen | Germany | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.94% | 1.37E-05 |
| EDTY / Schwäbisch-Hall | Germany | 100.00% | 0.00E+00 | 0 | 13/12/2012 | 99.95% | 1.16E-05 |
| EDVE / Braunschweig-Wolfsburg | Germany | 100.00% | 0.00E+00 | 0 | 18/10/2012 | 99.94% | 1.37E-05 |
| EDVK / Kassel-Calden | Germany | 100.00% | 0.00E+00 | 0 | 04/04/2013 | 99.97% | 8.32E-06 |
| EDWE / Emden | Germany | 100.00% | 0.00E+00 | 0 | 30/05/2013 | 99.98% | 9.58E-06 |
| EDWI / Wilhelmshaven JadeWeserAirport | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.94% | 1.34E-05 |
| EDXW / Sylt | Germany | 100.00% | 0.00E+00 | 0 | 10/12/2015 | 99.98% | 1.09E-05 |
| EEKA / Kärdla | Estonia | 99.89% | 2.80E-05 | 5 | 31/01/2019 | 99.97% | 1.89E-05 |
| EEKE / Kuressaare | Estonia | 99.93% | 2.80E-05 | 5 | 02/03/2017 | 99.98% | 1.76E-05 |
| EETU / Tartu | Estonia | 99.89% | 3.96E-05 | 8 | 18/07/2019 | 99.94% | 3.89E-05 |
| EFET / Enontekiö | Finland | 98.77% | 4.56E-04 | 173 | 07/12/2017 | 99.81% | 1.57E-04 |
| EFHA / Halli | Finland | 99.66% | 1.87E-04 | 98 | 03/12/2020 | 99.93% | 4.69E-05 |
| EFHK / Helsinki-Vantaa | Finland | 99.79% | 7.15E-05 | 13 | 27/02/2020 | 99.95% | 4.13E-05 |
| EFIV / Ivalo | Finland | 98.07% | 6.20E-04 | 268 | 07/12/2017 | 99.49% | 4.04E-04 |
| EFJO / Joensuu | Finland | 99.34% | 2.66E-04 | 140 | 12/12/2013 | 99.74% | 1.63E-04 |
| EFJY / Jyväskylä | Finland | 99.58% | 1.66E-04 | 104 | 07/12/2017 | 99.91% | 6.58E-05 |
| EFKE / Kemi-Tornio | Finland | 99.29% | 2.53E-04 | 96 | 07/12/2017 | 99.89% | 1.06E-04 |
| EFKI / Kajaani | Finland | 99.29% | 2.73E-04 | 120 | 07/12/2017 | 99.83% | 1.32E-04 |
| EFKK / Kokkola-Pietarsaari | Finland | 99.61% | 1.49E-04 | 104 | 07/12/2017 | 99.94% | 4.83E-05 |
| EFKS / Kuusamo | Finland | 98.72% | 6.02E-04 | 330 | 07/12/2017 | 99.56% | 3.49E-04 |
| EFKT / Kittilä | Finland | 98.76% | 4.41E-04 | 190 | 07/12/2017 | 99.79% | 1.69E-04 |
| EFKU / Kuopio | Finland | 99.42% | 2.36E-04 | 117 | 07/12/2017 | 99.85% | 1.04E-04 |
| EFLA / Lahti-Vesivehmaa | Finland | 98.91% | 1.46E-04 | 6 | 26/01/2023 | 98.91% | 1.46E-04 |
| EFLP / Lappeenranta | Finland | 99.57% | 1.35E-04 | 40 | 07/12/2017 | 99.86% | 8.90E-05 |
| EFMA / Mariehamn | Finland | 99.85% | 3.37E-05 | 6 | 29/03/2019 | 99.97% | 1.39E-05 |
| EFMI / Mikkeli | Finland | 99.56% | 1.68E-04 | 91 | 27/01/2022 | 99.89% | 5.35E-05 |
| EFOU / Oulu | Finland | 99.38% | 2.05E-04 | 95 | 07/12/2017 | 99.90% | 8.57E-05 |
| EFPO / Pori | Finland | 99.77% | 7.00E-05 | 16 | 07/12/2017 | 99.96% | 2.56E-05 |
| EFRO / Rovaniemi | Finland | 98.95% | 4.38E-04 | 227 | 07/12/2017 | 99.81% | 1.70E-04 |
| EFSA / Savonlinna | Finland | 99.48% | 1.48E-04 | 41 | 07/12/2017 | 99.82% | 1.16E-04 |

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| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|---------------------------------|-------------|----------------------------|-------------------------------|---------|---|--|---|
| EFTU / Turku | Finland | 99.82% | 5.91E-05 | 16 | 07/12/2017 | 99.97% | 2.15E-05 |
| EFUT / Utti | Finland | 99.66% | 1.61E-04 | 67 | 28/01/2021 | 99.92% | 5.79E-05 |
| EFVA / Vaasa | Finland | 99.71% | 1.33E-04 | 43 | 07/12/2017 | 99.96% | 3.73E-05 |
| EGJA / Alderney | Guernsey | 100.00% | 0.00E+00 | 0 | 07/12/2011 | 99.94% | 1.18E-05 |
| EHAM / Amsterdam | Netherlands | 100.00% | 0.00E+00 | 0 | 13/11/2014 | 99.99% | 7.50E-06 |
| EHGG / Eelde | Netherlands | 100.00% | 0.00E+00 | 0 | 13/11/2014 | 99.98% | 9.82E-06 |
| EHLE / Lelystad | Netherlands | 100.00% | 0.00E+00 | 0 | 05/12/2019 | 99.99% | 4.20E-06 |
| EHTE / Teuge | Netherlands | 100.00% | 0.00E+00 | 0 | 13/11/2014 | 99.99% | 7.93E-06 |
| EICK / Cork Airport | Netherlands | 100.00% | 0.00E+00 | 0 | 16/08/2018 | 99.97% | 2.63E-05 |
| EIKN / Ireland West Airport | Ireland | 100.00% | 0.00E+00 | 0 | 25/03/2021 | 99.99% | 1.07E-05 |
| EKAH / Aarhus | Ireland | 100.00% | 0.00E+00 | 0 | 05/03/2015 | 99.98% | 1.12E-05 |
| EKAL / Ålborg hospital Mølholm | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKHS / Saltum heliport | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKKA / Karup | Denmark | 100.00% | 0.00E+00 | 0 | 02/04/2015 | 99.98% | 1.09E-05 |
| EKKH / Kolding hospital | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKNH / Holsterbro HEMS | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKOH / Odense Hospital | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKRG / Gødstrup hospital | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKRH / Rigshospitalet København | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKRS / Ringsted HEMS | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKSE / | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKSH / Skejby Ålborg hospital | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| EKSK / SKive HEMS | Denmark | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| ENAN / Andøya/Andenes | Norway | 98.94% | 3.24E-04 | 128 | 02/04/2015 | 99.82% | 1.12E-04 |
| ENAR / Arendal hospital | Norway | 100.00% | 0.00E+00 | 0 | 20/05/2021 | 100.00% | 2.94E-06 |
| ENAT / Alta | Norway | 98.12% | 6.90E-04 | 307 | 08/09/2022 | 99.22% | 3.70E-04 |
| ENBG / Bergen Gronneviksoren | Norway | 100.00% | 0.00E+00 | 0 | 20/05/2021 | 100.00% | 3.91E-06 |
| ENBL / Førde/Bringeland | Norway | 99.98% | 1.76E-05 | 5 | 28/05/2015 | 99.97% | 1.92E-05 |
| ENBN / Brønnøysund/Brønnøy | Norway | 99.79% | 1.33E-04 | 55 | 08/12/2016 | 99.96% | 3.87E-05 |
| ENBO / Bodo | Norway | 99.49% | 2.30E-04 | 91 | 06/12/2018 | 99.91% | 7.57E-05 |
| ENBS / Båtsfjord | Norway | 96.16% | 1.37E-03 | 629 | 02/12/2021 | 98.58% | 8.08E-04 |

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| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|-----------------------------------|---------|----------------------------|-------------------------------|---------|---|--|---|
| ENBV / Berlevåg | Norway | 96.12% | 1.38E-03 | 679 | 02/12/2021 | 98.61% | 7.84E-04 |
| ENCN / Kristiansand/Kjevik | Norway | 100.00% | 0.00E+00 | 0 | 03/03/2016 | 99.98% | 1.34E-05 |
| ENDU / Bardufoss | Norway | 98.92% | 3.26E-04 | 129 | 26/04/2018 | 99.84% | 1.26E-04 |
| ENEV / Evenes | Norway | 99.07% | 3.20E-04 | 107 | 30/03/2017 | 99.85% | 1.01E-04 |
| ENFL / Florø | Norway | 99.98% | 2.02E-05 | 15 | 02/04/2015 | 99.97% | 2.10E-05 |
| ENHT / Hattfjelldal | Norway | 99.72% | 9.51E-05 | 32 | 20/05/2021 | 99.96% | 3.01E-05 |
| ENHX / Haugesund Hospital | Norway | 100.00% | 0.00E+00 | 0 | 17/06/2021 | 100.00% | 3.60E-06 |
| ENKG / Kongsvinger Hospital | Norway | 99.99% | 2.80E-05 | 5 | 17/06/2021 | 100.00% | 7.62E-06 |
| ENKR / Kirkenes/Hoybuktknoen | Norway | 96.85% | 1.25E-03 | 681 | 27/04/2017 | 98.80% | 7.41E-04 |
| ENLH / Lillehammer Hospital | Norway | 99.98% | 3.47E-05 | 7 | 17/06/2021 | 99.99% | 8.50E-06 |
| ENLK / Leknes | Norway | 99.31% | 3.61E-04 | 158 | 02/02/2017 | 99.88% | 8.41E-05 |
| ENMH / Mehamn | Norway | 96.28% | 1.42E-03 | 720 | 29/03/2019 | 98.75% | 8.04E-04 |
| ENMS / Mosjøen/Kjærstad | Norway | 99.71% | 1.41E-04 | 50 | 30/03/2017 | 99.94% | 4.48E-05 |
| ENNA / Lakselv/Banak | Norway | 97.82% | 8.81E-04 | 454 | 21/04/2022 | 99.43% | 3.08E-04 |
| ENNH / Namsos Hospital | Norway | 99.88% | 3.40E-05 | 7 | 17/06/2021 | 99.98% | 1.40E-05 |
| ENRS / Røst | Norway | 99.49% | 2.83E-04 | 102 | 06/03/2014 | 99.87% | 8.56E-05 |
| ENRY / Moss/Rygge | Norway | 100.00% | 0.00E+00 | 0 | 10/12/2015 | 99.98% | 1.41E-05 |
| ENSH / Svolvær/Helle | Norway | 99.23% | 4.05E-04 | 177 | 08/12/2016 | 99.88% | 8.72E-05 |
| ENSK / Stokmarknes/Skagen | Norway | 99.13% | 3.46E-04 | 152 | 08/12/2016 | 99.86% | 9.61E-05 |
| ENSO / Stord/Sørstokken | Norway | 100.00% | 0.00E+00 | 0 | 03/03/2016 | 99.97% | 1.68E-05 |
| ENSP / Kalnes Hospital | Norway | 100.00% | 0.00E+00 | 0 | 17/06/2021 | 100.00% | 3.14E-06 |
| ENSR / Sorkjosen | Norway | 98.58% | 5.79E-04 | 259 | 20/05/2021 | 99.74% | 1.62E-04 |
| ENSS / Vardø/Svartnes | Norway | 95.94% | 1.48E-03 | 744 | 03/12/2020 | 98.52% | 8.13E-04 |
| ENTH / Thisted hospital | Norway | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| ENTO / Sandefjord/Torp | Norway | 100.00% | 0.00E+00 | 0 | 20/08/2015 | 99.98% | 1.38E-05 |
| ENTU / Tromsø Univeristy Hospital | Norway | 98.77% | 3.09E-04 | 94 | 17/06/2021 | 99.78% | 1.14E-04 |
| ENUH / Ullevaal | Norway | 100.00% | 0.00E+00 | 0 | 20/05/2021 | 100.00% | 3.80E-06 |
| ENXXXZHO / Hov | Norway | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 0.00E+00 |
| ENYY / Levanger Hospital | Norway | 99.90% | 3.81E-05 | 9 | 17/06/2021 | 99.99% | 9.82E-06 |
| ESCM / Uppsala | Sweden | 99.88% | 2.80E-05 | 5 | 21/05/2020 | 99.98% | 1.03E-05 |
| ESEB / Boras Hospital | Sweden | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 0.00E+00 |
| ESEN / Trollhattan / Nal sjukhus | Sweden | 100.00% | 0.00E+00 | 0 | 16/06/2022 | 100.00% | 0.00E+00 |

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|--|---------|----------------------------|-------------------------------|---------|---|--|---|
| ESGI / Jönköping | Sweden | 100.00% | 0.00E+00 | 0 | 09/11/2017 | 99.98% | 9.71E-06 |
| ESGT / Trollhättan-Vänersborgs flygplats | Sweden | 100.00% | 0.00E+00 | 0 | 29/03/2018 | 99.98% | 8.79E-06 |
| ESHO / Skovde Hospital | Sweden | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 0.00E+00 |
| ESHS / Sahlgrenska hospital heliport | Sweden | 100.00% | 0.00E+00 | 0 | 16/06/2022 | 100.00% | 0.00E+00 |
| ESIB / Satenas | Sweden | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 0.00E+00 |
| ESJD / Backefors Hospital | Sweden | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 0.00E+00 |
| ESKM / Mora / Siljan | Sweden | 99.92% | 2.80E-05 | 5 | 30/01/2020 | 99.99% | 9.02E-06 |
| ESMK / Kristianstad | Sweden | 100.00% | 0.00E+00 | 0 | 06/12/2018 | 99.98% | 7.75E-06 |
| ESMQ / Kalmar Öland Airport | Sweden | 100.00% | 0.00E+00 | 0 | 29/03/2019 | 99.98% | 7.39E-06 |
| ESMT / Halmstad | Sweden | 100.00% | 0.00E+00 | 0 | 08/11/2018 | 99.99% | 6.93E-06 |
| ESMX / Växjö Kronoberg | Sweden | 100.00% | 0.00E+00 | 0 | 25/04/2019 | 99.98% | 8.06E-06 |
| ESND / Sveg | Sweden | 99.90% | 3.36E-05 | 6 | 31/01/2019 | 99.98% | 1.28E-05 |
| ESNG / Lapland Airport | Sweden | 99.21% | 3.64E-04 | 180 | 20/06/2019 | 99.88% | 1.04E-04 |
| ESNK / Kramfors-Sollefteå | Sweden | 99.81% | 9.31E-05 | 30 | 13/08/2020 | 99.97% | 2.38E-05 |
| ESNL / Lycksele Airport | Sweden | 99.72% | 7.90E-05 | 22 | 15/08/2019 | 99.96% | 3.63E-05 |
| ESNS /Skellefteå Airport | Sweden | 99.62% | 1.32E-04 | 44 | 29/03/2019 | 99.94% | 5.08E-05 |
| ESNV /Vilhelmina | Sweden | 99.76% | 7.41E-05 | 40 | 27/02/2020 | 99.96% | 3.68E-05 |
| ESNX / Arvidsjaur | Sweden | 99.58% | 1.75E-04 | 64 | 05/12/2019 | 99.93% | 5.98E-05 |
| ESOE / Örebro Airport | Sweden | 99.95% | 2.80E-05 | 5 | 16/08/2018 | 99.98% | 8.35E-06 |
| ESOH /Hagfors | Sweden | 99.96% | 2.80E-05 | 5 | 30/01/2020 | 99.99% | 7.88E-06 |
| ESOK / Karlstad | Sweden | 99.98% | 2.80E-05 | 5 | 05/11/2020 | 99.99% | 1.00E-05 |
| ESOW / Stockholm / Västerås | Sweden | 99.91% | 2.80E-05 | 5 | 30/01/2020 | 99.99% | 8.63E-06 |
| ESSD / Borlänge Dala | Sweden | 99.91% | 2.80E-05 | 5 | 05/11/2020 | 99.99% | 1.00E-05 |
| ESSP / Norrköping Kungsängen | Sweden | 99.95% | 2.80E-05 | 5 | 29/03/2018 | 99.98% | 7.81E-06 |
| ESST / Torsby | Sweden | 99.97% | 2.80E-05 | 5 | 23/05/2019 | 99.98% | 1.06E-05 |
| ESSU / Eskilstuna | Sweden | 99.91% | 2.80E-05 | 5 | 10/09/2020 | 99.99% | 1.06E-05 |
| ESSV / Visby | Sweden | 99.99% | 2.80E-05 | 5 | 17/06/2021 | 99.99% | 7.03E-06 |
| ESTA / Ängelholm | Sweden | 100.00% | 0.00E+00 | 0 | 19/07/2018 | 99.98% | 7.85E-06 |
| ESTL / Ljungbyhed | Sweden | 100.00% | 0.00E+00 | 0 | 17/06/2021 | 99.99% | 1.36E-05 |
| ESUP / Pajala | Sweden | 99.01% | 2.80E-04 | 104 | 31/12/2020 | 99.85% | 8.88E-05 |
| ESUT / Hemavan Tärnaby Airport AB | Sweden | 99.67% | 1.23E-04 | 43 | 11/10/2018 | 99.94% | 4.68E-05 |



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|-------------------------------|-----------|----------------------------|-------------------------------|---------|---|--|---|
| EYKA / Kaunas | Lithuania | 99.98% | 5.60E-06 | 1 | 09/09/2021 | 99.98% | 1.09E-05 |
| EYPA / Palanga | Lithuania | 99.98% | 5.60E-06 | 1 | 25/03/2021 | 99.99% | 6.76E-06 |
| EYVI / Vilnius | Lithuania | 99.95% | 1.68E-05 | 3 | 16/07/2020 | 99.96% | 2.76E-05 |
| GCLA / La Palma | Spain | 89.40% | 2.77E-03 | 1030 | 14/07/2022 | 95.48% | 1.31E-03 |
| GCRR / Lanzarote AD | Spain | 92.50% | 1.96E-03 | 801 | 23/05/2019 | 99.22% | 3.00E-04 |
| LBBG / Burgas | Bulgaria | 99.87% | 9.87E-05 | 57 | 04/11/2021 | 99.88% | 1.62E-04 |
| LBGO / Gorna Oryahovitsa | Bulgaria | 99.90% | 2.80E-05 | 6 | 04/11/2021 | 99.90% | 1.39E-04 |
| LBDP / Plovdiv | Bulgaria | 99.94% | 5.49E-05 | 31 | 04/11/2021 | 99.92% | 1.49E-04 |
| LBWN / Varna | Bulgaria | 99.88% | 9.76E-05 | 55 | 16/06/2022 | 99.93% | 7.77E-05 |
| LDDU / Dubrovnik | Croatia | 99.97% | 5.60E-06 | 1 | 10/12/2015 | 99.98% | 2.42E-05 |
| LDOS / Osijek/Klisa | Croatia | 99.97% | 5.60E-06 | 1 | 29/03/2018 | 99.98% | 2.09E-05 |
| LDPL / Pula | Croatia | 99.97% | 5.60E-06 | 1 | 26/04/2018 | 99.98% | 8.57E-06 |
| LDRI / Rijeka | Croatia | 99.97% | 5.60E-06 | 1 | 10/10/2019 | 99.99% | 7.47E-06 |
| LDSB / Brac | Croatia | 99.97% | 5.60E-06 | 1 | 05/12/2019 | 99.98% | 1.31E-05 |
| LDSP / Split/Kastela | Croatia | 99.97% | 5.60E-06 | 1 | 10/10/2019 | 99.98% | 1.10E-05 |
| LDZA / Zagreb/Pleso | Croatia | 99.97% | 5.60E-06 | 1 | 29/03/2018 | 99.99% | 8.78E-06 |
| LDZD / Zadar | Croatia | 99.97% | 5.60E-06 | 1 | 11/10/2018 | 99.98% | 9.08E-06 |
| LEAM / Almería | Spain | 99.94% | 3.70E-05 | 14 | 02/02/2017 | 99.98% | 1.55E-05 |
| LECH / Castellón | Spain | 100.00% | 0.00E+00 | 0 | 21/04/2022 | 99.99% | 3.32E-06 |
| LEDA / Lleida | Spain | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 99.98% | 5.79E-06 |
| LEGE / Girona | Spain | 100.00% | 0.00E+00 | 0 | 24/03/2022 | 99.99% | 2.21E-06 |
| LEJR / Jerez | Spain | 99.96% | 5.57E-05 | 33 | 02/12/2021 | 99.94% | 2.86E-05 |
| LEPA / Palma de Mallorca | Spain | 99.99% | 5.60E-06 | 1 | 01/03/2018 | 99.99% | 6.46E-06 |
| LERS / Reus | Spain | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 0.00E+00 |
| LEVC / Valencia | Spain | 99.99% | 5.60E-06 | 1 | 01/02/2018 | 99.99% | 6.93E-06 |
| LEVX / Vigo | Spain | 100.00% | 0.00E+00 | 0 | 05/12/2019 | 99.95% | 2.89E-05 |
| LEXJ / Santander | Spain | 100.00% | 0.00E+00 | 0 | 17/10/2013 | 99.96% | 2.78E-05 |
| LFAC / Calais | France | 100.00% | 0.00E+00 | 0 | 20/09/2012 | 99.97% | 1.16E-05 |
| LFAQ / Albert Bray | France | 100.00% | 0.00E+00 | 0 | 15/11/2012 | 99.97% | 9.46E-06 |
| LFAT / Le Touquet Paris Plage | France | 100.00% | 0.00E+00 | 0 | 04/02/2016 | 99.98% | 6.27E-06 |
| LFAV / Valenciennes Denain | France | 100.00% | 0.00E+00 | 0 | 19/09/2013 | 99.99% | 7.45E-06 |
| LFAY / Amiens Glisy | France | 100.00% | 0.00E+00 | 0 | 27/06/2013 | 99.97% | 8.30E-06 |
| LFBI / Poitiers Biard | France | 100.00% | 0.00E+00 | 0 | 12/11/2015 | 99.99% | 5.70E-06 |

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| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|-----------------------------------|---------|----------------------------|-------------------------------|---------|---|--|---|
| LFBK / Montluçon Gueret | France | 100.00% | 0.00E+00 | 0 | 17/12/2013 | 99.99% | 1.04E-05 |
| LFBN / Niort Marais Poitevin | France | 100.00% | 0.00E+00 | 0 | 02/03/2017 | 99.99% | 5.95E-06 |
| LFBO / Toulouse Blagnac | France | 100.00% | 0.00E+00 | 0 | 03/05/2012 | 99.94% | 1.31E-05 |
| LFBP / Pau-Pyrénées | France | 100.00% | 0.00E+00 | 0 | 17/03/2011 | 99.93% | 1.76E-05 |
| LFBR / Muret Lherm | France | 100.00% | 0.00E+00 | 0 | 15/10/2015 | 99.99% | 5.83E-06 |
| LFBT / Tarbes Lourdes Pyrénées | France | 100.00% | 0.00E+00 | 0 | 28/05/2015 | 99.99% | 6.39E-06 |
| LFCI / Albi Le Sequestre | France | 100.00% | 0.00E+00 | 0 | 26/05/2016 | 99.99% | 6.29E-06 |
| LFCK / Castres Mazamet | France | 100.00% | 0.00E+00 | 0 | 22/08/2013 | 99.98% | 1.21E-05 |
| LFCR / Rodez Marcillac | France | 100.00% | 0.00E+00 | 0 | 31/05/2012 | 99.94% | 1.33E-05 |
| LFCY / Royan Médis | France | 100.00% | 0.00E+00 | 0 | 30/04/2015 | 99.99% | 6.72E-06 |
| LFDH / Auch Lamothe | France | 100.00% | 0.00E+00 | 0 | 28/05/2015 | 99.99% | 6.19E-06 |
| LFEC / Ouessant | France | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.98% | 1.03E-05 |
| LFHY / Moulins Montbeugny | France | 100.00% | 0.00E+00 | 0 | 01/05/2014 | 99.99% | 6.31E-06 |
| LFJL / Metz Nancy Lorraine | France | 100.00% | 0.00E+00 | 0 | 04/04/2013 | 99.97% | 1.07E-05 |
| LFKJ / Ajaccio Napoléon Bonaparte | France | 99.97% | 5.60E-06 | 1 | 23/06/2016 | 99.99% | 5.34E-06 |
| LFLA / Auxerre Branches | France | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.99% | 6.79E-06 |
| LFLD / Bourges | France | 100.00% | 0.00E+00 | 0 | 18/08/2016 | 99.99% | 4.87E-06 |
| LFMD / Cannes Mandelieu | France | 99.97% | 5.60E-06 | 1 | 05/02/2015 | 99.99% | 7.10E-06 |
| LFML / Marseille | France | 100.00% | 0.00E+00 | 0 | 08/01/2015 | 99.99% | 6.37E-06 |
| LFMP / Perpignan Rivesaltes | France | 100.00% | 0.00E+00 | 0 | 15/10/2015 | 99.99% | 6.00E-06 |
| LFMU / Béziers Vias | France | 100.00% | 0.00E+00 | 0 | 18/10/2012 | 99.97% | 1.20E-05 |
| LFNB / Mende | France | 100.00% | 0.00E+00 | 0 | 17/12/2013 | 99.99% | 1.04E-05 |
| LFOB / Beauvais | France | 100.00% | 0.00E+00 | 0 | 20/09/2012 | 99.97% | 9.71E-06 |
| LFOK / Chalons Vatry | France | 100.00% | 0.00E+00 | 0 | 02/02/2017 | 99.99% | 5.22E-06 |
| LFOU / Cholet le Pontreau | France | 100.00% | 0.00E+00 | 0 | 04/02/2016 | 99.98% | 6.23E-06 |
| LFOV / Laval Entrammes | France | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.99% | 5.53E-06 |
| LFPO / Paris Orly | France | 100.00% | 0.00E+00 | 0 | 30/05/2013 | 99.97% | 9.45E-06 |
| LFQA / Reims Prunay | France | 100.00% | 0.00E+00 | 0 | 03/04/2014 | 99.99% | 7.49E-06 |
| LFQG / Nevers Fouchambault | France | 100.00% | 0.00E+00 | 0 | 13/12/2012 | 99.97% | 1.05E-05 |
| LFQM / Besançon La Vèze | France | 100.00% | 0.00E+00 | 0 | 18/09/2014 | 99.99% | 7.75E-06 |
| LFQQ / Lille Lesquin | France | 100.00% | 0.00E+00 | 0 | 26/06/2014 | 99.99% | 5.96E-06 |
| LFQT / Merville | France | 100.00% | 0.00E+00 | 0 | 15/11/2012 | 99.97% | 9.57E-06 |

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| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|---------------------------------------|---------|----------------------------|-------------------------------|---------|---|--|---|
| LFRB / Brest Bretagne | France | 100.00% | 0.00E+00 | 0 | 03/05/2012 | 99.94% | 1.51E-05 |
| LFRD / Dinard | France | 100.00% | 0.00E+00 | 0 | 06/02/2014 | 99.98% | 8.69E-06 |
| LFRG / Deauville Saint Gatien | France | 100.00% | 0.00E+00 | 0 | 18/09/2014 | 99.98% | 6.66E-06 |
| LFRM / Le Mans | France | 100.00% | 0.00E+00 | 0 | 15/11/2012 | 99.97% | 1.13E-05 |
| LFRN / Rennes | France | 100.00% | 0.00E+00 | 0 | 30/05/2013 | 99.97% | 1.12E-05 |
| LFRS / Nantes | France | 100.00% | 0.00E+00 | 0 | 28/06/2012 | 99.97% | 1.29E-05 |
| LFRU / Morlaix Ploujean | France | 100.00% | 0.00E+00 | 0 | 13/10/2016 | 99.98% | 7.55E-06 |
| LFRV / Vannes Meucon | France | 100.00% | 0.00E+00 | 0 | 31/05/2012 | 99.94% | 1.31E-05 |
| LFSB / Bâle-Mulhouse | France | 100.00% | 0.00E+00 | 0 | 10/12/2015 | 99.99% | 6.00E-06 |
| LFSJ / Dijon-Longvic | France | 100.00% | 0.00E+00 | 0 | 28/04/2016 | 99.99% | 5.11E-06 |
| LFSG / Epinal Mirecourt | France | 100.00% | 0.00E+00 | 0 | 30/05/2013 | 99.97% | 1.11E-05 |
| LGIO / Ioannina | Greece | 99.96% | 3.66E-05 | 17 | 27/02/2020 | 99.95% | 1.01E-04 |
| LGKO / Kos | Greece | 99.93% | 7.06E-05 | 43 | 27/02/2020 | 99.89% | 1.44E-04 |
| LGMT / Mitilini | Greece | 99.92% | 2.88E-05 | 7 | 27/02/2020 | 99.93% | 1.27E-04 |
| LGTS / Thessaloniki | Greece | 99.95% | 5.01E-05 | 28 | 27/02/2020 | 99.94% | 1.21E-04 |
| LHBC / Békéscsaba Repülőtér | Hungary | 99.97% | 5.60E-06 | 1 | 28/01/2021 | 99.97% | 4.05E-05 |
| LHDC / Debrecen International Airport | Hungary | 99.95% | 1.68E-05 | 3 | 30/01/2020 | 99.98% | 3.57E-05 |
| LHNY / Nyíregyháza | Hungary | 99.94% | 1.76E-05 | 5 | 24/03/2022 | 99.98% | 5.24E-05 |
| LHPP / Pecs-Pogany Airport | Hungary | 99.97% | 5.60E-06 | 1 | 03/12/2020 | 99.98% | 1.54E-05 |
| LHPR / Győr-Pér | Hungary | 99.97% | 1.90E-05 | 11 | 25/02/2021 | 99.98% | 9.61E-06 |
| LHSM / Heviz-Balaton | Hungary | 99.97% | 5.60E-06 | 1 | 25/03/2021 | 99.98% | 6.83E-06 |
| LICJ / Palermo/Punta Raisi | Italy | 99.95% | 1.12E-05 | 3 | 11/10/2018 | 99.98% | 1.11E-05 |
| LIDT / Trento/Mattarello | Italy | 99.97% | 5.60E-06 | 1 | 30/01/2020 | 100.00% | 2.54E-06 |
| LIEA / Alghero/Fertilia | Italy | 99.97% | 5.60E-06 | 1 | 11/10/2018 | 99.99% | 5.16E-06 |
| LIKC / Cles Helipad | Italy | 99.97% | 5.60E-06 | 1 | 01/12/2022 | 100.00% | 2.53E-06 |
| LIMC / Milano/Malpensa | Italy | 99.97% | 5.60E-06 | 1 | 21/08/2014 | 99.99% | 7.49E-06 |
| LIME / Bergamo/Orio al Serio | Italy | 99.97% | 5.60E-06 | 1 | 20/07/2017 | 99.99% | 5.66E-06 |
| LIML / Milano/Linate | Italy | 99.97% | 5.60E-06 | 1 | 13/12/2012 | 99.97% | 1.19E-05 |
| LIPE / Bologna / Borgo Panigale | Italy | 99.97% | 5.60E-06 | 1 | 03/01/2019 | 99.98% | 1.05E-05 |
| LIPZ / Venezia/Tessera | Italy | 99.97% | 5.60E-06 | 1 | 27/06/2013 | 99.96% | 1.51E-05 |
| LIRF / Roma-Fiumicino | Italy | 99.97% | 5.60E-06 | 2 | 23/05/2019 | 99.99% | 5.20E-06 |
| LIRQ / Firenze/Peretola | Italy | 99.97% | 5.60E-06 | 1 | 22/06/2017 | 99.99% | 6.23E-06 |

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| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|--|-----------------|----------------------------|-------------------------------|---------|---|--|---|
| LJPZ / Portototz | Slovenia | 99.97% | 5.60E-06 | 1 | 01/12/2022 | 99.99% | 2.80E-06 |
| LKKU / Kunovice | Czech Republic | 99.97% | 5.60E-06 | 1 | 01/12/2017 | 99.99% | 1.03E-05 |
| LKKV / Karlovy Vary | Czech Republic | 99.97% | 5.60E-06 | 1 | 13/11/2014 | 99.99% | 6.98E-06 |
| LKMT / Ostrava | Czech Republic | 99.97% | 5.60E-06 | 1 | 09/01/2014 | 99.98% | 1.27E-05 |
| LKTB / Brno | Czech Republic | 99.97% | 5.60E-06 | 1 | 09/01/2014 | 99.98% | 1.19E-05 |
| LKVO / Praha/Vodochody | Czech republic | 99.97% | 5.60E-06 | 1 | 25/06/2015 | 99.99% | 7.41E-06 |
| LMML / Luqa | Malta | 99.90% | 8.78E-05 | 38 | 11/10/2018 | 99.96% | 4.80E-05 |
| LOAV / Vöslau | Austria | 99.97% | 5.60E-06 | 1 | 28/02/2019 | 99.99% | 4.89E-06 |
| LODO / ÖAMTC/Oberwart | Austria | 99.97% | 5.60E-06 | 1 | 28/02/2019 | 99.99% | 5.61E-06 |
| LPCS / Cascais | Portugal | 99.99% | 1.12E-05 | 2 | 20/05/2021 | 99.96% | 2.02E-05 |
| LPFR / Faro | Portugal | 99.97% | 2.80E-05 | 5 | 18/07/2019 | 99.97% | 2.61E-05 |
| LPPR / Porto | Portugal | 100.00% | 0.00E+00 | 0 | 12/10/2017 | 99.96% | 2.75E-05 |
| LPPS / Porto Santo | Portugal | 98.71% | 4.43E-04 | 158 | 09/09/2022 | 99.36% | 2.79E-04 |
| LPPT / Lisboa | Portugal | 99.99% | 5.60E-06 | 1 | 28/05/2015 | 99.97% | 2.03E-05 |
| LRCL / Cluj - Napoca / Avram Iancu | Romania | 99.92% | 7.40E-05 | 36 | 10/11/2016 | 99.93% | 7.00E-05 |
| LSMD / Dübendorf | Switzerland | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.99% | 8.34E-06 |
| LSME / Emmen | Switzerland | 100.00% | 0.00E+00 | 0 | 03/04/2014 | 99.99% | 7.67E-06 |
| LSZR / St. Gallen-Altenrhein | Switzerland | 100.00% | 0.00E+00 | 0 | E17/11/2011 | 99.94% | 1.24E-05 |
| LZIB / Bratislava-Milan Rastislav Štefánik | Switzerland | 99.97% | 1.12E-05 | 2 | 05/02/2015 | 99.98% | 1.52E-05 |
| XZBK / Bjarkoy | Slovak Republic | 98.98% | 2.50E-04 | 55 | 20/05/2021 | 99.84% | 7.98E-05 |
| XZES / Evenskjaer | Norway | 99.06% | 3.28E-04 | 120 | 20/05/2021 | 99.86% | 7.64E-05 |
| XZFI / Finnsnes | Norway | 98.88% | 3.64E-04 | 150 | 20/05/2021 | 99.82% | 1.02E-04 |
| XZHM / Hamar Hospital | Norway | 99.99% | 2.80E-05 | 5 | 17/06/2021 | 100.00% | 6.47E-06 |
| XZIH / Innhøvet | Norway | 99.24% | 3.92E-04 | 153 | 17/06/2021 | 99.90% | 7.11E-05 |
| XZKA / Kautokeino | Norway | 98.61% | 5.08E-04 | 225 | 20/05/2021 | 99.75% | 1.44E-04 |
| XZKB / Kongsberg Hospital | Norway | 100.00% | 0.00E+00 | 0 | 17/06/2021 | 100.00% | 3.27E-06 |
| XZKS / Karasjok | Norway | 98.02% | 6.24E-04 | 263 | 20/05/2021 | 99.58% | 2.87E-04 |
| XZLK / Lofoten Hospital | Norway | 99.32% | 3.80E-04 | 172 | 17/06/2021 | 99.91% | 6.46E-05 |
| XZMK / Mosjøen | Norway | 99.70% | 1.36E-04 | 50 | 17/06/2021 | 99.96% | 3.34E-05 |

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| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|------------------------------|---------|----------------------------|-------------------------------|---------|---|--|---|
| XZMY / Mysen | Norway | 100.00% | 0.00E+00 | 0 | 17/06/2021 | 100.00% | 3.45E-06 |
| XZNK / Narvik | Norway | 99.32% | 3.80E-04 | 172 | 17/06/2021 | 99.91% | 6.46E-05 |
| XZSC / Skjervøy | Norway | 98.47% | 4.46E-04 | 167 | 17/06/2021 | 99.71% | 1.69E-04 |
| XZSO / Storsteinnes | Norway | 98.85% | 3.74E-04 | 151 | 20/05/2021 | 99.80% | 1.13E-04 |
| XZSS / Sandnessjøen Hospital | Norway | 99.69% | 1.55E-04 | 88 | 17/06/2021 | 99.96% | 3.57E-05 |
| XZTN / Trones | Norway | 99.86% | 7.44E-05 | 19 | 17/06/2021 | 99.98% | 2.18E-05 |

Table 8 – Monthly APV-I Availability at airports with published procedures using EGNOS

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APPENDIX C EGNOS LPV-200 PERFORMANCE AT AIRPORTS

The table reports LPV-200 Availability and Continuity at airports with published procedures using EGNOS. These values correspond to the performance obtained under fault-free conditions using all satellites in view:

| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ⁴ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|-----------------------------|---------|------------------------------|---------------------------------|----------------------|---|--|---|
| EBLG / Liège | Belgium | 100.00% | 0.00E+00 | 0 | 19/05/2022 | 100.00% | 9.06E-06 |
| EBOS / Oostende-Brugge | Belgium | 100.00% | 0.00E+00 | 0 | 03/01/2019 | 99.98% | 1.03E-05 |
| EDAC / Leipzig/Altenburg | Germany | 100.00% | 0.00E+00 | 0 | 29/03/2019 | 99.98% | 1.23E-05 |
| EDAY / Strausberg | Germany | 100.00% | 0.00E+00 | 0 | 17/06/2021 | 100.00% | 4.23E-06 |
| EDAZ / Schoenhagen | Germany | 100.00% | 0.00E+00 | 0 | 11/10/2018 | 99.98% | 1.26E-05 |
| EDBH / Barth | Germany | 100.00% | 0.00E+00 | 0 | 09/09/2021 | 99.99% | 6.42E-06 |
| EDDB / Berlin Brandenburg | Germany | 100.00% | 0.00E+00 | 0 | 08/10/2020 | 99.99% | 4.41E-06 |
| EDDE / Erfurt-Weimar | Germany | 100.00% | 0.00E+00 | 0 | 09/09/2021 | 100.00% | 4.70E-06 |
| EDDH / Hamburg | Germany | 100.00% | 0.00E+00 | 0 | 18/06/2020 | 99.99% | 6.86E-06 |
| EDDK / Koeln-Bonn | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.99% | 8.57E-06 |
| EDDM / München | Germany | 99.97% | 5.60E-06 | 2 | 12/09/2019 | 99.99% | 9.56E-06 |
| EDDN / Nürnberg | Germany | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 0.00E+00 |
| EDDP / Leipzig/Halle | Germany | 100.00% | 0.00E+00 | 0 | 30/01/2020 | 99.98% | 1.20E-05 |
| EDDW / Bremen | Germany | 100.00% | 0.00E+00 | 0 | 30/03/2017 | 99.98% | 1.31E-05 |
| EDFH / Frankfurt Hahn | Germany | 100.00% | 0.00E+00 | 0 | 14/09/2017 | 99.99% | 9.56E-06 |
| EDGS / Siegerland | Germany | 100.00% | 0.00E+00 | 0 | 12/10/2017 | 99.99% | 1.10E-05 |
| EDHI / Hamburg/Finkenwerder | Germany | 100.00% | 0.00E+00 | 0 | 18/06/2020 | 99.99% | 7.16E-06 |
| EDHK / Kiel-Holtenau | Germany | 100.00% | 0.00E+00 | 0 | 18/06/2020 | 99.99% | 7.99E-06 |
| EDHL / Luebeck-Blankensee | Germany | 100.00% | 0.00E+00 | 0 | 18/06/2020 | 99.99% | 6.27E-06 |
| EDJA / Memmingen | Germany | 99.99% | 5.60E-06 | 1 | 04/11/2021 | 100.00% | 5.69E-06 |
| EDLN / Moenchgladbach | Germany | 100.00% | 0.00E+00 | 0 | 06/12/2018 | 99.98% | 1.22E-05 |
| EDLP / Paderborn/Lippstadt | Germany | 100.00% | 0.00E+00 | 0 | 10/10/2019 | 99.99% | 8.75E-06 |
| EDMA / Augsburg | Germany | 99.97% | 5.60E-06 | 1 | 11/10/2018 | 99.99% | 9.69E-06 |
| EDMO / Oberpfaffenhofen | Germany | 99.97% | 5.60E-06 | 2 | 23/05/2019 | 99.99% | 9.39E-06 |
| EDNY / Friedrichshafen | Germany | 100.00% | 0.00E+00 | 0 | 19/07/2018 | 99.99% | 1.02E-05 |

⁴ Outages refer to events when the LPV200 service changes its status from Available to Unavailable for the reported month.



| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ⁴ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|------------------------------|-------------|------------------------------|---------------------------------|----------------------|---|--|---|
| EDQA / Bamberg-Breitenau | Germany | 100.00% | 0.00E+00 | 0 | 02/12/2021 | 100.00% | 3.59E-06 |
| EDQG / Giebelstadt | Germany | 100.00% | 0.00E+00 | 0 | 02/12/2021 | 100.00% | 4.10E-06 |
| EDQM / Hof-Plauen | Germany | 100.00% | 0.00E+00 | 0 | 21/06/2018 | 99.98% | 1.04E-05 |
| EDQT / Hassfurt-Schweinfurt | Germany | 100.00% | 0.00E+00 | 0 | 23/04/2020 | 99.99% | 8.46E-06 |
| EDSB / Karlsruhe/Baden-Baden | Germany | 100.00% | 0.00E+00 | 0 | 27/04/2017 | 99.99% | 9.55E-06 |
| EDTL / Lahr | Germany | 100.00% | 0.00E+00 | 0 | 27/04/2017 | 99.99% | 9.83E-06 |
| EEMU / Pärnu | Estonia | 99.84% | 1.88E-04 | 141 | 03/11/2022 | 99.88% | 1.41E-04 |
| EETN / Lennart Meri Tallinn | Estonia | 99.70% | 3.87E-04 | 341 | 06/12/2018 | 99.91% | 1.21E-04 |
| EETU / Tartu | Estonia | 99.74% | 4.31E-04 | 371 | 18/07/2019 | 99.87% | 1.55E-04 |
| EFTP/ Tampere-Pirkkala | Finland | 99.39% | 6.20E-04 | 603 | 11/08/2022 | 99.78% | 3.38E-04 |
| EGJB / Guernsey | Guernsey | 100.00% | 0.00E+00 | 0 | 10/10/2019 | 99.98% | 1.08E-05 |
| EGJJ / Jersey | Jersey | 100.00% | 0.00E+00 | 0 | 23/05/2019 | 99.98% | 1.01E-05 |
| EHAM / Amsterdam | Netherlands | 100.00% | 0.00E+00 | 0 | 05/12/2019 | 99.98% | 1.32E-05 |
| EHBD / Weert/Budel | Netherlands | 100.00% | 0.00E+00 | 0 | 31/12/2020 | 99.99% | 5.73E-06 |
| EHBK / Maastricht Aachen | Netherlands | 100.00% | 0.00E+00 | 0 | 14/07/2022 | 100.00% | 1.15E-05 |
| EHEH / Eindhoven | Netherlands | 100.00% | 0.00E+00 | 0 | 28/01/2021 | 100.00% | 4.97E-06 |
| EHKD / Den Helder - De Kooy | Netherlands | 100.00% | 0.00E+00 | 0 | 28/01/2021 | 99.99% | 7.52E-06 |
| EHLW / Leeuwarden | Netherlands | 100.00% | 0.00E+00 | 0 | 28/01/2021 | 99.99% | 8.48E-06 |
| EHRD / Rotterdam The Hague | Netherlands | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 2.70E-06 |
| EHWO / Woensdrecht | Netherlands | 100.00% | 0.00E+00 | 0 | 26/01/2023 | 100.00% | 0.00E+00 |
| EIDW / Dublin airport | Ireland | 100.00% | 0.00E+00 | 0 | 08/09/2022 | 99.99% | 1.13E-05 |
| EISG / Sligo | Ireland | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 6.16E-06 |
| EKBI / Billund | Denmark | 100.00% | 0.00E+00 | 0 | 20/07/2017 | 99.98% | 1.56E-05 |
| EKEB / Esbjerg | Denmark | 100.00% | 0.00E+00 | 0 | 26/03/2020 | 99.99% | 8.96E-06 |
| EKSB / Sønderborg | Denmark | 100.00% | 0.00E+00 | 0 | 30/12/2021 | 100.00% | 5.53E-06 |
| ELLX / Luxembourg | Luxembourg | 100.00% | 0.00E+00 | 0 | 26/03/2020 | 99.99% | 8.41E-06 |
| ENAL / Ålesund/Vigra | Norway | 99.91% | 4.86E-05 | 16 | 07/11/2019 | 99.96% | 3.64E-05 |
| ENBL / Førde/Bringeland | Norway | 99.95% | 3.40E-05 | 22 | 27/04/2017 | 99.96% | 3.17E-05 |
| ENBR / Bergen/Flesland | Norway | 99.98% | 1.12E-05 | 2 | 28/02/2019 | 99.96% | 2.64E-05 |
| ENEV / Harstad/Narvik/Evenes | Norway | 97.75% | 1.64E-03 | 1506 | 15/07/2021 | 99.44% | 1.19E-03 |

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| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ⁴ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|---------------------------------------|---------|------------------------------|---------------------------------|----------------------|---|--|---|
| ENGM / Gardermoen | Norway | 99.98% | 1.12E-05 | 2 | 10/11/2016 | 99.97% | 2.16E-05 |
| ENHD / Haugesund/Karmøy | Norway | 99.99% | 5.60E-06 | 1 | 13/08/2020 | 99.98% | 1.78E-05 |
| ENHK / Hasvik | Norway | 95.29% | 2.85E-03 | 2736 | 03/12/2020 | 98.61% | 1.78E-03 |
| ENKB / Kristiansund/Kvernberget | Norway | 99.86% | 8.41E-05 | 29 | 31/12/2020 | 99.96% | 3.19E-05 |
| ENML / Molde/Årø | Norway | 99.91% | 7.14E-05 | 19 | 30/03/2017 | 99.96% | 3.36E-05 |
| ENNM / Namsos | Norway | 99.55% | 7.07E-04 | 631 | 27/04/2017 | 99.94% | 8.39E-05 |
| ENOL / Ørland | Norway | 99.74% | 3.74E-04 | 260 | 12/10/2017 | 99.95% | 5.21E-05 |
| ENRM / Rørvik/Ryum | Norway | 99.48% | 6.79E-04 | 565 | 02/02/2017 | 99.93% | 9.05E-05 |
| ENSG / Sogndal/Haukasen | Norway | 99.97% | 5.60E-06 | 1 | 14/09/2017 | 99.96% | 2.49E-05 |
| ENST / Sandnessjøen/Stokka | Norway | 99.14% | 9.38E-04 | 902 | 30/01/2020 | 99.85% | 2.77E-04 |
| ENTX / Oslo Helikopterplass Taraldrud | Norway | 99.99% | 1.16E-05 | 3 | 15/07/2021 | 99.99% | 1.78E-05 |
| ENVA / Trondheim/Værnes | Norway | 99.72% | 4.47E-04 | 332 | 27/02/2020 | 99.96% | 5.97E-05 |
| ENZV / Stavanger/Sola | Norway | 99.99% | 1.08E-05 | 6 | 09/11/2017 | 99.96% | 2.23E-05 |
| EPBY / Bydgoszcz - Szwederowo | Poland | 99.98% | 5.60E-06 | 1 | 26/04/2018 | 99.97% | 1.83E-05 |
| EPGD / Gdańsk Lech Wałęsa | Poland | 99.98% | 5.60E-06 | 1 | 26/04/2018 | 99.97% | 1.76E-05 |
| EPKK / Kraków - Balice | Poland | 99.95% | 1.12E-05 | 2 | 26/04/2018 | 99.97% | 3.37E-05 |
| EPKT / Katowice | Poland | 99.95% | 1.68E-05 | 3 | 26/04/2018 | 99.98% | 2.53E-05 |
| EPLB / Lublin | Poland | 99.92% | 5.68E-05 | 19 | 26/04/2018 | 99.93% | 7.12E-05 |
| EPLL / Łódź - Lublinek | Poland | 99.97% | 1.68E-05 | 3 | 21/06/2018 | 99.97% | 2.33E-05 |
| EPMO / Warszawa/Modlin | Poland | 99.96% | 2.24E-05 | 4 | 26/04/2018 | 99.97% | 2.66E-05 |
| EPPO / Poznan Lawica | Poland | 99.97% | 5.60E-06 | 2 | 18/07/2019 | 99.98% | 1.50E-05 |
| EPRZ / Rzeszów - Jasionka | Poland | 99.88% | 5.68E-05 | 12 | 26/04/2018 | 99.95% | 6.46E-05 |
| EPSC / Szczecin - Goleniów | Poland | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.98% | 1.40E-05 |
| EPSY / Olsztyn - Mazury | Poland | 99.98% | 1.12E-05 | 3 | 26/04/2018 | 99.97% | 2.49E-05 |
| EPWA / Warszawa - F. Chopin | Poland | 99.95% | 2.80E-05 | 5 | 26/04/2018 | 99.97% | 2.93E-05 |
| EPWR / Wrocław/Strachowice | Poland | 99.97% | 5.60E-06 | 1 | 26/04/2018 | 99.98% | 1.48E-05 |
| EPZG / Zielona Góra - Babimost | Poland | 99.97% | 5.60E-06 | 1 | 18/07/2019 | 99.98% | 1.47E-05 |
| ESGP / Säve | Sweden | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 99.99% | 1.31E-05 |

If printed, make sure it is the applicable version



| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ⁴ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|--|---------|------------------------------|---------------------------------|----------------------|---|--|---|
| ESSV / Visby | Sweden | 99.99% | 4.59E-05 | 9 | 25/03/2021 | 99.98% | 1.56E-05 |
| EVGA / Lielvarde | Latvia | 99.99% | 4.48E-05 | 8 | 27/01/2022 | 99.97% | 3.29E-05 |
| EVLA / Liepaja | Latvia | 99.99% | 5.60E-06 | 1 | 16/06/2022 | 99.99% | 1.22E-05 |
| EVRA / Riga | Latvia | 99.99% | 4.59E-05 | 11 | 27/01/2022 | 99.97% | 2.94E-05 |
| LEBL / Josep Tarradellas Barcelona-El Prat | Spain | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 99.99% | 6.86E-06 |
| LFAQ / Albert Bray | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 9.76E-06 |
| LFAT / Le Touquet Paris Plage | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.10E-05 |
| LFV / Valenciennes Denain | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.08E-05 |
| LFBA / Agen La Garenne | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.36E-05 |
| LFBD / Bordeaux Merignac | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.41E-05 |
| LFBE / Bergerac | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.35E-05 |
| LFBF / Toulouse Francazal | France | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 99.99% | 5.79E-06 |
| LFBH / La Rochelle | France | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 100.00% | 7.24E-06 |
| LFBI / Poitiers Biard | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.18E-05 |
| LFBL / Limoges | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.21E-05 |
| LFBS / Biscarrosse Parentis | France | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 100.00% | 7.42E-06 |
| LFBU / Angoulême Brie Champniers | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.24E-05 |
| LFBX / Périgueux Bassillac | France | 100.00% | 0.00E+00 | 0 | 25/05/2017 | 99.98% | 1.21E-05 |
| LFBZ / Biarritz Bayonne Anglet | France | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.98% | 1.62E-05 |
| LFCC / CAHORS LALBENQUE | France | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 99.99% | 5.79E-06 |
| LFCL / Albi Le Sequestre | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.41E-05 |
| LFCL / Rodez Marcillac | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.38E-05 |
| LFDJ / Pamiers Les Pujols | France | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 99.99% | 1.13E-05 |
| LFDN / Rochefort Charente Maritime | France | 100.00% | 0.00E+00 | 0 | 23/05/2018 | 99.98% | 1.24E-05 |
| LFY / Ile d Yeu | France | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 100.00% | 9.33E-06 |
| LFGA / Colmar Houssen | France | 100.00% | 0.00E+00 | 0 | 21/06/2018 | 99.99% | 1.06E-05 |
| LFGL / Dole Tavaux | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.14E-05 |
| LFHP / Le Puy Loudes | France | 100.00% | 0.00E+00 | 0 | 28/02/2019 | 99.99% | 1.23E-05 |
| LFJL / Metz Nancy Lorraine | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.06E-05 |
| LFJR / Angers Marcé | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.12E-05 |

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| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ⁴ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|---------------------------------------|---------|------------------------------|---------------------------------|----------------------|---|--|---|
| LFKB / Bastia Poretta | France | 99.97% | 5.60E-06 | 1 | 07/12/2017 | 99.98% | 1.60E-05 |
| LFKC / Calvi Sainte Catherine | France | 99.97% | 5.60E-06 | 1 | 04/11/2021 | 99.98% | 5.94E-06 |
| LFKF / Figari Sud Corse | France | 99.97% | 5.60E-06 | 2 | 21/11/2017 | 99.98% | 1.91E-05 |
| LFLC / Clermont-Ferrand Auvergne | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.20E-05 |
| LFLG / Grenoble – Le Versoud | France | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 0.00E+00 |
| LFLI / Lyon St Exupery | France | 100.00% | 0.00E+00 | 0 | 15/08/2019 | 99.99% | 1.17E-05 |
| LFLN / Saint Yan | France | 100.00% | 0.00E+00 | 0 | 02/03/2017 | 99.98% | 1.08E-05 |
| LFLP / Annecy Meythet | France | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 100.00% | 9.51E-06 |
| LFLS / Grenoble Isere | France | 100.00% | 0.00E+00 | 0 | 13/10/2016 | 99.98% | 1.06E-05 |
| LFLU / Valence | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.19E-05 |
| LFLV / Vichy Charmeil | France | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.98% | 1.03E-05 |
| LFLW / Aurillac | France | 100.00% | 0.00E+00 | 0 | 15/08/2019 | 99.98% | 1.29E-05 |
| LFLX / Chateauroux Deols | France | 100.00% | 0.00E+00 | 0 | 15/08/2019 | 99.98% | 1.02E-05 |
| LFLY / Lyon Bron | France | 100.00% | 0.00E+00 | 0 | 28/09/2016 | 99.98% | 1.10E-05 |
| LFMH / Saint Étienne Bouthéon | France | 100.00% | 0.00E+00 | 0 | 02/02/2017 | 99.98% | 1.12E-05 |
| LFMK / Carcassonne Salvaza | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.31E-05 |
| LFML / MARSEILLE PROVENCE | France | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 99.99% | 5.40E-06 |
| LFMN / Nice Côte d'Azur | France | 99.97% | 5.60E-06 | 1 | 24/04/2019 | 99.98% | 1.03E-05 |
| LFMT / Montpellier Mediterranee | France | 100.00% | 0.00E+00 | 0 | 05/12/2019 | 99.98% | 1.33E-05 |
| LFMV / Avignon Caumont | France | 100.00% | 0.00E+00 | 0 | 21/06/2018 | 99.98% | 1.06E-05 |
| LFOB / Beauvais | France | 100.00% | 0.00E+00 | 0 | 01/12/2022 | 100.00% | 1.01E-05 |
| LFOH / Le Havre Octeville | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.03E-05 |
| LFOQ / Blois le Breuil | France | 100.00% | 0.00E+00 | 0 | 24/04/2019 | 99.98% | 9.08E-06 |
| LFOT / TOURS VAL DE LOIRE | France | 100.00% | 0.00E+00 | 0 | 03/11/2022 | 100.00% | 8.87E-06 |
| LFOZ / Orléans Saint Denis De L'Hotel | France | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 100.00% | 5.00E-06 |
| LFPB / Paris-Le Bourget | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 9.00E-06 |
| LFPG / Paris Charles de Gaulle | France | 100.00% | 0.00E+00 | 0 | 28/04/2016 | 99.98% | 7.94E-06 |
| LFPN / Melun Villaroche | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 9.69E-06 |

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| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ⁴ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|-------------------------------------|---------|------------------------------|---------------------------------|----------------------|---|--|---|
| LFPN / Toussus Le Noble | France | 100.00% | 0.00E+00 | 0 | 27/04/2017 | 99.98% | 8.42E-06 |
| LFPO / Paris Orly | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 9.13E-06 |
| LFPT / Pontoise Cormeilles en Vexin | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 9.17E-06 |
| LFQB / Troyes Barberey | France | 100.00% | 0.00E+00 | 0 | 18/08/2016 | 99.98% | 8.28E-06 |
| LFRB / Brest Bretagne | France | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 100.00% | 1.30E-05 |
| LFRC / Cherbourg Maupertus | France | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.98% | 9.26E-06 |
| LFRD / Dinard | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.15E-05 |
| LFRG / Deauville Normancie | France | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 100.00% | 8.97E-06 |
| LFRI / La Roche Sur Yon | France | 100.00% | 0.00E+00 | 0 | 10/11/2016 | 99.98% | 1.17E-05 |
| LFRK / Caen Carpiquet | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.06E-05 |
| LFRO / Lannion | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.31E-05 |
| LFRQ / Quimper | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.97% | 2.13E-05 |
| LFRS / Saint Briec Armor | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.27E-05 |
| LFRZ / Saint Nazaire Montoir | France | 100.00% | 0.00E+00 | 0 | 03/12/2020 | 99.98% | 1.41E-05 |
| LFSL / Brive Souillac | France | 100.00% | 0.00E+00 | 0 | 04/11/2021 | 100.00% | 8.77E-06 |
| LFSN / Nancy Essey | France | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.99% | 1.02E-05 |
| LFST / Strasbourg Entzheim | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.02E-05 |
| LFTW / Nîmes Garons | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.17E-05 |
| LHBP / Budapest Liszt Ferenc | Hungary | 99.96% | 2.35E-05 | 24 | 15/09/2016 | 99.95% | 6.37E-05 |
| LHPP / Pecs-Pogany Airport | Hungary | 99.96% | 1.12E-05 | 2 | 03/12/2020 | 99.95% | 5.20E-05 |
| LHPR / Győr-Pér | Hungary | 99.96% | 1.68E-05 | 3 | 25/02/2021 | 99.97% | 2.05E-05 |
| LHSM / Heviz-Balaton | Hungary | 99.97% | 1.12E-05 | 2 | 25/03/2021 | 99.97% | 2.63E-05 |
| LIBD / Bari / Palese | Italy | 99.97% | 5.60E-06 | 1 | 25/03/2021 | 99.91% | 8.73E-05 |
| LIBG / Taranti/Grottaglie | Italy | 99.97% | 1.12E-05 | 2 | 20/05/2021 | 99.88% | 1.01E-04 |
| LIBR / Brindisi / Casale | Italy | 99.96% | 1.12E-05 | 2 | 07/10/2021 | 99.86% | 1.07E-04 |
| LICA / Lamezia Terme | Italy | 99.96% | 4.37E-05 | 26 | 08/09/2022 | 99.98% | 1.52E-05 |
| LICD / Lampedusa | Italy | 99.77% | 2.52E-04 | 191 | 30/01/2020 | 99.87% | 1.31E-04 |
| LICG / Pantelleria | Italy | 99.96% | 6.05E-05 | 23 | 31/05/2018 | 99.93% | 9.01E-05 |
| LICR / Reggio Calabria | Italy | 99.95% | 4.74E-05 | 37 | 19/07/2018 | 99.90% | 1.24E-04 |
| LIEO/Costa Smeralda | Italy | 99.97% | 7.84E-06 | 4 | 11/08/2022 | 99.99% | 3.39E-06 |

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| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ⁴ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|-------------------------------------|----------------|------------------------------|---------------------------------|----------------------|---|--|---|
| LIMC / Milano/Malpensa | Italy | 99.97% | 5.60E-06 | 1 | 23/04/2020 | 99.99% | 1.08E-05 |
| LIME / Bergamo /Orio al Serio | Italy | 99.97% | 5.60E-06 | 1 | 08/10/2020 | 99.99% | 5.47E-06 |
| LIMF / Torino / Caselle | Italy | 100.00% | 0.00E+00 | 0 | 25/03/2021 | 100.00% | 4.58E-06 |
| LIMJ / Genova/Sestri | Italy | 99.97% | 5.60E-06 | 2 | 10/09/2020 | 99.99% | 6.01E-06 |
| LIMP / Parma | Italy | 99.97% | 5.60E-06 | 1 | 23/05/2018 | 99.98% | 1.33E-05 |
| LIMZ / Cuneo/Levaldigi | Italy | 99.97% | 5.60E-06 | 1 | 23/05/2018 | 99.98% | 9.36E-06 |
| LIPQ / Trieste/Ronchi dei Legionari | Italy | 99.97% | 5.60E-06 | 1 | 12/08/2021 | 99.99% | 1.13E-05 |
| LIPR / Rimini Miramare | Italy | 99.97% | 5.60E-06 | 1 | 15/07/2021 | 99.98% | 1.04E-05 |
| LIPY / Ancona / Falconara | Italy | 99.97% | 5.60E-06 | 1 | 03/01/2019 | 99.97% | 4.40E-05 |
| LIRA / Roma/Ciampino | Italy | 99.97% | 5.60E-06 | 2 | 21/05/2020 | 99.96% | 3.05E-05 |
| LIRF / Roma/Fiumicino | Italy | 99.97% | 5.60E-06 | 2 | 23/05/2019 | 99.97% | 4.13E-05 |
| LIRN / Napoli / Capodichino | Italy | 99.97% | 5.60E-06 | 2 | 07/10/2021 | 99.94% | 6.85E-05 |
| LKPR / Prague | Czech Republic | 99.97% | 5.60E-06 | 1 | 05/12/2019 | 99.98% | 1.13E-05 |
| LMML / Luqa | Malta | 99.79% | 1.28E-04 | 74 | 11/10/2018 | 99.86% | 1.59E-04 |
| LOWG / Flughafen Graz | Austria | 99.97% | 5.60E-06 | 1 | 01/03/2018 | 99.97% | 3.90E-05 |
| LOWI / Innsbruck | Austria | 99.97% | 5.60E-06 | 1 | 01/02/2018 | 99.98% | 1.40E-05 |
| LOWK / Klagenfurt | Austria | 99.97% | 5.60E-06 | 1 | 11/10/2018 | 99.98% | 2.82E-05 |
| LOWL / Linz | Austria | 99.97% | 5.60E-06 | 1 | 02/02/2017 | 99.98% | 1.91E-05 |
| LOWS / Salzburg | Austria | 99.97% | 5.60E-06 | 1 | 23/04/2020 | 99.99% | 1.11E-05 |
| LOWW / Wien - Schwechat | Austria | 99.97% | 1.12E-05 | 2 | 02/02/2017 | 99.97% | 3.27E-05 |
| LSGC / Les Eplatures | Switzerland | 100.00% | 0.00E+00 | 0 | 26/05/2016 | 99.99% | 1.04E-05 |
| LSGG / Genève | Switzerland | 100.00% | 0.00E+00 | 0 | 13/09/2018 | 99.99% | 1.16E-05 |
| LSMD / Dübendorf | Switzerland | 100.00% | 0.00E+00 | 0 | 30/01/2020 | 99.99% | 1.13E-05 |
| LSMP / Payerne | Switzerland | 100.00% | 0.00E+00 | 0 | 05/12/2019 | 99.99% | 1.15E-05 |
| LSZB / Bern-Belp | Switzerland | 100.00% | 0.00E+00 | 0 | 03/12/2020 | 100.00% | 6.59E-06 |
| LSZH / Zurich | Switzerland | 100.00% | 0.00E+00 | 0 | 25/05/2017 | 99.99% | 1.04E-05 |
| LYBE / Beograd/Nikola Tesla | Serbia | 99.95% | 2.80E-05 | 19 | 26/03/2020 | 99.90% | 1.01E-04 |
| LYKV / KRALJEVO/Morava | Serbia | 99.95% | 2.28E-05 | 19 | 24/02/2022 | 99.90% | 9.09E-05 |
| LYNI / Niš/Konstantin Veliki | Serbia | 99.93% | 3.74E-05 | 37 | 26/03/2020 | 99.86% | 1.53E-04 |
| LYPG / Podgorica | Montenegro | 99.97% | 5.60E-06 | 1 | 26/03/2020 | 99.88% | 1.23E-04 |

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| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ⁴ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|---------------------|-----------------|------------------------------|---------------------------------|----------------------|---|--|---|
| LZKZ / Košice | Slovak Republic | 99.94% | 1.68E-05 | 3 | 16/06/2022 | 99.98% | 1.53E-05 |
| LZPP / Piešťany | Slovak Republic | 99.96% | 1.12E-05 | 2 | 02/02/2017 | 99.97% | 3.51E-05 |
| LZTT / Poprad-Tatry | Slovak Republic | 99.94% | 1.68E-05 | 3 | 29/03/2018 | 99.96% | 6.00E-05 |
| LZZI / Žilina | Slovak Republic | 99.96% | 2.50E-05 | 24 | 25/05/2017 | 99.97% | 3.29E-05 |

Table 9 – Monthly LPV-200 Availability at airports with published procedures using EGNOS



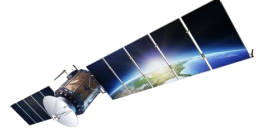
APPENDIX D REFERENCE DOCUMENTS

| | |
|--------|---|
| [RD-1] | Open Service Definition Document, EGN-SDD-OS; v.02-03 (https://egnos-user-support.essp-sas.eu/new_egnos_ops/sites/default/files/documents/egnos_os_sdd_in_force.pdf) |
| [RD-2] | Safety Of Life Definition Document, EGN-SDD-SoL; v.03-04 (https://egnos-user-support.essp-sas.eu/new_egnos_ops/sites/default/files/documents/egnos_sol_sdd_in_force.pdf) |
| [RD-3] | EGNOS Data Access Service (EDAS) Service Definition Document, EGN-SDD-EDAS; v.02-02 (https://egnos-user-support.essp-sas.eu/new_egnos_ops/sites/default/files/documents/egnos_edas_sdd_in_force.pdf) |



APPENDIX E LIST OF ACRONYMS

| Acronym | Definition |
|---------|---|
| APV | Approach with Vertical Guidance |
| ASN | Abstract Syntax Notation |
| ECAC | European Civil Aviation Conference |
| EDAS | EGNOS Data Access Service |
| EGNOS | European Geostationary Navigation Overlay Service |
| ENT | EGNOS Network Time |
| ESSP | European Satellite Services Provider |
| FTP | File Transfer Protocol |
| GEO | Geostationary Satellite |
| GNSS | Global Navigation Satellite System |
| GPS | Global Positioning System |
| HAL | Horizontal Alert Limit |
| HNSE | Horizontal Navigation System Error |
| HPE | Horizontal Position Error |
| HPL | Horizontal Protection Level |
| HSI | Horizontal Safety Index |
| LPV | Localizer Performance with vertical guidance |
| MI | Misleading Information |
| MT27 | Message Type 27 |
| NA | Not Applicable/ Not Available |
| NLES | Navigation Land Earth Station |
| NPA | Non-Precision Approach |
| NTRIP | Networked Transport of RTCM via Internet Protocol |
| OP | Operation |
| OPS | Operations |
| OS | Open Service |
| PA | Precision Approach |
| PL | Protection Level |
| PRN | Pseudo-Random Noise |
| RAIM | Receiver Autonomous Integrity Monitoring |
| RD | Reference Document |
| RIMS | Ranging and Integrity Monitoring Station |
| RTCM | Radio Technical Commission for Maritime Services |
| SBAS | Satellite-Based Augmentation System |
| SDD | Service Definition Document |
| SIS | Signal-In-Space |
| SLO | Service Level 0 |
| SL2 | Service Level 2 |
| SoL | Safety of Life |
| UTC | Universal Time Coordinated |
| VAL | Vertical Alert Limit |
| VNSE | Vertical Navigation System Error |
| VPE | Vertical Position Error |
| VPL | Vertical Protection Level |
| VSI | Vertical Safety Index |



APPENDIX F VNSE HISTOGRAM DATA EXTRAPOLATED AT 10⁻⁷/150S FOR EACH RIMS LOCATION

For each RIMS, accumulating measurements from both EGNOS GEO, the following figures present:

1. Accumulated VNSE histogram in dark blue and referenced to the vertical axis on the left.
2. Cumulative probability of the accuracy distribution in orange and referenced to the vertical axis on the right.
3. Cumulative probability of the over bounding Gaussian distribution in pink and referenced to the vertical axis on the right.
4. VNSE extrapolated to 10⁻⁷/150s in the right top corner.

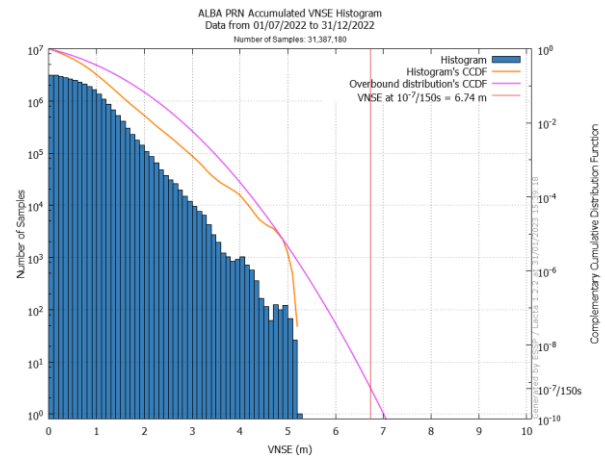
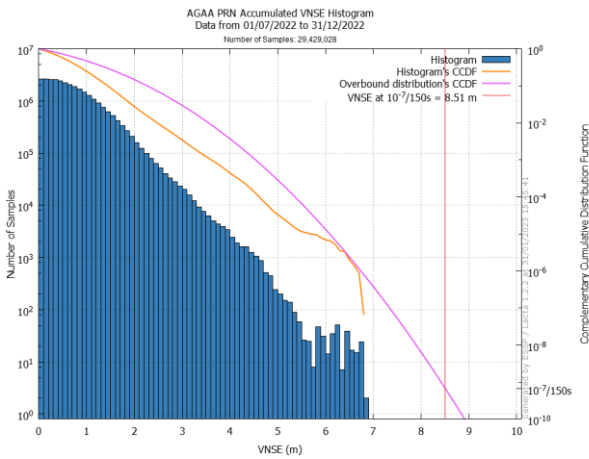


Figure 32 – Extrapolated LPV200 VNSE at 10⁻⁷/150s in AGA (left) & ALB (right)

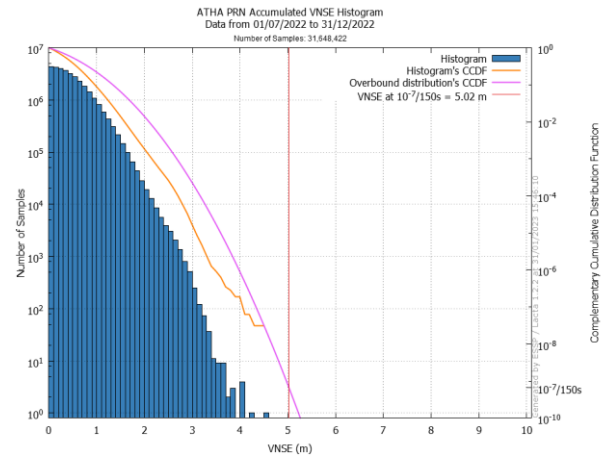
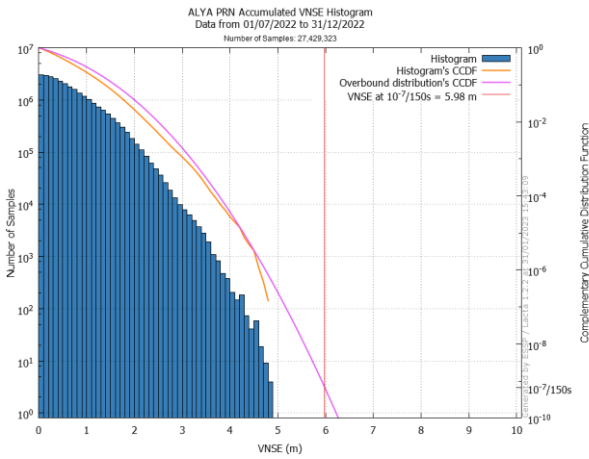


Figure 33 – Extrapolated LPV200 VNSE at 10⁻⁷/150s in ALY (left) & ATH (right)

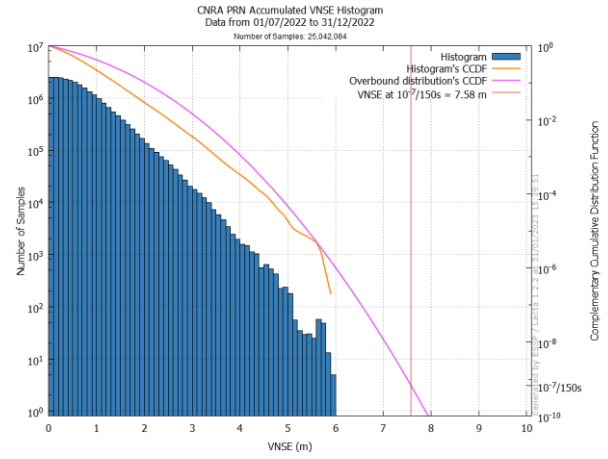
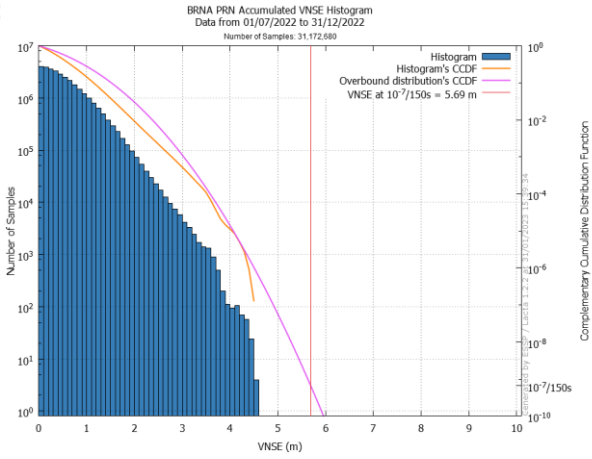


Figure 34 – Extrapolated LPV200 VNSE at 10-7/150s in BRN (left) & CNR (right)

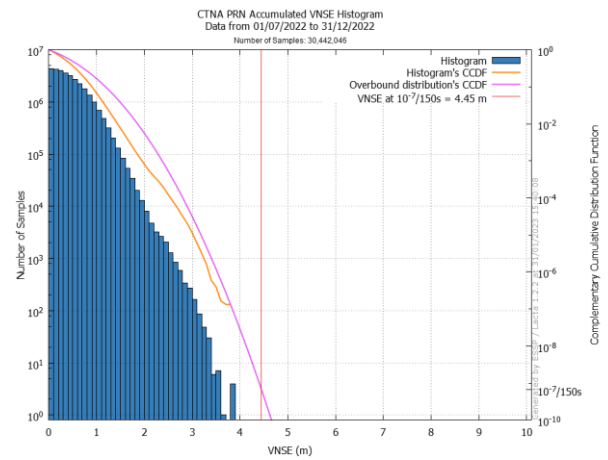
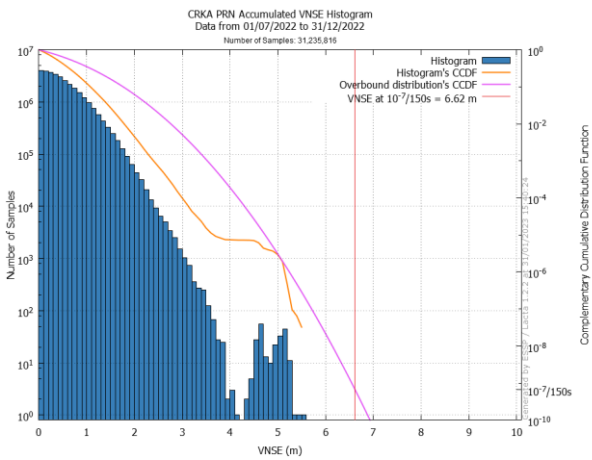


Figure 35 – Extrapolated LPV200 VNSE at 10-7/150s in CRK (left) & CTN (right)

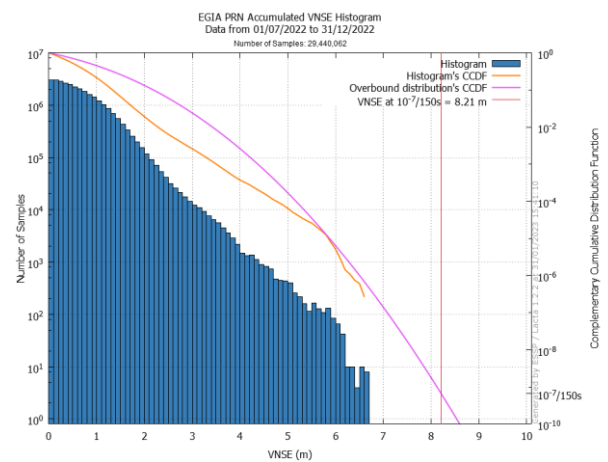
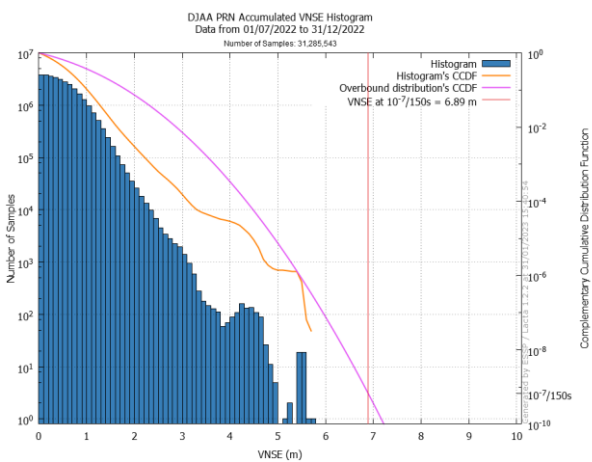


Figure 36 – Extrapolated LPV200 VNSE at 10-7/150s in DJA (left) & EGI (right)

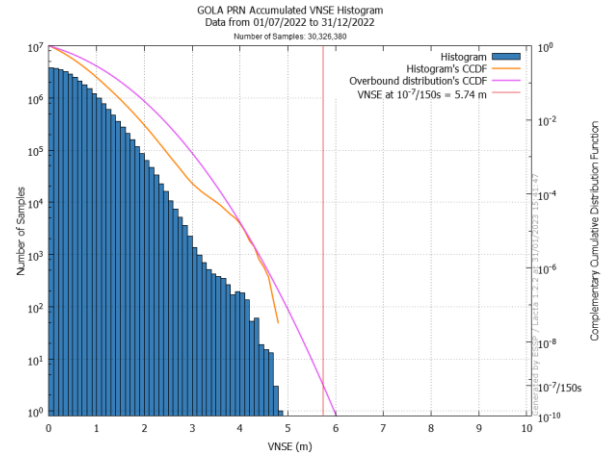
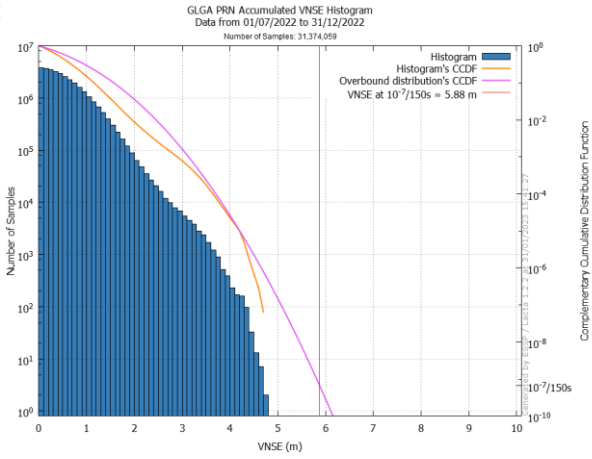


Figure 37 – Extrapolated LPV200 VNSE at 10-7/150s in GLG (left) & GOL (right)

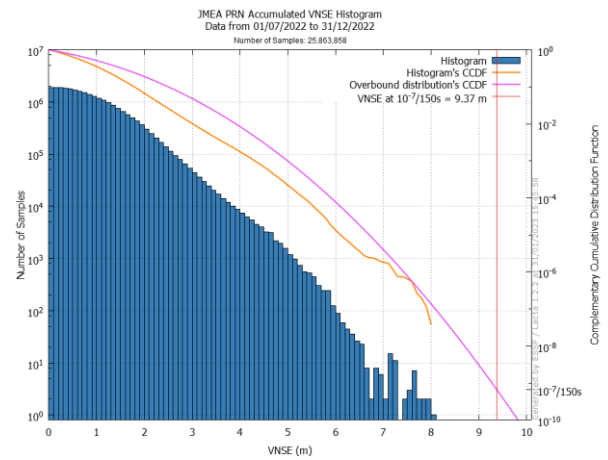
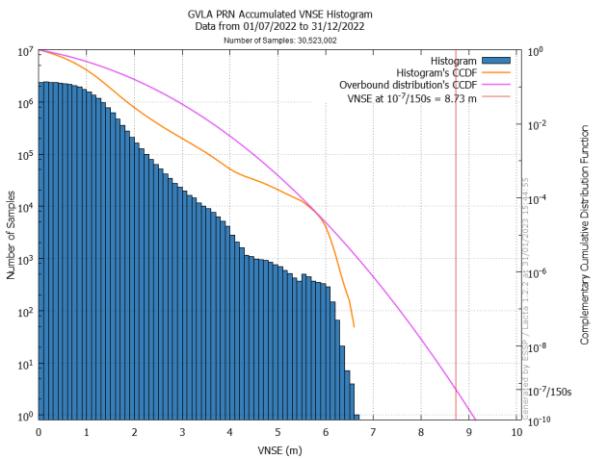


Figure 38 – Extrapolated LPV200 VNSE at 10-7/150s in GVL (left) & JME (right)

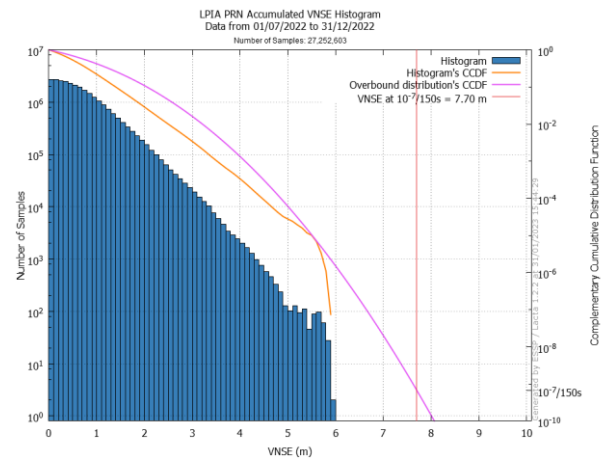
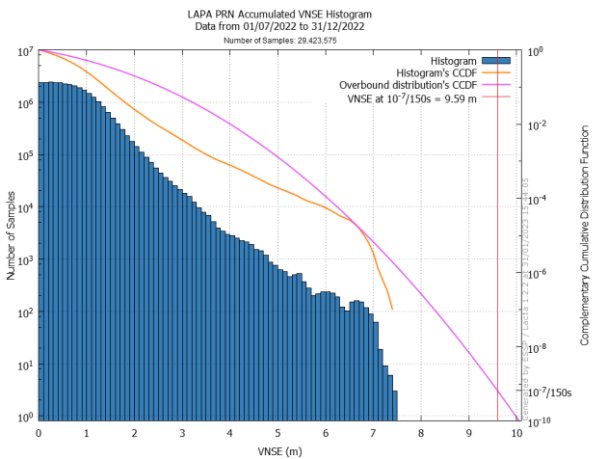


Figure 39 – Extrapolated LPV200 VNSE at 10-7/150s in LAP (left) & LPI (right)

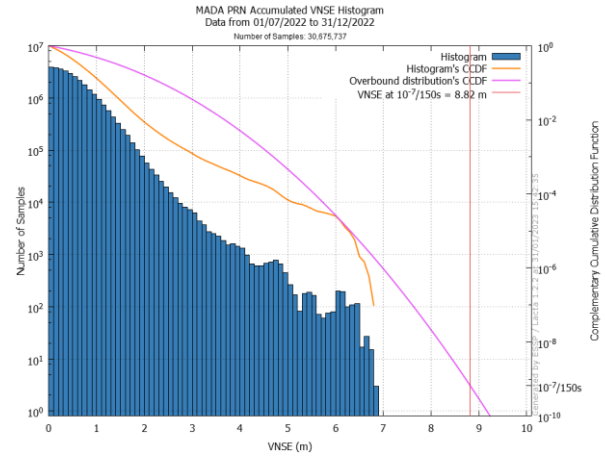
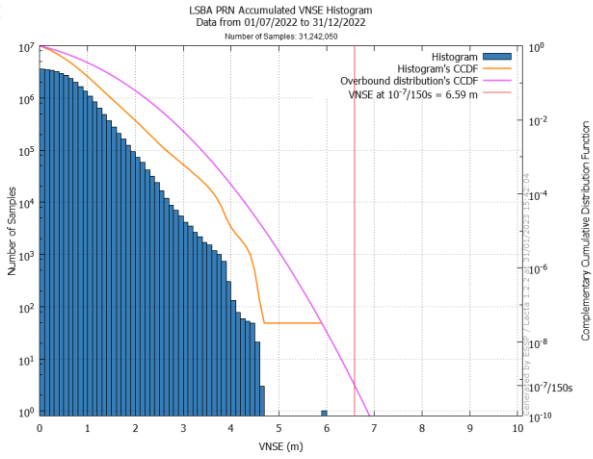


Figure 40 – Extrapolated LPV200 VNSE at 10-7/150s in LSB (left) & MAD (right)

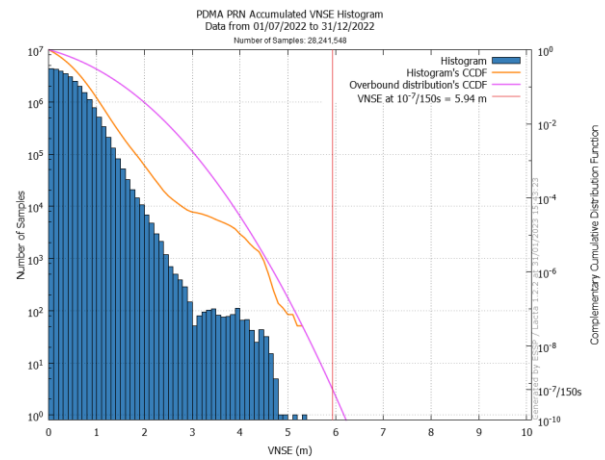
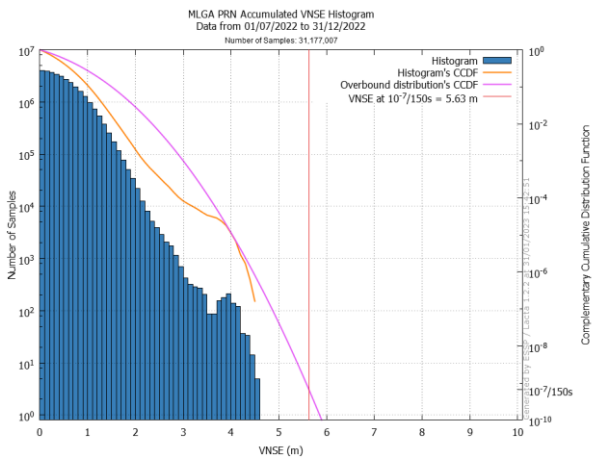


Figure 41 – Extrapolated LPV200 VNSE at 10-7/150s in MLG (left) & PDM (right)

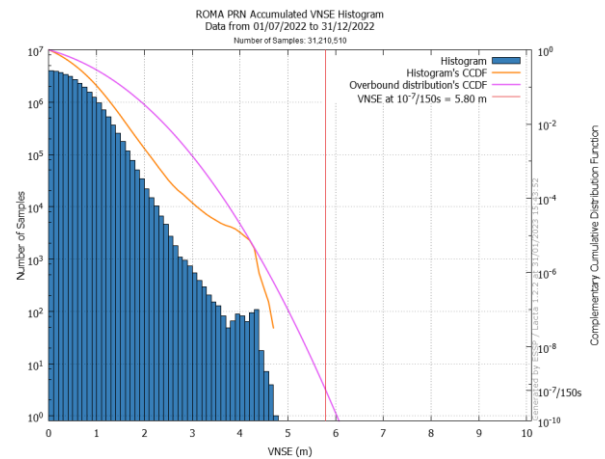
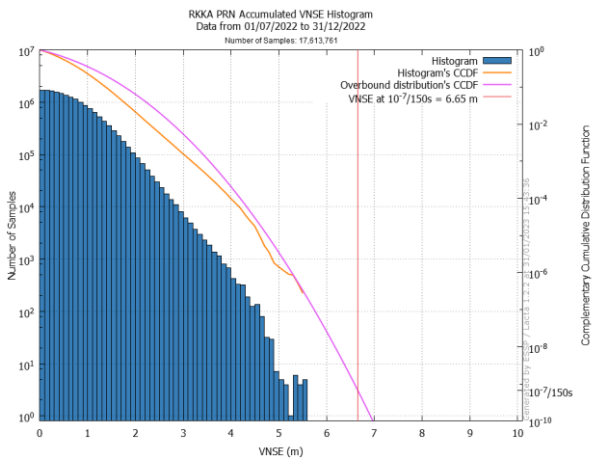


Figure 42 – Extrapolated LPV200 VNSE at 10-7/150s in RKK (left) & ROM (right)

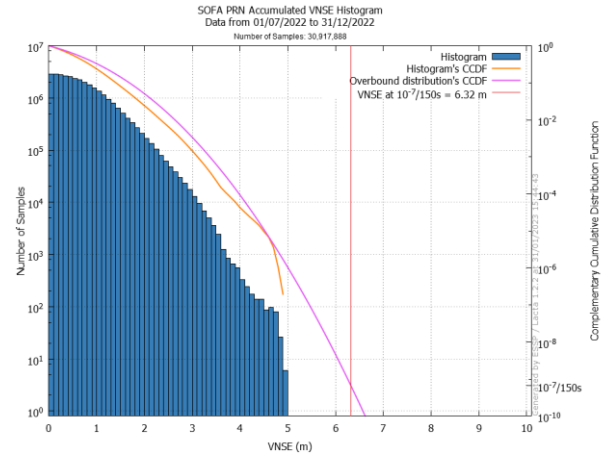
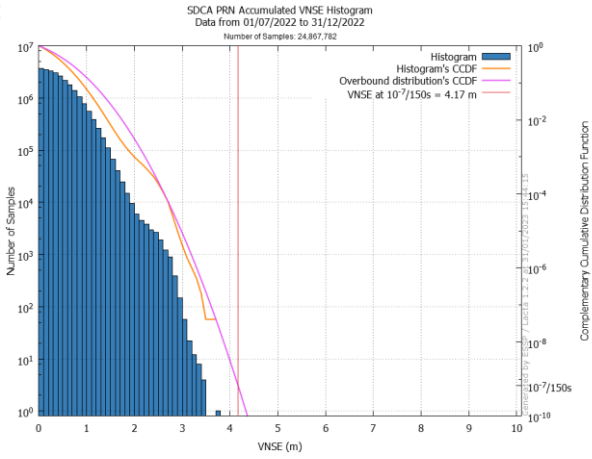


Figure 43 – Extrapolated LPV200 VNSE at 10-7/150s in SDC (left) & SOF (right)

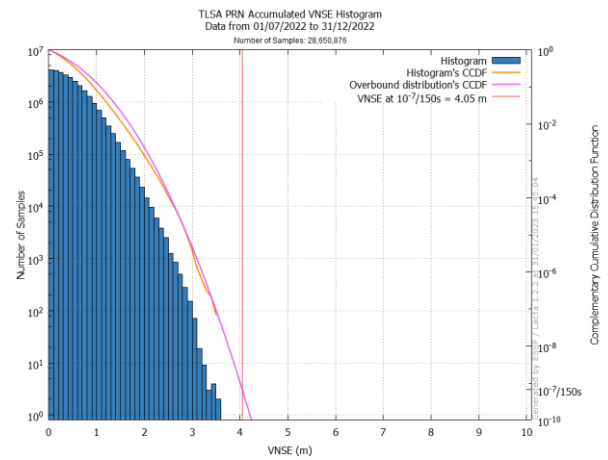
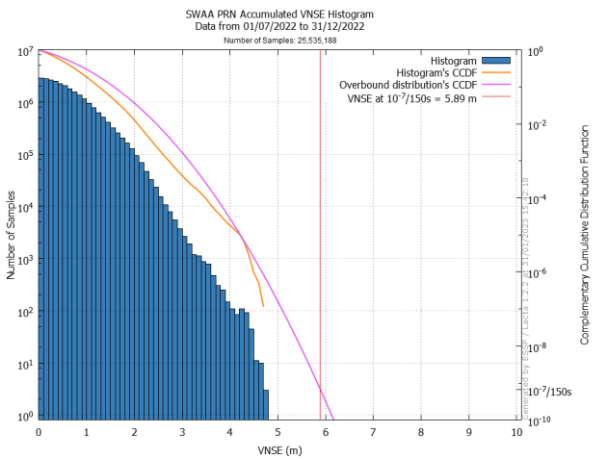


Figure 44 – Extrapolated LPV200 VNSE at 10-7/150s in SWA (left) & TLS (right)

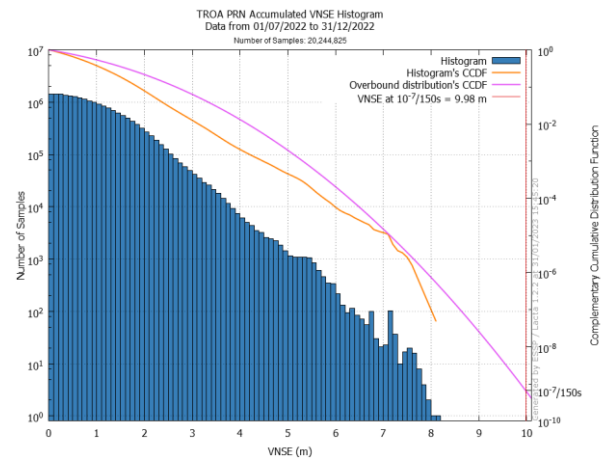
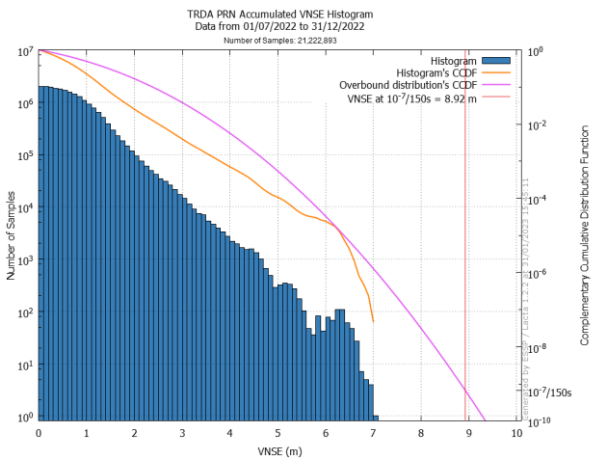


Figure 45 – Extrapolated LPV200 VNSE at 10-7/150s in TRD (left) & TRO (right)

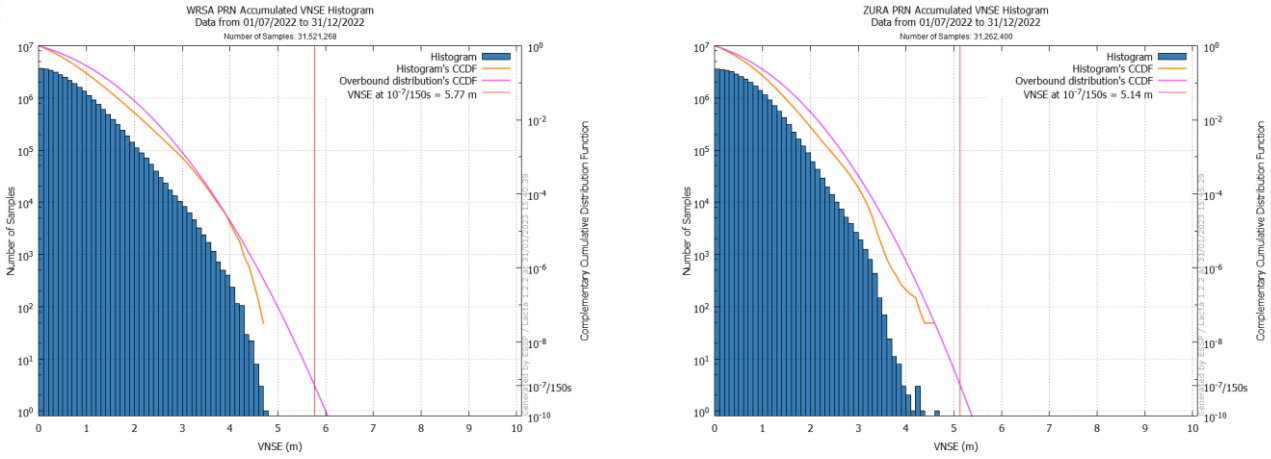


Figure 46 – Extrapolated LPV200 VNSE at 10-7/150s in WRS (left) & ZUR (right)

Instead of analysing each RIMS site individually, it is possible to compute the extrapolated LPV200 VNSE at $10^{-7}/150s$ in a global way, considering samples from all RIMS within LPV200 commitment all together.

Performing this analysis for each operational GEO, it is possible to obtain the extrapolated LPV200 VNSE that may be considered as characteristic for EGNOS. Those values would be 8.67m for GEO PRN123 and 8.62m for GEO PRN136 as observed in following histograms.

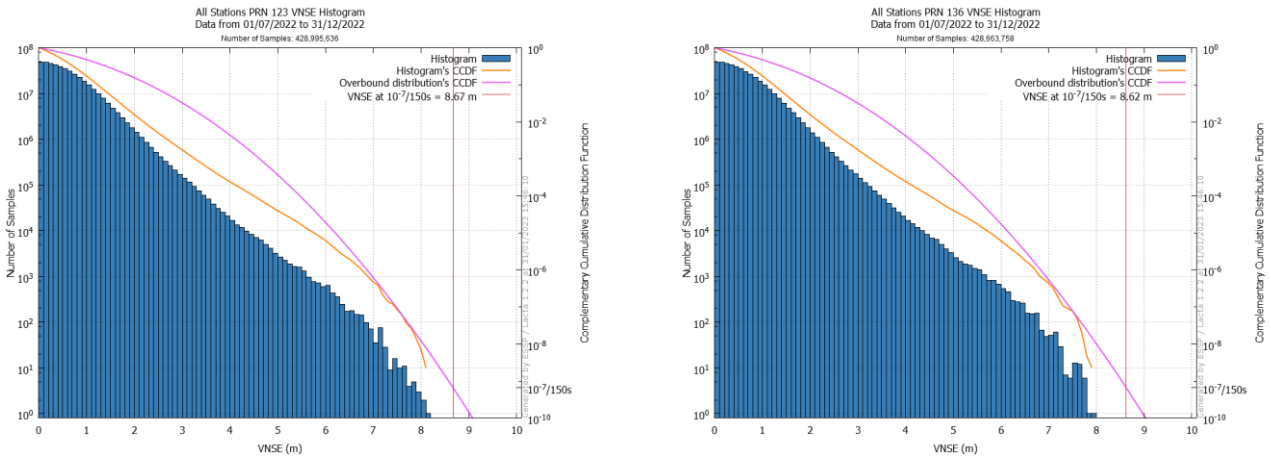


Figure 47 – Extrapolated LPV200 VNSE at 10-7/150s - all RIMS - PRN123 (left) & PRN136 (right)



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