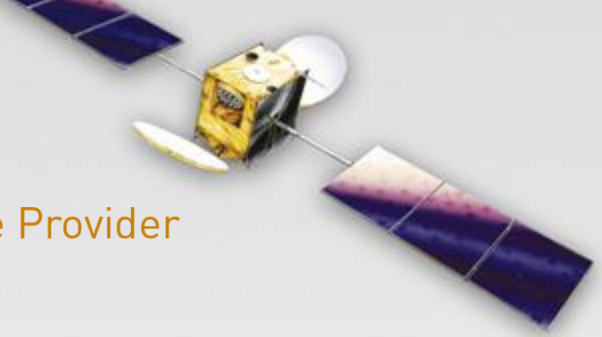


The **EGNOS** Service Provider



Monthly Performance Report August 2018



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ESSP-DRD-22617 Iss. 01-00 Date: 07.09.2018

The **EGNOS** Annual Workshop will take place during the **European Space Week** this year



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GEO swap on PRNs 120 & 136



EGNOS
SPACE SEGMENT UPDATE

From August 23rd → PRN136 introduced on EGNOS Operational Platform

From August 30th → PRN120 introduced on EGNOS Test Platform

From August 23rd until 30th, PRN120 will remain in EGNOS Operational Platform

GEO 136 has been placed into the Operational Platform on 23/08/2018 at 10:00 UTC and GEO 120 has been placed into Test Platform on 30/08/2018 at 13:00 UTC, as previously announced on the [Service Implementation Roadmaps](#). You can find here below a summary table describing the operational GEOs during the mentioned time frame:

| Date & Time | Operational GEOs |
|--|--------------------------|
| Until 23/08/2018 at 10:00 UTC | PRN120 & PRN123 |
| From 23/08/2018 at 10:00 UTC until 30/08/2018 at 13:00 UTC | PRN120, PRN123 & PRN 136 |
| From 30/08/2018 at 13:00 UTC until further notice | PRN123 & PRN136 |

Please note that GEO120 was kept on operational mode until 30/08/2018 at 13:00 UTC to ease the transition to the new configuration.

We encourage EGNOS Users to configure the GEO Satellites described on the table above accordingly in order to retrieve the optimal solution. Nevertheless, you can contact the EGNOS Helpdesk at egnos-helpdesk@essp-sas.eu, submitting an [EGNOS Helpdesk form](#) or calling at +34 911 236 555.

Moreover, the active GEO satellites are shown on the “[EGNOS System Availability](#)” Section on the homepage of the EGNOS User Support Website, as it provides real-time information on this matter. You can find further information on the GEO swap on [Service Notice #15](#).

Should you like to manage your subscriptions on the EGNOS Documentation Notification Service, including the Service Notices, please refer to the “[subscriptions](#)” tool that will allow you to select the notifications you would like to receive.

EXECUTIVE SUMMARY

This report presents the EGNOS services performance during August 2018. 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 PRN120 – PRN123¹. 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 results corresponding to APV-I and LPV200 Availability and Continuity for this month have been relatively good in terms of service area coverage.

The percentage² of SoL SDD service area [RD-2] covered by APV-I and LPV200 Availability (99%) performance map is 97.73% for APV-I and 98.68% for LPV200. The value achieved for continuity ($5 \cdot 10^{-4}/15s$) is 99.14% for APV-I and 98.20% for LPV200.

The APV-I and LPV200 performance at all airports with approach operations based on the APV-I or LPV200 service levels presented an availability above 99% and continuity risk lower than $5 \cdot 10^{-4}/15s$, with the only exception of Kirkenes (ENKR) in Norway.

The Horizontal and Vertical Safety Indexes remained below 0.43 for both APV-I and LPV200 service levels for all the analyzed sites, what represents a good integrity margin.

NPA Availability above 99% is delivered in the whole 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 (and most of them equal or close to 100%).

The horizontal and vertical accuracy results for all the sites remained below 1.4 meters (95%) and 2.3 meters (95%) respectively, which represents a very good level of accuracy.

EDAS Service

In terms of availability, the observed performance for all the EDAS services has fulfilled the targets [RD-3].

Regarding the EDAS Services latency, the observed delays (for the real-time services) were also better than the committed performance [RD-3].

EGNOS Time Service

The EGNOS Time Service was available during more than 99% of the time for each day during August 2018, except on 7th and 29th of August. On those days, the availability of the EGNOS Time Service was 85.08% and 98.87% respectively.

The offset between the EGNOS Network Time and the GPS time remained below 8 nanoseconds over the three previous months (May to July 2018).

¹ Note that due to the GEO Swap that took place during this month, the combination of operational GEO satellites considered for the different computations along this report is PRN120 & PRN123 from the 1st of August to the 29th of August and PRN 120 & PRN136 for 30th and 31st of August. PRN120 & PRN136 are referred as “OP2” on future sections to ease reporting the operational GEO satellites at any time.

² 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.

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 SIS availability for PRN120, PRN123 and PRN136, the following values are also reported³:

- percentage of time in the month during which at least one geostationary satellite broadcasts EGNOS messages (PRN120, PRN123 or PRN136);
- percentage of time in the month during which operational geostationary satellites broadcast EGNOS messages.

EGNOS SIS monitoring for August 2018, reports the following reception percentage of an SBAS message:

- OP2 Availability: **99.98%**
- PRN123 Availability: **99.98%**
- SIS – OP2 or PRN123: **100%**
- SIS – OP2 and PRN123: **99.98%**

The following figure presents the availability of the signal in both EGNOS GEO satellites (PRN120 and PRN123). Red lines correspond to unavailability periods:

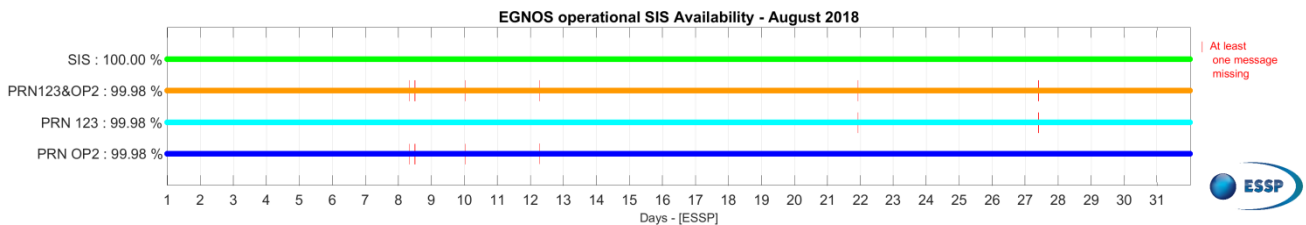


Figure 1 – EGNOS SIS & PRN Availability for August 2018.

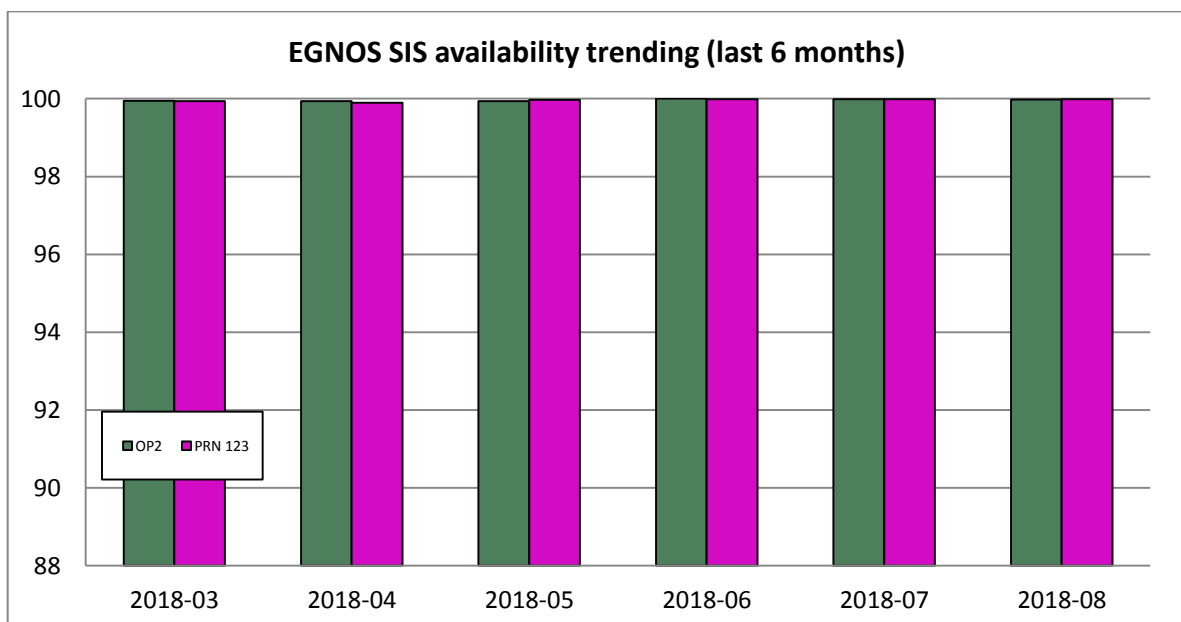


Figure 2 – Trend of EGNOS SIS Availability per GEO.

³ Note that due to the GEO Swap that took place during this month, the combination of operational GEO satellites considered for the different computations along this report is PRN120 & PRN123 from the 1st of August to the 29th of August and PRN 120 & PRN136 for 30th and 31st of August. PRN120 & PRN136 are referred as “OP2” on future sections to ease reporting the operational GEO satellites at any time.

| Availability (%) | 2018-03 | 2018-04 | 2018-05 | 2018-06 | 2018-07 | 2018-08 |
|----------------------------------|---------|---------|---------|---------|---------|---------|
| OP2 | 99,95 | 99,94 | 99,94 | 100 | 99,99 | 99,98 |
| PRN 123 | 99,94 | 99,9 | 99,97 | 99,99 | 99,99 | 99,98 |
| At least one EGNOS GEO satellite | 100 | 100 | 100 | 100 | 100 | 100 |

Table 1 – EGNOS SIS Availability (%) on EGNOS GEO satellites⁴.

⁴ Note that due to the GEO Swap that took place during this month, the combination of operational GEO satellites considered for the different computations along this report is PRN120 & PRN123 from the 1st of August to the 29th of August and PRN 120 & PRN136 for 30th and 31st of August. PRN120 & PRN136 are referred as “OP2” on future sections to ease reporting the operational GEO satellites at any time.

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 are reported.

| Station | HNSE 95% (m) | VNSE 95% (m) |
|-------------------|--------------|--------------|
| Agadir | 0.8 | 1.4 |
| Aalborg | 0.6 | 1.4 |
| Alexandria | 1.3 | 2.2 |
| Athens | 0.8 | 1.5 |
| Berlin | 0.7 | 1.1 |
| Canarias | 0.8 | 1.6 |
| Cork | 0.7 | 1.1 |
| Catania | 0.7 | 1.1 |
| Djerba | 0.8 | 1.1 |
| Egilsstadir | 0.7 | 1.5 |
| Glasgow | 0.7 | 1.2 |
| Golbasi | 0.9 | 1.6 |
| Gavle | 0.6 | 1.6 |
| Jan Mayen | 1.2 | 2.2 |
| Kirkenes | 0.8 | 1.8 |
| Lappeenranta | 0.7 | 1.6 |
| La Palma | 0.8 | 1.6 |
| Lisboa | 0.8 | 1.3 |
| Madeira | 0.7 | 1.3 |
| Malaga | 0.7 | 1.1 |
| Palma de Mallorca | 0.7 | 1.0 |
| Reykjavik | 0.9 | 1.9 |
| Roma | 0.7 | 1.1 |
| S. Compostela | 0.7 | 1.0 |
| Sofía | 1.0 | 2.0 |
| Swanwick | 0.9 | 1.4 |
| Toulouse | 0.7 | 1.1 |
| Trondheim | 0.7 | 1.4 |
| Tromsoe | 0.9 | 2.1 |
| Warsaw | 0.7 | 1.4 |
| Zurich | 0.7 | 1.2 |

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.

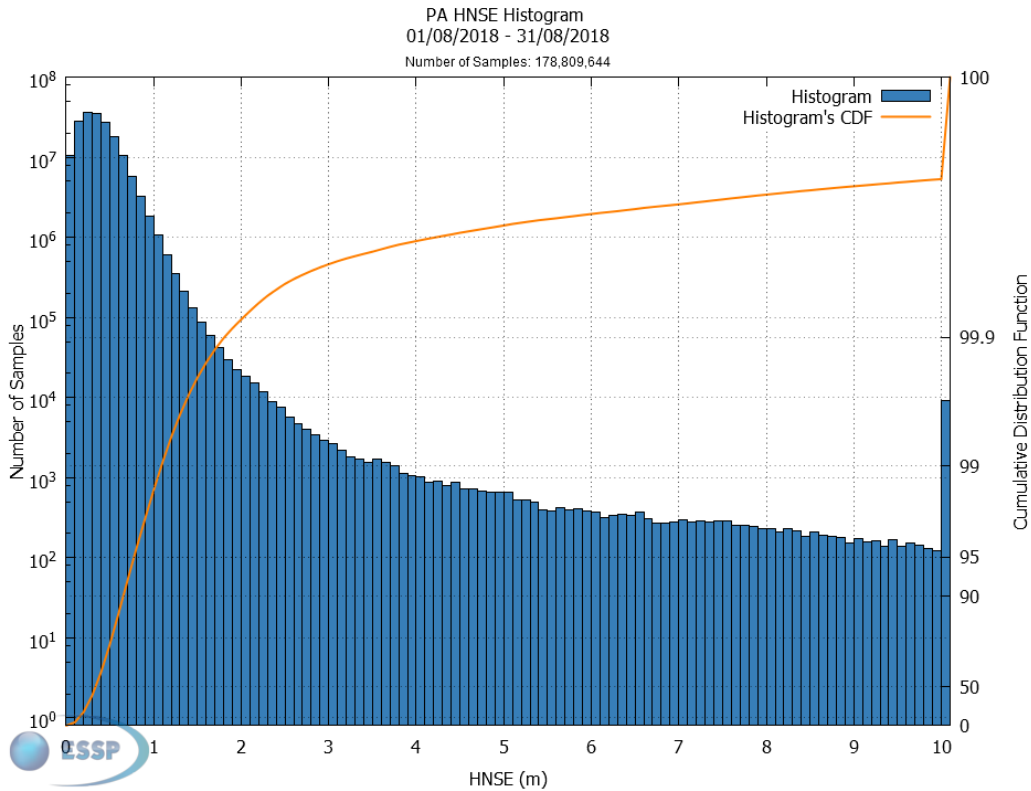


Figure 3 – EGNOS Open Service HNSE Histogram and Cumulative Probability

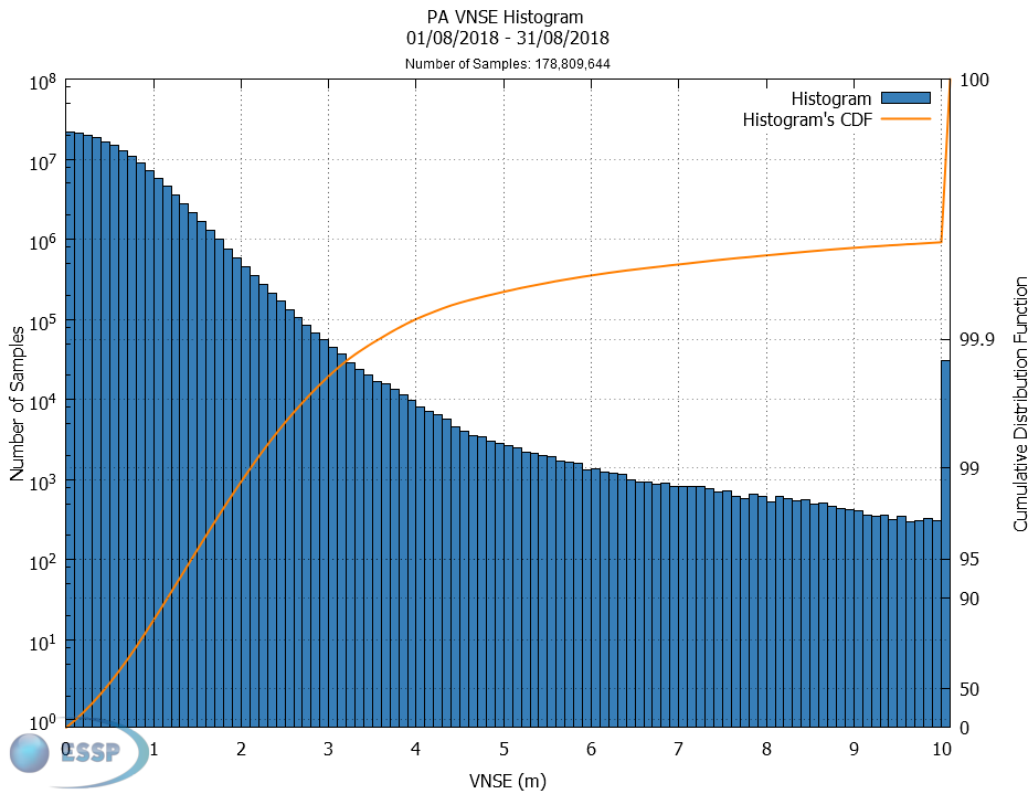


Figure 4 – EGNOS Open Service VNSE Histogram and Cumulative Probability

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 are reported.

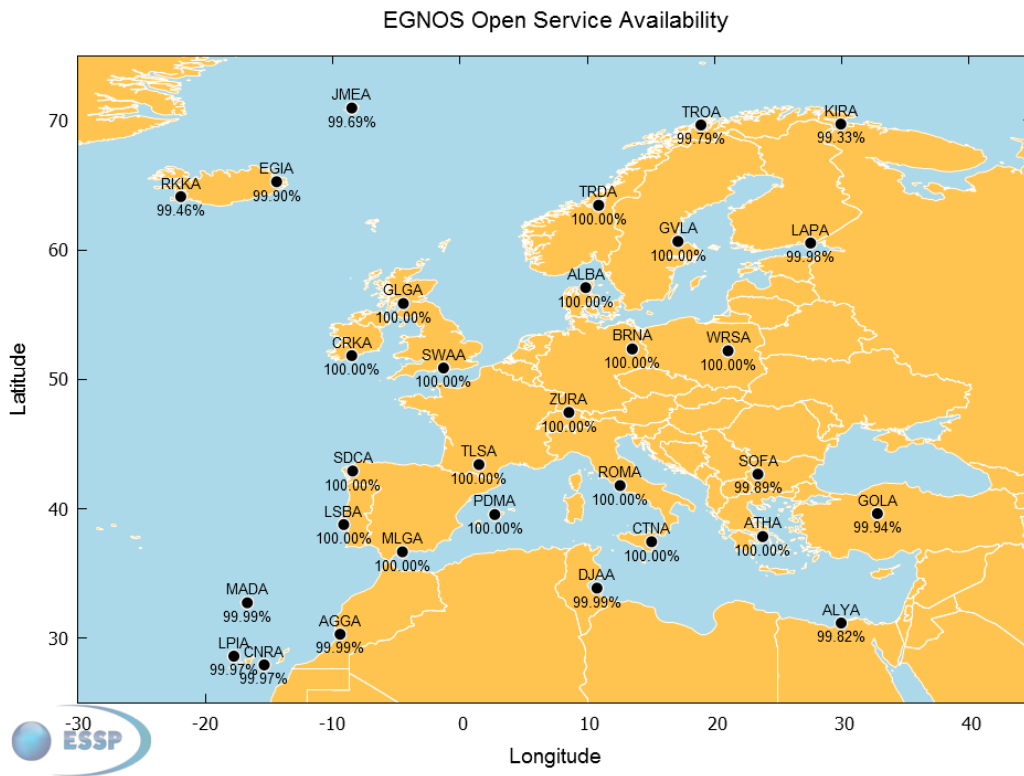


Figure 5 – EGNOS Open Service Availability at reference stations

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.

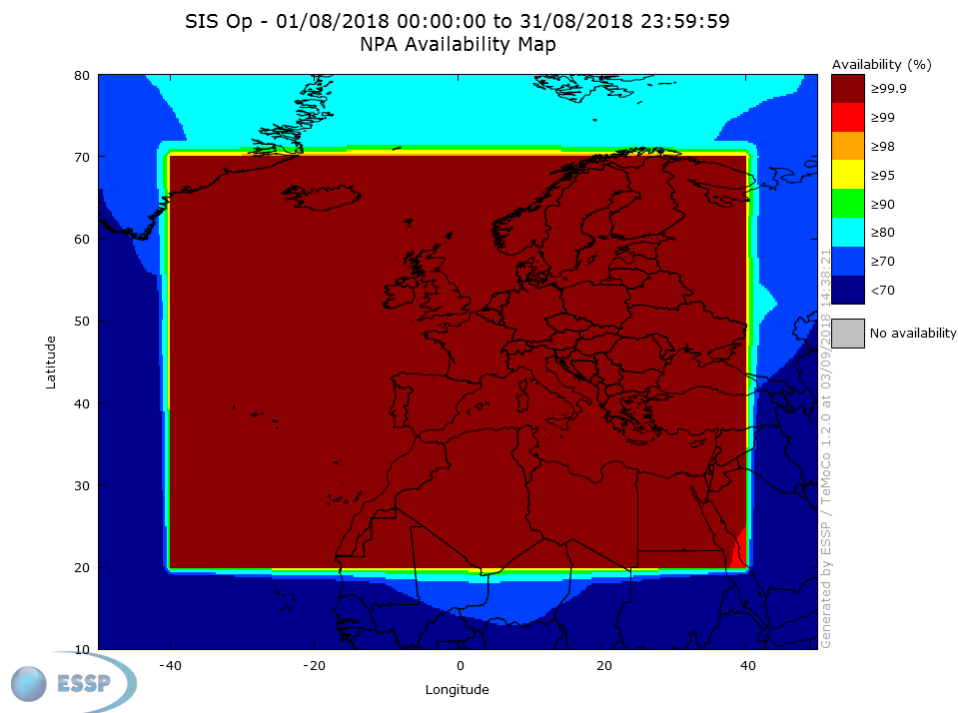


Figure 6 – EGNOS NPA availability

The evolution of the compliance area for a 30 days period with respect to NPA availability compliance area at 99% level as defined in the SoL SDD ([RD-2]) during the last 3 months is presented here:

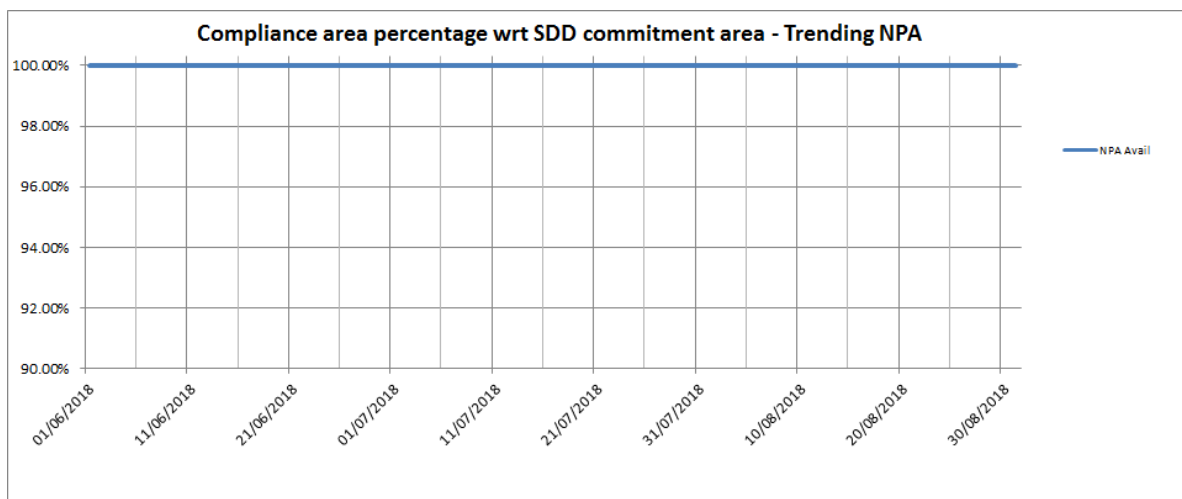


Figure 7 – EGNOS NPA availability compliance trend

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.

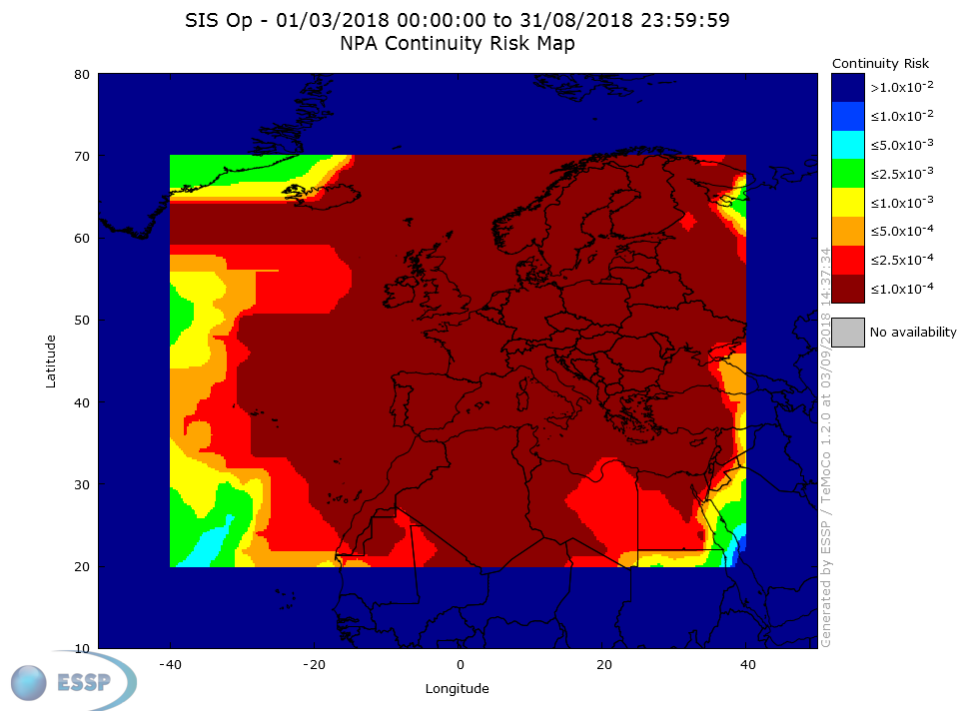


Figure 8 – EGNOS NPA Continuity over the last 6 months

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 histograms show the distribution of HSI (Horizontal Safety Index), which is computed at the different EGNOS stations for each second over the current month. These histograms take into account the epochs in which the NPA service is available (Protection Level < NPA Alarm Limit).

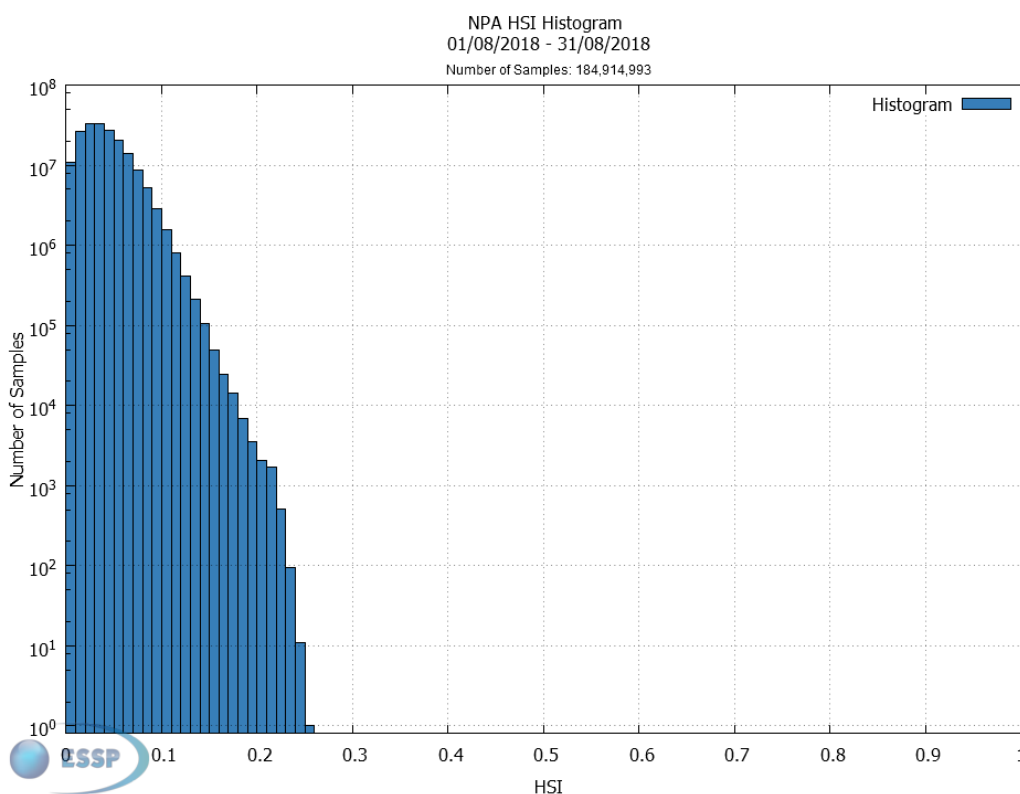


Figure 9 – EGNOS NPA Horizontal Safety Index of the month

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 are reported.

| Station | HNSE 95% (meters) | % of samples in NPA mode |
|-------------------|-------------------|--------------------------|
| Abu Simbel | 1.8 | 100.00% |
| Azores | 1.4 | 100.00% |
| Agadir | 0.8 | 100.00% |
| Aalborg | 0.6 | 100.00% |
| Alexandria | 1.3 | 100.00% |
| Athens | 0.8 | 100.00% |
| Berlin | 0.7 | 100.00% |
| Canary Islands | 0.8 | 100.00% |
| Cork | 0.7 | 100.00% |
| Catania | 0.7 | 100.00% |
| Djerba | 0.8 | 100.00% |
| Egilsstadir | 0.8 | 100.00% |
| Glasgow | 0.7 | 100.00% |
| Golbasi | 0.9 | 100.00% |
| Gavle | 0.6 | 100.00% |
| Kirkenes | 0.8 | 100.00% |
| Lappeenranta | 0.7 | 100.00% |
| La Palma | 0.8 | 100.00% |
| Lisbon | 0.8 | 100.00% |
| Madeira | 0.7 | 100.00% |
| Málaga | 0.7 | 100.00% |
| Palma de Mallorca | 0.7 | 100.00% |
| Reykjavik | 0.9 | 100.00% |
| Roma | 0.7 | 100.00% |
| S. de Compostela | 0.7 | 100.00% |
| Sofia | 1.0 | 100.00% |
| Swanwick | 0.9 | 100.00% |
| Toulouse | 0.7 | 100.00% |
| Trondheim | 0.7 | 100.00% |
| Tromsøe | 0.9 | 100.00% |
| Warsaw | 0.8 | 100.00% |
| Zürich | 0.7 | 100.00% |

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

The following figures show 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.

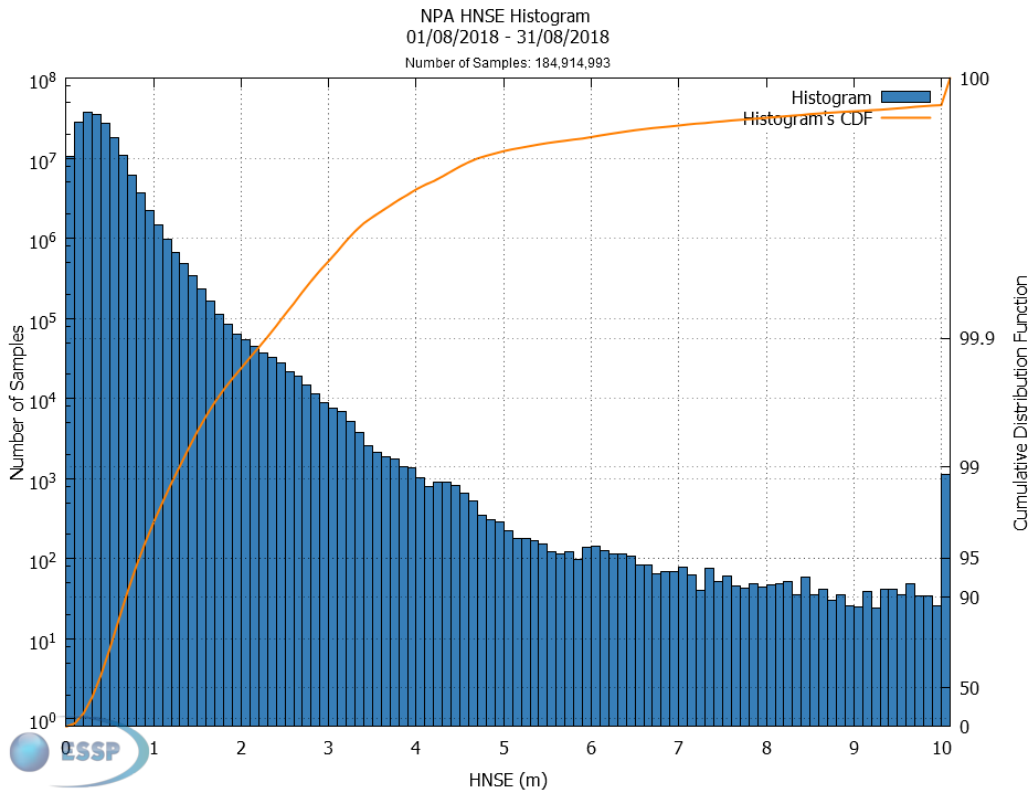


Figure 10 – EGNOS NPA HNSE Histogram and Cumulative Probability

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.

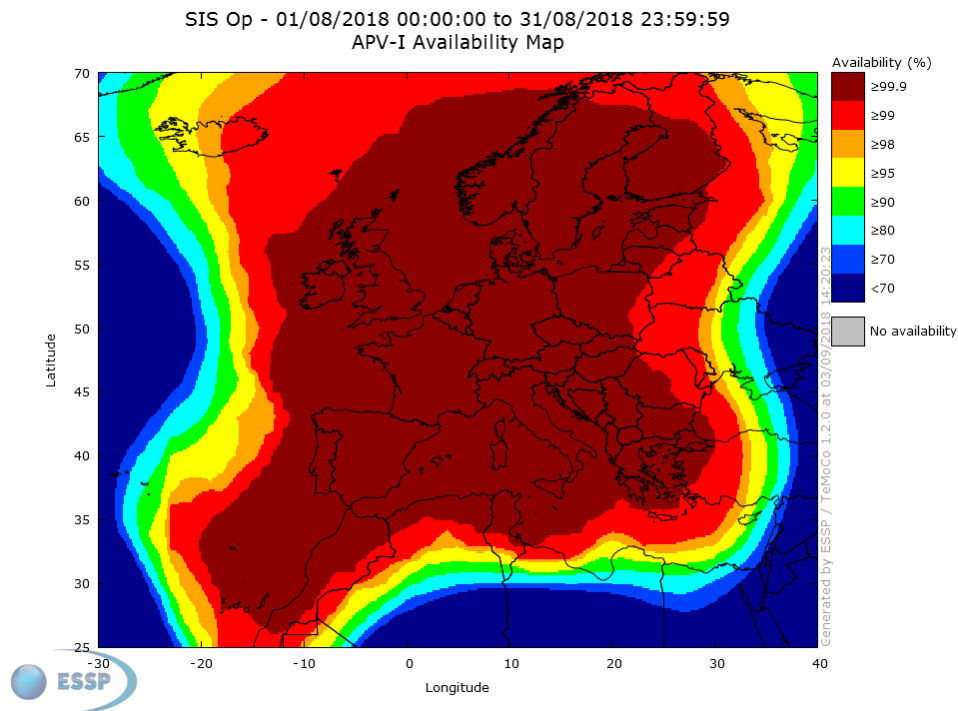


Figure 11 – EGNOS APV-I Availability

Below, the evolution of the monthly APV-I availability (99%) compliance area (30 days sliding window) is presented. The percentage is computed with respect to the commitment area at 99% level as defined in the SoL SDD ([RD-2]). The information is presented for the last 3 months.

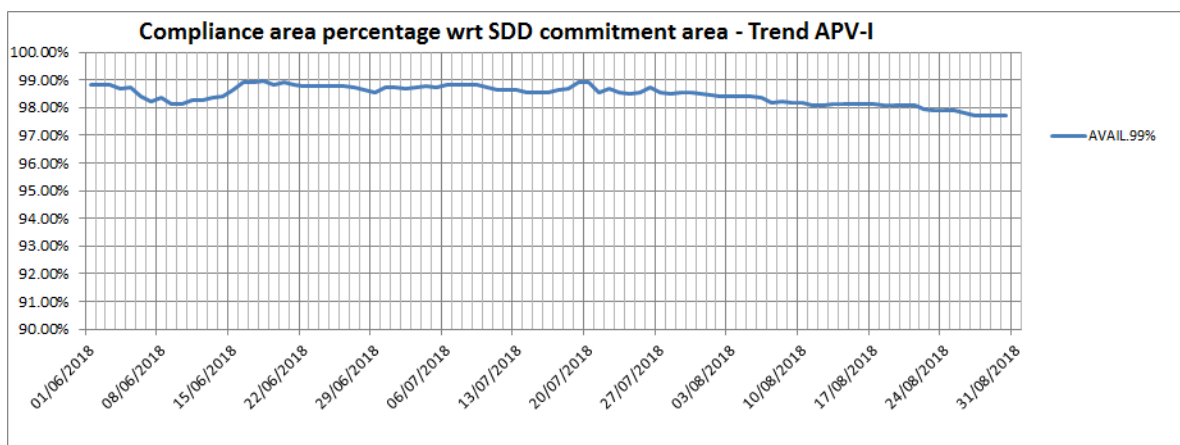


Figure 12 – EGNOS APV-I availability compliance trend

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.

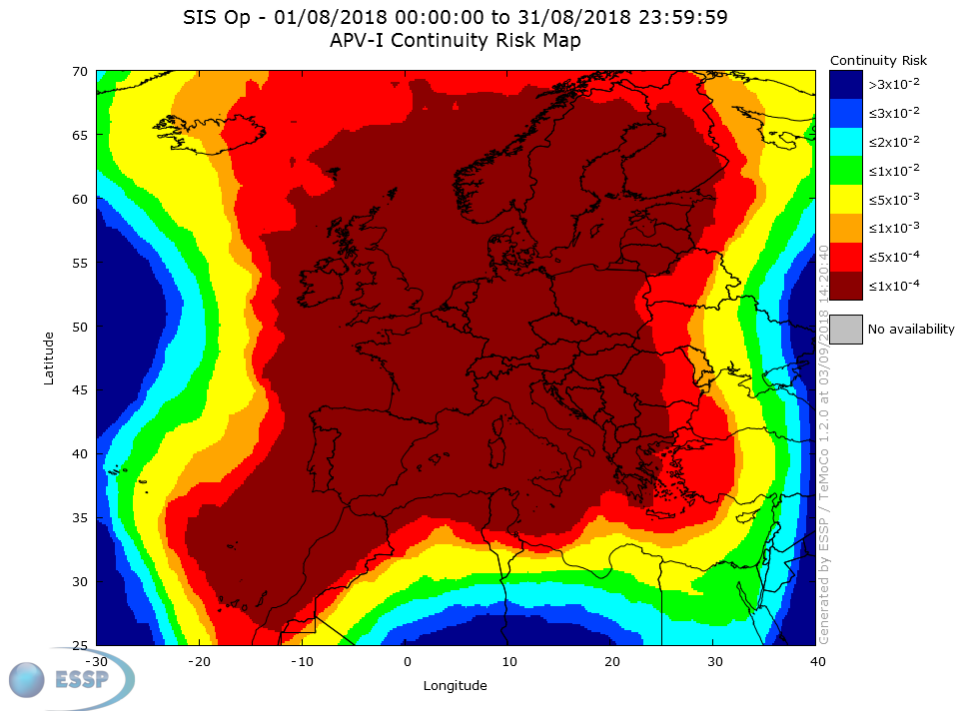


Figure 13 – EGNOS APV-I Continuity

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.

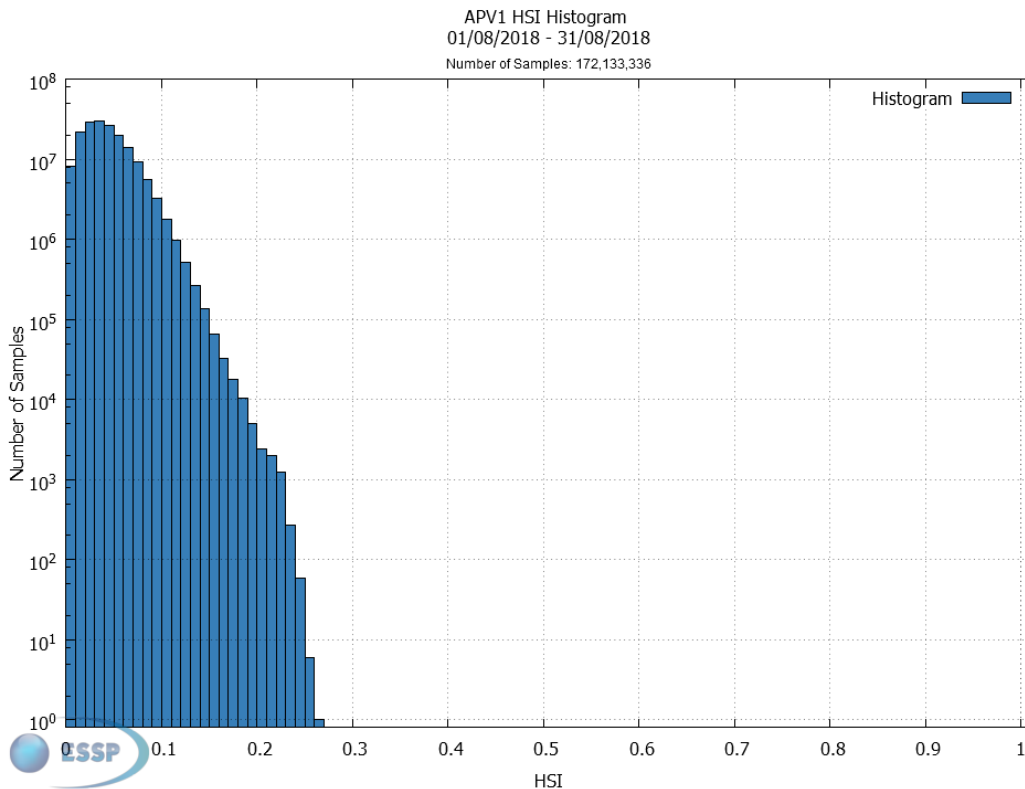


Figure 14 – EGNOS APV-I Horizontal Safety Index of the month

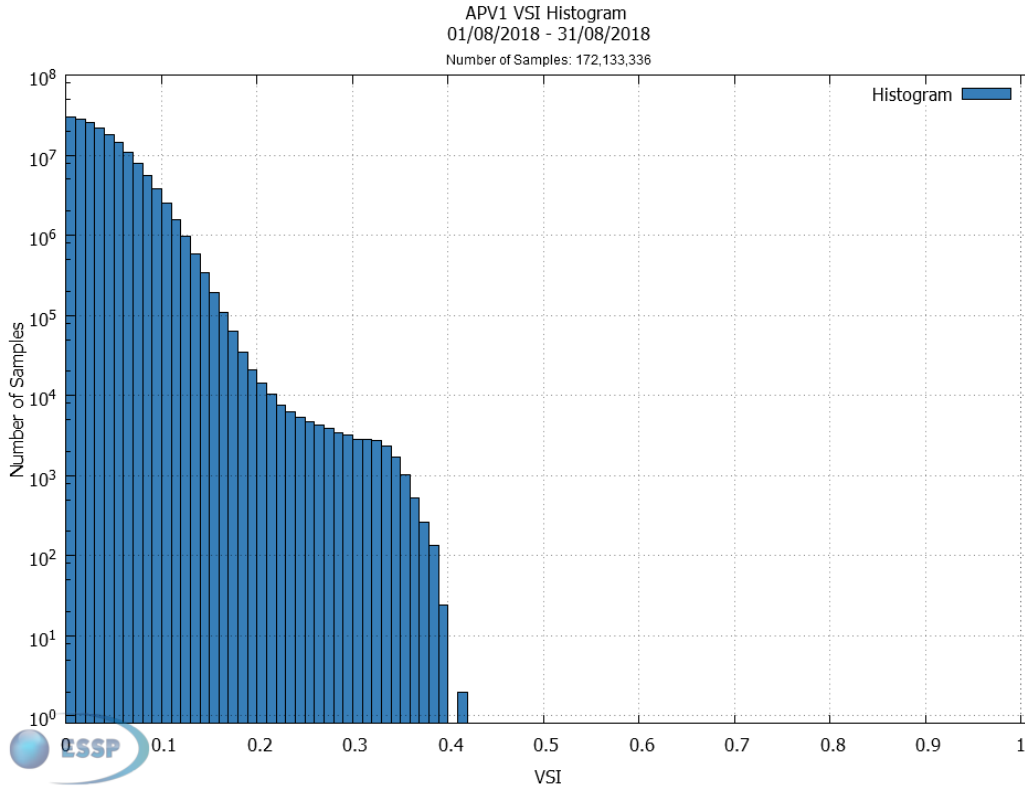


Figure 15 – EGNOS APV-I Vertical Safety Index of the month

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 per operational GEO combined satellite. See Appendix A for further details of the stations where APV-I Accuracy are reported.

| Station | HNSE 95% (meters) | VNSE 95% (meters) | % of samples with APV-I service available |
|-------------------|-------------------|-------------------|---|
| Agadir | 0.8 | 1.4 | 99.99% |
| Aalborg | 0.6 | 1.4 | 99.97% |
| Alexandria | 1.3 | 2.1 | 88.72% |
| Athens | 0.8 | 1.5 | 99.94% |
| Berlin | 0.7 | 1.1 | 99.99% |
| Canary Islands | 0.8 | 1.6 | 99.92% |
| Cork | 0.7 | 1.1 | 100.00% |
| Catania | 0.7 | 1.1 | 100.00% |
| Djerba | 0.8 | 1.1 | 99.97% |
| Egilsstadir | 0.7 | 1.5 | 99.47% |
| Glasgow | 0.7 | 1.2 | 100.00% |
| Golbasi | 0.9 | 1.6 | 98.94% |
| Gavle | 0.6 | 1.6 | 99.98% |
| Kirkenes | 0.8 | 1.6 | 98.77% |
| Lappeenranta | 0.7 | 1.6 | 99.94% |
| La Palma | 0.8 | 1.6 | 100.00% |
| Lisbon | 0.8 | 1.3 | 100.00% |
| Madeira | 0.7 | 1.3 | 100.00% |
| Málaga | 0.7 | 1.1 | 100.00% |
| Palma de Mallorca | 0.7 | 1.0 | 100.00% |
| Reykjavik | 0.8 | 1.6 | 97.01% |
| Roma | 0.7 | 1.1 | 99.99% |
| S. de Compostela | 0.7 | 1.0 | 99.99% |
| Sofia | 1.0 | 2.0 | 99.98% |
| Swanwick | 0.9 | 1.4 | 100.00% |
| Toulouse | 0.7 | 1.1 | 100.00% |
| Trondheim | 0.7 | 1.4 | 99.99% |
| Tromsoe | 0.9 | 2.1 | 99.70% |
| Warsaw | 0.7 | 1.4 | 99.96% |
| Zürich | 0.7 | 1.2 | 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.

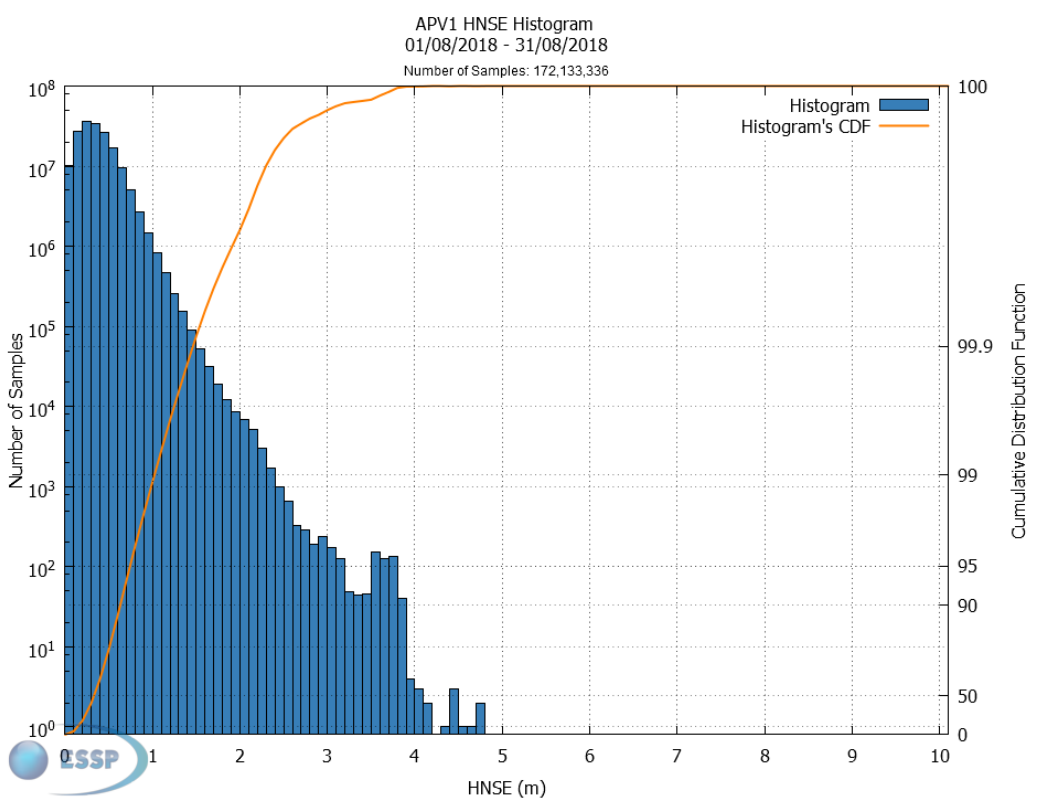


Figure 16 – EGNOS APV-I HNSE Histogram and Cumulative Probability

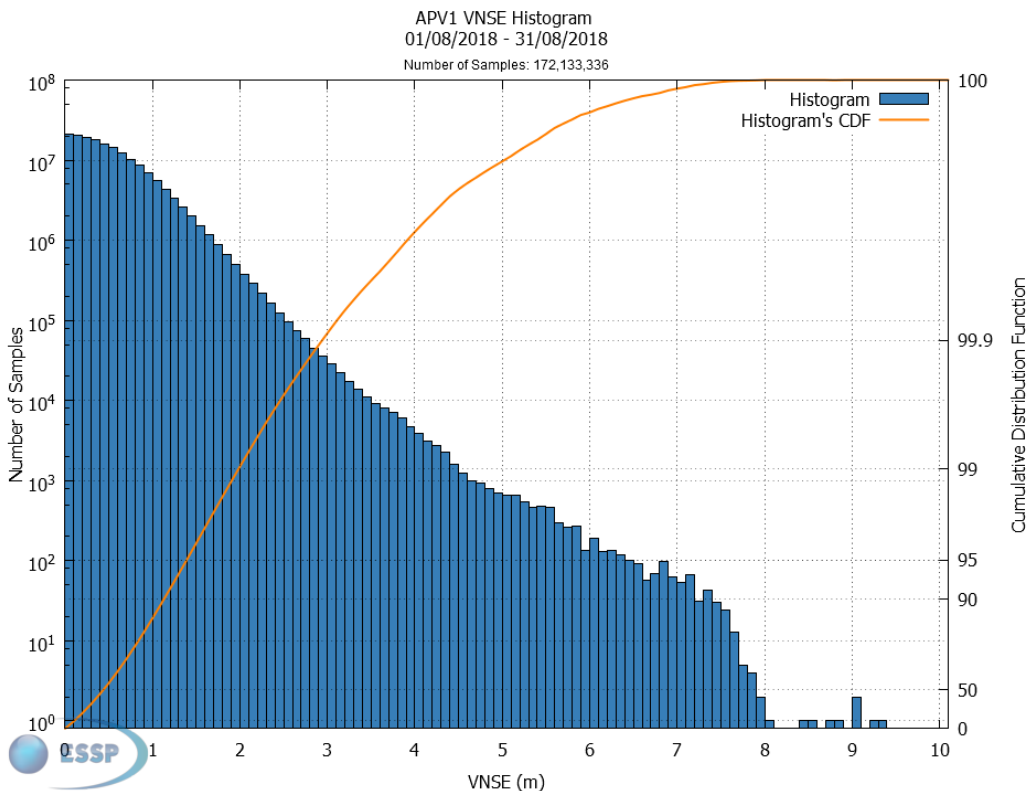


Figure 17 – EGNOS APV-I VNSE Histogram and Cumulative Probability

3.2.5 EGNOS APV-I Performance at airports

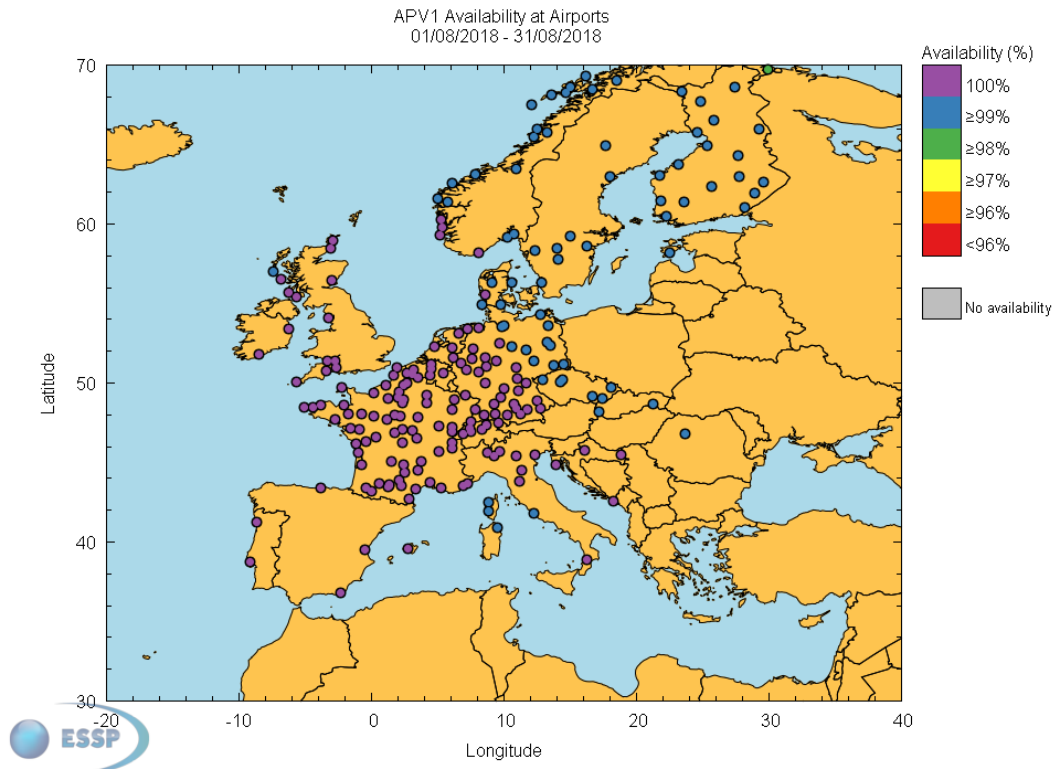


Figure 18 – EGNOS APV-I Availability at airports

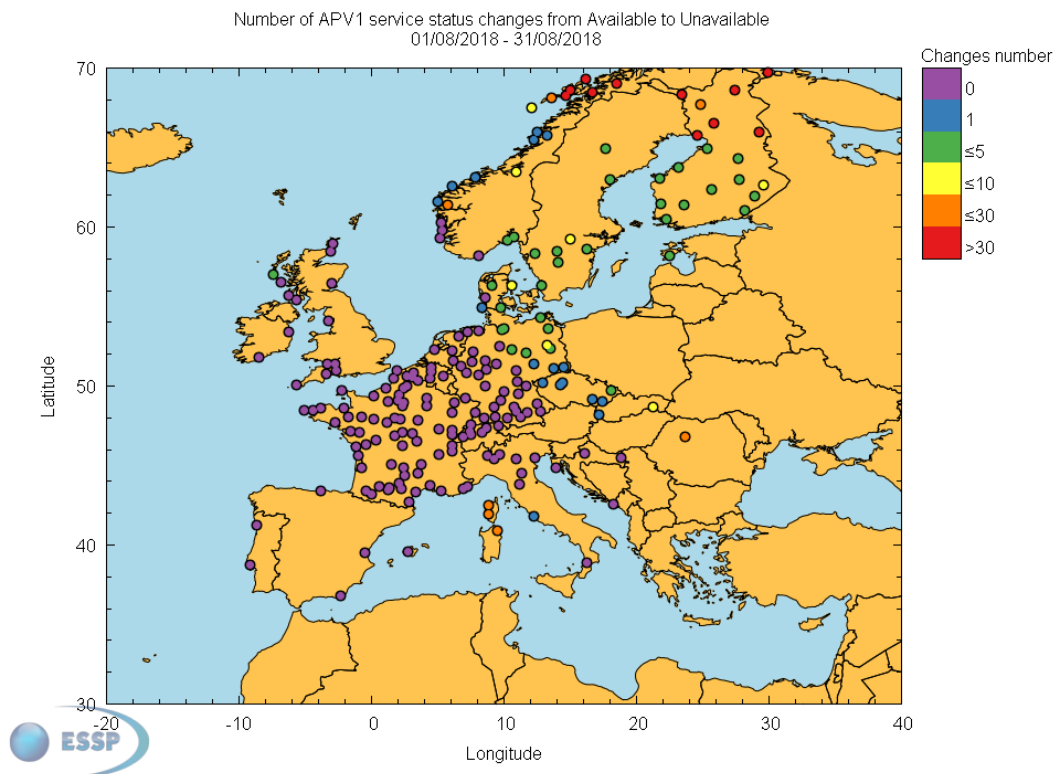


Figure 19 – EGNOS APV-I outages

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.

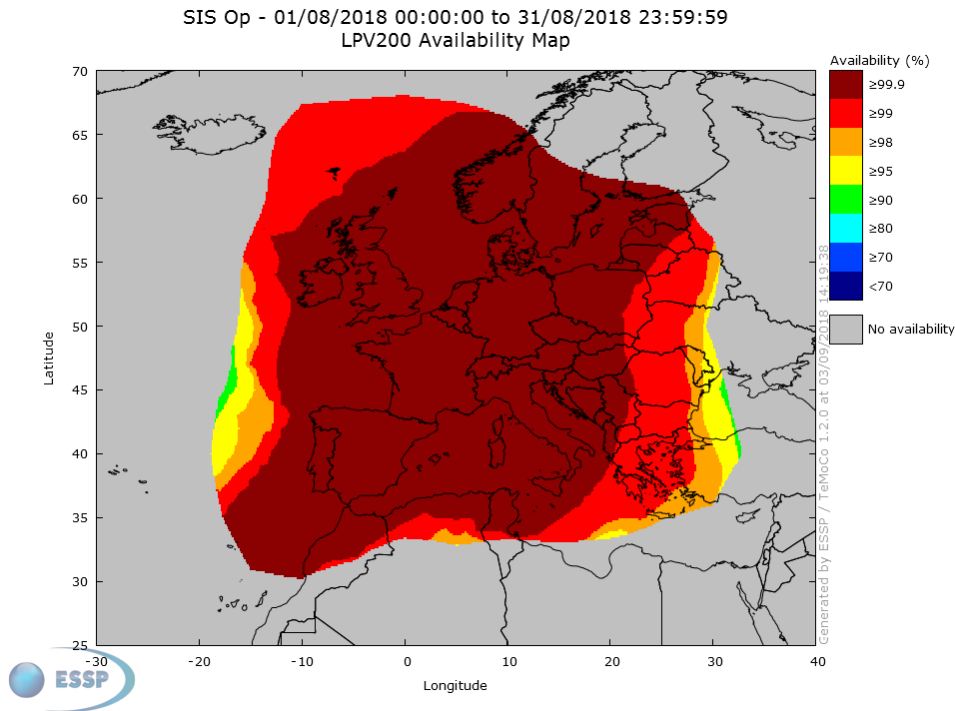


Figure 20 – EGNOS LPV-200 Availability

Below, the evolution of the monthly LPV-200 availability (99%) compliance area (30 days sliding window) is presented. The percentage is computed with respect to the commitment area at 99% level as defined in the SoL SDD ([RD-2]). The information is presented for the last 3 months.

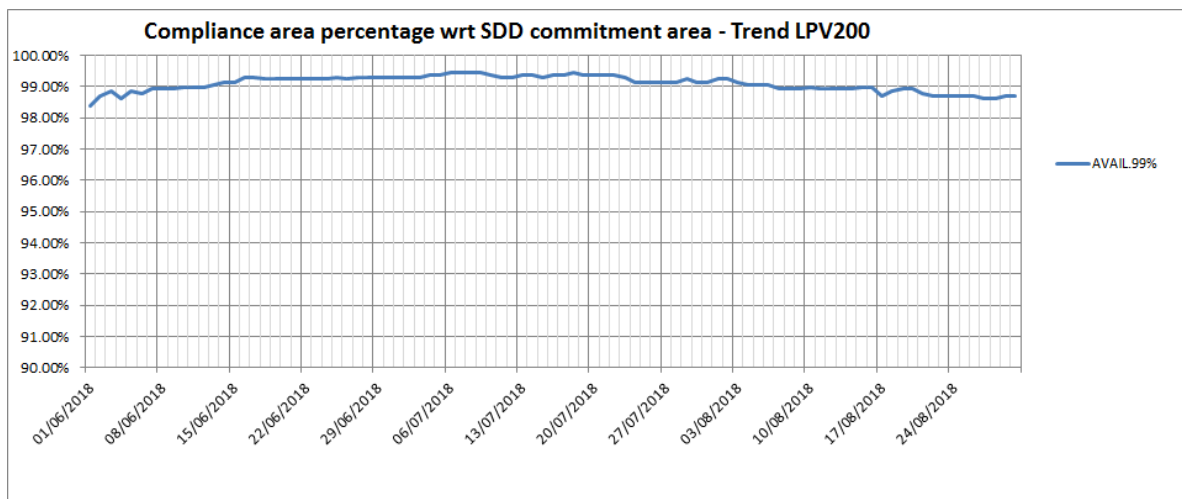


Figure 21 – EGNOS LPV-200 availability compliance trend

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.

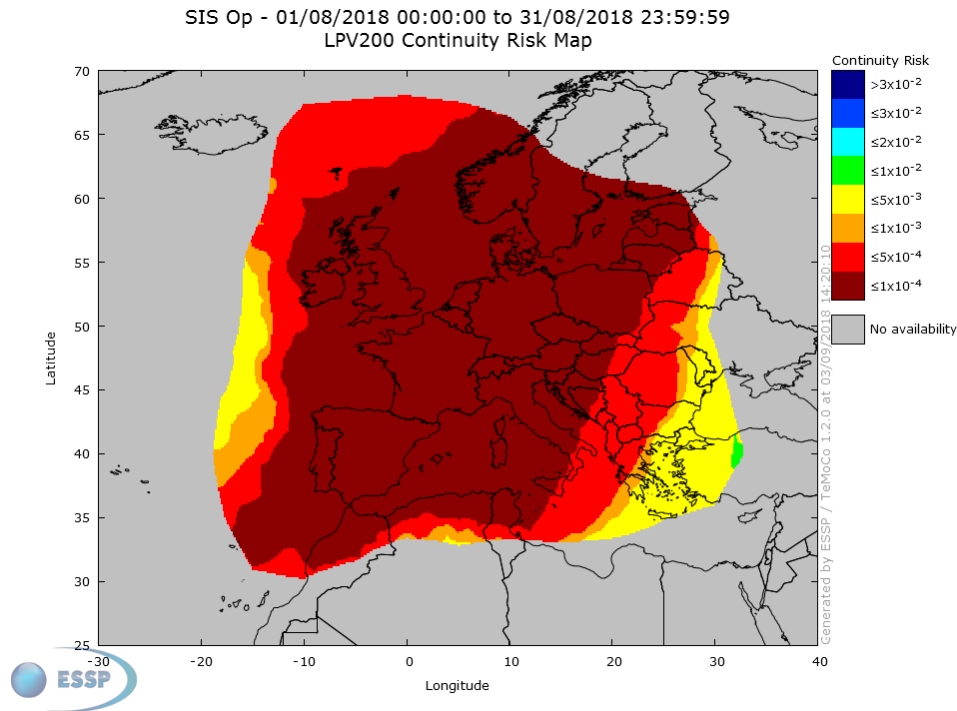


Figure 22 – EGNOS LPV-200 Continuity⁵

⁵ 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.

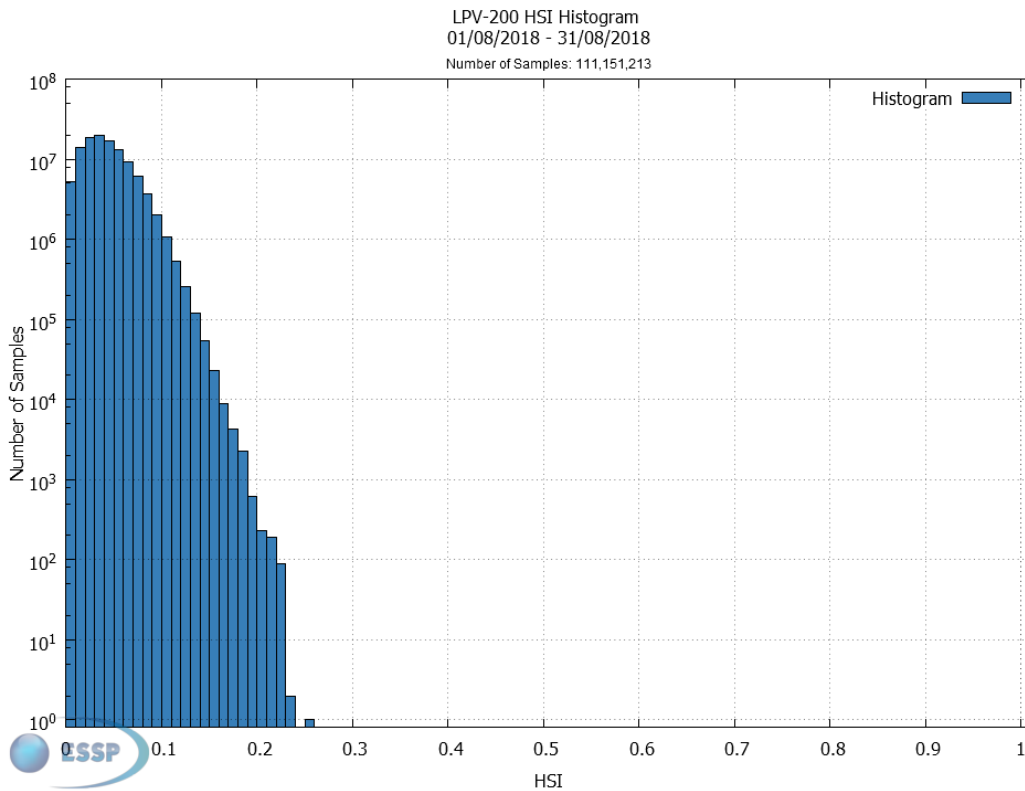


Figure 23 – EGNOS LPV-200 Horizontal Safety Index of the month

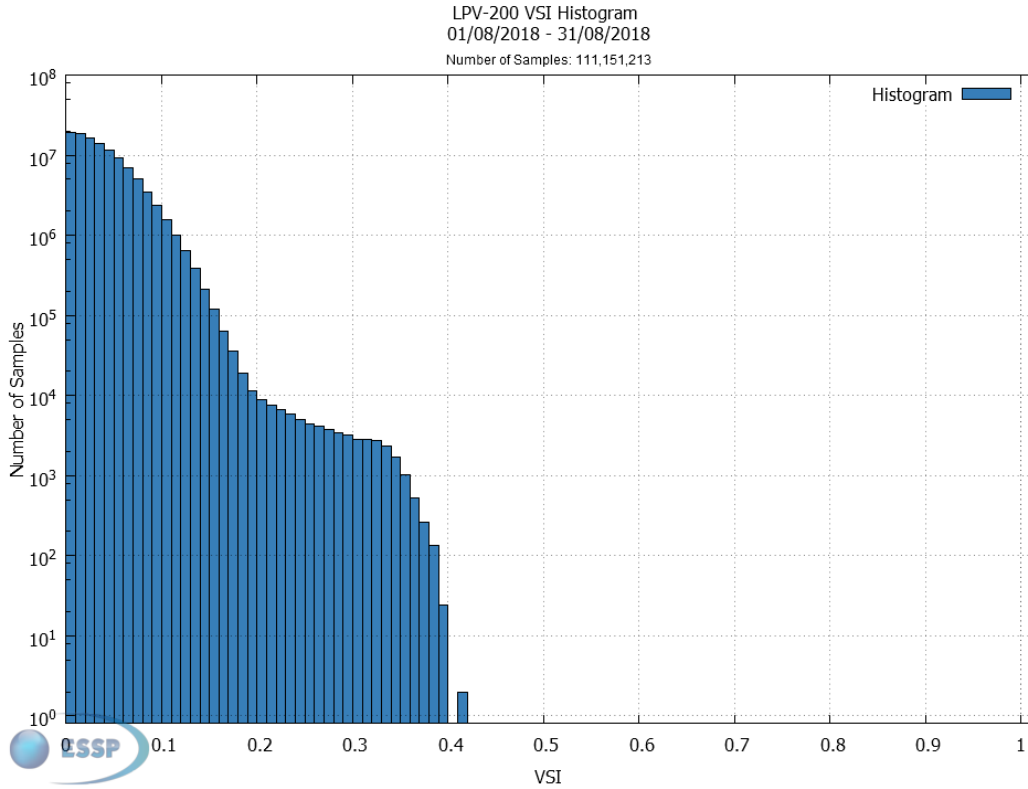


Figure 24 – EGNOS LPV-200 Vertical Safety Index of the month

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 per operational GEO combined satellite. 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 |
|-------------------|-------------------|-------------------|---|
| Aalborg | 0.6 | 1.4 | 99.98% |
| Athens | 0.8 | 1.5 | 99.54% |
| Berlin | 0.7 | 1.1 | 99.98% |
| Cork | 0.7 | 1.1 | 99.99% |
| Catania | 0.7 | 1.1 | 99.98% |
| Djerba | 0.8 | 1.1 | 99.94% |
| Glasgow | 0.7 | 1.2 | 100.00% |
| Gavle | 0.6 | 1.6 | 99.97% |
| Lisboa | 0.8 | 1.3 | 100.00% |
| Málaga | 0.7 | 1.1 | 100.00% |
| Palma de Mallorca | 0.7 | 1.0 | 100.00% |
| Roma | 0.7 | 1.1 | 99.99% |
| S. de Compostela | 0.7 | 1.0 | 99.99% |
| Sofia | 1.0 | 2.0 | 99.84% |
| Swanwick | 0.9 | 1.4 | 100.00% |
| Toulouse | 0.7 | 1.1 | 100.00% |
| Trondheim | 0.7 | 1.4 | 99.97% |
| Warsaw | 0.7 | 1.4 | 99.95% |
| Zürich | 0.7 | 1.2 | 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.

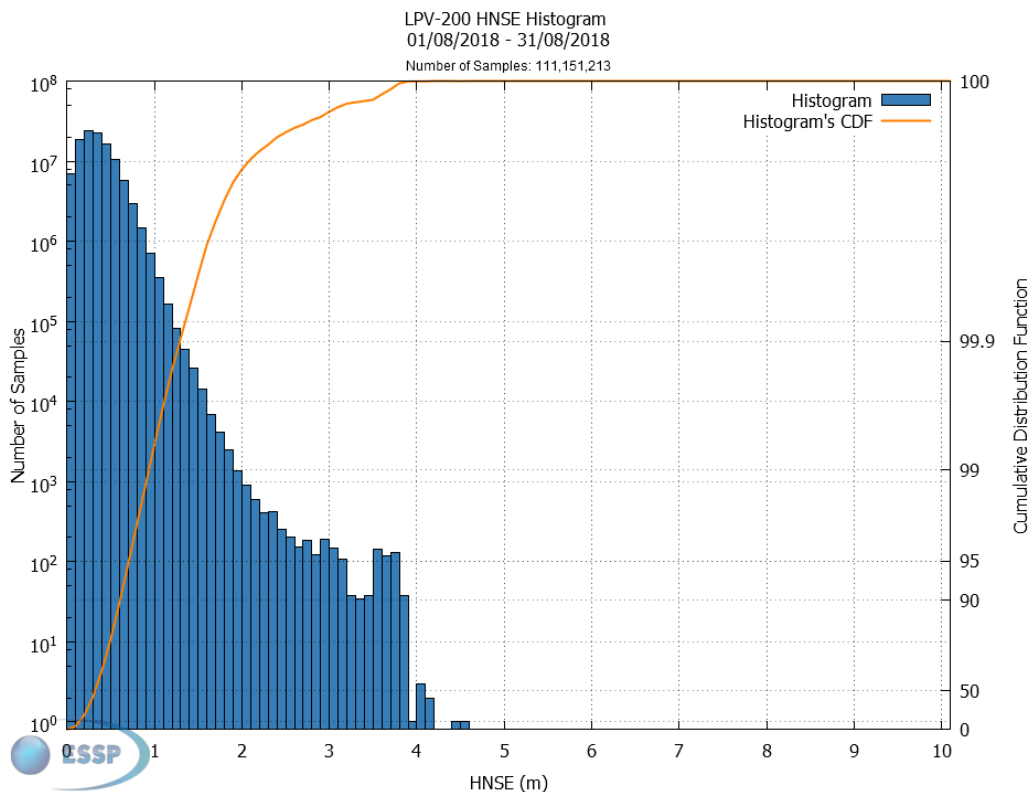


Figure 25 – EGNOS LPV-200 HNSE Histogram and Cumulative Probability

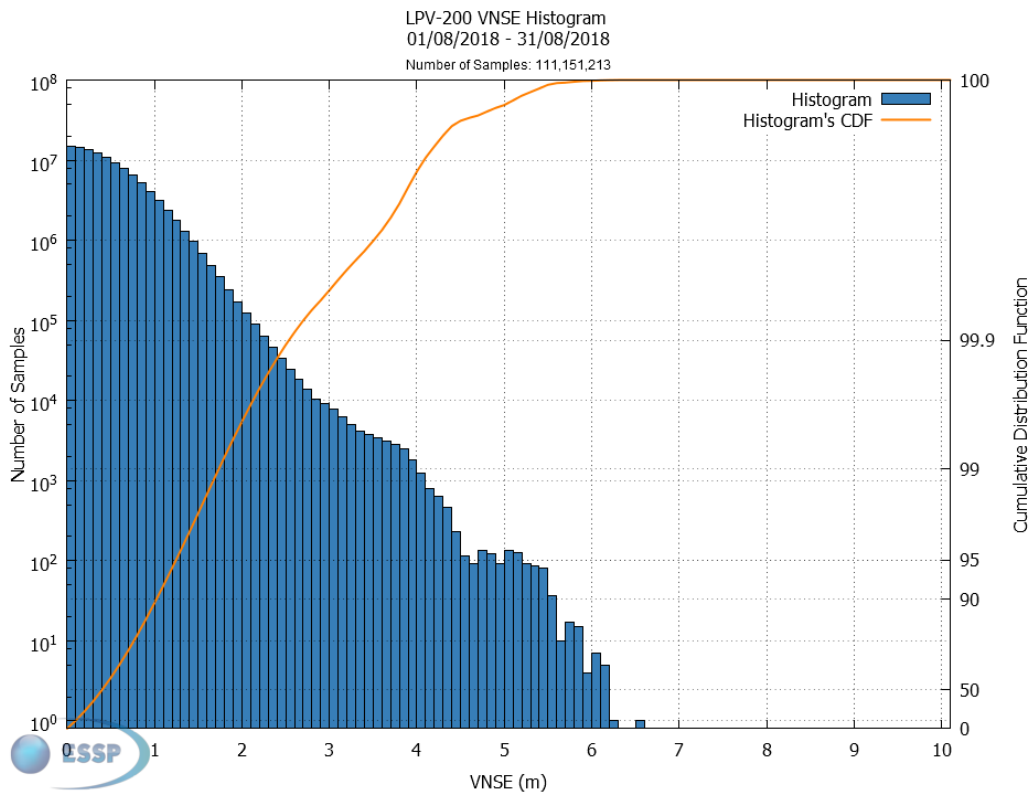


Figure 26 – EGNOS LPV-200 VNSE Histogram and Cumulative Probability

3.3.5 EGNOS LPV-200 Performance at airports

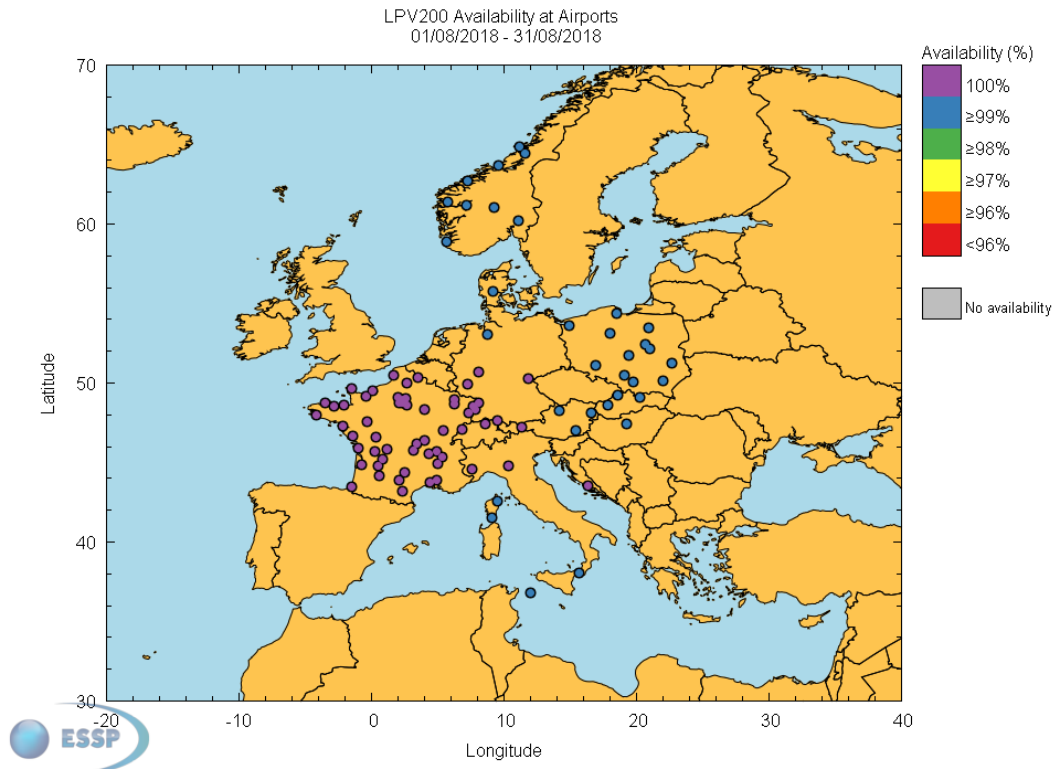


Figure 27 – EGNOS LPV-200 Availability at airports

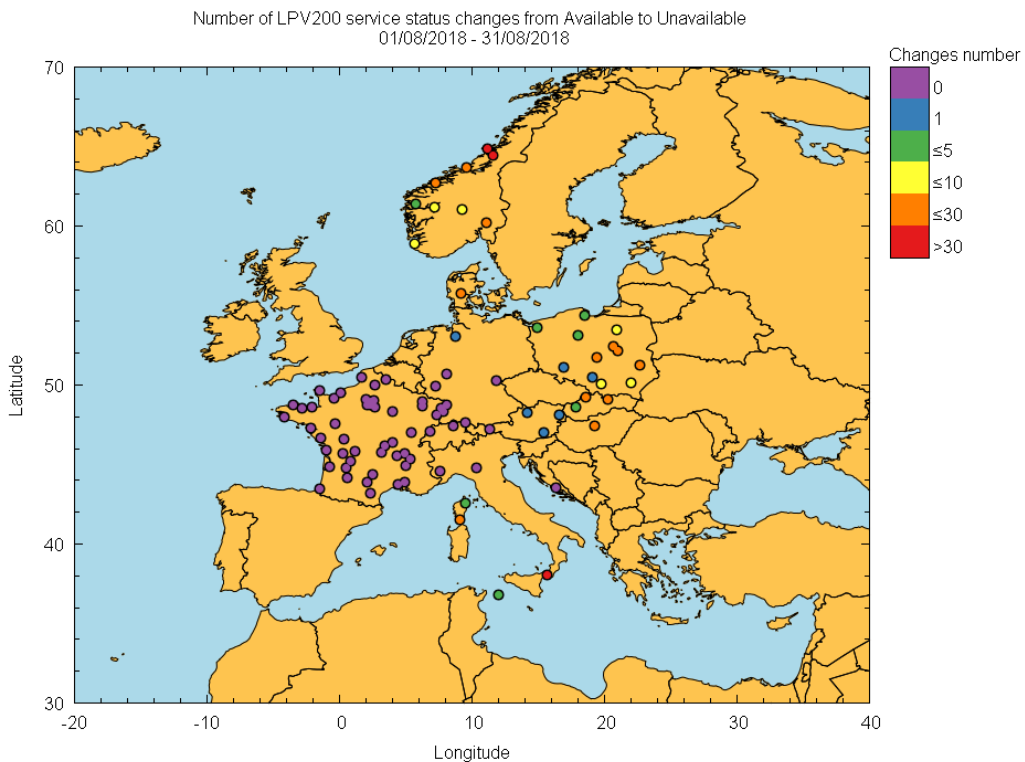


Figure 28 – EGNOS LPV-200 outages

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

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 August 2018 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% | 550,81 |
| Service Level 2 | - | 100,00% | 554,94 |
| Ntrip Service | - | 99,82% | 621,97 |
| SISNeT Service | GEO Operational 1 | 99,92% | 65,45 |
| | GEO Operational 2 | 99,85% | 66,58 |
| Data Filtering Service | RIMS A | 99,87% | 724,19 |
| | Central | 99,87% | 471,07 |
| | MEDA | 99,87% | 585,13 |
| | North-East | 99,87% | 191,29 |
| | North-West | 99,87% | 498,06 |
| | South-West | 99,89% | 590,03 |
| 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 availability**⁶ 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 information is presented for the combination of both operational GEOs. As it can be observed, it is 100% or very close to 100% all days of the month, except on 7th August with 85.08%.

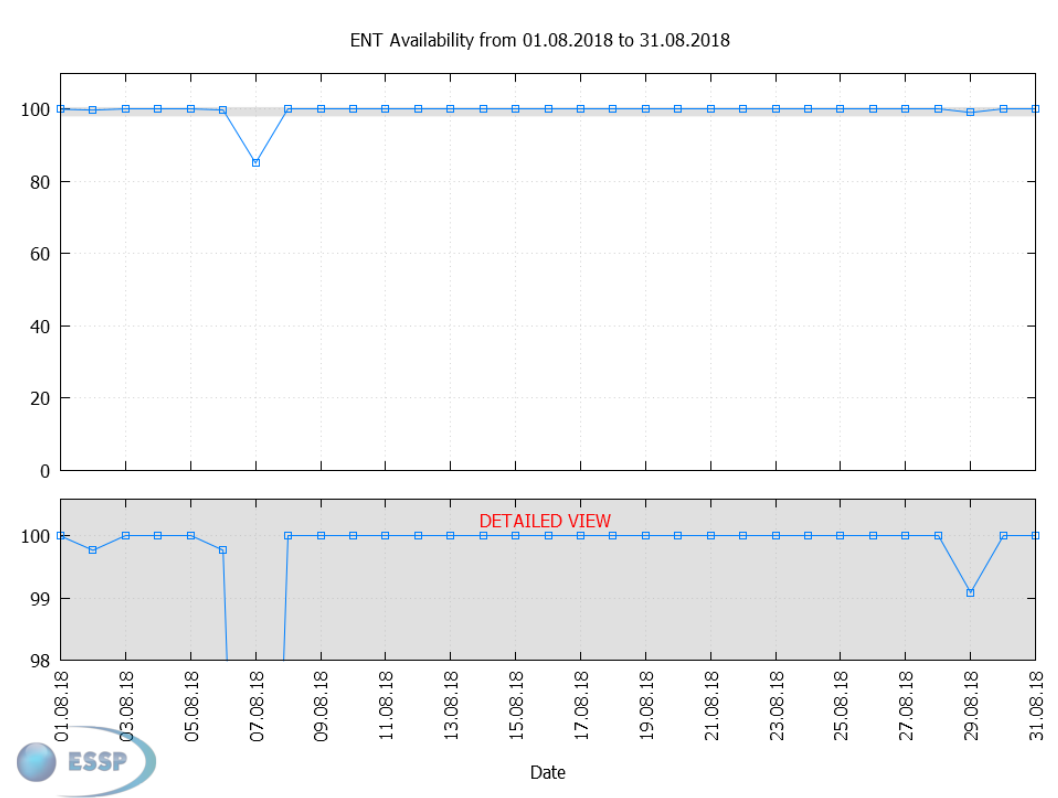


Figure 29 – EGNOS Time Service availability

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 May to July 2018. It can be observed that the offset between them remains below 8 nanoseconds.

⁶ EGNOS Time Service availability is computed taking into account that it is not possible to obtain the time solution if the navigation solution is not obtained. 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.

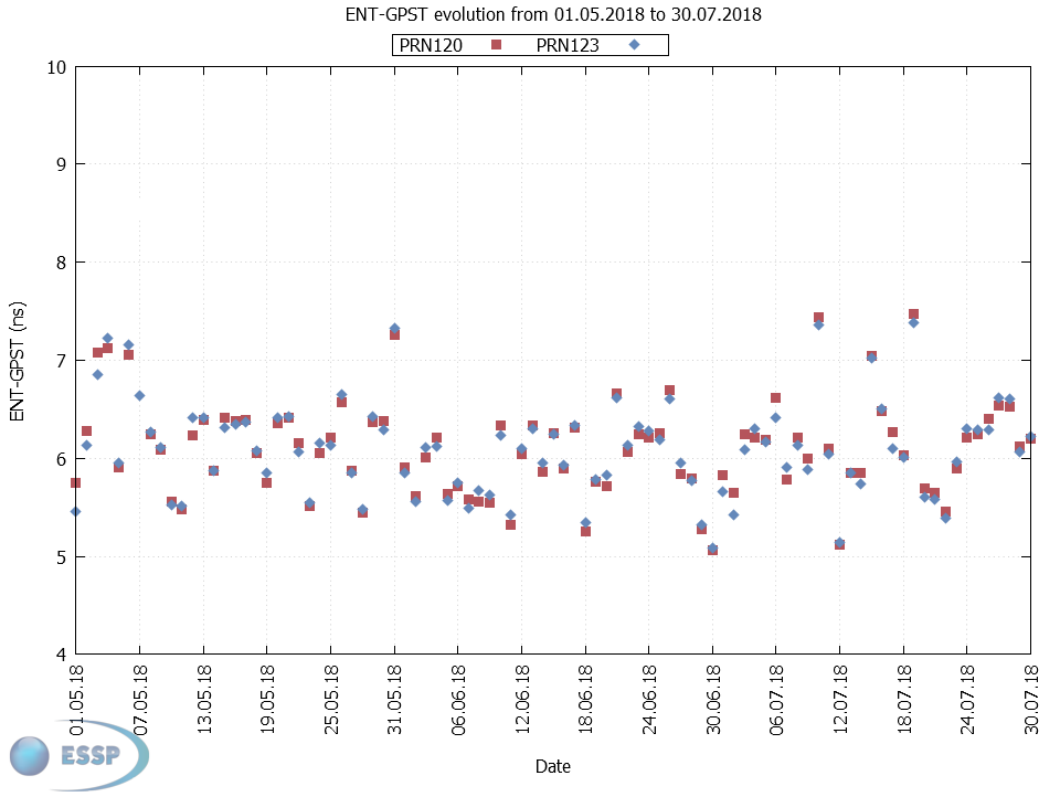


Figure 30 – ENT-GPS offset evolution

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:

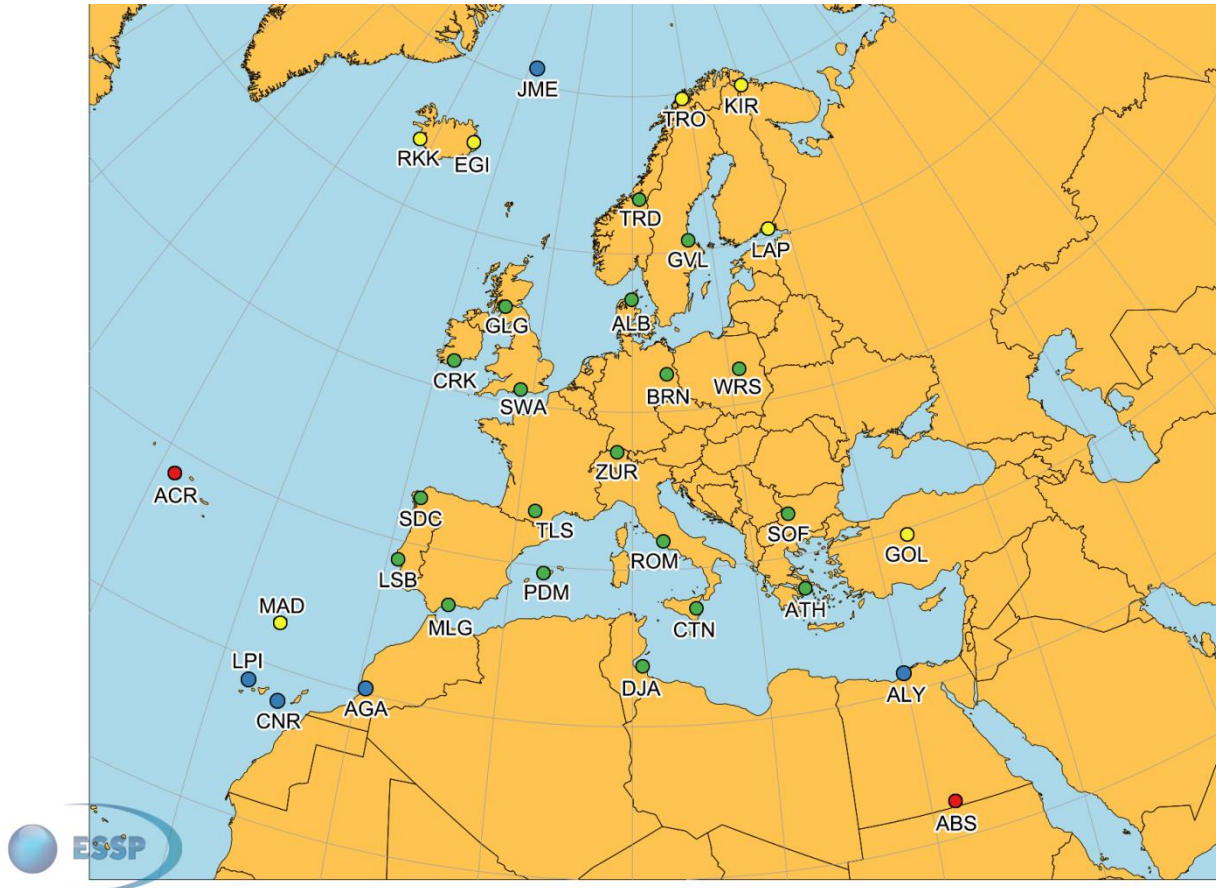


Figure 31 – EGNOS RIMS sites used in this report

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, yellow and blue are used to report Open Service results.

Performances corresponding to NPA include all the stations (green, yellow, blue and red colours) with the exception of Jan Mayen RIMS site (JME) that is used only to report Open Service results.

Next table shows the name and location of each one, so as to calculate which service is used each one of them.

| Id | Location name | Country | APV-I | LPV-200 | OS | NPA |
|-----|------------------------|----------------|-------|---------|----|-----|
| ABS | RIMS Abu Simbel | Egypt | | | | X |
| ACR | RIMS Azores | Portugal | | | | X |
| ALB | RIMS Aalborg | Denmark | X | X | X | X |
| AGA | RIMS Agadir | Morocco | | | X | X |
| ALY | RIMS Alexandria | Egypt | | | 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 |
| 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 |
| GLG | RIMS Glasgow | United Kingdom | X | X | X | X |
| GOL | RIMS Golbasi | Turkey | X | | X | X |
| GVL | RIMS Gävle | Sweden | X | X | X | X |
| JME | RIMS Jan Mayen | Norway | | | X | |
| KIR | RIMS Kirkenes | Norway | X | | X | X |
| LAP | RIMS Lappeenranta | Finland | X | | X | X |
| LPI | RIMS La Palma | Spain | | | X | X |
| LSB | RIMS Lisbon | Portugal | X | X | X | X |
| MAD | RIMS Madeira | Portugal | X | | X | X |
| MLG | RIMS Málaga | Spain | X | X | X | X |
| PDM | RIMS Palma de Mallorca | Spain | X | X | X | X |
| RKK | RIMS Reykjavik | Iceland | X | | X | X |
| ROM | RIMS Roma | 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 |
| WRS | RIMS Warsaw | Poland | X | X | X | X |
| ZUR | RIMS Zürich | 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 ¹ | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|-----------------------------------|---------|----------------------------|-------------------------------|----------------------|---|--|---|
| EBAW / Antwerpen / Deurne | Belgium | 100.00% | 0.00E+00 | 0 | 10/12/2015 | 99.98% | 9.77E-06 |
| EBBR / Brussels-National | Belgium | 100.00% | 0.00E+00 | 0 | 02/03/2017 | 99.97% | 1.14E-05 |
| EBCI / Charleroi / Brussels South | Belgium | 100.00% | 0.00E+00 | 0 | 31/03/2016 | 99.98% | 7.27E-06 |
| EBLG / Liège | Belgium | 100.00% | 0.00E+00 | 0 | 13/10/2016 | 99.98% | 8.19E-06 |
| EBKT / Kortrijk/Wevelgem | Belgium | 100.00% | 0.00E+00 | 0 | 09/11/2017 | 99.99% | 1.67E-05 |
| EDAB / Bautzen | Germany | 99.99% | 5.60E-06 | 1 | 27/04/2017 | 99.91% | 1.80E-05 |
| EDBH / Barth | Germany | 99.98% | 1.83E-05 | 5 | 03/06/2010 | 99.90% | 2.02E-05 |
| EDBM / Magdeburg/City | Germany | 99.99% | 1.12E-05 | 2 | 13/12/2012 | 99.91% | 1.81E-05 |
| EDBN / Neubrandenburg | Germany | 99.99% | 1.68E-05 | 3 | 02/04/2015 | 99.99% | 1.18E-05 |
| EDDB / Berlin/Schönefeld | Germany | 99.99% | 1.12E-05 | 2 | 04/06/2009 | 99.91% | 2.02E-05 |
| EDDC / Dresden | Germany | 99.99% | 5.60E-06 | 1 | 15/12/2011 | 99.91% | 1.65E-05 |
| EDDE / Erfurt-Weimar | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.92% | 1.43E-05 |
| EDDF / Frankfurt Main | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.92% | 1.53E-05 |
| EDDG / Münster/Osnabrück | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.91% | 1.69E-05 |
| EDDH / Hamburg | Germany | 99.98% | 1.68E-05 | 3 | 15/12/2011 | 99.90% | 2.03E-05 |
| EDDK / Köln/Bonn | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.91% | 1.53E-05 |
| EDDL / Düsseldorf | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.91% | 1.47E-05 |
| EDDM / München | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.91% | 1.91E-05 |
| EDDN / Nürnberg | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.92% | 1.46E-05 |
| EDDP / Leipzig/Halle | Germany | 99.99% | 5.60E-06 | 1 | 15/12/2011 | 99.91% | 1.68E-05 |
| EDDR / Saarbrücken | Germany | 100.00% | 0.00E+00 | 0 | 01/03/2018 | 99.99% | 4.72E-06 |
| EDDS / Stuttgart | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.91% | 1.96E-05 |
| EDDT / Berlin-Tegel | Germany | 99.99% | 2.24E-05 | 9 | 15/12/2011 | 99.91% | 1.99E-05 |
| EDDV / Hannover | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.91% | 1.84E-05 |
| EDFQ / Allendorf/Eder | Germany | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.91% | 1.55E-05 |
| EDGS / Siegerland | Germany | 100.00% | 0.00E+00 | 0 | 12/10/2017 | 99.99% | 1.30E-05 |
| EDHI / Hamburg-Finkenwerder | Germany | 99.98% | 1.68E-05 | 3 | 13/12/2012 | 99.90% | 2.09E-05 |
| EDJA / Memmingen | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.91% | 1.93E-05 |
| EDLP / Paderborn/Lippstadt | Germany | 100.00% | 0.00E+00 | 0 | 13/12/2012 | 99.91% | 1.75E-05 |

¹ Outages refer to events when the APV-I service changes its status from Available to Unavailable for the reported month.

| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages ¹ | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|---------------------------------------|---------|----------------------------|-------------------------------|----------------------|---|--|---|
| EDLV / Niederrhein | Germany | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.98% | 7.94E-06 |
| EDLW / Dortmund | Germany | 100.00% | 0.00E+00 | 0 | 12/12/2013 | 99.91% | 1.62E-05 |
| EDMA / Augsburg | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.91% | 1.88E-05 |
| EDME / Eggenfelden | Germany | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.91% | 1.98E-05 |
| EDMO / Oberpfaffenhofen | Germany | 100.00% | 0.00E+00 | 0 | 13/12/2012 | 99.91% | 1.92E-05 |
| EDMS / Straubing | Germany | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.91% | 1.63E-05 |
| EDPR / Donauwörth | Germany | 100.00% | 0.00E+00 | 0 | 08/12/2016 | 99.99% | 6.90E-06 |
| EDQC / Coburg-Brandensteinebene | Germany | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.92% | 1.39E-05 |
| EDQD / Bayreuth | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.92% | 1.46E-05 |
| EDQG / Giebelstadt | Germany | 100.00% | 0.00E+00 | 0 | 14/02/2012 | 99.92% | 1.46E-05 |
| EDTD / Donaueschingen-Villingen | Germany | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.91% | 1.89E-05 |
| EDTL / Lahr | Germany | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.99% | 1.09E-05 |
| EDTM / Mengen-Hohentengen | Germany | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.91% | 2.01E-05 |
| EDTY / Schwäbisch-Hall | Germany | 100.00% | 0.00E+00 | 0 | 13/12/2012 | 99.91% | 1.71E-05 |
| EDVE / Braunschweig-Wolfsburg | Germany | 99.99% | 1.12E-05 | 2 | 18/10/2012 | 99.91% | 1.84E-05 |
| EDVK / Kassel-Calden | Germany | 100.00% | 0.00E+00 | 0 | 04/04/2013 | 99.96% | 1.08E-05 |
| EDWE / Emden | Germany | 100.00% | 0.00E+00 | 0 | 30/05/2013 | 99.98% | 1.15E-05 |
| EDWI / Wilhelmshaven JadeWeserAirport | Germany | 100.00% | 0.00E+00 | 0 | 15/12/2011 | 99.90% | 1.83E-05 |
| EDXW / Sylt | Germany | 99.99% | 5.60E-06 | 1 | 10/12/2015 | 99.98% | 1.41E-05 |
| EEKE / Kuressaare | Estonia | 99.97% | 2.28E-05 | 5 | 02/03/2017 | 99.97% | 2.21E-05 |
| EFET / Enontekiö | Finland | 99.78% | 1.49E-04 | 52 | 07/12/2017 | 99.86% | 9.50E-05 |
| EFIV / Ivalo | Finland | 99.54% | 2.88E-04 | 70 | 07/12/2017 | 99.71% | 2.36E-04 |
| EFJO / Joensuu | Finland | 99.95% | 3.36E-05 | 6 | 12/12/2013 | 99.71% | 1.63E-04 |
| EFJY / Jyväskylä | Finland | 99.97% | 1.68E-05 | 3 | 07/12/2017 | 99.88% | 7.93E-05 |
| EFKE / Kemi-Tornio | Finland | 99.95% | 7.66E-05 | 37 | 07/12/2017 | 99.92% | 7.45E-05 |
| EFKI / Kajaani | Finland | 99.97% | 1.68E-05 | 3 | 07/12/2017 | 99.84% | 1.04E-04 |
| EFKK / Kokkola-Pietarsaari | Finland | 99.97% | 1.68E-05 | 3 | 07/12/2017 | 99.95% | 4.44E-05 |
| EFKS / Kuusamo | Finland | 99.80% | 3.13E-04 | 125 | 07/12/2017 | 99.61% | 3.31E-04 |
| EFKT / Kittilä | Finland | 99.86% | 8.71E-05 | 23 | 07/12/2017 | 99.86% | 9.75E-05 |
| EFKU / Kuopio | Finland | 99.97% | 1.68E-05 | 3 | 07/12/2017 | 99.82% | 1.02E-04 |
| EFLP / Lappeenranta | Finland | 99.96% | 1.68E-05 | 3 | 07/12/2017 | 99.82% | 9.39E-05 |
| EFOU / Oulu | Finland | 99.98% | 2.24E-05 | 5 | 07/12/2017 | 99.93% | 6.31E-05 |
| EFPO / Pori | Finland | 99.98% | 2.24E-05 | 4 | 07/12/2017 | 99.96% | 3.26E-05 |
| EFRO / Rovaniemi | Finland | 99.91% | 1.09E-04 | 56 | 07/12/2017 | 99.88% | 1.10E-04 |

| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages ¹ | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|-----------------------------|----------------|----------------------------|-------------------------------|----------------------|---|--|---|
| EFSA / Savonlinna | Finland | 99.96% | 2.24E-05 | 4 | 07/12/2017 | 99.74% | 1.51E-04 |
| EFTP / Tampere-Pirkkala | Finland | 99.98% | 2.24E-05 | 4 | 07/12/2017 | 99.94% | 5.67E-05 |
| EFTU / Turku | Finland | 99.97% | 1.12E-05 | 2 | 07/12/2017 | 99.96% | 2.89E-05 |
| EFVA / Vaasa | Finland | 99.97% | 1.12E-05 | 2 | 07/12/2017 | 99.97% | 4.71E-05 |
| EGEC / Campbeltown | United Kingdom | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.93% | 3.71E-05 |
| EGFF / Cardiff | United Kingdom | 100.00% | 0.00E+00 | 0 | 13/10/2016 | 99.96% | 2.45E-05 |
| EGGD / Bristol | United Kingdom | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.97% | 1.60E-05 |
| EGHC / Lands End | United Kingdom | 100.00% | 0.00E+00 | 0 | 27/04/2017 | 99.98% | 1.66E-05 |
| EGHG / Yeovil | United Kingdom | 100.00% | 0.00E+00 | 0 | 09/06/2017 | 99.98% | 2.01E-05 |
| EGJA / Alderney | Guernsey | 100.00% | 0.00E+00 | 0 | 07/12/2011 | 99.91% | 1.67E-05 |
| EGNL / Barrow/Walney Island | United Kingdom | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.94% | 2.80E-05 |
| EGPA / Kirkwall | United Kingdom | 100.00% | 0.00E+00 | 0 | 21/07/2016 | 99.92% | 3.51E-05 |
| EGPC / Wick | United Kingdom | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.93% | 3.25E-05 |
| EGPI / Islay | United Kingdom | 100.00% | 0.00E+00 | 0 | 18/08/2016 | 99.93% | 3.66E-05 |
| EGPN / Dundee | United Kingdom | 100.00% | 0.00E+00 | 0 | 30/03/2017 | 99.93% | 3.02E-05 |
| EGPR / Barra | United Kingdom | 99.99% | 9.71E-06 | 2 | 18/08/2016 | 99.92% | 4.12E-05 |
| EGPU / Tiree | United Kingdom | 100.00% | 0.00E+00 | 0 | 04/02/2016 | 99.92% | 3.84E-05 |
| EGTE / Exeter | United Kingdom | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.98% | 1.35E-05 |
| EHAM / Amsterdam | Netherlands | 100.00% | 0.00E+00 | 0 | 13/11/2014 | 99.99% | 9.78E-06 |
| EHGG / Eelde | Netherlands | 100.00% | 0.00E+00 | 0 | 13/11/2014 | 99.98% | 1.15E-05 |
| EHTE / Teuge | Netherlands | 100.00% | 0.00E+00 | 0 | 13/11/2014 | 99.98% | 1.06E-05 |
| EICK / Cork Airport | Ireland | 100.00% | 0.00E+00 | 0 | 16/08/2018 | 100.00% | 0.00E+00 |
| EIDW / Dublin | Ireland | 100.00% | 0.00E+00 | 0 | 25/05/2017 | 99.95% | 3.56E-05 |
| EKAH / Aarhus | Denmark | 99.99% | 2.13E-05 | 6 | 05/03/2015 | 99.98% | 1.47E-05 |
| EKEB / Esbjerg | Denmark | 100.00% | 0.00E+00 | 0 | 15/10/2015 | 99.98% | 1.59E-05 |
| EKKA / Karup | Denmark | 99.99% | 1.12E-05 | 2 | 02/04/2015 | 99.98% | 1.37E-05 |
| EKSB / Sønderborg | Denmark | 99.98% | 1.79E-05 | 4 | 18/08/2016 | 99.98% | 1.41E-05 |
| ENAL / Ålesund/Vigra | Norway | 99.99% | 5.60E-06 | 1 | 03/03/2016 | 99.96% | 2.57E-05 |
| ENAN / Andøya/Andenes | Norway | 99.81% | 1.63E-04 | 105 | 02/04/2015 | 99.81% | 1.12E-04 |
| ENBL / Førde/Bringeland | Norway | 100.00% | 2.65E-05 | 12 | 28/05/2015 | 99.96% | 2.31E-05 |
| ENBN / Brønnøysund/Brønnøy | Norway | 99.99% | 5.60E-06 | 1 | 08/12/2016 | 99.95% | 3.20E-05 |
| ENBR / Bergen/Flesland | Norway | 100.00% | 0.00E+00 | 0 | 03/03/2016 | 99.97% | 2.18E-05 |

| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages ¹ | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|--|---------|----------------------------|-------------------------------|----------------------|---|--|---|
| ENCN / Kristiansand/Kjevik | Norway | 100.00% | 0.00E+00 | 0 | 03/03/2016 | 99.98% | 1.71E-05 |
| ENDU / Bardufoss | Norway | 99.77% | 1.58E-04 | 95 | 26/04/2018 | 99.92% | 9.03E-05 |
| ENEV / Harstad/Narvik/Evenes | Norway | 99.86% | 1.33E-04 | 64 | 30/03/2017 | 99.84% | 8.48E-05 |
| ENFL / Florø | Norway | 99.99% | 5.60E-06 | 1 | 02/04/2015 | 99.97% | 2.39E-05 |
| ENHD / Haugesund/Karmøy | Norway | 100.00% | 0.00E+00 | 0 | 03/03/2016 | 99.97% | 2.06E-05 |
| ENKB / Kristiansund/Kvernberget | Norway | 99.99% | 5.60E-06 | 1 | 26/05/2016 | 99.96% | 2.65E-05 |
| ENKR / Kirkenes/Hoybuktnoen | Norway | 98.80% | 6.32E-04 | 296 | 27/04/2017 | 99.15% | 6.50E-04 |
| ENLK / Leknes | Norway | 99.96% | 6.46E-05 | 16 | 02/02/2017 | 99.87% | 7.54E-05 |
| ENMS / Mosjøen/Kjærstad | Norway | 99.99% | 5.60E-06 | 1 | 30/03/2017 | 99.94% | 3.75E-05 |
| ENRS / Røst | Norway | 99.97% | 4.03E-05 | 9 | 06/03/2014 | 99.83% | 9.37E-05 |
| ENRY / Moss/Rygge | Norway | 99.99% | 2.24E-05 | 4 | 10/12/2015 | 99.98% | 1.76E-05 |
| ENSH / Svolvær/Helle | Norway | 99.94% | 8.97E-05 | 43 | 08/12/2016 | 99.87% | 7.72E-05 |
| ENSK / Stokmarknes/Skagen | Norway | 99.89% | 1.50E-04 | 81 | 08/12/2016 | 99.85% | 9.26E-05 |
| ENSO / Stord/Sørstokken | Norway | 100.00% | 0.00E+00 | 0 | 03/03/2016 | 99.97% | 2.08E-05 |
| ENST / Sandnessjøen/Stokka | Norway | 99.99% | 5.60E-06 | 1 | 23/07/2015 | 99.94% | 3.93E-05 |
| ENTO / Sandefjord/Torp | Norway | 99.99% | 2.80E-05 | 5 | 20/08/2015 | 99.98% | 1.68E-05 |
| ENVA / Trondheim/Vårnes | Norway | 99.99% | 2.17E-05 | 9 | 03/03/2016 | 99.96% | 2.63E-05 |
| ESGJ / Jönköping | Sweden | 99.98% | 1.12E-05 | 2 | 09/11/2017 | 99.98% | 1.88E-05 |
| ESGR / Skövde | Sweden | 99.98% | 1.12E-05 | 2 | 31/05/2018 | 99.99% | 7.55E-06 |
| ESGT / Trollhättan-Vänersborgs flygplats | Sweden | 99.99% | 1.68E-05 | 3 | 29/03/2018 | 99.99% | 6.81E-06 |
| ESNO / Örnköldsvik | Sweden | 99.98% | 1.12E-05 | 2 | 07/12/2017 | 99.98% | 2.32E-05 |
| ESOE / Örebro Airport | Sweden | 99.97% | 3.47E-05 | 6 | 16/08/2018 | 99.97% | 3.47E-05 |
| ESSP / Norrköping Kungsängen | Sweden | 99.98% | 1.76E-05 | 4 | 29/03/2018 | 99.99% | 5.83E-06 |
| ESTA / Ängelholm | Sweden | 99.98% | 1.38E-05 | 5 | 19/07/2018 | 99.98% | 1.76E-05 |
| ESUD / Storuman | Sweden | 99.98% | 1.68E-05 | 3 | 11/12/2014 | 99.92% | 5.79E-05 |
| LDDU / Dubrovnik | Croatia | 100.00% | 0.00E+00 | 0 | 10/12/2015 | 99.99% | 1.32E-05 |
| LDPL / Pula | Croatia | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.99% | 5.43E-06 |
| LDOS / Osijek/Klisa | Croatia | 100.00% | 0.00E+00 | 0 | 29/03/2018 | 99.99% | 1.77E-05 |
| LDZA / Zagreb/Pleso | Croatia | 100.00% | 0.00E+00 | 0 | 29/03/2018 | 99.99% | 8.40E-06 |
| LEAM / Almería | Spain | 100.00% | 0.00E+00 | 0 | 02/02/2017 | 99.99% | 1.03E-05 |
| LEPA / Palma de Mallorca | Spain | 100.00% | 0.00E+00 | 0 | 01/03/2018 | 99.99% | 6.61E-06 |
| LEVC / Valencia | Spain | 100.00% | 0.00E+00 | 0 | 01/02/2018 | 99.99% | 1.18E-05 |
| LEXJ / Santander | Spain | 100.00% | 0.00E+00 | 0 | 17/10/2013 | 99.94% | 4.33E-05 |

| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages ¹ | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|-----------------------------------|---------|----------------------------|-------------------------------|----------------------|---|--|---|
| LFAB / Dieppe Saint Aubin | France | 100.00% | 0.00E+00 | 0 | 02/03/2017 | 99.97% | 8.57E-06 |
| LFAC / Calais | France | 100.00% | 0.00E+00 | 0 | 20/09/2012 | 99.95% | 1.60E-05 |
| LFAQ / Albert Bray | France | 100.00% | 0.00E+00 | 0 | 15/11/2012 | 99.96% | 1.36E-05 |
| LFAT / Le Touquet Paris Plage | France | 100.00% | 0.00E+00 | 0 | 04/02/2016 | 99.98% | 9.75E-06 |
| LFAV / Valenciennes Denain | France | 100.00% | 0.00E+00 | 0 | 19/09/2013 | 99.98% | 1.02E-05 |
| LFAY / Amiens Glisy | France | 100.00% | 0.00E+00 | 0 | 27/06/2013 | 99.95% | 1.21E-05 |
| LFBG / Bordeaux Merignac | France | 100.00% | 0.00E+00 | 0 | 08/03/2012 | 99.90% | 1.98E-05 |
| LFBF / Toulouse Francazal | France | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.99% | 8.02E-06 |
| LFBH / La Rochelle | France | 100.00% | 0.00E+00 | 0 | 20/09/2012 | 99.95% | 1.84E-05 |
| LFBK / Montluçon Gueret | France | 100.00% | 0.00E+00 | 0 | 17/12/2013 | 99.98% | 1.69E-05 |
| LFBN / Niort Marais Poitevin | France | 100.00% | 0.00E+00 | 0 | 02/03/2017 | 99.97% | 9.40E-06 |
| LFBO / Toulouse Blagnac | France | 100.00% | 0.00E+00 | 0 | 03/05/2012 | 99.90% | 1.96E-05 |
| LFBP / Pau-Pyrénées | France | 100.00% | 0.00E+00 | 0 | 17/03/2011 | 99.89% | 2.67E-05 |
| LFBR / Muret Lherm | France | 100.00% | 0.00E+00 | 0 | 15/10/2015 | 99.99% | 9.00E-06 |
| LFBT / Tarbes Lourdes Pyrénées | France | 100.00% | 0.00E+00 | 0 | 28/05/2015 | 99.98% | 9.76E-06 |
| LFCK / Castres Mazamet | France | 100.00% | 0.00E+00 | 0 | 22/08/2013 | 99.97% | 1.93E-05 |
| LFCL / Rodez Marcillac | France | 100.00% | 0.00E+00 | 0 | 31/05/2012 | 99.90% | 2.04E-05 |
| LFCY / Royan Médis | France | 100.00% | 0.00E+00 | 0 | 30/04/2015 | 99.98% | 9.43E-06 |
| LFDH / Auch Lamothe | France | 100.00% | 0.00E+00 | 0 | 28/05/2015 | 99.98% | 9.08E-06 |
| LFEC / Ouessant | France | 100.00% | 0.00E+00 | 0 | 11/12/2014 | 99.98% | 1.28E-05 |
| LFHP / Le Puy Loudes | France | 100.00% | 0.00E+00 | 0 | 04/02/2016 | 99.99% | 9.14E-06 |
| LFHY / Moulins Montbeugny | France | 100.00% | 0.00E+00 | 0 | 01/05/2014 | 99.98% | 9.55E-06 |
| LFJL / Metz Nancy Lorraine | France | 100.00% | 0.00E+00 | 0 | 04/04/2013 | 99.96% | 1.61E-05 |
| LFKC / Calvi Sainte Catherine | France | 99.99% | 1.05E-05 | 11 | 30/04/2015 | 99.99% | 8.38E-06 |
| LFKJ / Ajaccio Napoléon Bonaparte | France | 99.99% | 2.24E-05 | 24 | 23/06/2016 | 99.99% | 6.83E-06 |
| LFLA / Auxerre Branches | France | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.98% | 1.01E-05 |
| LFLD / Bourges | France | 100.00% | 0.00E+00 | 0 | 18/08/2016 | 99.98% | 7.73E-06 |
| LFLM / Lyon St Exupery | France | 100.00% | 0.00E+00 | 0 | 07/02/2013 | 99.95% | 1.68E-05 |
| LFLP / Annecy Meythet | France | 100.00% | 0.00E+00 | 0 | 19/09/2013 | 99.98% | 1.80E-05 |
| LFLW / Aurillac | France | 100.00% | 0.00E+00 | 0 | 26/06/2014 | 99.98% | 1.50E-05 |

| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages ¹ | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|-------------------------------------|---------|----------------------------|-------------------------------|----------------------|---|--|---|
| LFLX / Chateauroux Deols | France | 100.00% | 0.00E+00 | 0 | 06/02/2014 | 99.98% | 1.35E-05 |
| LFMD / Cannes Mandelieu | France | 100.00% | 0.00E+00 | 0 | 05/02/2015 | 99.99% | 1.15E-05 |
| LFML / Marseille | France | 100.00% | 0.00E+00 | 0 | 08/01/2015 | 99.99% | 1.01E-05 |
| LFMN / Nice Côte d'Azur | France | 100.00% | 0.00E+00 | 0 | 25/06/2015 | 99.99% | 7.35E-06 |
| LFMP / Perpignan Rivesaltes | France | 100.00% | 0.00E+00 | 0 | 15/10/2015 | 99.99% | 9.26E-06 |
| LFMU / Béziers Vias | France | 100.00% | 0.00E+00 | 0 | 18/10/2012 | 99.95% | 1.84E-05 |
| LFNB / Mende | France | 100.00% | 0.00E+00 | 0 | 17/12/2013 | 99.98% | 1.68E-05 |
| LFOB / Beauvais | France | 100.00% | 0.00E+00 | 0 | 20/09/2012 | 99.96% | 1.42E-05 |
| LFOE / Évreux Fauville | France | 100.00% | 0.00E+00 | 0 | 15/11/2012 | 99.98% | 9.93E-06 |
| LFOJ / Orleans Bricy | France | 100.00% | 0.00E+00 | 0 | 18/09/2014 | 99.98% | 1.09E-05 |
| LFOK / Chalons Vatry | France | 100.00% | 0.00E+00 | 0 | 02/02/2017 | 99.98% | 8.92E-06 |
| LFOQ / Blois Le Breuil | France | 100.00% | 0.00E+00 | 0 | 15/09/2016 | 99.98% | 7.89E-06 |
| LFOU / Cholet le Pontreau | France | 100.00% | 0.00E+00 | 0 | 04/02/2016 | 99.98% | 9.22E-06 |
| LFOV / Laval Entrammes | France | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.98% | 1.43E-05 |
| LFOZ / Orléans St. Denis De L'Hotel | France | 100.00% | 0.00E+00 | 0 | 28/06/2012 | 99.96% | 1.50E-05 |
| LFPB / Paris-Le Bourget | France | 100.00% | 0.00E+00 | 0 | 02/06/2011 | 99.91% | 1.47E-05 |
| LFPO / Paris Orly | France | 100.00% | 0.00E+00 | 0 | 30/05/2013 | 99.95% | 1.42E-05 |
| LFPT / Pontoise Cormeilles en Vexin | France | 100.00% | 0.00E+00 | 0 | 01/05/2014 | 99.98% | 1.01E-05 |
| LFQA / Reims Prunay | France | 100.00% | 0.00E+00 | 0 | 03/04/2014 | 99.98% | 1.10E-05 |
| LFQG / Nevers Fouchambault | France | 100.00% | 0.00E+00 | 0 | 13/12/2012 | 99.95% | 1.59E-05 |
| LFQM / Besançon La Vèze | France | 100.00% | 0.00E+00 | 0 | 18/09/2014 | 99.99% | 1.29E-05 |
| LFQQ / Lille Lesquin | France | 100.00% | 0.00E+00 | 0 | 26/06/2014 | 99.98% | 7.73E-06 |
| LFQT / Merville | France | 100.00% | 0.00E+00 | 0 | 15/11/2012 | 99.96% | 1.36E-05 |
| LFRB / Brest Bretagne | France | 100.00% | 0.00E+00 | 0 | 03/05/2012 | 99.90% | 2.04E-05 |
| LFRD / Dinard | France | 100.00% | 0.00E+00 | 0 | 06/02/2014 | 99.98% | 1.25E-05 |
| LFRG / Deauville Saint Gatien | France | 100.00% | 0.00E+00 | 0 | 18/09/2014 | 99.98% | 9.99E-06 |
| LFRM / Le Mans | France | 100.00% | 0.00E+00 | 0 | 15/11/2012 | 99.95% | 1.60E-05 |
| LFRN / Rennes | France | 100.00% | 0.00E+00 | 0 | 30/05/2013 | 99.95% | 1.62E-05 |
| LFRS / Nantes | France | 100.00% | 0.00E+00 | 0 | 28/06/2012 | 99.95% | 1.87E-05 |
| LFRU / Morlaix Ploujean | France | 100.00% | 0.00E+00 | 0 | 13/10/2016 | 99.97% | 9.80E-06 |
| LFRV / Vannes Meucon | France | 100.00% | 0.00E+00 | 0 | 31/05/2012 | 99.90% | 1.86E-05 |
| LFSB / Bâle-Mulhouse | France | 100.00% | 0.00E+00 | 0 | 10/12/2015 | 99.99% | 1.01E-05 |
| LFSD / Dijon-Longvic | France | 100.00% | 0.00E+00 | 0 | 28/04/2016 | 99.99% | 8.83E-06 |

| Airports | Country | Monthly APV-I Availability | Monthly APV-I Continuity Risk | Outages ¹ | Publication date of first APV-I procedure | APV-I Availability since procedure publication | APV-I Continuity Risk since procedure publication |
|--|-----------------|----------------------------|-------------------------------|----------------------|---|--|---|
| LFSG / Epinal Mirecourt | France | 100.00% | 0.00E+00 | 0 | 30/05/2013 | 99.96% | 1.73E-05 |
| LFSL / Brive Souillac | France | 100.00% | 0.00E+00 | 0 | 22/08/2013 | 99.97% | 1.84E-05 |
| LFTW / Nîmes Garons | France | 100.00% | 0.00E+00 | 0 | 18/10/2012 | 99.95% | 1.74E-05 |
| LICA / Lamezia Terme | Italy | 100.00% | 0.00E+00 | 0 | 23/05/2018 | 99.99% | 5.26E-06 |
| LIEO / Olbia/Costa Smeralda | Italy | 99.99% | 2.73E-05 | 29 | 12/11/2015 | 99.99% | 8.81E-06 |
| LIMC / Milano/Malpensa | Italy | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.98% | 1.13E-05 |
| LIME / Bergamo / Orio al Serio | Italy | 100.00% | 0.00E+00 | 0 | 20/07/2017 | 99.99% | 8.51E-06 |
| LIML / Milano/Linate | Italy | 100.00% | 0.00E+00 | 0 | 13/12/2012 | 99.95% | 1.76E-05 |
| LIPE / Bologna Borgo Panigale | Italy | 100.00% | 0.00E+00 | 0 | 18/11/2014 | 99.98% | 1.67E-05 |
| LIPZ / Venezia/Tessera | Italy | 100.00% | 0.00E+00 | 0 | 27/06/2013 | 99.94% | 2.19E-05 |
| LIPX / Verona/Villafranca | Italy | 100.00% | 0.00E+00 | 0 | 22/06/2017 | 99.99% | 7.96E-06 |
| LIRF / Roma/Fiumicino | Italy | 99.99% | 5.60E-06 | 1 | 10/01/2013 | 99.92% | 3.84E-05 |
| LIRQ / Firenze/Peretola | Italy | 100.00% | 0.00E+00 | 0 | 22/06/2017 | 99.99% | 7.57E-06 |
| LKKU / Kunovice | Czech Republic | 99.99% | 5.60E-06 | 1 | 01/12/2017 | 99.99% | 1.30E-05 |
| LKKV / Karlovy Vary | Czech Republic | 99.99% | 5.60E-06 | 1 | 13/11/2014 | 99.99% | 9.40E-06 |
| LKMT / Ostrava | Czech Republic | 99.98% | 1.68E-05 | 3 | 09/01/2014 | 99.98% | 1.63E-05 |
| LKPR / Praha | Czech Republic | 99.99% | 5.60E-06 | 1 | 09/01/2014 | 99.99% | 1.03E-05 |
| LKTB / Brno | Czech Republic | 99.99% | 5.60E-06 | 1 | 09/01/2014 | 99.98% | 1.59E-05 |
| LKVO / Praha/Vodochody | Czech republic | 99.99% | 5.60E-06 | 1 | 25/06/2015 | 99.99% | 9.27E-06 |
| LPPR / Porto | Portugal | 100.00% | 0.00E+00 | 0 | 12/10/2017 | 99.98% | 2.10E-05 |
| LPPT / Lisboa | Portugal | 100.00% | 0.00E+00 | 0 | 28/05/2015 | 99.98% | 1.50E-05 |
| LRCL / Cluj - Napoca / Avram Iancu | Romania | 99.92% | 4.93E-05 | 26 | 10/11/2016 | 99.93% | 5.60E-05 |
| LSGG / Genève | Switzerland | 100.00% | 0.00E+00 | 0 | 12/11/2015 | 99.99% | 9.36E-06 |
| LSHI / Bern-Insel Hospital | Switzerland | 100.00% | 0.00E+00 | 0 | 23/07/2015 | 99.99% | 1.39E-05 |
| LSMD / Dübendorf | Switzerland | 100.00% | 0.00E+00 | 0 | 21/08/2014 | 99.99% | 1.36E-05 |
| LSME / Emmen | Switzerland | 100.00% | 0.00E+00 | 0 | 03/04/2014 | 99.99% | 1.20E-05 |
| LSMP / Payerne | Switzerland | 100.00% | 0.00E+00 | 0 | 17/09/2015 | 99.99% | 8.90E-06 |
| LSZB / Berne-Belp | Switzerland | 100.00% | 0.00E+00 | 0 | 07/03/2013 | 99.96% | 1.70E-05 |
| LSZG / Grenchen | Switzerland | 100.00% | 0.00E+00 | 0 | 25/07/2013 | 99.95% | 1.88E-05 |
| LSZR / St. Gallen-Altentrhein | Switzerland | 100.00% | 0.00E+00 | 0 | 17/11/2011 | 99.91% | 1.84E-05 |
| LZIB / Bratislava-Milan Rastislav Štefánik | Slovak Republic | 99.99% | 5.60E-06 | 1 | 05/02/2015 | 99.98% | 2.54E-05 |
| LZKZ / Košice | Slovak Republic | 99.91% | 3.92E-05 | 8 | 05/02/2015 | 99.95% | 6.46E-05 |

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

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 ¹ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|------------------------------|---------|------------------------------|---------------------------------|----------------------|---|--|---|
| EDDW / Bremen | Germany | 99.99% | 5.60E-06 | 1 | 30/03/2017 | 99.98% | 1.65E-05 |
| EDFH / Frankfurt Hahn | Germany | 100.00% | 0.00E+00 | 0 | 14/09/2017 | 99.99% | 1.17E-05 |
| EDGS / Siegerland | Germany | 100.00% | 0.00E+00 | 0 | 12/10/2017 | 99.99% | 1.40E-05 |
| EDNY / Friedrichshafen | Germany | 100.00% | 0.00E+00 | 0 | 19/07/2018 | 99.99% | 7.89E-06 |
| EDQM / Hof-Plauen | Germany | 100.00% | 0.00E+00 | 0 | 21/06/2018 | 99.99% | 7.34E-06 |
| EDSB / Karlsruhe/Baden-Baden | Germany | 100.00% | 0.00E+00 | 0 | 27/04/2017 | 99.99% | 1.14E-05 |
| EDTL / Lahr | Germany | 100.00% | 0.00E+00 | 0 | 27/04/2017 | 99.99% | 1.18E-05 |
| EKBI / Billund | Denmark | 99.99% | 4.26E-05 | 18 | 20/07/2017 | 99.98% | 2.53E-05 |
| ENBL / Førde/Bringeland | Norway | 99.98% | 1.68E-05 | 3 | 27/04/2017 | 99.95% | 3.58E-05 |
| ENFG / Fagernes | Norway | 99.98% | 2.46E-05 | 6 | 14/09/2017 | 99.96% | 3.19E-05 |
| ENGM / Gardermoen | Norway | 99.98% | 3.14E-05 | 13 | 10/11/2016 | 99.96% | 2.43E-05 |
| ENML / Molde/Årø | Norway | 99.98% | 4.37E-05 | 17 | 30/03/2017 | 99.95% | 4.69E-05 |
| ENNM / Namsos | Norway | 99.96% | 5.86E-05 | 42 | 27/04/2017 | 99.93% | 6.65E-05 |
| ENOL / Ørland | Norway | 99.97% | 5.90E-05 | 26 | 12/10/2017 | 99.95% | 6.61E-05 |
| ENRM / Rørvik/Ryum | Norway | 99.97% | 8.44E-05 | 66 | 02/02/2017 | 99.92% | 6.79E-05 |
| ENSG / Sogndal/Haukasen | Norway | 99.98% | 2.46E-05 | 6 | 14/09/2017 | 99.95% | 3.51E-05 |
| ENZV / Stavanger/Sola | Norway | 99.99% | 1.49E-05 | 6 | 09/11/2017 | 99.96% | 4.41E-05 |
| EPBY / Bydgoszcz - Szwedzko | Poland | 99.97% | 1.12E-05 | 2 | 26/04/2018 | 99.99% | 6.78E-06 |
| EPGD / Gdańsk Lech Wałęsa | Poland | 99.98% | 1.12E-05 | 2 | 26/04/2018 | 99.98% | 8.14E-06 |
| EPKK / Kraków - Balice | Poland | 99.93% | 3.62E-05 | 9 | 26/04/2018 | 99.96% | 3.99E-05 |
| EPKT / Katowice | Poland | 99.97% | 5.60E-06 | 1 | 26/04/2018 | 99.98% | 1.09E-05 |
| EPLB / Lublin | Poland | 99.81% | 8.83E-05 | 20 | 26/04/2018 | 99.89% | 7.47E-05 |
| EPLL / Łódź - Lublinek | Poland | 99.95% | 3.14E-05 | 16 | 21/06/2018 | 99.98% | 2.76E-05 |
| EPMO / Warszawa/Modlin | Poland | 99.96% | 5.04E-05 | 20 | 26/04/2018 | 99.97% | 2.84E-05 |
| EPRZ / Rzeszów - Jasionka | Poland | 99.88% | 5.05E-05 | 10 | 26/04/2018 | 99.93% | 8.01E-05 |
| EPSC / Szczecin - Goleniów | Poland | 99.97% | 1.12E-05 | 2 | 26/04/2018 | 99.99% | 1.18E-05 |
| EPSY / Olsztyn - Mazury | Poland | 99.96% | 3.40E-05 | 7 | 26/04/2018 | 99.98% | 1.72E-05 |

¹ Outages refer to events when the LPV-200 service changes its status from Available to Unavailable for the reported month.

| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ¹ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|------------------------------------|---------|------------------------------|---------------------------------|----------------------|---|--|---|
| EPWA / Warszawa - F. Chopin | Poland | 99.95% | 4.15E-05 | 13 | 26/04/2018 | 99.97% | 2.25E-05 |
| EPWR / Wroclaw/Strachowice | Poland | 99.97% | 5.60E-06 | 1 | 26/04/2018 | 99.99% | 6.78E-06 |
| LDSP / Split/Kastela | Croatia | 100.00% | 0.00E+00 | 0 | 29/03/2018 | 99.94% | 7.92E-05 |
| LFAQ / Albert Bray | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.23E-05 |
| LFAT / Le Touquet Paris Plage | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.97E-05 |
| LFAN / Valenciennes Denain | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.53E-05 |
| LFBA / Agen La Garenne | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.43E-05 |
| LFBD / Bordeaux Merignac | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.36E-05 |
| LFBE / Bergerac | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.43E-05 |
| LFBI / Poitiers Biard | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.36E-05 |
| LFBL / Limoges | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.49E-05 |
| LFBU / Angoulême Brie Champniers | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.36E-05 |
| LFBX / Périgueux Bassillac | France | 100.00% | 0.00E+00 | 0 | 25/05/2017 | 99.99% | 8.81E-06 |
| LFBZ / Biarritz Bayonne Anglet | France | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.97% | 1.70E-05 |
| LFCE / Albi Le Sequestre | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.55E-05 |
| LFCE / Rodez Marcillac | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.55E-05 |
| LFDF / Rochefort Charente Maritime | France | 100.00% | 0.00E+00 | 0 | 23/05/2018 | 99.97% | 1.80E-05 |
| LFGE / Colmar Houssen | France | 100.00% | 0.00E+00 | 0 | 21/06/2018 | 99.99% | 7.34E-06 |
| LFGL / Dole Tavaux | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.43E-05 |
| LFJL / Metz Nancy Lorraine | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.73E-05 |
| LFJR / Angers Marcé | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.55E-05 |
| LFKB / Bastia Poretta | France | 99.99% | 7.09E-06 | 5 | 07/12/2017 | 99.98% | 2.65E-05 |
| LFKF / Figari Sud Corse | France | 99.99% | 2.73E-05 | 29 | 21/11/2017 | 99.98% | 3.05E-05 |
| LFLE / Clermont-Ferrand Auvergne | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.52E-05 |
| LFLL / Saint Yan | France | 100.00% | 0.00E+00 | 0 | 02/03/2017 | 99.98% | 1.15E-05 |
| LFLL / Grenoble Isere | France | 100.00% | 0.00E+00 | 0 | 13/10/2016 | 99.98% | 9.97E-06 |
| LFLL / Valence | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.36E-05 |
| LFLL / Vichy Charmeil | France | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.98% | 1.12E-05 |
| LFLL / Lyon Bron | France | 100.00% | 0.00E+00 | 0 | 28/09/2016 | 99.98% | 9.99E-06 |
| LFMH / Saint Étienne Bouthéon | France | 100.00% | 0.00E+00 | 0 | 02/02/2017 | 99.98% | 1.04E-05 |
| LFMK / Carcassonne Salvaza | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.49E-05 |

| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ¹ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|-------------------------------------|-----------------|------------------------------|---------------------------------|----------------------|---|--|---|
| LFMV / Avignon Caumont | France | 100.00% | 0.00E+00 | 0 | 21/06/2018 | 99.99% | 7.34E-06 |
| LFOH / Le Havre Octeville | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.46E-05 |
| LFPB / Paris-Le Bourget | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.30E-05 |
| LFPG / Paris Charles de Gaulle | France | 100.00% | 0.00E+00 | 0 | 28/04/2016 | 99.98% | 6.91E-06 |
| LFPM / Melun Villaroche | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.43E-05 |
| LFPN / Toussus Le Noble | France | 100.00% | 0.00E+00 | 0 | 27/04/2017 | 99.99% | 8.82E-06 |
| LFPO / Paris Orly | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.36E-05 |
| LFPT / Pontoise Corneilles en Vexin | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.30E-05 |
| LFQB / Troyes Barberey | France | 100.00% | 0.00E+00 | 0 | 18/08/2016 | 99.98% | 6.89E-06 |
| LFRC / Cherbourg Maupertus | France | 100.00% | 0.00E+00 | 0 | 23/06/2016 | 99.98% | 9.61E-06 |
| LFRD / Dinard | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.63E-05 |
| LFRI / La Roche Sur Yon | France | 100.00% | 0.00E+00 | 0 | 10/11/2016 | 99.97% | 1.09E-05 |
| LFRK / Caen Carpiquet | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.55E-05 |
| LFRO / Lannion | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.75E-05 |
| LFRQ / Quimper | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.81E-05 |
| LFRT / Saint Brieuc Armor | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.69E-05 |
| LFRZ / Saint Nazaire Montoir | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.98% | 1.70E-05 |
| LFSN / Nancy Essey | France | 100.00% | 0.00E+00 | 0 | 26/04/2018 | 99.99% | 1.18E-05 |
| LFST / Strasbourg Entzheim | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.80E-05 |
| LFTW / Nîmes Garons | France | 100.00% | 0.00E+00 | 0 | 21/11/2017 | 99.99% | 1.36E-05 |
| LHBP / Budapest Liszt Ferenc | Hungary | 99.99% | 3.36E-05 | 14 | 15/09/2016 | 99.96% | 5.28E-05 |
| LICG / Pantelleria | Italy | 99.99% | 1.34E-05 | 4 | 31/05/2018 | 99.99% | 1.71E-05 |
| LICR / Reggio Calabria | Italy | 99.98% | 1.11E-04 | 104 | 19/07/2018 | 99.98% | 1.06E-04 |
| LIMP / Parma | Italy | 100.00% | 0.00E+00 | 0 | 23/05/2018 | 99.99% | 7.02E-06 |
| LIMZ / CUNEO/Levaldigi | Italy | 100.00% | 0.00E+00 | 0 | 23/05/2018 | 99.98% | 9.71E-06 |
| LOWG / Flughafen Graz | Austria | 99.99% | 5.60E-06 | 1 | 01/03/2018 | 99.95% | 6.50E-05 |
| LOWI / Innsbruck | Austria | 100.00% | 0.00E+00 | 0 | 01/02/2018 | 99.99% | 2.96E-05 |
| LOWL / Linz | Austria | 99.99% | 5.60E-06 | 1 | 02/02/2017 | 99.98% | 3.18E-05 |
| LOWW / Wien - Schwechat | Austria | 99.99% | 5.60E-06 | 1 | 02/02/2017 | 99.97% | 4.43E-05 |
| LSGC / Les Eplatures | Switzerland | 100.00% | 0.00E+00 | 0 | 26/05/2016 | 99.99% | 7.46E-06 |
| LSZH / Zurich | Switzerland | 100.00% | 0.00E+00 | 0 | 25/05/2017 | 99.99% | 9.41E-06 |
| LZPP / Piešťany | Slovak Republic | 99.99% | 1.12E-05 | 2 | 02/02/2017 | 99.97% | 4.39E-05 |

| Airports | Country | Monthly LPV-200 Availability | Monthly LPV-200 Continuity Risk | Outages ¹ | Publication date of first LPV-200 procedure | LPV-200 Availability since procedure publication | LPV-200 Continuity Risk since procedure publication |
|---------------------|-----------------|------------------------------|---------------------------------|----------------------|---|--|---|
| LZTT / POPRAD-Tatry | Slovak Republic | 99.93% | 6.95E-05 | 25 | 29/03/2018 | 99.93% | 1.15E-04 |
| LZZI / Žilina | Slovak Republic | 99.99% | 2.69E-05 | 14 | 25/05/2017 | 99.98% | 3.53E-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/library/official_docs/egnos_os_sdd_in_force.pdf) |
| [RD-2] | Safety Of Life Definition Document, EGN-SDD-SoL; v.03-01 (https://egnos-user-support.essp-sas.eu/new_egnos_ops/sites/default/files/library/official_docs/egnos_sol_sdd_in_force.pdf) |
| [RD-3] | EGNOS Data Access Service (EDAS) Service Definition Document, EGN-SDD-EDAS; v.02-01 (https://egnos-user-support.essp-sas.eu/new_egnos_ops/sites/default/files/library/official_docs/egnos_edas_sdd_v2_1.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 Alarm 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 Number |
| 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 |
| SL0 | Service Level 0 |
| SL2 | Service Level 2 |
| SoL | Safety of Life |
| UTC | Universal Time Coordinated |
| VAL | Vertical Alarm Limit |
| VNSE | Vertical Navigation System Error |
| VPE | Vertical Position Error |
| VPL | Vertical Protection Level |
| VSI | Vertical Safety Index |

END OF THE DOCUMENT