PROGRAMME OF THE
EUROPEAN UNION

EGNOS

EGNOS Annual Performace Report

2023

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DOCUMENT CHANGE RECORD

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

This document corresponds to the EGNOS Annual Performance Report and provides reporting and analysis on the EGNOS service provision performance over a full year period, from the 1st of January 2023 to the 31st of December 2023, both dates included.

Daily, weekly, and monthly service performance is monitored and analysed as part of ESSP's day-to-day tasks and reported through the dedicated EGNOS User Support Website or the monthly performance reporting. The current document evaluates the EGNOS service and ESSP's performance as the EGNOS Service Provider of 2023.

2 EXECUTIVE SUMMARY

2.1 A word from the ESSP CEO

These last years, aviation, in general, and ATM, in particular, have been affected by the crisis. Since 2022 the traffic is growing again and EGNOS services contribute to a safe sky by being continuously safely and securely provided.

The year 2023 has been marked, in particular, by the implementation of the new Next EGNOS Service Provision (NESP) contract, a Framework contract for 10 years, ii. the deployment of an important EGNOS release (in a very short timeframe), that makes EGNOS service more robust to solar activities, and iii. the move of the GEO2 satellite. For some specific activities, task forces involving EUSPA, ESSP and TAS have been set-up and have shown their benefits. ESSP is pleased to highlight, during the overall year, the EGNOS service has been maintained with a good level of performance.

I would like to thank the ESSP teams for their commitment, our partners and subcontractors for adapting to the situation and helping to maintain first-class services, and our customer EUSPA for their continued trust.

Charlotte Neyret
CEO, ESSP SAS

2.2 Service Performance

EGNOS Safety of Life (SoL) Service – Non-Precision Approach (NPA)	
NPA Availability	100.00% coverage of the 99.90% NPA Service Area[1]
NPA Integrity	No integrity event for any of the monitoring sites
NPA Continuity	No values below 5.10^{-4}/h in Service Area, with most of the regions with values below 10^{-3}/h
EGNOS Safety of Life (SoL) Service – Approach with Vertical Guidance (APV-I)	
APV-I Availability	87.88% coverage of the 99.00% APV-I Service Area[1]
APV-I Integrity	No APV-I integrity event
APV-I Continuity	94.01% coverage of the $5 \cdot 10^{-4}$ APV-I Service Area[1]
EGNOS Safety of Life (SoL) Service – LPV-200	
LPV-200 Availability	82.32% coverage of the 99.00% LPV-200 Service Area[1]
LPV-200 Integrity	No LPV-200 integrity event
LPV-200 Continuity	86.85% coverage of the $5 \cdot 10^{-4}$ LPV-200 Service Area[1]
LPV-200 Accuracy Tails	No events happened during the period
EGNOS Open Service (OS)[2]	
Horizontal Accuracy	1.3 metres (95^{th} percentile of the cumulative data for all stations)
Vertical Accuracy	1.9 metres (95^{th} percentile of the cumulative data for all stations)
Open Service Availability	Above 99.00% for all locations, except for 8 monitoring stations (RIMS) situated in the northwest and the southwest.

EGNOS Data Access Service (EDAS)[3]		
Service	**Availability**	**Latency**
Service Level 0	99.93%	647.91 ms
Service Level 2	99.93%	648.04 ms
Ntrip	99.91%	626.92 ms
SISNeT	99.89%	64.25 ms
Data Filtering	99.93%	451.31 ms
FTP	99.94%	N/A
Signal-In-Space (SIS) Availability		

[1] Refer to SoL SDD [RD-2]

[2] Refer to OS SDD [RD-1]

[3] Refer to EDAS SDD [RD-3]

OP1 (PRN136)	OP2 (PRN123 or PRN126)[4]	EGNOS OP (at least one SIS)
99.99%	99.99%	100.00%

Table 1 – EGNOS service performance during 1st January 2023 to 31st December 2023 period.

The leading causes for the observed EGNOS Service performance degradations were:

- *EGNOS OS and SoL services:*
  - **Solar cycle 25:** The abnormal ionosphere activity mainly affected EGNOS performances in the north and southwest of the Service Area. Since the beginning of 2023, it became the leading cause of observed underperformance. The main reason is the ramp-up of solar activity, which led to more frequent ionospheric disturbances. However, it shall be noted that the current solar cycle is displaying unexpectedly high levels of solar activity, not seen before in the EGNOS operational lifetime.
  - **Notice Advisory to Navstar Users (NANU):** The publication of NANUs announces when certain GPS satellites cannot be used. This temporary absence of GPS satellites can be the cause of degradation of EGNOS service performance on specific days.
  - **Data quality/RIMS anomaly:** Local issues affecting the RIMS receiver contributed to the degradation of performance in areas close to the affected RIMS. These issues were mainly due to clock jumps, or cycle slips not detected or repaired.

[4] GEO PRN123 was in EGNOS TEST from 30/06/2023 to 14/08/2023. GEO PRN126 was in EGNOS OP from 21/06/2023 to 24/08/2023.

2.3 Service delivery and management

2.3.1 EGNOS services user interface

2.3.1.1 EGNOS services related document evolutions (SN, SDD)

The main achievements for the reported period are:

- Service Definition Documents (https://egnos.gsc-europa.eu/documents/field_gc_document_type/89):
  SoL SDD 3.5 was published on November 23rd, 2023. This SDD includes new commitment maps reflecting the EGNOS performance to be expected with the current EGNOS ground segment configuration and the status of Solar Cycle 25. Additionally, other changes were also incorporated, such as the update of the EGNOS ground and space segments.

Figure 1 – EGNOS Service Definition Documents

  There are ongoing activities to update the OS SDD and the EDAS SDD in 2024, which will include updated commitments and updated EGNOS ground and space segments.
- Service Notices:
  Seven new notices and eight additional updates were published to communicate changes in the EGNOS system and their impact on the Services defined in the corresponding SDDs. Section 4.1 includes the main information on these Service Notices.

2.3.1.2 User Support (EGNOS & EMSP Website & Helpdesk)

During this period, the website was updated based on the EGNOS User Satisfaction Survey 2022 outcomes and the different internal improvement actions.

A dedicated website and helpdesk including the EDAS and Maritime services will be implemented.

2.3.1.3 User support improvement process

Regarding the user support improvement process, the result of the user survey held in 2022 conveyed a good satisfaction score (on average above 8.5 out of 10). All identified recommendations have been analysed and derived in a set of actions to implement during 2023-2024.

2.3.2 EGNOS services development

2.3.2.1 Aviation

The main achievements in the reported year are as follows:

- The first EWA with an operator of an uncontrolled (non-ATS) and non-instrument-runway aerodrome was established on 25/01/2023. The involved aerodrome, Lahti-Vesivehmaa Aerodrome (EFLA), is based in Finland. The EGNOS-based procedure at EFLA, the first of its kind published in such a scenario, was enabled by the establishment of the corresponding EWA and published on 26/01/2023.
  Then, a second request for establishing an EWA with an aerodrome operator of this kind (uncontrolled, non-instrument runway) was received from REDSTONE AERO (EFPR), and the agreement was signed on 05/05/2023.
- The sixth EWA with an air operator (Svensk Luftambulans, a rotorcraft HEMS operator based in Sweden) was established on 05/05/2023.
- The following relevant activities have been carried out for the evolution of EGNOS-based operations:
  - To implement EGNOS-based procedures at non-instrumental runway ends, safety assessments have been developed for 3 European airports serving General Aviation (GA): Boras (Sweden), Breda (Netherlands) and Freiburg (Germany).
  - Guidelines for the combined use of EGNOS-based operations and an Enhanced Flight Vision System (EFVS) have been developed and submitted for consultation with relevant stakeholders. EASA published the document in August 2023.
  - A roadmap has been proposed for implementing an EGNOS based service for UAS, starting in 2023.

2.3.2.2 Maritime

In the maritime domain, the main achievements in the reported year are as follows:

- In the framework of the Maritime Service Preparation Activities, ESSP has completed the development of the tools, operational processes, and procedures necessary for the operations supporting the EGNOS Maritime Service Provider.
- In order to support the adoption of EGNOS in the maritime domain, ESSP has been actively present in the main forums associated with the Maritime and Inland Waterways domains:
  - At IALA, the International Association of Marine Aids to Navigation and Lighthouse Authorities, it was attended DTEC#1 and ENG#17 Committees. In fact, an input paper titled “Retransmission of SBAS through VDES” was presented and accepted by IALA, resulted in identifying a new activity in the IALA Work Plan 2023-2027 assigned to the ENG (Aids to Navigation Engineering and Sustainability) Committee. The main goal is to introduce EGNOS data into VDES (VHF Data Exchange System) as another alternative to broadcast EGNOS corrections and integrity information.
  - In CESNI, the European Committee for Standardisation in the field of Inland Navigation, ESSP attended the two CESNI RIS Week workshops scheduled for the current year. In this way, at programme level the interest of contributing to this forum it is focused on monitoring and sounding out the potential future introduction of EGNOS in inland waterways (IWW).
  - ESSP has supported the coordination and co-chairing of the European Maritime and River Radionavigation Forum (EMRF), event, being attended by the main actors (e.g. IALA, EMSA, EC, etcetera) of the maritime community either physically, in the facilities of Puertos del Estado in Madrid (Spain), or virtually. The main goal of the event was to introduce the EGNOS SoL assisted service for Maritime Users (ESMAS) and its forthcoming service declaration while enabling additionally the debate and feedback about the service main features among the event participants. Additionally, it was offered to the Maritime community the forum to present other relevant topics related to PNT (Positioning, Navigation and Timing). Worthy of mention were the attendees’ expressed enthusiasm for the event’s organisation and the debate results.

- ESSP has been working and developing training material for a webinar on the use of SBAS in the maritime sector. This material will be the basis in 2024 for planned webinars with different stakeholders (i.e. IALA, CESNI, shipowners' associations) to widespread the main characteristics and benefits of the EGNOS SoL assisted service to Maritime Users (ESMAS) as well as to improve the awareness about the use of SBAS in Maritime.
- To complement the above activities and build on experience in the maritime sector, at programme level ESSP has been working on a potential operational concept for introducing EGNOS in inland waterways (IWW), presenting several operational scenarios and associated service provision schemes which would enable the provision of EGNOS services in this domain.

2.3.2.3 Rail

The following points summarise the main achievements in the Rail domain field:

- Different activities have been performed with the ERTMS User Group Localisation Working Group (EUG-LWG), aiming to define and implement a GNSS augmentation service based on EGNOS. In particular, ESSP has supported EUSPA in the project EGNOS4Rail since November 2023, bringing added value to the development of the future service based on EGNOS.
- A GNSS training course was coordinated, performed and given to the EUG-LWG (ERTMS User Group – Location Working Group), introducing different aspects of GNSS and augmentations systems (including SBAS and EGNOS). The high quality of the training was very appreciated by the attendees, that expressed their satisfaction to the team that imparted it.
- Finally, EU Space Week and in the User Consultation Platform (UCP) for the Rail domain served to, among other objectives, in the gathering of rail´s user needs related to GNSS and EGNOS.

3 SERVICE PERFORMANCE

This section presents the EGNOS service performances during the year 2023. Since a new SDD was published in 2023, it must be considered that values before 23rd of November 2023 are computed based on SDD v3.4, and values after this date are based on SDD v3.5, as per section 2.3.1.1.

3.1 EGNOS SIS Availability

*The **Individual GEO availability** is the percentage of time each geostationary satellite broadcasts a valid EGNOS SIS. A valid SIS is defined as a Signal-In-Space compliant with ICAO SARPS and RTCA MOPS.*

*The **Grouped GEO Availability** is the percentage of time in which at least one geostationary satellite in the EGNOS operational configuration (EGNOS-OP) broadcasts a valid EGNOS SIS. A valid SIS is defined as a Signal-In-Space compliant with ICAO SARPS and RTCA MOPS.*

This section presents the annual performance of SIS availability. It provides the monthly SIS availability for each GEO PRN in operational mode, namely PRN123, PRN136, PRN126 and the operational SIS (at least one SIS available). Note that GEO swaps between the EGNOS OP and EGNOS TEST segregations were performed from 20 June to 24 August 2023. Therefore, the second GEO of EGNOS OP (OP2 in the figure below) was either PRN123 or PRN126 during the 3 months of June, July and August.

- OP1 (PRN136): 99.986 %
- OP2[5] (PRN123 or PRN126): 99.989 %
- EGNOS OP (at least one SIS: OP1 or OP2): 100 %

[5] GEO PRN123 was in EGNOS TEST from 30/06/2023 to 14/08/2023. GEO PRN126 was in EGNOS OP from 20/06/2023 to 24/08/2023. Therefore, OP2 was PRN123 for all months of 2023 except from 30/06/2023 to 14/08/2023 when OP2 was PRN126 due to GEO swaps. Meanwhile, OP1 was PRN136 throughout the entire year 2023.

Figure 2 shows the monthly results:

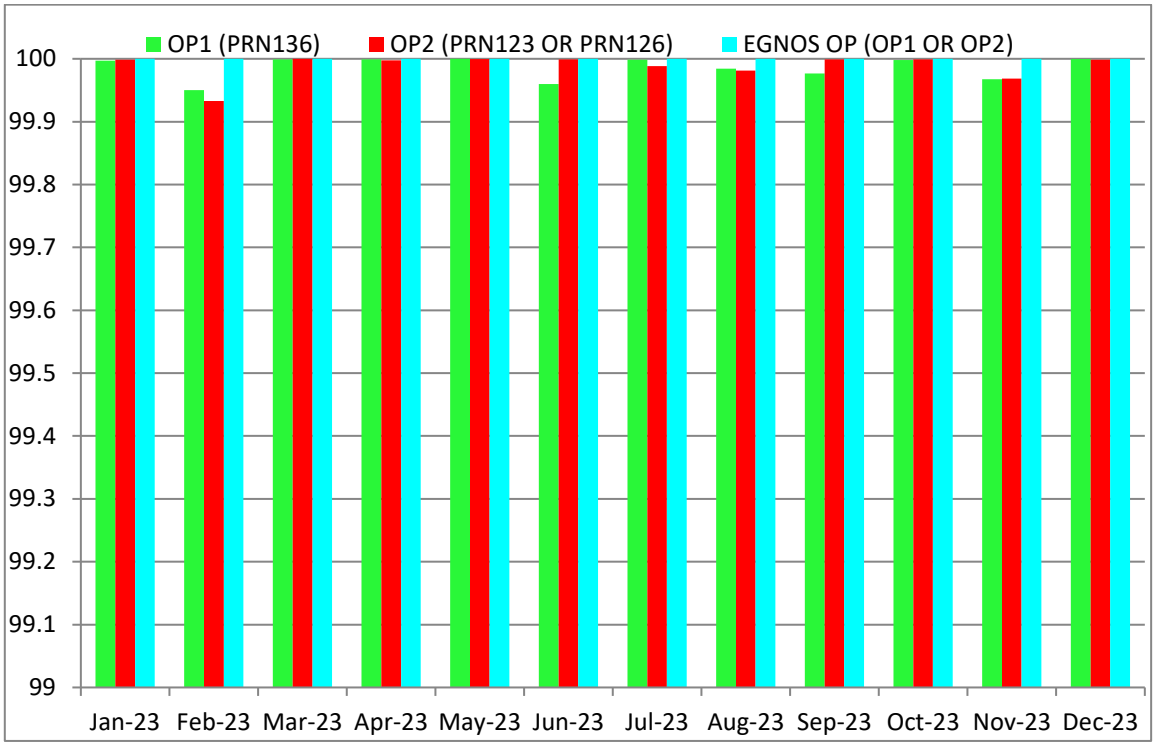

Figure 2 – EGNOS SIS OP availability trend January 2023 to December 2023 (%)

Numerical values for each month and each PRN are given in Table 2:

DATE	OP1 (%)	OP2[5] (%)	OP1 OR OP2[5] (%)
January 2023	99.99	99.99	100
February 2023	99.95	99.93	100
March 2023	99.99	100.00	100
April 2023	99.99	99.99	100
May 2023	100.00	99.99	100
June 2023	99.96	99.99	100
July 2023	99.99	99.99	100
August 2023	99.98	99.98	100
September 2023	99.98	99.99	100
October 2023	99.99	99.99	100
November 2023	99.97	99.97	100
December 2023	99.99	99.99	100
Average monthly availability	**99.99**	**99.99**	**100**

Table 2 – EGNOS SIS OP Monthly availability from January to December 2023 (%)

3.2 SoL Service – Non-Precision Approach (NPA)

Figure 3 and Figure 4 show the minimum performance for the Non-Precision Approach (NPA) availability and continuity that can be expected from EGNOS, as defined in the EGNOS SoL SDD (see EGNOS SoL Service Definition Document).

The maps presented in this section are computed with the combined GEO operational. Note that, since there were two GEO swaps during the year, performances presented in this section are computed using GEO PRN126 (being the combined OP1/PRN136-OP2/PRN126) from 1 July to 15 August, and GEO PRN123 (being the combined OP1/PRN136-OP2/PRN123) the rest of the year. The combined GEOs state for the real situation where both GEO can be used for redundancy, so primary GEO is used except if this is not available, where it is used the secondary GEO.

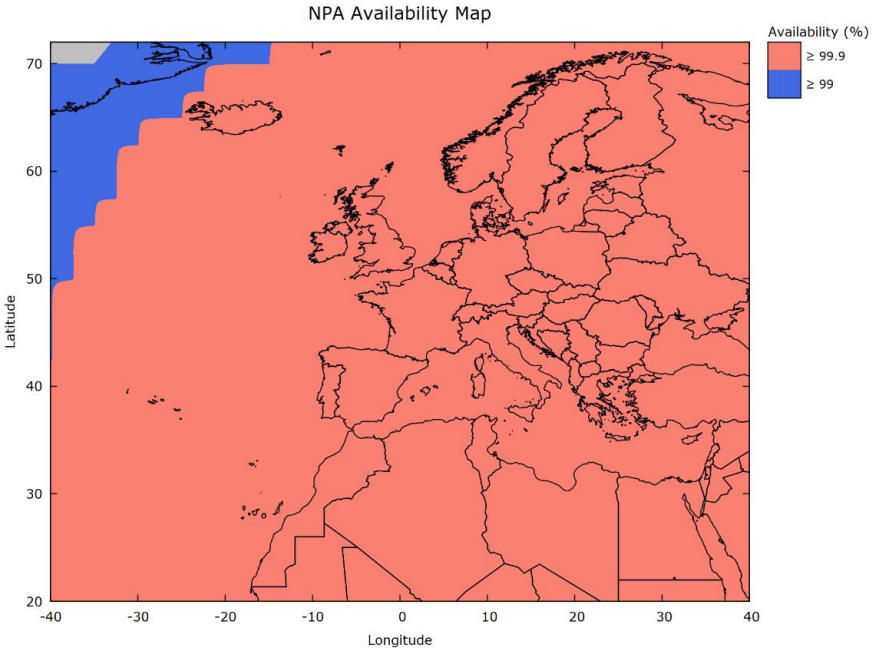

Figure 3 – NPA Availability map – Expected minimum performance (SoL SDD v3.5)

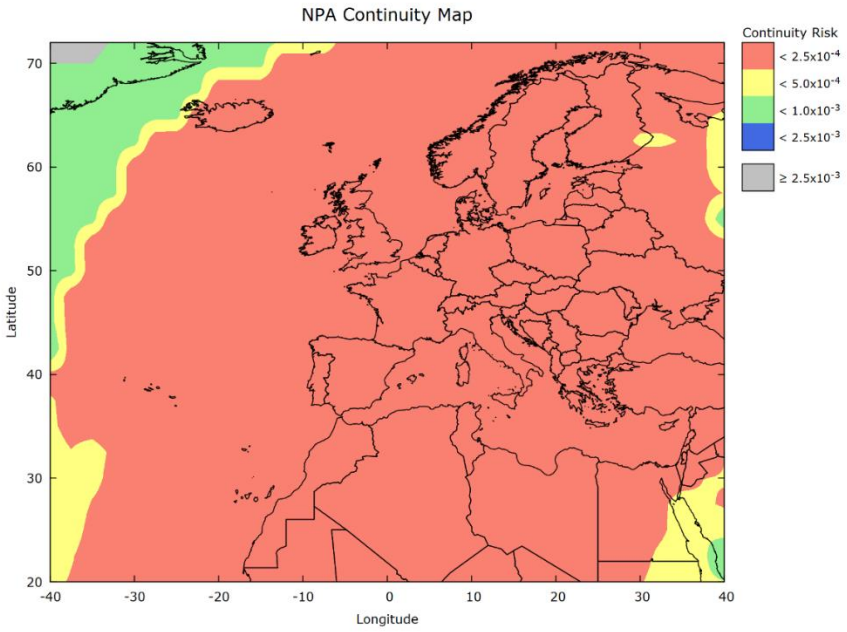

Figure 4 – NPA Continuity map – Expected minimum performance (SoL SDD v3.5)

These values correspond to the expected performance measured by a fault-free receiver using all GPS satellites in view for one month and using all operational EGNOS GEOs.

The NPA performance achieved during the reporting period is shown below. Additionally, NPA performance is conveyed through the EGNOS Monthly Performance reports, available on the EGNOS User Support website.

3.2.1 NPA availability

EGNOS NPA Availability *is defined as the percentage of samples in which the Horizontal Protection Level (HPL) is below the Alert Limit for NPA (HAL: 556m), computed over the total period.*

Figure 5 shows the NPA availability for the reporting period for combined GEOs (understood as the use of corrections from either one of the two operational GEOs, switching between each one of them in the event that an SiS outage longer than three seconds is observed):

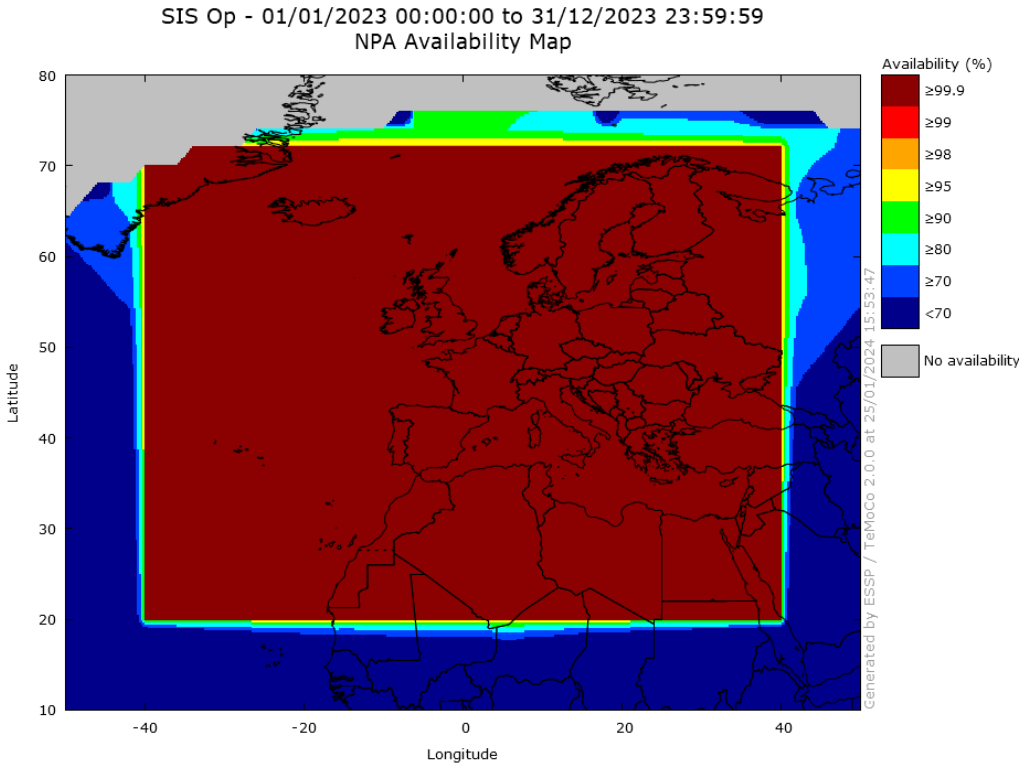

Figure 5 – NPA Availability from 01/01/23 to 31/12/23

The NPA availability performance has been met during the reporting period: greater than 99% over the entire NPA Service Area[6], except for a very small region over Greenland due to the lack of visibility of the EGNOS operational GEO satellites (OP1/PRN123 and OP2/PRN136).

3.2.2 NPA availability – Achievement against target values

In this section, the compliance of NPA availability is analysed by comparing the performance to the Reference Map of the Service Area [RD-2]. Figure 6 shows the combination of the 99% NPA availability map and the NPA Service

[6] The NPA Service Area is the 99% NPA availability area depicted in Figure 3 from the EGNOS Safety of Life SDD. It corresponds to the MT27 area.

Area. It should be noted that the north-west corner was not covered by the GEO footprint during the reporting period.

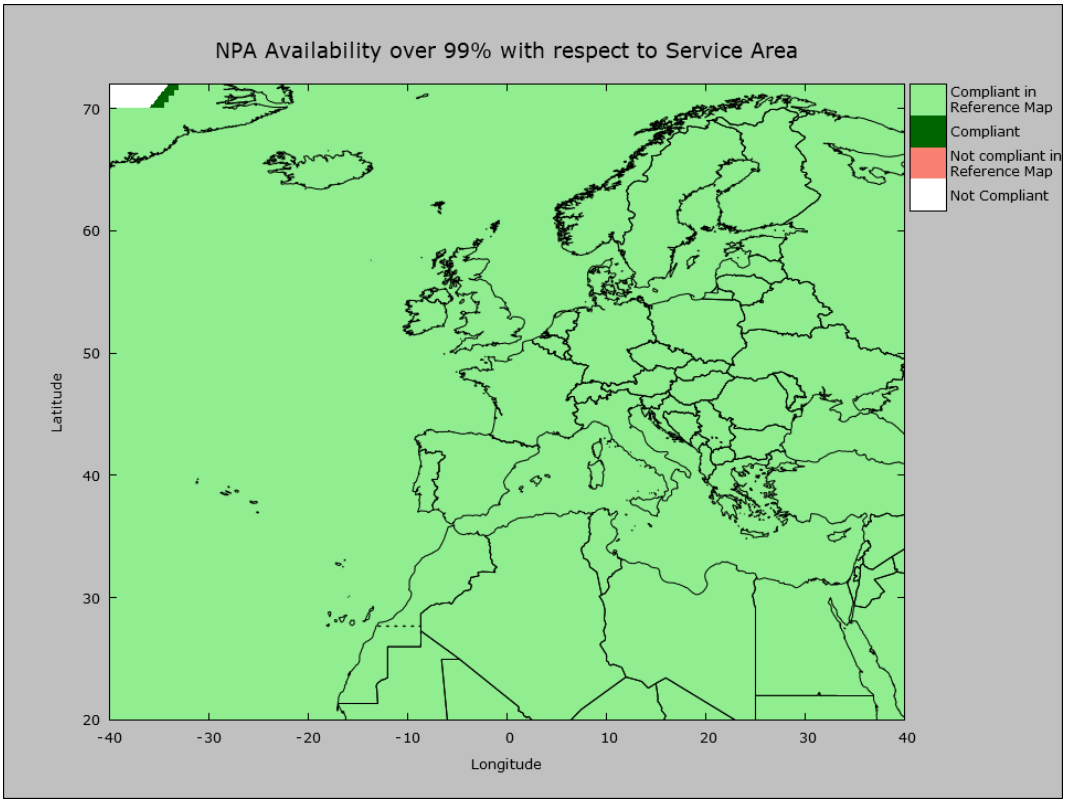

Figure 6 – NPA Availability map regarding the Service Area – from 01/01/23 to 31/12/23

In the picture, the legend should be read as follows:

- Compliant in Reference Map: the part of the Service Area where NPA Availability was above 99% (target).
- Compliant: the area outside the Service Area where NPA Availability was also above 99% (coverage extension regarding the commitment).
- Not compliant in Reference Map: the part of the Service Area where NPA Availability was lower than 99%.
- **Not compliant (white):** any other area outside the Service Area where NPA Availability is lower than 99% (target).

As shown in Figure 6, NPA availability was greater than 99% (green colour) over the area where the EGNOS GEOs were visible (all except the top left corner in white) for the reporting period.

Taking the SoL SDD v3.5 commitments as the reference, the percentage of compliant points with the 99.9% NPA Service Area (i.e. availability above 99.9%) is 100%. Note that the SDD SoL commitment map comparison is included for information purposes. The commitment map is a monthly reference, whereas the reporting period is one year.

3.2.3 NPA Integrity

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

The ***Safety index*** *is defined as the Navigation System Error versus the Protection Level ratio (assuming NPA algorithms to compute xNSE and xPL) for each second. If the xNSE/xPL ratio is over 1, it indicates that a Misleading Information (MI) situation has occurred.*

Table 3 shows the maximum Horizontal Safety Index (HSI) of the year 2023 at each RIMS inside the NPA Service Area (Figure 3).

Station	HSI	Station	HSI
Azores	0.41	Lappeenranta	0.27
Agadir	0.95	La Palma	0.88
Aalborg	0.32	Lisbon	0.55
Athens	0.49	Madeira	0.77
Berlin	0.32	Malaga	0.73
Canary Islands	0.83	Palma de Mallorca	0.52
Cork	0.25	Reykjavik	0.23
Catania	0.68	Roma	0.45
Djerba	0.99	S. de Compostela	0.32
Egilsstadir	0.28	Sofia	0.34
Glasgow	0.27	Swanwick	0.28
Golbasi	0.32	Toulouse	0.34
Gävle	0.29	Trondheim	0.29
Haifa	0.65	Tromsoe	0.30
Jan Mayen	0.31	Warsaw	0.31
Kirkenes	0.26	Zürich	0.29
Kuusamo	0.26		

Table 3 – NPA Safety Index (maximum) at reference stations

There were no integrity events in any of the RIMS stations located within the SDD commitment area during the year 2023. The very high geomagnetic activity observed in certain areas (southwest and north of Service Area) impacted the HSI of the associated RIMS stations, but the values are maintained under 0.83.

Figure 7 shows the HSI histogram, collecting measurements from the different EGNOS stations and for the operational GEOs over the whole year 2023.

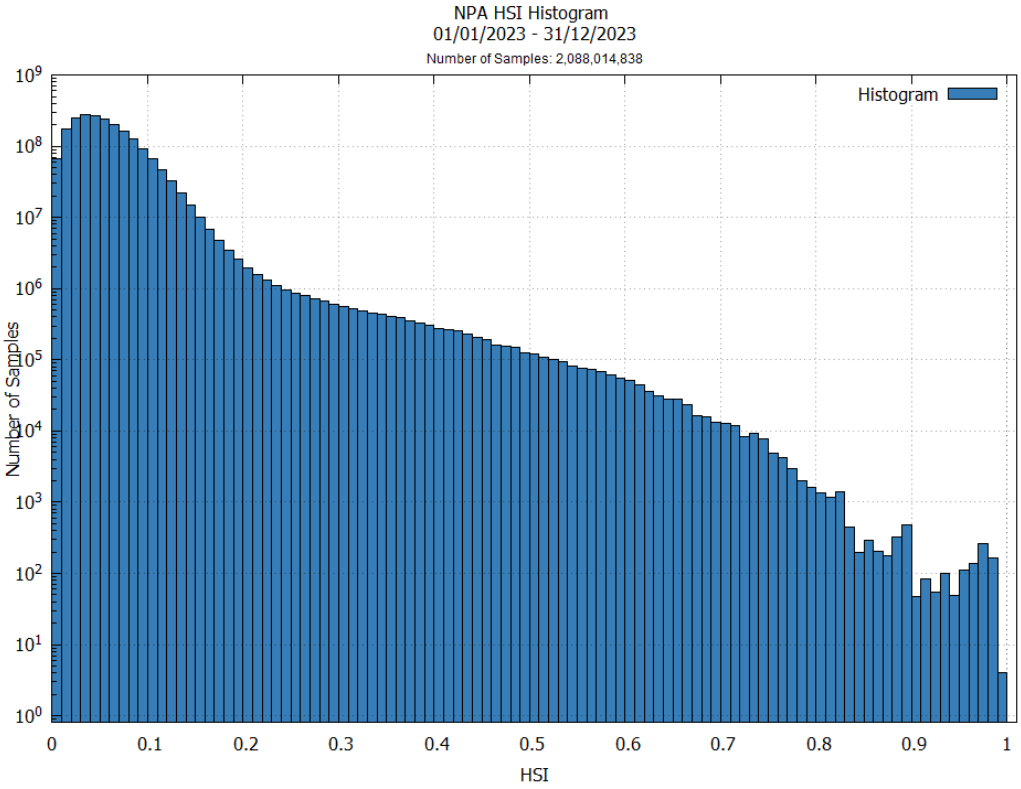

Figure 7 – NPA Horizontal Safety Index[7]

From the histogram, it can be observed that there was no MI in the year. In some cases, there were not EGNOS corrections available, and the navigation solution is computed with the GPS ionosphere model (Klobuchar). Since these cases correspond to days and regions of high geomagnetic activity, the GPS model is not accurate in these particular conditions. Despite of this situation that impacted the integrity, the horizontal safety index of the associated RIMS stations remains under 0.83 in most of the year.

[7] Note that some periods may have been removed to compute the different histograms presented in this document, corresponding to stations showing poor data quality linked to the local environment. The data extracted from the histograms correspond to RIMS data where any OR affecting data quality has been observed, the presence of cycle slips affecting performance has been detected, or other data quality issues have been traced as causing daily degradation.

3.2.4 NPA Continuity

EGNOS NPA Continuity *is computed by dividing the total number of single continuity events, using a time-sliding window of one hour, by the number of samples with a 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 within the following time-sliding window of one hour, the system becomes unavailable.*

Figure 8 shows the NPA Continuity Risk obtained for the GEO, combined over the entire analysed period.

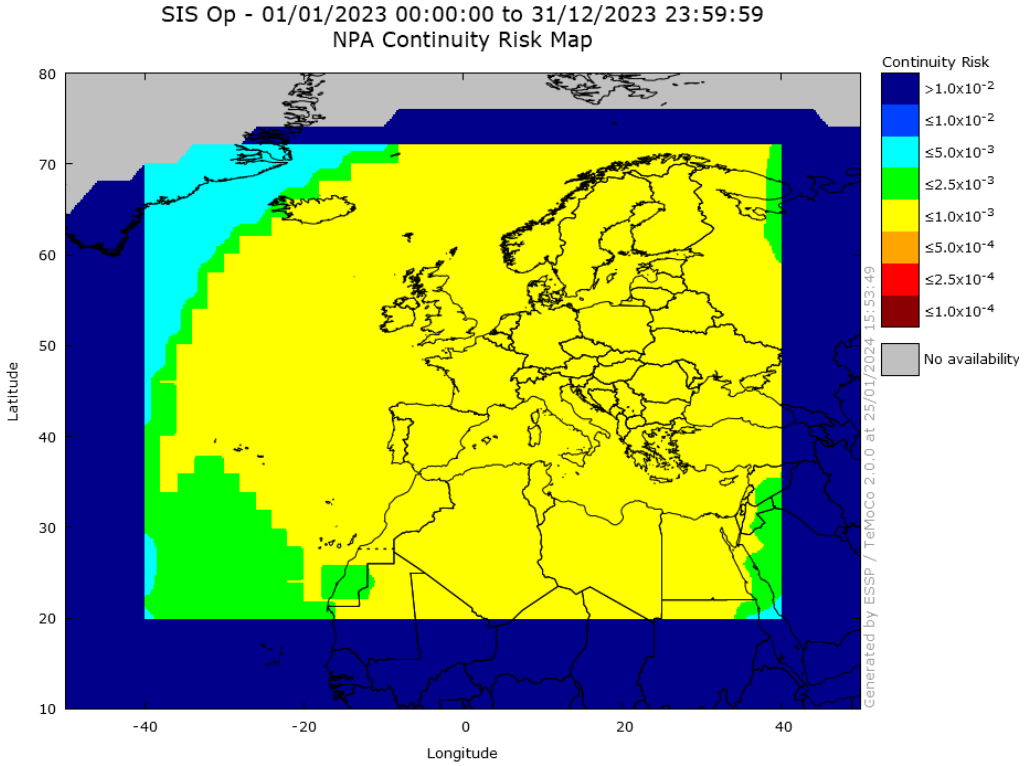

Figure 8 – NPA Continuity Risk from 01/01/23 to 31/12/23

As per Figure 8, the continuity risk met 1e-3 over the Service Area in 2023. Actually, the continuity risk was 5e-4 over the area in average over the year 2023, except for October 9th, 2023, when several continuity break events happened due to all SV simultaneously set to DU. This is an isolated and rare situation. The root cause was identified and corrected (preventive actions on RIMS maintenance have been implemented). The situation shall not occur again.

3.3 SoL Service – Approach with Vertical guidance (APV-I)

Figure 9 and Figure 10 show the minimum performance expected from EGNOS for an Approach with Vertical guidance (APV-I) availability and continuity, as defined in the EGNOS SoL Service Definition Document. ¡

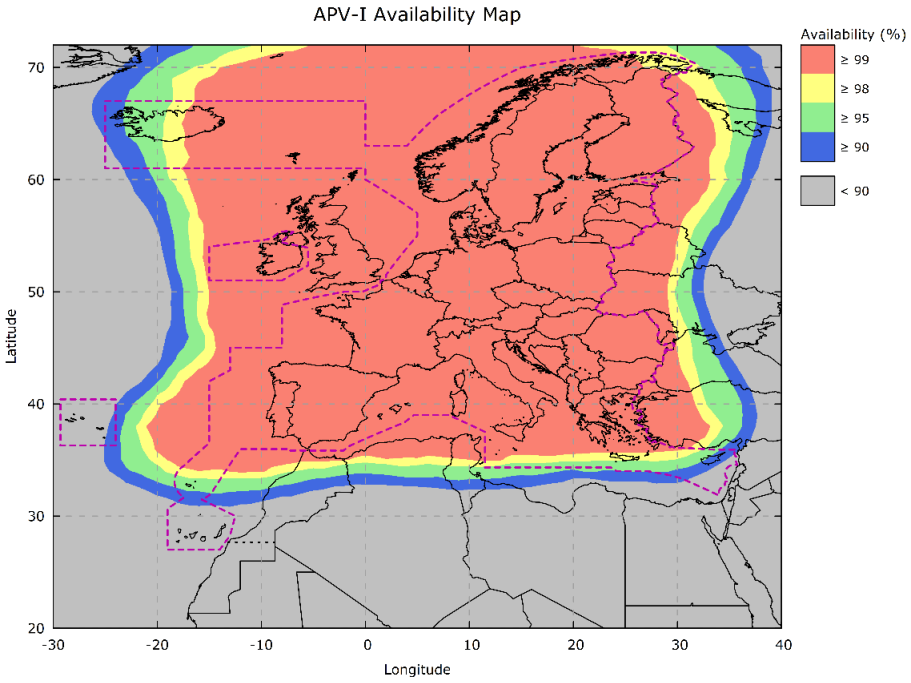

Figure 9 – APV-I Availability map – Expected minimum performance (SoL SDD v3.5)

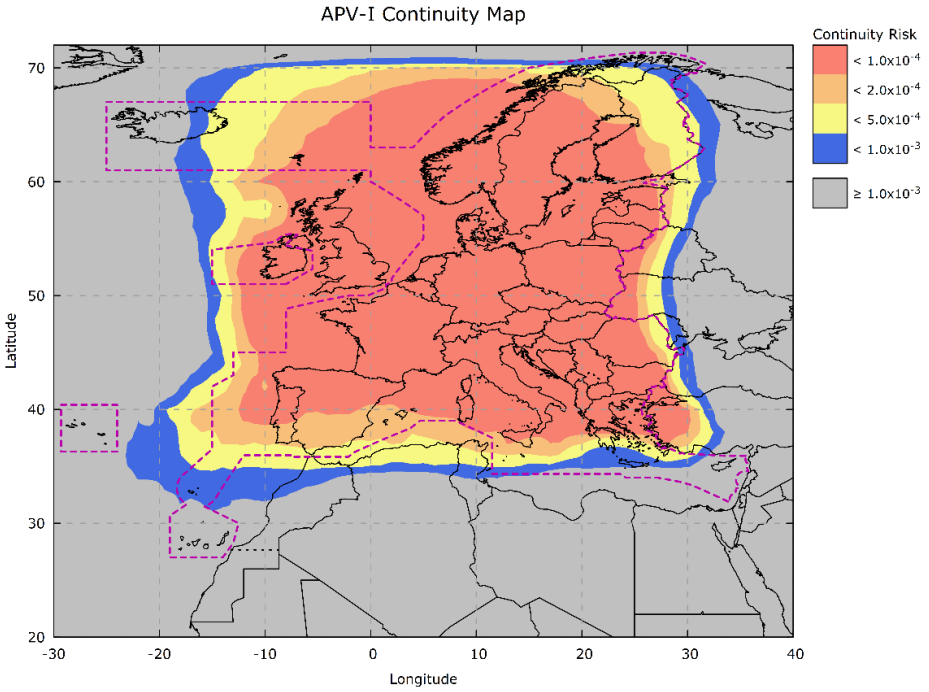

Figure 10 – APV-I Continuity map – Expected minimum performance (SoL SDD v3.5)

These values correspond to the expected performance measured by a fault-free receiver using all satellites in view, averaging over one month, using all operational EGNOS GEOs.

The APV-I performance achieved during the reporting period is shown below. APV-I performance is also reported in the EGNOS Monthly Performance reports, which are available on the EGNOS User Support website.

3.3.1 APV-I availability

EGNOS APV-I Availability *is defined as the percentage of epochs in the period in which the Protection Level (both HPL and VPL) is below Alert Limits for this APV-I service (HAL: 40m; VAL: 50m) over the total period.*

Figure 11 shows the APV-I Availability map for the combination of the operational GEOs during the reporting period:

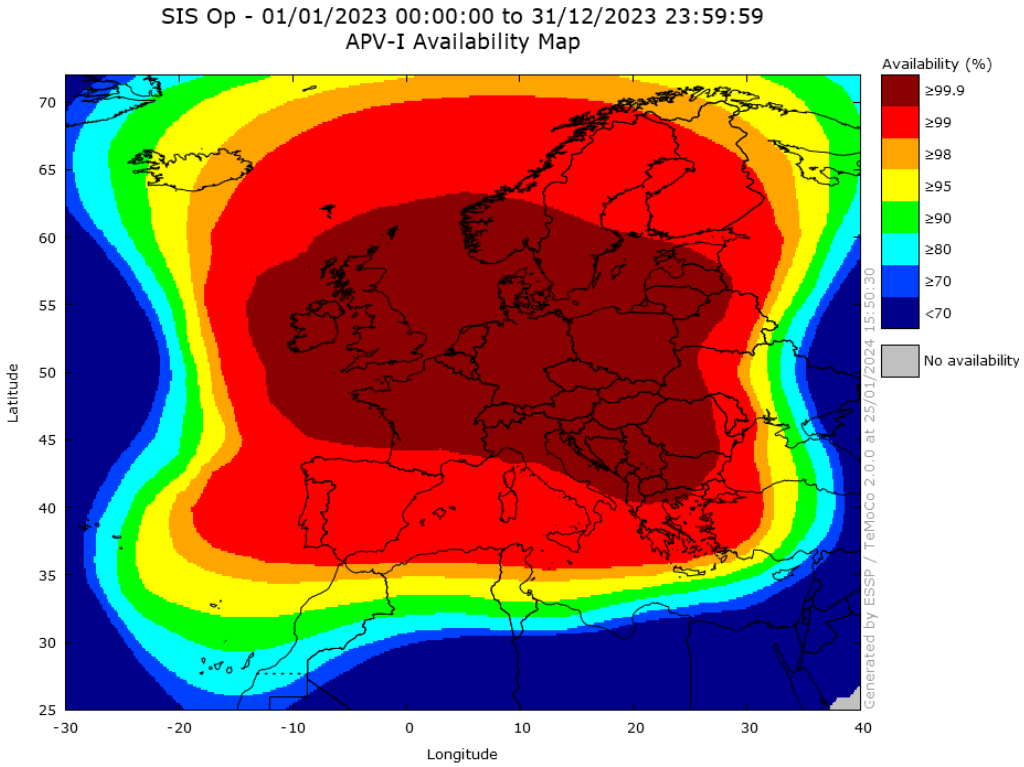

Figure 11 – APV-I Availability from 01/01/23 to 31/12/23

Figure 12 shows the annual compliance with the APV-I Availability target of the SoL SDD for airports with published EGNOS-based operations:

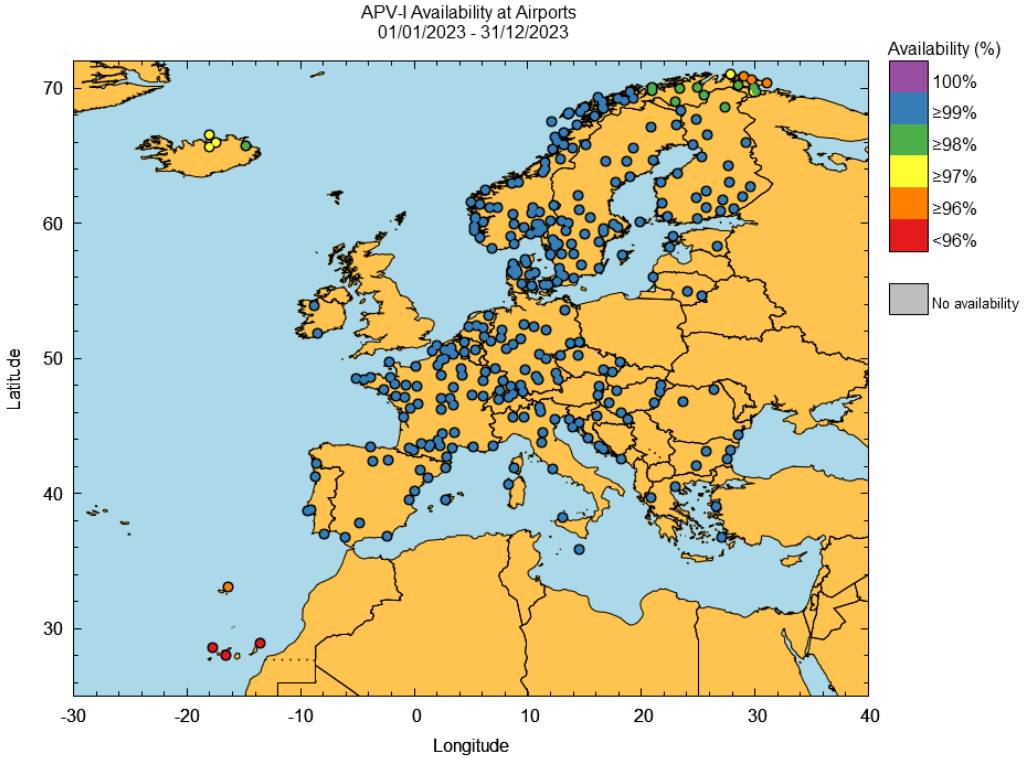

Figure 12 – APV-I Availability compliance at airports with published EGNOS-based operations from 01/01/23 to 31/12/23

Moreover, the APV-I service availability commitment according to SoL SDD 3.5 was fulfilled at all airports with EGNOS-based operations, except at:

- Akureyri (BIAR), Grimsey (BIGR), Husavik (BIHU), and Vopnafjordur (BIVO) in Iceland.
- Ivalo (EFIV) in Finland.
- Alta (ENAT), Båtsfjord (ENBS), Berlevåg (ENBV), Kirkenes Hoybuktmoen (ENKR), Mehamn (ENMH), Lakselv Banak (ENNA), Sorkjosen (ENSR), VardØ Svartnes (ENSS), Kautokeino (ENXXXZKA), Karasjok (ENXXXZKS), and Skjervøy (ENXXXZSC) in Norway.

For additional information, please refer to the corresponding Monthly Performance Reports.

3.3.2 APV-I availability – Achievement against target values

In this section, the compliance of APV-I availability is analysed by comparing the performance to the Reference Map of the Service Area [RD-2]. The combination of the 99% APV-I Availability map and the 99% APV-I Service Area is shown in Figure 13:

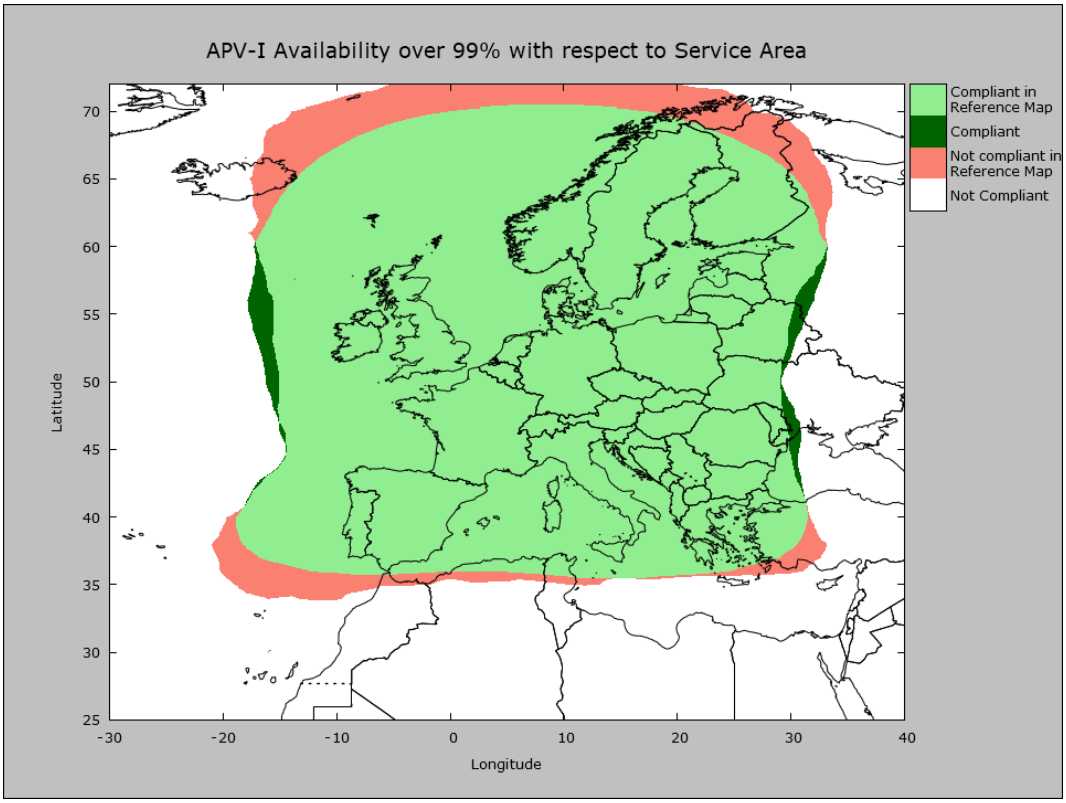

Figure 13 – APV-I 99% Availability map for the 99% APV-I Service Area – from 01/01/23 to 31/12/23

In the figure, the legend should be read as follows:

- Compliant in Reference Map: the part of the Service Area where NPA Availability was above 99% (target).
- Compliant: the area outside the Service Area where NPA Availability was also above 99% (coverage extension regarding the commitment).
- Not compliant in Reference Map: the part of the Service Area where NPA Availability was lower than 99%.
- **Not compliant (white):** any other area outside the Service Area where NPA Availability is lower than 99% (target).

The percentage of points compliant with the 99% APV-I Service Area (green colour) is **87.88%.** The reduced coverage in the southern border is explained by ionospheric disturbances linked to solar activity, equatorial scintillation, and HFA unavailability. Additionally, the northern border also presented underperformance, mainly linked to geomagnetic storms.

Note that the SDD SoL commitment map comparison is included for information purposes. It must be considered that the commitment map is a monthly reference, whereas the reporting period is one year.

3.3.3 APV-I Integrity events

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

No integrity events were detected.

The ***Safety Index*** *is defined as the Navigation System Error versus the Protection Level ratio (assuming PA algorithms to compute xNSE and xPL) for each second. If the xPE/xPL ratio is over 1, a Misleading Information situation has occurred.*

Table 4 shows the maximum HSI and Vertical Safety Index (VSI) of the year 2023 at each RIMS inside the APV-I Service Area (see Figure 9 and Figure 10). Moreover, Stanford plots are available on the EGNOS User Support Website.

Station	HSI	VSI	Station	HSI	VSI
Agadir	0.39	0.30	Lappeenranta	0.28	0.32
Aalborg	0.33	0.38	La Palma	0.32	0.28
Athens	0.27	0.35	Lisbon	0.33	0.30
Berlin	0.33	0.29	Madeira	0.47	0.31
Canary Island	0.54	0.30	Malaga	0.35	0.37
Cork	0.26	0.32	Palma de Mallorca	0.33	0.29
Catania	0.33	0.25	Reykjavik	0.22	0.29
Djerba	0.50	0.28	Roma	0.32	0.25
Egilsstadir	0.29	0.30	S. de Compostela	0.33	0.28
Glasgow	0.27	0.35	Sofia	0.35	0.35
Golbasi	0.26	0.22	Swanwick	0.29	0.37
Gävle	0.30	0.34	Toulouse	0.28	0.29
Haifa	0.32	0.23	Trondheim	0.30	0.34
Jan Mayen	0.30	0.36	Tromsoe	0.30	0.39
Kirkenes	0.27	0.31	Warsaw	0.32	0.31
Kuusamo	0.26	0.35	Zürich	0.30	0.34

Table 4 – EGNOS APV-I Safety Index (maximum) at reference stations

Figure 14 and Figure 15 provide the HSI and VSI histograms for each second when collecting measurements from the different EGNOS stations and for both operational GEOs over the whole year 2023.

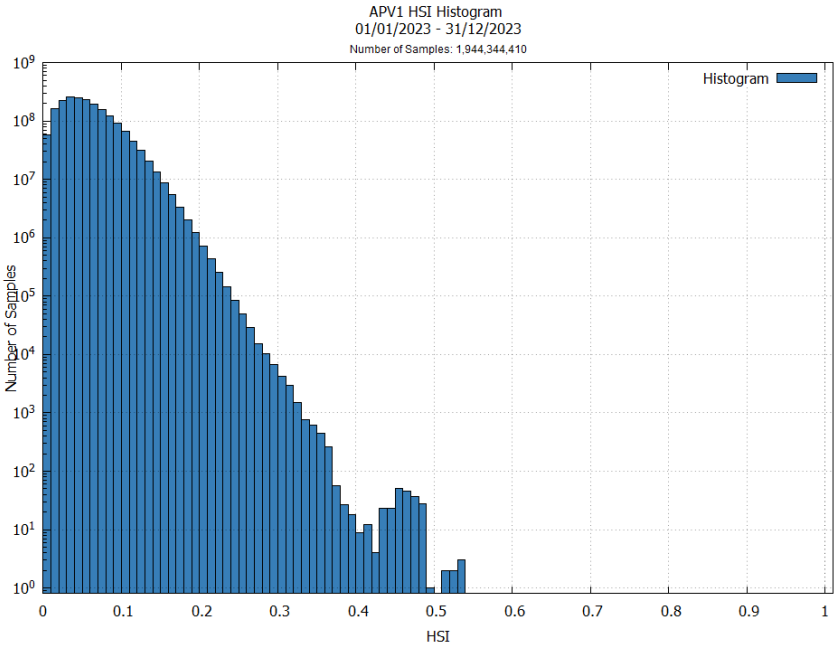

Figure 14 – EGNOS APV-I Horizontal Safety Index[8]

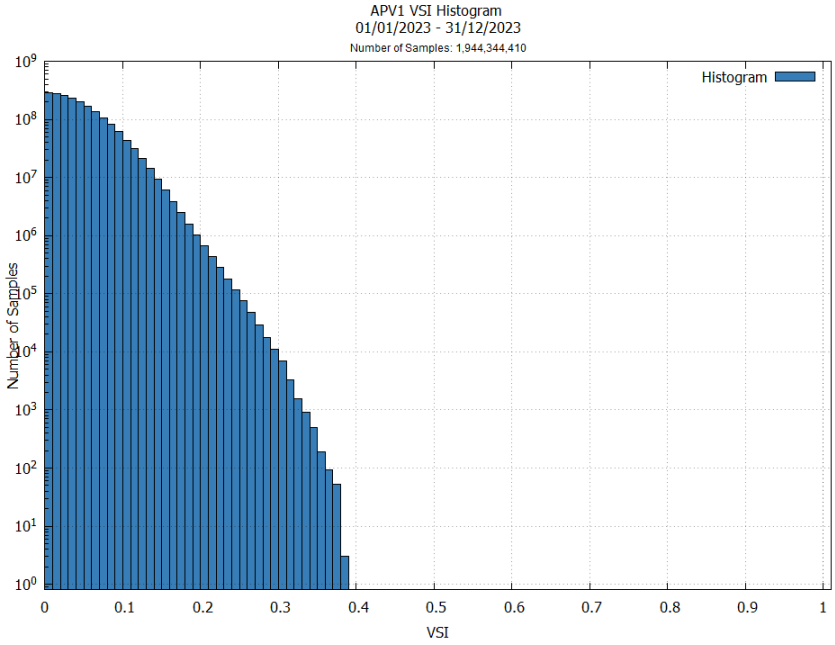

Figure 15 – EGNOS APV-I Vertical Safety Index[8]

Figure 14 and Figure 15 show that the horizontal and vertical safety index for APV-I remained below 0.55 and 0.39, respectively.

[8] Note that some periods may have been removed to compute the different histograms presented in this document, corresponding to stations showing poor data quality related to the local environment. The data removed from the histograms correspond to RIMS data where some OR affecting data quality has been observed, where the presence of cycle slips affecting performance has been detected, or where other data quality issues have been traced as causes of daily degradations.

3.3.4 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 a valid and available APV-I navigation solution. A single continuity break occurs if the system is available at the start of the operation and becomes unavailable during one of the following 15 seconds.*

Figure 16 provides the GEO combined APV-I continuity risk for the reporting period:

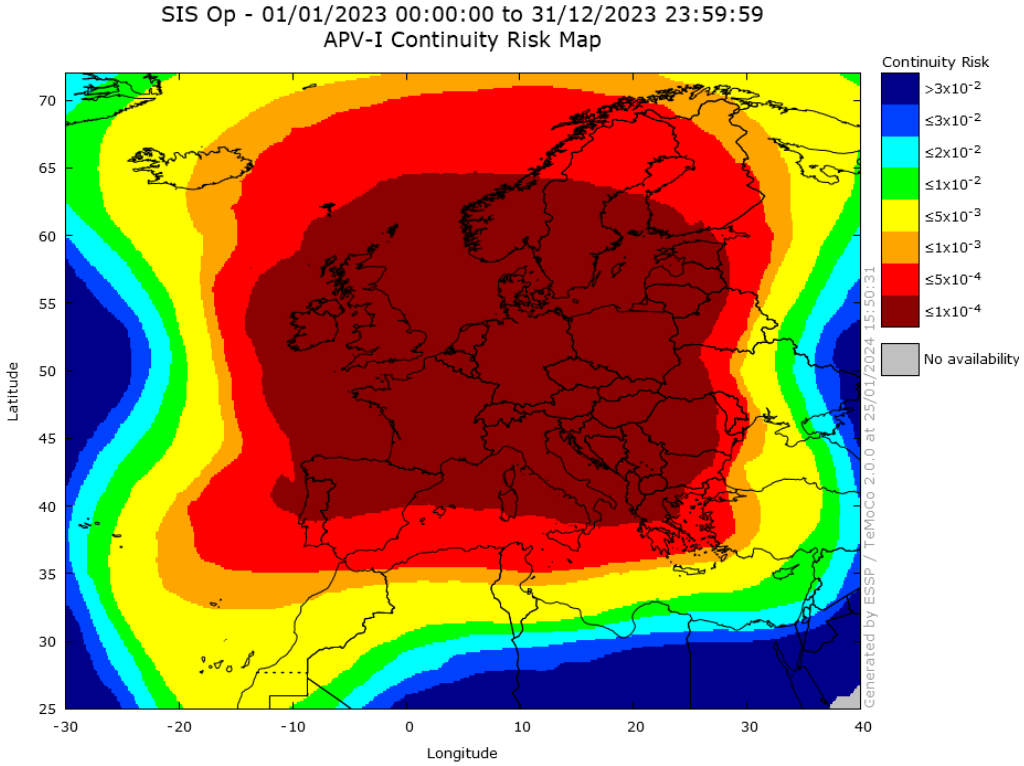

Figure 16 – APV-I Continuity Risk from 01/01/23 to 31/12/23

The APV-I continuity performance has been in line with availability: lower than 5·10-4 over the center of the APV-I Service Area[9] with underperformances observed mainly on the northern and southern borders.

[9] 5·10-4 APV-I Service Area is the 5·10-4 APV-I continuity risk area depicted in Figure 10, obtained from the EGNOS Safety of Life SDD v3.5.

3.3.5 APV-I Continuity – Achievement against target values

The combination of the 5.10-4 APV-I Continuity Risk map and the 5·10-4 APV-I Service Area is shown in Figure 17:

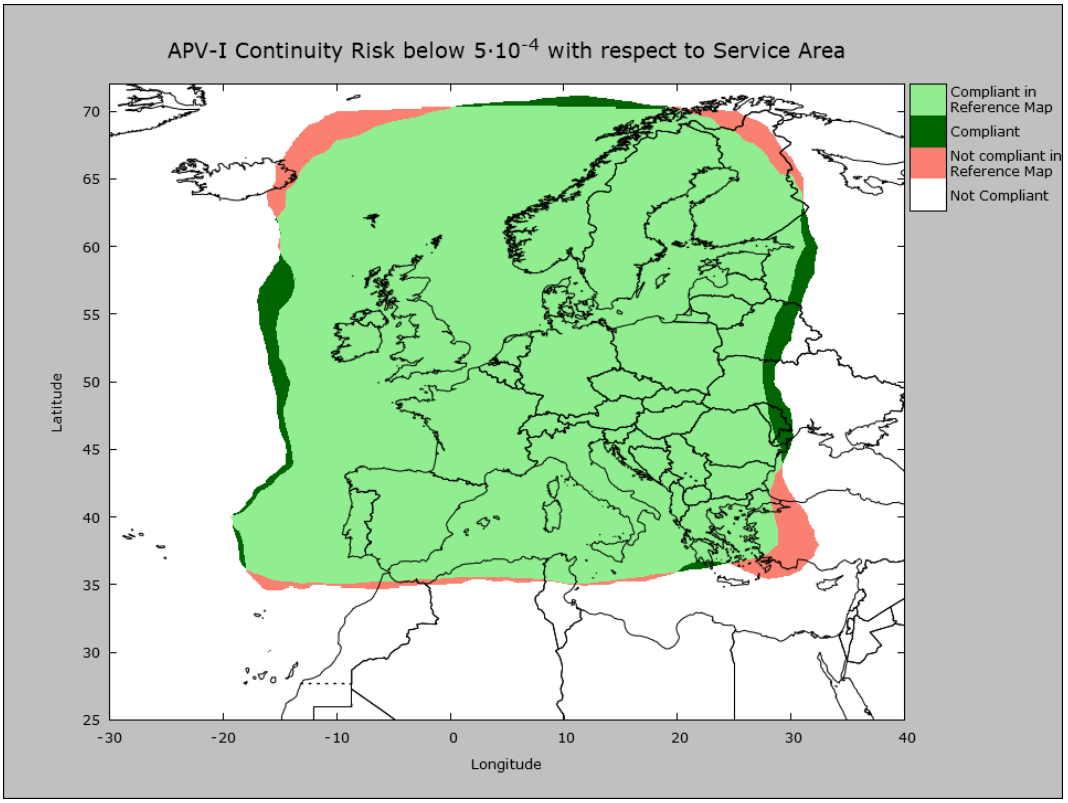

Figure 17 – APV-I Continuity Risk (5·10-4) map regarding the 5·10-4 APV-I Service Area – from 01/01/23 to 31/12/23

In the picture, the legend should be read as follows:

- Compliant in Reference Map: the part of the Service Area where APV-I continuity was above 5·10-4.
- Compliant: the area outside the Service Area where APV-I continuity was also above 5·10-4 (coverage extension regarding commitment).
- Not compliant in Reference Map: the part of the Service Area where APV-I continuity was lower than 5·10-4.
- **Not compliant (white):** any other area outside the Service Area where APV-I continuity is lower than 5·10-4.

Using the SDD v3.5 map as a reference, the percentage of points compliant with the 5·10-4 APV-I Service Area (5·10-4/15sec) is **94.01%.** Note that the comparison regarding the SDD SoL commitment map is included for information purposes. It must be considered that the commitment map is a monthly reference, whereas the reporting period is one year.

3.4 SoL Service – EGNOS Localizer Performance with Vertical guidance to a decision altitude of 200 FT (LPV-200)

Figure 18 and Figure 19 show the minimum performance expected from EGNOS for LPV-200 availability and continuity, as defined in the EGNOS SoL Service Definition Document.

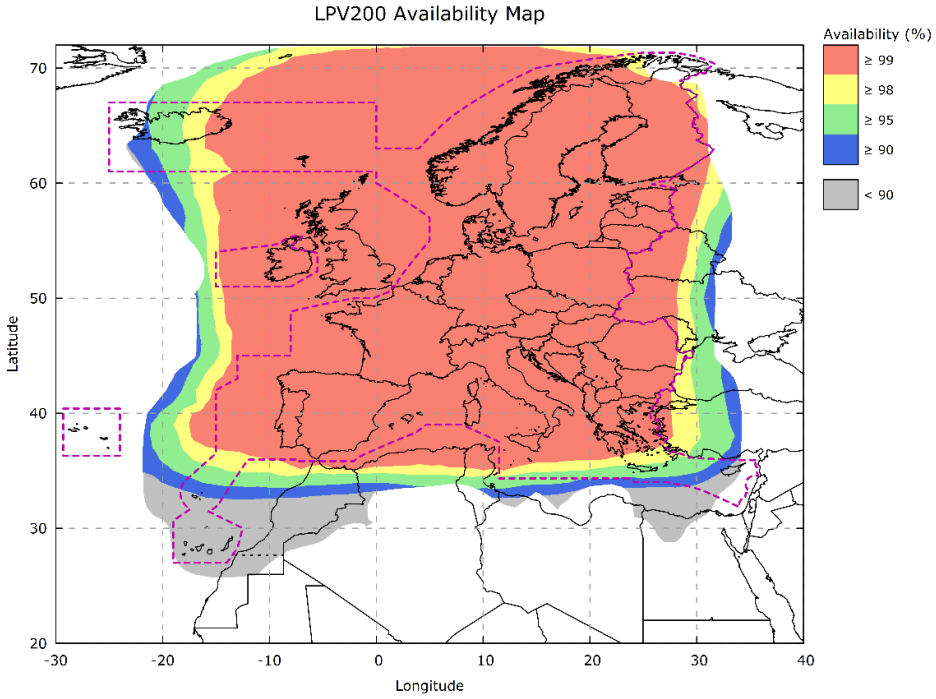

Figure 18 – LPV200 Availability map – Expected minimum performance (SoL SDD v3.5)

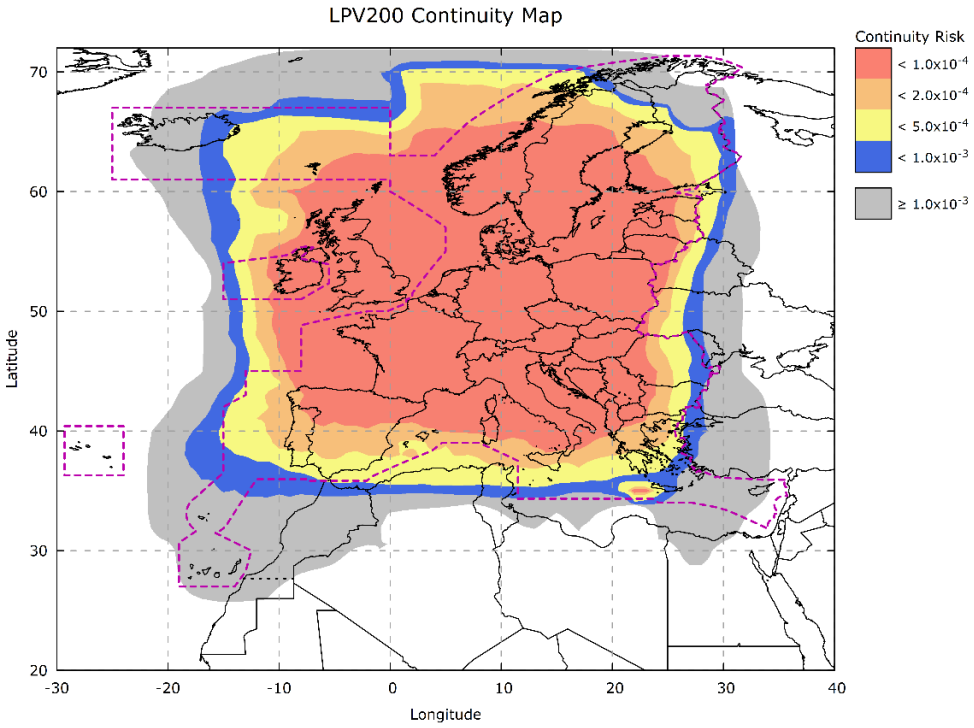

Figure 19 – LPV200 Continuity map – Expected minimum performance (SoL SDD v3.5)

These values correspond to the expected performance measured by a fault-free receiver using all GPS satellites in view over one month and all operational EGNOS GEOs.

The LPV-200 performance achieved during the reporting period is conveyed below. Additionally, LPV-200 performance is reported in the EGNOS Monthly Performance reports, which are available on the EGNOS User Support website.

3.4.1 LPV-200 availability

EGNOS LPV-200 Availability *is defined as the percentage of epochs in the period in which the Protection Level (both HPL and VPL) is below Alert Limits for this LPV-200 service (HAL: 40m; VAL: 35m) over the total period.*

Figure 20 shows the LPV-200 availability for the combination of operational GEOs for the period of January 2023 to December 2023:

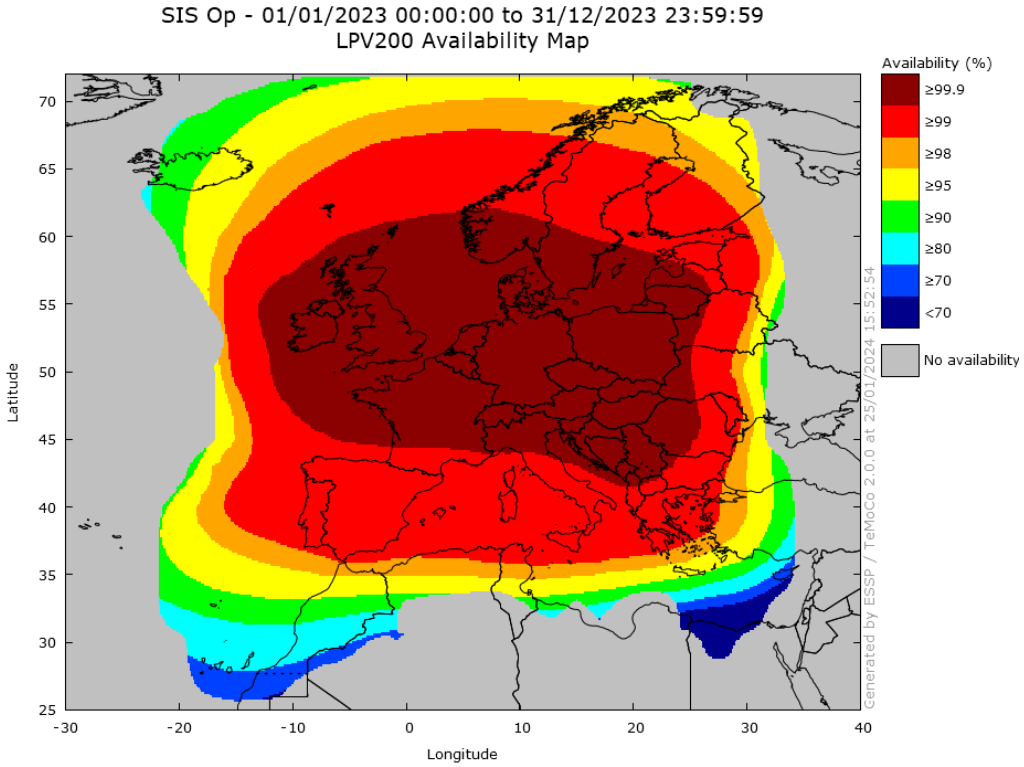

Figure 20 – LPV-200 Availability from 01/01/23 to 31/12/23

The LPV-200 availability performance suffered some degradations during the reporting period, mainly due to ionospheric activity (as explained in section 2.2 greater than 99% over the centre of LPV-200 99% Service Area[10], with the degradation focused on the northern and southern borders.

[10] 99% LPV-200 Service Area is the 99% LPV-200 availability area shown in Figure 18, obtained from the EGNOS Safety of Life SDD v3.5.

Figure 21 shows the annual LPV-200 availability compliance against the target at airports with published EGNOS-based operations:

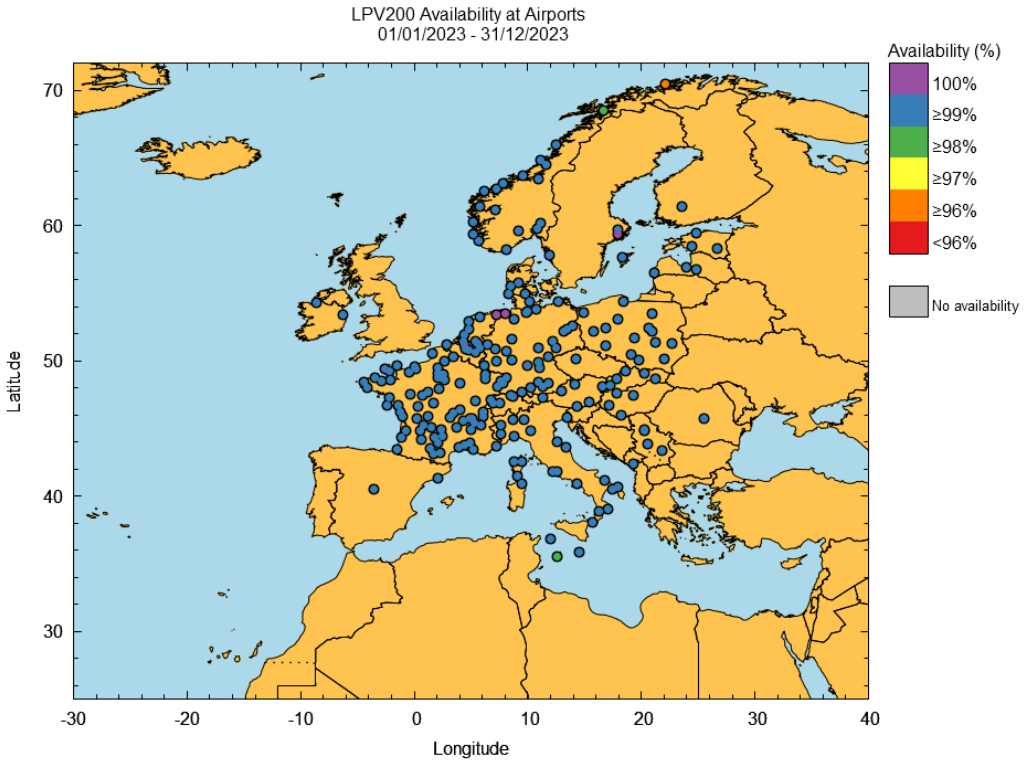

Figure 21 – LPV-200 Availability compliance at airports with published EGNOS-based operations from 01/01/23 to 31/12/23

In addition, the LPV200 service availability commitment, according to the SoL SDD, was met at all airports with EGNOS-based operations except at:

- Harstad Narvik Evenes (ENEV), Hasvik (ENHK) in Norway.
- Lampedusa (LICD).

For additional information, please refer to the relevant Monthly Performance Reports.

3.4.2 LPV-200 availability – Achievement against target value

In this section, the compliance of LPV-200 availability is analysed by comparing the performance to the Reference Map of the Service Area [RD-2]. Figure 22 shows the combination between the 99% LPV-200 Availability map and the 99% LPV-200 Service Area[10]:

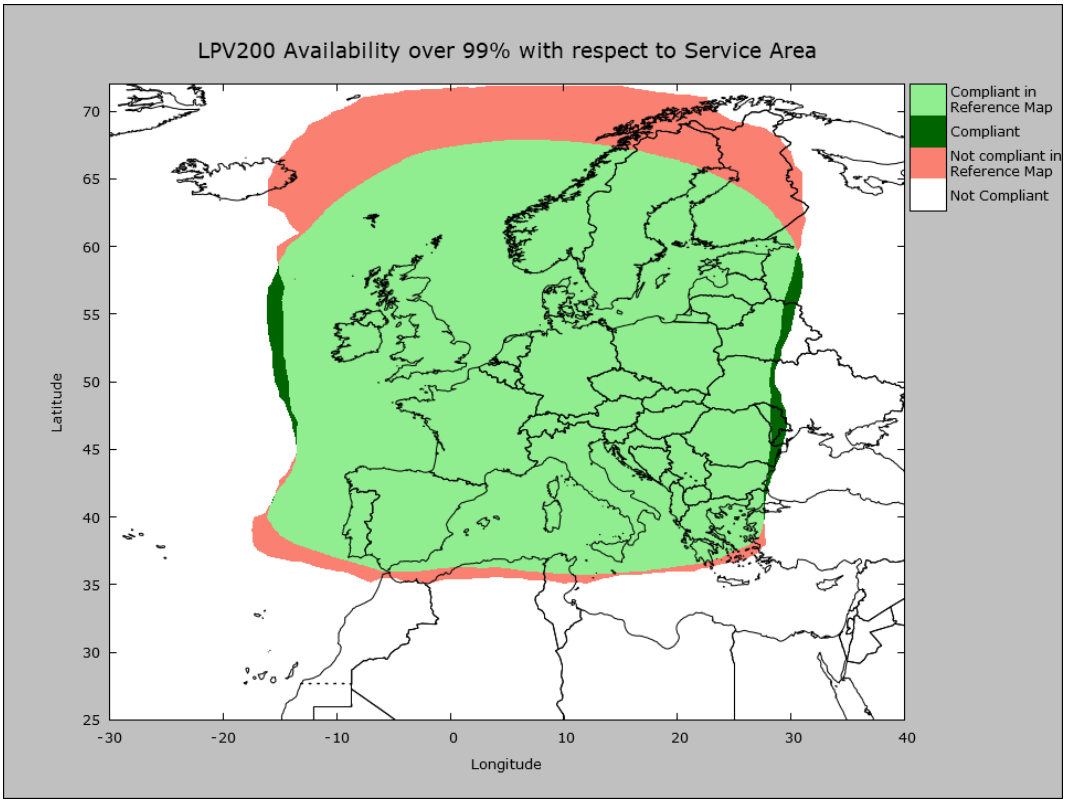

Figure 22 – LPV-200 Availability map regarding the Service Area[10] – from 01/01/23 to 31/12/23

In the picture, the legend should be read as follows:

- Compliant in Reference Map: the part of the Service Area where NPA Availability was above 99% (target).
- Compliant: the area outside the Service Area where NPA Availability was also above 99% (coverage extension regarding the commitment).
- Not compliant in Reference Map: the part of the Service Area where NPA Availability was lower than 99%.
- **Not compliant (white):** any other area outside the Service Area where NPA Availability is lower than 99% (target).

Based on the EGNOS Safety-of-Life SDD v3.5 map, the percentage of points meeting the 99% LPV-200 Service Area[10] is **82.32%.** The area over the northern border and the south-west deviated from the SDD commitment for reasons similar to the ones explained in section 3.3.2.

Note that the SDD SoL commitment map comparison is included for information purposes. The commitment map is a monthly reference, whereas the reporting period is one year; therefore, this comparison must be interpreted with care.

3.4.3 LPV-200 Integrity events

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

No integrity events were detected.

The ***Safety Index*** *is defined as the Navigation System Error versus the Protection Level ratio (assuming PA algorithms to compute xNSE and xPL) for each second. If the xPE/xPL ratio is over 1, a Misleading Information situation has occurred.*

Table 5 shows the maximum HSI and VSI of the year 2023 at each RIMS inside the LPV-200 Service Area (see Figure 18 and Figure 19). In addition, Stanford plots are available on the operations website.

Station	HSI	VSI	Station	HSI	VSI
Agadir	0.39	0.30	La Palma	0.32	0.27
Aalborg	0.33	0.38	Lisbon	0.33	0.30
Athens	0.26	0.35	Madeira	0.34	0.31
Berlin	0.33	0.29	Malaga	0.35	0.37
Canary Island	0.54	0.30	Palma de Mallorca	0.33	0.29
Cork	0.26	0.32	Reykjavik	0.22	0.29
Catania	0.33	0.25	Roma	0.32	0.25
Djerba	0.50	0.28	S. de Compostela	0.33	0.28
Egilsstadir	0.29	0.30	Sofia	0.35	0.35
Glasgow	0.27	0.35	Swanwick	0.29	0.37
Golbasi	0.26	0.22	Toulouse	0.28	0.29
Gävle	0.30	0.34	Trondheim	0.30	0.34
Jan Mayen	0.30	0.36	Tromsoe	0.30	0.39
Kuusamo	0.26	0.35	Warsaw	0.32	0.31
Lappeenranta	0.28	0.32	Zürich	0.30	0.34

Table 5 – EGNOS LPV-200 Safety Index (maximum) at reference stations

Figure 23 and Figure 24 show the HSI and VSI histograms for each second when collecting measurements from the different EGNOS stations and for both operational GEOs over the reporting period.

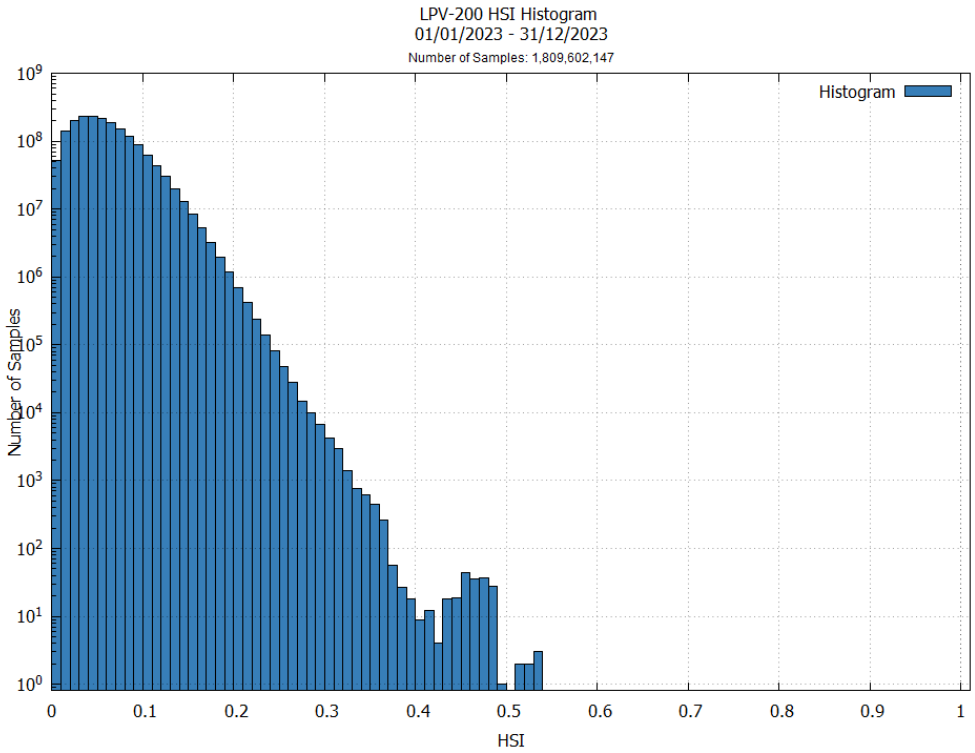

Figure 23 – EGNOS LPV-200 Horizontal Safety Index

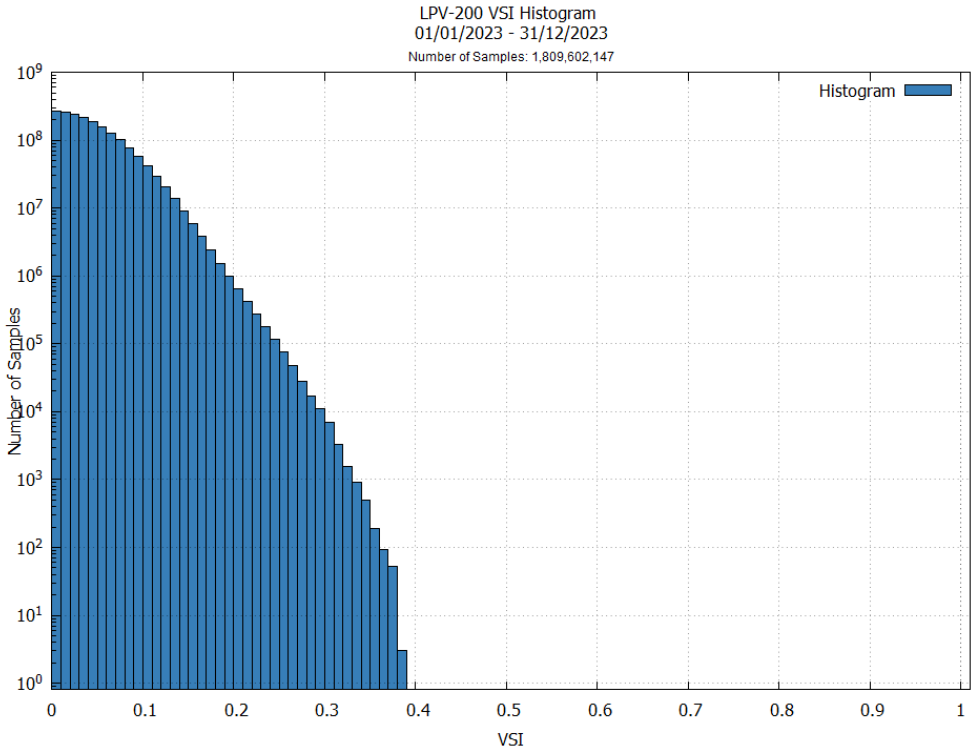

Figure 24 – EGNOS LPV-200 Vertical Safety Index

Figure 23 and Figure 24 show that the horizontal and vertical safety indices for LPV-200 remained below 0.55 and 0.39, respectively, for all stations.

3.4.4 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 a valid and available LPV-200 navigation solution. A single continuity event occurs if the system is available at the start of the operation and becomes unavailable in at least one of the following 15 seconds.*

Figure 25 shows the GEO combined LPV-200 continuity risk for the reporting period:

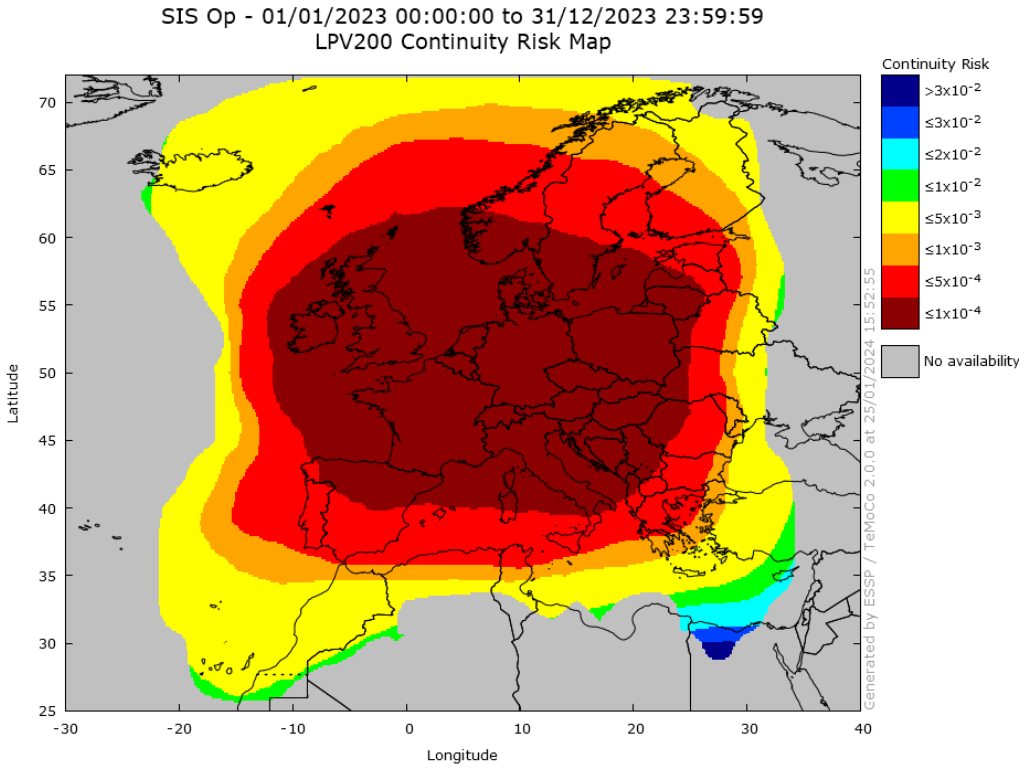

Figure 25 – LPV-200 Continuity Risk from 01/01/23 to 31/12/23[11]

The LPV200 continuity performance was met in the center of Europe during the reporting period: the entire LPV200 5·10-4 Service Area[12] is covered except for some border areas, mainly over the north-east, north-west and south-east.

[11] The grey colour identifies regions outside the LPV-200 Service area as defined in the EGNOS Safety of Life SDD v3.5.

[12] 5·10-4 LPV200 Service Area is the 5·10-4 LPV200 continuity risk area shown in Figure 19, obtained from the EGNOS Safety of Life SDD v3.5.

3.4.5 LPV-200 Continuity – Achievement against target values

Figure 26 shows the combination of the 5.10-4 LPV-200 Continuity Risk map and the Service Area[12]:

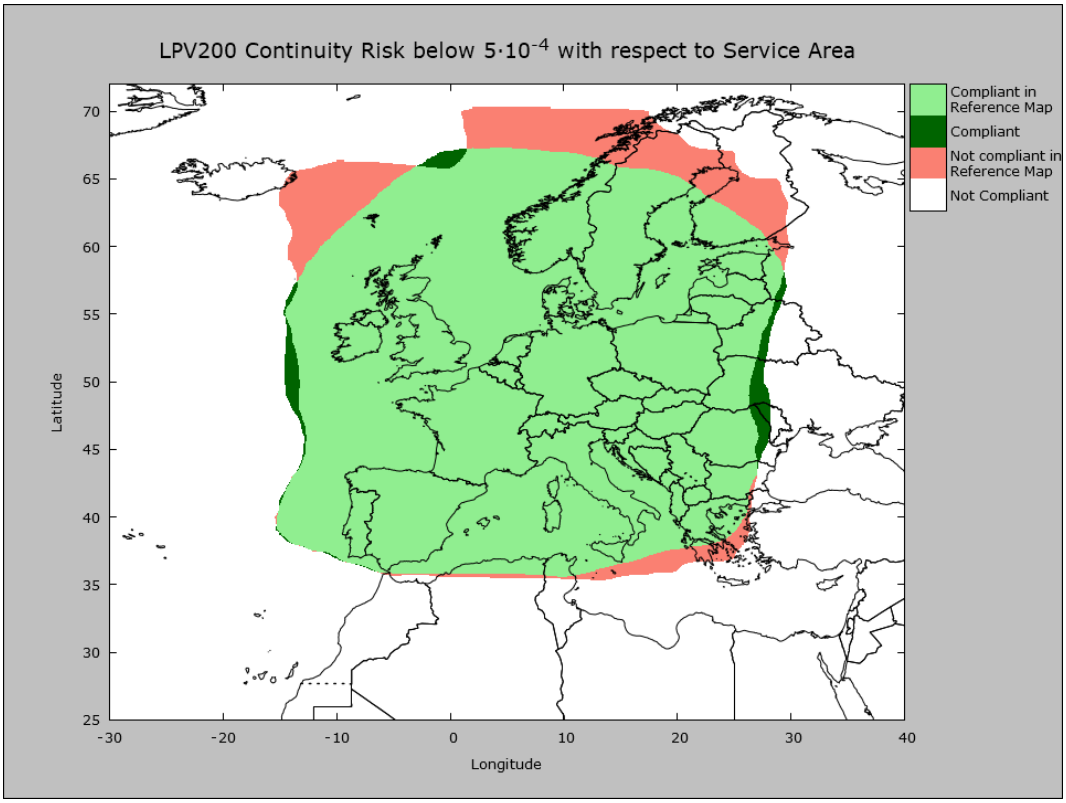

Figure 26 – LPV-200 Continuity Risk (5·10-4) map regarding the reference map – from 01/01/23 to 31/12/23

In the picture, the legend should be read as follows:

- Compliant in Reference Map: the part of the Service Area[12] where LPV-200 continuity was above 5·10-4.
- Compliant: the area outside the Service Area[12] where LPV-200 continuity was also above 5·10-4 (coverage extension regarding the commitment).
- Not compliant in Reference Map: the part of the Service Area[12] where LPV-200 continuity was lower than 5·10-4.
- **Not compliant (white):** any other area outside the Service Area[12] where LPV-200 continuity is lower than 5·10-4.

Considering the SDD v3.5 map used as a reference, the percentage of points compliant with the 5·10-4 LPV-200 Service Area (5.10-4/15sec) is **86.85%.** Note that the comparison concerning the SDD SoL commitment map is included for information purposes. The commitment map is a monthly reference, whereas the reporting period is one year; therefore, this comparison must be interpreted with care.

3.4.6 EGNOS LPV-200 vertical accuracy

Compared to APV-I, LPV-200 is based on more stringent performance requirements, such as a Vertical Navigation System Error (VNSE) of 4 m (95%) and a Vertical Alert Limit (VAL) of 35 m. In addition, specific requirements are defined in terms of the probability of the VNSE exceeding 10 m in nominal system operation conditions, set to 10-7/per approach or 15 m in degraded system operation conditions, defined as a 10-5/per approach.

An Accuracy Major Event (AME) occurs whenever the instantaneous VNSE exceeds 10 m in nominal conditions or 15 m under degraded scenarios.

Figure 27 shows the histogram and cumulative distribution function of VNSE, computed at the RIMS stations inside the LPV-200 Service Area, for each second over the entire period.

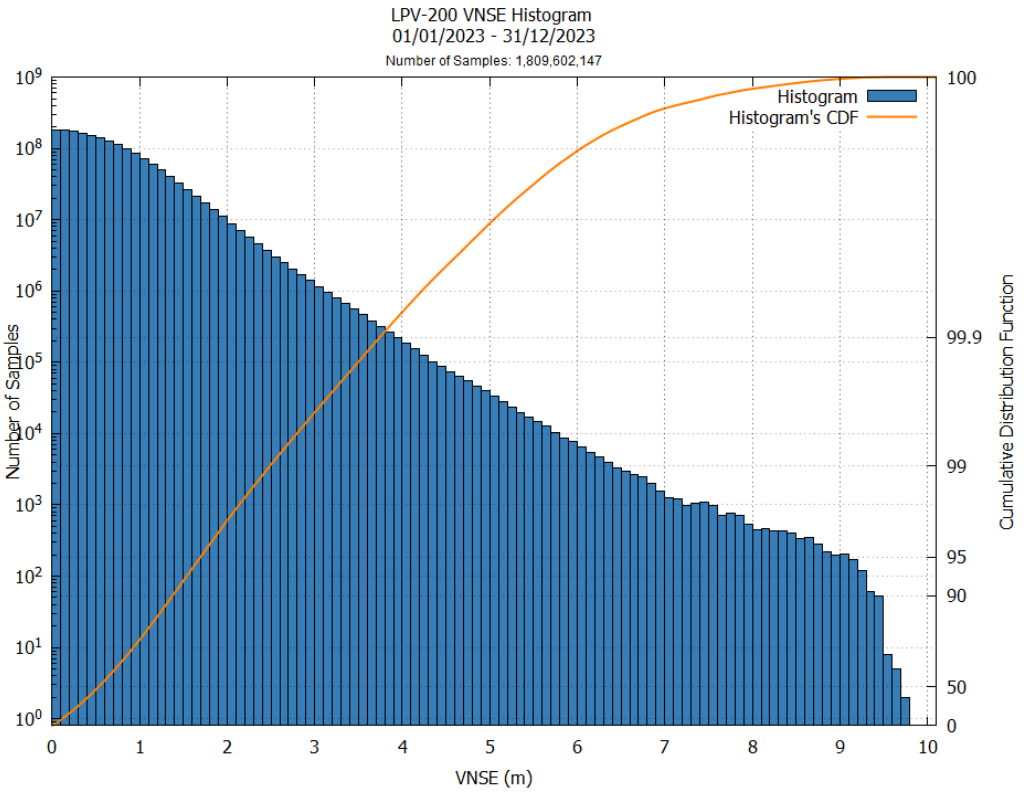

Figure 27 – EGNOS LPV-200 Vertical Accuracy Histogram and Cumulative Probability

As observed, the cumulative results confirm that the vertical accuracy remained below 10 metres during the period analysed. In other words, no AME took place during this period. However, it is observed that there are some VNSE values over 8 meters (near AMEs), mainly due to high geomagnetic activity. The 95th percentile is around 1.7 metres.

3.4.7 EGNOS LPV-200 accuracy extrapolated at 10-7/150 s

This section presents the results of extrapolating each station's accuracy performance to 10-7/150 s. This extrapolation enables characterising the accuracy distribution tails using a Gaussian extrapolation applied to the vertical navigation error.[13]

Figure 28 presents the values obtained from 1 January 2023 to 31 December 2023, using values obtained from both operational GEOs. For this period, all RIMS within the LPV-200 Service Area exhibit extrapolated accuracy values within the requirement: Pr (VNSE>10 m) < 10-7/150 s.

For the analysis period, the extrapolated accuracy tail at values of 10-7/150 s for RIMS within the LPV-200 commitment is as follows:

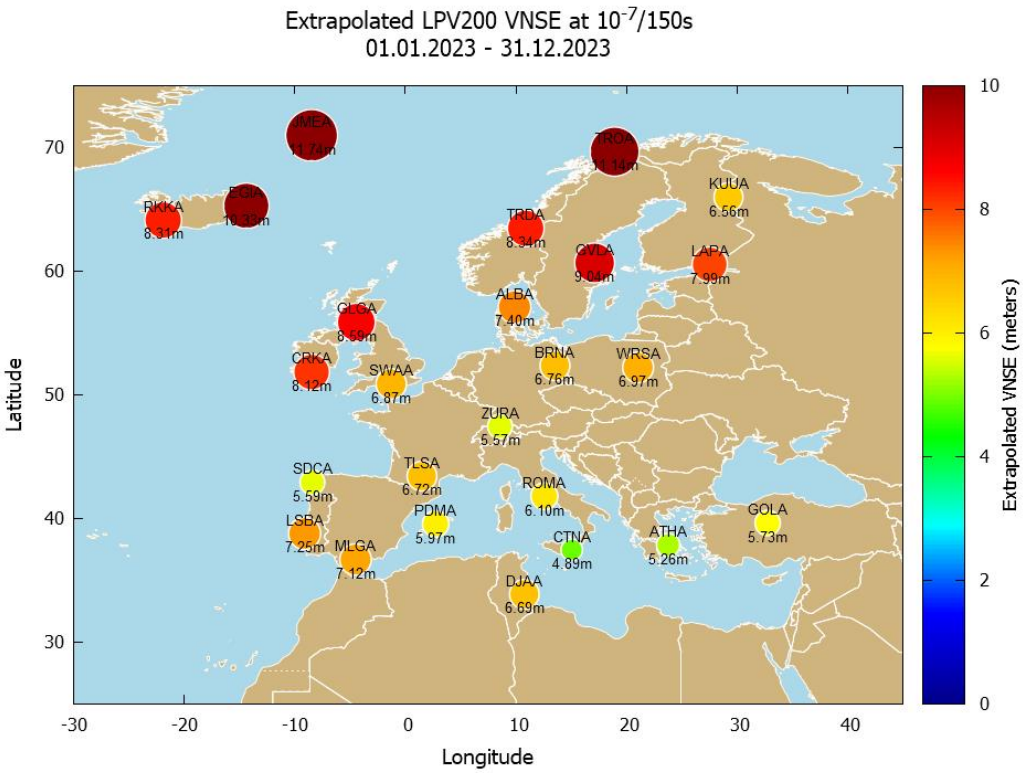

Figure 28 – Extrapolated VNSE at 10-7/150 s in the RIMS within the LPV-200 commitment

The highest value is 11.74m, obtained for RIMS JME, and the extrapolated VNSE value is above 10 meters for RIMS EGIA, JMEA, and TROA. The detailed analysis of the causes that affected each RIMS is linked to geomagnetic activity.

[13] An over-bounding Gaussian distribution is computed (σbound) using the cumulative VNSE distribution, which enables the VNSE bound to be extrapolated to the required probability of 10-7/150 s to be obtained. For additional details on the method used, please refer to "SBAS CAT-I available in Europe: LPV-200 commitment area and performance results" [ESSP SAS, ENC GNSS 2016].

3.5 Open Service (OS)

The EGNOS OS is qualified by defining the minimum compliance area where, 99% of the time, users can calculate their position, and the accuracy performance is better than three metres horizontally and four metres vertically. Figure 29 shows the minimum compliance area:

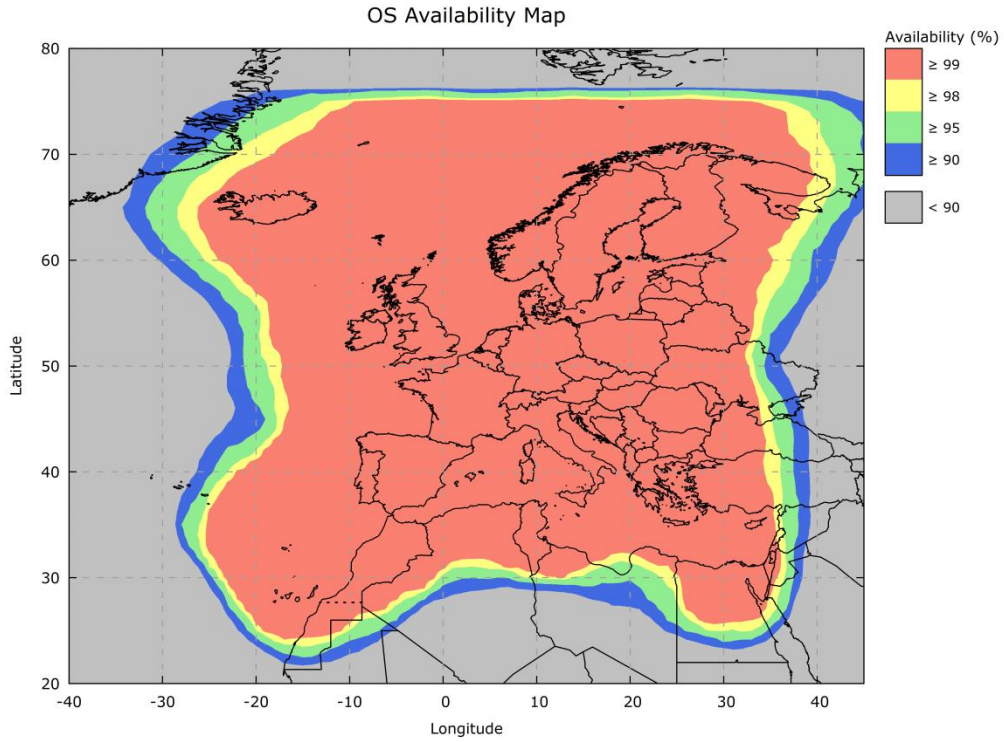

Figure 29 – EGNOS OS compliance area

Further details can be found in the EGNOS OS Service Definition Document version v2.3. Additionally, OS performance is reported through the EGNOS Monthly Performance reports, available on the EGNOS User Support website.

Note that since there were two GEO swaps during the year (see section 3.1), performances presented in this section are computed using GEO PRN 126, from 1 July to 15 August, and GEO PRN 123, for the rest of the year as OP2.

3.5.1 RIMS monitoring network

Figure 30 shows the location of the deployed RIMS:

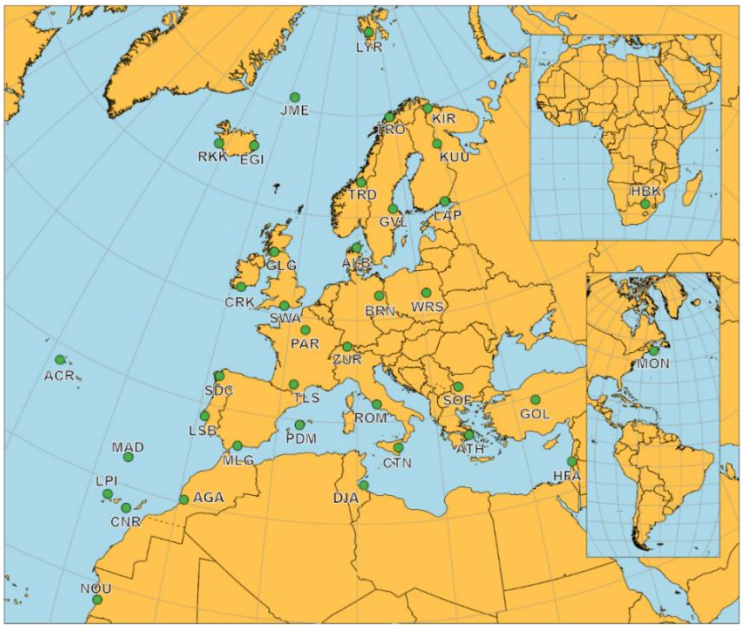

Figure 30 – RIMS locations

The receiver network used to report the Open Service corresponds to the subset of RIMS inside the EGNOS OS SDD commitment map.

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

Table 6 – List of RIMS sites where OS performance is reported

3.5.2 Horizontal and Vertical Accuracy

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

Table 7 provides the accuracy values (95%) in metres measured for the reporting period. The target values are 3 meters for horizontal accuracy and 4 meters for vertical accuracy.

Station	HNSE 95% (m)	VNSE 95% (m)	Station	HNSE 95% (m)	VNSE 95% (m)
Agadir	3.0	2.5	Lappeenranta	1.0	1.8
Aalborg	0.8	1.6	La Palma	3.5	2.8
Athens	1.0	1.5	Lisbon	1.4	1.6
Berlin	0.9	1.5	Madeira	1.8	1.9
Canary Islands	3.6	3.0	Malaga	1.3	1.6
Cork	1.0	1.6	Palma de Mallorca	1.0	1.3
Catania	1.0	1.4	Reykjavik	1.5	2.7
Djerba	1.5	1.8	Roma	1.0	1.4
Egilsstadir	1.1	2.1	S. de Compostela	1.2	1.3
Glasgow	1.0	1.6	Sofia	1.3	1.9
Golbasi	1.1	1.7	Swanwick	1.1	1.7
Gävle	0.9	1.8	Toulouse	1.0	1.3
Haifa	1.8	2.7	Trondheim	0.9	1.9
Jan Mayen	1.5	2.8	Tromsoe	1.3	2.6
Kirkenes	1.3	2.4	Warsaw	1.0	1.6
Kuusamo	0.9	1.9	Zürich	0.9	1.4

Table 7 – EGNOS Open Service accuracy (95%)

The horizontal accuracy results for all the stations remained below 3 metres (95%) except for RIMS in the south-west of the Service Area (AGA, CNR, and LPI), and the vertical accuracy below 4 metres (95%) for all the RIMS.

Figure 31 and Figure 32 show the histogram and cumulative distribution function of the HNSE (Horizontal Navigation System Error) and the VNSE (Vertical Navigation System Error), computed at the stations shown in Table 7 for each second over the entire period across the value range.

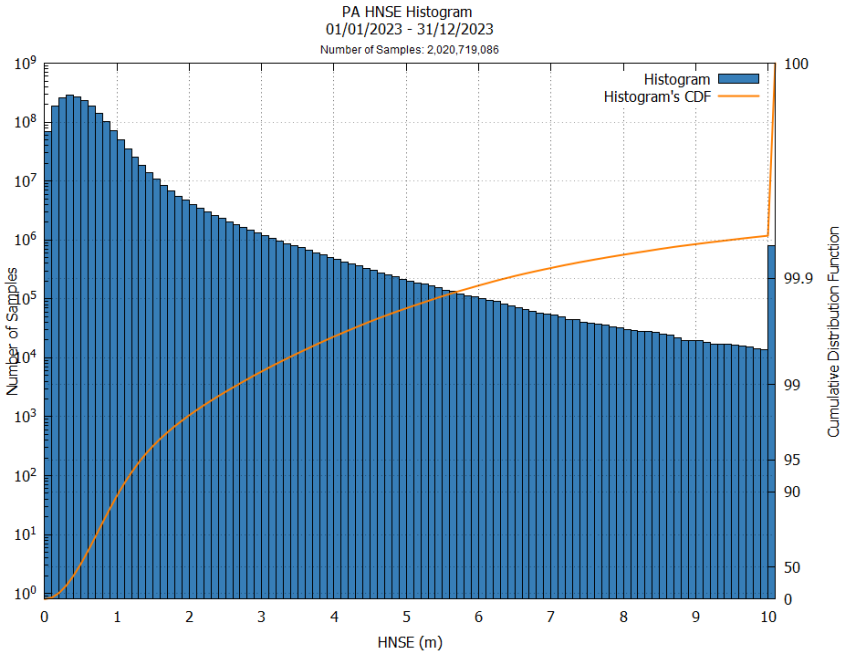

Figure 31 – EGNOS Open Service HNSE Histogram and Cumulative Probability[14]

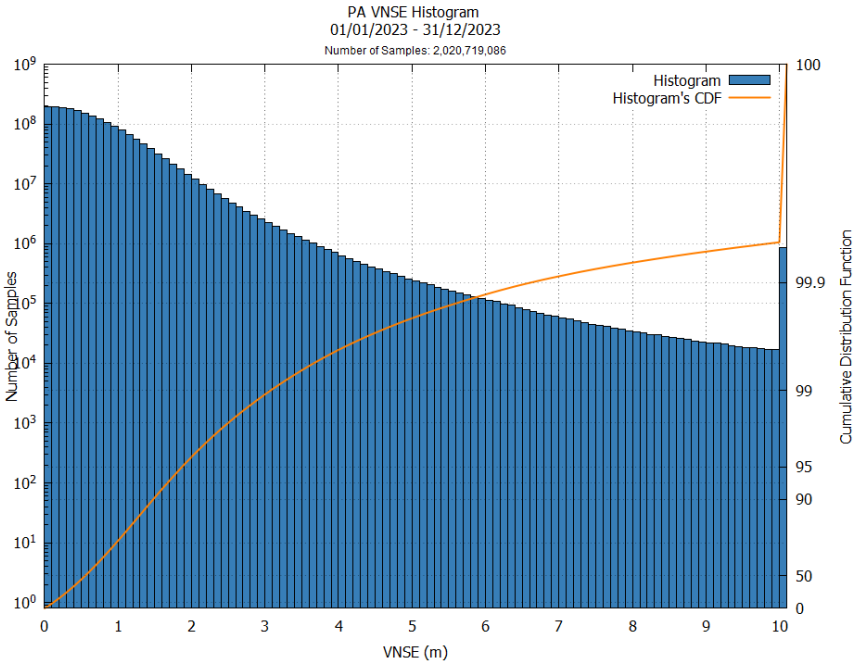

Figure 32 – EGNOS Open Service VNSE Histogram and Cumulative Probability[14]

As shown, the cumulative results confirm the positive values observed at all stations. The 95th percentile of the observed accuracy performance is below 1.3 metres in the horizontal domain and 1.9 metres in the vertical domain.

[14] Note that some periods may have been removed to compute the different histograms presented in this document, corresponding to stations showing poor data quality linked to the local environment. Data removed from histograms correspond to data from RIMS where any OR affecting data quality has been observed, the presence of cycle slips affecting performance is detected, or other data quality issues have been traced as a cause of daily degradations.

Table 8 and Table 9 provide the daily values of monthly maximums for Horizontal and Vertical Accuracy (95%) while using EGNOS messages broadcast by PRN123/PRN126 and PRN136. It is seen that the average value did not meet the commitment for RIMS AGAA, CNRA, LPIA for horizontal and vertical accuracy; MADA for horizontal accuracy; and RIMS JMEA, RKKA for vertical accuracy.

PRN 123/126		01/23	02/23	03/23	04/23	05/23	06/23	07/23	08/23	09/23	10/23	11/23	12/23	Average
AGA	H	4.17	7.36	11.36	5.55	3.70	2.76	3.96	3.45	5.61	8.18	7.18	6.98	5.86
	V	4.48	4.17	7.51	5.92	3.38	2.53	4.17	3.59	5.24	6.32	6.25	11.01	5.38
ALB	H	1.21	1.45	1.17	0.94	0.88	1.01	0.86	0.88	1.61	1.00	1.89	1.86	1.23
	V	2.69	3.18	2.58	2.15	1.79	1.72	1.59	1.86	2.56	1.95	2.76	2.25	2.26
ATH	H	1.02	1.13	1.91	1.41	1.15	1.12	1.19	2.14	1.40	1.86	1.25	1.05	1.39
	V	1.49	1.67	2.08	1.82	1.71	1.86	1.87	2.97	2.20	2.70	1.80	1.48	1.97
BRN	H	1.13	1.27	1.40	1.13	1.03	0.98	0.91	1.07	1.22	1.04	1.62	1.31	1.18
	V	1.86	2.45	2.10	1.69	1.73	1.57	1.56	1.72	1.71	1.95	2.82	2.14	1.94
CNR	H	5.20	11.87	9.62	5.20	4.05	3.39	3.53	5.92	6.48	8.90	10.04	6.66	6.74
	V	4.99	10.02	9.95	4.33	5.44	5.40	6.58	3.40	7.12	8.06	9.27	6.02	6.72
CRK	H	1.15	1.70	1.80	1.19	1.06	1.25	1.04	1.17	1.07	1.13	2.10	1.78	1.37
	V	1.88	2.19	2.22	2.17	1.82	1.71	1.64	1.50	1.85	2.24	2.65	3.33	2.10
CTN	H	1.12	1.43	2.32	1.50	1.18	1.14	1.31	1.36	1.21	1.60	1.38	1.11	1.39
	V	1.58	1.68	1.59	1.67	1.93	1.76	1.97	1.72	1.97	1.97	1.94	1.73	1.79
DJA	H	1.81	2.16	2.66	2.48	1.60	1.41	2.96	2.16	2.59	3.30	4.52	2.12	2.48
	V	1.58	2.11	2.91	3.00	2.39	2.36	2.52	2.51	2.50	3.37	3.57	2.09	2.58
EGI	H	2.28	2.49	2.42	1.26	1.07	0.97	1.17	1.20	1.54	2.23	2.19	2.27	1.76
	V	4.02	4.33	4.42	3.23	2.59	2.95	2.35	2.76	3.25	4.17	5.23	5.61	3.74
GLG	H	1.13	1.63	1.40	1.00	0.96	1.06	1.01	0.91	1.74	1.27	1.81	1.86	1.32
	V	2.31	3.11	2.94	2.15	1.87	1.79	1.51	1.63	2.62	2.20	3.63	3.52	2.44
GOL	H	1.12	1.26	2.95	1.77	1.21	1.21	1.33	1.36	1.20	2.28	1.48	1.19	1.53
	V	2.11	2.10	2.82	2.64	2.09	2.08	2.25	2.38	1.96	4.25	2.04	1.67	2.37
GVL	H	1.55	1.90	1.62	1.15	0.96	0.91	1.08	1.00	1.46	1.29	2.20	2.43	1.46
	V	2.82	3.28	3.27	2.38	2.12	2.03	2.16	2.27	2.62	2.17	3.32	2.55	2.58
HFA	H	1.92	2.12	3.89	1.86	2.13	2.04	3.00	2.60	2.83	2.52	N/A	N/A	2.49
	V	3.38	4.07	4.81	2.77	3.06	3.06	4.01	4.10	3.66	2.66	N/A	N/A	3.56
JME	H	2.47	4.42	3.08	1.95	1.42	1.24	1.46	1.53	1.85	3.10	2.77	2.42	2.31
	V	3.90	5.61	4.95	3.41	3.24	3.48	3.65	3.27	3.43	5.45	5.44	5.05	4.24
KIR	H	2.01	3.89	3.05	1.67	1.11	0.93	1.02	1.40	1.89	2.65	2.19	1.45	1.94
	V	4.40	6.71	4.83	3.20	2.53	2.57	2.82	2.90	3.46	4.36	4.39	3.77	3.83
LAP	H	1.79	3.33	1.74	1.29	1.15	1.13	1.21	1.07	1.58	1.35	2.33	1.93	1.66
	V	3.11	4.37	3.46	2.35	2.14	1.95	2.32	2.81	2.50	2.26	3.87	3.05	2.85
LPI	H	5.86	10.94	8.00	4.92	4.13	3.56	3.69	4.39	6.92	7.96	8.40	5.60	6.20
	V	4.60	8.66	6.61	4.77	5.29	3.96	6.03	3.27	5.71	6.17	8.56	4.15	5.65
LSB	H	1.42	2.49	2.22	2.08	1.66	1.52	1.62	1.39	1.56	2.10	2.03	1.64	1.81
	V	1.66	2.11	2.29	2.99	1.60	2.00	1.83	1.78	1.90	2.30	2.46	2.48	2.12
MAD	H	2.89	6.76	5.33	2.41	3.55	2.14	3.21	2.61	3.48	3.59	4.85	2.86	3.64
	V	2.32	4.58	4.37	3.78	2.14	2.74	2.58	2.75	4.09	3.37	4.79	2.73	3.35
MLG	H	1.35	2.03	2.82	1.92	1.59	1.35	2.02	2.15	2.17	1.83	3.44	1.75	2.04
	V	1.45	2.17	2.78	2.77	1.62	1.98	2.01	1.99	2.60	1.87	5.14	2.28	2.39
PDM	H	1.13	1.33	1.49	1.67	1.44	1.13	1.17	1.11	1.34	1.48	1.64	1.35	1.36
	V	1.23	1.77	1.79	1.53	1.42	1.41	1.39	1.45	1.37	1.57	2.62	1.69	1.60
RKK	H	3.11	4.15	2.81	1.79	1.86	1.53	1.62	1.74	2.22	2.95	3.49	3.42	2.56
	V	4.78	6.75	5.93	3.86	2.95	3.26	3.07	3.20	5.65	5.00	6.24	6.98	4.81
ROM	H	0.96	1.18	1.52	1.24	1.21	1.17	1.09	1.01	0.97	1.31	0.99	1.22	1.16
	V	1.53	1.82	2.14	1.57	1.59	1.77	1.55	1.48	1.53	1.56	2.15	1.47	1.68
SDC	H	1.37	1.49	1.92	2.04	1.42	1.43	1.41	1.21	1.37	1.44	1.40	1.37	1.49
	V	1.25	1.70	1.73	1.97	1.48	1.77	1.88	1.47	1.64	1.79	2.17	2.03	1.74
SOF	H	1.34	1.58	1.96	1.65	1.61	1.55	1.45	1.39	1.50	1.65	1.38	2.61	1.64
	V	2.18	2.22	3.64	2.15	2.24	2.20	1.99	2.08	2.07	2.12	1.96	2.65	2.29
SWA	H	1.33	1.52	1.55	1.25	1.13	1.36	1.21	1.11	1.10	1.25	1.71	1.51	1.34
	V	1.97	2.19	2.20	2.03	2.14	2.06	1.76	1.68	1.95	2.13	2.96	2.57	2.14
TLS	H	1.02	1.20	1.43	1.51	1.24	1.18	1.17	0.98	1.05	1.18	1.08	1.31	1.20
	V	1.38	1.94	1.93	1.78	1.88	1.54	1.41	1.37	1.35	1.59	2.26	1.51	1.66
TRD	H	1.77	2.05	1.83	1.14	0.95	1.00	1.14	1.25	1.33	1.52	2.03	1.49	1.46
	V	4.08	3.45	4.21	3.06	2.19	1.98	2.33	2.13	3.89	3.11	4.85	2.87	3.18
TRO	H	1.95	2.98	2.25	1.54	1.14	1.28	1.24	1.60	1.91	2.26	2.24	1.81	1.85
	V	3.70	5.37	4.21	3.31	2.90	3.20	3.14	3.27	3.56	3.92	4.52	3.63	3.73
WRS	H	1.18	1.18	1.44	1.22	1.09	0.95	0.98	1.09	1.31	1.14	1.72	1.37	1.22
	V	2.39	2.30	2.27	1.87	1.88	1.73	1.62	2.08	1.96	2.04	2.81	2.38	2.11
KUU	H	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.25	1.93	2.09
	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.89	2.75	3.32
ZUR	H	0.96	1.06	1.32	1.21	1.15	1.23	1.00	0.97	0.92	1.10	1.15	1.42	1.12
	V	1.68	2.09	1.88	1.81	1.82	1.68	1.67	1.54	1.42	1.66	2.76	1.43	1.79

Table 8 – Monthly Horizontal/Vertical Accuracy at RIMS-A sites for PRN 123/126 (in metres). Values in red are below commitment and green above the commitment (3 m for horizontal and 4 m for vertical).

PRN 136		01/23	02/23	03/23	04/23	05/23	06/23	07/23	08/23	09/23	10/23	11/23	12/23	Average
AGA	H	4.12	7.45	11.15	5.50	3.72	2.75	3.95	3.92	5.63	7.73	7.12	6.80	5.82
	V	4.22	4.29	8.11	5.70	3.52	2.55	4.16	3.55	5.13	6.21	6.30	11.02	5.40
ALB	H	1.19	1.47	1.16	0.93	0.88	1.01	0.87	0.88	1.55	1.01	1.82	1.90	1.22
	V	2.73	3.18	2.58	2.12	1.81	1.71	1.58	1.85	2.55	1.96	3.09	2.24	2.28
ATH	H	1.01	1.13	1.94	1.40	1.14	1.11	1.20	1.87	1.41	1.83	1.36	1.06	1.37
	V	1.47	1.66	2.06	1.84	1.75	1.87	1.86	2.88	2.21	2.66	1.98	1.49	1.98
BRN	H	1.13	1.28	1.38	1.13	1.01	0.99	0.91	1.06	1.23	1.05	1.53	1.31	1.17
	V	1.86	2.43	2.08	1.69	1.64	1.55	1.54	1.70	1.72	1.97	2.89	2.17	1.94
CNR	H	5.27	10.47	9.17	5.24	3.96	3.51	3.42	6.15	6.48	9.16	9.64	6.96	6.62
	V	4.98	10.04	9.86	4.48	5.42	5.38	6.44	3.42	7.16	7.85	9.25	6.37	6.72
CRK	H	1.16	1.70	1.81	1.19	1.05	1.25	1.04	1.17	1.06	1.14	2.05	1.76	1.37
	V	1.91	2.22	2.20	2.17	1.81	1.73	1.63	1.52	1.86	2.24	2.31	3.30	2.08
CTN	H	1.11	1.40	2.30	1.48	1.16	1.14	1.32	1.34	1.20	1.59	1.67	1.12	1.40
	V	1.58	1.71	1.60	1.62	1.96	1.77	1.98	1.72	1.94	1.99	2.03	1.73	1.80
DJA	H	1.77	2.13	2.68	2.54	1.60	1.43	2.92	2.22	2.69	2.99	3.18	2.11	2.36
	V	1.60	2.10	2.90	3.15	2.44	2.37	2.53	2.46	2.52	3.30	3.26	2.09	2.56
EGI	H	2.31	2.51	2.48	1.27	1.08	0.97	1.15	1.24	1.54	2.23	2.58	2.29	1.80
	V	4.05	4.46	4.63	3.20	2.59	2.98	2.36	2.41	3.28	4.27	5.50	5.58	3.78
GLG	H	1.12	1.64	1.41	0.99	0.94	1.08	1.02	0.92	1.75	1.27	1.64	1.88	1.31
	V	2.32	3.12	2.96	2.15	1.79	1.78	1.51	1.62	2.62	2.21	3.13	3.51	2.39
GOL	H	1.07	1.26	2.94	1.78	1.21	1.21	1.36	1.38	1.20	2.27	1.79	1.19	1.56
	V	2.05	2.10	2.84	2.69	2.11	2.07	2.26	2.32	1.96	4.24	2.16	1.68	2.37
GVL	H	1.58	1.94	1.61	1.17	0.94	0.91	1.08	0.99	1.47	1.28	2.31	2.40	1.47
	V	2.83	3.28	3.20	2.41	2.11	2.04	2.17	2.31	2.94	2.17	2.98	2.54	2.58
HFA	H	1.87	2.00	3.95	1.87	2.14	2.00	2.96	2.54	2.81	2.53	N/A	N/A	2.47
	V	3.37	4.06	4.65	2.81	3.05	2.94	3.95	4.04	3.55	2.65	N/A	N/A	3.51
JME	H	2.47	4.68	3.10	1.87	1.45	1.26	1.42	1.54	1.80	3.12	3.20	2.41	2.36
	V	4.05	5.40	5.17	3.39	3.22	3.52	3.58	3.12	3.79	5.38	5.65	4.93	4.27
KIR	H	1.96	3.91	3.13	1.72	1.12	0.95	1.04	1.42	1.89	2.62	3.70	1.46	2.08
	V	4.44	6.70	4.93	3.21	2.57	2.56	2.84	2.90	3.51	4.22	5.85	3.74	3.96
LAP	H	1.81	3.33	1.75	1.31	1.14	1.11	1.21	1.08	1.55	1.32	2.60	1.93	1.68
	V	3.11	4.27	3.46	2.36	2.12	1.95	2.31	2.91	2.79	2.31	3.51	3.05	2.85
LPI	H	5.79	10.36	7.80	4.93	4.17	3.60	3.65	4.55	8.01	7.83	8.42	5.77	6.24
	V	4.51	8.44	6.50	4.75	5.32	3.91	5.77	3.19	5.78	5.98	7.16	4.18	5.46
LSB	H	1.43	2.50	2.22	2.09	1.64	1.53	1.61	1.40	1.55	2.13	2.01	1.65	1.81
	V	1.67	1.97	2.30	3.02	1.62	2.02	1.83	1.79	1.94	2.34	2.46	2.49	2.12
MAD	H	2.82	6.72	4.99	2.43	3.54	2.10	3.18	2.56	3.45	3.55	4.86	2.86	3.59
	V	2.36	4.57	4.22	2.44	2.15	2.72	2.57	2.71	4.13	3.28	4.76	2.85	3.23
MLG	H	1.32	2.02	2.77	2.00	1.59	1.35	2.05	2.19	2.22	1.81	3.42	1.72	2.04
	V	1.45	2.11	2.85	2.90	1.64	2.00	2.01	1.97	2.54	1.85	5.07	2.29	2.39
PDM	H	1.10	1.36	1.52	1.69	1.42	1.14	1.18	1.11	1.30	1.49	1.42	1.36	1.34
	V	1.21	1.72	1.84	1.51	1.41	1.44	1.39	1.45	1.40	1.55	2.29	1.69	1.58
RKK	H	3.20	3.87	2.87	1.86	1.98	1.58	1.72	1.53	2.20	2.79	3.45	3.44	2.54
	V	5.13	6.52	5.86	3.80	3.06	3.43	3.16	3.04	5.58	5.14	6.20	7.12	4.84
ROM	H	0.94	1.19	1.51	1.25	1.21	1.16	1.08	1.01	0.96	1.33	1.08	1.23	1.16
	V	1.51	1.81	2.19	1.53	1.59	1.66	1.56	1.49	1.54	1.57	2.02	1.46	1.66
SDC	H	1.18	1.50	1.92	2.04	1.41	1.42	1.41	1.21	1.23	1.44	1.52	1.35	1.47
	V	1.28	1.68	1.79	1.99	1.46	1.76	1.89	1.47	1.64	1.79	1.91	2.02	1.72
SOF	H	1.33	1.62	1.96	1.66	1.58	1.54	1.45	1.39	1.48	1.66	1.46	2.65	1.65
	V	2.17	2.20	3.66	2.14	2.22	2.20	2.00	2.05	2.23	2.10	2.02	2.66	2.30
SWA	H	1.32	1.52	1.55	1.25	1.11	1.37	1.21	1.11	1.10	1.27	1.51	1.50	1.32
	V	1.97	2.22	2.19	2.03	2.10	2.05	1.76	1.69	1.96	2.13	2.56	2.57	2.10
TLS	H	1.02	1.20	1.42	1.51	1.22	1.17	1.17	1.00	1.04	1.15	1.11	1.31	1.19
	V	1.35	1.94	1.91	1.77	1.87	1.56	1.40	1.38	1.34	1.54	1.87	1.51	1.62
TRD	H	1.75	2.02	1.86	1.15	0.95	1.00	1.16	1.38	1.32	1.51	2.14	1.51	1.48
	V	4.17	3.41	4.33	3.05	2.17	2.00	2.30	2.14	3.87	3.09	4.33	2.80	3.14
TRO	H	1.95	3.06	2.28	1.59	1.13	1.30	1.19	1.66	1.97	2.23	2.93	1.84	1.93
	V	3.68	5.29	4.18	3.33	2.87	3.18	3.16	3.19	3.51	3.92	5.09	3.64	3.75
WRS	H	1.19	1.21	1.45	1.20	1.09	0.95	0.98	1.08	1.31	1.15	1.60	1.37	1.22
	V	2.36	2.31	2.27	1.86	1.91	1.74	1.64	2.09	1.96	2.04	2.72	2.34	2.10
KUU	H	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.81	1.95	2.38
	V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.81	2.70	3.76
ZUR	H	0.96	1.07	1.31	1.21	1.13	1.23	1.00	0.96	0.91	1.10	1.09	1.42	1.12
	V	1.66	2.06	1.87	1.83	1.81	1.60	1.65	1.55	1.42	1.66	2.50	1.45	1.76

Table 9 – Monthly Horizontal/Vertical Accuracy at RIMS-A sites for GEO136 (in metres). Values in red are below commitment and green above the commitment (3 m for horizontal and 4 m for vertical).

3.5.3 Open Service Availability

EGNOS OS Availability performance *is defined in this document as the percentage of time in the month when the instantaneous HNSE is lower than three metres, and the instantaneous VNSE is lower than four metres over the total number of samples with valid PA navigation solution.*

Table 10 and Table 11 provide the values measured using OP2 (PRN 123/126) and OP1 (PRN 136), respectively.

PRN 123/126	01/23	02/23	03/23	04/23	05/23	06/23	07/23	08/23	09/23	10/23	11/23	12/23	Average
AGA	95.81%	91.06%	84.31%	94.61%	97.96%	99.67%	97.97%	97.92%	92.12%	91.92%	90.70%	95.85%	94.16%
ALB	99.90%	99.91%	99.99%	99.96%	100.00%	100.00%	100.00%	100.00%	99.94%	100.00%	99.94%	100.00%	99.97%
ATH	100.00%	100.00%	99.99%	99.96%	100.00%	100.00%	99.96%	99.65%	99.93%	99.88%	100.00%	100.00%	99.95%
BRN	99.98%	99.95%	100.00%	99.98%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.95%	100.00%	99.99%
CNR	91.98%	82.57%	75.91%	91.27%	95.45%	99.22%	97.53%	97.10%	87.54%	83.92%	84.91%	89.47%	89.74%
CRK	100.00%	99.98%	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.97%	99.97%	99.99%
CTN	100.00%	99.98%	99.89%	99.90%	99.99%	100.00%	99.99%	99.98%	99.95%	99.87%	99.98%	100.00%	99.96%
DJA	99.94%	99.68%	99.18%	99.32%	99.96%	99.96%	99.60%	99.60%	99.39%	98.78%	99.29%	99.99%	99.56%
EGI	99.48%	98.48%	98.89%	99.70%	99.81%	99.75%	99.88%	99.85%	99.75%	99.07%	99.14%	99.66%	99.45%
GLG	99.87%	99.93%	99.92%	100.00%	100.00%	99.99%	99.98%	100.00%	99.98%	99.99%	99.85%	99.87%	99.95%
GOL	99.91%	99.96%	99.83%	99.75%	99.99%	99.97%	99.90%	99.79%	99.94%	99.17%	99.92%	99.91%	99.84%
GVL	99.66%	99.61%	99.77%	99.95%	99.99%	99.96%	99.91%	99.92%	99.97%	100.00%	99.88%	99.88%	99.88%
HFA	98.36%	97.35%	97.64%	99.17%	99.14%	98.88%	98.11%	97.88%	98.68%	98.89%	N/A	N/A	98.41%
JME	98.75%	96.64%	97.19%	98.96%	99.30%	99.28%	98.87%	99.23%	99.16%	97.36%	98.64%	99.46%	98.57%
KIR	98.74%	96.74%	97.63%	99.69%	99.79%	99.74%	99.52%	98.94%	99.29%	98.37%	98.88%	99.77%	98.93%
LAP	99.55%	99.20%	99.74%	99.84%	99.99%	100.00%	99.81%	99.67%	99.93%	99.99%	99.72%	99.90%	99.78%
LPI	92.57%	84.69%	78.27%	93.36%	96.63%	99.37%	97.85%	97.32%	89.94%	85.60%	88.05%	92.11%	91.31%
LSB	100.00%	99.84%	99.65%	99.83%	99.98%	100.00%	99.98%	100.00%	99.95%	99.86%	99.91%	100.00%	99.92%
MAD	99.29%	96.30%	95.56%	99.40%	99.52%	99.82%	99.60%	99.85%	98.07%	97.18%	97.80%	99.35%	98.48%
MLG	99.99%	99.83%	99.32%	99.84%	100.00%	100.00%	99.90%	99.94%	99.85%	99.80%	99.41%	99.94%	99.82%
PDM	100.00%	99.97%	99.88%	99.99%	100.00%	100.00%	99.98%	100.00%	99.99%	99.96%	99.98%	100.00%	99.98%
RKK	99.03%	96.04%	96.53%	98.81%	99.30%	98.83%	99.15%	98.94%	98.02%	97.30%	97.42%	98.47%	98.16%
ROM	100.00%	100.00%	99.96%	99.95%	100.00%	99.99%	100.00%	100.00%	100.00%	99.92%	99.98%	100.00%	99.98%
SDC	100.00%	99.98%	99.84%	99.98%	100.00%	99.97%	100.00%	100.00%	100.00%	99.99%	100.00%	100.00%	99.98%
SOF	100.00%	100.00%	99.78%	99.91%	99.96%	99.95%	99.98%	99.86%	99.93%	99.96%	99.99%	99.58%	99.91%
SWA	100.00%	99.90%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.99%	100.00%	99.99%
TLS	100.00%	99.98%	99.96%	99.98%	100.00%	100.00%	100.00%	100.00%	99.98%	99.96%	100.00%	100.00%	99.99%
TRD	99.74%	99.61%	99.46%	99.88%	99.98%	99.92%	99.92%	99.93%	99.84%	99.83%	99.48%	99.96%	99.80%
TRO	99.24%	97.08%	97.82%	99.55%	99.70%	99.30%	99.42%	99.30%	99.55%	98.93%	99.03%	99.69%	99.05%
WRS	99.91%	99.95%	99.98%	99.98%	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	99.95%	99.99%	99.98%
KUU	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	99.64%	99.91%	99.78%
ZUR	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.96%	100.00%	100.00%	100.00%

Table 10 – OS Availability at RIMS-A sites for PRN 123/126. Values in red are below commitment and green above the commitment (99%).

PRN 136	01/23	02/23	03/23	04/23	05/23	06/23	07/23	08/23	09/23	10/23	11/23	12/23	Average
AGA	95.70%	90.76%	84.37%	94.46%	97.89%	99.69%	97.95%	98.06%	92.08%	91.88%	91.70%	95.89%	94.20%
ALB	99.90%	99.91%	99.99%	99.96%	100.00%	100.00%	100.00%	100.00%	99.94%	100.00%	99.90%	100.00%	99.97%
ATH	100.00%	100.00%	99.99%	99.96%	100.00%	100.00%	99.96%	99.68%	99.93%	99.89%	99.99%	100.00%	99.95%
BRN	99.97%	99.95%	100.00%	99.98%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.95%	100.00%	99.99%
CNR	91.87%	82.60%	75.96%	91.27%	95.42%	99.23%	97.57%	97.11%	87.44%	83.80%	86.08%	89.53%	89.82%
CRK	100.00%	99.97%	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.97%	99.97%	99.99%
CTN	100.00%	99.96%	99.90%	99.92%	99.99%	100.00%	99.99%	99.98%	99.94%	99.88%	99.94%	100.00%	99.96%
DJA	99.96%	99.72%	99.09%	99.30%	99.95%	99.97%	99.66%	99.56%	99.35%	98.83%	99.56%	99.98%	99.58%
EGI	99.49%	98.48%	98.91%	99.70%	99.82%	99.74%	99.89%	99.88%	99.71%	99.05%	99.01%	99.65%	99.44%
GLG	99.86%	99.93%	99.92%	100.00%	100.00%	99.99%	99.98%	100.00%	99.98%	99.98%	99.88%	99.87%	99.95%
GOL	99.93%	99.95%	99.83%	99.73%	99.99%	99.97%	99.88%	99.80%	99.93%	99.16%	99.92%	99.91%	99.83%
GVL	99.66%	99.63%	99.77%	99.95%	100.00%	99.96%	99.90%	99.88%	99.91%	100.00%	99.85%	99.88%	99.87%
HFA	98.35%	97.35%	97.63%	99.20%	99.13%	98.91%	98.03%	97.71%	98.65%	98.69%	N/A	N/A	98.37%
JME	98.72%	96.68%	97.15%	98.98%	99.35%	99.29%	98.87%	99.30%	99.09%	97.36%	98.25%	99.46%	98.54%
KIR	98.69%	96.53%	97.71%	99.67%	99.82%	99.74%	99.54%	98.71%	99.13%	98.43%	98.16%	99.77%	98.83%
LAP	99.53%	99.21%	99.74%	99.84%	99.99%	100.00%	99.80%	99.61%	99.92%	99.99%	99.68%	99.90%	99.77%
LPI	92.47%	84.76%	78.26%	93.21%	96.52%	99.37%	97.88%	97.35%	89.89%	85.51%	89.01%	92.10%	91.36%
LSB	100.00%	99.83%	99.63%	99.84%	99.97%	100.00%	99.98%	99.99%	99.94%	99.85%	99.85%	100.00%	99.91%
MAD	99.29%	96.19%	95.65%	99.42%	99.51%	99.84%	99.61%	99.83%	98.10%	97.17%	97.91%	99.34%	98.49%
MLG	99.99%	99.86%	99.31%	99.82%	100.00%	100.00%	99.90%	99.95%	99.84%	99.80%	99.39%	99.95%	99.82%
PDM	100.00%	99.96%	99.87%	99.99%	100.00%	100.00%	99.98%	100.00%	99.98%	99.95%	99.98%	100.00%	99.98%
RKK	98.99%	96.11%	96.55%	98.82%	99.30%	98.83%	99.13%	98.88%	98.00%	97.31%	97.38%	98.48%	98.15%
ROM	100.00%	100.00%	99.97%	99.96%	100.00%	99.98%	100.00%	100.00%	100.00%	99.93%	99.99%	100.00%	99.98%
SDC	100.00%	99.96%	99.85%	99.99%	100.00%	99.97%	100.00%	100.00%	100.00%	99.98%	100.00%	100.00%	99.98%
SOF	100.00%	99.99%	99.78%	99.91%	99.96%	99.96%	99.99%	99.87%	99.93%	99.96%	99.98%	99.57%	99.91%
SWA	100.00%	99.90%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.99%
TLS	100.00%	99.98%	99.97%	99.99%	99.99%	100.00%	100.00%	100.00%	99.98%	99.97%	99.98%	100.00%	99.99%
TRD	99.74%	99.62%	99.44%	99.89%	99.99%	99.91%	99.90%	99.93%	99.84%	99.83%	99.50%	99.96%	99.80%
TRO	99.24%	96.99%	97.83%	99.57%	99.72%	99.29%	99.39%	99.25%	99.50%	98.96%	98.61%	99.71%	99.01%
WRS	99.91%	99.95%	99.98%	99.98%	100.00%	99.99%	99.99%	99.99%	100.00%	100.00%	99.95%	99.99%	99.98%
KUU	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	99.26%	99.90%	99.58%
ZUR	100.00%	99.99%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	99.96%	99.99%	100.00%	99.99%

Table 11 – OS Availability at RIMS-A sites for PRN 136. Values in red are below commitment and green above the commitment (99%).

Figure 33 shows the OS availability value during the year for each location. The worst value between OP2 (PRN 123/126) and OP1 (PRN 136) is shown in Figure 33.

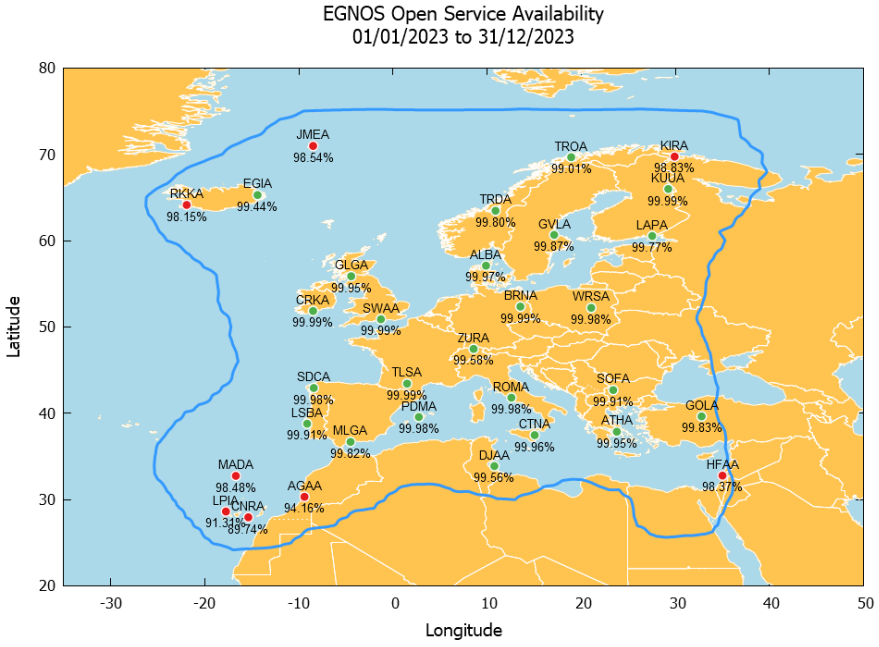

Figure 33 – OS availability for the RIMS stations

As shown in Figure 33, the worst value of the global Open Service Availability performance has been greater than 99% at all stations except for RIMS CNRA, LPIA, MADA, AGAA, HFAA, KIRA, JMEA, and RKKA.

3.6 EGNOS Data Access Service (EDAS)

EDAS (EGNOS Data Access Service) provides free-of-charge Internet-based access to EGNOS and GNSS (GPS&GLONASS) data in real-time and through an archive, including all the data generated by the EGNOS ground stations, mainly distributed over Europe and North Africa.

EDAS, like all other EGNOS Services, has its own EDAS SDD. Among other content, the EDAS SDD defines the committed performance for EDAS (which should always be met in a nominal situation) in terms of availability and latency:

- **Availability**: the percentage of time in which EDAS is providing its services according to specifications. The availability of EDAS services is measured at the EDAS system output (excluding external network performance).
- **Latency**: the time elapsed from transmitting the last bit of the navigation message from the space segment (the EGNOS and the GPS/GLONASS satellites) until the data leaves the EDAS system (formatted according to the corresponding service level specification). The EDAS latency is a one-way parameter defined for real-time services.

Based on the above definitions, the tables below provide minimum availability and maximum latency for the EDAS services:

SL0	SL2	SISNeT	FTP	Data Filtering	Ntrip
98.5%	98.5%	98%	98%	98%	98%

Table 12 – EDAS services minimum availability

SL0	SL2	SISNeT	FTP	Ntrip	Data Filtering	
					SL0	SL2
1.3 seconds	1.450 seconds	1.150 seconds	N/A	1.75 seconds	1.6 seconds	1.75 seconds

Table 13 – Maximum latency for EDAS Services

The EDAS performance is reported through the EGNOS Monthly Performance reports, available on the EGNOS User Support Website.

Figure 34 shows the availability achieved during the period.

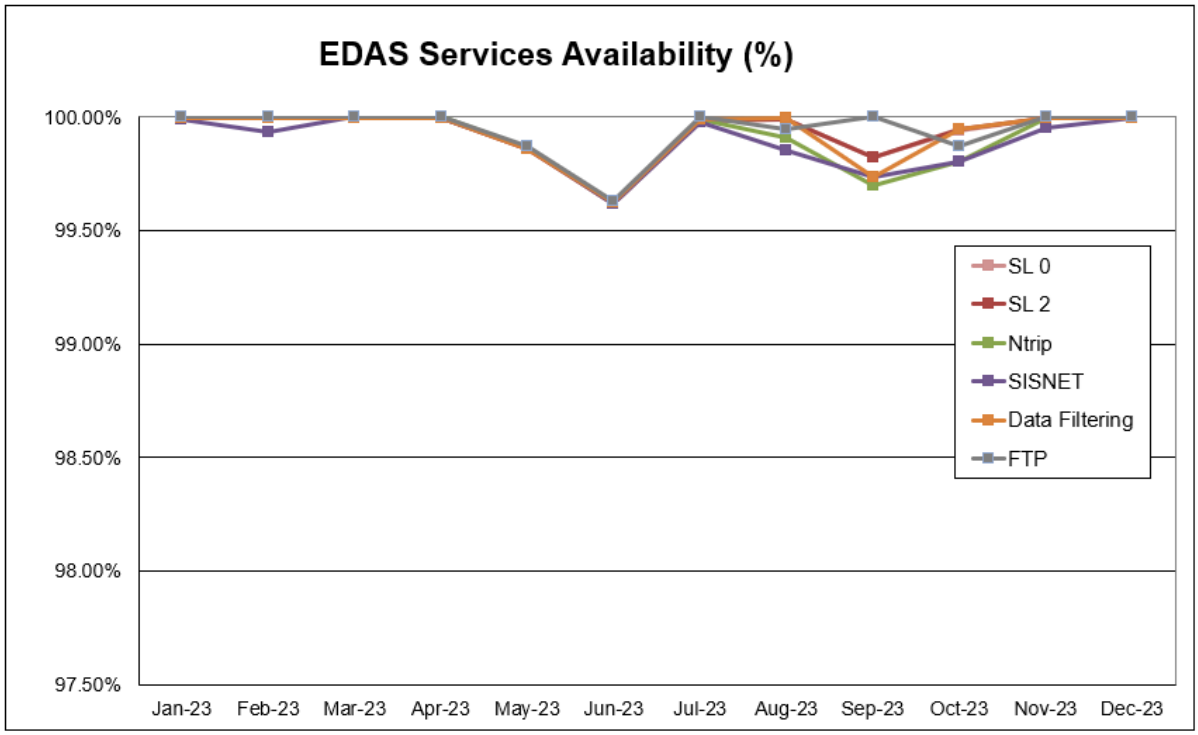

Figure 34 – EDAS Services Availability (from January 2023 to December 2023)

The latency for real-time services (not applicable for the FTP service) during the previous year is shown below, computed as the average of the 95th percentile latencies monitored every five minutes.

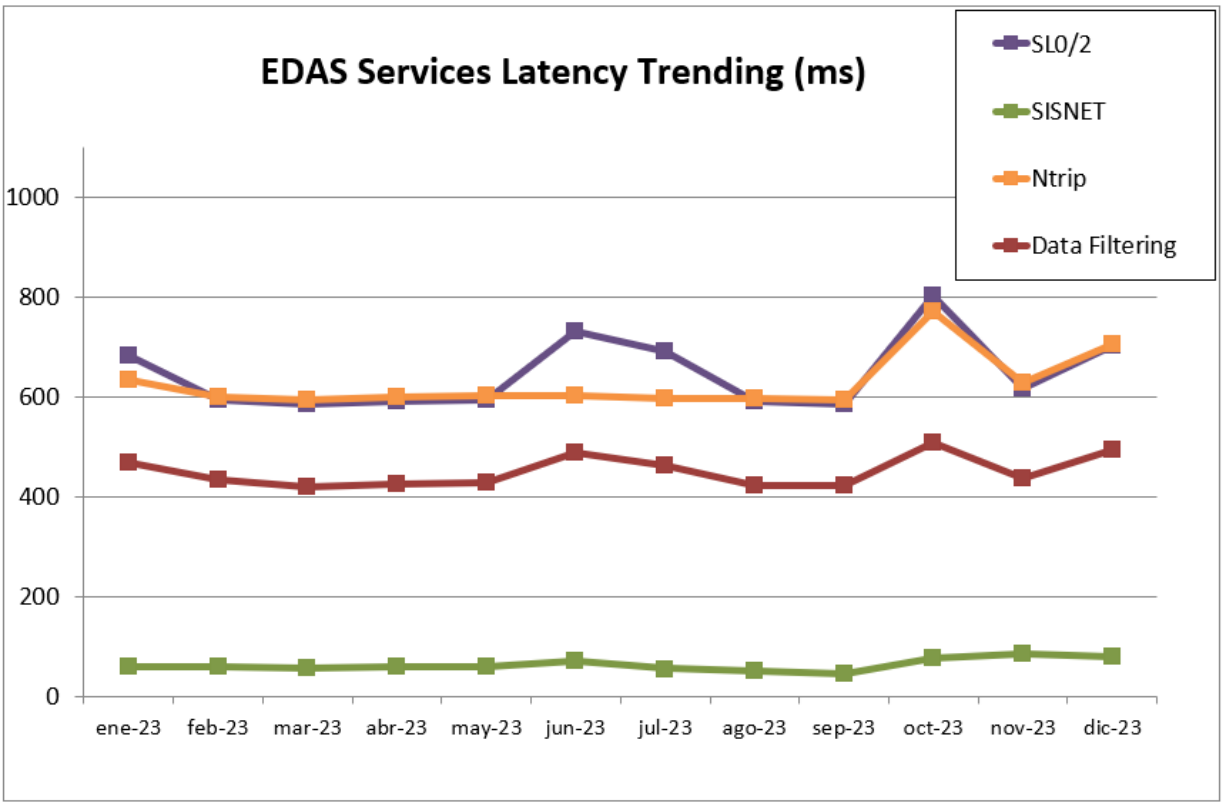

Figure 35 – EDAS Services Latency (from January 2023 to December 2023)

As shown in Figure 35, the EDAS services latency has been consistently below the one-second threshold and well below the EDAS SDD commitment for all services over the entire reporting period.

4 EGNOS SERVICES PROVISION

4.1 NOTAM Proposals Service Status

Since ESSP started providing EGNOS NOTAM Proposals for Pau Airport in France (17 March 2011), the Provision of EGNOS NOTAM Proposals has grown both in subscribing countries (following the signature of an EGNOS Working Agreement between ESSP and the relevant ANSP) and operational airports.

EGNOS NOTAM Proposals are provided according to the following notification deadlines:

- GNSS scheduled events communicated at least 72 hours in advance.
- Unscheduled GNSS events (EGNOS and GPS) communicated within 2 hours (7D/H24).

As per Figure 36, the actual delays observed in the notification of predicted EGNOS service outages versus unscheduled GNSS system events have typically been in the 30-minute range.

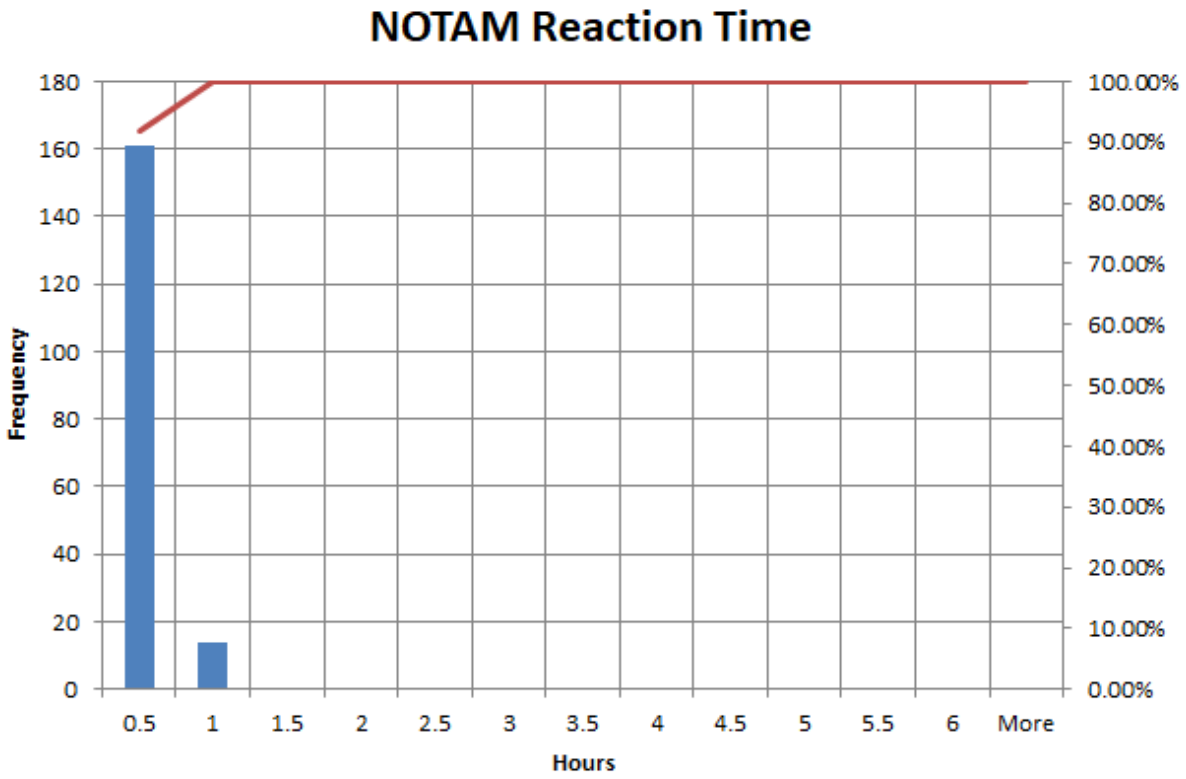

Figure 36 – NOTAM reaction time during 2023

4.2 Service Definition Documents and Service Notices over the period

A new SoL SDD (issue 3.5) was published on November 23rd, 2023. It included new commitment maps reflecting the current EGNOS performance linked to the current EGNOS ground segment and the Solar Cycle 25. Additionally, other changes were also incorporated, such as the update of the EGNOS ground and space segments.

ESSP generated Service Notices as supplementary information for users that may temporarily amend the applicable version of the EGNOS Service Definition Documents. During this reported period, ESSP published and/or updated seven Service Notices (whose status at 31/12/2023 is provided after the description of the corresponding Service Notice):

- Service Notice 24: Potential EGNOS underperformance linked to new EGNOS RIMS configuration [In force] (This new RIMS configuration refers to the decommissioning of RIMS Abu Simbel (ABS – Egypt) and Alexandria (ALY – Egypt))
- Service Notice 25: Potential EGNOS underperformance due to Solar Cycle [In force]
- Service Notice 26: EGNOS Space Segment changes in the Second and Third Quarters of 2023 [Expired]
- Service Notice 27: EGNOS Space Segment Update [In force]
- Service Notice 28: Temporary unavailability of EGNOS Service [Expired]
- Service Notice 29: Potential underperformance of EGNOS in the south-east linked to the new configuration of EGNOS RIMS [In force]
- Service Notice 30: Entry into service of EGNOS System Release 242B [In force]

In addition to the Service Notices published in 2023, the following one published in 2018 remains in force.

- Service Notice 17: EDAS FTP RINEX navigation files [In force]

The current status of the Service Notices is available on the EGNOS User Support website.

4.3 User Consultations and Improvement Actions

Every year, EUSPA and ESSP jointly carry out an overall EGNOS User Satisfaction Process on the three EGNOS Services (SoL, OS, and EDAS). This process aims to obtain valuable feedback on the EGNOS use and ESSP performance, identify areas for improvement, and define recommendations on EGNOS services.

This process considers feedback received through different means and interfaces, such as the EGNOS Service Provision Workshop, EGNOS User Support activities, ESSP participation in multimodal forums, GNSS implementation projects, working groups, or relevant events. However, the main input is the user satisfaction survey, which is widely distributed among key users and stakeholders of each of the EGNOS Services.

The 2022 EGNOS User Satisfaction Survey was launched in October 2022 and closed on 28/02/2023, using a specific online platform. A total of 82 responses were received.

The output from this survey is included in the EGNOS Bulletin Autumn 2023 and published on the EGNOS User Support Website.

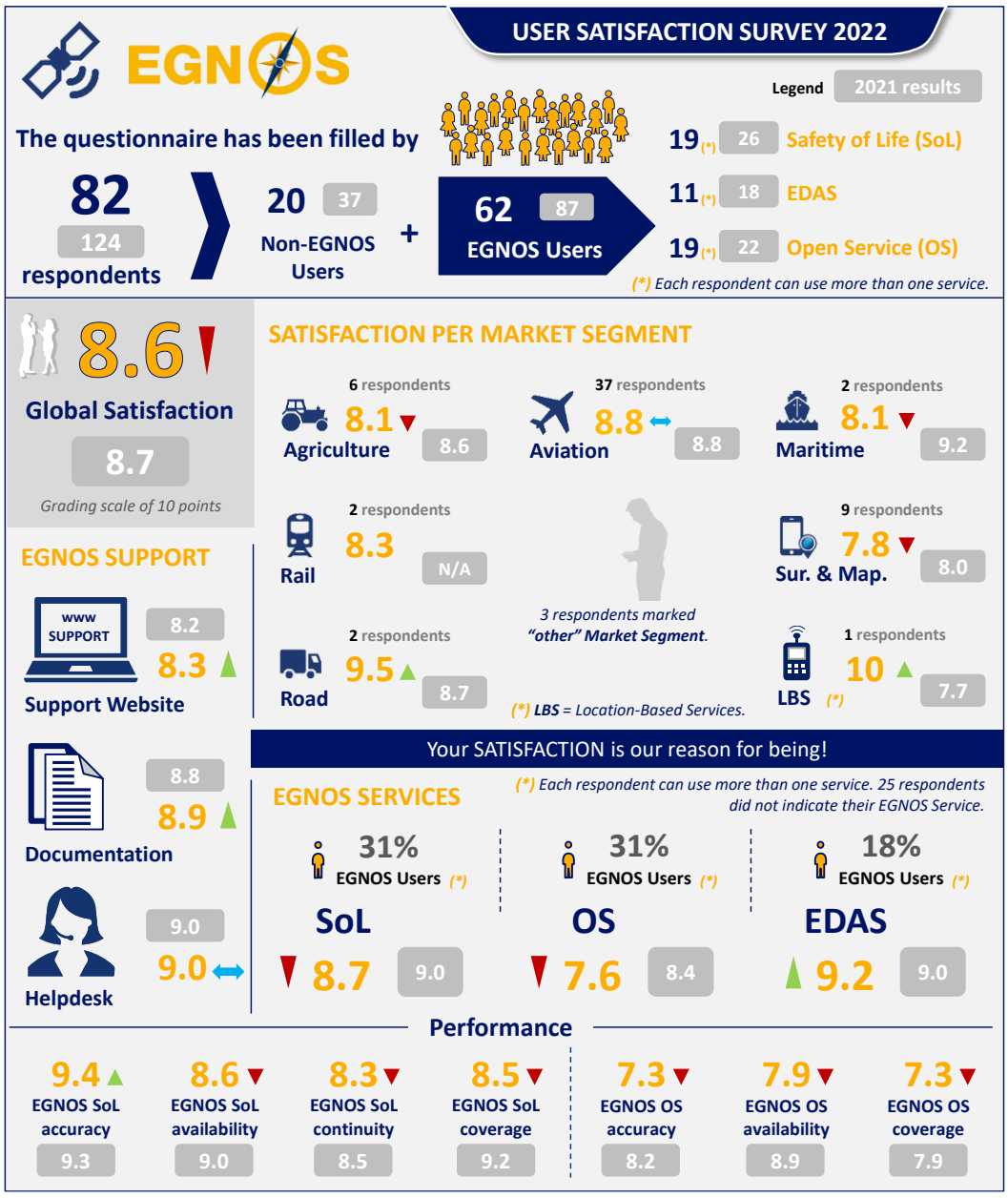

Figure 37 – Summary of results from User Satisfaction Survey

Key conclusions on EGNOS User Satisfaction (Evolution from 2021 to 2022):

EGNOS users showed a satisfaction level of 8.6 over 10 in 2022 (8.7 in 2021). In general terms, this represents an outstanding level of satisfaction with EGNOS. The observed score decrease (0.1) is not representing any specific trend.

- **EGNOS SERVICES**: the score has improved for EDAS (from 9.0 in 2021 to 9.2 in 2022). The score for SoL was 8.7 in 2022 (9.0 in 2021), and for OS was 7.6 in 2022 (8.4 in 2021).
- **EGNOS USER SUPPORT**: the level of user satisfaction is higher in 2022 than in 2021 for the website (8.3 versus 8.2) and for documentation (8.9 versus 8.8). The helpdesk obtained the same score in both years (9.0). Among the EGNOS Documentation elements, the EGNOS Service Implementation Roadmaps have significantly increased their level of satisfaction (9.1 versus 8.5).

4.4 2023 EGNOS Multimodal Adoption Plan

The EGNOS Multimodal Adoption Plan in 2023 focused on four main market segments (aviation, maritime, rail, and user space) together with some transversal actions. The main outcomes per market segments are summarised as follows:

- In aviation, a number of activities have been carried out to promote its use and awareness by the Community. Some of the operators engaged include Icelandair, Lufthansa Group, SAS and Norwegian, with whom ESSP discussed the use of EGNOS and provided tailored support. Particularly, the study developed with Lufthansa shall be highlighted, as it provides a measure of the order of magnitude of EGNOS' benefits derived from the latest update of the EASA fuel rules, focused on taking advantage of the lower minima provided by EGNOS, thus allowing for fuel reduction derived from flight planning. For the remaining operators, especially for SAS and Norwegian, their analyses turned out positive, thus demonstrating that EGNOS proofs to be beneficial for their particular fleet and way of operation.
  Regarding EGNOS-based procedures, 35 APV-I and 53 LPV200 procedures have been published during 2023. The impact of ILS rationalization has also been studied so as to understand to a what extent air operators could benefit economically from the decommission of ILS infrastructure (particularly CAT-I equipment), which provided a result of 1.482 fee reduction for the particular example taken. In terms of the work done on LPV procedures publication at non-instrumental runway ends, 2023 ended with the generation of three safety assessments for Boras, Breda and Freiburg aerodromes.
  Various ad-hoc contact campaigns have been triggered to Stakeholders to follow-up the state of adoption and provide support, as well as to establish constant coordination with manufacturers. This provided ESSP with relevant information on various topics, including the publication of LPV solutions available for implementation. Over 2023, a new solution for Saab 2000 aircraft was made public, and future beholds other LPV solutions to come for the A320 (with Thales avionics) and B777 aircraft models, as a result of the increased interest from Operators.
- In Maritime, two types of Blue Market Sectors have been addressed: Trade and Navigation (Port Activities, Shipbuilding and Repair, Maritime/Inland Transport) and Marine Living resources (Fisheries and Aquaculture).
  Intense promotion has been undertaken through relevant forums and events, and actions with specific stakeholders, such as GNSS receiver manufacturers in relation to the IEC standard for SBAS receivers (61108-7), as an important step towards the declaration of a dedicated EGNOS Service for Maritime.
  In detail, key information regarding the costs derived from the implementation of the standard (as a first step for the adoption of the ESMAS) was obtained for two relevant actors of the maritime value chain, Receiver manufacturers (SAAB) and Testing laboratories/notified bodies (BSH). The obtention of the certification costs provided from the two perspectives (certification entity and certified actor) is a piece of valuable information for planning the adoption and understanding the resources needed/faced by those two main actors in the maritime segment.
  In parallel, awareness of the IEC standard for SBAS receivers (61108-7) has been performed with receiver manufacturers (e.g. Koden and Hemisphere) during the events (specially SMM and METS), paving the way to continue the support to manufacturers in the process of preparing their receivers to the new standard. Taking advantage of the PoCs gathered in the events to extend the support to different companies, in the same way that happen this year with Raymarine and Garmin.
  In parallel to this topic, other relevant results of EGNOS adoption activities this year can be summarized as follows:
  - Upgrading of the Contact network (PoCs Database).
  - Conducting test campaigns.
  - Upgrading the SBAS-enabled devices Database, with special emphasis on the Fishing technology market (e.g. GNSS-enabled buoys).
  - Fostering and promotion of EGNOS services among PPU manufacturers, GNSS receiver manufacturers, etc.

  - Identification of EGNOS synergies towards new applications and fields such as the Copernicus Marine In-Situ environment.
  - Generation of guidelines, tools, and resources for promotion and analysis, such as the European AIS stations map and material for a webinar for maritime authorities.
- In the rail sector, ESSP has continued supporting EUSPA with a particular focus on a market size assessment of European freight wagons to be equipped with GNSS tracking devices and GNSS-based passenger information systems (non-SoL market). Specific training for the ERTMS Users Group was organised jointly with the GSC team and ESSP also supported EUSPA in the UCP for Railway at the European Space Week, also collecting notes and conclusions.
- In the User Space, ESSP generated relevant EGNOS dissemination material to feed the platform, including several success stories from different domains, a comprehensive video showcasing the use of EGNOS in aviation and a dedicated training for UAS operators to use EGNOS in drones at Expodrónica. In addition, guidelines on the use of EGNOS in several domains were developed to facilitate the process of its implementation and use.
  Furthermore, personalised support was provided to drone operators on the use of EGNOS (Beagle Labs, Dronetag, ETRAIR, ITG, ELA and Euroflyers) and a test campaign was performed with ESSP-proprietary UAS (hexacopter) to evaluate its use in different environments and conditions, which served to improve the general understanding of various setups, and then used to encourage its adoption depending on the type of user. These tests provided an overview of the accuracy, measured as the Navigation System Error (NSE), enabled by GPS-only, GPS + EGNOS and EDAS. The main conclusions are summarized here below.

EGNOS 95th percentile	
HNSE*	VNSE*
1.7m	2.0m

GPS 95th percentile	
HNSE*	VNSE*
3.2m	5.8m

EDAS 95th percentile	
HNSE*	VNSE*
0.7m	0.7m

All in all, 2023 concluded satisfactorily with all actions implemented on schedule and has served to set the foundation to keep on working on related (and new) topics in 2024.

5 KEY ACTIVITIES PLANNED FOR THE YEAR 2024

5.1 Service delivery and management

5.1.1 EGNOS services user interface

5.1.1.1 EGNOS services related document evolutions (SN, SDD)

The updating process for the Service Definition Documents are already ongoing:

- The next SoL SDD release will be focused on the updated EGNOS performance linked to the ESR 2.4.2B deployment.
- OS SDD will be updated mainly due to changes in the EGNOS system (ground and space segments) and a new map of performance commitments.
- EDAS SDD mainly linked to the new role of EUSPA as EDAS service provider and general service information update.

These new Service Definition Documents will also incorporate the corresponding amendments communicated to the users through the 'in force' Service Notices.

5.1.1.2 User Support (EGNOS & EMSP Website & Helpdesk)

The main objective of the period is to implement a dedicated website and helpdesk including the EDAS and Maritime services. Activities planned for the coming period will be focused on the continuation of the split website and helpdesk services. They will also ensure users are well informed and that the transition is smooth minimising any potential impact, keeping all former contact channels available and ensuring references in existing documentation pointing at former links, are redirected or have a landing page informing where the content has been moved to.

5.1.1.3 User support improvement process

The main objective for the next period is to improve the number of respondents by defining and implementing actions agreed with the Agency, considering that the survey is launched together with Galileo. An additional objective of 2024 is to work on promoting the EGNOS services, and in particular the new ones, to improve the adoption and use of EGNOS services in the service area. In particular, the effort will be pursued to promote the level of performance of EGNOS towards users and potential future users.

5.1.1.4 EGNOS communication and promotion plan

Event	Dates and Location	Market segment
EGNOS WORKSHOP	13 – 14 March, Dublin, Ireland	ALL
AIRSPACE	19 – 21 March, Geneve, Switzerland	Aviation
Amsterdam Drone Week	16 – 18 April, Amsterdam, The Netherlands	UAS
Aerospace Tech Week	17 – 18 April, Munich, Germany	Aviation
Aqua 24 Europe	26 – 30 August, Copenhagen, Denmark	Maritime
Expodrónica	TBC	Aviation & Drones
SMM	3 – 6 September, Hamburg, Germany	Maritime
INNOTRANS	24 – 27 September, Berlin, Germany	Rail
METSTRADE	19 – 21 November Amsterdam, The Netherlands	Maritime

Table 14 – EGNOS events in 2024

5.1.2 EGNOS services development

5.1.2.1 Aviation

The key activities planned for the year 2024 in terms of EGNOS services development in the aviation domain are as follows:

- Raising awareness of EGNOS based instrument approach procedures implementation at non-ATS environments by presenting the EWA framework already in place for aerodrome operators and air operators, in coordination with EUSPA (e.g. through contribution at relevant forums such as the GNSS General Aviation (GA) Working Group).
- Support the implementation of EGNOS based instrument approach procedures at non-instrument runway ends (NIREs) in General Aviation scenarios with the development of Safety Guidelines and a Solutions Catalogue.
- Promote the use of EGNOS to support UAS operations and the definition and implementation of the EGNSS Service for UAS, in line with the EC roadmap for UAS, with the aim to ease compliance with current and expected future regulation for UAS and VTOL-capable aircraft (VCA) and their safe integration in complex environments, such as mixed manned and unmanned airspaces and Innovative Air Mobility (IAM).

5.1.2.2 Maritime

The following bullet points summarise the main activities planned for the year 2024:

- About the Maritime Service Preparation Activities, it is continued the implementation of preparatory activities to support EUSPA in declaring the EGNOS Maritime Service.
- Active participation is committed in the preparation and update of related guidelines on using SBAS, either in Maritime (in IALA, for instance, in the definition of retransmission mechanisms of SBAS corrections via VDES) or IWW (CESNI), as well attending the main fora events either physically or virtually.

- Additionally, a coordinated document will be developed at IALA. It will propose the procedures and requirements for the recognition and acceptance of augmentation systems, SBAS among others, intended for international use in the Maritime domain. This document will be presented to IMO (International Maritime Organization) for its consideration and adoption in its regulatory framework. This recognition, in accordance with IMO, is needed for the future development of DFMC (Dual Frequency Multi-Constellation) SBAS performance standards.
- Following the work done in the previous year, a series of webinars on the use of SBAS (including the EGNOS service for Maritime) will be arranged to the benefit of Maritime and IWW authorities and user communities (IALA, CESNI, shipowner associations…)

5.1.2.3 Rail

The main activity for 2024 is focused on the development of an EGNOS for Rail service in the framework of the Location Working Group (LWG). This development will contribute to the integration of EGNOS in the Absolute Safe Train Positioning (ASTP) concept being implemented in the frame of the EU-Rail Joint Undertaking (ERJU) and will be used in the demonstrators currently in development to demonstrate that rail performance and safety targets are met.

Other key activities for this year will be supporting EUSPA in its activities in different Working Groups such as ERTMS (European Rail Traffic Management System) User Group (EUG), Location Working Group (LWG), EU Rail projects such as R2DATO (Rail to Digital automated up to Autonomous Train Operation), FutuRe (Future Regional Railways), and other Research and Development activities like CLUG2 (Certifiable Localisation Unit with GNSS and RADIUS (Railway Digitalisation Using Drones).

APPENDIX A FULL LIST OF EGNOS-BASED APPROACH PROCEDURES

The information shown in this annex corresponds to the situation at AIRAC Cycle#2203 (24/03/2022). For an up to date list of the published EGNOS based procedures, please refer to the EGNOS User Support Website.

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Akureyri	Iceland	BIAR	BIRD	2	21/05/2020							2
Aerodrome	Grimsey	Iceland	BIGR	BIRD	1	22/04/2021							1
Aerodrome	Husavik	Iceland	BIHU	BIRD	1	29/03/2019							1
Aerodrome	Vopnafjordur	Iceland	BIVO	BIRD	1	22/04/2021							1
Heliport	Cles Helipad	Italy	LIKC	LIMM	2	30/01/2020							2
Aerodrome	Antwerpen	Belgium	EBAW	EBBU	1	10/12/2015			1	02/11/2023			2
Aerodrome	Beauvechain	Belgium	EBBE	EBBU					4	07/09/2023			4
Aerodrome	Brussels-National	Belgium	EBBR	EBBU		06/12/2018			4	05/10/2023			4
Aerodrome	Charleroi / Brussels South	Belgium	EBCI	EBBU	2	31/03/2016							2
Aerodrome	Kortrijk/Wevelgem	Belgium	EBKT	EBBU	1	09/11/2017							1
Aerodrome	Liège	Belgium	EBLG	EBBU	2	13/10/2016			2	19/05/2022			4

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Oostende-Brugge	Belgium	EBOS	EBBU					2	03/01/2019			2
Aerodrome	Bautzen	Germany	EDAB	EDMM	1	27/04/2017		15/12/2011					1
Aerodrome	Leipzig/Altenburg	Germany	EDAC	EDMM					2	28/03/2019			2
Aerodrome	Strausberg	Germany	EDAY	EDWW					2	17/06/2021			2
Aerodrome	Schoenhagen	Germany	EDAZ	EDWW					1	11/10/2018			1
Aerodrome	Barth	Germany	EDBH	EDWW				03/06/2010	1	09/09/2021			1
Aerodrome	Magdeburg/City	Germany	EDBM	EDWW	1	13/12/2012							1
Aerodrome	Neubrandenburg	Germany	EDBN	EDWW	2	02/04/2015							2
Aerodrome	Berlin Brandenburg	Germany	EDDB	EDWW				04/06/2009	4	08/10/2020			4
Aerodrome	Dresden	Germany	EDDC	EDMM			2	15/12/2011					2
Aerodrome	Erfurt-Weimar	Germany	EDDE	EDMM				15/12/2011	2	09/09/2021			2
Aerodrome	Frankfurt Main	Germany	EDDF	EDGG				15/12/2011	12	13/07/2023			12
Aerodrome	Münster/Osnabrück	Germany	EDDG	EDGG			2	15/12/2011					2
Aerodrome	Hamburg	Germany	EDDH	EDWW				15/12/2011	4	18/06/2020			4

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Köln/Bonn	Germany	EDDK	EDGG				15/12/2011	6	12/09/2019			6
Aerodrome	Düsseldorf	Germany	EDDL	EDGG			4	15/12/2011					4
Aerodrome	München	Germany	EDDM	EDMM				15/12/2011	4	23/05/2019			4
Aerodrome	Nürnberg	Germany	EDDN	EDMM					2	01/12/2022			2
Aerodrome	Leipzig/Halle	Germany	EDDP	EDMM				15/12/2011	4	30/01/2020			4
Aerodrome	Saarbrücken	Germany	EDDR	EDGG		01/03/2018	2	28/03/2019					2
Aerodrome	Stuttgart	Germany	EDDS	EDGG				15/12/2011		23/04/2020			0
Aerodrome	Berlin-Tegel	Germany	EDDT	EDWW				15/12/2011					0
Aerodrome	Hannover	Germany	EDDV	EDWW			4	15/12/2011					4
Aerodrome	Bremen	Germany	EDDW	EDWW				15/12/2011	2	30/03/2017			2
Aerodrome	Frankfurt Hahn	Germany	EDFH	EDGG		23/07/2015			2	14/09/2017			2
Aerodrome	Allendorf/Eder	Germany	EDFQ	EDGG	1	21/08/2014							1
Aerodrome	Siegerland	Germany	EDGS	EDGG	1	12/10/2017			1	12/10/2017			2
Aerodrome	Hamburg/Finkenwerder	Germany	EDHI	EDWW		13/12/2012			2	18/06/2020			2
Aerodrome	Kiel-Holtenau	Germany	EDHK	EDWW					2	18/06/2020			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Luebeck-Blankensee	Germany	EDHL	EDWW					2	18/06/2020			2
Aerodrome	Memmingen	Germany	EDJA	EDMM				15/12/2011	2	04/11/2021			2
Aerodrome	Moenchengladbach	Germany	EDLN	EDGG					2	06/12/2018			2
Aerodrome	Paderborn/Lippstadt	Germany	EDLP	EDGG		13/12/2012			2	10/10/2019			2
Aerodrome	Niederrhein	Germany	EDLV	EDGG	1	23/06/2016							1
Aerodrome	Dortmund	Germany	EDLW	EDGG	2	12/12/2013							2
Aerodrome	Augsburg	Germany	EDMA	EDMM			1	15/12/2011	1	11/10/2018			2
Aerodrome	Eggenfelden	Germany	EDME	EDMM	1	11/12/2014							1
Aerodrome	Oberpfaffenhofen	Germany	EDMO	EDMM		13/12/2012			1	23/05/2019			1
Aerodrome	Straubing	Germany	EDMS	EDMM	1	11/12/2014							1
Aerodrome	Friedrichshafen	Germany	EDNY	EDMM				15/12/2011	2	19/07/2018			2
Heliport	Donauwörth	Germany	EDPR	EDMM	2	08/12/2016							2
Aerodrome	Bamberg-Breitenau	Germany	EDQA	EDMM					2	02/12/2021			2
Aerodrome	Coburg-Brandensteinsebene	Germany	EDQC	EDMM	1	11/12/2014							1
Aerodrome	Bayreuth	Germany	EDQD	EDMM			1	15/12/2011					1
Aerodrome	Giebelstadt	Germany	EDQG	EDGG				14/02/2012	2	02/12/2021			2
Aerodrome	Hof-Plauen	Germany	EDQM	EDMM					2	21/06/2018			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Karlsruhe/Baden-Baden	Germany	EDSB	EDGG		17/09/2015			2	27/04/2017			2
Aerodrome	Donaueschingen-Villingen	Germany	EDTD	EDGG	1	11/12/2014							1
Aerodrome	Lahr	Germany	EDTL	EDGG	1	23/06/2016			1	27/04/2017			2
Aerodrome	Mengen-Hohentengen	Germany	EDTM	EDGG	1	11/12/2014							1
Aerodrome	Schwäbisch-Hall	Germany	EDTY	EDGG	2	13/12/2012							2
Aerodrome	Braunschweig-Wolfsburg	Germany	EDVE	EDWW	2	18/10/2012							2
Aerodrome	Kassel-Calden	Germany	EDVK	EDWW	2	04/04/2013							2
Aerodrome	Emden	Germany	EDWE	EDWW		30/05/2013			4	30/11/2023			4
Aerodrome	Wilhelmshaven JadeWeserAirport	Germany	EDWI	EDWW				15/12/2011	2	30/11/2023			2
Aerodrome	Sylt	Germany	EDXW	EDWW		10/12/2015			2	20/04/2023			2
Aerodrome	Kärdla	Estonia	EEKA	EETT	2	31/01/2019							2
Aerodrome	Kuressaare	Estonia	EEKE	EETT	2	02/03/2017							2
Aerodrome	Pärnu	Estonia	EEPU	EETT					2	03/11/2022			2
Aerodrome	Lennart Meri Tallinn	Estonia	EETN	EETT					4	06/12/2018			4

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Tartu	Estonia	EETU	EETT	1	18/07/2019			1	18/07/2019			2
Aerodrome	Enontekiö	Finland	EFET	EFIN	2	03/12/2020		07/12/2017					2
Aerodrome	Halli	Finland	EFHA	EFIN	2	03/12/2020							2
Aerodrome	Helsinki-Vantaa	Finland	EFHK	EFIN	6	27/02/2020							6
Aerodrome	Ivalo	Finland	EFIV	EFIN	2	03/12/2020		07/12/2017					2
Aerodrome	Joensuu	Finland	EFJO	EFIN	2	12/12/2013							2
Aerodrome	Jyväskylä	Finland	EFJY	EFIN	2	28/01/2021		07/12/2017					2
Aerodrome	Kemi-Tornio	Finland	EFKE	EFIN	2	28/01/2021		07/12/2017					2
Aerodrome	Kajaani	Finland	EFKI	EFIN	2	03/12/2020		07/12/2017					2
Aerodrome	Kokkola-Pietarsaari	Finland	EFKK	EFIN	2	18/06/2020		07/12/2017					2
Aerodrome	Kuusamo	Finland	EFKS	EFIN	2	10/09/2020		07/12/2017					2
Aerodrome	Kittilä	Finland	EFKT	EFIN	2	22/04/2021		07/12/2017					2
Aerodrome	Kuopio	Finland	EFKU	EFIN	2	16/07/2020		07/12/2017					2
Aerodrome	Lahti-Vesivehmaa	Finland	EFLA	EFIN	1	26/01/2023							1
Aerodrome	Lappeenranta	Finland	EFLP	EFIN	2	10/09/2020		07/12/2017					2
Aerodrome	Mariehamn	Finland	EFMA	EFIN	2	18/06/2020		08/12/2017					2
Aerodrome	Mikkeli	Finland	EFMI	EFIN	2	27/01/2022							2
Aerodrome	Oulu	Finland	EFOU	EFIN	2	23/04/2020		07/12/2017					2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Pori	Finland	EFPO	EFIN	2	03/12/2020		07/12/2017					2
Aerodrome	Rovaniemi	Finland	EFRO	EFIN	2	23/04/2020		07/12/2017					2
Aerodrome	Savonlinna	Finland	EFSA	EFIN	2	03/12/2020		07/12/2017					2
Aerodrome	Tampere-Pirkkala	Finland	EFTP	EFIN				07/12/2017	2	11/08/2022			2
Aerodrome	Turku	Finland	EFTU	EFIN	2	27/02/2020		07/12/2017					2
Aerodrome	Utti	Finland	EFUT	EFIN	2	28/01/2021							2
Aerodrome	Vaasa	Finland	EFVA	EFIN	2	18/06/2020		07/12/2017					2
Aerodrome	Campbeltown	United Kingdom	EGEC	EGPX		23/06/2016							0
Aerodrome	Cardiff	United Kingdom	EGFF	EGTT		13/10/2016							0
Aerodrome	Bristol	United Kingdom	EGGD	EGTT		21/08/2014							0
Aerodrome	Lands End	United Kingdom	EGHC	EGTT		27/04/2017							0
Aerodrome	Yeovil	United Kingdom	EGHG	EGTT		09/06/2017							0
Aerodrome	Southampton	United Kingdom	EGHI	EGTT		11/10/2018							0
Aerodrome	Alderney	Guernsey	EGJA	LFRR	2	07/12/2011							2
Aerodrome	Guernsey	Guernsey	EGJB	LFRR					2	10/10/2019			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Jersey	Jersey	EGJJ	LFRR					2	23/05/2019			2
Aerodrome	Barrow/Walney Island	United Kingdom	EGNL	EGTT		23/06/2016							0
Aerodrome	Kirkwall	United Kingdom	EGPA	EGPX		21/07/2016							0
Aerodrome	Sumburgh	United Kingdom	EGPB	EGPX		11/10/2018							0
Aerodrome	Wick	United Kingdom	EGPC	EGPX		23/06/2016							0
Aerodrome	Islay	United Kingdom	EGPI	EGPX		18/08/2016							0
Aerodrome	Prestwick	United Kingdom	EGPK	EGPX		30/01/2020				16/07/2020			0
Aerodrome	Dundee	United Kingdom	EGPN	EGPX		30/03/2017							0
Aerodrome	Barra	United Kingdom	EGPR	EGPX		18/08/2016							0
Aerodrome	Tiree	United Kingdom	EGPU	EGPX		04/02/2016							0
Aerodrome	Exeter	United Kingdom	EGTE	EGTT		21/08/2014							0
Aerodrome	Amsterdam	Netherlands	EHAM	EHAM	1	21/06/2018			9	05/12/2019			10
Aerodrome	Weert/Budel	Netherlands	EHBD	EHAA					1	31/12/2020			1

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Maastricht Aachen Aiport	Netherlands	EHBK	EHAA					1	14/07/2022			1
Aerodrome	Eindhoven	Netherlands	EHEH	EHAA					2	28/01/2021			2
Aerodrome	Eelde	Netherlands	EHGG	EHAA	2	13/11/2014							2
Aerodrome	Den Helder - De Kooy	Netherlands	EHKD	EHAA					3	28/01/2021			3
Aerodrome	Lelystad	Netherlands	EHLE	EHAA	2	05/12/2019							2
Aerodrome	Leeuwarden	Netherlands	EHLW	EHAA					2	28/01/2021			2
Aerodrome	Rotterdam The Hague	Netherlands	EHRD	EHAA					2	03/11/2022			2
Aerodrome	Teuge	Netherlands	EHTE	EHAA	1	13/11/2014							1
Aerodrome	Woensdrecht	Netherlands	EHWO	EHAA					2	26/01/2023			2
Aerodrome	Cork	Ireland	EICK	EISN	3	16/08/2018							3
Aerodrome	Dublin	Ireland	EIDW	EISN					5	08/09/2022			5
Aerodrome	Ireland West Airport	Ireland	EIKN	EINN	2	25/03/2021							2
Heliport	SLIGO	Ireland	EISG	EISN					2	01/12/2022			2
Aerodrome	Aarhus	Denmark	EKAH	EKDK	2	05/03/2015							2
Heliport	Ålborg hospital Mølnholm	Denmark	EKAL	EKCH	1	03/11/2022							1
Aerodrome	Billund	Denmark	EKBI	EKDK					2	20/07/2017			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Esbjerg	Denmark	EKEB	EKDK		15/10/2015			2	26/03/2020			2
Heliport	Saltum heliport	Denmark	EKHS	EKCH	2	03/11/2022							2
Aerodrome	Karup	Denmark	EKKA	EKDK	2	02/04/2015							2
Heliport	Kolding hospital	Denmark	EKKH	EKCH	1	03/11/2022							1
Heliport	Holsterbro HEMS	Denmark	EKNH	EKCH	1	03/11/2022							1
Heliport	Odense Hospital	Denmark	EKOH	EKCH	1	03/11/2022							1
Heliport	Gødstrup hospital	Denmark	EKRG	EKCH	1	03/11/2022							1
Heliport	Rigshosptalet København	Denmark	EKRH	EKCH	1	03/11/2022							1
Heliport	Ringsted HEMS	Denmark	EKRS	EKCH	1	03/11/2022							1
Aerodrome	Sønderborg	Denmark	EKSB	EKDK		18/08/2016			2	30/12/2021			2
Heliport	Slagelse Hospital	Denmark	EKSE	EKCH	1	03/11/2022							1
Heliport	Skejby Ålborg hospital	Denmark	EKSH	EKCH	1	03/11/2022							1
Heliport	SKive HEMS	Denmark	EKSK	EKCH	1	03/11/2022							1
Aerodrome	Luxembourg	Luxembourg	ELLX	EBBU					2	26/03/2020			2
Aerodrome	Ålesund/Vigra	Norway	ENAL	ENOR		03/03/2016			2	07/11/2019			2
Heliport	Alesund	Norway	ENAX	ENOR	1	18/05/2023							1
Aerodrome	Andøya/Andenes	Norway	ENAN	ENOR	2	02/04/2015							2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Heliport	Arendal hospital	Norway	ENAR	ENOR	1	20/05/2021							1
Aerodrome	Alta	Norway	ENAT	ENOR	1	08/09/2022							1
Heliport	Bergen Gronneviksoren	Norway	ENBG	ENOR	1	20/05/2021							1
Aerodrome	Førde/Bringeland	Norway	ENBL	ENOR	1	28/05/2015			1	27/04/2017			2
Aerodrome	Brønnøysund/Brønnøy	Norway	ENBN	ENOR	1	08/12/2016							1
Aerodrome	Bodo	Norway	ENBO	ENOR	1	06/12/2018							1
Aerodrome	Bergen/Flesland	Norway	ENBR	ENOR				03/03/2016	2	28/02/2019			2
Aerodrome	Båtsfjord	Norway	ENBS	ENOR	2	02/12/2021							2
Aerodrome	Berlevåg	Norway	ENBV	ENOR	2	02/12/2021							2
Heliport	Haukeland Hospital Bergen	Norway	ENBX	ENOR	1	07/09/2023							1
Aerodrome	Kristiansand/Kjevik	Norway	ENCN	ENOR				03/03/2016	2	23/02/2023			2
Aerodrome	Bardufoss	Norway	ENDU	ENOR	2	26/04/2018							2
Aerodrome	Harstad/Narvik/Evenes	Norway	ENEV	ENOR	1	30/03/2017			1	30/06/2021			2
Aerodrome	Florø	Norway	ENFL	ENOR	1	02/04/2015							1
Aerodrome	Gardermoen	Norway	ENGM	ENOR					4	10/11/2016			4
Aerodrome	Haugesund/Karmøy	Norway	ENHD	ENOR				03/03/2016	2	13/08/2020			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Hasvik	Norway	ENHK	ENOR					2	03/12/2020			2
Heliport	Hattfjelldal	Norway	ENHT	ENOR	1	20/05/2021							1
Heliport	Haugesund Hospital	Norway	ENHX	ENOR	1	17/06/2021							1
Aerodrome	Kristiansund/Kvernberget	Norway	ENKB	ENOR		26/05/2016			2	31/12/2020			2
Heliport	Kongsvinger Hospital	Norway	ENKG	ENOR	1	17/06/2021							1
Aerodrome	Kirkenes/Hoybuktmoen	Norway	ENKR	ENOR	2	27/04/2017							2
Heliport	Lovund	Norway	ENXXZLV	ENOR	1	18/05/2023							1
Heliport	Lillehammer Hospìtal	Norway	ENLH	ENOR	2	17/06/2021							2
Aerodrome	Leknes	Norway	ENLK	ENOR	1	02/02/2017	1	10/10/2019					2
Heliport	Lorenskog	Norway	ENLX	ENOR	2	18/05/2023							2
Aerodrome	Mehamn	Norway	ENMH	ENOR	2	05/12/2019		28/03/2019					2
Aerodrome	Molde/Årø	Norway	ENML	ENOR					2	30/03/2017			2
Aerodrome	Mosjøen/Kjærstad	Norway	ENMS	ENOR	1	30/03/2017							1
Aerodrome	Lakselv/Banak	Norway	ENNA	ENOR	2	21/04/2022							2
Heliport	Namsos Hospital	Norway	ENNH	ENOR	1	17/06/2021							1

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Namsos	Norway	ENNM	ENOR		02/04/2015			2	27/04/2017			2
Heliport	Notodden	Norway	ENNO	ENOR					1	07/09/2023			1
Aerodrome	Ørland	Norway	ENOL	ENOR				03/03/2016	2	12/10/2017			2
Aerodrome	Rørvik/Ryum	Norway	ENRM	ENOR					2	02/02/2017			2
Aerodrome	Røst	Norway	ENRS	ENOR	2	06/03/2014							2
Aerodrome	Moss/Rygge	Norway	ENRY	ENOR	2	10/12/2015							2
Aerodrome	Sogndal/Haukasen	Norway	ENSG	ENOR		17/08/2017			1	14/09/2017			1
Aerodrome	Svolvær/Helle	Norway	ENSH	ENOR	1	08/12/2016							1
Aerodrome	Stokmarknes/Skagen	Norway	ENSK	ENOR	1	08/12/2016							1
Aerodrome	Stord/Sørstokken	Norway	ENSO	ENOR			2	03/03/2016					2
Heliport	Kalnes Hospital	Norway	ENSP	ENOR	1	17/06/2021							1
Aerodrome	Sorkjosen	Norway	ENSR	ENOR	1	20/05/2021							1
Aerodrome	Vardø/Svartnes	Norway	ENSS	ENOR	2	03/12/2020							2
Aerodrome	Sandnessjøen/Stokka	Norway	ENST	ENOR		23/07/2015			2	30/01/2020			2
Heliport	Stavenger	Norway	ENSX	ENOR	1	18/05/2023							1
Heliport	Thisted hospital	Denmark	EKTH	EKCH	1	03/11/2022							1
Aerodrome	Sandefjord/Torp	Norway	ENTO	ENOR	2	20/08/2015							2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Heliport	Tromsø Univeristy Hospital	Norway	ENTU	ENOR	1	17/06/2021							1
Heliport	Oslo Helikopterplass Taraldrud	Norway	ENTX	ENOR		25/03/2021			2	30/06/2021			2
Heliport	Ullevål University Hospital	Norway	ENUH	ENOR	2	20/05/2021							2
Aerodrome	Trondheim/Vårnes	Norway	ENVA	ENOR				03/03/2016	2	27/02/2020			2
Aerodrome	Vadsø	Norway	ENVD	ENOR			2	23/03/2023					2
Heliport	Hov	Norway	ENXXX ZHO	ENOR	1	03/11/2022							1
Heliport	Levanger Hospital	Norway	ENYY	ENOR	1	17/06/2021							1
Heliport	Stavanger/Sola	Norway	ENZV	ENOR				03/03/2016	6	21/04/2022			6
Aerodrome	Bydgoszcz - Szwederowo	Poland	EPBY	EPWW					2	26/04/2018			2
Aerodrome	Gdańsk Lech Wałęsa	Poland	EPGD	EPWW		28/05/2015			2	26/04/2018			2
Aerodrome	Kraków - Balice	Poland	EPKK	EPWW		18/08/2016			2	26/04/2018			2
Aerodrome	Katowice	Poland	EPKT	EPWW		03/04/2014			2	26/04/2018			2
Aerodrome	Lublin	Poland	EPLB	EPWW					2	26/04/2018			2
Aerodrome	Łódź - Lublinek	Poland	EPLL	EPWW					2	21/06/2018			2
Aerodrome	Warszawa/Modlin	Poland	EPMO	EPWW					2	26/04/2018			2

Operational Aerodromes / Heliports / Routes													
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Aerodrome	Poznan Lawica	Poland	EPPO	EPWW					2	18/07/2019			2
Aerodrome	Warszawa-Radom	Poland	EPRA	EPWW					2	10/08/2023			2
Aerodrome	Rzeszów - Jasionka	Poland	EPRZ	EPWW		15/09/2016			2	26/04/2018			2
Aerodrome	Szczecin - Goleniów	Poland	EPSC	EPWW					2	26/04/2018			2
Aerodrome	Olsztyn - Mazury	Poland	EPSY	EPWW					2	26/04/2018			2
Aerodrome	Warszawa - F. Chopin	Poland	EPWA	EPWW					4	26/04/2018			4
Aerodrome	Wroclaw/Strachowice	Poland	EPWR	EPWW		13/10/2016			2	26/04/2018			2
Aerodrome	Zielona Góra - Babimost	Poland	EPZG	EPWW					2	18/07/2019			2
Aerodrome	Uppsala	Sweden	ESCM	ESAA	4	21/05/2020							4
Heliport	Boras Hospital	Sweden	ESEB	ESAA	1	01/12/2022							1
Heliport	Trollhattan / Nal sjukhus	Sweden	ESEN	ESAA	1	29/12/2022							1
Aerodrome	Jönköping	Sweden	ESGJ	ESAA	2	09/11/2017							2
Aerodrome	Säve	Sweden	ESGP	ESAA		05/11/2020			2	04/11/2021			2
Aerodrome	Trollhättan-Vänersborgs flygplats	Sweden	ESGT	ESAA	2	29/03/2018							2

Operational Aerodromes / Heliports / Routes													
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Heliport	Gothenburg DSBUS Östra Hospital	Sweden	ESHB	ESAA	1	23/03/2023							1
Heliport	Skovde Hospital	Sweden	ESHO	ESAA	1	01/12/2022							1
Heliport	Sahlgrenska hospital heliport	Sweden	ESHS	ESAA	1	29/12/2022							1
Aerodrome	Satenas	Sweden	ESIB	ESAA	2	01/12/2022							2
Heliport	Backefors Hospital	Sweden	ESJD	ESAA	1	01/12/2022							1
Aerodrome	Mora/Siljan	Sweden	ESKM	ESAA	2	30/01/2020							2
Aerodrome	Kristianstad	Sweden	ESMK	ESAA	2	06/12/2018							2
Aerodrome	Kalmar Öland	Sweden	ESMQ	ESAA	1	28/03/2019	1	28/03/2019					2
Aerodrome	Halmstad	Sweden	ESMT	ESAA	2	08/11/2018							2
Aerodrome	Växjö Kronoberg	Sweden	ESMX	ESAA	2	25/04/2019							2
Aerodrome	Sveg	Sweden	ESND	ESAA	2	31/01/2019							2
Aerodrome	Lapland	Sweden	ESNG	ESAA	2	20/06/2019							2
Aerodrome	Kramfors-Sollefteå	Sweden	ESNK	ESAA	2	13/08/2020							2
Aerodrome	Lycksele	Sweden	ESNL	ESAA	2	15/08/2019							2
Aerodrome	Örnsköldsvik	Sweden	ESNO	ESAA	2	15/06/2023							2
Aerodrome	Skellefteå	Sweden	ESNS	ESAA	2	21/05/2020		28/03/2019					2
Aerodrome	Vilhelmina	Sweden	ESNV	ESAA	2	27/02/2020							2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Arvidsjaur	Sweden	ESNX	ESAA	2	05/12/2019							2
Aerodrome	Örebro	Sweden	ESOE	ESAA	2	16/08/2018							2
Aerodrome	Hagfors	Sweden	ESOH	ESAA	2	30/01/2020							2
Aerodrome	Karlstad Airport	Sweden	ESOK	ESAA	2	05/11/2020							2
Aerodrome	Stockholm/Västerås	Sweden	ESOW	ESAA	2	30/01/2020							2
Aerodrome	Borlänge Dala	Sweden	ESSD	ESAA	2	05/11/2020							2
Aerodrome	Norrköping Kungsängen	Sweden	ESSP	ESAA	2	29/03/2018							2
Aerodrome	Torsby	Sweden	ESST	ESAA	2	23/05/2019							2
Aerodrome	Eskilstuna	Sweden	ESSU	ESAA	2	10/09/2020							2
Aerodrome	Stockholm/Arlanda	Sweden	ESSA	ESAA	1	02/11/2023			3	02/11/2023			4
Aerodrome	Stockholm/Bromma	Sweden	ESSB	ESAA					2	30/11/2023			2
Aerodrome	Visby	Sweden	ESSV	ESAA	1	17/06/2021			1	25/03/2021			2
Aerodrome	Ängelholm	Sweden	ESTA	ESAA	2	24/03/2022							2
Aerodrome	Ljungbyhed	Sweden	ESTL	ESAA	2	17/06/2021							2
Aerodrome	Storuman	Sweden	ESUD	ESAA		11/12/2014							0
Aerodrome	Pajala	Sweden	ESUP	ESAA	2	31/12/2020							2
Aerodrome	Hemavan Tärnaby Airport AB	Sweden	ESUT	ESAA	1	11/10/2018							1

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Lielvarde	Latvia	EVGA	EVRR					2	27/01/2022			2
Aerodrome	Liepaja	Latvia	EVLA	EVRR					2	16/06/2022			2
Aerodrome	Riga	Latvia	EVRA	EVRR					2	27/01/2022			2
Aerodrome	Kaunas	Lithuania	EYKA	EYVL	2	09/09/2021							2
Aerodrome	Palanga	Lithuania	EYPA	EYVL	1	25/03/2021							1
Aerodrome	Vilnius	Lithuania	EYVI	EYVL	2	16/07/2020							2
Aerodrome	La Palma	Spain	GCLA	GCCC	1	14/07/2022							1
Aerodrome	Lanzarote AD	Spain	GCRR	GCCC	1	23/05/2019							1
Aerodrome	Tenerife Sur	Spain	GCTS	GCCC	2	05/10/2023							2
Route	Hel Low-Flight Route KY251	Switzerland	KY251	LSAS							1	22/06/2017	1
Route	Hel Low-Flight Route KY252	Switzerland	KY252	LSAS							1	22/06/2017	1
Route	Hel Low-Flight Route KY253	Switzerland	KY253	LSAS							1	22/06/2017	1
Route	Hel Low-Flight Route KY256	Switzerland	KY256	LSAS							1	22/06/2017	1
Route	Hel Low-Flight Route KY257	Switzerland	KY257	LSAS							1	22/06/2017	1
Aerodrome	Burgas	Bulgaria	LBBG	LBSR	2	04/11/2021							2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Gorna Oryahovitsa	Bulgaria	LBGO	LBSR	2	04/11/2021							2
Aerodrome	Plovdiv	Bulgaria	LBPD	LBSR	3	04/11/2021							3
Aerodrome	Varna	Bulgaria	LBWN	LBSR	2	16/06/2022							2
Aerodrome	Dubrovnik	Croatia	LDDU	LDZO	1	10/12/2015							1
Aerodrome	Osijek/Klisa	Croatia	LDOS	LDZO	1	29/03/2018							1
Aerodrome	Pula	Croatia	LDPL	LDZO	2	26/04/2018							2
Aerodrome	Rijeka	Croatia	LDRI	LDZO	2	12/09/2019							2
Aerodrome	Brač	Croatia	LDSB	LDZO	2	05/12/2019							2
Aerodrome	Split/Kastela	Croatia	LDSP	LDZO	1	29/03/2018							1
Aerodrome	Zagreb/Pleso	Croatia	LDZA	LDZO	2	29/03/2018							2
Aerodrome	Zadar	Croatia	LDZD	LDZO	4	11/10/2018							4
Aerodrome	Almería	Spain	LEAM	LECM	2	02/02/2017							2
Aerodrome	Córdoba	Spain	LEBA	LECM	2	15/06/2023							2
Aerodrome	Josep Tarradellas Barcelona-El Prat	Spain	LEBL	LECB					5	04/11/2021			5
Aerodrome	Burgos	Spain	LEBG	LECM	2	20/04/2023							2
Aerodrome	Castellón	Spain	LECH	LECB	1	21/04/2022							1
Aerodrome	Lleida	Spain	LEDA	LECB	1	03/11/2022							1

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Girona	Spain	LEGE	LECB	1	24/03/2022							1
Aerodrome	Jerez	Spain	LEJR	LECM	1	02/12/2021							1
Aerodrome	Palma de Mallorca	Spain	LEPA	LECB	3	01/03/2018							3
Aerodrome	AS Madrid-Barajas	Spain	LEMD	LECM					4	23/02/2023			4
Aerodrome	Logroño	Spain	LERJ	LECM	1	20/04/2023							1
Aerodrome	Reus	Spain	LERS	LECB	1	01/12/2022							1
Aerodrome	Valencia Airport	Spain	LEVC	LECB	2	01/02/2018							2
Aerodrome	Vigo	Spain	LEVX	LECM	2	05/12/2019							2
Aerodrome	Santander	Spain	LEXJ	LECM	2	17/10/2013							2
Aerodrome	Calais	France	LFAC	LFFF	1	20/09/2012							1
Aerodrome	Albert Bray	France	LFAQ	LFFF	1	15/11/2012			1	21/11/2017			2
Aerodrome	Le Touquet Paris Plage	France	LFAT	LFFF	1	04/02/2016			1	21/11/2017			2
Aerodrome	Valenciennes Denain	France	LFAV	LFFF	1	19/09/2013			1	21/11/2017			2
Aerodrome	Amiens Glisy	France	LFAY	LFFF	1	27/06/2013							1
Aerodrome	Agen La Garenne	France	LFBA	LFBB		06/03/2014			1	21/11/2017			1
Aerodrome	Bordeaux Merignac	France	LFBD	LFBB		08/03/2012			4	21/11/2017			4
Aerodrome	Bergerac	France	LFBE	LFBB		09/01/2014			2	21/11/2017			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Toulouse Francazal	France	LFBF	LFBB		23/06/2016			2	03/11/2022			2
Aerodrome	La Rochelle	France	LFBH	LFBB		20/09/2012			2	04/11/2021			2
Aerodrome	Poitiers Biard	France	LFBI	LFBB	1	12/11/2015			1	21/11/2017			2
Aerodrome	Montluçon Gueret	France	LFBK	LFBB	1	17/12/2013							1
Aerodrome	Limoges	France	LFBL	LFBB		28/06/2012			2	21/11/2017			2
Aerodrome	Niort Marais Poitevin	France	LFBN	LFBB	1	02/03/2017							1
Aerodrome	Toulouse Blagnac	France	LFBO	LFBB	4	03/05/2012							4
Aerodrome	Pau-Pyrénées	France	LFBP	LFBB	1	17/03/2011							1
Aerodrome	Muret Lherm	France	LFBR	LFBB	1	15/10/2015							1
Aerodrome	Biscarrosse Parentis	France	LFBS	LFBB					1	04/11/2021			1
Aerodrome	Tarbes Lourdes Pyrénées	France	LFBT	LFBB	1	28/05/2015							1
Aerodrome	Angoulême Brie Champniers	France	LFBU	LFBB		03/04/2014			2	21/11/2017			2
Aerodrome	Périgueux Bassillac	France	LFBX	LFBB		28/05/2015			1	25/05/2017			1
Aerodrome	Biarritz Bayonne Anglet	France	LFBZ	LFBB		09/02/2012		01/01/2013	2	26/04/2018			2
Aerodrome	CAHORS LALBENQUE	France	LFCC	LFBB					1	03/11/2022			1
Aerodrome	Albi Le Sequestre	France	LFCI	LFBB	1	26/05/2016			1	21/11/2017			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Castres Mazamet	France	LFCK	LFBB	1	22/08/2013							1
Aerodrome	Rodez Marcillac	France	LFCR	LFBB	1	31/05/2012			1	21/11/2017			2
Aerodrome	Royan Médis	France	LFCY	LFBB	1	30/04/2015							1
Aerodrome	Auch Lamothe	France	LFDH	LFBB	2	28/05/2015							2
Aerodrome	Pamiers Les Pujols	France	LFDJ	LFFF					2	03/11/2022			2
Aerodrome	Rochefort Charente Maritime	France	LFDN	LFBB					2	01/12/2022			2
Aerodrome	Ouessant	France	LFEC	LFRR	2	11/12/2014							2
Aerodrome	Ile d Yeu	France	LFEY	LFBB					2	04/11/2021			2
Aerodrome	Colmar Houssen	France	LFGA	LFEE		02/05/2013			2	21/06/2018			2
Aerodrome	Dole Tavaux	France	LFGJ	LFEE		09/01/2014			1	21/11/2017			1
Aerodrome	Le Puy Loudes	France	LFHP	LFBB		04/02/2016			2	28/02/2019			2
Aerodrome	Moulins Montbeugny	France	LFHY	LFFF	1	01/05/2014							1
Aerodrome	Metz Nancy Lorraine	France	LFJL	LFEE	1	04/04/2013			1	21/11/2017			2
Aerodrome	Angers Marcé	France	LFJR	LFRR		07/01/2016			1	21/11/2017			1
Aerodrome	Bastia Poretta	France	LFKB	LFMM					1	07/12/2017			1
Aerodrome	Calvi Sainte Catherine	France	LFKC	LFMM		30/04/2015			2	04/11/2021			2
Aerodrome	Figari Sud Corse	France	LFKF	LFMM					1	21/11/2017			1

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Ajaccio Napoléon Bonaparte	France	LFKJ	LFMM	1	23/06/2016							1
Aerodrome	Auxerre Branches	France	LFLA	LFFF	2	21/08/2014							2
Aerodrome	Clermont-Ferrand Auvergne	France	LFLC	LFMM		05/05/2011			1	21/11/2017			1
Aerodrome	Bourges	France	LFLD	LFFF	1	18/08/2016							1
Heliport	Grenoble – Le Versoud	France	LFLG	LFMM					1	01/12/2022			1
Aerodrome	Lyon St Exupery	France	LFLL	LFMM		07/02/2013			4	15/08/2019			4
Aerodrome	Saint Yan	France	LFLN	LFMK					2	02/03/2017			2
Aerodrome	Annecy Meythet	France	LFLP	LFMM		19/09/2013			2	04/11/2021			2
Aerodrome	Grenoble Isere	France	LFLS	LFMM		05/12/2019			2	13/10/2016			2
Aerodrome	Valence	France	LFLU	LFMM		13/12/2012			1	21/11/2017			1
Aerodrome	Vichy Charmeil	France	LFLV	LFMM		05/02/2015			1	26/04/2018			1
Aerodrome	Aurillac	France	LFLW	LFBB		26/06/2014			1	15/08/2019			1
Aerodrome	Chateauroux Deols	France	LFLX	LFBB		06/02/2014			2	15/08/2019			2
Aerodrome	Lyon Bron	France	LFLY	LFMM					2	28/09/2016			2
Aerodrome	Cannes Mandelieu	France	LFMD	LFMM	1	05/02/2015							1
Aerodrome	Saint Étienne Bouthéon	France	LFMH	LFMM		24/07/2014			2	02/02/2017			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Carcassonne Salvaza	France	LFMK	LFBB		03/05/2012			2	21/11/2017			2
Aerodrome	Marseille Provence	France	LFML	LFMM	2	08/01/2015	2	25/06/2015	2	03/11/2022			6
Aerodrome	Nice Côte d'Azur	France	LFMN	LFMM		25/06/2015			2	25/04/2019			2
Aerodrome	Perpignan Rivesaltes	France	LFMP	LFMM	1	15/10/2015							1
Aerodrome	Montpellier Mediterranee	France	LFMT	LFMM					1	05/12/2019			1
Aerodrome	Béziers Vias	France	LFMU	LFMM	2	18/10/2012							2
Aerodrome	Avignon Caumont	France	LFMV	LFMM					3	21/06/2018			3
Aerodrome	Mende	France	LFNB	LFMM	1	17/12/2013							1
Aerodrome	Beauvais	France	LFOB	LFFF	1	20/09/2012			1	01/12/2022			2
Aerodrome	Le Havre Octeville	France	LFOH	LFFF		10/12/2015			2	21/11/2017			2
Aerodrome	Chalons Vatry	France	LFOK	LFFF	2	02/02/2017							2
Aerodrome	Blois Le Breuil	France	LFOQ	LFFF		15/09/2016			1	25/04/2019			1
Aerodrome	TOURS VAL DE LOIRE	France	LFOT	LFFF					2	01/12/2022			2
Aerodrome	Cholet le Pontreau	France	LFOU	LFRR	2	04/02/2016							2
Aerodrome	Laval Entrammes	France	LFOV	LFFF	2	26/04/2018							2
Aerodrome	Orléans Saint Denis De L'Hotel	France	LFOZ	LFBB		28/06/2012			2	04/11/2021			2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Paris-Le Bourget	France	LFPB	LFFF		02/06/2011			2	21/11/2017			2
Aerodrome	Paris Charles de Gaulle	France	LFPG	LFFF					8	28/04/2016			8
Aerodrome	Melun Villaroche	France	LFPM	LFFF		10/12/2015			2	21/11/2017			2
Aerodrome	Toussus Le Noble	France	LFPN	LFFF					2	27/04/2017			2
Aerodrome	Paris Orly	France	LFPO	LFFF	2	30/05/2013	2	30/04/2015	2	21/11/2017			6
Aerodrome	Pontoise Cormeilles en Vexin	France	LFPT	LFFF		01/05/2014			4	21/11/2017			4
Aerodrome	Reims Prunay	France	LFQA	LFFF	1	03/04/2014							1
Aerodrome	Troyes Barberey	France	LFQB	LFFF					2	18/08/2016			2
Aerodrome	Nevers Fouchambault	France	LFQG	LFFF	1	13/12/2012							1
Aerodrome	Besançon La Vèze	France	LFQM	LFEE	1	18/09/2014							1
Aerodrome	Lille Lesquin	France	LFQQ	LFFF	3	26/06/2014							3
Aerodrome	Merville	France	LFQT	LFFF	2	15/11/2012							2
Aerodrome	Brest Bretagne	France	LFRB	LFRR		03/05/2012	1	01/01/2014	1	04/11/2021			2
Aerodrome	Cherbourg Maupertus	France	LFRC	LFFF					1	23/06/2016			1
Aerodrome	Dinard	France	LFRD	LFRR	1	06/02/2014			1	21/11/2017			2
Aerodrome	Deauville Normancie	France	LFRG	LFFF	1	18/09/2014			1	04/11/2021			2

Operational Aerodromes / Heliports / Routes													
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Aerodrome	La Roche Sur Yon Les Ajoncs	France	LFRI	LFRR		13/12/2012			2	10/11/2016			2
Aerodrome	Caen Carpiquet	France	LFRK	LFRR		11/12/2014			1	21/11/2017			1
Aerodrome	Le Mans	France	LFRM	LFFF	1	15/11/2012							1
Aerodrome	Rennes	France	LFRN	LFRR	2	30/05/2013							2
Aerodrome	Lannion	France	LFRO	LFRR		07/01/2016			1	21/11/2017			1
Aerodrome	Quimper	France	LFRQ	LFRR		29/03/2019			2	21/11/2017			2
Aerodrome	Nantes	France	LFRS	LFRR	1	28/06/2012							1
Aerodrome	Saint Brieuc Armor	France	LFRT	LFRR		10/12/2015			1	21/11/2017			1
Aerodrome	Morlaix Ploujean	France	LFRU	LFRR	1	13/10/2016							1
Aerodrome	Vannes Meucon	France	LFRV	LFRR	1	31/05/2012							1
Aerodrome	Saint Nazaire Montoir	France	LFRZ	LFRR		28/10/2014			1	21/11/2017			1
Aerodrome	Bâle-Mulhouse	France	LFSB	LFEE	2	10/12/2015							2
Aerodrome	Dijon-Longvic	France	LFSD	LFEE	1	28/04/2016							1
Aerodrome	Epinal Mirecourt	France	LFSG	LFEE	1	30/05/2013							1
Aerodrome	Brive Souillac	France	LFSL	LFBB		22/08/2013			2	04/11/2021			2
Aerodrome	Nancy Essey	France	LFSN	LFEE		02/05/2013			1	26/04/2018			1
Aerodrome	Strasbourg Entzheim	France	LFST	LFEE		10/12/2015			2	21/11/2017			2

Operational Aerodromes / Heliports / Routes													
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Aerodrome	Nîmes Garons	France	LFTW	LFMM		18/10/2012			2	21/11/2017			2
Aerodrome	Ioannina	Greece	LGIO	LGGG	2	27/02/2020							2
Aerodrome	Kos	Greece	LGKO	LGGG	2	27/02/2020							2
Aerodrome	Mitilini	Greece	LGMT	LGGG	1	27/02/2020							1
Aerodrome	Thessaloniki	Greece	LGTS	LGGG	1	27/02/2020							1
Aerodrome	Békéscsaba Repülőtér	Hungary	LHBC	LHCC	2	28/01/2021							2
Aerodrome	Budapest Liszt Ferenc	Hungary	LHBP	LHCC					4	15/09/2016			4
Aerodrome	Debrecen International	Hungary	LHDC	LHCC	1	30/01/2020							1
Aerodrome	Nyíregyháza Airport	Hungary	LHNY	LHCC	4	24/03/2022							4
Aerodrome	Pecs-Pogany	Hungary	LHPP	LHCC	1	03/12/2020			1	03/12/2020			2
Aerodrome	Győr-Pér	Hungary	LHPR	LHCC	1	25/02/2021			1	25/02/2021			2
Aerodrome	Heviz-Balaton	Hungary	LHSM	LHCC	1	25/03/2021			1	25/03/2021			2
Aerodrome	Crotone	Italy	LIBC	LIBB					2	02/11/2023			2
Aerodrome	Bari/Palese	Italy	LIBD	LIBB					2	25/03/2021			2
Aerodrome	Taranti/Grottaglie	Italy	LIBG	LIBB					1	20/05/2021			1
Aerodrome	Brindisi/Casale	Italy	LIBR	LIBB					2	07/10/2021			2

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Aerodrome	Lamezia Terme	Italy	LICA	LIRR					1	08/09/2022			1
Aerodrome	Lampedusa	Italy	LICD	LIRR					2	30/01/2020			2
Aerodrome	Pantelleria	Italy	LICG	LIRR					3	21/06/2018			3
Aerodrome	Palermo/Punta Raisi	Italy	LICJ	LIRR	3	11/10/2018							3
Aerodrome	Reggio Calabria	Italy	LICR	LIRR					1	19/07/2018			1
Aerodrome	Trento/Mattarello	Italy	LIDT	LIMM	2	30/01/2020							2
Aerodrome	Alghero/Fertilia	Italy	LIEA	LIRR	2	11/10/2018							2
Aerodrome	OLBIA/Costa Smeralda	Italy	LIEO	LIRR					1	11/08/2022			1
Aerodrome	Milano/Malpensa	Italy	LIMC	LIMM	2	21/08/2014			4	23/04/2020			6
Aerodrome	Bergamo /Orio al Serio	Italy	LIME	LIMM	1	20/07/2017			1	08/10/2020			2
Aerodrome	Torino/Caselle	Italy	LIMF	LIMM					1	25/03/2021			1
Aerodrome	Genova/Sestri	Italy	LIMJ	LIMM					1	10/09/2020			1
Aerodrome	Milano/Linate	Italy	LIML	LIMM		13/12/2012							0
Aerodrome	Parma	Italy	LIMP	LIMM					1	23/05/2018			1
Aerodrome	Cuneo/Levaldigi	Italy	LIMZ	LIMM					1	23/05/2018			1
Aerodrome	Bologna/Borgo Panigale	Italy	LIPE	LIMM	2	03/01/2019							2

Operational Aerodromes / Heliports / Routes													
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Aerodrome	Trieste/Ronchi dei Legionari	Italy	LIPQ	LIMM					1	12/08/2021			1
Aerodrome	Rimini/Miramare	Italy	LIPR	LIMM					2	15/07/2021			2
Aerodrome	Verona/Villafranca	Italy	LIPX	LIMM		22/06/2017							0
Aerodrome	Ancona/Falconara	Italy	LIPY	LIMM					1	03/01/2019			1
Aerodrome	Venezia/Tessera	Italy	LIPZ	LIMM	4	27/06/2013							4
Aerodrome	Roma/Ciampino	Italy	LIRA	LIRR					2	21/05/2020			2
Aerodrome	Roma/Fiumicino	Italy	LIRF	LIRR	4	10/01/2013			2	23/05/2019			6
Aerodrome	Napoli/Capodichino	Italy	LIRN	LIRR					2	07/10/2021			2
Aerodrome	Firenze/Peretola	Italy	LIRQ	LIRR	1	22/06/2017							1
Aerodrome	Portotoz	Slovenia	LJPZ	LJLA	1	01/12/2022							1
Aerodrome	Kunovice	Czech Republic	LKKU	LKAA	1	01/12/2017							1
Aerodrome	Karlovy Vary	Czech Republic	LKKV	LKAA	2	13/11/2014							2
Aerodrome	Ostrava	Czech Republic	LKMT	LKAA	2	09/01/2014							2
Aerodrome	Prague	Czech Republic	LKPR	LKAA				09/01/2014	4	05/12/2019			4
Aerodrome	Brno	Czech Republic	LKTB	LKAA	2	09/01/2014							2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Praha/Vodochody	Czech republic	LKVO	LKAA	2	25/06/2015							2
Aerodrome	Luqa	Malta	LMML	LMMM	2	11/10/2018			2	11/10/2018			4
Aerodrome	Vöslau	Austria	LOAV	LOVV	1	28/02/2019							1
Heliport	Öamtc/Oberwart	Austria	LODO	LOVV	1	28/02/2019							1
Aerodrome	Graz	Austria	LOWG	LOVV		09/01/2014			2	01/03/2018			2
Aerodrome	Innsbruck	Austria	LOWI	LOVV					1	01/02/2018			1
Aerodrome	Klagenfurt	Austria	LOWK	LOVV					2	11/10/2018			2
Aerodrome	Linz	Austria	LOWL	LOVV		09/01/2014			2	02/02/2017			2
Aerodrome	Salzburg	Austria	LOWS	LOVV					1	23/04/2020			1
Aerodrome	Wien - Schwechat	Austria	LOWW	LOVV					4	02/02/2017			4
Aerodrome	Cascais	Portugal	LPCS	LPPC	1	20/05/2021							1
Aerodrome	Faro	Portugal	LPFR	LPPC	1	18/07/2019							1
Aerodrome	Porto	Portugal	LPPR	LPPC	1	12/10/2017							1
Aerodrome	Porto Santo	Portugal	LPPS	LPPC	2	08/09/2022							2
Aerodrome	Lisboa	Portugal	LPPT	LPPC	2	28/05/2015							2
Aerodrome	BRAŞOV / Braşov-Ghimbav	Romania	LRBV	LRBB					1	13/07/2023			1
Aerodrome	Constanta	Romania	LRCK	LRBB	2	07/09/2023							2

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Cluj - Napoca / Avram Iancu	Romania	LRCL	LRBB	2	10/11/2016							2
Aerodrome	Suceava	Romania	LRSV	LRBB	2	07/09/2023							2
Aerodrome	Les Eplatures	Switzerland	LSGC	LSAS					2	26/05/2016			2
Aerodrome	Genève	Switzerland	LSGG	LSAS		12/11/2015			2	13/09/2018			2
Heliport	Bern-Insel Hospital	Switzerland	LSHI		1	23/07/2015							1
Aerodrome	Dübendorf	Switzerland	LSMD	LSAS	2	21/08/2014			1	30/01/2020			3
Aerodrome	Emmen	Switzerland	LSME	LSAS	1	03/04/2014							1
Aerodrome	Payerne	Switzerland	LSMP	LSAS		17/09/2015			1	05/12/2019			1
Aerodrome	Bern-Belp	Switzerland	LSZB	LSAS		07/03/2013			1	03/12/2020			1
Aerodrome	Zurich	Switzerland	LSZH	LSAS		06/12/2018			2	25/05/2017			2
Aerodrome	St. Gallen-Altenrhein	Switzerland	LSZR	LSAS	1	17/11/2011							1
Aerodrome	Beograd/Nikola Tesla	Serbia	LYBE	LYBA					4	26/03/2020			4
Aerodrome	BEOGRAD/Batajnica - Pukovnik-pilot Milenko Pavlović	Serbia	LYBT	LYBA					3	15/06/2023			3
Aerodrome	KRALJEVO/Morava	Serbia	LYKV	LYBA					2	24/02/2022			2
Aerodrome	Niš/Konstantin Veliki	Serbia	LYNI	LYBA					1	26/03/2020			1
Aerodrome	Podgorica	Montenegro	LYPG	LYBA					1	26/03/2020			1

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Aerodrome	Bratislava-Milan Rastislav Štefánik	Slovak Republic	LZIB	LZBB		05/02/2015			2	20/04/2023			2
Aerodrome	Košice	Slovak Republic	LZKZ	LZBB					2	16/06/2022			2
Aerodrome	Piešťany	Slovak Republic	LZPP	LZBB					1	02/02/2017			1
Aerodrome	Poprad-Tatry	Slovak Republic	LZTT	LZBB					2	29/03/2018			2
Aerodrome	Žilina	Slovak Republic	LZZI	LZBB					1	25/05/2017			1
Heliport	Aenes	Norway	ENXXXZAE	ENOR	1	18/05/2023							1
Heliport	Bjarkoy	Norway	ENXXXZBK	ENOR	1	20/05/2021							1
Heliport	Evenskjaer	Norway	ENXXXZES	ENOR	1	20/05/2021							1
Heliport	Finnsnes	Norway	ENXXXZFI	ENOR	1	20/05/2021							1
Heliport	Fodnes	Norway	ENXXXZFN	ENOR	1	18/05/2023							1
Heliport	Farsund	Norway	ENXXXZFS	ENOR	1	20/04/2023							1
Heliport	Hamar Hospital	Norway	ENXXXZHM	ENOR	1	17/06/2021							1

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Heliport	Innhavet	Norway	ENXXX ZIH	ENOR	1	17/06/2021							1
Heliport	Kautokeino	Norway	ENXXX ZKA	ENOR	1	20/05/2021							1
Heliport	Kongsberg Hospital	Norway	ENXXX ZKB	ENOR	1	17/06/2021							1
Heliport	Kirkenes	Norway	ENXXX ZKK	ENOR	1	18/05/2023							1
Heliport	Karasjok	Norway	ENXXX ZKS	ENOR	1	20/05/2021							1
Heliport	Lofoten Hospital	Norway	ENXXX ZLK	ENOR	1	17/06/2021							1
Heliport	Mosjøen	Norway	ENMK	ENOR	1	17/06/2021							1
Heliport	Mysen	Norway	ENXXX ZMY	ENOR	1	17/06/2021							1
Heliport	Narvik	Norway	ENXXX ZNK	ENOR	1	17/06/2021							1
Heliport	Rindal	Norway	ENXXX ZRD	ENOR	1	18/05/2023							1
Heliport	Rjukan	Norway	ENXXX ZRJ	ENOR	1	20/04/2023							1
Heliport	Rindal	Norway	ENXXX ZRL	ENOR		20/04/2023							0

Operational Aerodromes / Heliports / Routes													
Aerodrome /Route	**Name**	**Country**	**ICAO Code**	**FIR**	**APV-I Procedure**	**Activation APV-I procedure**	**APV Baro Procedure**	**Activation APV Baro Procedure**	**LPV-200 Procedure**	**Activation LPV-200 procedure**	**RNP 0.3 Procedure**	**Activation RNP 0.3 procedure**	**Total Procedures (LPV + APV Baro + LPV-200 + RNP 0.3)**
Heliport	Skjervøy	Norway	ENXXX ZSC	ENOR		17/06/2021							0
Heliport	Steinkjer	Norway	ENXXX ZSK	ENOR	1	20/04/2023							1
Heliport	Surnadal	Norway	ENXXX ZSL	ENOR	1	20/04/2023							1
Heliport	Storsteinnes	Norway	ENXXX ZSO	ENOR	1	20/05/2021							1
Heliport	Sandnessjøen Hospital	Norway	ENXXX ZSS	ENOR		17/06/2021							0
Heliport	Treungen	Norway	ENXXX ZTG	ENOR	1	18/05/2023							1
Heliport	Trysil	Norway	ENXXX ZTL	ENOR	1	20/04/2023							1
Heliport	Trones	Norway	ENXXX ZTN	ENOR	1	17/06/2021							1
Heliport	Torpomoen	Norway	ENXXX ZTP	ENOR	1	07/09/2023							1
Heliport	Vrangerbotn	Norway	ENXXX ZVB	ENOR	1	18/05/2023							1
Heliport	Vangsnes	Norway	ENXXX ZVG	ENOR	1	20/04/2023							1

Table 15 – EGNOS-based approach procedure

APPENDIX B LIST OF REFERENCES

[RD-1] Open Service Definition Document, EGN-SDD-OS; v.02-03 (https://egnos.gsc-europa.eu/sites/default/files/documents/egnos_os_sdd_in_force.pdf)

[RD-2] Safety Of Life Definition Document, EGN-SDD-SoL; v.03-05 (https://egnos.gsc-europa.eu/sites/default/files/documents/egnos_sol_sdd_in_force.pdf)

[RD-3] EGNOS Data Access Service (EDAS) Service Definition Document, EGN-SDD-EDAS; v.02-03 (https://edas-maritime.gsc-europa.eu/sites/default/files/documents/egnos_edas_sdd_in_force.pdf)

APPENDIX C LIST OF ACRONYMS

ACRONYM	DEFINITION
APV	Approach with Vertical Guidance
ASTP	Absolute Safe Train Positioning
ASN	Abstract Syntax Notation
CLUG	Certifiable Localisation Unit with GNSS
ECAC	European Civil Aviation Conference
EDAS	EGNOS Data Access Service
EGNOS	European Geostationary Navigation Overlay Service
ENT	EGNOS Network Time
ERJU	Europe´s Rail Joint Undertaking
ERTMS	European Rail Traffic Management System
ESSP	European Satellite Services Provider
EUG	ERTMS User Group
FTP	File Transfer Protocol
FutuRe	Future Regional railways
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
LWG	Location Working Group

ACRONYM	DEFINITION
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
R2DATO	Rail to Digital automated up to Autonomous Train Operation)
RADIUS	Railway Digitalisation Using Drones
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 Alert Limit
VNSE	Vertical Navigation System Error

ACRONYM	DEFINITION
VPE	Vertical Position Error
VPL	Vertical Protection Level
VSI	Vertical Safety Index

Table 16 – List of Acronyms

LINKING SPACE TO USER NEEDS

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