

EGNOS Data Access Service Content and Access

<http://www.gsa.europa.eu/go/egnos/edas>



Plugging into EGNOS

A new service from EGNOS is now available! The European Geostationary Navigation Overlay Service (EGNOS) is essentially Europe's 'pre-GALILEO' system, its first concrete venture into satellite navigation. EGNOS delivers services based mainly on GPS signals, providing augmentation signals disseminated by geostationary satellites linked to a network of ground stations. EGNOS provides services via three EGNOS geostationary satellites: the Open Service, and EDAS, which provides ground-based access to EGNOS.



EGNOS now provides a terrestrial data service

EDAS – the EGNOS Data Access Service – allows you to plug into EGNOS to receive the internal data collected, generated and delivered by Europe's first satellite navigation system. EDAS therefore provides an opportunity to deliver EGNOS data to users who cannot always view the EGNOS satellites (such as in urban canyons), or to support a variety of other services, applications and research programmes.

EDAS provides a formatted data feed from EGNOS through a ground based transmission network. The EDAS data can then be built upon either to form new innovative services or to be integrated into existing services. Ultimately, it is envisaged EDAS will add value to a range of multimodal applications, including location-based services (LBS), Assisted-GNSS (A-GNSS) concepts, a broad range of services in professional GNSS markets, and related R&D activities.

Why EDAS?

EDAS builds on the qualities of EGNOS to provide a reliable high level of service to users. EDAS offers the following key advantages.

Reliability and assurance: EGNOS will be a certified Safety-of-Life system requiring a highly reliable and resilient infrastructure. This infrastructure is the basis for EDAS.

Data delivery: EGNOS data is provided in real-time through a standard internet connection or via a direct fixed line.

Data content: EDAS not only provides EGNOS broadcast data, but also raw data from Ranging and Integrity Monitoring Stations (RIMS) and satellite status messages.

European and North African coverage: EDAS data is sourced from 34 EGNOS RIMS generating unique Global Navigation Satellite System (GNSS) datasets from Europe and North Africa

Commercial contracts: In the future, it is planned that EDAS can be provided to service providers on a long-term basis with reliable performance levels.

EDAS content and access

In this information package we aim to provide you with everything you will need to know about the content delivered by EDAS, how to sign up for the service and how to access EDAS. This information package is complemented by a separate package outlining the potential uses and applications for EDAS, available at <http://www.gsa.europa.eu/go/egnos/edas>. Furthermore, a list of FAQs and the EDAS Help Desk can also be accessed at <http://www.gsa.europa.eu/go/egnos/edas>. If you have any questions not addressed in our information packages, please contact us at edas@gsa.europa.eu.

EDAS Connection

The standard and easiest way to receive EDAS is over the internet. Simply by downloading the client software EDAS can be received through a typical broadband internet connection, where:

- ASN.1 format service requires 600kb/s
- RTCM format service requires 300kb/s
- Both formats can be received at 900kb/s

During the beta trial phase it is possible to obtain dedicated and faster connections. This service includes a fixed line solution providing a dedicated line for each user. The costs for introducing the fixed line solution to EDAS need to be covered, but we will provide assistance and support in setting up the connection.



Signing up for EDAS

Signing up for free is simple. Just go to <http://www.gsa.europa.eu/go/egnos/edas> and follow the instructions under the menu «how do I access EDAS». From there you can fill in a simple application form to be sent via email. You will then receive configuration and login details, the client software and other useful information.

Data available from EDAS

EDAS is the single point of access for the data collected and generated by EGNOS. The EGNOS infrastructure is composed of ground stations, most of which are located in Europe and North Africa. The main types of data provided by EDAS are:

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

In addition, EDAS provides the Antenna Phase Centre Coordinates, which is a list of the geographical coordinates of RIMS stations.

The details of these types of data, their content and format, are presented in this information package.

Raw observations from the RIMS network

The data collected by the RIMS network includes dual-frequency GPS data, GLONASS L1, and the EGNOS geostationary Signal-in-Space (SIS). For each RIMS and each satellite tracked a set of observables is provided. Therefore, at any one time information from each RIMS will be provided with a set of observables from visible satellites. The raw data can be provided in both ASN.1 and RTCM format.

This data is provided by EDAS in real-time with an update rate of one second. Each message contains a variable number of sections (depending on the number of tracked satellites). The summary table below lists all the raw observables provided from the RIMS network.



EGNOS Ground Infrastructure
(• = RIMS)

For each RIMS (and NLES) and each visible GPS satellite			For each RIMS (not NLES) and each visible GLONASS satellite		For each RIMS and each visible EGNOS GEO	
GPS navigation data (50 bits)	GPS L1 code measurements	GPS L2 code measurements	GLONASS navigation data (50 bits)	GLONASS L1 code measurements	GEO navigation data (250 bits)	GEO L1 code measurements
GPS receiver channel status.	GPS L1 phase measurements (accumulated Doppler from satellite acquisition)	GPS L2 phase measurements (accumulated Doppler)	GLONASS receiver channels status	GLONASS L1 phase measurements (accumulated Doppler)	GEO receiver channels status	GEO L1 phase measurements (accumulated Doppler)
	GPS L1 signal C/N0 ratio	GPS L2 signal C/N0 ratio		GLONASS L1 signal C/N0 ratio		GEO L1 signal C/N0 ratio
	GPS L1 code carrier phase coherency indicator	GPS L2 code carrier phase coherency indicator		GLONASS L1 code carrier phase coherency indicator		GEO L1 code carrier phase coherency indicator
	GPS L1 signal status	GPS L2 signal status		GLONASS L1 signal status		GEO L1 signal status
	GPS L1 signal quality	GPS L2 signal quality		GLONASS L1 signal quality		GEO L1 signal quality

RIMS Antenna Phase Centre Coordinates

The Antenna Phase Centre Coordinates of RIMS stations are provided in a dedicated message. The coordinates are expressed as Earth-Centred, Earth-Fixed (ECEF) Cartesian coordinates in the World Geodetic System 1984 (WGS84) reference system. This data therefore consists of a set of WGS84 coordinates for RIMS stations.

EGNOS augmentation message

This is the EGNOS augmentation message as uplinked and broadcast from the EGNOS geostationary satellites. The augmentation message from EGNOS has been internationally standardised along with any other space-based augmentation system (SBAS). Therefore its content and format is defined precisely in the following public document: Minimum Operational Performance Standards for Global Positioning System/Wide Area Augmentation System Airborne Equipment, Ref. RTCA DO-229, Revision D, Issued 13 December 2006.

The EGNOS augmentation message is formed from a number of distinct message types containing various aspects of the overall augmentation message. The message types provided are summarised in the table (below).

The EGNOS augmentation message is transmitted per second and each message is 250 bits long. In an EDAS message, the previous four augmentation messages transmitted are also provided.

Type	Contents
0	Don't use for safety applications (for SBAS testing)
1	PRN Mask assignments, set up to 51 of 210 bits
2 to 5	Fast corrections
6	Integrity information
7	Fast correction degradation factor
9	GEO navigation message (X, Y, Z, time, etc.)
10	Degradation Parameters
12	SBAS Network Time/UTC offset parameters
17	GEO satellite almanacs
18	Ionospheric grid point masks
24	Mixed fast corrections/long term satellite error corrections
25	Long term satellite error corrections
26	Ionospheric delay corrections
27	SBAS Service Message
28	Clock-Ephemeris Covariance Matrix Message

For more information:

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