



EGNOS, it's there. Use it.

EGNOS verification guidelines



European
Global Navigation
Satellite Systems
Agency



Precise navigation,
powered by Europe



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How to ensure your equipment is using EGNOS corrections (1/9)

Step 1:

Be sure that your device is EGNOS compatible and it is correctly configured



How to ensure your equipment is using EGNOS corrections (2/9)

STEP 1



EGNOS compatibility: Look for “SBAS” and “EGNOS” words in datasheets

SPECIFICATIONS	
Tracking Capabilities	
Number of Channels	226 Channels with Universal Tracking Technology
Tracked Signals	GPS L1 CA, L1/L2 P-code, L2C GLONASS L1/L2 CA, L1/L2 P-code SBAS WAAS, EGNOS, MSAS, QZSS
Positioning Accuracy	
Static	L1+L2 H: 3mm + 0.5ppm V: 5mm + 0.5ppm
	L1 only H: 3mm + 0.8ppm V: 4mm + 1ppm
RTK, Kinematic	L1+L2 H: 10mm + 1ppm V: 15mm + 1ppm
DGPS	<0.5m

PRODUCT FEATURE	AgGPS® 162 RECEIVER
Signal Tracked	L1, SBAS (WAAS, EGNOS, MSAS)
Maximum Number of Satellites Tracked	12 + 3 SBAS
DGPS Accuracy	± 8-12 inch pass-to-pass
Position Fix Update Rate (sec)	1 Hz, 5 Hz
Cold Start	< 2.5 Minutes
Warm Start	< 30 Seconds
Re-acquisition	< 5 Seconds
NMEA Messages	ALM, GGA, GLL, GSA, GSV, PTNLID, RMC, VTG, ZDA, GRS, GST, GGK, PTNLISM
Antenna Type	L1 GPS
Baud Rate	4,800 — 115,200

Examples of devices specifications



How to ensure your equipment is using EGNOS corrections (3/9)

STEP 1

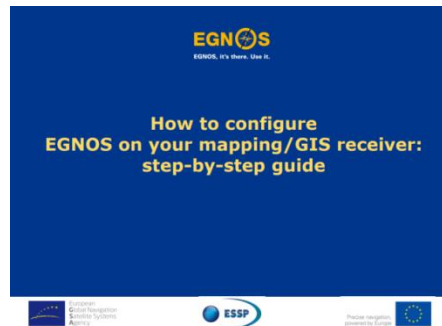


EGNOS configuration: Check the equipment's user manual, look for "SBAS/EGNOS" and "configuration" words



It can be helpful to consult these free material explaining how to configure EGNOS:

MAPPING & SURVEYING



AGRICULTURE



Remember to check which are the current operational EGNOS satellites consulting the [EGNOS User Support Website](#) and/or [EGNOS APP](#)



After Step1 you should know if your equipment is EGNOS compatible and it is correctly configured to use EGNOS corrections

How to ensure your equipment is using EGNOS corrections (4/9)

Step 2:

Check in the device user manual if there is any information displayed on the device screen in relation with the PRNs tracked

How to ensure your equipment is using EGNOS corrections (5/9)

STEP 2



Usually the Signal to Noise ratio (SNR) for each satellite tracked is displayed on the screen (the higher the bar the higher SNR experienced by the device). Look for EGNOS GEO operational PRNs(*)



Check EGNOS the User Support Website and/or EGNOS APP to find [PRNs for operational EGNOS satellites](#)

(*) Some devices display NMEA PRN codes that are the satellite PRN minus 87



After Step2 you should know if your equipment is tracking EGNOS satellites. To be 100% sure that EGNOS corrections are being used in PVT computation go to Step 3

How to ensure your equipment is using EGNOS corrections (6/9)

Step 3:

If the device does not display on the screen any information about the PRNs tracked

How to ensure your equipment is using EGNOS corrections (7/9)

STEP 3



- Check the specifications and user manual to confirm if the device outputs [NMEA sentences](#) (and how to command the logging of such sentences)
- Log NMEA sentences and look for command [\\$GGA](#)
- The output of the **GGA** NMEA sentence shall be checked, especially the field so called “**Fix quality**”. If it appears a **2**, then the equipment is using SBAS/EGNOS in the PVT solution

GGA - essential fix data which provide 3D location and accuracy data.

```
$GPGGA,123519,4807.038,N,01131.000,E,1,08,0.9,545.4,M,46.9,M,,*47
```

Where:

GGA	Global Positioning System Fix Data
123519	Fix taken at 12:35:19 UTC
4807.038,N	Latitude 48 deg 07.038' N
01131.000,E	Longitude 11 deg 31.000' E
1	Fix quality: 0 = invalid
	1 = GPS fix (SPS)
	2 = DGPS fix
	3 = PPS fix
	4 = Real Time Kinematic
	5 = Float RTK
	6 = estimated (dead reckoning) (2.3 feature)
	7 = Manual input mode
	8 = Simulation mode
08	Number of satellites being tracked
0.9	Horizontal dilution of position
545.4,M	Altitude, Meters, above mean sea level
46.9,M	Height of geoid (mean sea level) above WGS84 ellipsoid
(empty field)	time in seconds since last DGPS update
(empty field)	DGPS station ID number
*47	the checksum data, always begins with *



After Step 3 you should know if your equipment is tracking and using EGNOS satellites in PVT solution



How to ensure your equipment is using EGNOS corrections (8/9)

Step 4:

If steps 2 & 3 are not feasible, verify the accuracy obtained with EGNOS

(see [slide #14](#))

How to ensure your equipment is using EGNOS corrections (9/9)

Step 5:

If any of the previous steps are not feasible, please contact the receiver's manufacturer user support channel

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How to check from which EGNOS geostationary satellite the equipment is receiving EGNOS corrections



Usually the Signal to Noise ratio (SMR) for each satellite tracked is displayed on the screen (the higher the bar the higher SNR experienced by the device). Look for EGNOS GEO operational PRNs. See [slide #7](#)



- Check the specifications and user manual to confirm if the device outputs [NMEA sentences](#) (and how to command the logging of such sentences).
- Log NMEA sentences and look for command [\\$GGA](#)
- The output of the **GGA** NMEA sentence shall be checked, especially the field so called “**Fix quality**”. If it appears a **2**, then the equipment is using SBAS/EGNOS in the PVT solution. See [slide #9](#)



After performing the checks described in slides #7 and #9 you should know if your equipment is tracking and using EGNOS satellites in PVT solution

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How to test the error obtained with your equipment when using EGNOS



You can verify whether EGNOS corrections are being applied by placing your receiver at a well-known position (with known coordinates):

- Perform a measurement campaign of 15-30 min configuring the device in “GPS only mode” and log the PVT file
- Just after (or in parallel if you have two devices), perform another measurement campaign of 15-30 min configuring the equipment in “EGNOS-enabled mode”
- Assure that the coordinates of the known-position are in the same geographic coordinates that your device sorts out the PVT solution and compare both
- Compute the error done in each set of measurements, and then compare both sets of errors. The ones obtained with EGNOS should be smaller than the ones obtained with using just GPS (specially noticeable in the vertical component)

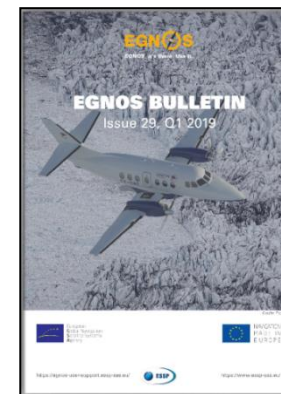
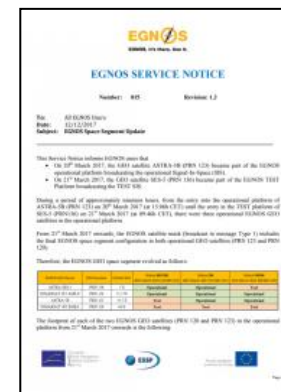
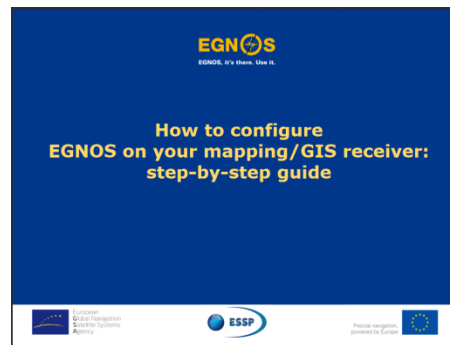
NOTE: it is not possible to compute with NMEA sentences the real error the PVT solution has. In some devices, it is provided an estimated accuracy (by means of proprietary sentences, implemented by each manufacturer and not even in all their models)

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Summary of useful EGNOS links

- EGNOS User Support Website: <http://egnos-user-support.essp-sas.eu>
- [Service Notices \(e.g. PRN modifications\)](#)
- Real-time performance:
 - [EGNOS vs GPS](#)
 - [EDAS](#)
- [Historical performance](#)
- [Guidance material](#)
- [Visibility maps](#)
- [EGNOS bulletin](#)
- [EGNOS helpdesk](#)
- EGNOS APP [Android](#) & [iOS](#)





EGNOS, it's there. Use it.

QUESTIONS AND ANSWERS



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



egnos-helpdesk@essp-sas.eu

+34 911 236 555 (H24/7)



www.essp-sas.eu



Corporate Video