

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)  
Space Navigation Systems and Services (4)

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EUROPEAN GEOSTATIONARY NAVIGATION OVERLAY SYSTEM (EGNOS) CAPABILITY ON  
THE SES SIRIUS 5 SATELLITE

**Abstract**

The European Geostationary Navigation Overlay Service (EGNOS) is the wide area GPS augmentation system being fielded by the European Commission over a broad European coverage area. As part of the Satellite-Based Augmentation System (SBAS), EGNOS provides additional signals in space from geostationary satellites over Europe. In addition to providing additional ranging signals, the EGNOS message structure, like the U.S.-based Wide Area Augmentation System (WAAS), provides corrections to GPS, GLONASS and Galileo data, including clock, ephemeris, and ionospheric corrections, as well as providing satellite integrity data. The correction and integrity data generated at an EGNOS Master Control Center are based on information collected across an autonomous network of monitoring stations located across the European service area. Applications include civil aviations for aircraft with EGNOS-enabled receivers. Accuracy, availability and continuity of service are all improved with EGNOS service.

Significant EGNOS infrastructure has already been deployed, including the ground monitoring and control infrastructure, open service (i.e., non safety-of life) receivers, and three geostationary satellites with payloads providing EGNOS signals in space. The EGNOS system went operational for non safety-of-life applications in October 2009 and is expected to be certified for safely-of-life applications, including non-precision approach and approach with vertical guidance aeronautical applications, in 2010.

Although substantial EGNOS infrastructure already exists, the three geostationary satellites currently providing EGNOS signals in space broadcast only on the L1 GPS frequency. The final operational configuration of EGNOS includes an E5 channel, in which there can be two carriers: E5a (also known as L5 for the WAAS system) and E5b. The European Commission selected the satellite operator SES to provide the first satellite with both L1 and E5 channels. This satellite, Sirius 5, is currently scheduled to launch in late 2011. This paper summarizes the features of the EGNOS system and describes the implementation on the SES Sirius 5 satellite.