



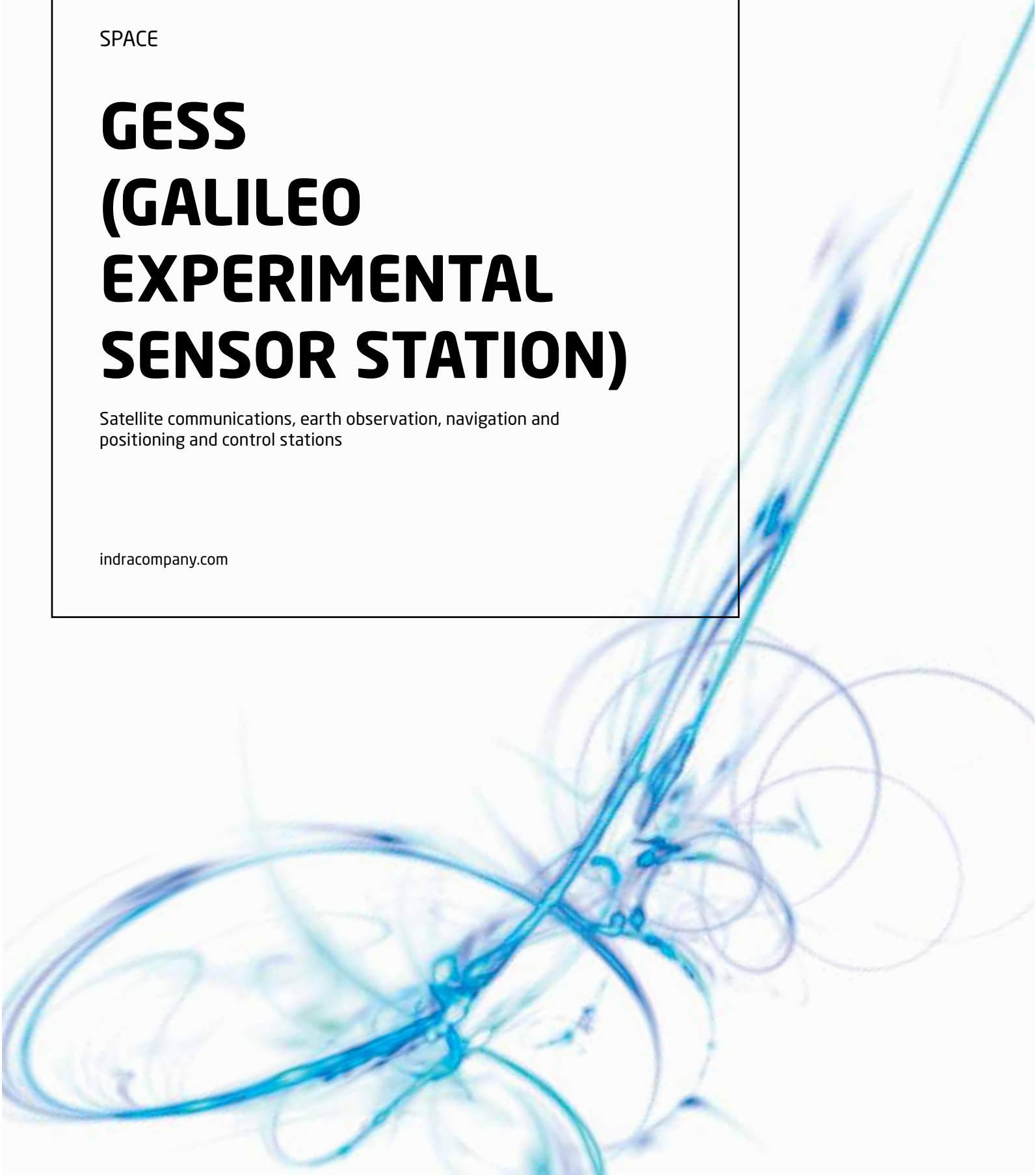
indra

SPACE

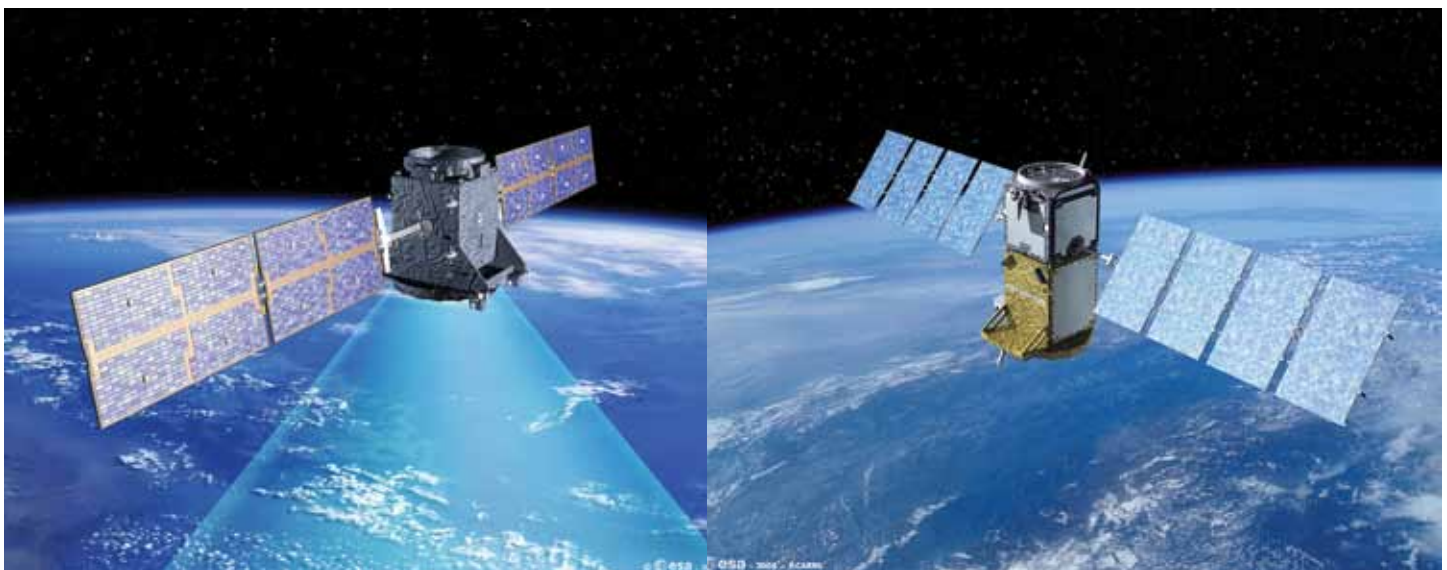
GESS (GALILEO EXPERIMENTAL SENSOR STATION)

Satellite communications, earth observation, navigation and positioning and control stations

indracompany.com



GESS (GALILEO EXPERIMENTAL SENSOR STATION)



Introduction

The GNSS (Global Navigation Satellite System) is evolving to new constellations and frequencies. New and powerful ground stations become a need to cover more constellations, satellites and frequencies for different applications: reference stations for differential systems, sensor stations to monitor the quality of service, etc...

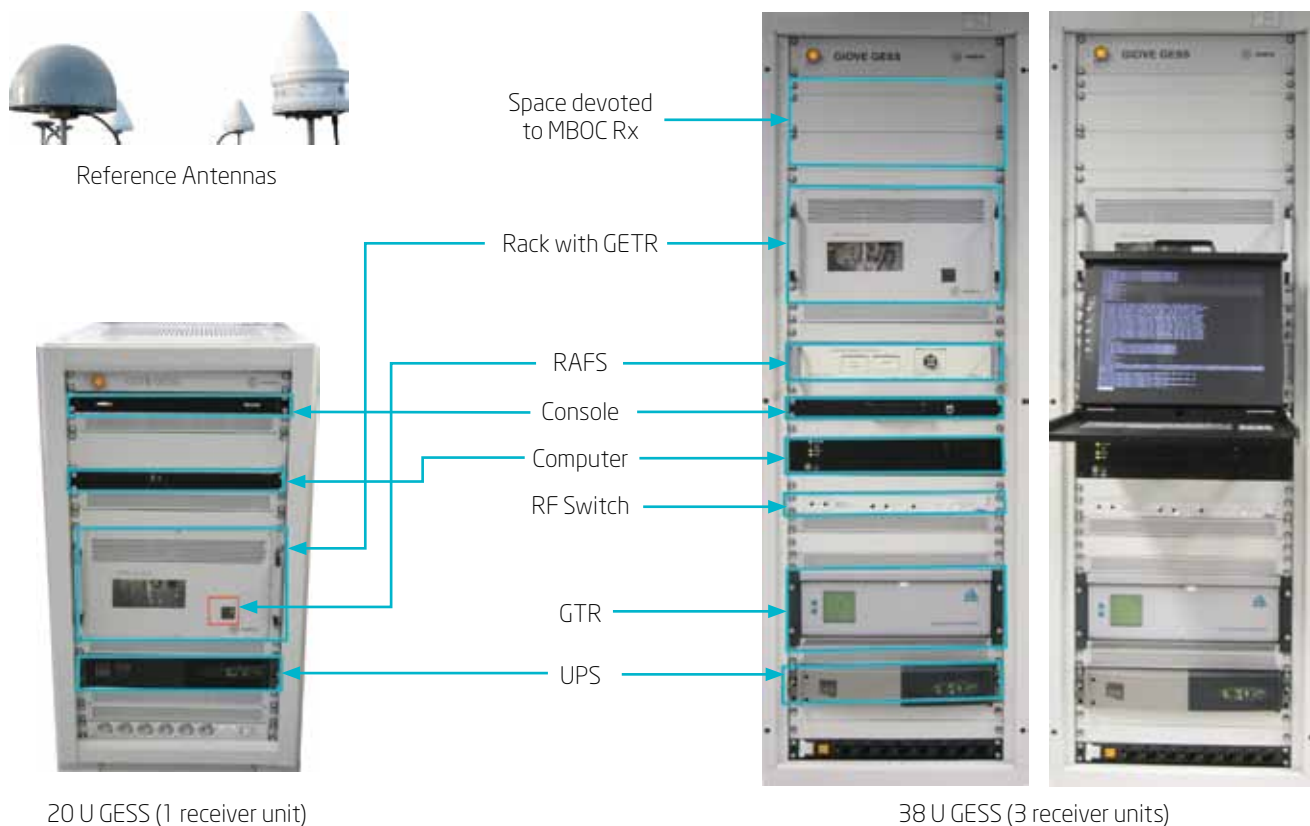
The Galileo Sensor Stations were initially developed to validate the Galileo experimental signal-in-space (based on GIOVE satellites).

Overview

A GESS supports up to 3 different GNSS receivers and up to two different antennas. A control computer handles receivers raw data, monitoring and control of all the GESS equipments and the communications with central processing centre. All receivers share a common high stability clock. A complementary SW application running at the central processing centre is in charge of files collection and archiving, remote monitoring and control plus GESS data analysis.

Highlights

- Monitoring of the GIOVE-A and GIOVE-B E1/E5/E6 signals, GALILEO IOV E1/E5/E6, as well as the GPS L1/L2 signals.
- Up to 3 receivers and up to 2 antennas in the same station.
- Pseudo-range and Carrier-phase measurements provided at 1Hz.
- Giove/Galileo IOV and GPS signals encapsulated in files downloadable by FTP to the GPC (Giove Processing Centre).
- Unmanned station, 24/7 continuous operation
- GESS allows a complete M&C, Configuration and remote GNSS receivers and control, computer SW upgrade
- Remote Monitoring and Control from GIOVE Processing Center (GPC)
- Remote administration of the GESS: SW upgrades, configuration parameters.
- Communications with the GPC based on Internet and FTP facilities.
- Local console to support the first level maintenance.
- UPS for securing power and automatic boot up.
- LOG files with monitoring and control responses data, encapsulated in files, downloadable by FTP to the GPC.



GESS characteristics

- Two different models: with integrated Reference Atomic Frequency Standard (RAFS) or with interface for external Frequency Standard (i.e.: connection of H-Maser).
- Cabinet sizes: 20U (for 1 receiver) or 38U (for 2 or three receivers).
- The station could integrate up to three receivers.
- Antenna diversity with two Reference Antennas
- Controlled RF Switch/Splitters allows injecting any antenna signal into any GESS Receivers.
- Reference Atomic Frequency Standard (RAFS) based on Rubidium cell.
- Core Computer allows raw data collection (with local storage), and remote M&C by Central Processing Centre.
- Console allows local maintenance actions.

Success stories

GIOVE-M CI

The GESS, Galileo Experimental Sensor Station, was the reference station in charge of acquiring the first Galileo Signal in Space, as broadcasted by the GIOVE satellites. An important engineering challenge was performed by the industrial team and ESA designing, developing, testing and deploying a world-wide network of these experimental stations in one year.

The first GESS station was installed at ESTEC (Noordwijk) in April 2006 and Mission Segment operations and experimentation are ongoing since July 2006. These years of operation have been very profitable in order to characterize RAFS behaviour in space, GIOVE Orbit Determination and models, and the GESS Sensor Station Quality.

Moreover, GIOVE Signal In Space and GSTBv2 Experimental Test Receivers have been analyzed in a real environment, hosting sites have been characterised in terms of multipath and interference according to the Galileo site acceptance requirements.

At July 2010 a total of 18 GESS stations have been deployed worldwide with the following characteristics:

- 2 Time Laboratory Stations: GIEN (INRIM) and GUSN (USNO)
- 16 Standard Stations with RAFS.



ISO 9001:2000



indra

C/Mar Egeo, 4
Polígono industrial, 1
28830 San Fernando de Henares
Madrid (Spain)
T + 34 91 627 30 00
F + 34 91 627 30 51
space@indracompany.com
indracompany.com

Indra reserves the right to
modify these specifications
without prior notice.