

EARTH OBSERVATION SYMPOSIUM (B1)  
Future Earth Observation Systems (2)

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## GMES SENTINEL-1: SPACECRAFT DESIGN, DEVELOPMENT AND QUALIFICATION

**Abstract**

In the frame of the Global Monitoring for Environment and Security programme (GMES), the European Space Agency (ESA) is responsible for the development of the Sentinel-1, a European polar orbit satellite system for the continuation of SAR operational applications in C-Band. Thales Alenia Space Italia (TASI) is the Prime Contractor responsible for the design, development and verification of the Spacecraft. This paper provides an overview of the main features and Development and Qualification approach of Sentinel-1 Spacecraft. The first part of the paper, starting from an overview of the specific requirements, describes the Spacecraft design in terms of architecture, configuration and performances giving particular emphasis on Satellite peculiar and innovative design features. Among the most significant Satellite features, it is worth highlighting: P/L tight image quality parameters Satellite reduced envelope and mass, compatible with medium-class launcher Significant P/L power/energy demand, to be provided, managed and dissipated High P/L data rates, to be managed on-board and to be transmitted to Ground Precise orbit determination and attitude pointing and knowledge Significant on-board autonomy. In the second part, the specific Development and Qualification approach for the GMES Sentinel-1 Spacecraft is described, in particular the Spacecraft-level Assembly Integration Verification and Testing flow, focusing on the most challenging topics (e.g. mechanical, electrical and RFC qualification/verification).