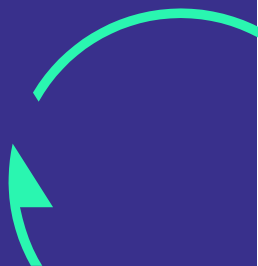spirent™
Federal Systems

In collaboration with

SpΛcePNT⁺

SimORBIT Datasheet

Enhanced Orbit Propagation Tool

Spirent SimORBIT Datasheet

Purpose of this Document

This datasheet describes the functionality of Spirent SimORBIT, an Enhanced Orbit Propagation Tool which enables the computation of the high accuracy LEO satellite orbits.

This datasheet also provides technical product specification data and configuration information. Please speak to your Spirent Federal sales representative to discuss your requirements.

PROPRIETARY INFORMATION

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Glossary

GNSS	Global Navigation Satellite Systems
PNT	Positioning Navigation Time
PosApp	Positioning Application (Spirent SW)
ECEF	Earth Centered Earth Fixed
ECI	Earth Centered Inertial
GCRF	Geocentric Celestial Reference Frame
GMAT	General Mission Analysis Tool GUI Graphical User Interface
IERS	International Earth Rotation and Reference Systems Service
ITRS	International Terrestrial Reference System
LEO	Low Earth Orbit
POD	Precise Orbit Determination
RINEX	Receiver Independent Exchange Format

Spirent SimORBIT Datasheet

Introduction

SimORBIT is an Enhanced Orbit Propagation Tool which provides the computation and modeling of LEO satellite orbits with a very high accuracy (either in ECEF or in ECI coordinates). This tool implements a dynamical model specifically designed to meet the stringent requirements of Precise Orbit Determination for LEO satellites. The high accuracy of the software tool is enabled by the state-of-the-art models which takes into consideration the major perturbations affecting satellites.
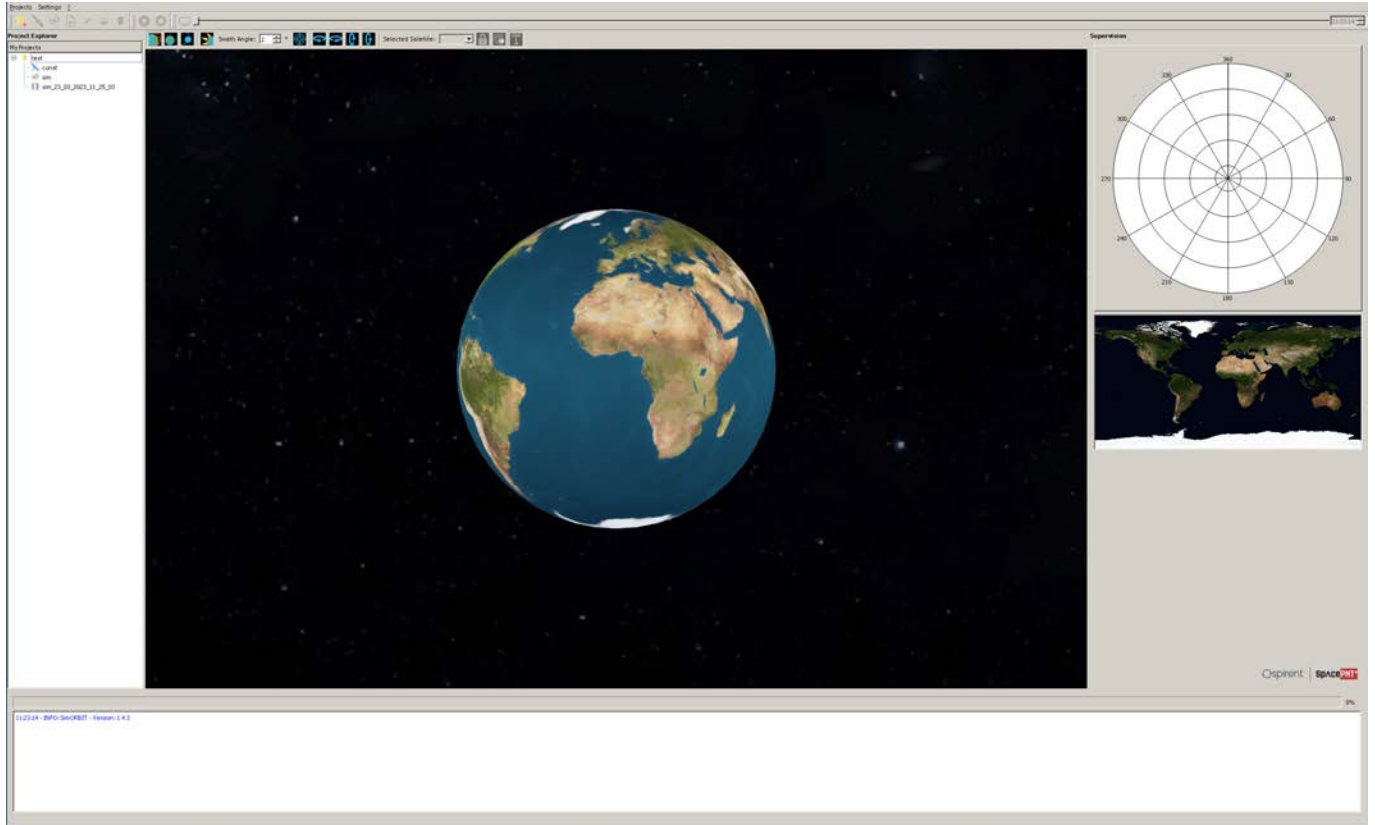

Figure 1 SimORBIT Main Window

SimORBIT allows the user to

- Create a new constellation either from scratch or through RINEX file importation
- Start a simulation to compute the satellite orbits in high accuracy
- Display results that have been previously computed

Specifications / characteristics

- Accurate orbital model that can be used as reference trajectory propagator
- Orbit generation for signal satellite or constellation (up to 999 satellites)
- Fully consistent with IERS 2010 conventions
- Implemented in ITRF
- Customizable input satellite parameters (e.g. drag coefficient, mass, cross-section area)
- Output in standard formats (e.g. SP3)

Input and Output

INPUT
- RINEX Navigation File
- Manual setup of initial conditions

OUTPUT
- Orbit files in SP3-c format
- Orbit files in MOT format
- Orbit files in MOTI format

Compatibility

Table 1 outlined the compatibility of SimORBIT with the different variants of Spirent's software portfolio.

	SimGEN	SimREPLAY+	SimTEST
SP3-C	✓	✓	✗
MOT	✓	✓	✓
MOTI	✓	✓	✓

Table 1: SimORBIT Compatibility

Spirent SimORBIT Datasheet

For more information

For more information on any aspect of the SimOrbit, please contact your Spirent Federal representative or Spirent Federal directly:

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Americas   Europe   Asia

About Spirent Positioning Technology

Spirent enables innovation and development in the GNSS (global navigation satellite system) and additional PNT (positioning, navigation and timing) technologies that are increasingly influencing our lives.

Our clients promise superior performance to their customers. By providing comprehensive and tailored test solutions, Spirent assures that our clients fulfill that promise.

Why Spirent?

Across five decades Spirent has brought unrivaled power, control and precision to positioning, navigation and timing technology. Spirent is trusted by the leading developers across all segments to consult and deliver on innovative solutions, using the highest quality dedicated hardware and the most flexible and intuitive software on the market.

Spirent delivers

- Ground-breaking features proven to perform
- Flexible and customizable systems for future-proofed test capabilities
- World-leading innovation, redefining industry expectations
- First-to-market with new signals and ICDs
- Signals built from first principles — giving the reliable and precise truth data you need
- Unrivaled investment in customer-focused R&D
- A global customer support network with established experts

About Spirent Communications
Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks. We help bring clarity to increasingly complex technological and business challenges. Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled. For more information visit: www.spirentfederal.com

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