WEBINAR

GSG-7: The Newest Turnkey Solution for the Skydel GNSS Simulation Engine

01

Agenda

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What is the GSG-7?

Orolia Family of Simulators

Architectural Design

Applications

Resources

Q&A

02

What is the GSG-7?

Shared software-defined benefits and interoperability:

- Easy configuration with intuitive UI and automation

- Supports all major global constellations & frequencies

- Advanced signal customization and scenario creation

- Modify variables and parameters in real time

- Integrate interference with no additional hardware

- IQ file generation

- 1000Hz simulation iteration rate

- Comprehensive API (Python, C#, C++, LabVIEW)

- Record and export user interactions as Python script

03

What is the GSG-7?

High Performance and Capability Made Easy

GSG-7 delivers the highest standard of GNSS signal testing in a cost-effective, easy-to-use, turnkey form factor supporting the growing need of location aware applications and systems that require navigation or timing.

KEY FEATURES

- Small size – 2U Rack-Mountable or Bench Top
- In-field software upgradability
- All MF/MC Signals via Composite Port
- All-in-view satellites simulation
- Low-latency HIL
- Live Sky Time Synchronization
- On-the-Fly Scenario Reconfiguration
- Flexible licensing

04 Orolia Family of Simulators

05 Architectural Design

Skydel Simulation Engine

- Supports all Constellations & Frequencies

- Skydel application not dependent on specific hardware:

  - Features and performance mostly defined by Skydel, not hardware

  - SDR not dedicated to specific task, i.e.:GNSS, jamming, spoofing, etc.

  - GPU's performance can be shared & optimized

- Scenarios can be shared between different platforms

- All-In-View "User Defined" vs channels "Hardware Defined"
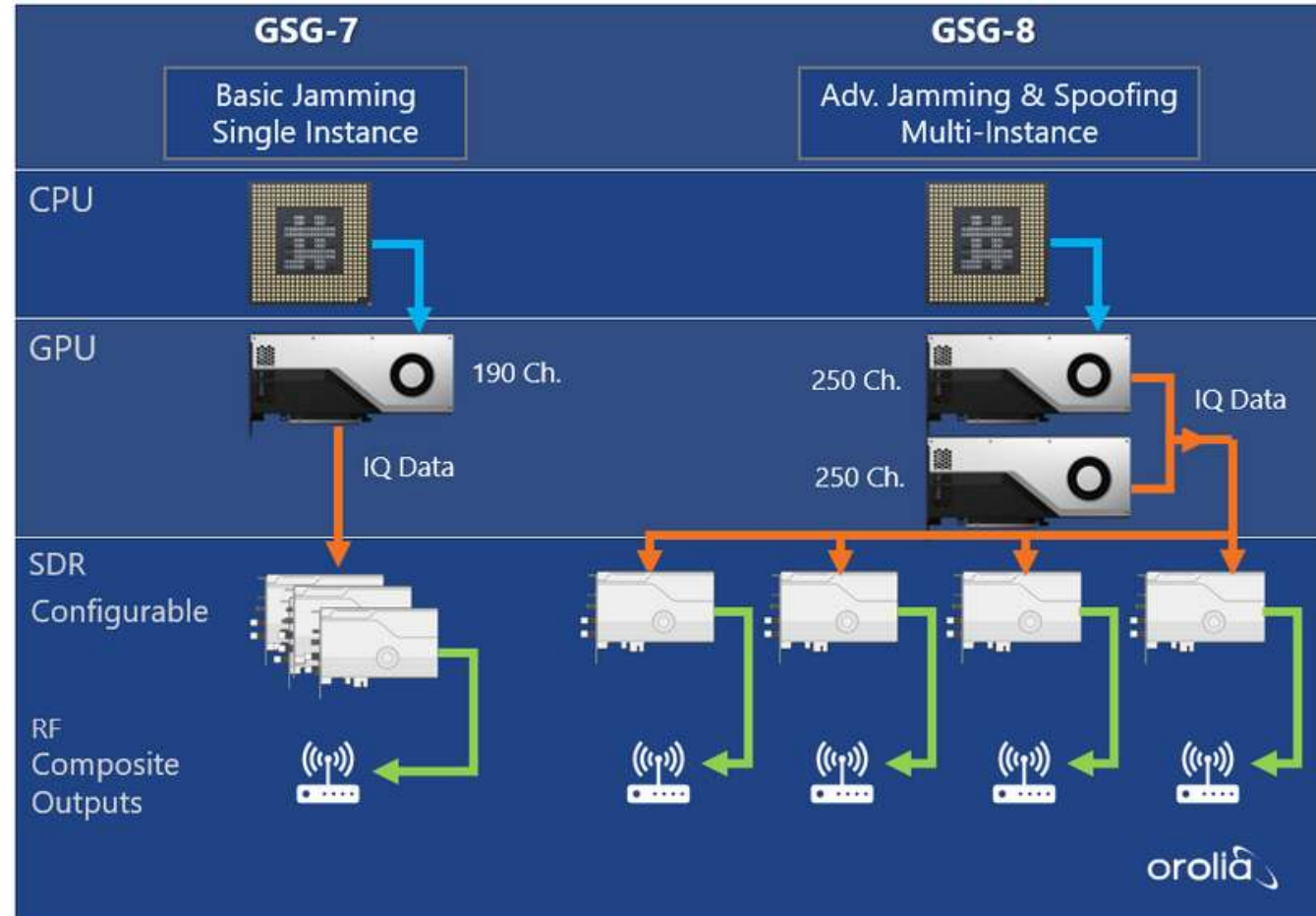
06 Architectural Design

GSG-8 Computer Grade Quality

Internal Timing Card

2U-Sized Chassis

1 to 3 SDRs

Single RF Output (Front)

07 All-in-View Satellites

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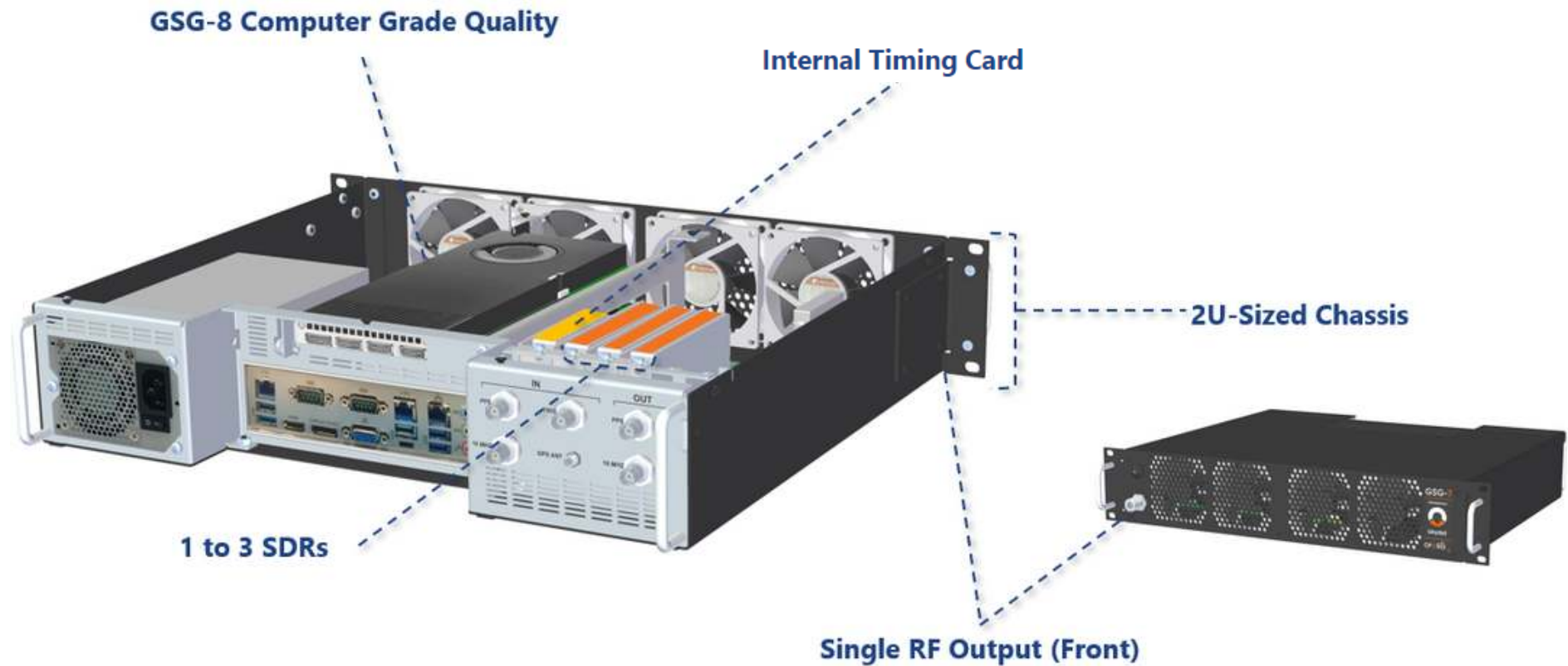|	
GPS:	11
GLONASS:	10
Galileo:	10
BeiDou:	13
QZSS:	0
IRNSS:	0
Number of Satellites:	44
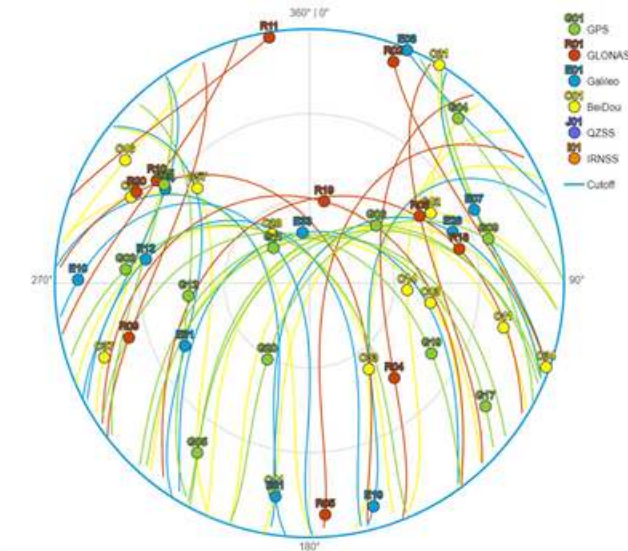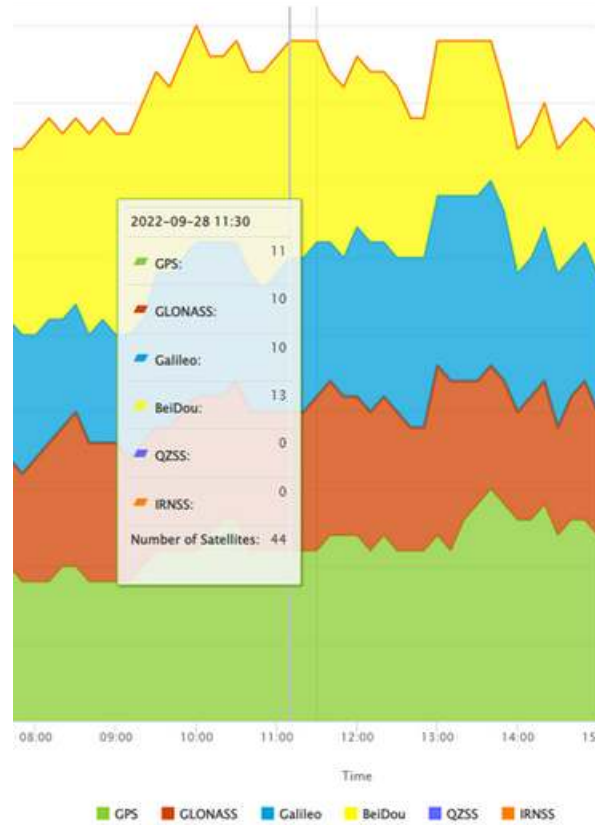
Date: 22-09-28 11:30
Location: N43, W77, 500m
Elevation Cutoff: 0 degrees

- *Each satellite transmits more than 1 signal.*
- *Multipath, interference, or SBAS are additional signals not considered.*
- *With Skydel, you purchase the signal and have access to all of the satellites in that constellation. No need to purchase channels or channel banks.*

Constellation	# of Signals per Sat	Sats	Total Signals
GPS	4	11	44
GLONASS	3	10	30
Galileo	4	10	40
Beidou	5	13	65
			179

*The quantity of satellites generated by Skydel is only limited by the compute capacity of the GPU(s)

08 GNSS Simulation for Space Launch

Take full advantage of Skydel's space simulation features:

- *Space Vehicle Orbital Trajectory Editor*
- *Spacecraft Atmospheric Condition Simulation*
- *High Dynamic Trajectories (1000Hz update rate)*
- *GNSS Constellation High Signal Count*
- *GNSS Satellite Antenna Model*
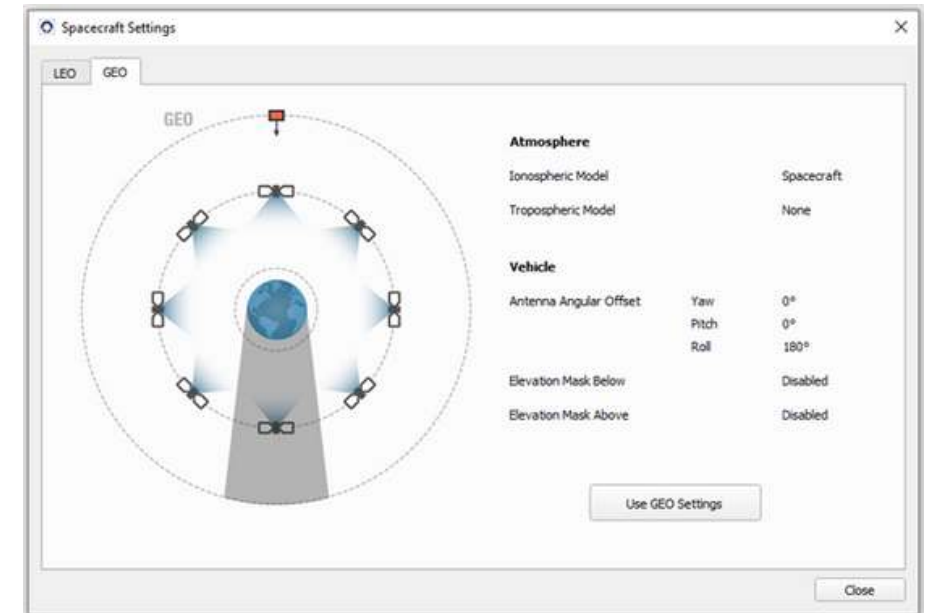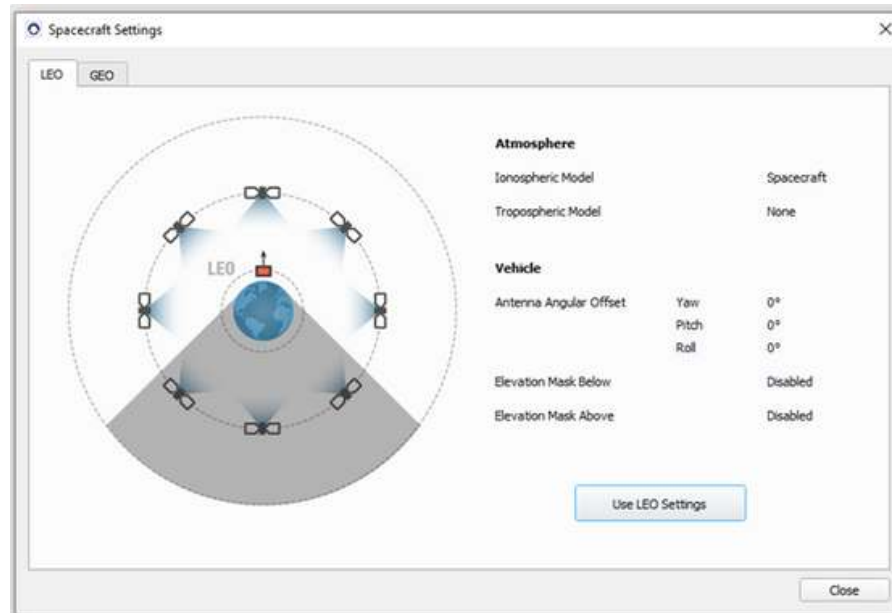
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Flight Simulation

HIL Setup for flight simulation and pilot training.

- *Aircraft position and attitude information sent real-time to GSG-7 simulator.*
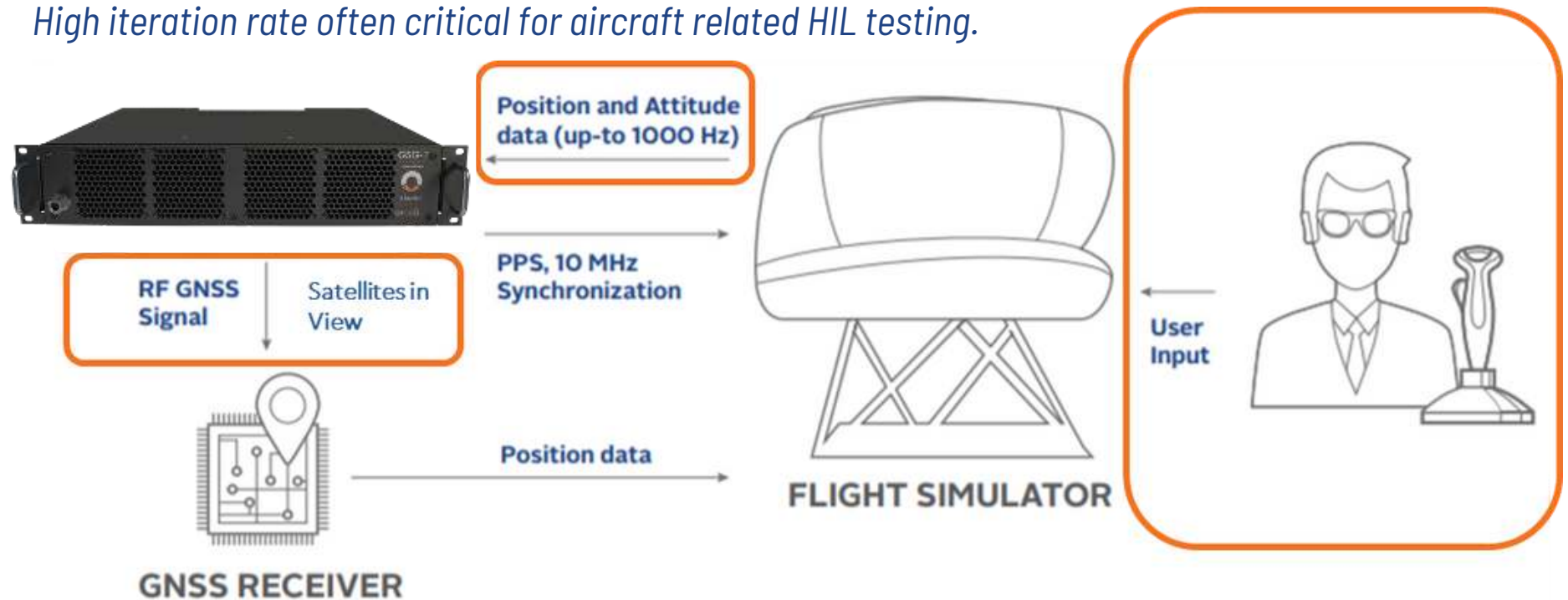- *GNSS simulator (GSG-7) outputs GNSS signal data to aircraft.*
- *Aircraft cockpit displays realistic data and allows for flight test while on the ground.*

High iteration rate often critical for aircraft related HIL testing.

Position and Attitude data (up-to 1000 Hz)

PPS, 10 MHz Synchronization

RF GNSS Signal   Satellites in View

Position data

GNSS RECEIVER

FLIGHT SIMULATOR

User Input

Skydel – RTCM Messages Plug-ins

Internal Synchronization of 2 x Skydel Instances

For triggering and synchronizing "Rover" and "Base" scenarios

RF (Rover)

GSG-7

Correction Data/RTCM

Rover

RF

DUT

Serial

RTCM Data simulated for the Base through RTCM server Plugin driven by SKYDEL Multi-Instance feature
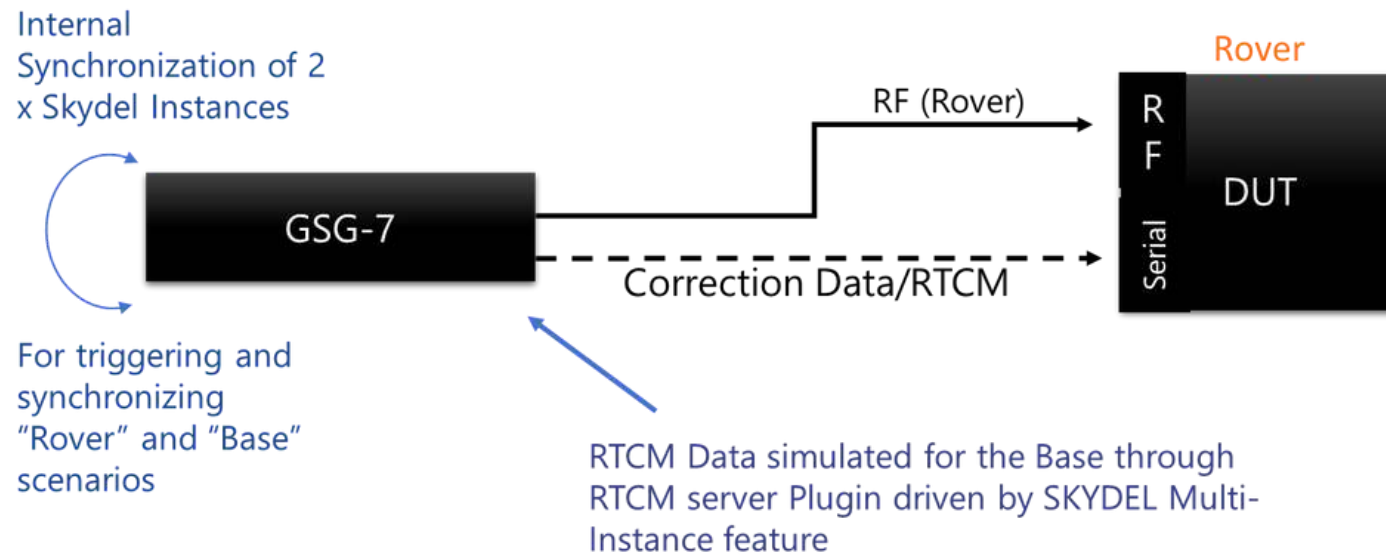
Best Test Methodology for Testing Rover(s) Only

- Skydel powered GSG-7 GNSS Simulator
- RTCM messages automatically calculated based on a virtual base station
- RTCM messages sent to Rover (receiver) via COM port or saved in a file.
- Built-in NTRIP Server/Caster

RTK Plug-In

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Resources
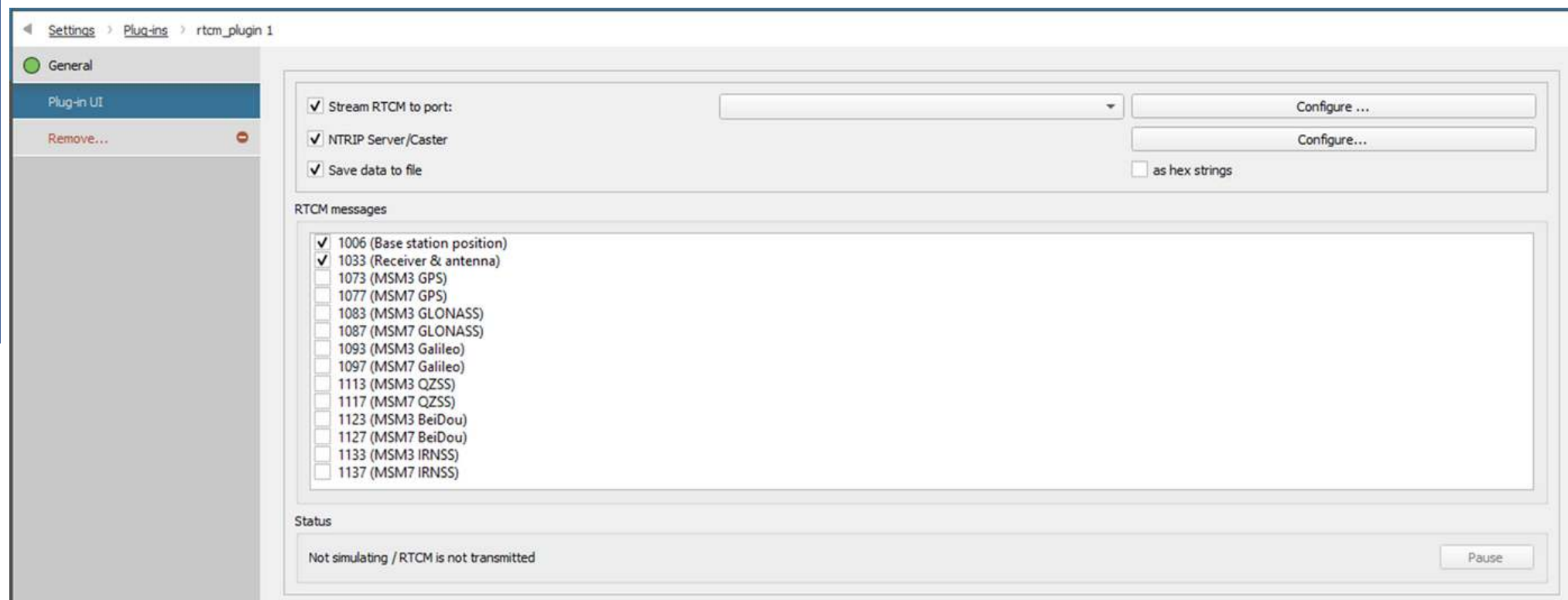
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  - Support Tutorials
  - FAQ's
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  - Datasheets
  - User Manuals at manuals.orolia.com
  - Quick Start Guides (shipped with the product and online)
  - Application Notes
- GitHub at skydel.gitbook.io
- Skydel Certification
- Our Team of Experts at orolia.com/support

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Questions?

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