

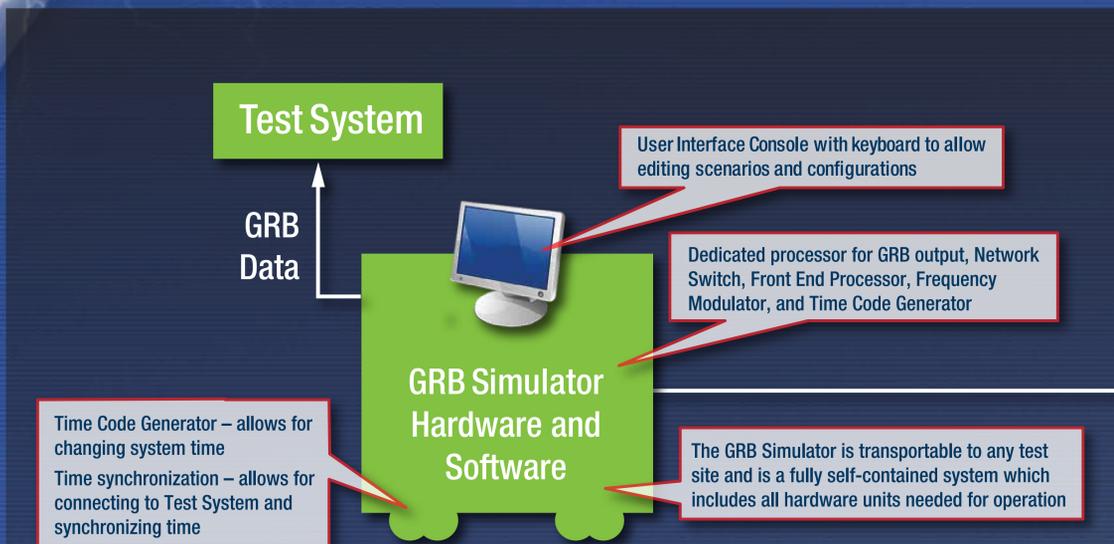


GOES-R GRB Simulator

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A System for Testing GOES Rebroadcast (GRB) Data Streams by Simulating GRB Downlink



New, Expanded Signal Structure

GOES-R Rebroadcast (GRB) signals in the GOES-R era will replace the current legacy GOES Variable (GVAR) signal and will have substantially different characteristics, including a change in data rate from a single 2.1 Mbps stream to two digital streams of 15.5 Mbps each.

Baseband or IF Output

The GRB Simulator will provide GRB data as either baseband or Intermediate Frequency (IF) output to the test system. GRB packet data will be sent in the same two output streams as used in the operational system: one for Left-Hand Circular Polarization (LHCP) and one for Right-Hand Circular Polarization (RHCP). Use of circular polarization in the operational system allows the transmitting antenna to multiplex the two digital streams into the same signal, thereby doubling the available bandwidth. The GRB simulator may be used at any site that receives GRB downlink.

Full GRB Data Format – All Instruments

The GRB Simulator outputs both instrument packets and GRB Information packets. Instrument packets contain data simulated from any instrument: the Advanced Baseline Imager (ABI), Solar Ultraviolet Imager (SUVI), Space Environment In-Situ Suite (SEISS), Extreme Ultraviolet Sensor (EUVS) and X-ray Irradiance Sensor (XRS) called EXIS, Geostationary Lightning Mapper (GLM), or the Magnetometer.

A Transportable Simulator

The GRB Simulator is a portable system that outputs a high-fidelity stream of Consultative Committee for Space Data Systems (CCSDS) formatted GRB packet data equivalent to live GRB data. The data is used for on-site testing of user ingest and data handling systems known as field terminal sites. Five transportable simulators are in production for 2013.

Test Patterns, Proxy Images, Test Scenario Editor

Simulations are controlled by test scenarios, which are scripts that specify the test data and provide a series of actions for the GRB Simulator to perform when generating GRB output. Scenarios allow for the insertion of errors or modification of GRB packet headers for testing both nominal and error conditions. The GRB Simulator provides a built-in editor for managing scenarios

Supports Both Pre-Launch or Post-Launch Testing

Simulated GRB data streams can be played back either during pre-launch or post-launch testing of target systems. Simulations can be configured to run with either current wall clock or specially defined simulation time. Provides capability to allow operators to create test data from image files.