Solutions Datasheet (Preliminary):
Investigator™ for OBSAI ™

For more information, demo & pricing contact
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Absolute Analysis Investigator™

OBSAI Protocol Tester

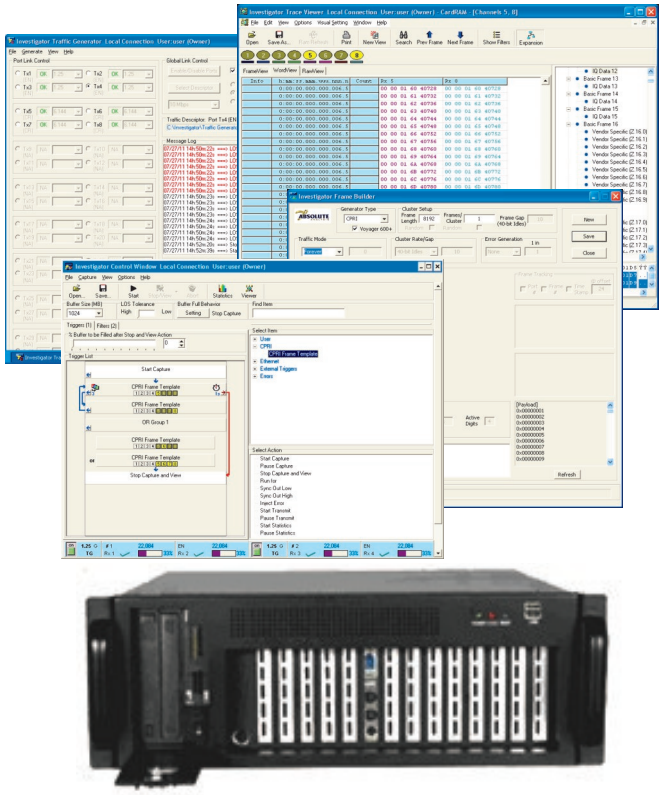
Investigator™ for OBSAI provides a comprehensive tool set for validating and debugging OBSAI links between devices such as Remote Radio Head Units and Base Band Units

Fully-Integrated Architecture

Investigator's architecture incorporates its **protocol analyzer** and **traffic generator** into the same hardware, making it an elegant and complete solution for debugging devices within an OBSAI environment.

General Specifications:

- Supports Protocol Analyzer, Traffic Generator and Performance Statistics
- Compatible with RP1, RP2, RP3, and RP3-01 OBSAI links
- 1.536, 3.072, and 6.144 Gbps link speeds
- Up to 32 time-synchronized ports
- Lossless 100% line rate data capture
- Supports air interface standards GSM/EDGE, WDCMA/LTE, and 802.16d-e
- Real time traffic generation of OBSAI packets
- Validate user data (IQ) and control data
- Multiple chassis configurations, including portable, rack mount, and ruggedized



Investigator™ Software above shown with 4U Rack Mount Platform Option

Validate & Debug

Investigator™ not only validates compliance and interoperability to OBSAI specifications, but also offers a complete test environment to debug when tricky problems and errors are encountered. Investigator™'s capability to see every bit down to the hardware level give us our motto: **"We never miss a bit."**

Investigator™ OBSAI Solution Overview

Bypass and Traffic Generation Modes

Investigator™ monitors OBSAI link traffic in different modes:

Bypass mode: Investigator connects inline and monitors traffic real time. A maximum 16 full duplex OBSAI links can be supported in this mode.

Traffic Generation Mode: Investigator is used as an end-point device. A maximum 32 OBSAI end points can be supported .

Monitor Multiple Points

The capacity of Investigator is 16 link pairs. This gives the tool the capability of monitoring multiple points simultaneously, and view the results with full time correlation.

This capability is not limited to a single protocol. Multiple types of protocols can also be monitored to check data passing through multiple protocol domains.

Monitor Errors Real-Time

Investigator™ captures data at full line rate. Couple this with its advanced triggering and filtering, allows users to monitor for conditions and errors in real-time. This not only saves time to find the problem, but also helps designers quickly find which device is misbehaving. This proprietary filtering and triggering is unique to the industry, and has the power to reduce your debug time in half or more.

Sample Investigator Application for OBSAI

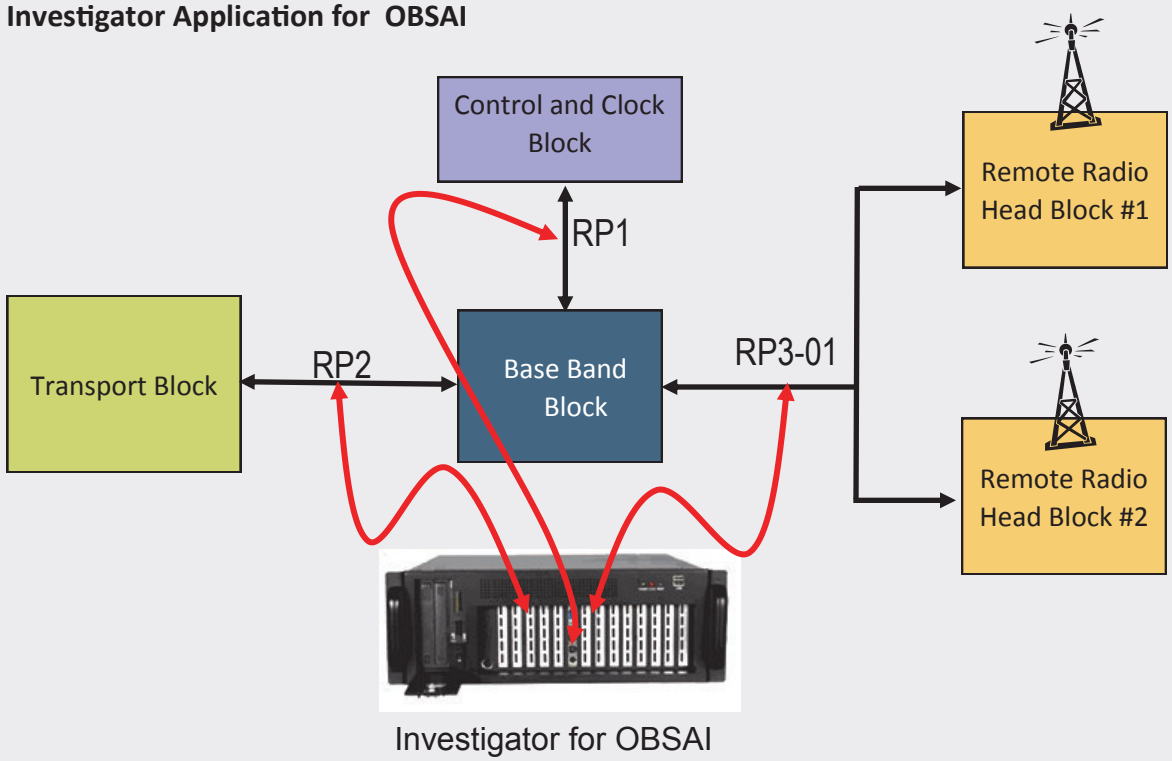


Figure 1
Investigator™ monitoring 3 separate OBSAI links.

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Software Functions - Displaying and Finding Trace Data

Find and Debug Errors Fast

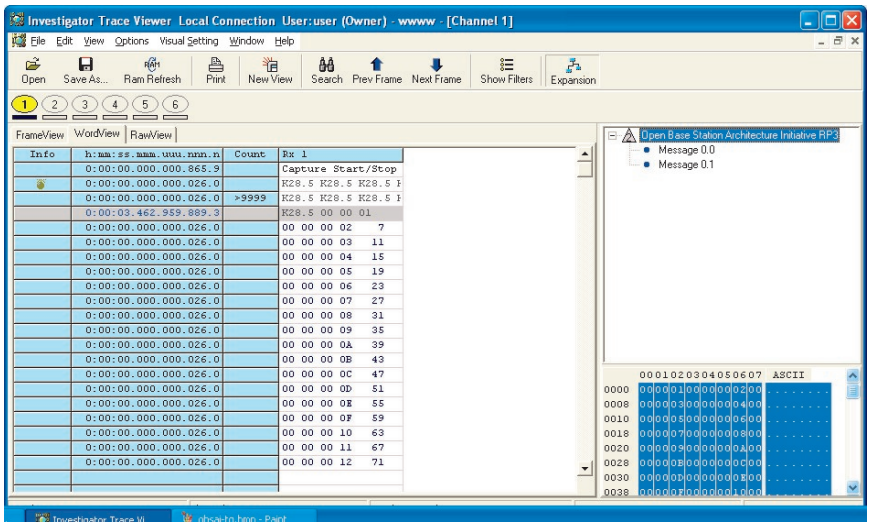
Investigator software provides exceptional functionality to find and debug errors fast. The software can constantly monitor data on the line, and only capture events necessary for your debug. This both saves time as well as precious capture data, ensuring you will capture only the required conditions that caused the problem.

To achieve this, the software utilizes a number of advanced functionality, including:

- **Alarms**: Build and save custom trigger, filter and capture configurations to server for later use, or use as part of a formal test procedure
- **Advanced triggering**: Start capturing data only when specific conditions are met
- **Powerful filtering**: Sift through trace data fast, and filter out all conditions except the ones you are looking for
- **Search facilities**: Find any data pattern within any packet or control symbol, and maintain a library of predefined search patterns
- **Bookmarks**: Set bookmarks for reference in later debugging

Collaboration and Offline Viewing

The Investigator Trace Viewer is available for zero cost download, enabling design team collaboration with captured trace data. All traces can be captured and stored on any standard PC.



Investigator Trace Viewer showing an OBSAI word view trace

Search Facilities

- Find next and previous packets
- Create and go-to bookmarks
- Search for source or destination address
- Search for any data pattern within a packet or control symbol
- Library of predefined search items
- Find trigger events within a trace.

Data Display Formats

- Raw, 8B/10B, hexadecimal, and frame modes
- Detailed decode of each packet or control symbol down to individual bit level
- Highly configurable trace display with color coded channel data
- Independent or merged channel views
- Multi-layer post capture filtering on all fields.

Investigator Performance Statistics

Characterize link performance with real time statistics monitoring. Provides bookmarks, search, event log, and readily customizable tabular or graphical displays of link data.

Performance Statistics further enhances Investigator's reputation for unrivalled flexibility, power and ease of use in high-speed data capture, decode and analysis.

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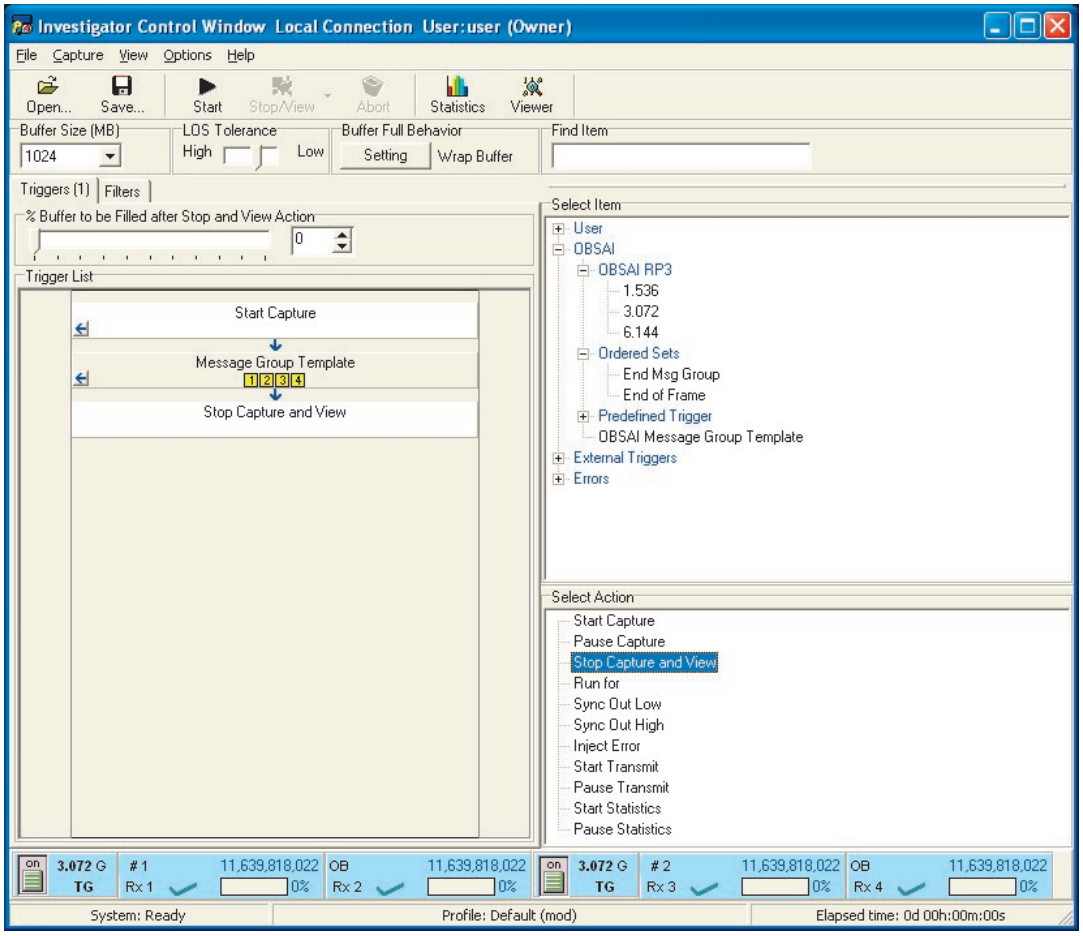
Advanced Analysis Capabilities

Expert Control: Find and Trigger on Anything

Part of the exercise of validating and debugging involves finding the problem quickly, without having to sift through gigabytes of data. With Investigator, the advanced triggering will allow you to trigger on any event or character within the protocol specification, and then setup automated multi-step tests.



An OBSAI Trigger Example

Protocol Analyzer Control

- Capture and decode data before & after the trigger
- Send out an external sync out signal to any oscilloscope or logic analyzer
- Loop back to begin after capturing data
- Use Boolean logic for up to 64 trigger conditions
- Re-arm trigger if condition is not met
- Independent channel triggers

Triggering Options

- Multi-level triggering
- Trigger on multiple consecutive events, or across every channel
- Select from a list of predefined trigger events
- State machine "loop sequence" triggering
- Re-arm trigger if condition is not met
- Independent channel triggers

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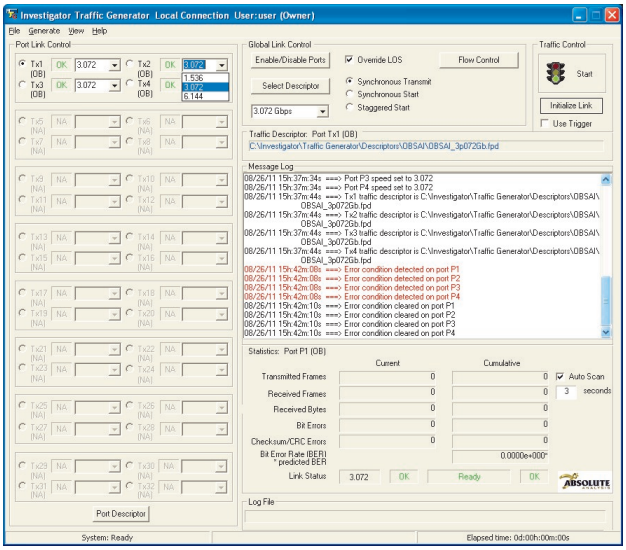
OBSAI Traffic Generator

Generate Real OBSAI Packet Data To Your Device

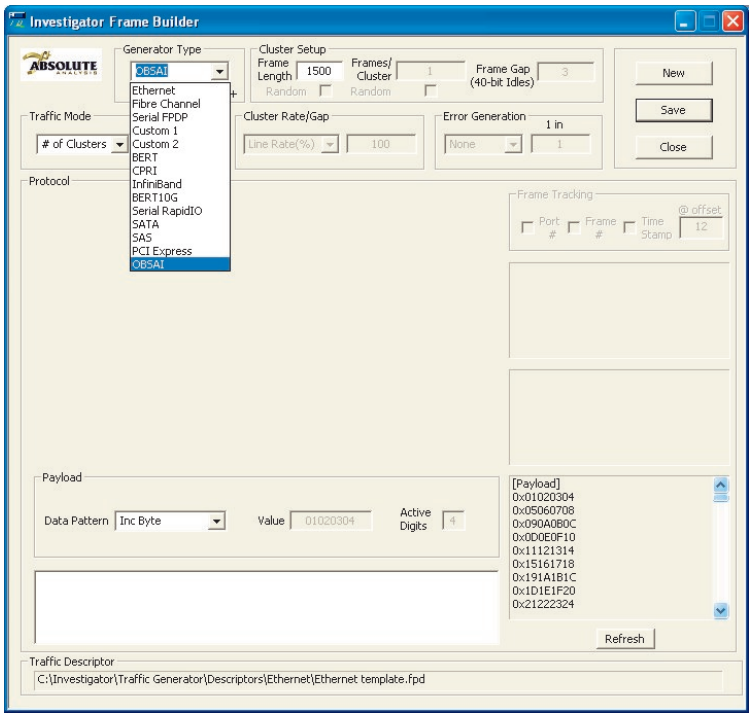
Absolute Analysis Investigator's OBSAI Traffic Generator allows you to generate compliant traffic into a Device Under Test (DUT) with complete control over the timing and content of the data.

Valid and invalid traffic streams can be defined to test device error recovery. The traffic generator's ability to maintain full-line rate traffic, even across multiple links, allows device performance to be measured and operation under stress to be characterized.

Investigator's Traffic Generator together with the Frame Builder application allows user-defined data to be sent across the interface.



Generate OBSAI Packet Data Using our Traffic Generator



Use Investigator Frame Builder to generate Implementation defined payload and control data

Use Investigator Frame Builder to Define Payload and Control Data

The Frame Builder provides an easy to use GUI to create implementation defined payload and/or control symbols.

To create such an event the user simply enters the value for each field or uses the default values supplied. Frame Builder uses the contents of the Protocol. Nested protocols are also supported.

Critical timing events that cannot be supported in software are handled by the FPGA's on the Interface Card. These are configurable by the user.

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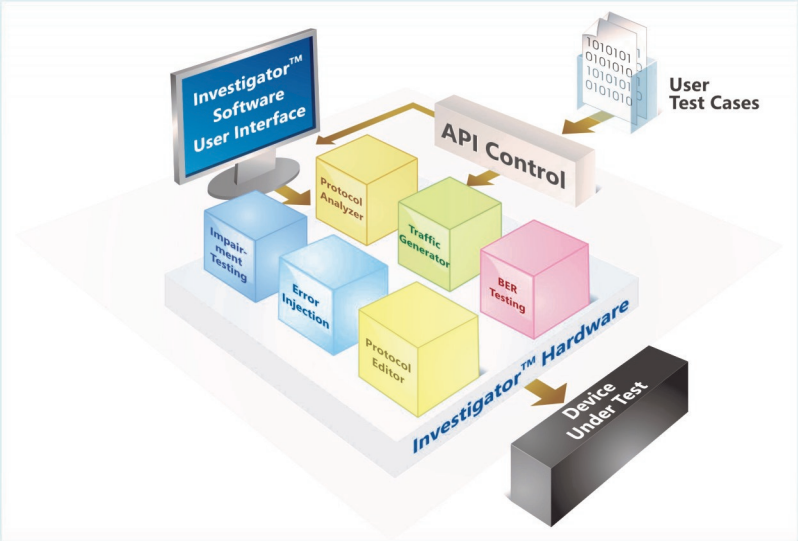
Investigator™ Library Application Programming Interface (API)

Write your own test case suites

All of the functions used by the various Investigator applications are made available to the user through the Investigator Library API. The 'C' compatible interface allows 3rd party applications to be created on top of the Investigator System that can be used for Test Automation, Production Testing or Conformance Testing.

The API can also be accessed from a UNIX platform using remote procedure calls enabling the integration of Unix-based platforms into the Investigator solution.



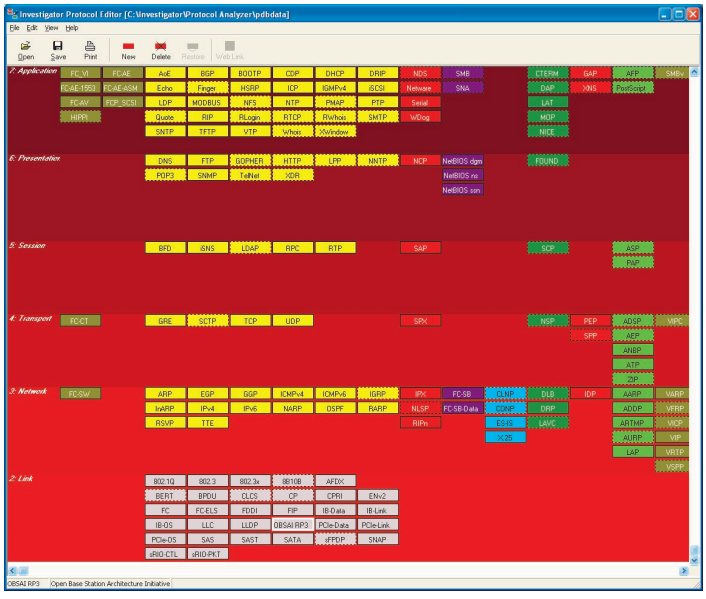
Investigator™ Protocol Editor

Create your own custom protocols and/or decodes

The Protocol Editor is easy to use, powerful means of adding implementation defined packets and control symbols, per the OBSAI specification.

The Protocol Editor uses a GUI to correctly display the translated data from the link. Once it is saved into the protocol database the new or revised protocol is available for decoding and searching within the Trace Viewer, in the Protocol Analyzer as trigger and filter definitions, also in the Frame Builder as a communications event.

An example of using custom decodes is to define the decodes for the vendor specific fields.



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Investigator™ Media Kits

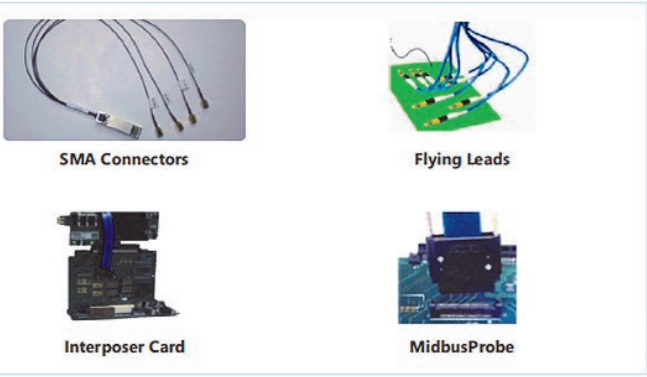
A variety of connector types available

The ports on every Investigator System have been standardized to accommodate the widest range of connections using the SFP (small form factor pluggable) transceiver specification.

We support the most common connection methods for OBSAI devices, which include:

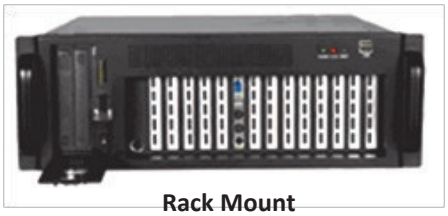
- SMA
- LC 850nm Optical
- LC 1320nm Optical
- RJ45 Copper
- Others upon request

Investigator Systems use industry standard hardware components. Please contact us for your specific connector and cabling needs.



A Variety of Connectors and Cables Are Available
(Not Shown: QSFP to InfiniBand or QSFO to optical cables)

Portables



Rack Mount

Benchtop

Investigator™ Platforms

Select the chassis to suit your needs

Investigator Platforms have been designed to meet a number of different customer requirements from **high port count** to **extreme portability** and **ruggedization**.

Investigator makes use of industry standards within its design to protect customer investments in our technology. **This means future upgrade paths are flexible and cost effective**. Often, additional protocols and capabilities can be self-installed into existing hardware, without having to send the unit back to the factory.

Investigator platforms use industry standard PC-based platforms, Windows-based operating systems and Java -based applications.

Absolute Analysis invests time and effort in ensuring the enclosure technology provides appropriate power and cooling for the Investigator Interface Cards. Each platform provides exactly the same high level of functionality as the others with the only difference being the number of Interface Cards, and consequently the number of communications ports, supported.

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Investigator™ for OBSAI ™ Solutions Summary

A complete solution on a single piece of hardware

Functions	Protocol Analyzer and Traffic Generator for OBSAI
Specification Support	Compatible with RP1, RP2, RP3, and RP3-01 OBSAI links
Speed Support	1.536, 3.072, and 6.144 Gbps speeds supported
Air Interface Standard Support	GSM/EDGE, WDCDMA, LTE and 802.16d-e
Capture Buffer	Maximum 4 GB per card, or 1 GB per port.
Triggering Functions	Trigger on real-time traffic, using any control symbol, packet or port. Advanced Boolean functions for setting trigger conditions, including external trigger in and out capabilities.
Filtering	Filter trace data on any symbol or packet. Save filter conditions for later analysis. Add note and bookmarks to help facilitate debugging.
API Support	Use the API to control the analyzer and traffic generator with an external C program. Automate test cases, and reproduce specific traffic pattern to facilitate a repeatable test plan.
Network Connections	The Investigator™ System supports a variety of Media Kits to interface with an OBSAI network and supports both copper and optical connections.
Maximum Port Count	Maximum port count is 32 ports. The ports can be configured to monitor 16 links in Bypass mode or 32 OBSAI end points in Traffic Generator mode.
Platforms and Configurations	Absolute Analysis Investigator™ Systems are available in several platforms ranging from portable to high port count rack mounts to ruggedized chassis.

Service and Support

Absolute Analysis provides unsurpassed service to all Investigator™ users including remote diagnostics, extended warranties, and upgrade paths to current offerings from any Investigator™ system.

Training

Absolute Analysis offers comprehensive training courses for products and protocols. Training can be provided at your location or remotely, and can be customized to your requirements.

For More Information

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