

## POS OC-48c TeraMetrics™ Modules

# POS-3505As/POS-3505AR

### Product Overview

The SmartBits® POS-3505As and POS-3505AR TeraMetrics modules are scalable performance analysis modules capable of simulating the millions of client/server sessions and control protocols required to fully test Packet over SONET/SDH systems. With the POS-3505As and POS-3505AR, you can quickly measure all of the key metrics, including true load capacity, latency, and IP frame sequencing using repeatable, industry-standard tests.

### Key Applications and Benefits

- Evaluates key performance parameters of POS routers under typical or extreme traffic load conditions.
- Qualifies POS routers during development, quality assurance, and final regression testing.
- Tests control plane protocols such as BGP4 (for routing) and RSVP-TE (for MPLS) and analyzes their impact on data forwarding.
- Dramatically improves the time to market and reduces the risk of failure at the customer site.
- Performs high load data plane testing while simultaneously stress testing routing protocols.
- For network service providers, stresses and commissions high-speed POS networks prior to actual deployment.

### Specifications

- Line Rate
  - 2.488 Gbps line rate (2.396Gb/s) transmit SPE bandwidth.
- Port Density
  - 1 port per POS-3505As or POS-3505AR module.
- Framing
  - SONET OC-48c or SDH STM-16c framing.
  - Internal/external transmitter clock selection.
  - SONET/SDH error generation and analysis.

### ■ Transmit Characteristics

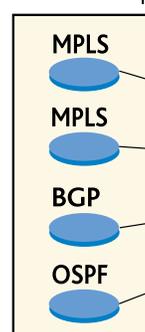
- L2 Encapsulation: PPP or Cisco HDLC encapsulation.
  - Optional MPLS label stack encapsulation within PPP frames.
  - Rate-based or gap-based transmission scheduling.
  - Gap-based transmission scheduling.
  - Interframe gap (IFG): min 3.34 nanoseconds; max. 21.88 milliseconds.
  - Interburst gap (IBG): min. 13.4 nanoseconds; max. 1.79 seconds.
  - Background frame (16 KB Buffer) data fill pattern: user-specified or random (global setting).
  - Error generation: CRC, IP checksum, data integrity.
  - Payload scrambling enabled under user control ( $x^{43}+1$ ).
  - Traffic shaping through random frame length, inter-frame gap, and frame content settings.
  - Ability to execute applications on the module under Linux OS.
- ### ■ Per Stream Features
- Generates up to 512 independent IP streams (peer-to-peer) and analyzes up to 65,535 streams at any given time.
  - Frame length: from 42 bytes to 16,384 bytes. The frame length includes the 4-byte PPP header and the frame payload, but does not include the FCS. Capable of generating back-to-back frames separated by a single flag.
  - VFD 1, VFD 2: from 1 to 6 bytes (specifiable), anywhere in a packet; static, increment, decrement, random. Cycle: max. 16,777,215; increment and decrement modes only. Stutter: max. 4,095; increment and decrement modes only.
  - VFDs 1, 2 are bit-maskable, IP subnet-aware, and can be cascaded.
  - IP header checksum generation according to VFDs and/or background.

**SmartBits Division**  
26750 Agoura Road  
Calabasas, CA  
91302 USA  
Tel: 818-676-2300  
Fax: 818-676-2700

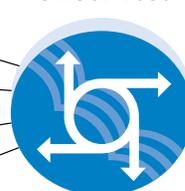
**Sales**  
USA: 800-927-2660  
EMEA: +33 1 6137 2250  
Asia: +852 2166 8382

[www.spirent.com](http://www.spirent.com)

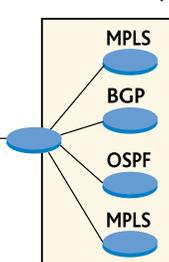
SMB-6000B  
POS OC-48c port



**Router Under Test**



SMB-600/6000B  
POS OC-192c port



• SMB-600/6000B OC-48c and OC-192c ports support a variety of technologies including BGP, OSPF, and MPLS.

- Testing capabilities include sequence tracking per stream, latency over time, latency per stream, and latency variation.
- User-selectable Frame Check Sequence (FCS) of 16- or 32-bit.
- Data integrity validation of L3/L4 payload.
- Unicast, broadcast, and multicast traffic effects can be analyzed.
- **Frame-based Transmit Modes**
  - Continuous: constant frame transmit.
  - Single burst: up to 4 billion packets in a single burst.
  - Multiburst: up to 4 billion repetitive bursts with user-defined delay between bursts.
  - Continuous Multiburst: runs multiburst mode continuously.
- **Frame-based Receive Modes**
  - IP Header checksum and data integrity check.
  - Per-stream statistics mode: QoS based on addressing, protocol type, port number, and frame priorities.
  - Over-time statistics mode: statistics can be maintained for all incoming frames within the specified timeframe.
  - Latency histograms for latency distribution.
  - Sequence tracking per stream.
- **Capture Mode**
  - Full line-rate (2.488 Gbps) capture and analysis.
  - 16 MB capture buffer per port.
  - Frame Length: 9 to 16,384 bytes.
  - Frame selection: entire frame (up to 16 KB), slice of a frame beginning at offset 0 (programmable number of 64-byte slices), or signature field.
  - Pre-capture filtering on: all valid frames, frames with or without a signature field, only signature field, received trigger, CRC errors, data integrity errors, and IP checksum errors.
- **Triggers**
  - Two triggers of variable length.
  - Trigger combinations: Trigger 1 only, Trigger 2 only, Triggers 1 and 2, Trigger 1 or 2.
- **Management Frame Transmit and Receive**
  - The TeraMetrics architecture supports many protocol stacks including PPP, ICMP, TCP, RIP, OSPF, IS-IS, BGP, RSVP-TE, LDP, and CR-LDP.
  - Minimum management frame size: 9 bytes containing a CRC-32.

- **SONET/SDH Statistics**
  - Section BIP-8
  - Line BIP-384
  - Line FEBE
  - Path BIP-8
  - Path FEBE
- **Raw Tags**
  - In the Raw Tags test, frames are stored and sent to the application without any calculations or filtering performed on the stream tags received. Up to 64K of records can be stored. Module transmit time, receive time, and delta (in  $\mu$ Sec) are recorded per tag.

### Supported Applications

- SmartWindow™
- SmartLib™ Programming Library
- ScriptCenter™
- SmartFlow™
- SmartVoIPQoS™
- SmartMulticast IP™
- TeraRouting Tester™

### Interface Specifications

The POS-3505As and POS-3505AR modules are compliant with RFC's 1661, 1662, and 2615, which specify Packet Over SONET (POS) interface requirements. Each SONET interface conforms to ANSI T1.105 and ITU-T G.707 specifications. Each port presents an SC-duplex fiber connector suitable for use with existing single-mode fiber cabling.

	POS-3505As	POS-3505AR
<b>Ports per module</b>	1	1
<b>Reach</b>	Single mode – 2-15 km	Single mode – 2-15 km
<b>Wavelength</b>	1310nm	1550nm

### Requirements

- The POS-3505As and the POS-3505AR modules each require one slot in an SMB-600 or SMB-6000B chassis.
- An IBM or compatible Pentium™ PC running Windows® 98/2000/NT, with mouse and color monitor.

### Ordering Information

#### POS-3505As

OC-48c/STM-16, 1-port, single mode, 1310nm, TeraMetrics module

#### POS-3505AR

OC-48c/STM-16, 1-port, single mode, 1550nm, TeraMetrics module

#### SUS-SMB

12-month Software Update Support Service (includes firmware support)



POS-3505As

#### SmartBits Division

26750 Agoura Road  
Calabasas, CA  
91302 USA  
Tel: 818-676-2300  
Fax: 818-676-2700

#### Sales

USA: 800-927-2660  
EMEA: +33 1 6137 2250  
Asia: +852 2166 8382

www.spirentcom.com

	Counter Width	Rates (32-bit)
■ Transmitted and received frames	64-bits	✓
■ Transmitted and received bytes	64-bits	✓
■ Signature Frames (Rx and Tx)	64-bits	✓
■ CRC errors (Rx)	64-bits	✓
■ IP Header Checksum Errors (Rx)	64-bits	X
■ Triggers (Rx and Tx)	64-bits	✓
■ Latency (Rx and Tx)	32-bits	X