



# Tsunami™

## 100BaseT/F Wireless Ethernet Bridge



### Fast Ethernet Connectivity in a Wireless Solution

Tsunami 100BaseT/F is a wireless Ethernet bridge providing greater capacity and significantly lower cost than using dedicated DS-3 leased lines.

Using high-quality radio transmitters, standard IP links, and low-cost Ethernet switches, Tsunami 100BaseT/F Ethernet bridges greatly reduce the latency and processing overhead associated with DS-3 connections to IP routers and switches. Because it is wireless, Tsunami 100BaseT/F eliminates wire/fiber installation costs and recurring monthly fees—delivering carrier-class performance quickly, at an affordable price.

In addition to the Fast Ethernet connection, Tsunami 100BaseT/F also provides a separate T1 connection, allowing you to extend PBX connectivity between buildings without additional leased-line costs.

#### Extend or Enhance Your Network Virtually Overnight

With Tsunami 100BaseT/F, there are no leased-line hassles or natural or man-made barriers to overcome. Easy installation and operation allow network planners to quickly implement full 100BaseT/F Fast Ethernet capacity between networks, making it the ideal solution for:

- Organizations building out networks to include WAN connectivity between buildings, campuses, and remote locations
- Establishing high-speed connections between Internet or network service providers and their customers
- Service providers extending existing fiber and wire networks
- Organizations or service providers seeking network redundancy for mission-critical connections

#### About the Tsunami Product Family

The Tsunami family of Ethernet bridges provides wireless solutions that meet the growing demand for transparent and reliable high-speed network interconnectivity.

In addition to Tsunami 100BaseT/F, the Tsunami price-performance leader, the Tsunami product line includes:

**Tsunami 10BaseT**, a cost-effective, high-capacity alternative to multiple wireline T1 connections.

**Tsunami 1000BaseSX**, the world's first license-exempt Ethernet bridge to provide Gigabit, wireless connectivity using native IP.

### PRODUCT HIGHLIGHTS

#### Double DS-3 Capacity

- Aggregate throughput to more than 200 Mbps (100 Mbps full duplex)
- Native IP preserved throughout the network with direct connections to Fast Ethernet switches

#### Rapid Return on Investment

- Fast payback compared to the costs of leasing DS-3 lines or trenching new fiber
- Next-day deployment enables faster service activation and payback

#### Fast and Easy to Deploy

- Multiple frequencies provide installation options for easy deployment and minimum interference with existing equipment
- Eliminates schedule delays due to fiber right-of-way issues

#### Carrier-Class Reliability

- Meets or exceeds traditional Telco wireline standards and requirements
- Longer distances and highest reliability due to superior system gain

### KEY FEATURES

- Additional T1 or E1 for voice or data
- Multiple Capacities: 93, 206 or 208 Mbps aggregate throughput
- Frequency Ranges:  
5.3 GHz license-exempt,  
5.8 GHz license-exempt,  
5.3/5.8 GHz license-exempt, and  
23 GHz licensed
- Compliant with industry standards
- Network management through SNMP, HTTP, and Serial
- Point-to-point communications from less than 1 mile/km to more than 15 miles/24 km
- Built-in loopback, far-end monitoring, and private telephone network orderwire
- 2-year warranty

## Product Specifications

PRODUCT	TYPE	MODEL NUMBER	FREQUENCY BAND	AGGREGATE THROUGHPUT	CHANNEL PLANS	THRESHOLD (BER=1X10 <sup>-4</sup> )	OUTPUT POWER (MINIMUM)	SYSTEM GAIN	DISTANCE (MILES/KM)
Tsunami 45	Single-band License-exempt	27750-51	5250-5350 MHz	93 Mbps	1 (A)	-79 dBm	+13 dBm	92 dB	<1 to >5/8
Tsunami 45	Single-band License-exempt	27710-51/2	5750.9-5798.9 MHz	93 Mbps	1 (A)	-79 dBm	+17 dBm	96 dB	<1 to >15/24
Tsunami 45	Licensed High-power	27400-51H	21200-23600 MHz	93 Mbps	24 (8 x A, B, C)	-77 dBm	+23 dBm	100 dB	<1 to >8/13
Tsunami 45	Licensed Low-power	27400-51L	21200-23600 MHz	93 Mbps	24 (8 x A, B, C)	-77 dBm	+17 dBm	94 dB	<1 to >5/8
Tsunami 100	Single-band License-exempt	28010-51/2	5725-58025 MHz	208 Mbps	1 (A)	-71 dBm	+16 dBm	87 dB	<1 to >5/8
Tsunami 100	Dual-band License-exempt	27720-51	5250-5350 MHz and 5725-5825 MHz	206 Mbps	1 (A)	-77 dBm	+10 dBm +17 dBm	87 dB	<1 to >5/8

### System

#### Capacity

Tsunami 45	45 Mbps full duplex (+T1/E1)
Tsunami 100	100 Mbps full duplex (+2xT1/E1)

#### Antenna Connector

N-Type female (license-exempt)  
WG Flange (UG-595) Integral (licensed)

#### RF Attenuation Range

20 dB, minimum (license-exempt models)

#### Maximum Receive Level

-30 dBm, error-free (license-exempt)  
-20 dBm, error-free (licensed)

#### Latency

<500 µS

#### Regulatory Compliance

FCC Part 15/Class B

#### Network Management

SNMP, Telnet (100 Mbps models only),  
HTTP web browser

#### Security

2<sup>48</sup> security coding

### Data Interface

#### Ethernet Interface

100BaseTX/FX

#### Connector

RJ-45 female and Fiber SC

#### Compliance

IEEE 802.3, 802.3u, 802.3d

### Auxiliary Connections

#### Orderwire Handset

2-wire, RJ-11

#### VF Orderwire Bridge

600 ohm balanced, 4-wire, 0 dBm, DB9

#### Diagnostics Port

RS-232 (craft), DB9

#### Aux. Data Port

(Clear Service Channel)

RS-232/RS-422,  
≤9.6K baud, DB9

#### Alarm Port

2 ea. Form C, 6 TTL, DB9

#### Test Points

Output power, near- and far-end RSL  
(license-exempt) Output power, near-end  
RSL (licensed)

#### Wayside Channel(s)

T1 for 27710-51, 27750-51, 27400-51H/L  
2xE1 for 27710-52 (optional second E1  
occupies 2 Mbps of data bandwidth)  
2 x T1 for 27720-51  
2 x E1 for 28010-51/2

### Power/Environment

#### DC Power

±20 to ±63 Volts, <45 Watts (license-  
exempt), <95 Watts (licensed)

#### Optional AC Adapter

100-250 Volts, 50-60 Hz

#### Power Connector

6-pin barrier strip, plug-in

### Power/Environment (continued)

#### Operational Temperature

-30° to 55° C (license-exempt IDU<sup>1</sup> &  
licensed ODU<sup>1</sup>), -5 to +50° C (licensed IDU)

#### Humidity

0 to 95%, non-condensing

#### Altitude

15,000 feet/4572 meters, maximum

### Physical Dimensions

#### Indoor Unit (IDU)

##### Size (WxHxD)

17.2 x 3.5 x 14.5 inches (license-exempt,  
excludes 100 Mbps 5.8 GHz)  
43.7 x 8.9 x 36.8 cm (license-exempt,  
excludes 100 Mbps 5.8 GHz)  
17.2 x 1.75 x 14.5 inches (23 GHz licensed)  
43.7 x 4.4 x 36.8 cm (23 GHz licensed)  
17.2 x 3.5 x 14.5 inches (100 Mbps 5.8 GHz)  
43.7 x 8.9 x 36.8 cm (100 Mbps 5.8 GHz)  
11 lbs/5 kg (license-exempt)  
6.7 lbs/3.04 kg (licensed)

##### Weight

#### Outdoor Unit (ODU; Tsunami 45 23 GHz licensed & Tsunami 100 5.8 GHz models only)

##### Size (WxHxD)

8.0 x 10.0 x 4.5 inches (23 GHz)  
9 x 13 x 5 inches (100 Mbps 5.8 GHz)  
20.3 x 25.4 x 11.4 cm (23 GHz)  
22.9 x 33 x 12.7 cm (100 Mbps 5.8 GHz)  
11.4 lbs/5.17 kg (23 GHz)  
20 lbs/9 kg (100 Mbps 5.8 GHz)

##### Weight

### Mounting (Installation)

#### EIA Rack Mount

19 inch/48.2 cm, 2 rack unit  
(license-exempt)  
10 inch/25.4 cm, 1 rack unit  
(23 GHz licensed)  
(mounting brackets supplied)

### Frequency Channel Plans

Model Number	Channel Plan	Frequency
27750-51	A1/A2	5275/5325 MHz
27710-51/2	A1/A2	5750.9/5798.9 MHz
27400-51H/L	A1/A2	21225-21575/22425-22775 MHz
27400-51H/L	B1/B2	21625-21975/22825-23175 MHz
27400-51H/L	C1/C2	22025-22375/23225-23575 MHz
28010-51/2	A1/A2	5725/5825 MHz
27720-51	A1/A2	5300/5775 MHz

<sup>1</sup>ODU=Outdoor Unit (for 45L 23 GHz Licensed & 100 Mbps 5.8 GHz only), IDU=Indoor Unit