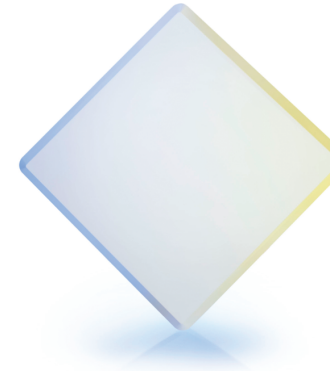


## Tsunami MP.11 Model 2454-R and 5054-R Specifications (Cont'd)



PRODUCT MODELS	
5054-BSUR	Tsunami MP.11 Model 5054-R Base Station Unit with Type-N Connector
5054-SUA	Tsunami MP.11 Model 5054-R Subscriber Unit with Type-N Connector
5054-SUR	Tsunami MP.11 Model 5054-R Subscriber Unit with Integrated 23-dBi Antenna
2454-BSUR	Tsunami MP.11 Model 2454-R Base Station Unit with Type-N Connector
2454-SUA	Tsunami MP.11 Model 2454-R Subscriber Unit with Type-N Connector
2454-SUR	Tsunami MP.11 Model 2454-R Subscriber Unit with Integrated 18-dBi Antenna
INTERFACES	
Wired Ethernet	10/100Base-TX Ethernet (RJ-45)
Wireless Protocol	WORP
Antenna Connector	Standard-N female (only for BSU and SU with Type-N connector)
RADIO AND TRANSMISSION SPECIFICATIONS	
Modulation Method	OFDM
Unlicensed Frequencies	
Model 5054-R	Americas (FCC): 5.25-5.35 GHz (15 channels) Americas (FCC): 5.725-5.850 GHz (21 channels) Europe (ETSI): 5.47-5.725 GHz (46 channels) Europe (Russia): 5.15-5.850 GHz (82 channels) Europe (Licensed in the UK): 5.725- 5.850 GHz (21 channels)
Model 2454-R	Americas (FCC): 2.4-2.4835 GHz (13 channels) Europe (ETSI): 2.4-2.4835 GHz (13 channels) Japan (MKK): 2.4-2.497 GHz (14 channels)
Data Rate	54, 48, 36, 24, 18, 12, 9, 6, 4.5, 3, 2.25, 1.5 Mbps
UNIT PHYSICAL SPECIFICATIONS	
Dimension	
Packaged :	14.57 x 13.70 x 8.19 in (370 x 348 x 208 mm)
Unpackaged: (BSUR and SUA)	10.5 x 10.5 x 3.25 in (267 x 267 x 83 mm)
Unpackaged (SUR):	12.60 x 12.60 x 3.50 in (320 x 320 x 89 mm)
Weight	
Packaged (BSUR and SUA):	9.2 lbs (4.2 kg)
Unpackaged weight (BSUR and SUA):	5.5 lbs (2.49 kg)
Packaged weight (SUR):	10.1 lbs (4.6 kg)
Unpackaged weight (SUR):	6.0 lbs (2.72 kg)
ENVIRONMENTAL SPECIFICATIONS	
Temperature	
Operating:	-33° to 60°C (-27.5° to 140° Fahrenheit)
Storage:	-55° to 80°C (-41° to 176° Fahrenheit)
Humidity	
Operating:	Max 100% relative humidity (non-condensing)
Storage:	Max 100% relative humidity (non-condensing)
Water and Dust Proof	IP65
ELECTRICAL	
Power Injector	
Input:	Voltage 110 to 250 VAC
Output:	Current 420mA at 48V
Power Consumption:	Maximum 20 Watt
Power over Ethernet:	Via RJ-45 Ethernet interface port
MANAGEMENT	
Local Management	RS-232 serial (RJ11 and DB-9)
Remote Management	Telnet, Web GUI, TFTP
SNMP	SNMPv1/v2; MIB-II ; Ethernet-like MIB; BridgeMIB; 802.3MAU; 802.11 MIB; Private MIB; ORINOCO MIB; RFC 1157; RFC 1213; RFC 1643; RFC 1493; RFC 2668
MTBF AND WARRANTY	
100,000 hours; 1-year on parts and labor	
PACKAGE CONTENTS	
Tsunami MP.11 Model 2454-R and 5054-R Base Station or Subscriber Unit, wall/ pole mounting bracket, power injector for 2454-R and 5054-R, country specific power cord, Ethernet cable weather-proof plug, Documentation and Software CD-ROM	
RELATED PRODUCTS	
Power Over Ethernet (PoE) Surge Arrestor (P/N #: 70251); Spare Power DC Injector for Tsunami MP.11 or QB.11 (-R model ONLY) (P/N #: 69823); 5 GHz Antennas; 2.4 GHz Antennas	



Capabilities of Fixed and Mobile WiMAX for U.S. and Global Markets

# Tsunami® MP.11 Model 2454-R and 5054-R

## The Next-Generation Broadband Wireless Access Solution Adds WiMAX Functionality Today

Proxim Wireless is proud to introduce an enhanced version of its field-proven Tsunami® MP.11 point-to-multipoint product line. The MP.11 product line has enabled municipalities and service providers to bridge the digital divide, increase productivity, cut network costs, and create new business opportunities -- all through advanced broadband wireless networking. New features include: WiMAX Quality of Service (QoS); roaming with seamless handoffs at speeds up to 200 km/hour; and dynamic frequency selection (DFS) which has already received EN 301-893 v1.3.1 certification\*. The MP.11 is capable of supporting converged voice, video and data transmission in fixed and mobile applications, bringing capabilities of the WiMAX IEEE 802.16e standard to market now, for license-free frequency bands available globally. Existing MP.11 installations can even be upgraded in the field.

- Frequency support for 2.4 GHz with 13 total channels, four 5 GHz bands (5.15, 5.25, 5.47 and 5.725) GHz with 80+ non-overlapping channels and scalable performance from 6 to 54 Mbps -- all selectable via simple user interfaces
- Advanced revenue-enhancing features are standard -- including flexible bandwidth provisioning for DSL, T1 or Ethernet-like tiered services as well as NAT and DHCP for IP-based storage and e-mail hosting

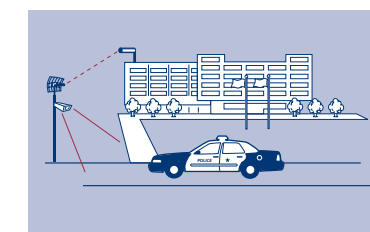
## WiMAX QoS Provides New Revenue Opportunities for Service Providers

IEEE 802.16 (WiMAX) QoS provides a higher level of prioritization than any available 801.1p-based schemes of service, with up to four service flows per class, are supported. This is especially important for emerging services like VoIP and streaming video applications. As a result, service providers will have more options for managing their bandwidth more effectively and can make better, more informed decisions about their service management strategies and revenue-generating opportunities.

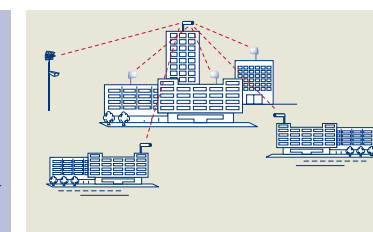
## Mobile Roaming Enables New Applications

Proxim innovation delivers another wireless industry first -- mobile roaming of Subscriber Units (SU) between Base Station Units (BSU). Public safety first responder networks, transportation system monitoring and telemetry, and mobile security and surveillance are now all possible with a low cost, robust system.

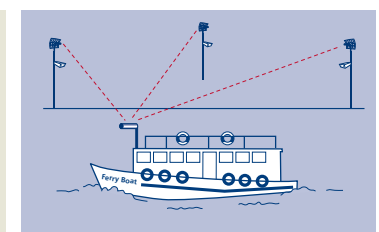
- Fast handoff at speeds up to 200 km per hour (120 miles per hour) with handoff times as low as 40ms
- Customizable roaming parameter maintains minimum bandwidth required for application performance



Emergency First Responders



Enterprise Campus Connectivity



Mobile Hot Spots

\*DFS compliant with EN 301-893 v1.3.1 is only available via request.

## APPLICATIONS

- **Security and Surveillance**  
Wireless solutions for bandwidth-intensive and high-definition IP-surveillance cameras located at important city and transportation infrastructure such as airports, bridges and trains
- **Business and Residential Last Mile Access**  
Competitive broadband service alternative to DSL or cable modems for residences and T1 or Ethernet for businesses
- **Metropolitan Area Networks**  
Secure and reliable connectivity between city buildings
- **Emergency First Responders**  
Critical information delivery such as medical data and video feeds during in-progress events
- **Enterprise Campus Connectivity**  
Extend main network to remote branch offices, warehouses or other out buildings without leased line
- **Mobile Hot Spot**  
On-demand entertainment and broadband access solutions for ferry, transit buses and railway system commuters

## Adaptive Wireless Network Optimizes Performance

Using advanced OFDM technology and Wireless Outdoor Routing Protocol (WORP), 2454-R and 5054-R networks dynamically adapt to the ever-changing network load for optimum performance.

- WORP adapts to avoid collisions and maximizes data content with each transmission
- Dynamic Data Rate Selection automatically compensates for temporary link degradation, maintaining robust connectivity and mitigating service calls

## Advanced Security Protects Privacy

Multiple security mechanisms protect operator, residential customer and enterprise privacy.

- Weatherized enclosure allows colocation on rooftops – limiting physical access
- Outdoor Routing Protocol (WORP) prevents snooping common to Wi-Fi systems
- Advanced encryption protects over-the-air transmission
- Intracell blocking forbids direct communication between Subscriber Units
- BSU and SU mutual authentication eliminates unauthorized use of system by rogue SUs and man-in-the middle attacks
- Password protection of all remote management methods

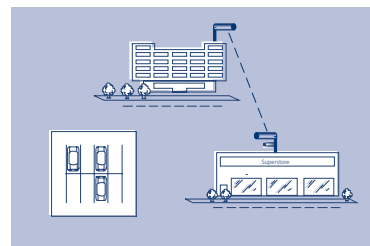
## Designed for Fast Installation and Lower Maintenance Cost

The 2454-R and 5054-R incorporate hardware and software features that reduce labor costs associated with initial deployment and post-sales maintenance.

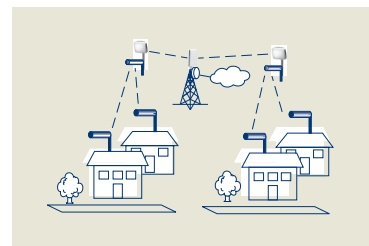
- With Peltier heating and cooling technology inside a ruggedized enclosure, MP.11 can be deployed in extreme weather conditions
- Decrease Subscriber Unit configuration time with integrated and vertical/ horizontal polarized antennas
- Eliminate guess work in locating the remote antennas with audible tone and real-time signal strength measurements
- Support for both local and remote management, removing the need for expensive on-site supports

## Investment Protection for Current Tsunami MP.11 Model 5054 (MP.11a) customers

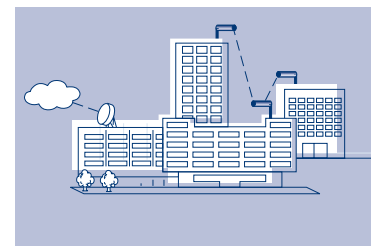
Customers of earlier versions of MP.11 can upgrade their products in the field with enhancements including WiMAX QoS and fast roaming (v2.3) and DFS compliant with EN 301-893 v1.3.1 (v2.4, available via request only).



Security and Surveillance



Last Mile Access



Metropolitan Area Networking

## Tsunami MP.11 Model 2454-R and 5054-R Specifications

PERFORMANCE AND SCALABILITY	
Best-in-class performance with WORP	By eliminating in-the-air collisions and maximizing data content for each transmission, WORP (Wireless Outdoor Router Protocol) significantly improves performance
Near line of sight capable	Line of sight and near line of sight connectivity extends deployment flexibility in rural as well as high-density urban areas
Highest performance per cell	Supports 6 sectors per cell with an aggregate data rate of 324 Mbps
Dense subscriber support per cell	Supports up to 1,500 subscribers with 6 sectors
Guaranteed data rate while roaming	Allows bandwidth-intensive applications, such as high-definition video streaming, in mobile environments
QUALITY OF SERVICE (QoS)	
WiMAX 802.16 QoS	Supports up to 8 QoS Classes; Supports up to 4 Service Flows per class
Traffic Prioritization Parameters Supported	IP ToS (Layer 3 QoS identification), IP Protocol List, 802.1p tag (Layer 2 QoS identification), Source IP Address+Mask, Destination IP Address+Mask, Source TCP/UDP port ranges, Destination TCP/UDP port ranges, Source MAC addresses, Destination MAC address, VLAN ID, Ether type
Committed information rate (CIR)	Users can set CIR for each Subscriber Unit
Minimum Information Rate (MIR) Support	Settable MIR
SECURITY	
Unicast, multicast and broadcast storm	User definable threshold levels prevent excessive bandwidth consumptions from degrading network control performance
Packet filtering	MAC, Ether type, IP address filtering provides very granular network security
Intracell blocking	Allows the BSU to act as the central policy enforcer for SU to SU communications, further enhancing subscriber units' privacy
WORP as a secure protocol	Unspoofable by wireless decryptors, WORP provides critical feature support for secure long-range wireless deployments in unlicensed frequency spectrum
Secure encryption and authentication	Supports for WEP, WEP+ and AES for "over the air" encryptions and Radius for user authentication
Interference mitigation tool	Variable Receive Threshold, Transmit Power Control and Dynamic Frequency Selection
LOWER COST OF OWNERSHIP	
Dynamic Data Rate Selection (DDRS)	Automatically optimizes throughput as link conditions change or as subscribers roam. Connectivity is automatically maintained when link quality degrades
Flexible and secure remote management	Supports remote management via Telnet, SNMP and web interfaces with password protections
Antenna alignment tool	Audible tone and CLI with running statistics displaying real-time signal strength ease antenna system installation
Comprehensive station statistics	Unit and group statistics are available for monitoring, planning and management of a wireless network
Lower recurring lease cost	Co-locating unit on rooftops with plenty of available space lowers lease cost
Options for subscriber units with type-N or integrated antenna	Subscriber unit with type-N connector supports a broad selection of standard-based external antennas; subscriber unit with integrated antennas supports dual polarizations, vertical and horizontal, to minimize installation time
Extreme Operating Temperature	Rated for -33° to 60° Celsius, the 2454-R and 5054-R can be deployed in hot or cold outdoor climates
Remote Reboot	System reboot or reset to factory default can be performed remotely via a power injector button