



# **Motorola Point-to-Point 600 Series**

## Wireless Ethernet Bridges



MOTOWI<sup>4</sup>

# High-Throughput Connectivity Virtually Anywhere

## You Shouldn't Need a License to Speed.

With wireless Ethernet bridging, you typically have needed a license to go fast. Because a license reserved a part of the radio spectrum just for you, wireless links encountered less interference, and, as a result, could go farther, faster, at higher capacity and with greater reliability.

Motorola changed all that with its unlicensed wi4 Fixed Point-to-Point (PTP) 600 Series Wireless Ethernet Bridges. Operating in the 5.4 and 5.8 GHz bands, PTP 600 bridges combine the speed and reliability of licensed wireless with the flexibility of the unlicensed space, sparing you the delay and expense of applying for a license to set up IP and circuit-switched wireless networks.

In addition to unlicensed-band solutions, the PTP 600 family of bridges includes the PTP 25600 model which operates in the 2.5 GHz licensed spectrum. The PTP 25600 bridges are designed to support a variety of Educational Broadband Service (EBS) applications with high-throughput, spectrally-efficient connectivity and low latency. (It is recommended that regulatory conditions for radio-frequency bands be confirmed prior to system purchase.)

## Choice and Flexibility

Incorporated in Motorola's MOTOWi4 portfolio, the PTP 600 Series bridges are available in several models to meet your specific requirements:

- **5.4 and 5.8 GHz Integrated:** With up to 300 Mbps Ethernet data rate and dual built-in antennae, the 5.4 and 5.8 GHz Integrated systems are the perfect choice for near- or non-line-of-sight, long-distance line-of-sight and high-interference environments where high throughput is a major requirement and/or dual E1/T1 capability is needed.

- **5.4 and 5.8 GHz Integrated Lite:** The Lite versions of the PTP 600 Integrated bridges include all the same robust technology of the full-speed versions, but at less cost. They are ideal solutions in situations requiring single E1/T1 capability and/or more speed and bandwidth than is provided by the Motorola PTP 400 Series bridges. With up to 150 Mbps Ethernet data rate, the PTP 600 Integrated Lite is software upgradeable to 300 Mbps as throughput requirements increase.

- **5.4 and 5.8 GHz Connectorised:** The PTP 600 Connectorised models combine all the innovative technology found in the Integrated versions with the high-gain advantage of external antennae. Over long distances and in extremely adverse environments, including deep non-line-of-sight, these solutions let you connect over greater distance and at a higher level of reliability and speed than comparable wireless bridges. (A list of approved antennae that meet FCC requirements is provided on our web site.)

- **5.4 and 5.8 GHz Connectorised Lite:** With all the performance and reliability of the Connectorised systems, these solutions deliver up to 150 Mbps in extremely adverse environments – at less cost. As bandwidth requirements grow, you can easily upgrade from 150 to 300 Mbps.

- **2.5 GHz Integrated:** With ranges up to 50 km (30 miles), dual built-in antennae and the same robust technology of the unlicensed models, the PTP 25600 Integrated systems offer 2.5 GHz license holders selectable 5, 10, 15 and 30 MHz channel sizes and varying data rates:

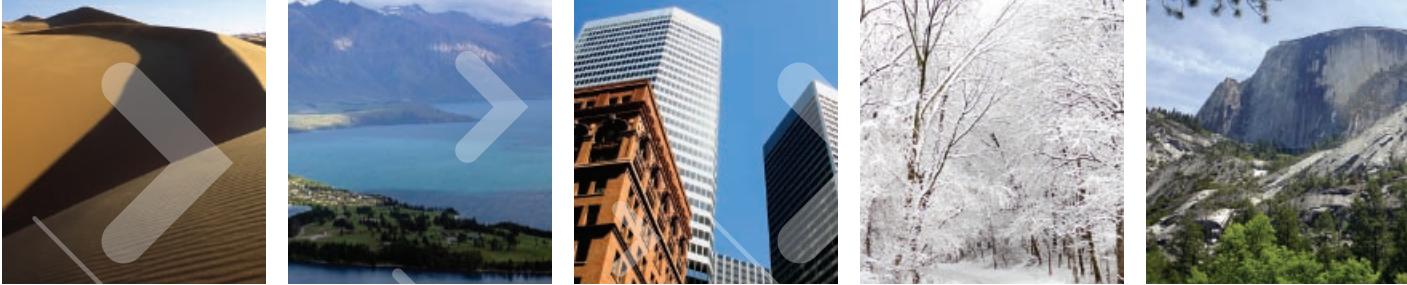
PTP 25600 * Channel Size	Maximum Ethernet Data Rate
5 MHz Channel	Up to 45 Mbps
10 MHz Channel	Up to 90 Mbps
15 MHz Channel	Up to 135 Mbps
30 MHz Channel	Up to 300 Mbps

\* Currently the PTP 25600 is not available in Canada

- **2.5 GHz Connectorised:** The Connectorised model combines all the innovative technology of the Integrated system with the high-gain advantage of external antennae, enabling connections up to 200 km (124 miles) in extremely adverse environments, including deep-non-line-of-sight and long-distance line-of-sight situations.

## MOTOWi4™

PTP 600 Series bridges can operate as stand-alone systems or integrate easily with other systems in Motorola's MOTOWi4 portfolio of wireless broadband solutions that create, complement and complete IP networks. Delivering IP coverage to virtually all spaces, the MOTOWi4 portfolio includes Fixed Broadband, WiMAX, Mesh, and Broadband-over-Powerline solutions for private and public networks.



## **Reliable, High-Speed Wireless Ethernet Bridges for Challenging Non-Line-of-Sight and Long-Range Line-of-Sight Environments, Including Those Over Water**

### **Interference Mitigation**

In the event a PTP 600 Series system encounters interference, it automatically applies sophisticated mitigation techniques to vastly increase the likelihood that your wireless communications will get through reliably and accurately:

- **Advanced Spectrum Management with i-DFS:**

*Intelligent* Dynamic Frequency Selection (i-DFS) is at the heart of our exceptional spectrum management capabilities. At power-up and during operation, the PTP 600 bridge scans the band – 500 times a second – and automatically switches to the clearest channel. A 30-day, time-stamped database alerts you to any interference that exists and provides statistics that help you pinpoint the channels that offer the clearest data paths, creating virtually interference-free performance in the band.

- **Adaptive Modulation:** Transmitter and receiver negotiate the highest mutually sustainable data rate – then dynamically “upshift” and “downshift” the rate as conditions change to provide the maximum performance possible within the current power limits.

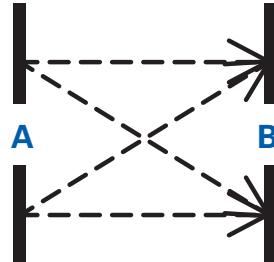
- **Time Division Duplexing (TDD)**

**Synchronisation:** TDD synchronisation synchronises transmit and receive signals and enables efficient frequency reuse, allowing network operators to co-locate multiple radios on a rooftop or tower without the radios interfering with each other.

### **Very High Throughput**

With 256 QAM modulation, PTP 600 systems deliver a faster data stream using less of the available band. Dual transceivers at each end of the link allow you to send two parallel data streams at once. The transceivers can also send redundant streams, offering greater range than comparable solutions, especially over water or in non-line-of-sight conditions. In addition to throughput, PTP 600 bridges offer other significant performance advantages, including:

**More Range to Anywhere:** PTP 600 links have class-leading sensitivity and power output, which enable the links to go farther, regardless of conditions. Plus, Motorola is the only manufacturer to combine Multiple-Input Multiple-Output (MIMO), *intelligent* Orthogonal Frequency Division Multiplexing (i-OFDM) and our advanced signal-processing algorithms. This combination allows PTP 600 systems to create four simultaneous channels between pairs of transceivers at each end of the link, without losing spectrum efficiency. In non-adverse environments, each pair of transceivers can operate in parallel, in effect creating two links and doubling throughput.



**More Ways to Use the Band:** The PTP 600’s innovative architecture combines an abundance of Ethernet and circuit-switched options. Whether your infrastructure is based on Ethernet over copper or multimode fiber...10/100/1000 Base T or 1000 Base SX...or even E1/T1 ports that bundle circuit switched connectivity with IP service, you can connect with one wireless solution, the PTP 600.

**Effective Spectrum Utilisation:** PTP 600 Series bridges monitor all available channels and dynamically select those over which they can sustain both the highest data rate and the most reliable availability. This means the bridges are very likely to find a clear channel (without operator intervention) even in a crowded space, allowing the transmitter and receiver to automatically use the frequency with the highest throughput. You can also manually lock the frequency (in either direction) and restrict each link to specified frequencies.

### **Reassuring, Robust Security**

With Motorola’s unique software, each wireless bridge will communicate only with its matched counterpart at the other end of the link – and with no other. In addition communications are encoded using a unique scrambling mechanism to secure over-the-air transmissions. Another layer of security can be applied with FIPS-197 compliant 128- and 256-bit AES encryption (optional).



**Typically, a PTP 600 system's performance means more productive users, less interference, lower cost of ownership and fewer connection points.**

### **End-to-End System Management**

PTP 600 systems contain embedded web servers to manage a link either locally or remotely and are designed to easily integrate with Web- or SNMP-based management systems and the Canopy® Prizm system. Plus the bridges support the WiMAX Management Information Block (MIB), allowing end-to-end management of a WiMAX network.

### **Productivity Payoff**

Typically, the PTP 600 system's performance means more productive users, less interference, lower cost of ownership and fewer connection points. In fact, Motorola PTP 600 Series solutions are often the lower-cost option when you consider:

- The business impact from being able to connect in an area already saturated with RF or in environments that were previously inaccessible
- The capabilities to support more bandwidth-sensitive applications, such as multimedia or voice-over-IP
- The impact of reducing or eliminating the recurring costs associated with leased E1/T1 lines
- The ability to backhaul more local loops using a single link
- The capabilities to expand video surveillance applications beyond the constraints of a wired network
- The impact of having higher reliability and speed without having to pay licensed spectrum fees

### **Put PTP 600 Bridges to Work for You**

**Service Providers:** With multi-level security, the ability to connect E1/T1 ports for bundled connectivity and WiMAX backhaul capability, PTP 600 systems support sophisticated convergent, multimedia applications, supplying services to large, wide-spread customer bases.

**Enterprises:** PTP 600 solutions support high-bandwidth enterprise applications in environments where wired networks are too expensive or impossible to implement, whilst efficiently using the frequency spectra to reduce interference and boost performance for business-critical applications.

**Vertical Markets:** Whether migrating from an analog to a digital network, linking separate networks within a building or linking networks in a campus setting, PTP 600 Series bridges offer high-throughput and reliability for multiple applications in a variety of markets, including government, utilities, transportation, healthcare and education.

**2.5 GHz License Holders:** For 2.5 GHz EBS license holders, PTP 25600 solutions can provide a dedicated broadband Internet connection that supports instant access to research; online work assignments; media-rich content for home-schooled and hospitalised students or employees in remote offices; video presentations; online testing and performance tracking; virtual field trips; and individual tutoring and mentoring.

### **Locate a Partner**

Motorola PTP 600 Series products are available through value-added distributors around the world. Our authorised Point-to-Point Distributors can be found on our web site, listed under the "Buy PTP" link on the Home Page.

### **Additional Information**

For more information on Motorola's PTP 600 Series Bridges, refer to the PTP 600 Series Technical Specifications and Fact Sheet.



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