WIRELESS NETWORK SOLUTIONS

POINT-TO-POINT RADIOS: BUILT TO RUN, BUILT TO LAST

More Than 1.5 Billion Field Hours Confirm the PTP Portfolio's Durability

PTP Product Family

When making a major purchase, you inherently want to believe that your chosen product will operate flawlessly, forever. No one likes dealing with malfunctions, whether from a car, a computer, a television or a microwave radio. Of course, no manufacturer can guarantee that their products won't fail at some point. However, Motorola's Point-to-Point (PTP) Wireless Ethernet Bridges* have an impressive and reassuring track record for durability and reliability – even when deployed in some of the most hostile locations around the globe. As evidence of that durability and reliability, PTP radios have logged more than 1.5 billion operational field hours worldwide. That sure sounds like forever.

Engineered for the Worst

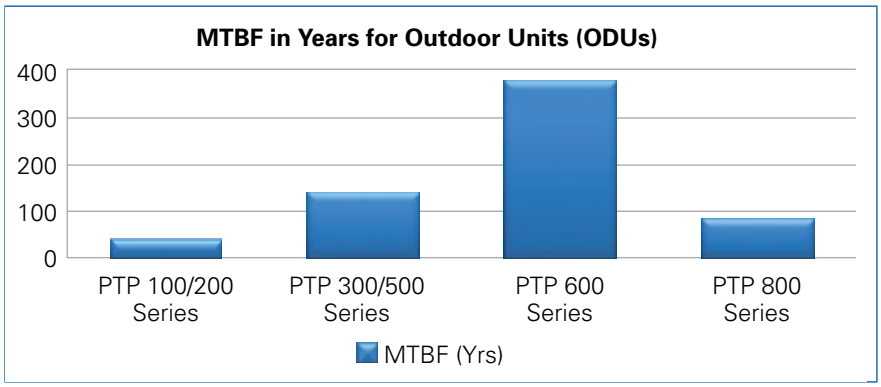
There is no place where durability and reliability are more crucial than in outdoor wireless communications. Mounted on high towers and rooftops, PTP bridges have to operate in extreme temperatures, through all types of weather and often in very hostile environments. As a result, PTP bridges have been engineered and quality-tested to withstand rain, sleet, snow, hot desert sun, icy mountain tops, salty sea air and dusty plains.

To ensure that PTP radios will provide the best possible protection from the adverse effects of the elements, the units are manufactured with industrial-grade components which are stronger and more resistant to external forces. One PTP radio even fell over and continued to send and receive data until the service team could replace the roof-mounting hardware and realign the radios.

*While all PTP systems are highly durable and reliable, certain characteristics may not apply to all models.

Mean Time Between Failures (MTBF)

MTBF is the projected elapsed time between equipment failures. MTBF years for PTP products are based on field component failure rates, excluding product returns due to lightning damage, packaging problems and incorrect installation procedures.



As shown above, the MTBF for PTP 300/500 and 600 Outdoor Units (ODUs) is 141 and 377 years respectively. MTBF for the PTP 800 ODU is 84 years and 40 years for the PTP 100 and 200 ODUs. In addition, the MTBF for the PTP 800 Compact Modem Unit (CMU) is 58 years. Because the CMU is a relatively new product and has no significant period of time in the field, the CMU's MTBF is a theoretical calculation based on component-failure calculations

The percentage of PTP 300, 500 and 600 Return Material Authorizations (RMAs) for any and all reasons averages only 1.6 percent. However, the importance of deploying lightning protection units cannot be overstated. As an example, PTP 600 returns resulting from field component failure represent 15 percent of the total number of returns. In comparison, returns due to lightning damage make up 40 percent of the total returns – more than double the number of field component failures. Packaging and incorrect installation procedures account for 21 percent, while returns with "no problem found" account for the final 24 percent. Deploying Motorola PTP Lightning Protection Units (LPUs) with PTP radios greatly decreases the number of PTP product returns.

Temperature Ranges

All PTP products can withstand wide temperature extremes. This ability to communicate reliably in very cold and very hot temperatures lets you deploy PTP radios from the Arctic Circle to the Sahara Desert and down to Antarctica. In fact, PTP radios are helping scientists in Antarctica study the effects of weather and climate on day-to-day life. Those radio links operate reliably through freezing temperatures, blizzard conditions, ice and melting snow.

PTP OPERATING TEMPERATURES		
PTP Product	**Temperature Range (Fahrenheit)**	**Temperature Range (Celsius)**
PTP 100 and 200	–40° to +131° F	–40° to +55° C
PTP 300, 500, 600	–40° to +140° F	–40° to +60° C
PTP 800	–27° to +131° F	–33° to +55° C

Every single PTP 300, 500 and 600 link undergoes rigorous temperature testing before shipment. That means 100 percent of the systems are temperature tested. During those tests, links are installed. Then the temperature is lowered to -40º F (-40º C). Following the cold test, the temperature is ramped up to +140º F (+60º C). At each temperature extreme, the systems are tested to ensure that they will boot up properly and operate reliably. In contrast, comparable systems do limited sample testing.

Wind Speed Survival

In addition to temperature extremes, PTP bridges are able to withstand high winds up to 202 miles per hour (325 kilometers per hour). Wind speed survival was confirmed in wind tunnel tests performed at the University of Maryland. The result was that the PTP radio and antenna sustained 202 mph (325 kph) winds with no mechanical defects.

PTP WIND SPEED SURVIVAL		
PTP Product	**Miles Per Hour**	**Kilometers Per Hour**
PTP 100 and 200	118 mph	190 kph
PTP 300, 500, 600	202 mph	325 kph
PTP 800	150 mph	242 kph

IP66

The IP Code, or Ingress Protection Rating, classifies the degrees of protection provided against the intrusion of solid objects, dust and water in electrical enclosures. PTP ODUs with aluminum casings are IP65 rated for dust protection and water ingress due to spraying or splashing water. Testing for the IP66 rating is currently in process. When completed, ODU casings will be verified to the IP66 standard by testing with dust and powerful water jets aimed at the enclosure from any direction.

ATEX/HAZLOC Certification

PTP radios are in the process of being tested and certified to meet the ATEX (ATmospheres EXplosibles) and HAZLOC (Hazardous Locations) directives for equipment operations in environments with an explosive atmosphere. Typical locations which require these certifications include petrochemical plants, fixed offshore platforms and other areas where a potentially explosive atmosphere may be present.

Summary

All PTP systems are designed for the rigors of outdoor use. That means you have the flexibility to deploy your wireless links wherever you need them, without concern about the environment. You can have full confidence that your PTP systems will consistently carry your data, voice and video communications and operate unattended for years. Simply put, PTP radios are built to run effortlessly and built to last into the next generation.

Wireless Network Solutions

Motorola delivers seamless connectivity that puts real-time information in the hands of users, giving customers the agility they need to grow their business or better protect and serve the public. Working seamlessly together with its world-class devices, Motorola's unrivalled wireless network solutions include indoor WLAN, outdoor wireless mesh, point-to-multipoint, point-to-point networks and voice over WLAN solutions. Combined with powerful software for wireless network design, security, management and troubleshooting, Motorola's solutions deliver trusted networking and anywhere access to organizations across the globe.

Motorola Environmental Leadership

Along with durability, Motorola also emphasizes green awareness:

- Dow Jones and Newsweek recognition for leading role in corporate sustainability
- Named "Greenest Wireless Network Systems Manufacturer" by ABI Research in 2008
- Carbon footprint reduced by 20% in three years
- Packaging weight cut 50% since 2003
- Pioneer organization in voluntary climate change
- Major supporter of renewable energy

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