



## PacketWave<sup>®</sup> 5.8 GHz Radio Base Station Radio and Antenna

The Aperto<sup>®</sup> Networks PacketWave<sup>®</sup> 5.8 GHz base station radio works with the PacketWave base station and PacketWave subscriber units to provide a complete fixed broadband wireless solution. With a PacketWave radio and antenna, the system is equipped to deliver optimal performance and flexibility.

### Link Optimization

The PacketWave system employs innovative OptimaLink<sup>®</sup> wireless link adaptation technology to optimize bandwidth, robustness, and overall performance to each subscriber. The base station radio and antenna support three key OptimaLink features: polarization diversity, spatial diversity, and radio power output control.

By rapidly adjusting polarization and automatically switching between antennas on a burst-by-burst basis, the PacketWave system ensures high performance on each link and maximizes coverage in challenging high-density and non-line-of-sight environments. The radio controls transmit power for each burst, an important advantage in cellular

deployments because it minimizes interference in adjacent cells. In addition, the radio transmits only when data is available, which reduces interference substantially compared to conventional systems that transmit continuously in the downstream direction.

### Radio Flexibility

In the U.S., the 5.725 to 5.850 GHz band is license-free and limited to broadband applications. This gives service providers the opportunity to deliver highly reliable broadband services without the burden of licensing fees or service area limitations.

The PacketWave radio covers the entire 5.725 to 5.925 frequency band. This range of frequencies lets service providers change channel plans easily, and saves them from having to inventory multiple radio types.

The PacketWave base station antenna is flexible, and offers various beamwidth options—available with a 90° beamwidth for a four-sector cell, or a 60° beamwidth for a six-sector cell.

## 5.8 GHz Base Station Radio/Antenna Specifications

### Overall Parameters

Frequency Range: 5.725-5.925 GHz  
Modulation: QPSK and 16 QAM  
Channel Widths: 2-6 MHz in 1 MHz steps  
Duplexing: TDD  
Standard Range: Up to 8.2 miles/13.2 kilometers  
Extended Range: Up to 13 miles/20.8 kilometers with external subscriber antenna

### Transmitter

Maximum Power\*: 20 dBm  
Transmitter Overpower Accuracy:  $\pm 1$  dB  
Maximum Switching Time: 2  $\mu$ s  
\* The maximum power varies depending on country regulations.

### Receiver

Maximum Receiver Noise Figure: 3.5 dB  
Receiver Gain: 36  $\pm$  3 dB

### Synthesizer

Maximum Phase Noise: -83 dBc/Hz @ 10 KHz Offset  
Frequency Stability with system 10 MHz reference:  $\pm 0.25$  ppm

### Antenna Options

Minimum Gain: 17 dBi (60°); 16 dBi (90°)  
Maximum VSWR: 2.0:1  
Polarization: horizontal and vertical  
Minimum Cross-Polarization Isolation: 20 dB  
Minimum Front-to-Back Isolation: 30 dB  
Maximum Sidelobe Level: -30 dB at  $\pm 90^\circ$  (60° antenna); -30 dB at  $135^\circ$  (90° antenna)  
3 dB Beamwidth: 60° or 90° azimuth (other options possible)  
8° elevation  
Connectors: 2 N-type female  
Pole Diameter for Mounting Kit: 2.5 to 4.5 inches  
Wind Speed: 75 mph operational (120 km/hr)  
125 mph survival (200 km/hr)

### Ports

#### IF Port

Connector: F-type female  
Impedance: 75 ohm  
IF Signal: 44 MHz  
Voltage Range: 10 to 22 VDC  
Power: 12 W  
Maximum coax cable length: 164 feet (50 meters); option available for up to 825 feet (250 meters)

#### IF Control Port

Connector: RJ-45  
Maximum CAT-5 Cable Length: 164 feet (50 meters); option available for up to 825 feet (250 meters)

#### RF Port

Connector: 4 N-type female

### Alarms and Status

VCXO Lock  
Synthesizer Lock  
Under Voltage Alarm: voltage  $< 9.5$  V

### Environmental and Certification Requirements

Operating Temperature: -31° to 140°F (-35° to 60°C)  
Storage Temperature: -40° to 257°F (-40° to 125°C)  
Relative Humidity: 0% to 100%  
Certifications: FCC Part 15, Subpart E; 15.247

### Ordering Information

PacketWave 5.8 GHz base station radio	PWR5800
PacketWave 5.8 GHz base station antenna (60 degree sector)	PWA5800-60
PacketWave 5.8 GHz base station antenna (90 degree sector)	PWA5800-90

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