



PacketWave® 3.5 GHz Radio Base Station Radio and Antenna

The Aperto® Networks PacketWave® 3.5 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® 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

The PacketWave radio covers the entire 3.4 to 3.7 GHz 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.

3.5 GHz Base Station Radio/Antenna Specifications

Overall Parameters

Frequency Range: 3.4-3.7 GHz
Modulation: QPSK and 16 QAM
Channel Widths: (ETSI) 1.75, 3.5 and 7.0 MHz
(Non ETSI) 1-6 MHz in 1 MHz steps
Duplexing: TDD and FDD option
Standard Range: Up to 10.5 miles/16.9 kilometers
Extended Range: Up to 23 miles/37 kilometers
with external subscriber antenna

Transmitter

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

Receiver

Maximum Receiver Noise Figure: 3.0 dB
Receiver Gain: 36 \pm 3 dB

Synthesizer

Maximum Phase Noise: -83 dBc/Hz @ 10 KHz offset
Frequency Stability with system 10 MHz
reference: ± 0.25 ppm

Antenna Options

Minimum Gain: 17.5 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 90° (60° antenna); -30 dB at 135° (90° antenna)
3dB Beamwidth: 60° or 90° azimuth
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 RG-6 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: EN 301 753, EN 301 021,
EN 60950:2000, ETS 301 489 -1

Ordering Information

PacketWave 3.5 GHz base station radio	PWR3500
PacketWave 3.5 GHz base station antenna (60 degree sector)	PWA3500-60
PacketWave 3.5 GHz base station antenna (90 degree sector)	PWA3500-90

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