



# PacketMAX® 3.65 GHz WiMAX

Solution Brief

## Licensed or License-Exempted?

Independent ISPs are looking to broadband wireless access as an effective means to compete with major telcos and mobile license holders and capture their fair share of the dynamic broadband access market. However, they are frequently overwhelmed by the cost of acquiring clear spectrum. The FCC has removed the cost barrier by allowing operators to pay a small registration fee for nationwide operation in the 50 MHz band existing from 3.65 GHz to 3.70 GHz. However, operation is on a non-exclusive basis—raising the possibility of interference and the need to coordinate with neighboring service providers. Aperto's 3.65 GHz PacketMAX solution allows ISPs and other operators to offer reliable, stable, and rich applications over this lightly regulated spectrum.

## Deploying WiMAX for 3.65 GHz Services

The 3.65 GHz band opens up new service possibilities for independent ISPs and other competitive service providers. Superior non-line of site (NLOS) propagation versus higher frequencies, and the ability to operate higher power compared to unlicensed bands, makes this band attractive for targeting multiple customer segments.

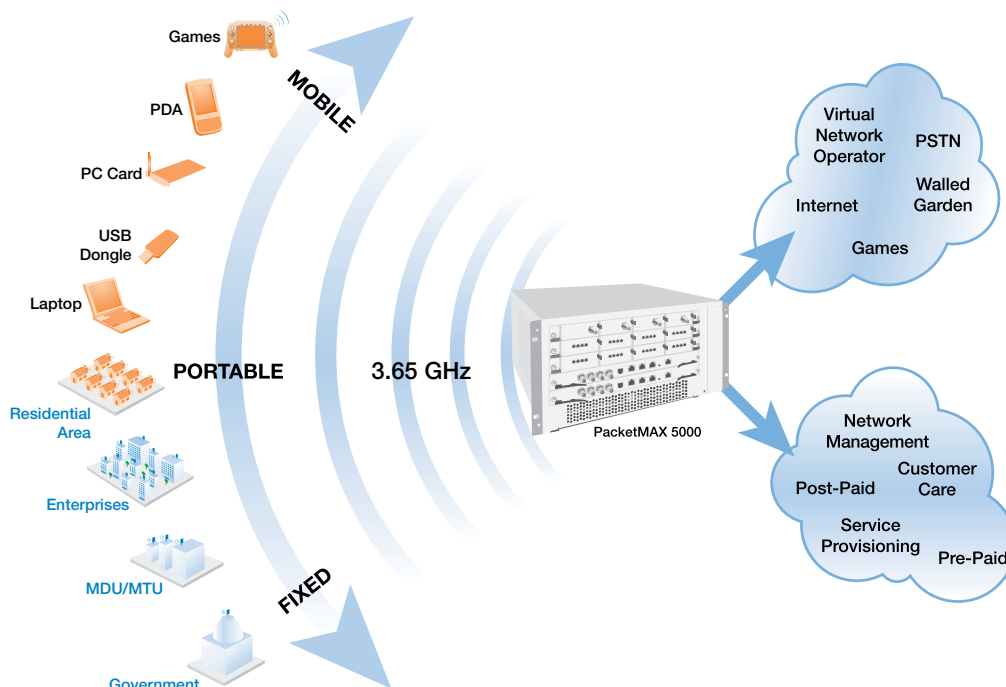
WiMAX employs a variety of technologies defeating the challenges of non-exclusive operation. Orthogonal Frequency Division Multiplexing (OFDM), scalable from 256 to 2048 FFT, improves resilience to multi-path conditions and interference. Subchannelization increases the effective range for rural customers without increasing the power. MIMO improves overall link budget and allows reliable indoor operation for consumers. WiMAX-scheduled MAC allows a scalable service rollout over a wide area versus contention-based protocols. Built-in quality of service (QoS) enables service guarantees for business customers and advanced services for consumers. Combining WiMAX technology with the low cost of license spectrum translates into a powerful business case in the 3.65 GHz band.

## TYPICAL APPLICATIONS

- WiSPs and competitive service providers
- Service rural and underserved areas
- Fixed WiMAX migrating to nomadic and portable WiMAX
- Indoor and outdoor operation
- Business grade service guarantees

## SOLUTION SPECIFICATIONS

- Frequency Range: 3.65 to 3.675 GHz
- WiMAX Standards: 802.16d; 802.16e
- PHY: OFDM 256 FFT, OFDMA 1024 FFT
- Duplexing Mode: TDD
- QoS: All WiMAX Service Classes
- Sectors per Site: Scalable 1 to 12



Wireless to the MAX

## PacketMAX for 3.65 GHz WiMAX

PacketMAX permits independent ISPs to exploit the full potential of this band. Network operators can now target fixed, mobile, indoor, outdoor, consumer, SOHO, business, rural, and urban users engaged in virtually any application wirelessly. PacketMAX 5000 is already proven as the first base station certified to operate the Fixed WiMAX standard. The system can simultaneously host Mobile WiMAX services, providing a graceful migration plan for operators wanting to start with fixed, and evolve to nomadic and portable services in the future.

Operators not requiring the flexibility of the PacketMAX 5000 can alternatively deploy the PacketMAX 4000 for Mobile WiMAX services or the PacketMAX 3000 for Fixed WiMAX services. Aperto's patented link management, admission control, and interference mitigation techniques are common across all PacketMAX platforms. PacketMAX allows provisioning of up to 8,192 service flows per sector. Per flow queuing and tunable ARQ features allocate bandwidth to users who need it.

All PacketMAX systems are managed by the WaveCenter EMS Pro graphical user interface. Base stations and CPE are automatically detected, provisioned, and seamlessly joined to the network. The intuitive approach lowers costs and simplifies operations.

# PacketMAX 3.65 GHz WiMAX

Fixed WiMAX Components	Mobile WiMAX Components
PacketMAX 5000 Carrier-Grade Macro Base Station (1-12 sectors)	PacketMAX 5000 Carrier-Grade Macro Base Station (1-12 Sectors)
PacketMAX 3000 Single Sector Base Station	PacketMAX 4000 Mini Base Station (1-4 sectors)
Base Station Radio	Remote Radio Head (with multiple transceivers for MIMO)
PacketMAX 120 Consumer and SOHO CPE	PacketMAX 500 Series Indoor Gateway
PacketMAX 320 Business and Enterprise CPE	PacketMAX 600 Series PC Card
PacketMAX 20 Voice Services Gateway	PacketMAX 700 Series USB Adapter

