

# RedMAX 4C™ - The ultimate choice for WiMAX

## Capacity, Coverage, Capabilities and Convergence

The RedMAX 4C™ base station is the latest addition to Redline's RedMAX™ family of WiMAX products, which has become the premier choice among carriers worldwide for delivering the most advanced voice, video and data services available today. Operating in the 2.5 GHz and 3.5 GHz spectrum bands and incorporating scalable OFDMA, the RedMAX 4C offers operators a cost-effective solution to deliver affordable WiMAX services

### Superior WiMAX Performance

The RedMAX 4C achieves maximum performance through cross-layer optimization. The base station incorporates Redline's proven 4th generation physical and medium access control layer technologies for TDD OFDMA-based systems. By controlling the end-to-end signal chain from the radio to the core network, Redline's design provides the ultimate in performance: high throughput, long reach and low latency.

The performance of the RedMAX 4C is further enhanced by the use of fiber optic cables connecting the chassis with the remote radios, which eliminates the power loss that occurs with traditional coaxial cables.

### Simple Network Integration

Redline's RedMAX 4C base station is an integral part of the IP-based network. It supports IP and Ethernet-based services and applications, enabling true network convergence, with the delivery of IP traffic from the core to the edge.

### Ease of Management

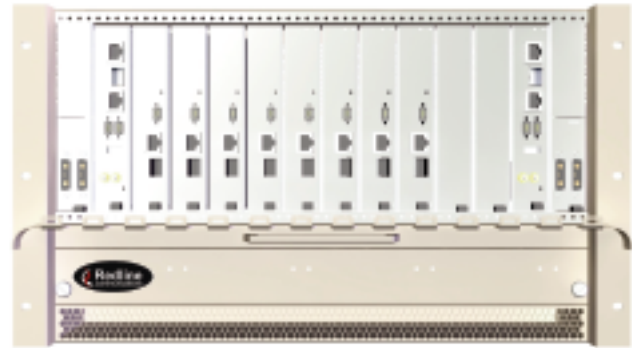
High reliability is ensured through comprehensive OAM&P (Operation, Administration, Maintenance and Provisioning) features including: fault tolerance, alarms and TCAs (Threshold Crossing Alerts), performance and inventory reports, and software management. Chassis management using SOAP/XML and SNMP interfaces (WiMAX MIBs) can be performed using the Redline Management Suite (RMS) or a third party Element Management System (EMS).

### Convenient, Standardized Chassis

Supporting deployments of up to six sectors using a single chassis, the small lightweight chassis design permits installation in a wide variety of environments -- reducing deployment costs associated with site preparation and civil works, and avoiding expensive load bearing construction for rooftop installations. Incorporating microTCA and OBSAI (Open Base Station Architecture Initiative) standards, the RedMAX 4C platform complies with WiMAX Forum specification support for R1 and R6 interoperability interfaces.

### Carrier Class Reliability and Security

The RedMAX 4C provides rugged design with 1:1 control module redundancy and cost effective N:1 radio chain redundancy, ensuring reliability and high performance. It also includes a privacy sub-layer that performs authentication, key exchange and packet encryption according to IEEE 802.16 standard.



### Modular Design

The modular design of the RedMAX 4C chassis provides operators complete flexibility in establishing their base station architecture. The base station can be configured in multiple ways using the following field replaceable building blocks which are housed in a PICMG compliant uTCA Sector Controller Shelf (SCS), and are each hot-swappable.

1. **Baseband Module (BBM):** WiMAX modem functionality. One baseband card serves a sector.
2. **Micro TCA Carrier Hub (MCH):** For traffic aggregation and distribution. The MCH connects to the backhaul system and provides GPS synchronization and shelf control functionality (OAM&P).
3. **Power Module (PWM):** Provides power to the shelf and modules. Multiple cards are used for redundancy.
4. **Remote Radio Module (RRM):** Connects to the baseband card through the OBSAI RP3.01 interface.
5. **Cooling Module:** Includes multiple fans for cooling the system.

### Supports Advanced Services

The RedMAX 4C supports a range of broadband services, enabling operators to realize greater revenue potential and ensure a rapid return on their WiMAX investment:

- High bandwidth residential data services including large e-mail and file downloads such as audio or video files
- Corporate broadband services
- High-quality VoIP for both business and residential subscribers
- Real time video including video conferences, online gaming and streaming video

## The Right Choice for a Profitable WiMAX Network

### Small, Flexible Design

The RedMAX 4C base station enables operators to deploy ubiquitous wireless networks for the delivery of advanced voice, video and data services to fixed, nomadic and mobile customers. Designed to provide the ultimate WiMAX performance in a very small package, the RedMAX 4C ensures the lowest capital and operational costs for a superior return on investment compared to other WiMAX offerings.

### Software-Defined Radio

The software defined radio implementation assures network operators of evolution with the developing standards and protects their investment in the access network infrastructure.

### Greater Revenue Opportunities

The RedMAX 4C supports the increasingly advanced voice, video and data content that subscribers demand – and will pay for – today. Designed to facilitate the integration of Redline's 802.16d and 802.16e technologies, the RedMAX 4C ensures operators can deliver the services they need to attract new subscribers and grow their business.

### Low Cost of Operation

The small, flexible and modular design of the RedMAX 4C helps reduce the cost of installations and enables deployments in a wide range of environments, allowing the operator more choice in selecting base station sites. This flexibility also enables operators to reduce ongoing leasehold and other recurring expenses associated with base station location.

The RedMAX 4C offers low ongoing maintenance costs with its high-availability, hot-swappable components, and redundancy.

The scalable design, which supports up to six sectors with one chassis, lets operators expand their network as required so they can invest as they grow. In addition, the standards-based platform and open interfaces leverage a large ecosystem of standard modules, which will result in greater economies of scale for lower-priced equipment.

### REDMAX 4C Base Station Specifications

Dimensions (H x W x D):	26.67cm x 48.26cm x 23.7cm
Weight:	12.5 kg (empty, with fan tray), 19 kg (fully equipped)
Frequency band:	2.5 – 2.7 GHz; 3.3-3.5 GHz; 3.4-3.6 GHz; 3.6-3.8 GHz
Capacity:	Scalable from one to six sectors
Power supply:	-48 V DC; 90-264 V AC
Power consumption:	230 W for single sector without redundancy 1770 W for fully redundant 6 sector configuration.
Operating temperature:	Indoor Unit 0 C to +40 C; RRM -40 C to +60 C
Installation:	19" rack
Redundancy:	N+1 for baseband module; 1+1 for control & power modules
WAN Interface:	GigE, 10/100BaseT

### Radio Specifications:

- Rx sensitivity: up to -99.5 dBm (QPSK) for 5 MHz channel
- Tx Power: 40 dBm (2.5 GHz)  
36 dBm (3.5 GHz)

### WiMAX Features:

#### IEEE 802.16-2004 compliant

- OFDM access scheme, WiMAX Forum Certified feature list in the 3.x GHz band (3.5/7 MHz channels) with additional option including:
  - > Uplink subchannelization
  - > ARQ
  - > AES

#### IEEE 802.16e-2005 compliant

- Scalable OFDMA access scheme: WiMAX Forum Certification Wave II profile, including:
  - > Permutation: PUSC, FUSC, AMC2\*3
  - > Convolutional turbo coding
  - > Hybrid ARQ (Chase Combining) Automatic Repeat request.
  - > Ethernet/IP CS – Convergence sublayer
  - > Modulation: QPSK/16QAM/64QAM
  - > QoS: BE, nrtPS, rtPS, ertPS, UGS
  - > Encryption: AES
  - > Antenna Systems: MIMO (multiple input multiple output) support with MRC receive diversity (maximal ratio combining)
  - > R6 Support for ASN connectivity - Access service network
  - > TDD
  - > Frequency Bands: 2.5-2.7 GHz, 3.4-3.6 GHz
  - > Channel Bandwidth: 3.5/5/7/10 MHz

### About Redline Communications

Redline Communications is the leading provider of standards-based wireless broadband solutions. Redline's RedMAX™ WiMAX Forum Certified™ systems and award-winning RedCONNEX™ family of broadband wireless infrastructure products enable service providers and other network operators to cost-effectively deliver high-bandwidth services including voice, video and data communications. Redline is committed to maintaining its wireless industry leadership with the continued development of WiMAX and other advanced wireless broadband products. With more than 35,000 installations in 75 countries, and a global network of over 100 partners, Redline's experience and expertise helps service providers, enterprises and government organizations roll out the services and applications that drive their business forward.

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