



Wavekrom

WaveKROM Backhaul 3000 Series

High Capacity Point-to-Point Solution for License-exempt Frequencies

WaveKROM 3000 is a carrier-class product providing high-capacity, long-range connectivity at the most competitive prices in the market.

The WaveKROM 3000 offers carrier-class link connectivity, delivering up to 600 Mbps data rates in licensed and unlicensed bands for carrier-class solutions, ideal for dedicated access and backhaul applications (including Video and VOIP). The WaveKROM 3000 features advanced software mechanisms that provide optimal point-to-point and point-to-multipoint connectivity for high-throughput at long distance links.

WaveKROM 3000 utilizes proprietary PTP and PTM mechanisms and techniques such as Time Division Multiple Access – TDMA and Frequency Division Duplexing – FDD. TDMA improves the throughput, latency and distance range while FDD allows deploying full duplex communications. TDMA dynamically allocate bandwidth in the direction needed, thus increasing link efficiency and greatly decreasing the impact that distance has on throughput of the link. On the other hand, regular Wi-Fi systems operate with CSMA and half duplex protocols which are limited in throughput and distance. The WaveKROM 3000 also features selective repeat ARQ technology, an enhanced error correction software mechanism that optimizes data traffic to provide very high throughput over high-bandwidth long-range links even in the presence of interference.

WaveKROM 3000 is suitable for providing QoS for Real Time traffic. The scheduler engine is responsible for the optimal and fair allocation of uplink/downlink resources according to the specific requirements of each traffic class. The goal is to maintain high throughput connections while satisfying the delay/jitter constraints for Real Time traffic as well.

WaveKROM 3000 links have class-leading sensitivity and power output, which enable the links to go more than 50km. WaveKROM 3000 combines MIMO Technology, OFDM and our advanced proprietary technology to obtain more bandwidth and spectrum efficiency.

Features:

- TDMA and FDD proprietary protocols for throughput optimization
- ARQ (Selective Repeat) for very high throughput
- Throughput up to 300 Mbps
- High Output Power 30 dBm
- Advanced Security Technologies: AES
- Throughput Optimization for long range links
- Long Range Link Applications more than 50Km
- Carrier-Class QoS architecture for Voice and Video applications
- TCP optimization
- High Throughput in narrow channels for High Availability and Spectrum Efficiency
- Carrier class radio for extreme environment -60 to 230 C°

Applications:

- High-speed Wireless Backhaul
- Building-to-building connectivity
- T1/E1 leased-line replacement
- Single-hop, long-range line-of-sight links
- Cost-effective network redundancy
- WiMAX, 3G and 4G Backhaul
- CCTV - Video Surveillance and IPTV Backhaul
- Equipment suitable for nLOS and NLOS scenarios



3G, 4G Backhaul



Building to building connectivity



DSLAM Backhaul



Long-range link



Video Surveillance



WiMAX Backhaul





Specifications WAVEKROM BACKHAUL 3000 SERIES:

RADIO SPECIFICATIONS	
RF Band	4.9GHz Band: 4940-4990MHz (public Safety Band) 5GHz Band: 5150-5850MHz (*) (*) Programmable for different country regulations -Extended Channels for BH-3000 Series: 4.9 - 6.1GHz -For Special Version from 2.3 to 7.0 GHz, please contact sales@netkrom.com
CPU	680Mhz
Packet Processing	100,000 PPS
Operating Mode	Access Point, Bridge, Station, Station Bridge, WDS, Repeater, Virtual Access Point
Channel Size	Configurable 5, 10, 20 and 40 Mhz
Max Transmit Power	30 dBm
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM) Adaptive Modulation
Receiver Sensitivity	Adaptive, varying between -96 dBm and -74 dBm according to modulation
Error Correction	FEC, ARQ
Access Method	TDMA, CSMA/CA and Beamforming support
Full Duplex Techniques:	TDD & FDD
ADVANCED ROUTING FEATURES	
Routing	RIP v1 and v2, OSPF v2, BGP v4 & MPLS
Forwarding	WDS, RSTP, HWMP (Hybrid Wireless Mesh Protocol)
VPN	Ipssec – tunnel and transport mode, certificate or PSK, AH and ESP security protocols DHCP server, DHCP client and DHCP relay Point to point tunneling (OpenVPN, PPTP, PPPoE, L2TP) Advanced PPP features (MLPPP, BCP) Simple tunnels (IPIP, EoIP) 6to4 tunnel support (IPv6 over IPv4 network) VLAN – IEEE802.1q Virtual LAN support, Q-in-Q support MPLS based VPNs
QoS	Hierarchical Token Bucket (HTB) QoS system with CIR, MIR, burst and priority support for 8 different queues
Web Proxy	Regular HTTP proxy Transparent proxy Access list by source, destination, URL and requested method (HTTP firewall)
SECURITY	
Data Encryption	WEP, WPA, WPA2, 802.1X (PSK, EAP, AES 128 bit , TKIP 256 bit Encryption), ACCESS LIST, CONNECT LIST
Ethernet Protocol	IEEE802.3
Interfaces	3 three Ethernet 10 / 100/ 1000 Mbps (RJ-45)–auto MDI/MDIX 2x2 MIMO RF Modules
WIRELESS PERFORMANCE	
Throughput	200+ Mbps / 450+ Mbps
Packet Latency	<2 ms
Range	>80Km (depends on antenna)
MANAGEMENT	
System Management	Web User- friendly GUI, Telnet, SSH, SNMP v1/2c/3 with traps supporting MIBs
Utilities	Site Survey, Alignment, Frequency Usage, Wireless Snooper, Signal Level, Link Quality and Client Registration Table
PHYSICAL	
Dimensions	Integrated: 16in x 16 in x 16in (40.6cm x 40.6cm x 40.6cm) Connectorized: 12in x 12in x 12in (30.5cm x 30.5cm x 30.5cm)
Weight	Integrated: 25lb (11.34kg) Connectorized: 16lb (7.26 kg)
Console Port	One Serial DB9 standard



PHYSICAL

Power Connections	8-30V passive PoE / 8-30VDC Power Jack
Operating Temperature	Enclosure Seal -60C° to 230C°
Enclosure	Industrial Die-Cast Thermal Aluminum, NEMA-6 / IP-67 / IK 10
Mount	Pole or tower mounting brackets
EMC Certificate	FCC Part 15/UL and ETSI 300/328/CE

Ordering Information

- **BH-3000I-TDD** WaveKROM Backhaul 300 Mbps TDMA TDD Wideband 4.9 to 6.1 GHz 1Watt (Integrated 24 dBi Antenna) Complete PTP Link
- **BH-3000C-TDD** WaveKROM Backhaul 300 Mbps TDMA TDD Wideband 4.9 to 6.1 GHz 1Watt (Connectorized for external antenna)
- **BH-3000C-FDD** WaveKROM Backhaul 300 Mbps TDMA FDD Wideband 4.9 to 6.1 GHz 1Watt (Connectorized for external antenna)
- **BH-3000C-TDD/DC** WaveKROM Backhaul 600 Mbps TDMA TDD Double Capacity Wideband 4.9 to 6.1 GHz 1Watt (Connectorized for external antenna)