LMS4000

WaveRider's LMS4000

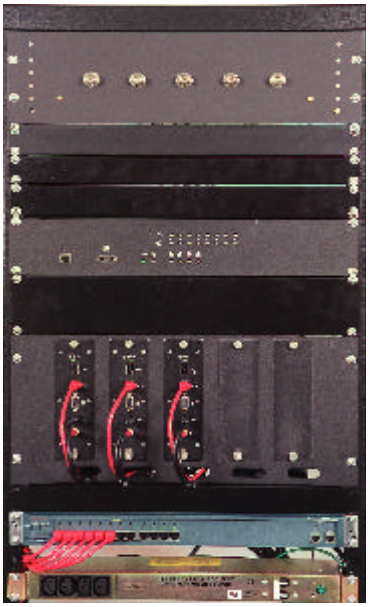
The LMS4000 is the newest generation of WaveRider's Last Mile Solution products. The LMS4000 enables operators to deliver both business and residential Internet connections and services via a single fixed wireless system that operates in multiple license-exempt frequencies. Integrating the non-line-of-sight capabilities of WaveRider's 900 MHz product and the high-speed connection delivered by its 2.4 GHz products, the LMS4000 is the most flexible and scalable fixed wireless system available today.

The LMS4000 is a cost-effective solution for operators to serve a small number of subscribers and to expand their networks as their subscriber base grows. The LMS4000 can be expanded over time to deliver a range of speeds and services to meet the needs of thousands of commercial and residential subscribers. The flexible design of the LMS4000 will allow service providers to incorporate wireless equipment that operates in other licensed and license-exempt bands as they are added to WaveRider's product portfolio.

LMS4000 at a glance

Carrier-class Features

- Delivers broadband services to both commercial and residential subscribers in a single system
- Supports private networks as well as public Internet access applications
- Provides the quality, reliability and manageability required to provide carrier-class service
- Includes a sophisticated Network Management System
- Offers superior maintenance features to verify the configuration and operation of network elements
- Provides automatic redundant fail over of key components to maximize system availability
- Generates and monitors real time SNMP alarms



900 MHz Non-Line-of-Sight Components

- True non-line-of-sight capability with WaveRider's user-installed wireless modem and indoor antenna
- Over-the-air data rate of 2.75 Mbps and access speeds of up to 1.4 Mbps
- Operates in the 902 - 928 MHz license-exempt ISM frequency bands
- Range of up to 2 miles with indoor antenna, up to 5 miles with outdoor antenna
- Profitable solution to deliver high-speed Internet access to residential and small business subscribers

2.4 GHz Line-of-Sight Components

- Over-the-air data rate of 11 Mbps with throughput speeds of up to 8 Mbps
- Operates in the 2.4 - 2.4835 GHz license-exempt ISM frequency bands
- Includes high-performance Polling MAC
- Delivers broadband access over a range of up to 10 miles
- Provides a profitable business model to deliver broadband services to commercial customers

For more information on WaveRider's Last Mile Solution® products, please visit:

www.waverider.com

WaveRider®
The World's Wireless Web Company

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LMS4000 TECHNICAL SPECIFICATIONS

	2.4 - 2.4835 GHz	902-928 MHz
Network Access Point (NAP) Specifications		
CAP-NAP Backhaul Interface Specifications		
Maximum Number of CAP-NAP Links	15	15
Physical Interface	10/100BaseT auto-sense Ethernet	10/100BaseT auto-sense Ethernet
NAP-Internet Interface Specifications		
Maximum Number of NAP-Internet Links	1	1
Physical Interface	10/100BaseT auto-sense Ethernet, full or half-duplex	10/100BaseT auto-sense Ethernet, full or half-duplex
Power Specifications		
AC Power Supply Input	110 ±15% VAC or 230 ±15% VAC, 50/60 Hz ±3	110 ±15% VAC or 230 ±15% VAC, 50/60 Hz ±3
Maximum Input Power	1000 VA	1000 VA
Communications Access Point (CAP) Specifications		
CAP Specifications		
Maximum Number Operational CCUs & Orthogonal Channels	3	3
Maximum Number Standby CCU's	1	1
Maximum Number Subscribers per CCU	30	100* (300 planned in Q1 2002) * Varies depending on user profile.
Ethernet Backhaul Interface Specifications		
Physical Interface	10/100BaseT auto-sense, full or half-duplex	10/100BaseT auto-sense, full or half-duplex
Power Specifications		
AC Power Supply Input	110/230 ±15% VAC, 50/60 Hz	110/230 ±15% VAC, 50/60 Hz
Maximum Input Power	1700 VA	1700 VA
CAP Channel Unit (CCU) and End User Modem (EUM) Specifications		
Radio Specifications		
Operating Frequency	2.4 - 2.4835GHz	902 to 928 MHz
Radio Type	Direct Sequence Spread Spectrum (DSSS)	DSSS
Radio Modulation	Complementary Code Keying @11, 5.5 Mbps Quadrature Phase Shift Keying @ 2 Mbps Binary Phase Shift Keying @ 1 Mbps	Complementary Code Keying
Maximum Output Power	High setting: +25 dBm Low setting: +20 dBm	High setting: +26 dBm Low setting: +15 dBm (software selectable)
RF Rx Threshold (BER<10^{-5})	-84 dBm @ 11 Mpbs; -87 dBm @ 5.5 Mbps -87 dBm @ 2 Mbps; -90 dBm @1 Mbps	-86 dBm (BER<10-5)
Minimum/Maximum Center Channel Frequency	2.412 / 2.462 GHz	905/925 MHz
Channel Bandwidth	22 MHz	5.5 MHz
Center Frequency Spacing Increment	5 MHz	0.2 MHz
Orthogonal Channels	3	3
Orthogonal Channel Separation	25 MHz	6.6 MHz
Orthogonal Channel Set	Channels 1, 6 and 11	n/a
Orthogonal Channel Set Center Frequencies	2.412 GHz, 2.437 GHz, 2.462 GHz	905 MHz, 915 MHz, 925 MHz
Adjacent Channel Isolation Requirement	64 dB	82 dB
(w/ optional cavity filters)	24 dB	37 dB
Antenna Connector	WaveRider Proprietary	WaveRider Proprietary
Radio Performance		
Maximum Over-the-Air, Raw Data Rate	11 Mbps (5.5 Mbps, 2 Mbps, 1 Mbps)	2.75 Mbps
User Data Rate	Up to 8.0 Mbps	Up to 1.4 Mbps
Maximum Link Path Distance	Up to 10 miles (16 km)	Up to 5 miles (8 km)
Interface Specifications		
Physical Interface CCU & EUM	Ethernet 10BaseT RJ-45	Ethernet 10BaseT RJ-45
Configuration/Console Port	RS-232C DB9 DCE	RS-232C DB9 DCE
Power Specifications		
Power Supply Input	Auto-sensing 90-260 VAC, 50/60 Hz	Auto-sensing 90-260 VAC, 50/60 Hz
Power Supply Output	7.5 VDC, 4A max	7.5 VDC, 4A max
Power Consumption (typical)	15W	15W
Environmental Specifications		
Operating / Storage Temperature		
NAP & CAP:	(0º C to 40º C) / (-20º C to 70º C)	(0º C to 40º C) / (-20º C to 70º C)
CCU:	(0º C to 55º C) / (-40º C to 70º C)	(0º C to 40º C) / (-20º C to 70º C)
EUM:	(0º C to 55º C) / (-40º C to 70º C)	(0º C to 40º C) / (-40º C to 70º C)
Operating Humidity	10% to 80% Relative Humidity (non-condensing)	5% to 95% RH (non-condensing)
Approvals		
Radio Transmitter	FCC Class A, CFR 47 Part 15. FCC ID: OOX-LMS3000; OOX - WRM2000 Industry Canada RSS-102 and RSS-210. Industry Canada ID: 32251040A; 3325391187A	
Safety	UL (pending) CSA (pending)	

Note: WaveRider's Continuous Improvement Policy means that specifications are subject to change without notice.