EUM8000

900 MHz, Non-Line-of-Sight
Integrated Outdoor Subscriber Station

The EUM8000 is a high speed, integrated outdoor modem for use by residential and commercial subscribers. The EUM8000 uses new adaptive OFDM modulation schemes for much higher data rates and system capacity than its successful predecessor, the EUM3006.

Increased data rates and system capacity allow Wireless Internet Service Providers a faster return on investment.

Features

High-Speed OFDM Modulation Schemes
- The multiple modulation schemes based on Orthogonal Frequency Division Multiplexing are ideal in non-line-of-sight and highly multipath radio environments for robust and spectrum efficient communications over different channel conditions and ranges.

Smart Diversity Antenna
- Provides superior performance in a multipath environment by automatically switching to either a vertical or horizontal polarization based on link conditions
- High-gain (10 dBi) antenna, enables the EUM8000 to generate the full +36 dBm EIRP average transmit power allowed by the FCC

Weatherproof Package
- Tested to meet ETSI 300-019 environmental standards for outdoor installations, with an extended temperature range of -40º C to 50º C plus solar loading

Power over Ethernet (PoE)
- The EUM8000 is powered by standard 48 VDC Power over Ethernet (802.3af Mode B compatible)

Configuration Capabilities
- Auto CCU discovery – EUM8000 selects CCU with best RF signal.
- DHCP Client – EUM8000 can obtain its IP address, subnet mask and gateway information from a DHCP server
- Automatic remote configuration - EUM8000 will accept parameters from a RADIUS server to set other configurable parameters in the modem

Installation Tools
- MDB1000 – hand-held device provides detailed key signal quality information to facilitate installation and alignment by a single installer (optional)
- SETUP Menu – allows any user to align the antenna or troubleshoot the RF link

Adaptive Modulation
- Higher modulation rates – Over-the-air data rates of 1.5 to 13.5 Mbps and access speeds up to 8 Mbps
- Each individual radio modem dynamically adapts to transmit the highest sustainable rate for its link to the base station

Advantages

- Over-the-air data rates of 1.5 to 13.5 Mbps and user access speeds up to 8 Mbps
- LOS range up to 25 miles; NLOS range up to 5 miles
- Highest system capacity
- Best in class Dynamic Polling MAC
- VoIP support
- Supports RADIUS AAA
- SNMP monitoring
- PPPoE support
- Web-based Graphical User Interface
- Supports a profitable business model

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Last Mile Solution ®
n e t w o r k s ®

EUM8000 Technical Specifications

Radio Specifications

Radio Type and Wireless Topology	Subscriber Unit for STAR Topology
Base Station Unit Compatibility	CCU8000
Operating Frequency Band	902 to 928 MHz
Radio Access	Dynamic Polling MAC and ARQ
Radio Modulation	Orthogonal Frequency Division Multiplexing (OFDM) with 8 different levels of quadrature amplitude modulation (QAM) and forward error correction (FEC) plus Direct Sequence Spread Spectrum (DSSS) with Complementary Code Keying (CCK) modulation

Type	Modulation	FEC Rate	Signalling Rate [Mbps]	RF Rx Threshold (internal antenna port, not including antenna gain) [dBm]
OFDM	BPSK	½	1.5	-88
OFDM	BPSK	¾	2.25	-87
OFDM	QPSK	½	3	-86
OFDM	QPSK	¾	4.5	-84
OFDM	16QAM	½	6	-81
OFDM	16QAM	¾	9	-77
OFDM	64QAM	⅔	12	-73
OFDM	64QAM	¾	13.5	-72

Average Output Power	up to +36 to 25 dBm EIRP (software selectable) depending on modulation scheme
Minimum/Maximum Center Channel Frequency	905.2/924.8 MHz
Channel Bandwidth	5.5 MHz
Center Frequency Spacing Increment	0.2 MHz
Orthogonal Channels	4
Orthogonal Channel Separation	6.6 MHz

Radio Performance

Signaling Rates	1.5, 2.25, 2.75, 3, 4.5, 6, 9, 12 and 13.5 Mbps
User Data Rate	Up to 8 Mbps
Maximum Link Path Distance	> 25 miles (40 km) LOS 1st Fresnel zone clearance

Antenna Specification

Antenna Package	Integrated with modem in single outdoor package
Antenna Gain	10 dBi
Antenna Beamwidth	45 degrees for both Horizontal and Vertical Polarization
Front-Back Min. Ratio	15 dB
Diversity	Automatic Diversity Selection of Horizontal and Vertical Polarization

Data and Power Interface

Ethernet Connector	10/100BaseT RJ-45 HDX Ethernet Jack (TIA - T568A)
Power over Ethernet	+48 VDC, 802.3af Mode B compatible PoE, pairs 1 & 4
Max. Ethernet Cable Length	330 feet (100 m)

Power over Ethernet Injector

Input	Auto-sensing 100-240 VAC, 47-63 Hz
Output	48 VDC, 350 mA max
Power Consumption (typical)	10 W

Dimensions

L x W x H	16.25" x 8.25" x 3.5" (41.5 cm x 21 cm x 9 cm)
Weight	6.4 lb (2.9 kg)
Materials	Aluminum base , plastic radome

Environmental Specifications

Operating Temperature	-40° C to 50° C plus solar loading
Storage Temperature	-40° C to 70° C
Operating Humidity	0% to 95% RH (non-condensing @ 50° C)
Standards	Compliant with ETSI-300-019-1-4, Class 4.1 with extended temp. range
Wind Loading	Better than 110 mph (180 kph) - maintains alignment to better than 56 mph (90 kph)
Ice Loading	Better than 1.25" (32 mm)
Mounting Interface	Mounts to any secure pole from 1" to 3" (2.5 cm to 7.6 cm)
Orientation	Mounts horizontally or vertically

Approvals

Radio Transmitter	FCC Part 15, Subpart C, 15.247; Industry Canada RSS-102 and RSS-210
Safety	UL, CSA

Ordering Information

SKU: WR200-8000 Includes: EUM8000 Outdoor Integrated Wireless Modem; 10 dBi integrated smart diversity antenna; mounting hardware; Universal AC/DC adapter with integrated 48 VDC PoE injector; NA AC cord