

AirMux-200

Broadband Wireless Multiplexer



RAD's new AirMux-200 is a carrier-class, high capacity, affordable multiplexer connecting E1/T1 and Ethernet networks point-to-point over a wireless link. Compliant with FCC, CAN/CSA and ETSI regulations for license-exempt transmission, the AirMux-200 operates over 5.7 GHz, 5.4 GHz, 5.2 GHz, or 2.4 GHz bands. Wireless transmission enables enterprises to save the cost of leased lines, while allowing the service provider to avoid the large capital costs and time required for deploying fiber, thereby assuring rapid deployment of E1/T1 and Ethernet links at a fraction of the cost.

Connect Ethernet and E1/T1 Circuits between Two Sites Using Broadband Wireless with the Best Price/Performance in the Market

High Performance of E1/T1 and Ethernet over Radio

RAD's AirMux™-200 enables the user to connect Ethernet and E1/T1 circuits between two distant sites over broadband wireless. The AirMux-200 supports a radio air interface bandwidth of up to 48 Mbps, yielding a full duplex throughput of up to 18 Mbps for user traffic. This means the user can transport up to 4 E1/T1 voice circuits and have ample bandwidth remaining for 10/100BaseT Ethernet traffic. When combined with RAD's IPmux solutions, the AirMux-200 can scale to support 7 E1 or 8 T1 circuits, plus Ethernet.

Rapid Return on Investment

The AirMux-200 pays for itself in no time by eliminating multiple leased line connections between buildings or the expense of laying fiber in the ground. Compared to just the monthly rental cost of leased lines, the AirMux-200 will provide ROI within a few months.

RAD Offers a One-Source Managed Solution for Multiservice Access and Wireless

In addition to benefiting from the excellent price/performance of the AirMux system, RAD offers the added value of a complete access solution incorporating both network access equipment and radio units. This ensures that all system components are interoperable – reducing deployment time and expenses. Furthermore, it enables the user to monitor the whole platform, simplifying operations and reducing training time and expenses. Moreover, there exists a single point of contact should a problem arise.

When teamed with RAD's IPmux TDMoIP® Gateways, the AirMux-200 enables IP service providers to connect their customers with multiple TDM services over the Last Mile, without laying fiber, thus aggregating all services at a central site. When combined with RAD's Vmux Voice Trunking Gateways, the user can extend multiple compressed E1 or T1 voice circuits



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over the wireless link. Also, for remote campus or branch applications, the AirMux-200 can be combined with RAD's Megaplex Multiservice Access Concentrators. This combination offers multiple analog or digital voice channels, together with low or high speed data, and LAN services over wireless links in drop-and-insert and ring topologies.

The AirMux-200 is managed by the RADview SNMP PC-based Element Management System (EMS). This application provides a user-friendly GUI for configuration and fault management. It is designed for cases where many links are to be managed from a central platform.

Fast Deployment and Reuse of Equipment

AirMux-200 offers simple and fast installation, alleviating the infrastructure investments associated with laying fiber or copper lines. This allows carriers to immediately connect to remote locations that are not yet reached by fiber infrastructure, and offer services that would not have been feasible otherwise. If terrestrial lines are later installed, the AirMux-200 can be easily redeployed.

Simple Set Up and Configuration

AirMux-200 consists of an indoor and outdoor unit connected by a Cat-5e outdoor Ethernet cable, allowing a distance of up to 100 meters (328 feet) between the two units. The outdoor unit can be equipped with a 22 dBi integrated antenna, or can be connected to an external high gain antenna for achieving greater range.

The AirMux-200 is simple to set up. Once mounted, a single technician can align the antennas with the help of an audio buzzer built right into the AirMux-200 outdoor units. A configurable automatic channel selection wizard makes it easy to find an available frequency within the license-free 5 GHz spectrum. Rapid installation and configuration contribute to keeping operating costs to a minimum.

Range up to 80 Km/50 Miles

Maximum attainable transmission range over wireless is a function of the selected transmission rate, the services transported and the type of antenna used. This means, for example, that a user will be able to transmit two E1/T1 channels and approximately 10 Mbps of Ethernet traffic to distances of up to 10 km/6 miles. Alternatively, 1 Mbps of Ethernet traffic can be transmitted to a range of up to 80 km/50 miles.

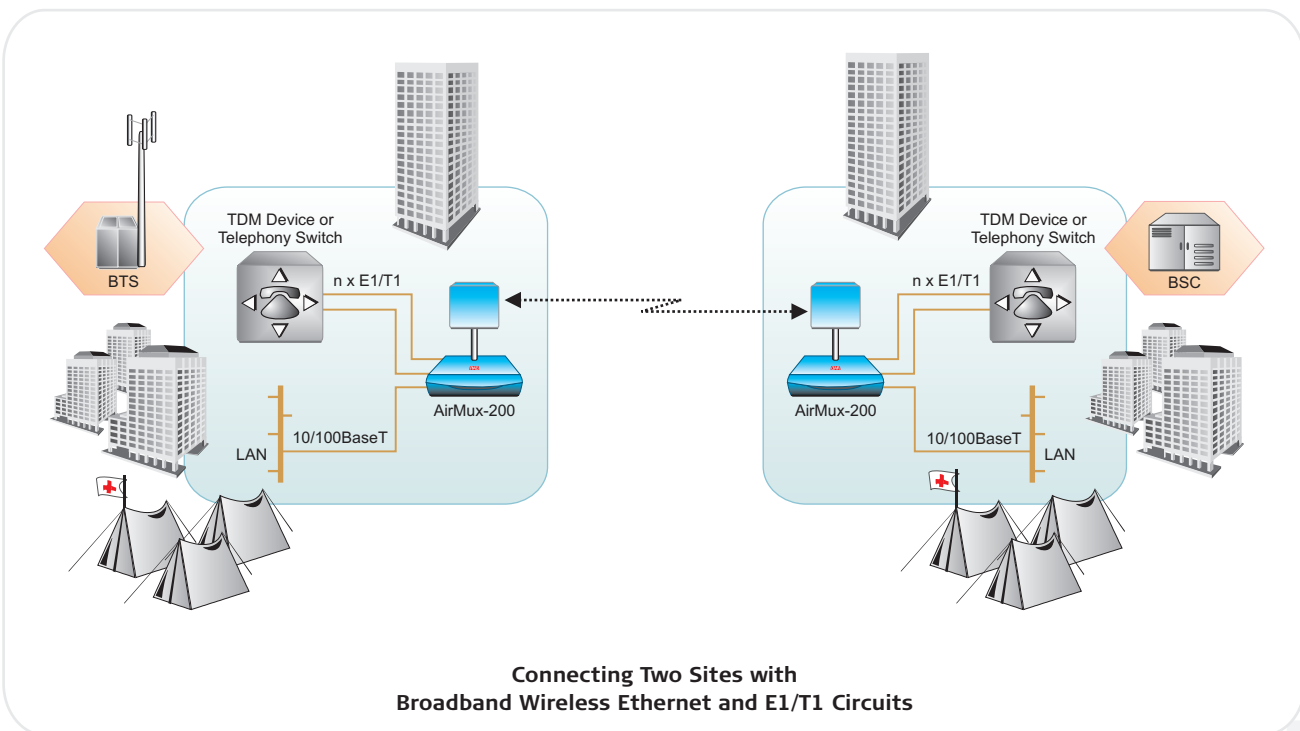
Enhanced Security Mechanisms

Radio transmissions are inherently vulnerable to eavesdropping. AirMux-200 incorporates safeguards to secure the wireless transmission against possible intrusion. The advanced encryption standard (AES 128) includes dynamic encryption key changes to prevent unauthorized eavesdropping, and coded time stamping to prevent false transmission from an intruding terminal. The network management system and the equipment are protected by a password and a challenge/response scheme.

Applications

With unbeatable price/performance, AirMux-200 provides a high return on investment in a variety of campus, enterprise and service provider applications. These include:

- Remote site connectivity of buildings, campuses, rural areas, highway stops
- Cellular TDM and Ethernet/IP traffic backhauling
- Broadband wireless Last Mile where fiber cables are not available
- Temporary or emergency site connectivity, for special events, construction sites, military posts, field camps
- Backup for terrestrial lines or for disaster recovery
- Wi-Fi hot spot backhauling.



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Product Details

Radio

- Frequency:
 - 5.725 – 5.850 GHz
 - 5.470 – 5.725 GHz
 - 5.250 – 5.350 GHz
 - 2.400 – 2.4835 GHz
- Data Rate:
 - Up to 48 Mbps, user-configurable
- Channel Bandwidth: 20 MHz
- Duplex Technique: TDD
- Modulation: OFDM - BPSK, QPSK, 16QAM, 64QAM
- Transmit (Tx) Power: User-selectable in 1 dBm steps, up to the maximum level (see table below)
- Encryption: AES 128

Antenna

- Integrated antenna is standard (high-gain external is optional)
- Gain at 5.7, 5.4, 5.2 GHz:
 - Integral: 22 dBi
 - External: 28 dBi
- Gain at 2.4 GHz:
 - Integral: 17 dBi
 - External: 24 dBi

Note: Maximum transmission range is a function of the selected data rate, the service types transported, and the antenna type used. See data sheet for details.

LAN Interface

- Number of Ports: 1 or 2
- Type: 10/100BaseT with auto-negotiation
- Framing/Coding: IEEE 802.3/U
- Bridging: Self-learning, up to 2000 MAC addresses
- Traffic Handling: MAC layer bridging, self-learning
- Latency: 3 msec (typical)
- VLAN Support: Transparent

E1/T1 Interface

- Number of Ports: 1, 2 or 4
- Framing: Unframed
- Timing: Plesiochronous (independent Tx and Rx timing)
- Latency: 8 msec
- Connector: RJ-45
- Jitter and Wander Compliance: As per G.823, G.824 requirements

Management

- Protocol: SNMP-based
- Network Management: SNMPc-based
- Management Interface: 10/100BaseT
- Connector: RJ-45
- Upgrade Capabilities: Local and over-the-air software download
- Diagnostics: Local and remote

Regulatory Compliance

- Radio: See table below
- Safety:
 - TUV: UL 60950, EN 60950-1, EN 60529
 - CAN/CSA: C22.2 No. 60950
- EMC:
 - FCC: 47CFR Parts 15, 15.247 and Subpart B
 - ETSI: EN 301 489-1
 - CAN/CSA-CEI/IEC: CISPR 22-02
- Environmental: ETSI, IEC 60721-3-4 Class 4M5, IP 67

Radio Regulatory Compliance and Maximum Transmit Power

Frequency	FCC and CAN/CSA		ETSI	
	Compliance	Max. Tx Power	Compliance	Max. Tx Power
5.725 – 5.850 GHz	47CFR Par 15 Subpart C, RSS-210	17 dBm	NA	NA
5.470 – 5.725 GHz	47CFR Par 15 Subpart E	17 dBm	EN 300 216 V1.2.1, EN 301 893 V1.2.2	7 dBm
5.250 – 5.350 GHz	47CFR Par 15 Subpart E, RSS-210	8 dBm	NA	NA
2.400 – 2.4835 GHz	47CFR Par 15 Subpart C, RSS-210	11 dBm	EN 300 328	-6 dBm

For complete product specifications, please see the data sheet online at www.rad.com.

International Headquarters

RAD Data Communications Ltd.
24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel: 972-3-6458181
Fax: 972-3-6498250
email: market@rad.com
www.rad.com

North America Headquarters

RAD Data Communications, Inc.
900 Corporate Drive
Mahwah, NJ 07430, USA
Tel: 1-201-529-1100
Toll free: 1-800-444-7234
Fax: 1-201-529-5777
email: market@radusa.com
www.radusa.com



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