

## MICROWAVE BYPASS SYSTEMS

# ETHERWAVE LAN RADIO



### FEATURES

- Full 10Mbps bandwidth
- Transparent 802.3 Ethernet connectivity
- Additional capacity for optional T1 or E1 channel
- SNMP Option (MIB-II) for remote monitoring/testing
- Optional LNA (Low Noise Amplifier) increases gain 6dB per path for longer single hop distances
- Full Duplex configuration delivers native Ethernet for single hop distances of up to 15 miles
- Redundant options ensure virtual 100% uptime
- Low basic system price of under \$30,000

The Etherwave LAN Radio is the first full bandwidth Ethernet microwave link designed specifically for the network manager. As the first true end-user radio for the LAN environment, it is easily operated and maintained by network administrators with no prior radio experience and without expensive radio test equipment. A comprehensive display of LEDs, alarms and signal meters provides LAN administrators with accurate, thorough operational statistics ensuring maximum long term reliability. For additional convenience and on-going monitoring, the LAN Radio connection may also be remotely managed through the network via SNMP.

Combined with the Etherwave Transceiver, the LAN Radio is completely transparent and acts as an extension of the Ethernet backbone or segment. As a fully compliant 802.3 transmission medium, the microwave can span single hop distances of up to 15 miles and support full 10Mbps Ethernets with reliability of up to 99.999% (far exceeding the Bell leased line specification). Greater distances may be achieved through the use of Ethernet and radio repeaters.

The microwave operates in the 23GHz frequency band and connects via two 75ohm RG-6/U coaxial cables to an indoor, rack mounted Etherwave Transceiver. A standard 15-pin AUI port at the rear of the Etherwave Transceiver is then connected to any 802.3 Ethernet repeater,

bridge or router as desired, to meet internet-work functionality requirements.

In addition to Ethernet, the Etherwave LAN Radio may also be equipped with a Bell Standard T1 or E1 module to support up to 24



voice/data channels. As a plug in module, the T1/E1 option further cost justifies the radio connection by providing multi-channel voice and data service at a low incremental cost.

The Etherwave LAN Radio is the PROVEN systems choice to solve the trade offs between the low speed of leased lines and the high implementation costs of fiber. Turn-key installations, on-site training and 24 hour engineering support available.

*Test/Control Module with  
Etherwave Transceiver*

**INSTALLATION OVERVIEW**

The Etherwave LAN Radio is compact, easy to install and offers maximum protection against hostile climatic conditions. To prevent corrosion, UV degradation and wind damage,

microwave connectivity, Microwave Bypass offers the highest quality products, systems engineering, and responsive customer service, for unmatched price/performance value.



all outdoor cables and connectors are run in 1" flexible conduit and terminate inside a weather-proof, temperature stabilized, RF Unit.

The RF Unit then attaches, via 36" waveguide to a light weight (12", 18", 24" or 48" diameter), parabolic antenna with protective radome. The antennas and mounts weigh from 18 to 135 pounds and support winds of up to 150 MPH. One RG-6/U coax and one power cable connects the outdoor RF Unit to the indoor rack mounted LAN Radio Test/Control Module (up to 1,000' distance). The Radio Control Module then connects via two RG-6/U cables to the Etherwave Transceiver which provides a standard AUI connect to any 802.3 retiming device. A typical point-to-point LAN Radio link may be installed and cutover by two persons within two to three days.

Microwave Bypass' LAN Radios are configured, factory tested and calibrated for long-term reliability and peak performance in any environment. As the pioneer and leader in LAN

**CUSTOMER SUPPORT AND  
TURN-KEY SERVICES**

**Pre-Installation**

- Systems engineering
- Site surveys
- Path profiles and statistics
- Frequency coordination
- FCC and international licensing

**Installation**

- Complete turn-key installations  
Includes alignment, final test and cutover

**On-Going Support**

- Customer training (on site)
- Systems support documentation
- 24 hour engineering hotline
- Spares depot maintenance programs
- Per diem, on site service
- Service/maintenance agreements

MBS also offers T-Carrier (T1, T2, and DS3), Token Ring and video radios to meet other transmission requirements. Call for more information.

## SPECIFICATIONS

### System:

Allowable round trip propagation delay: 46.4 microseconds  
Link separation with standard configuration: up to 5 miles  
(see below diagram for standard configuration)  
Link separation with duplex configuration: up to 15 miles  
Bit error rate: Better than 1 in  $10^9$

### Radio Interface:

**Transmitter** — Baseband output to transmitter — 1 volt pk to pk into 75ohms  
Signal Encoding — Baseband Manchester

**Receiver** — Baseband input from receiver — 1 volt pk to pk into 75 ohms  
Signal Encoding — Baseband Manchester  
Signaling Bandwidth — 20MHz

### Device Interface:

Conforms to Ethernet 2.0/802.3  
(Ref. "The Ethernet", Digital Intel Xerox, Version 2.0)

### Power Requirements:

+12volts to +15volts  $\pm 5\%$  @ 0.5 amps.  
(Power supplied through the device connector)

### Front Panel:

Four Status Indicators: Power — Receive — Transmit — Collision

### Rear Panel:

Output to transmitter — BNC female  
Input from receiver — BNC female  
Network device connect — DB 15 (male) AUI connection with screw lock posts  
(slide locks available on request)

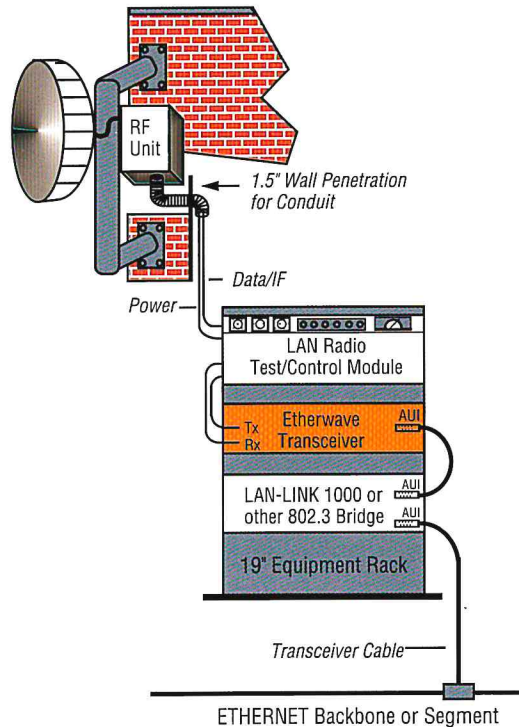
### Mechanicals:

Height: 1.75"  
Mount: 19" Standard E.I.A. rack compatible

## DIAGRAM OF TERMINAL END

10Mbps Ethernet  
over wideband microwave

### Example of standard configuration for distances under 4.3 miles



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For more information about this and other Microwave Bypass Systems products, contact:

**MICROWAVE BYPASS**  
SYSTEMS

Microwave Bypass Systems, Inc.

25 Braintree Hill Park, Braintree, MA 02184 617/843-8260 FAX 617/843-6021