RADITEK TELECOM GROUP
SHORT FORM CATALOG

See Our SATCOM Catalog

Contact us at:

1702L Meridian Ave Suite 127
San Jose, CA 95125, USA
(408) 266-7404 HQ
(408) 266-4483 Fax
http://www.raditek.com/Telecom.html
Please send inquiries to: sales@raditek.com

Carrier Class, Point to Point RADIOs examples (not a complete list):-

To 80 GHz:

7 GHz	8 GHz 1	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz
7.1-7.9	7.72-8.5	10.7-11.7	12.7-12.3	14.5-15.4	17.7-19.7	22.0-23.6

Capacity	16xE1/T1,	32 x E1/T1,	32xE1/T1,	STM-1
Ethernet Data Rate	100 Mbps	150 Mbps	200 Mbps	300 Mbps
Number of Ethernet Ports	2	2	2	2

PRODUCT SOLUTIONS

RADITEK TELECOM

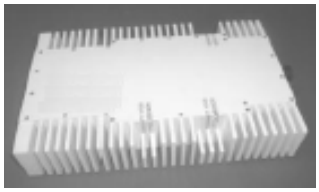
Point to Point RADIO. ODU is shown to the right. **IDU** Shown below. Product family supports many options, as shown. Other frequencies and related products are also available on request.

LNB
ODU
BUCs

SATCOM BUCs

C bands to >60W
X bands to >50W
Ku bands to >50W
Ka bands to 50W
Phase Locked LNBs
IP/data Modems
BUCs & Transceivers

RADITEK is providing many "turn key" solutions around the World. RADITEK is active in Europe, Africa, Middle East, South America and various Asian countries, for example. **RADITEK specializes in combining Satcom, WiMax (3.8 and 5Ghz, 2.3-2.4 Ghz release due mid 2009)Point to Multipoint and carrier class licensed and unlicensed bands Point to Point radio links up to 2 x STM-1 rates per IDU. Offering both IP and E1/T1/STM-1 output options.**
In addition we offer the most advanced WIFI MESH router, deployable anywhere by low skilled installers, as it has auto-configurable software.



	Input Frequency	Output Frequency	LO
Standard-C	950 ~ 1450	5925 ~ 6425	7375
Intelsat	975 ~ 1525	5850 ~ 6425	7375
InSat	1100 ~ 1400	6725 ~ 7025	8125
Palapa-C	1150 ~ 1450	6425 ~ 6725	7875
Full-C	950 ~ 1525	5850 ~ 6725	7375 / 7675

RADITEK's state of the Art, Satellite ground stations of very proven designs, up converts from 70MHz or L Band to various C, X, KU and Ka band frequency options, and output power options.
IF port interface is optionally via either Type "N" or "F" connector. The units typically can be optionally power from: 48V, 100-120V AC and 220-240V AC. Gain adjustment and intelligent Monitor and control is accessed, via RS232/RS485, or via a hand held terminal, or via the IF cable (to NMS in the IDU).
All units are built and tested to ISO9001, 14001, and OHSAS1801. Each unit has 3 days burn-in is and thoroughly tested. Installation is no problem with over 120 expert installers available to go anywhere in the world, as needed. We will even check your existing other network, if necessary and requested.

RADITEK has been a leading manufacturer of telecommunication components and equipment sine 1993. Founders: Malcolm Lee (President and CTO) and Peter Corbett (COO) are seasoned telecommunications professionals. RADITEK products are made to strict quality standards, at various locations around the world, to maintain lowest price, with no quality compromise. Raditek's two locations in California form the HQ, with the Engineering group in Fremont and Administration and Sales Offices in San Jose. We look forward, and are standing by to receiving your inquiries and RFQs.

RADITEK's revolutionary 57-64 GHz Radio System on a Chip.
Shown mounted onto a test board, it is a single 10 x 10mm BGA package **The package contains the complete 60GHz System,**
Including: **Synthesizer, internal Antenna or waveguide option (as shown). Supports AM, FM and IQ data modem interface.**

RADITEK

RADLINK
3.5 or 5.8GHz P2MP

Transceiver, Point to Multi-Point,
High Bandwidth, 3.4 or 5.8GHz, 300Mb, TDMA

Base

Subscriber

Subscriber

Order Examples: **RADLINK-P2MP-3.4GHz-a9**
Description: (Transceiver, Point to Multipoint, 3.5GHz)

Our Point-to-Multipoint Radio is a hi-power, linear 2x2 MIMO radio with enhanced receiver performance. The radio system utilizes the advantages of OFDM modulation and MIMO technology along with a proprietary Time Division Multiple Access (TDMA) protocol to provide exceptional range and speed (100+Mbps real TCP) performance.

Further performance enhancements are achieved with optional GPS Synchronization, providing precision synchronization and timing to eliminate co-location interference and enhance frequency re-use capability

FEATURES

- Fixed P2MP solution that can deliver 300 Mbps air-rate per sector (150+Mbps layer 2 TCP)
- High spectral efficiency (7.5bits/Hz)
- Long Range (30Km+)
- Provides AES encryption technology,
- Very Low Power Consumption: Base Station 8W per sector, Subscriber Station 6.5W
- Designed for rural African conditions with low infrastructure level and limited power availability
- Robust air interface based on MIMO and OFDM technology provides high capacity with NLOS performance
- Advanced Time Division Multiple Access Protocol (TDMA)– Reduced latency and improved throughput
- Intelligent QoS – priority given to voice/video for seamless access
- Traffic Shaping – Up and down stream traffic shaping per client
- Scalability – High capacity and can support more than 120 clients per sector
- Static Routing
- Highly-secure remote management via SSL, SSH and SNMPv1 and SNMPv32
- AirControl NMS forms part of standard equipment
- MAC, Ethertype and IP address packet filtering for granular network security.
- Built in real-time spectrum analyzer (standard with all equipment)
- Integrated Lightning Protection
- Option: GPS Synchronization– Synchronized transmission eliminates co-location interference
- Option: Channel Re-use & Frequency reuse for improved scalability
- Option: Dual Ethernet Ports providing power to a second device using PoE.

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Transceiver, Point to Multi-Point, 3.4 or 5.8GHz, 300Mb, TDMA

Our TDMA protocol allows each client to send and receive data using a pre-designated time slot scheduled by an intelligent AP controller.

This “time slot” method of provisioning clients eliminates hidden node collisions and maximizes airtime efficiency, providing magnitudes of performance improvements in latency, throughput and scalability when compared with other outdoor systems in its class.

APPLICATIONS

Connecting Communities: Cost-effective access within communities, municipalities and educational institutions specifically in rural low-density areas.

Security & Surveillance: Wireless connectivity for High Definition cameras in applications that require high bandwidth and low jitter.

Last Mile Access: Broadband services for residential, business and public enterprise users, with secure access differentiation as well as NLOS connectivity in diverse environments such as medium-density urban areas or foliage in rural areas.

Enterprise Networks: Leased line replacement for cost-effective connectivity, providing services between nodes in enterprises, campuses and remote sites.

Specifications

Integrated Dual Polarized Antenna	3.4-3.7GHz	4.9-5.8GHz	Power (W)	Dimensions (mm)	Weight (Kg)
Base Station	120° /17dBi	120° / 19dBi	8	140x700x120	3.5
Base Station + GPS Synchronization	120°/ 17dBi	120° / 19dBi	8	140x700x120	3.5
Corporate Subscriber	19dBi	11º / 25dBi	6.5	400x400x100	2.8
Residential Subscriber	N/A	20º / 22dBi	6.5	315x315x110	2.8
Capacity					
Base Station:	150 Mbps Full Duplex (Layer-2 TCP) per Sector				
Subscriber:	150 Mbps Full Duplex (Layer-2 TCP) per TDMA time-slot				
Interfaces					
Wired Ethernet 1x10/100 BASE-TX (Cat 5, RJ-45) Ethernet			1	2 (GPS Model)	
Radio Specifications					
Number of CSUs per BSS	Up to 120				
Range	Up to 30 Km				
Frequency Bands (Granularity)	5MHz with - 2.0MHz offset				
Channel Bandwidths	5MHz, 10MHz, 20MHz & 40MHz				
Modulation	2x2 MIMO- OFDM (BPSK/QPSK/16QAM/64-QAM) with Adaptive Modulation & Coding				
Duplex and Access Technology	TDD with adaptive TDMA protocol				
Encryption	AES128				

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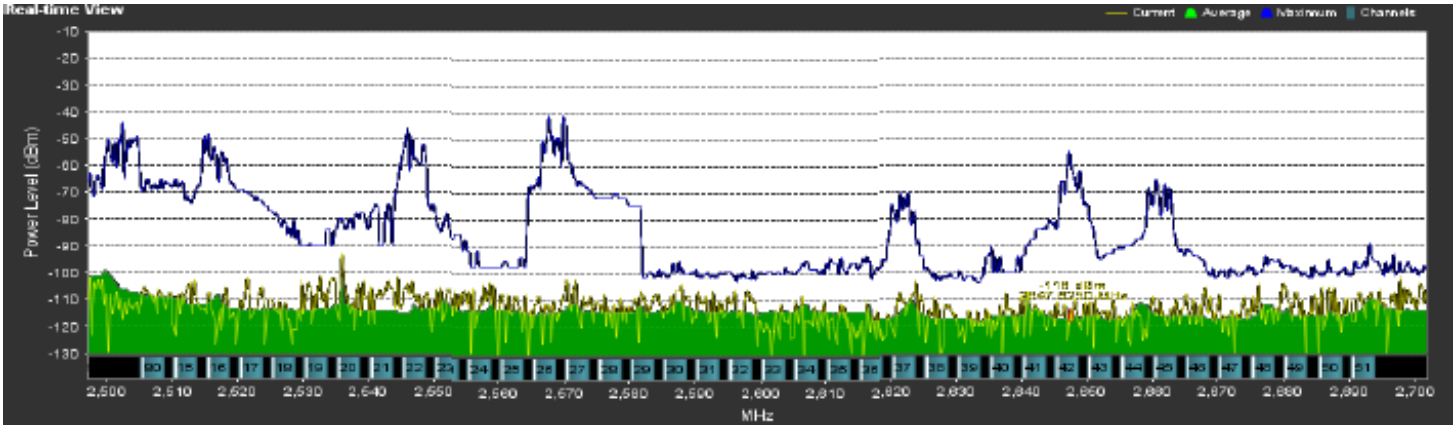
Transceiver, Point to Multi-Point,
3.4 or 5.8GHz, 300Mb, TDMA

Radio Performance (Air Interface)			
Modulation & Coding Schemes	(30-90 Mbps) MCS8-MCS10	(120-240Mbps) MCS11-MCS13	(270-300Mbps) MCS14-MCS15
TX Power	28dBm ±2dB	(25dBm-28dBm) ±2dB	(22dBm-24dBm) ±2dB
RX Sensitivity (1x10-6 BER)	-90 to -95dBm	-79 to -87dBm	-75 to -78dBm
Networking			
QoS	Intelligent QoS – priority given to voice/video for seamless access		
Routing	Static Routing		
Management			
BSS & SSU Management	Web based management and/or AirControl NMS		
Protocol	SSH, HTTPS, SNMPv11, SNMPv32		
Spectrum Analyser	Advanced Spectrum Analyzer Functionality: Waterfall, Waveform, and Real-time spectral views		
Power			
Power Feed	All power provided by Power over Ethernet units (PoE)		
Environmental			
Operating Temperature Range	-35°C to +70°C		
Storage Temperature Range	-55°C to +85°C		
Operating Humidity	100% Condensing, IP67		
Shock & Vibration	ETSI 300-019-1.4		
Mechanical			
Construction	Sealed die-cast aluminum housings with Gore® Vent equalizer		
Standard Compliance			
FCC	FCC part 90Y, 47CFR Class B, Part15, Sub-part B		
ETSI/ITU	EN302 502, EN 301 893, EN302 326-2 v1.2.2, EN300 386, EN 301 489-1, EN 301-489-4		
Regulatory	ICASA TA-2007/1243		



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RADITEK

RADLINK
1E1 or 1T1

Point to Point Radio Family

2.4 or 5.85GHz

PDH / Ethernet Convergent System

1xE1/T1 and 2xE1/T1

RoHS COMPLIANT

Reliability, Performance, Connectivity, Service

Features and Benefits:

- High quality Voice/ Data/ Video transmission
- Cost-effective alternative to traditional E1(T1) device
- 2 ports E1(t1) supported
- High reliability of radio link provides excellent BER
- Operate on 2.4GHz ISM band and 5.85GHz UNII bands with OFDM technology
- Employs Time Division Duplex (TDD) transmission, no need to plan and to allocate separate channels for the uplink and downlink data streams
- End to end transmission of multiple user services over packet switched networks
- Transparent Ethernet forwarding
- Support SNMP for remote monitor and management
- Window based utility provides user friendly interface to configure the IDE/ODU
- Rapid instillation and easy configuration for deploying the link
- Enhanced Security and access control
- Power over Ethernet to ODU
- IP-68 rated weather-proof housing for ODU
- Flexible Configuration upgrade

RADLINK-2.4G or 5.85G-PDH-Ethernet-a9 series delivers up to 54Mbps air rate for Ethernet (Up to 6 Mbps throughput) and 2 ports E1 (T1) traffic (Net throughput 23Mbps). The system operates in 2.4 GHz ISM Band or 5.85 UNII Band.

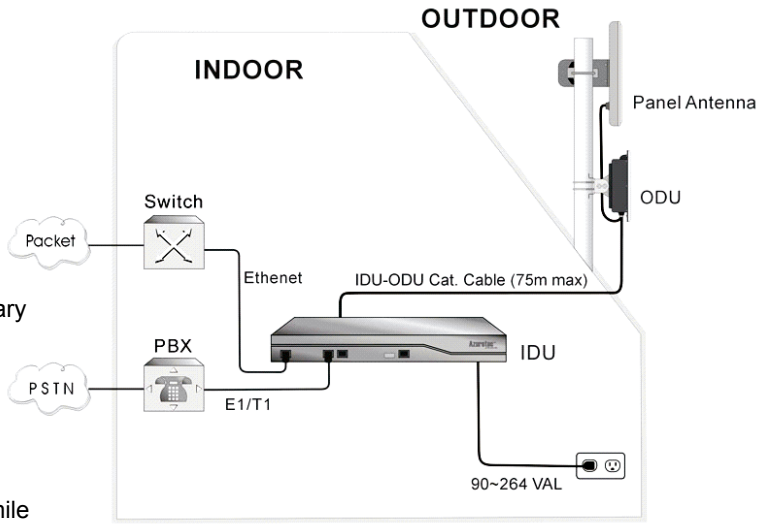
RADLINK-2.4G or 5.85G-PDH-Ethernet-a9 employs Time Division Duplex (TDD) transmission. This technology simplifies the installation and configuration procedure. There is no need to plan and to allocate separate channels for the uplink and downlink data streams.

Operation over 2.4GHz and 5.85 GHz UNII bands in not affected by harsh weather conditions, such as fog, heavy rain etc.

RADLINK-2.4G or 5.85G-PDH-Ethernet-a9 series system offers more than just an attractive price-point per link and powerful performance characteristics. Easy of installation and alignment along with smart management capabilities make setup and configuration a snap.

Applications:

- Wireless Backup
- Emergency Services and Temporary Deployment
- Cellular Backhaul
- Telephony Extension
- Lossless Backhaul for Hot spots
- Interconnecting Multiple Legacy Services over Packet Networks
- Extension to MMDS and 3G last mile network



Basic Hardware Installation Figure

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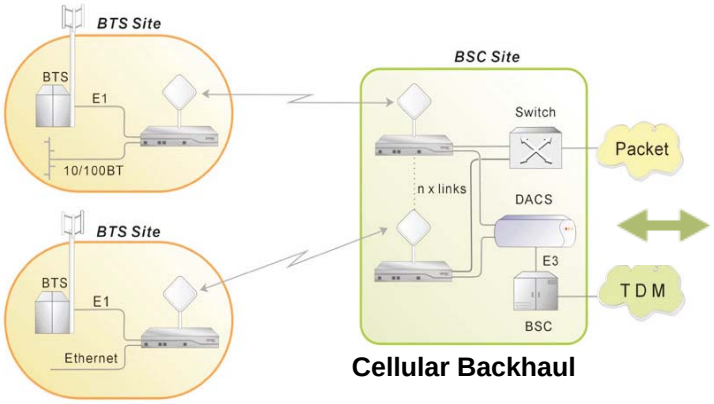
Point to Point Radio Family
2.4GHz or 5.85GHz E1/T1
PDH / Ethernet Convergent System / 1xE1/T1 and 2xE1/T1

APPLICATIONS

Telephone Services Extension to Remote / Rural Locations

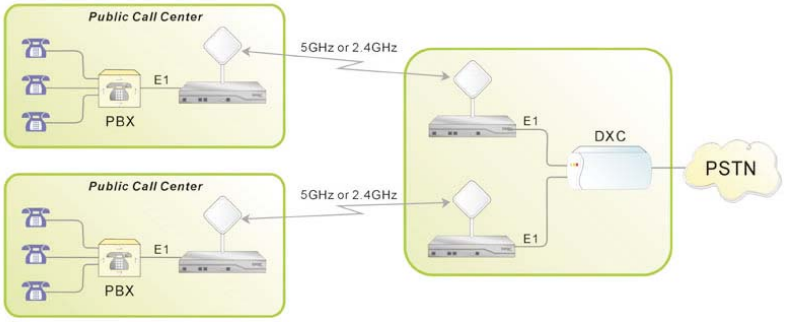
In many remote parts of the developing world, where infrastructure is lacking, operators are establishing public call centers to provide basic telephony services.

The **RADTR-P2P-2.4G or 5.85G-PDH-Ethernet-a9** series enable service providers to extend voice circuits to remote / rural sites.



Cellular Backhaul

Telephone Services Extension to Remote/ Rural Locations

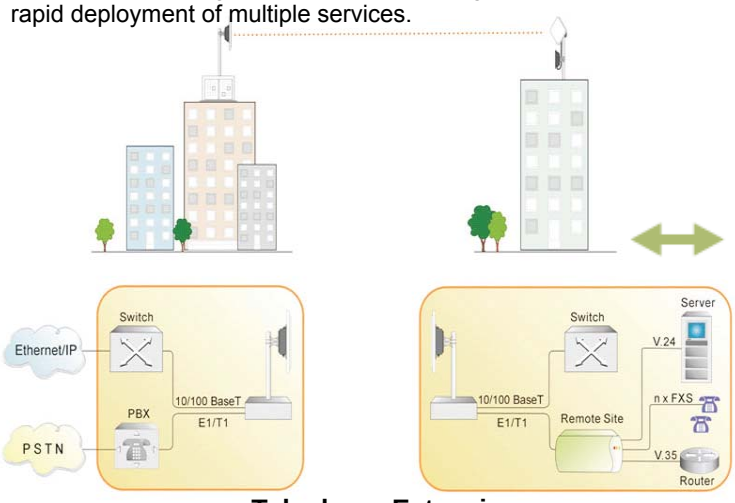


Cellular Backhaul
RADTR-P2P-2.4G or 5.85G-PDH-Ethernet-a9

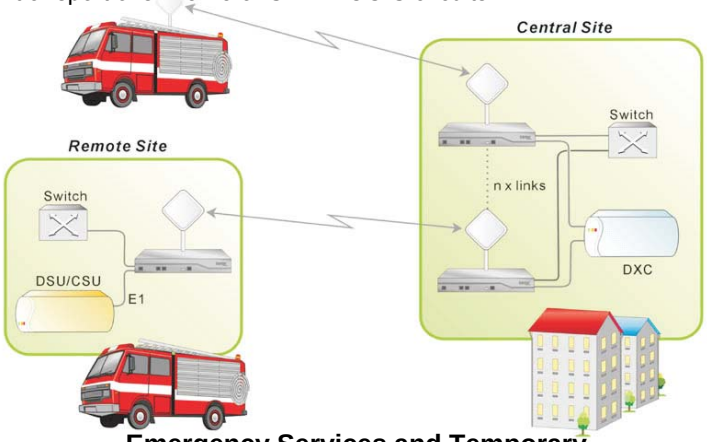
Together with the DXC, supports integration of cellular, monitoring and management traffic. Several Ares 2000-2s can be co-located at the BSC to handle incoming traffic from various remote sites and the DXC can aggregate the multiple E1/T1s for transport over E3/T3 or STM-1/OC-S circuits.

Emergency Services and Temporary Deployment

Establishing temporary communications links during an emergency situation is a classic wireless application. Simple setup, configuration and antenna alignment ensure rapid deployment of multiple services.



Telephony Extension



Emergency Services and Temporary

Telephony Extension

RADTR-P2P-2.4G or 5.85G-PDH-Ethernet-a9 offers a cost-effective solution for extending an E1 (T1) voice circuit up to 10 kilometers in a point-to-point application.

RADTR-P2P-2.4G or 5.85G-PDH-Ethernet-a9 is uniquely designed to handle all voice and data traffic while being virtually maintenance-free. The solution seamlessly connects the telephony and computer networking systems in one building to those in another building, thus creating one physical private network over airwaves. The PBXs are interconnected via E1 interface and the routers are interconnected via Ethernet interface.

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Point to Point Radio Family
2.4GHz or 5.85GHz E1/T1
PDH / Ethernet Convergent System / 1xE1/T1 and 2xE1/T1

SPECIFICATIONS

CONFIGURATION		
Architecture	IDU: Indoor Unit: Multiplex XxE1/Architecture T1+Ethernet, Includes 24VDC PoE	
	ODU: Outdoor Unit: TDD Ethernet Radio	
IDU to ODU Interface	Outdoor CAT-5 cable: Maximum cable length: 75m	
RADIO		
Frequency bands	2.4GHz	2.400 – 2.4835 GHz
	5.85GHz	5.150 – 5.250 GHz (UNII 1 – Indoor -FCC)
		5.250 – 5.350 GHz (UNII 2 – Low Power -FCC)
		5.470 – 5.725 GHz (includes DFS / TPC – ETSI)
		5.725 – 5.850 GHz (UNII 3 – Standard -FCC)
Data Rate	Configurable up to 23 Mbps (bi-directional)	
Ethernet Throughput	Up to 6 Mbps	
Channel Bandwidth	20 MHz	
Duplex Technique	TDD	
Modulation	OFDM-BPSK, QPSK, 16QAM, 64QAM	
Transmit Power	23dBm max.	
Received Dynamic Range	> 60dB	
ETHERNET INTERFACE		
Type	10/100Base T Interface with Auto-negotiation (IEEE 802.3)	
Number of Ethernet Ports	1 (LAN Traffic Bandwidth Control), Up to 6 Mbps Throughput	
Framing / Coding	IEEE 802.3/U	
Bridging	Self-learning up to 2047 MAC addresses IEEE 802.1Q	
Traffic Handling	MAC layer bridging, self-learning	
Line Impedance	100 Ω	
VLAN Support	Transparent	
Connector	RJ-45	
E1/T1 INTERFACE		
Framing	Unframed (transparent)	
Number of E1(T1)	0, 1, 2	
Standard Compliance	G.703, G.826	
Timing	Independent Tx and Rx timing	
Line Code	E1: HDB3 @ 2.048 Mbps; T1: B8ZS/AMI @ 1.544Mbps	
Impedance	E1-120 Ω. Balanced; T1 – 100 Ω, Balanced	
Connector	RJ-45	
Jitter & Wander	According to G.823, G.824	
NETWORK MANAGEMENT		
Local Management	CLI / RS232, SNMP	
Remote Management	SNMP	
SNMP Agent	MIB II, Private MIB	
Security	User log on, MAC Access control list, WEP Encryption 40,128,152 bit	

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Point to Point Radio Family

2.4GHz or 5.85GHz E1/T1

PDH / Ethernet Convergent System / 1xE1/T1 and 2xE1/T1

SPECIFICATIONS

POWER and MOUNTING		
Power Input	100/240 VAC (+24VDC to ODU); Pwr Consumption = 20W/2.4G, 17W/5.8G	
Mounting	Pole or Wall for ODU, 19 in Rack (1Mtg Sp) or Desktop	
MECHANICS		
ODU Dimensions (includes integrated antenna)	335 (L) × 335 (W) × 81 (H) ; mm; (13.1(L) x 13.2(W) x 3.2(H) inches) Weight: 2.9 Kg; (6.4 lb)	
ODU (integrated antenna not included)	259 (L) x 250 (W) x 75 (H); mm; (10.2(L) x 9.8(W) x 3.0(H) inches) Weight: 1.8kg; (4.0 lb)	
IDU Dimensions	425 (L) x 256 (W) x 44.5 (H); mm; (16.8(L) x 10.1(W) x 1.75(H) inches) Weight: 2.9 Kg; (6.4 lb)	
INTEGRAL ANTENNA	**5.85GHz**	**2.4GHz**
Frequency Range	5150 – 5875 MHz	2400-24835 MHz
Gain	23 dBi or 20 dBi	18 dBi
Beam Width	10°	10°
Polarization	Linear, or Vertical	Linear, or Vertical
ENVIRONMENTAL		
Outdoor Unit Enclosure	IP-68 rated weather-proof enclosure	
ODU Operating Temperature Range	-20°C to +60°C; (-4°F~140°F)	
IDU Operating Temperature Range	-5.0°C to +55°C; (23°F~131°F)	
Storage Temperature Range	-30℃ to +70℃, (-22°F~158°F)	
Humidity	Up to 90% non-condensing	

ORDERING INFORMATION		
RADTR-P2P-2.4G-2354-I18		2.4GHz ISM band, 2xE1+1xEthernet Term. with 18 dBi Integral Ant, EIRP=41dBm
RADTR-P2P-2.4G-2356-I18		2.4GHz ISM band, 2xT1+1xEthernet Term. with 18 dBi Integral Ant, EIRP=41dBm
RADTR-P2P-5.85G-2354-I20	Special Order	5GHz UNII band, 2xE1+1x Ethernet Term. with 20 dBi Integral Ant, EIRP=43dBm
RADTR-P2P-5.85G-2356-I20	Special Order	5GHz UNII band, 2XT1+1x Ethernet Term. with 20 dBi Integral Ant, EIRP=43dBm
RADTR-P2P-5.85G-2354-I23		5GHz UNII band, 2xE1+1x Ethernet Term. with 23 dBi Integral Ant, EIRP=46dBm
RADTR-P2P-5.85G-2356-I23		5GHz UNII band, 2XT1+1x Ethernet Term. with 23 dBi Integral Ant, EIRP=46dBm
RADTR-P2P-2.4G-2354-EXT		2.4GHz ISM band, 2xE1, 1x Ethernet Terminal (ODU + IDU) for External Antenna
RADTR-P2P-2.4G -2356-EXT		2.4GHz ISM band, 2xT1, 1xEthernet Terminal (ODU + IDU) for External Antenna
RADTR-P2P-5.85G-2354-EXT		5GHz UNII band, 2xE1, 1x Ethernet Terminal (ODU + IDU) for External Antenna
RADTR-P2P-5.85G-2356-EXT		5GHz UNII band, 2xT1, 1x Ethernet Terminal (ODU + IDU) for External Antenna
RADTR-P2P-2.4G or 5.85G-0101-IDU		IDU, 2xE1 Balanced, 1x Ethernet; Loose Equipment, for 2.4 or 5.X GHz 802.11a/g Radio
RADTR-P2P-2.4G or 5.85G-0101-IDU		IDU, 2xT1 Balanced, 1x Ethernet; Loose Equipment for 2.4 or 5.X GHz 802.11a/g Radio
RADTR-P2P-2.4G-2371-EXT		ODU, 2.4 GHz, External Antenna, Loose Equipment, 802.11g, +24VDC
RADTR-P2P-2.4G-2371-I18		ODU, 2.4 GHz, 18 dBi Integral Ant, Loose Equipment, EIRP=41dBm, 802.11g, +24VDC
RADTR-P2P-5.85G-2372-EXT		ODU, 5.X GHz, External Antenna, Loose Equipment, 802.11a, +24VDC
RADTR-P2P-5.85G-2372-I20	Special Order	ODU, 5.XGHz, 20dBi Integral Ant. Loose Equipment, EIRP=43dBm, 802.11a, +24VDC
RADTR-P2P-5.85G-2372-I23		ODU, 5.XGHz, 23dBi Integral Ant. Loose Equipment, EIRP=46dBm, 802.11a, +24VDC

Note:
For 75 ohm Unbalanced E1 requires external impedance matching transformer.

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RADITEK

RADLINK
4E1 or 4T1

Point to Point Radio Family
2.4 /5.8GHz, PDH/ Ethernet Convergent System
4E1 or 4T1

Order Examples: . RADLINK-P2P-2.4 or 5.85-PDH-4E1 or 4T1-a9
Description: (2.4 or 5.85GHz, Ethernet Convergent System, 4E1 or 4T1)

Our PDH/ Ethernet Convergent System 4xE1 or T1 series delivers up to 54Mbps air rate for 4 ports E1 (T1) traffic and Ethernet (Up to 3 Mbps Throughput) (Net throughput>23Mbps). **The system operates in 2.4 GHz ISM Band or 5.8 UNII Band.**

It employs Time Division Duplex (TDD) transmission. This technology simplifies the installation and configuration procedure. There is no need to plan and to allocate separate channels for the uplink and downlink data streams. Operation over 2.4GHz and 5.x GHz UNII bands provide stable operation in hard weather conditions (rain, snow, ice, dust, and etc).

Our PDH/ Ethernet Convergent System 4xE1 or T1 series system offers more than just an attractive price, but provides excellent performances; easy installation and alignment, along with smart management capabilities that make setup and configuration a snap.

Features and Benefits

- High quality Voice/ Data/ Video Transmission
- Cost effective Alternative to traditional E1(T1) devices
- 4 Ports of E1(T1) supported
- High Reliability of radio link provides excellent BER
- Operate on 2.4GHz ISM band and/or 5GHz UNI bands with OFDM Technology
- Employs Time Division Duplex (TDD) transmission
- End to end transmission of multiple user services over packet switched networks
- Transparent Ethernet forwarding
- Support SNMP for remote monitor & management
- Enhanced Security and access control
- Power over Ethernet to ODU
- Rapid installation and easy configuration for deploying the link
- Flexible and simple structure for upgrading
- Windows based utility program provides user friendly interface to configure the IDU/ODU

Applications

- Cellular Backhaul
- Telephony Extension
- Extension to MMDS and 3G last mile networks
- Interconnecting Multiple Legacy Services over packet networks
- Lossless Backhaul for Hot Spots
- Emergency Services and Temporary Deployment
- Wireless Backup
-

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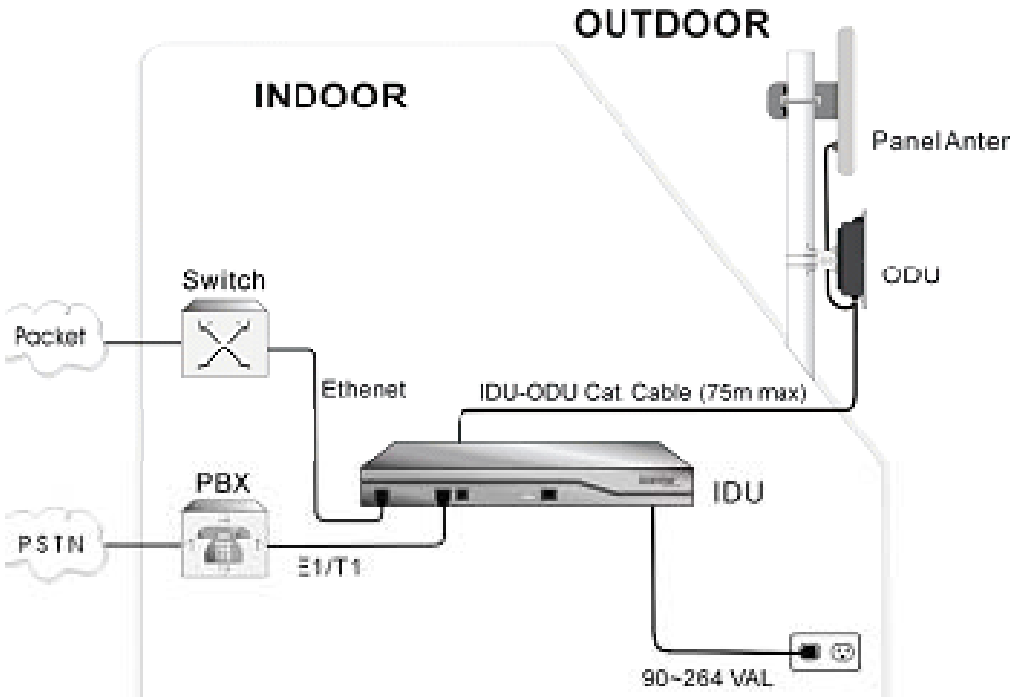
Point to Point Radio Family

2.4 /5.xGHz, PDH/ Ethernet Convergent System, 4xE1 or T1

Basic Hardware Installation

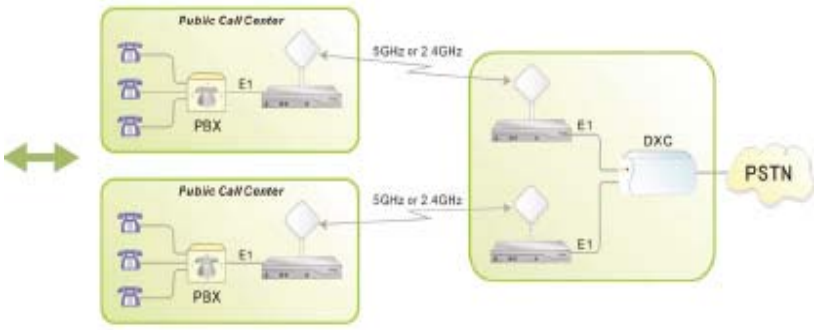


Applications

Telephone Services Extension to Remote/ Rural Locations

In many parts of the developing world where infrastructure is lacking, operators are establishing public call centers to provide basic telephony services.

The PDH/ Ethernet Convergent System 4xE1/T1 series enables service providers to extend voice circuits to remote/rural sites.



Telephone Services Extension to Remote / Rural Locations

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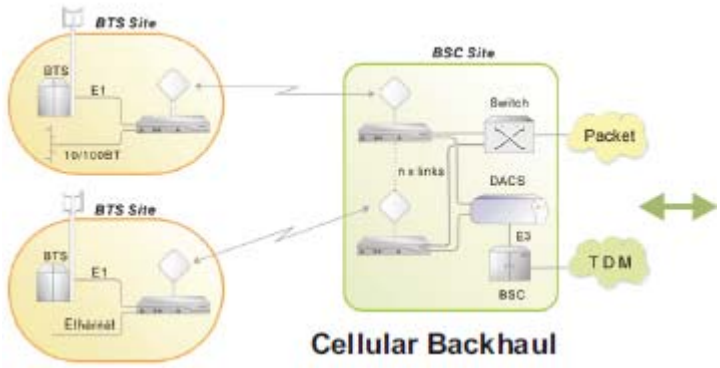
Tel: (408) 266-7404 FAX: (408) 266-4483
WEB: www.raditek.com E-mail: sales@raditek.com

Point to Point Radio Family

2.4 /5.xGHz, PDH/ Ethernet Convergent System, 4xE1 or T1



Cellular Backhaul

Cellular Backhaul

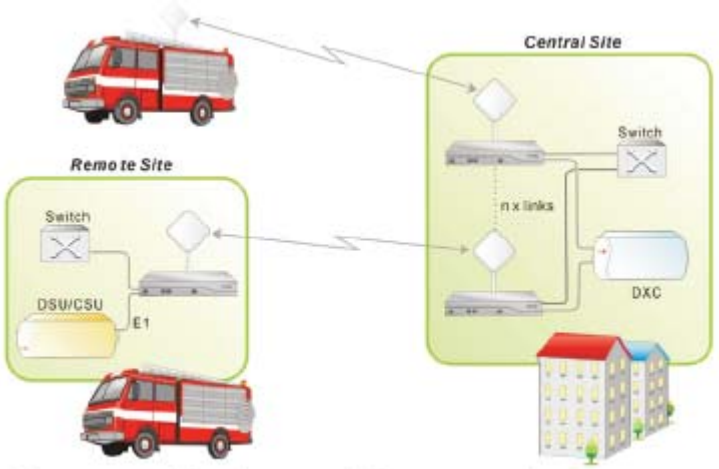
The PDH/ Ethernet Convergent System together with the DXC, supports integration of cellular, monitoring and management traffic.

Several Ares 2000-2s can be co-located at the BSC to handle incoming traffic from various remote sites and the DXC can aggregate the multiple E1/T1s for transport over E3/3 or STM-1/OC-S circuits.

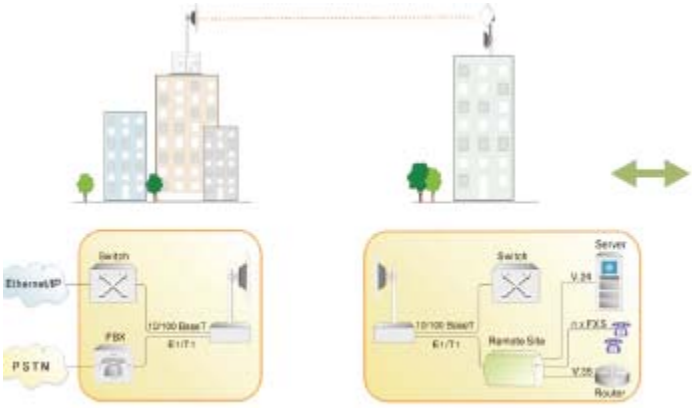
Emergency Services and Temporary Deployment

Establishing temporary communications links during an emergency situation is a classic wireless application.

Simple setup, configuration and antenna alignment ensure rapid deployment of multiple services.



Emergency Services and Temporary Deployment



Telephony Extension

Telephony Extension

The PDH/ Ethernet Convergent System offers a cost-effective solution for extending an E1(T1) Voice circuit up to 10 kilometers in a point-to-point application.

The system is uniquely designed to handle all voice and data traffic while being virtually maintenance-free.

The solution seamlessly connect the telephony and computer networking systems in one building to those in another building, thus creating one physical private network over the airwaves.

The PBX's are interconnected via E1 interface ant the routers are interconnected via Ethernet Interface.

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Point to Point Radio Family

2.4 /5.xGHz, PDH/ Ethernet Convergent System, 4xE1 or T1

Specifications

Configuration			
Architecture	**IDU**: Indoor Unit: Multiplex Architecture XxE1/T1+Ethernet, Includes 24VDC PoE **ODU**: Outdoor Unit: TDD Ethernet Radio		
IDU to ODU Interface	Outdoor CAT-5 cable: Maximum cable length: 75m		
Radio			
Frequency bands	RADTR 2.4	2.400 – 2.4835 GHz	Customized to meet local regulatory requirements
	RADTR 5.X	5.150 – 5.250 GHz	
Data Rate	Software configurable		
E1/T1 Capacity	Up to 4 x E1/T1		
Ethernet Throughput	Up to 3 Mbps		
RF Channel Bandwidth	20 MHz		
Duplex Technique	TDD		
Modulation	OFDM-64QAM, BPSK, QPSK, 16QAM,		
Transmit Power	23dBm (all RF bands)		
Received Dynamic Range	> 60dB		
Ethernet Interface			
Type	10/100Base T Interface with Auto-negotiation		
Number of Ethernet Ports	1 (LAN Traffic Bandwidth Control), Up to 3 Mbps Throughput		
Framing / Coding	IEEE 802.3, IEEE 802.3u		
Bridging	Self-learning up to 2047 MAC addresses IEEE 802.1Q		
Traffic Handling	MAC layer bridging, self-learning		
Line Impedance	100 Ω		
VLAN Support	Transparent		
Connector	RJ-45		
E1/T1 Interface			
Framing	Unframed (transparent)		
Number of E1(T1)	0, 1, 2, 3 or 4 E1/T1		
Standard Compliance	G.703, G.826		
Timing	Independent Tx and Rx timing		
Line Code	E1: HDB3@ 2.048 Mbps; T1: B8ZS/AMI @ 1.544Mbps		
Impedance	E1-120 Ω, Balanced: T1 - 100 Ω, Balanced		
Connector	RJ-45		
Jitter & Wander	According to G.823, G.824		
Network Management			
Local Management	CLI / RS232, SNMP		
Remote Management	SNMP		
SNMP Agent	MIB II, Private MIB		

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Point to Point Radio Family

2.4 /5.xGHz, PDH/ Ethernet Convergent System, 4xE1 or T1

Security		
Data Encryption	WEP 64.128/152 bits, AES-128 bit encryption	
	WPA-PSK, WPA	
Authorization	MAC Address Access Filter	
Other Features	Disable broadcasting SSID, Client Isolation (layer 2 Isolation) Regatta mode	
Power and Mounting		
Power Input	100/240 VAC (+24VDC PoE): Pwr Consumption = 21W/2.4G, 18W/5.8G	
Mounting	Pole or Wall for ODU, 19 in Rack (1Mtg Sp) or Desktop for IDU	
Mechanics		
5.X GHz ODU Dimensions (includes 23 dBi integral antenna)	335 (L) × 335 (W) × 81 (H) ; mm; (13.1(L) x 13.2(W) x 3.2(H) inches) Weight 2.9 Kg (6.4lb)	
5.X GHz ODU Dimensions (includes 18 dBi integral antenna)	335 (L) × 335 (W) × 81 (H) ; mm; (13.1(L) x 13.2(W) x 3.2(H) inches) Weight 2.9 Kg (6.4lb)	
ODU Dimensions for External Antenna	259 (L) x 250 (W) x 75 (H); mm; (10.2(L) x 9.8(W) x 3.0(H) inches) Weight: 1.8kg; (4.0 lb)	
IDU Dimensions	425 (L) x 256 (W) x 44.5 (H); mm; (16.8(L) x 10.1(W) x 1.75(H) inches) Weight: 2.9 Kg; (6.4 lb)	
Integral Antenna	**5.X**	**2.4**
Frequency Range	5150 – 5875 MHz	2400-24835 MHz
Gain	23 dBi	18 dBi
Beam Width	10°	10°
Polarization	Linear or Vertical	Linear or Vertical
Environmental		
Outdoor Unit Enclosure	IP-68 rated weather-proof enclosure	
ODU Operating Temperature Range	-30°C to +60°C; (-4°F~140°F)	
IDU Operating Temperature Range	-5.0°C to +55°C; (23°F~131°F)	
Storage Temperature Range	30°C to +70°C, (-22°F~158°F)	
Humidity	Up to 90% non-condensing	

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Point to Point Radio Family

2.4 /5.xGHz, PDH/ Ethernet Convergent System, 4xE1 or T1

Models

2.4 GHz ODU with 18dBi Integral Antenna

ODU for External Antenna (5 and 2.4 GHz)

5X GHz ODU with 23 dBi Integral Antenna

IDU for 4 xE1/T1 +Ethernet

Ordering Information	
RADLINK-P2P-SL24-2357-I18	2.4GHz ISM band, 4xE1+1xEthernet Term. with 18 dBi Integral Ant, EIRP=41dBm
RADLINK-P2P-SL24-2358-I18	2.4GHz ISM band, 4xT1+1xEthernet Term. with 18 dBi Integral Ant, EIRP=41dBm
RADLINK-P2P-SL5X-2357-I18	5GHz UNII band, 4xE1+1x Ethernet Term. with 23 dBi Integral Ant, EIRP=46dBm
RADLINK-P2P-SL5X-2358-I18	5GHz UNII band, 4xT1+1x Ethernet Term. with 23 dBi Integral Ant, EIRP=46dBm
RADLINK-P2P-SL24-2357-EXT	2.4GHz ISM band, 4xE1+1xEthernet Term (ODU + IDU) for External Antenna
RADLINK-P2P-SL24-2358-EXT	2.4GHz ISM band, 4xT1+1xEthernet Term. (ODU + IDU) for External Antenna
RADLINK-P2P-SL5X-2357-EXT	5GHz UNII band, 4xE1+1xEthernet Term (ODU + IDU) for External Antenna
RADLINK-P2P-SL5X-2358-EXT	5GHz UNII band, 4xT1+1xEthernet Term. (ODU + IDU) for External Antenna

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RADITEK

RADLINK PICO
Outdoor Radio-12dBi
802.11A/B/G

Small and Compact 4.9/5.85GHz
OFDM outdoor Subscriber
5/10/20/40MHz Fractional Bandwidths, 100Mbps

RoHS COMPLIANT

Applications
- Redundant link between buildings
- Home automation & building control
- Wireless Repeater
- Dedicated ISP connections for high reliability subscribers

Features & Benefits
- Competitive P-T-P or P-T-MP Bridge
- Monitoring of remote systems
- Cost effective alternative to wired Network environment

Order Examples: RADLINK-PICO-4.9-5.85-32d-a9
Description: (Transceiver Pico, 4.9-5.85GHz, 32dBm EIRP, 12dBi Integral Antenna)

The **RADLINK-PICO** is designed for Carrier and Internet Service Providers to address the last-mile wireless infrastructure solution with high performance and competitive cost. It is compliant to IEEE802.11a standard; it comes with software controllable RF power output and distant setting for optimal distance (up to 8km) Vs throughput performance.

The compact outdoor casing complies with IP68 standard and is water and dust resistant. Integrated with a 12dBi directional antenna, and data rate of up to 108Mbps on Turbo mode,
The **RADLINK-PICO** series has been tested to deliver a high TCP throughput of up to 20Mbps. With an option to have the WDS (wireless distribution system) turning on or off, it is interoperable with most of the standard 802.11 a/b/g APs in the market. It can also support multiple users with the WDS turned off.

Data encryption such as WEP, WPA-PSK and WPA/2 is possible providing the necessary security and interoperability with other equipment . Enhanced access control can be done with the use of MAC address filtering, both on the AP and the client side. Additionally, it is firmware upgradeable through web-server and Telnet.

Product Highlights

Effective spectrum utility
The **RADLINK-PICO** uses advanced technology to narrow the channel into smaller Bandwidths more than other wireless radios. There are software selectable channel bandwidths of 5, 10 ,20 and 40MHz.

Turbo mode increases the performance up to 50%
Turbo mode supports up to 108Mbps data rate which can enhance the throughput performance of the radio up to 50%.

Bandwidth control / QOS
Bandwidth control can limit the throughput and the QOS function provides better Video/VOIP signal quality.

Security
WEP 64 / 128 / 152 bits, 802.1x Authentication (EAP), MAC access control, disable broadcast the SSID, client isolation, WPA-PSK, WPA-TKIP encryption and WPA2 (AES-128bits) build the highest security mechanism to prevent malicious attacks from the internet.

Antenna Adjust
This function provides MAC address to the RSSI (signal strength) info of the units which is associated to the other end of the link for specific link quality information.

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Small and Compact 4.9/5XGHz, OFDM outdoor Subscriber
5/10/20/40MHz Fractional Bandwidths, 100Mbps

Specifications

RADIO		
Operating Channels	4.9 GHz (Optional)	4.9GHz-5.25GHz
	5X GHz	5.15GHz-5.35GHz
		5.475GHz-5.725GHz
		5.725GHz-5.850GHz
Channel Bandwidth	Software selectable channel bandwidths of 5 / 10 / 20 / 40 MHz	
Output Power	18 dBm (±2dB) @ QAM-64 19 dBm (±2dB) @ QAM-16 20 dBm (±2dB) @ QPSK 20 dBm (±2dB) @ PBSK	
Receive Sensitivity (BER 1E10-6) In a 5MHz channel	-71 dBm (±2dB) @ QAM-64 -81 dBm (±2dB) @ QAM-16 -84 dBm (±2dB) @ QPSK -89 dBm (±2dB) @ BPSK	
Frequency Stability	±10 ppm	
Modulation	OFDM	
Range	Up to 8 Km.	
INTERFACES		
Ethernet	IEEE 802.3(10Base-T) / IEEE 802.3u(100Base-Tx)	
MANAGEABLILITY		
Management and setup	Web-based	
SNMP agents	V1, V2c	
Password Access control to configuration	2 levels	
Operating System	Windows 98/2000/NT/XP	
Network Architecture	PTP / PTMP	
Bandwidth management	Yes	
Other features	VLAN transparent	
SECURITY		
Data Encryption	64/128/152 bits encryption; WPA PSK, WPA2 (AES-128 bit	
Authentication	802.1x Auth.(EAP)	
Authorization	MAC Address Access and protocol Filter	
Other security	Disable broadcast SSID(suppress SSID); Wireless Isolation	
ANTENNA		
Frequency	4.9 GHz or 5X GHz Band	
Gain	12dBi	
Beamwidth	H 40° ; E 33°	
VSWR	≤ 2.0:1	
Front to back ratio	40 dB	
Impedance	50 Ω (ohms)	

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Small and Compact 4.9/5XGHz, OFDM outdoor Subscriber

5/10/20/40MHz Fractional Bandwidths, 100Mbps

ENVIRONMENT	
Operating Temperature	-40 ~ 55ºC
Storage Temperature	-40 ~ 70ºC
Humidity	95% non-condensing
Power Supply	AC 100-264 V, DC 24 V, 50-60Hz
PHYSICAL	
Dimension	215 (L) ×122 (W) × 65 (H)
Weight	750g; 1.65lb
Warranty	1 year
ADVANCE	
Base Station Scanning	RSSI
ORDERING INFORMATION	
12dBi Panel Antenna	EIRP=32dBm
External Antenna	output power=20dBm
23dBi Panel Antenna	EIRP=43dBm

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RADITEK

RADLINK MICRO
Outdoor Radio
5.15-5.85GHz
802.11A

5GHz OFDM Outdoor Radio

Variable Bandwidth 54Mbps

RADLINK-micro-5.15-5.85-46dBm-a9

RoHS COMPLIANT

Outdoor Radio
with 23 dBi
Integral Antenna

802.11a Wideband Access
Variable Bandwidth
Outdoor Radio

Applications

- P_T_P (Bridge or P-T-MP)
- Monitor remote system
- Sensor data capture in embedded systems
- Home automation & building control
- SCADA (supervisory control & data Acquisition)
- Dedicated ISP connections for high-reliability subscribers
- Enterprises or Institutions LAN

Order Examples: RADLINK-micro-5.15-5.85-46dBm-a9
Description: (Transceiver Micro, 5.15-5.85GHz, 46dBm EIRP, 23dBi, INTEGRAL Antenna)

The **RADLINK-micro-5.15-5.85-46dBm-a9** from Raditek Inc. is a cost-effective point-to-point / point-to-multipoint solution for unlicensed wireless deployment both for backhaul and "last mile" distribution system, working at 5.1~5.8GHz band, which let the system operator deploy the applications with the lower cost. The fractional bandwidth control feature allow more non-overlapping channel in practical deployment that provides better flexibility in deploying the network. High output power OFDM technology gives the ability for near-line of sight deployment for distance up to 20 Km, and the unique Regatta mode can speed up throughput up to 30%. Utilizes Time Division Duplex Technology allowing operation on a single channel. These products are primarily designed to provide standard Ethernet interface in a wireless link between distant sites.

Product Highlights

Effective spectrum utility

The **RADLINK--micro** uses advanced technology (OFDM/TDD) to narrow the channel into smaller Bandwidths more than other wireless radios. There are software selectable channel bandwidths of 5, 10 and 20MHz.

Regatta mode increase the performance up to 30%

Unique technology called regatta mode can enhance the performance of the radio up to 30% for every channels and bandwidth.

Versatile quality of service/ Time-division multiplexing technique

TDM tech can avoid the packets collision and send the packet more efficient and stable more improve the quality of voice and data transmission. The data race of the CPE radio can be set in fractional (nx64Kbps).

Near-line of Sight.

High output power OFDM technology and better receive sensitivity provides the ability of Near-line of Sight development.

Security

WEP provides WEP 64 / 128 / 152 bits, AES 128bit WPA-PSK, and WPA2 PSK as well as MAC access control to increase security. The regatta mode will provide additional security the system.

Antenna Alignment

The site survey function provides the RSSI (received signal strength indicator) info to indicate the status of received signal level and useful as antenna alignment tool.

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5GHz OFDM Outdoor Radio
54Mbps Variable Bandwidth

RADIO					
Standard	IEEE 802.11				
Frequency Band	5X GHz				
Channel Bandwidth	5.15-5.85GHz Customized to meet local Regulatory requirements				
RF Power/ Recvs Sensitivity/ Up to Distance *with 23dBi Integral ant.for 99.99% availability & Ideal condition Recvs Sensitivity at 10:8 BER	Xmit power & data Rate	CH BW/Mod	Rx Sensitivity*	Throughput*	Max Dist
	20dB (±2dB) @54Mbps	20MHz/64QAM	-70dB	28 Mbps	8Km
	22dB (±1dB) @36Mbps	20MHz/16QAM	-75 dB	27 Mbps	11 Km
	22dB (±1dB) @18Mbps	10MHz/ QPSK	-81 dB	11 Mbps	16 Km
	22dB (±1dB) @6Mbps	5MHz/BPSK	-87 dB	6 Mbps	20 Km
Frequency Stability	±10 ppm	Frequency Tolerance	±15 ppm		
Modulation	OFDM/DSSS				

INTERFACES			
RF (antenna) connector	Type N female		
Ethernet	IEEE 802.3(10Base-T) / IEEE 802.3u(100Base-Tx)		
MANAGEABLILITY			
Management and setup	Web-based		
SNMP agents	MIMII		
Protocol	TCP/IP, IPX/SPX, NetBEUI		
Operating System	Windows 98/2000/NT/XP		
Network Architecture	PTP / PTMP		
Data Bandwidth Control	Versatile QoS/ TDM; N64Kbps		
SECURITY			
Data Encryption	WEP 64/128/152 bits, AES-128 bit encryption;		
	WPA-PSK, WPA		
Authorization	MAC Address Access Filter		
Other feature	Disable broadcasting SSID Client Isolation (Layer 2 Isolation)		
ENVIRONMENT			
Operating Temperature	-30 ~ 60ºC		
Storage Temperature	-30 ~ 70ºC		
Humidity	95% non-condensing		
Power Supply	AC 100-264 V, DC 24 V, 50-60Hz		
PHYSICAL			
	External antenna	**23 dBi INTEGRAL antenna**	**20 dBi INTEGRAL antenna**
Power	23dBm(200mW)@16QAM	EIRP=46dBm@16QAM	
Dimension	259(L) ×250(W) × 75(H) mm 10.2 X 9.5X 2.9 inch	335(L) ×335(W) × 81(H) mm 13.2 X 13.2 X 3.2 inch	330(L) ×295(W) × 91(H) mm 13. X 11.6 X 3.6 inch
Weight	1.4Kg; 4.0 lb	2.9Kg; 6.4 lb	2.9Kg; 6.4 lb
Warranty	1 year		
ADVANCE			
Base Station Scanning	N RSSI		

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RADITEK

TELECOM
Point to Point Radio

RADFI plus series

Advanced 5.3, 5.4, 5.8 GHz Point to Point Radios.

RoHS COMPLIANT

LOW COST

Can be configured as an Access point, Point to Point bridge and CPE

Key Features

- 23 dBm RF Output
- Dual Ethernet Ports Tunneling Protocol Support (VPN, PPTP, RSA, etc.)
- Wireless Distribution System (WDS)
- Security (WEP, WPA, MAC Authorization)
- Status LEDs (in Access Point Mode)
- Alignment LEDs (in CPE Mode)
- Client NAT Router with QoS (Quality of Service)
- SNMP
- Includes: PoE, Boot-Cover, Mounting Kit (Dual Ethernet Boot Cover Optional)
- ODFM Technology
- Configurable in Point-to-Point, Access Point or Client Modes
- WiFi protected Access (WPA):
- Includes WEP security features
- Unit has visible LEDs to indicate WEP and WPA activation
- Visual signal strength for self contained, easy alignment

Back Panel

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RADFI plus series

Advanced 5.3, 5.4, 5.8 GHz Point to Point Radios.

Features					
Standard		802.11a			
Frequency Range		5170 MHz to 5805 MHz			
Radio Mode		Access Point / Point to Point / Customer Premise Equipment			
Communication Method		Half-Duplex			
Transmit Power		+23dBm			
Receiver Sensitivity		-76dBm @ 54Mbps			
Polarization		Horizontal or Vertical			
Antennas					
Model	**Type**	**Wind Load (N)**		**Beamwidth**	
		100 mph	**125 mph**	**Horizontal**	**Vertical**
RADFI-N	N-Connector	105	165	N/A	N/A
RADFI-24PI	24dBi Panel (internal)	182	285	8.7°	7.7°
RADFI-26GE	26dBi Grid (external)	149	232	6°	6°
RADFI-29RE	29dBi Dish & Radome (external)	350	547	6°	6°
RADFI-32RE	32dBi Dish & Radome (external)	787	1230	4°	4°
RADFI-15VE	15dBi Vertical Sector (external)	52	82	5°	120°
RADFI-17VE	17dBi Vertical Sector (external)	52	81	5°	60°
RADFI-16HE	16dBi Horizontal Sector (external)	105	164	90°	6°
Management					
Remote Configuration		Based on IP Address			
Device Management		Windows Utility, Web-Based Management, SNMP (MIB-II and 80211 mib compliant)			
Protocol Supported		TCP/IP			
Security		40 bits and 128 bits WEP encryption, Media Access Control address filter (MAC), WPA			
Ethernet Connector		10/100 base T (Water Tight RJ-45)			
Operating Temperature		-65°C to +60°C			
Warranty		1 Year Depot			
Dimensions					
RADFI-24PI		16" X 14-1/4" (radio only)			
OTHER MODELS ABOVE		13" X 10-1/8" (radio only)			
Power Supply					
Standard		AC Wall Plug Input: 120V 60Hz Output: 18V, 1000mA			
Optional		AC Wall Plug Input: 120V 60Hz Output: 24V, 1000mA			

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RADITEK

Telecom
Point to Point Radio

Point to Point Radio Family

RADTR-P2P-6-38-IP170MB-a9

RoHS COMPLIANT

PDH 4-16E1s/E3 and/or Ethernet up to 170Mbps

6-38GHz

Applications

Ethernet IP
Cellular Backhaul
TDM/PDH/IP Radio Networks
Trunking or Access Networks

Features & Benefits

• Cost-effective high-capacity PDH and Ethernet IDU for microwave and millimeter-wave radios
  • 170 Mbps throughput
• Optimized for efficient cellular backhaul and private network applications
• Flexible modem and multiplexer
  • Programmable Bandwidths and Symbol Rates
  • Programmable Modulation Modes (up to 256 QAM)
  • Programmable FEC
  • Mix PDH and Ethernet traffic
• Flexible technology allows arbitrary bandwidth occupancy from a single IDU via software command
• Built-in PDH and Ethernet line interfaces
  • PDH: 16xE1
  • Built-in 2-port Ethernet with port-based VLAN & QO features
• Optional hot stand-by operation
  • Protect 2 ODUs from single IDU
• Optional errorless receive switching for diversity
• Single cable interface to Outdoor Unit
• Extensive link management inter-face support
  • Web-based link management
  • SNMP monitoring and craft menu applications
• Low-power design -20 to -72 VDC
• Uses less than 58 Watts
• Field-upgradeable firmware
• 1U 19-inch indoor rack mount unit

- Low-cost point to point FDD/PDH digital microwave radio system for E1 payload.
- Support capacities up to 16 E1 lines or E3* (34 Mbps) and Wayside Ethernet Full Duplex capacity up to 8.4 Mbps.
- Frequency ranges from 6 to 38 GHz. It is available in Non-Protected (1+0) and protected (1+1) mode in HSB, MHSB, frequency diversity (FD), and space diversity (SD) configuration. It is also configurable for Repeater Operation. It can be mounted directly on properly equipped antenna, or it can be mounted separately and connected using standard UBR flange series waveguide.

Carrier–grade standards for performance, reliability, and quality.
• Flexible combinations of interfaces:
• IP interfaces: 2×10/100Base-T
• PDH interfaces: 4×E1 to 16×E1 or E3*
• Software-configurable:
• Capacity (8 Mbps to 170 Mbps)
• Modulation (QPSK, 8QAM, 16QAM, 32QAM, 64QAM 128QAM and 256QAM)
• Channel bandwidth (3.5, 7 MHz, 14 MHz, and 28 MHz)
• IP-PDH payload throughput-allocation
• 1+1 configuration with no additional switching hardware
• Hitless (errorless) Rx protection switching

WORLD HQ: 1702L Meridian Ave. Suite 127, San Jose, Ca 95125, U.S.A.
Tel: (408) 266-7404 **FAX: (408) 266-4483**
WEB: www.raditek.com **E-mail: sales@raditek.com**

Point to Point Radio Family

RADTR-IP-170MB-a9

- Hot-Standby, Space-Diversity, Frequency-Diversity, Tributary-Diversity
- Support of ring applications with East/West aggregate payload and local add/drop for E1s
- Auxiliary EOW voice and data channels
- SNMP management with integral routing
- Configuration backup via removable NVRAM
- Common 1RU IDU for all frequency bands, capacities, modulations and channel bandwidths
- Built-in BER Monitor
- Superior receiver sensitivity and system gain performance

Technical Information

The Indoor Unit is an extremely versatile high-capacity IDU solution. A single, low-cost design is approved for the CEPT market.It offers Flexible Signal Processing architecture allows complete flexibility in combining Telco circuit-switched data (up to 16 E1s) and packet data (Ethernet) within the selected transport capacity.

Additional line interfaces can be accommodated via an optional line card. The transport capacity can be provisioned and monitored via the web-based Link Manager or craft interface. SNMP monitoring is provided.

The TR-170MB provides significant flexibility in a low-cost mechanical design. It is feature-rich including SNMP, built-in ODU protection, auxiliary control and alarms, and a craft command-line interface.

Customer Network Data Interface Options

Physical
- Ethernet Full duplex 100BaseTX
- E3—Full duplex E3*
- 4, 8 or 16 xE1 Full Duplex E1

Connector
- Ethernet RJ-45
- BNC Female 75 Ohm
- NxE1 2xRJ-48C, HDCompliance
- Ethernet IEEE 802.3
- E3* ITU-T, Telcordia
- NxE1 ITU-T

Auxiliary Connections
- RS232 Data Service Channel
- Alarm Port Two Form C relay alarm outputs and two TTL inputs

Options
- Additional Modem/IF for single chassis protected or east/west mode
- Switching Fabric for drop-and-insert between TDM/IP traffic

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Point to Point Radio Family

RADTR-IP-170MB-a9

Programmable Modulation Modes	QPSK, 8PSK, 16QAM, 32QAM,64QAM, 128QAM, 256QAM		
Programmable Channel BWs	CEPT/ETSI – 3.5, 7, 14 and 28 MHz		
Programmable Symbol Rates	2 to ~24 M baud 2 Mbps – 170 Mbps		
Programmable Forward Error Correction	• Configurable Reed-Solomon coding • Configurable interleaving frame length		
End-to-end latency	≤ 1 ms		
Link quality metrics	Supports ITU-T G.826		
Spurious and Out-of-Band Emissions	ETSI compliant		
Interference Immunity	ETSI compliant		
	Modulation	Net bps	Eb/No (dB)
	QPSK	1.81	8.8 dB
Sensitivity Threshold for BER of 10-8 (RS-encoded with T=12 error-correcting)	8PSK	2.72	12.2 dB
	16QAM	3.62	12.3 dB
	32 QAM	4.53	14.4 dB
	64 QAM	5.44	16.9 dB
	128 QAM	6.34	19.4 dB
	256 QAM	7.24	21.9 dB
Line Interfaces	16xE1 with Ethernet, *optional 32xE1 or E3 — others per customer request		

Compliance – Summation

Outdoor Unit (ODU) Interface
Intermediate Freq. Range Tx: 350 MHz, Rx: 140 MHz
Emissions Bandwidths ETSI
ODU Command Interface ODU specific

Modem Capability
Capacity Options Throughput from 1 – 170 Mbps
Modulation Programmable: QPSK, 16-QAM, 32-QAM, 64-QAM, 128-QAM, or 256-QAM
FEC (Trellis Coded Modulation concatenated with Reed-Solomon Coding)

Network Management
Support SNMP
Connector 2x10/100BaseTX

Environmental
Temperature –5° to +45°C (IDU)
Relative Humidity 0 to 95%, non-condensing
Power 50-75 Watts (depending on Network Data Interface and ODU version)
ODU: –33° to +55°C, 100% Humidity

Payload Parameters
IP Interface 2x10/100BaseT, RJ-45 connector
Standards Compliance IEEE 802.3ab, 802.1Q
User Data Channel 64 kbps, V.11, DB-15 connector
Voice Order wire 19.2 kbps, Standard handset interface

Mechanical
Dimensions 1RU, ETSI compliant

Configuration
Radio Protection 1+0 or 1+1 Hot standby, 'hitless' receiver switching with either frequency or space diversity
Tributary Protection Single or Dual tributary
Dual IF and power redundant feed (1+1 configuration)

Mechanical/Environmental
Dimensions IDU: 1U, 444.5 mm W x 240 mm D x 44.5 mm H
Operating Temperature IDU: -5° to +45°C, ODU: -33° to +55°C (ODU)
Altitude 4500 meters
Humidity IDU: 95%non-condensing, ODU: 100% all-weather
Power Input nominal -48V DC (-40.5 to -57 VDC)
Power Consumption IDU+ODU: 1+0: M60 watts, 1+1 M115W
Power Connector 2-pin male
Cooling Natural Convection
IDU-ODU Interface Coaxial N-type connector
ODU Cable Belden 9913/RG-8, up to 300m*
Standards Compliance ETSI ETS 300 019
* longer with LMR400 or equivalent

Management
Protocol SNMPv1

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WEB: www.raditek.com E-mail: sales@raditek.com

Point to Point Radio Family

RADTR-IP-170MB-a9

RF/ODU Specifications

Description	Specifications - Typical													
Frequency Range	6L	6U	7	8	10	11	13	15	18	23	26	28	32	38
	Frequency Bands (GHz)													
	5.9 to 6.4	6.4 to 7.1	7.1 to 7.9	7.9 to 8.5	10.0 to 10.685	10.7 to 11.7	12.7 to 13.3	14.4 to 15.4	17.7 to 19.7	21.2 to 23.6	24.2 to 26.5	27.5 to 29.5	31.8 to 33.4	37.0 to 40.0
T/R Spacing (MHz)	240, 252.04	340	154, 160, 161, 168, 196, 245	119, 126, 151.614, 208, 266, 311.32	65, 91, 143.5, 230, 350	490, 500, 530	266	315, 420, 475, 490, 640, 644, 728	1010, 1560	1008, 1200, 1232	TBA	TBA	TBA	TBA
Transmitter														
Type	Dual Conversion – Transmitter Power by Modulation Type													
Xmit Power (dBm)	30.0	30.0	27.0	27.0	27.0	27.0	20.0	20.0	19.0	19.0	19.0	N/A	N/A	19.0
Xmtr Attn Step (dB)	1	1	1	1	1	1	1	1	1	1	1	N/A	N/A	1
Xmit Pwr Range (dBm)	-10+27	-10+27	-10+27	-10+27	-10+27	-10+27	-1-+20	-10+20	-10+19	-10+19	-10+19	N/A	N/A	-10+19
TX Power Accuracy at Maximum Command(s)	± 1.5 dB (max)													
Slew Rate	7.85 kHz/us													
	Group Delay over 48MHz													
Linear	< 5.0 ns													
Parabolic	< 7.0 ns													
Channel Flatness	2 dB, within ±43% of channel BW referenced from center frequency													
TX Spectrum Mask	Meets ESTI Requirements													
Tx Power Accuracy over Command Range (Max)	± 2.0 dB (max)													
Output Power Muted	< -50 dBm													
Frequency Accuracy	± 7 ppm maximum, includes temp variation and aging, ± 8 ppm for 8GHz TR3l 1.32 and TRI51 .614, ± 9 ppm for 6GHzTR252.04													
Synthesizer Step Size	250 (except for 8GHz TR311.32:529.464 and TR151.614:530.091, 6GHz TR252.04:352.976)													
Modulation	QPSK, 16QAM, 32QAM, 64QAM													
Output Return Loss	> 10 dB											> 6 dB (> 10 Opt.)		
Receiver														
Receiver Noise Figure @ -65 dBm RSL (dB)	7.0	7.0	7.0	7.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0	N/A	8.0	8.0
Synthesizer Step Size (KHz)	250 (except for 8 GHz TR 311.32 : 529.464 and TR 151.614 : 530.091, 6 GHz TR 252.04 : 352.976)													
Typical High RSL* (dBm)	-20 (QPSK, 16/32 QAM)													
Typical Thresholds (-dBm)*	QPSK ~92, 16 QAM ~85, 32 QAM ~78, 64 QAM ~75, 128 QAM ~69, 256 QAM ~63													
CW Interferences*	Meets ETSI Requirements													
Receive Signal Level Indicator (V_{BNC})	4.5 (typical) @ -20 dBm RSL, 0.1 (typical) @ -90 dBm RSL, monotonic													
RSL versus V_{BNC}	RSL (dBm) = 15.77 V_{BNC} -91.58													
RSL Accuracy** [@V_{BNC}] (dB) (Max)	± 3.0, -70 ≤ RSL ≤ -30 dBm													
RSL Accuracy** (dB)	±2 -70 dBm to -30 dBm, ±3 -90 dBm to -20 dBm over temperature and frequency													
Input Return Loss (dB)	≥ 10											≥ 6 (≥ 10 optional)		
Group Delay	Total over 12 MHz (Narrow)					Linear over 28 MHz (Wide)						Parabolic over 28 MHz (Wide)		
Typical (ns)	100					10						10		

WORLD HQ: 1702L Meridian Ave. Suite 127, San Jose, Ca 95125, U.S.A.
Tel: (408) 266-7404 FAX: (408) 266-4483
WEB: www.raditek.com E-mail: sales@raditek.com

Point to Point Radio Family

RADTR-IP-170MB-a9

ODU Interface														
Connector Type	N Type													
Cable Impedance	50 Ohms													
TX IF Frequency	350 MHz													
RX IF Frequency	140 MHz													
ODU's Primary Power														
Power Dissipation	33.0 to 72.0 VDC, either polarity: 52 (Nom @ 48), 58 (Max @ 33) Watts					19.2 to 72.0 VDC, either polarity: 40 (Nom @ 48), 48 (Max @ 19.2)								
Protection Circuit	Power and protected by IDU (inrush current – ETS 300 132-2)													
CW Rejection														
CW Rejection to adjacent channels	56 MHz (Wide) ± 56 MHz >9 dB ± 112 MHz >20 dB					14 MHz (Narrow) ± 14 MHz >9 dB ± 28 MHz >20 dB								
Environmental, Etc.														
Operating	ETS 300 019-2-4 Class 4M5 to (-33 +55°C)													
Cold Start Conditions	Power Supply Operational @ -45°C, ODU will transmit, no guarantee of quality of service.													
Storage	ETS 300-019-2-1													
Transport	ETS 300-019.2-2													
Mechanical	Weight (3.7 kg), Size (107mm D x 225mm H x 225mm W)													
Finish	(Corro-Coat PE 71-190Z (Powder Coat), Gloss White													
Ground Lug	M5 x .8 x 9.5 long													
Antenna Interface (WR and/or Circ. Inch)	***	***	1.025	1.025	75 or .740	75 or .740	75 or .620	62 or .560	42 or .455	42 or .375	42 or .370	N/A	28 or .250	.219

* Compliance depends on Customer's unique MODEM attributes.
** An additional offset in accuracy should be expected for customer modulation bandwidths different than those used for receiver calibration.
*** Dielectrically loaded rectangular waveguide interface (non-standard). Requires external waveguide transition to WR137.
Contact Factory for Test Conditions and Specification Changes

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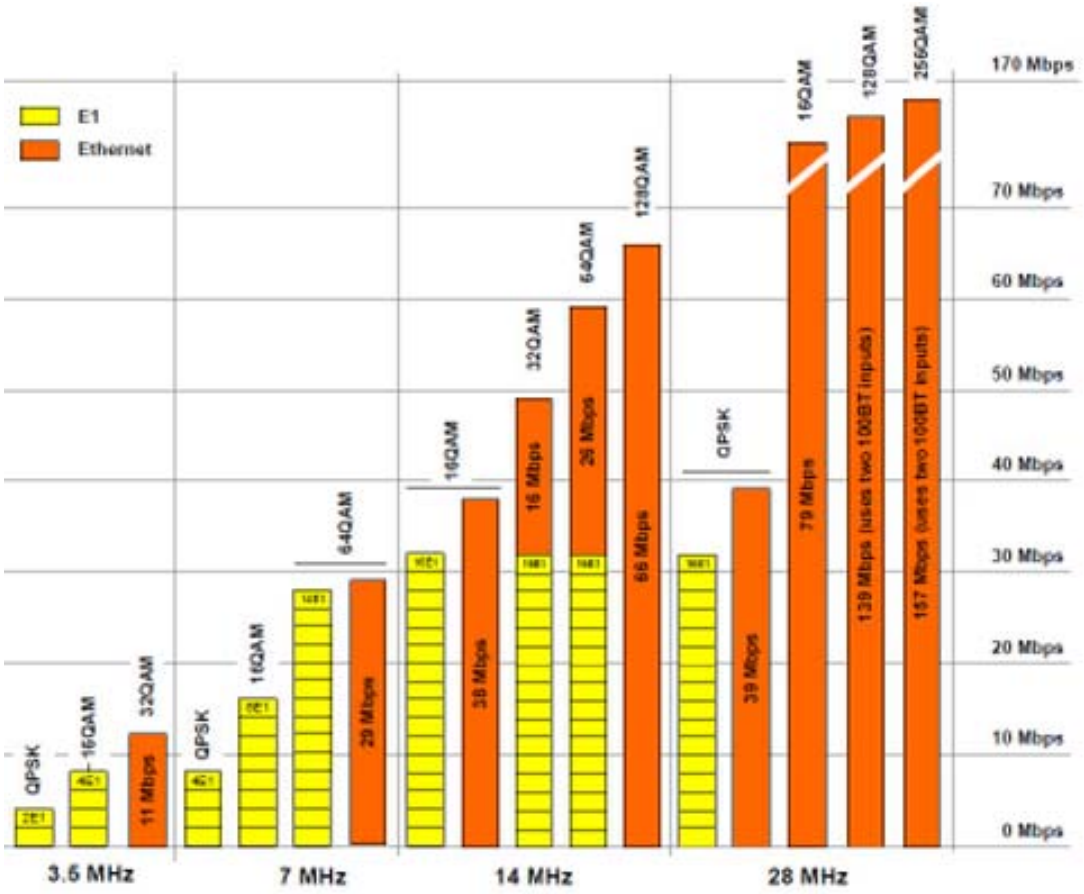

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RADITEK

Telecom
Point to Point Radio

Point to Point Radio Family 6-38GHZ

RoHS COMPLIANT

RADTR-6-38-IP300-600MB-a9

Over 300/600* Mbps Ethernet and/or TDM with SDH

(*Over 600 Mbps with either aggregate capacity or the use of XPIC Wireless without Boundaries)

Features & Benefits		
• Licensed Frequency Bands • Point to Point Link • 4, 8, 16, 28, 32, 54, 63 El Interface options • 1 or 2 x STM-1 Option • Low Latency Ethernet over 300/600* Mbps • Adaptive Modulation for increased availability• • Jumbo Frames up to 9600 Bytes • Field upgradeable by Plug-in Assembly • RF, IF, Digital Loop back Capability • Built-in BER Monitor • Delay Setting for Hitless (errorless) switching • Wide Operating Temperature Range • Wide DC Power Input Range • Low Power Consumption • SNMP Management • Up to 300 Meter separation between IDU and ODU • Small attractive profile IP1000c Series Microwave Radio System Indoor Unit Outdoor Unit Outdoor Unit +Antenna ETSI Over 300/600* Mbps Ethernet and/or TDM with SDH		

Overview

This full duplex (FD) point to point IDU and ODU microwave full duplex radio system is a flexible, low-cost, feature-rich solution for microwave radios in the global telecommunications market.

This Ethernet radio system is a full-featured compact split mount digital radio offering full duplex committed data rates up to 311 Mbps in IP based networks. The radio supports software configurable capacity selection between 100 and 311 Mbps in either 28 or 56 MHz channel bandwidths. Utilizing proprietary advanced ASIC modem technology using advanced Forward Error Correction (FEC)
Trellis Coded Modulation (TCM) provides superior performance and reliability at a low cost. Trellis Coded Modulation provides significant performance improvements to system gain and interference immunity translating in to smaller antennas and increase operating range.

Additional features are field replaceable common payload interfaces, built-in upgradeability to 1+1 hardware protection, engineering voice orderwire, auxiliary data channel, and optional element management software.

It is ideally suited for backhaul networks, WiMAX operators, ISPs, next generation mobile, and enterprise/campus networks requiring a low cost highly competitive Gigabit IP scalable radio system that exceeds carrier-grade standards for reliability, quality, and environmental compliance.

The IDU incorporates a unique, single-chip ASIC modem featuring integrated FEC with selectable coding rates. Modulation and data throughput rates are QPSK to 256 QAM and 11-311 Mbps respectively. Standard interfaces include 16x E1 and 100/1000BaseTX. Plug-in options allow for STM-1, or 2xSTM-1.

• incorporates digital filtering for the various data bandwidths.
• is designed to support protected and east/west repeater configurations in a single 1RU chassis.
• offers volume capacity and proven performance for applications worldwide
• represents a new generation of PDH IDUs at the most competitive prices in the market today.
• is designed to simplify product logistics and overall product life cycle costs.
• the upgradeable architecture reduces capital and operating expenditures for field installation, maintenance, training, and spares while maximizing product reliability.
• includes advanced features such as support for ring/consecutive point configurations. This creates a self-healing redundancy that is more reliable than traditional point-to-point networks.

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Tel: (408) 266-7404 FAX: (408) 266-4483
WEB: www.raditek.com E-mail: sales@raditek.com

Point to Point Radio Family 6-38GHZ

RADTR-IP-300-600MB-a9

Key Feature		Units

- 1RU Standalone
- Flexible Tx and Rx IF to ODU
- Standard Interfaces
- STM-1Option
- Supports Customized NMS, SNMP
- Adaptive Modulation Option

Benefits

- Low Cost Means More cost effective
- Quick to Deploy
- Network Option Cards for Easy Upgrade and Expansion
- Easily Deployed and Activated

Applications

- Ethernet IP
- PDH or STM-1 Radio Networks
- Cellular Backhaul
- Trunking or Access Networks

Services available

- Technical Support
- Installation and Setup
- Maintenance
- Application Support
- Hardware Support
- Extended Warranty

Technical Information

The RADTR IP300-600 MB-a9 is a low-cost point to point FDD/PDH, STM-1 and IP digital microwave radio system for Ethernet or EI payload.
-This Series products support capacities over 300/600* Mbps Ethernet + E1s (any part of which can be allocated to EI capacity up to 63xE1s).
-It operates in frequency ranges from 6 to 38 GHz. It is available in Non-Protected (1+0) and protected (1+1) mode in HSB, MHSB, frequency diversity (FD), and Space diversity (SD) configuration. It is also configurable for Repeater Operation. It can be mounted directly on properly equipped antennas using our snap-on mount, or it can be mounted separately and connected using standard UBR flange series waveguide.
-It meets carrier—grade standards for performance, reliability, and quality

Customer Network Data Interface Options

Physical
- Ethernet Full duplex 100BaseTX
- STS-1 Full duplex STS-1
- STM-1 Full duplex STM-1, Single Mode 1310 nm
- SONET Full duplex
- NxE1 Full Duplex E1

Connector
- Ethernet RJ-45
- STS-1 BNC Female 75 Ohm
- STM-1 BNC
- SONET Type fiber SC
- NxE1 2xRJ-48C, HD60

Compliance
- Ethernet IEEE 802.3
- STS-1 ITU-T, Telcordia
- STM-1 ITU-T
- SONET Telcordia
- NxE1 ITU-T

Auxiliary Connections
- Voice Service Channel 6 Wire, PTT Handset
- Data Service Channel 64kbps
- Alarm Port Two Form C relay alarm outputs

Options
- Additional Modem/IF for single chassis protected or east/west mode
- Switching Fabric for drop-and-insert between TDM/IP traffic
- E1 High Density Cable

Initial System Requirements

Network Interface
Standard Configuration
Scalable Ethernet
16x E1 Wayside or Traffic
In-band Control Channel
10/100/1000 BaseTx and 1000 BaseSx Ethernet

Options
Additional 16x E1
1 or 2xSTM-1
Multi-channel STM-1

Network Processor
Standard Configuration
Flexible Platform Processor
OAM&P
Security
Built-in Web Server

Modem
Standard Configuration
Flexible modulation: QPSK -256QAM
Selectable Error -Correction Coding
Equalization
Pre-distortion Built-in Link Support:
BER* future

Option
Adaptive Modulation
(choose any 3 constellations)
Second plug-in modem for protected or east/west mode

Intermediate Frequency
Standard Configuration
Transmit: 350 MHz
Receive: 140 MHz

Options
Variable Digital IF for various bandwidths
Second IF for plug-in modem for protected or east/west mode

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Point to Point Radio Family 6-38GHZ

RADTR-IP-300-600MB-a9

Description														
Specifications - Typical														
Frequency Range	6L	6U	7	8	10	11	13	15	18	23	26	28	32	38
Frequency Bands (GHz)	5.9 to6.4	6.4 to7.1	7.1 to7.9	7.9 to8.5	10 to 10.685	10.7 to 11.7	12.7 to 13.3	14.4 to 15.4	17.7 to 19.7	21.2 to 23.6	24.2 to 26.5	27.5 to 29.5	31.8 to 33.4	37 to 40.0
T/R Spacing (MHz)	240, 252.04	340	154,160, 161,168, 196,245	119,126, 151.614, 208,266, 311.32	65, 91, 143.5, 230,350	490, 500, 530	266	315,420,475 490,640,644, 728	1010, 1560	1008, 1200, 1232	TBA	TBA	TBA	TBA
Transmitter														
Type	Dual Conversion – Transmitter Power by Modulation Type													
Xmit Pwr (dBm) Max. @ QPSK	30.0	30.0	30.0	30.0	27.0	28.0	26.0	26.0	25.0	25.0	25.0	25.0	23.0	23.0
Xmtr Attn Step(dB)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Xmit Pwr Range (dBm)	-10+30	-10+30	-10+30	-10+30	-10+27	-10+28	-1-+26	-10-+26	-10-+25	-10-+25	-10-+25	-10-+25	-10-+23	-10-+23
Xmit Power at 128 QAM	24.0	24.0	24.0	24.0	21.0	21.0	18.0	18.0	17.0	17.0	17.0	17.0	16.0	16.0
TX Power Accuracy at Maximum Command(s)	± 1.5 dB (max)													
Slew Rate	7.85 kHz/us													
	Group Delay over 48MHz													
Linear	< 5.0 ns													
Parabolic	< 7.0 ns													
Channel Flatness	2 dB, within ±43% of channel BW referenced from center frequency													
TX Spectrum Mask														
Tx Power Accuracy over Command Range (max)	± 2.0 dB (max)													
Output Power Muted	< -50 dBm													
Frequency Accuracy	± 7 ppm maximum, includes temp variation and aging, ± 8 ppm for 8GHz TR3I 1.32 and TRI51 .614, ± 9 ppm for 6GHzTR252.04													
Synthesizer Step Size	250 (except for 8GHz TR311.32:529.464 and TR151.614:530.091, 6GHz TR252.04:352.976)													
Modulation	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM													
Output Return Loss	> 10 dB											> 6 dB (> 10 Opt.)		
Receiver														
Receiver Noise Figure @ -65 dBm RSL (dB)	7.0	7.0	7.0	7.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0	N/A	8.0	8.0
Synthesizer Step Size (KHz)	250 (except for 8 GHz TR 311.32 : 529.464 and TR 151.614 : 530.091, 6 GHz TR 252.04 : 352.976)													
Typical High RSL* (dBm)	-20 (QPSK, 16/32 QAM)													
Typical Threshold*	QPSK ~92, 16 QAM ~85, 32 QAM ~78, 64 QAM ~75, 128 QAM ~69, 256 QAM ~63													
CW Interferences*	Meets ETSI Requirements													
Receive Signal Level Indicator (VBNC)	4.5 (typical) @ -20 dBm RSL, 0.1 (typical) @ -90 dBm RSL, monotonic													
RSL versus VBNC	RSL (dBm) = 15.77 VBNC -91.58													
RSL Accuracy** [@VBNC] (dB) (Max)	± 3.0, -70 £ RSL £ -30 dBm													
RSL Accuracy** (dB)	±2 -70 dBm to -30 dBm, ±3 -90 dBm to -20 dBm over temperature and frequency													
Input Return Loss (dB)	≥10											≥ 6 (≥10 optional)		
Group Delay	Total over 12 MHz (Narrow)				Linear over 28 MHz (Wide)							Parabolic over 28 MHz (Wide)		
Typical (ns)	100				10							10		
ODU Interface														
Connector Type	N Type													
Cable Impedance	50 Ω (ohms)													
TX IF Frequency	350 MHz													
RX IF Frequency	140 MHz													
Primary Power														
Power Dissipation	33.0 to 72.0 VDC, either polarity: 52 (Nom @ 48), 58 (Max @ 33) Watts								19.2 to 72.0 VDC, either polarity: 40 (Nom @ 48), 48 (Max @ 19.2)					
Protection Circuit	Power and protected by IDU (inrush current – ETS 300 132-2)													
CW Rejection														
CW Rejection to adjacent channels	56 MHz (Wide) ± 56 MHz >9 dB ± 112 MHz >20 dB								14 MHz (Narrow) ± 14 MHz >9 dB ± 28 MHz >20 dB					

WORLD HQ: 1702L Meridian Ave. Suite 127, San Jose, Ca 95125, U.S.A.

Tel: (408) 266-7404 FAX: (408) 266-4483

WEB: www.raditek.com E-mail: sales@raditek.com

Point to Point Radio Family 6-38GHZ

RADTR-IP-300-600MB-a9

Environmental, Etc.														
Operating	ETS 300 019-2-4 Class 4M5 to (-33 +55°C)													
Cold Start Conditions	Power Supply Operational @ -45°C, ODU will transmit, no guarantee of quality of service.													
Storage : ETS 300-019.2-1	**Transport**: ETS 300-019.2-2													
Mechanical	Weight (3.7 kg), Size (107mm D x 225mm H x 225mm W)													
Finish	(Corro-Coat PE 71-190Z (Powder Coat), Gloss White													
Ground Lug	M5 x .8 x 9.5 long													
Antenna Interface (WR and/or Circ. Inch)	***	***	1025	1025	75 or .740	75 or .740	75 or .620	62 or .560	42 or .455	42 or .375	42 or .370	N/A	28 or .250	.219

Please Note: * Compliance depends on Customer's unique MODEM attributes.
** An additional offset in accuracy should be expected for customer modulation bandwidths different than those used for receiver calibration.

Outdoor Unit (ODU) Interface -Intermediate Freq. Range Tx: 350 MHz, Rx: 140 MHz -Emissions Bandwidths ETSI, FCC -ODU Command Interface ODU specific	**Modem Capability** *Capacity Options Throughput over 300 Mbps. XPIC Option provides over 600 Mbps—link is 600/1200 Mbps aggregate -Modulation Programmable: QPSK, 16-QAM,, 32-QAM, 64-QAM, 128-QAM, 256-QAM FEC (Trellis Coded Modulation concatenated with Reed-Solomon Coding)	**Network Management** -Support SNMP -Connector 10/100BaseTX
Environmental -Temperature -5° to +55°C -Relative Humidity 0 to 95%, non-condensing -Power 50-75 Watts (depending on Network -Data Interface and ODU type)	**Payload Parameters** -IP Interface 4x100/1000BaseT, RJ-45 connector, 1x1000BaseSC SFP -Standards Compliance IEEE 802.3ab, 802.1Q -User Data Channel 64 kbps, V.11, DB-15 connector -Voice Orderwire 64 kbps, Standard handset interface	**Mechanical** -Dimensions 1RU, ETSI compliant
Mechanical/Environmental -Dimensions IDU: 1U, 444.5 mm W x 240 mm D x 44.5 mm H -ODU: 267 mm Diameter x 89 mm H Weight IDU: 4.0 Kg, ODU: 4.7 Kg -Operating Temperature IDU: -5° to +45°C,ODU: -33° to +55°C (ODU) -Altitude 4500 meters -Humidity IDU: 95%non-condensing, ODU: 100% all-weather -Power Input -48V DC (-40.5 to -57 VDC) -Power Consumption ODU: 1+0: □65 watts, 1+1 □130 watts -Power Connector 2-pin male -Cooling Natural Convection -IDU-ODU Interface Coaxial N-type connector -ODU Cable Belden 9913/RG-8, up to 300m* Standards Compliance ETSI ETS 300 019 * longer with LMR400 or equivalent	**Configuration** -Radio Protection 1+0 or 1+1 Hot standby, 'hitless' receiver switching with either frequency or space diversity -Tributary Protection Single or Dual tributary -Power Protection Dual inputs with redundant feed (1+1 configuration) -Voice EOW Interface Standard handset interface -User Channel Interface V.11 or G.703, DB-15 connector	**Management** -Protocol SNMPv1 -Local Access Ethernet 10Base-T, RJ-45 -Remote IDU Access Out-of-band integrated routing over link and interconnected LANs -Craft Interface VT-100, via local craft RS-232/DB-9 port or remote via telnet session -External Alarms 4 inputs and 3 Form-C outputs, DB-25 connector -Standards Compliance ETSI EN 302 217-2, ETSI EN 301 489, ETSI EN 300 132-2, IEC EN 60950

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Tel: (408) 266-7404 **FAX: (408) 266-4483**
WEB: www.raditek.com **E-mail: sales@raditek.com**

RADITEK

TELECOM
Point to Point Radio

Point to Point Radio Family
RADTR-P2P-HC-6-38-E1/T1-a9

RoHS COMPLIANT

Digital Microwave Radio for High-Capacity, Long Haul Transmission

These and other key features, give network planners, selectivity and flexibility, when building their high capacity transport and access networks.

Features:

A low-cost, point to point, FDD/PDH digital microwave radio system for:

- **STM-1, Ethernet and E1 / T1 payload.**
- **STM-1, Ethernet and E1 / T1 payload.**
- **Supports capacities to 300 Mbps, including:**
- **Ethernet, any part of which can be allocated up to 32xE1/T1.**
- **Available in discreet licensed frequency bands from 6 to 38 GHz.**
- **Available in Non-Protected (1+0) and protected (1+1) mode in HSB, MHSB, frequency diversity (FD), and space diversity (SD) configuration. Configurable for Repeater Operation**
- **Mounts directly on many standard antennas using standard UBR flange series waveguide.**
- **Meets carrier-class standards for performance reliability and quality**

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Point to Point Radio Family

code-a9

RADTR-P2P-HC-6-38-E1/T1-a9

RADIO (ODU)									
Frequency		6 GHz	7/8 GHz 1	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	38 GHz
Band (GHz)		5.9-6.4/ 5.4-7.1	7.72-8.5 7.1-7.9	10.7-11.7	12.7-12.3	14.5-15.4	17.7-19.7	22.0-23.6	37.0-40.0
T-R Space (MHz)		154/161/ 196/245	119/126/151/ 266/311.32/ 614/154/161/ 196/245	490/530	266	420/490 728	1010/1092.5	1008/1200 1232	700, 1260
T-T Space (MHz)	ETSI	7, 14, 28, 56	7, 14, 28, 56	7, 14, 28, 56	7, 14, 28, 56	7, 14, 28, 56	7, 14, 28, 56	7, 14, 28, 56	7, 14, 28, 56
	FCC	30, 40, 50	30, 40, 50	30, 40, 50	30, 40, 50	30, 40, 50	30, 40, 50	30, 40, 50	30, 40, 50
TX Power dBm QPSK **Std/High Pwr.**		30 HP	27/30	26/28	26	26	25.5	24/25	22/23
Std/High Pwr. dBm (dBm)16/32QAM		28 HP	22.5/28	21.5/26	21.5/23	21.5/23	21.5/23	20.5/22	17.5/20
Std/High Pwr. dBm 64/128QAM		24 HP	16.5/24	15.5/21	15.5/18	15.5/18	15.5/18	14.5/17	11.5/16
Receiver Threshold 10-6 BER (dBm)	QPSK	-84	-84	-84	-84	-84	-84	-84	-84
	16/32 QAM	-72	-72	-72	-72	-72	-72	-72	-72
	64/128 QAM	-69/-65	-69/-65	-69/-65	-69/-65	-69/-65	-69/-65	-69/-65	-69/-65

Modulation	QCPSK, 16QAM, 32QAM, 64QAM, 128QAM - User Selectable		
Freq Stability	+/- 5ppm	Frequency Tolerance	+/- 10 ppm
Max Input Pwr	+0 dBm		
IDU to ODU Cable	LMR-400 or Equivalent (50 Ohm RG8 Type)		
IDU to ODU Separation	300 Meter (1000 ft) Single LMR-400 Coaxial Cable		
STD Compliance	ITU, ETSI, FCC		

Multiplexer (IDU)				
Capacity	4/8xE1/T1	4-32 x E1/T1	4-48xE1/T1	STM-1
Ethernet Data Rate	20 Mbps	50 Mbps	100Mbps	155 Mbps
Number of Ethernet Ports	2	2	2	2
Impedance	E1 = 75 Ohm std 120 Ohm optional	T1 (DS1) 100 Ohm Balanced		Ethernet = 100 Ohm Balanced
Line Code	E1 = HDB3	T1 (DS1) = AMI or B8ZS		Ethernet = 10 / 100 Base T
Network Management	WEB, SNMP or Telnet			
Status Indicator	LED	Power, Local, Remote-East, Remote West, multiple Alarms & Status		
Alarms	2 Form C electrical interfaces, 2 TTL alarm outputs, 4 TTL alarm inputs			

Power Supply	
Input Voltage	40 – 60VDC, any polarity
Power Consumption	<30 Watts IDU (1+1), <40W ODU (1+0)

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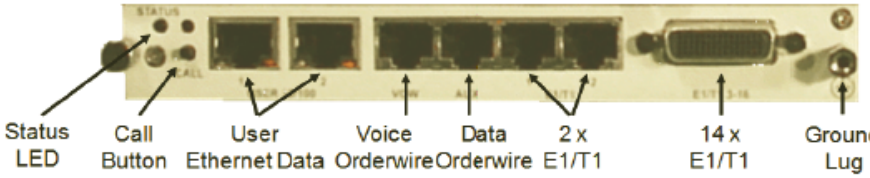
Point to Point Radio Family

code-a9

RADTR-P2P-HC-6-38-E1/T1-a9

Physical				
Dimensions (inches)	ODU	10.5 (D) x 3.5 (H)	IDU	17.5(W) x9.4(D) x 1.75(H)
Weight (lbs.)	ODU	10.7	IDU	7.5 (1+1)
Environmental				
Operating Temperature	ODU	-33C to +55C	IDU	-5 C to +55 C
Storage Temperature	ODU	ETS 300-019-2-1	IDU	-40 C to +70 C
Humidity	ODU	100% condensing	IDU	95% non-condensing
Warranty				
Standard	One (1) year from factory ship date			
All specifications subject to change without notice				

Standard I/O Module



- User Payload Data: Ethernet
  - 100Base-TX RJ-45 modular local port connectors
  - Port 1: Fast Ethernet interface
  - Port 2: Used for consecutive point networks
- Voice Orderwire
  - RJ-45 modular port connector
  - Provides a PTP connection via a PTT handset and buzzer.
- Call button
  - Initiates a Voice Orderwire ring
  - Only SDIDU's™ link partner receives ring
- Data Orderwire
  - RJ-45 modular port connector
  - RS-422 up to 64 kbps
  - RS-232 up to 19.2kbps
- T1/E1 Channels
  - 2 T1/E1 (RJ-48C) interface connections
  - Single Molex 60-pin connector containing 14 T1/E1 connections
  - T1: 100 Ω Balanced
  - E1: 120 Ω Balanced
  - 223 x E1/T1 Crosspoint Switch
- Ground Lug
  - Ground connection for SDIDU™
  - One of two possible ground locations

Bandwidth/ Modulation	30 MHz	40 MHz	50 MHz	56 MHz
QPSK	30 Mbps	45 Mbps	55 Mbps	60 Mbps
16-QAM	80 Mbps	100 Mbps	130 Mbps	160 Mbps
32-QAM	100 Mbps	130 Mbps	160 Mbps	200 Mbps
64-QAM	125 Mbps	160 Mbps	200 Mbps	250 Mbps
128-QAM	150 Mbps	200 Mbps	250 Mbps	300 Mbps

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RADITEK

TELECOM
WiMAX

Why contact RADITEK inc For WiMAX?

RADITEK inc offers a complete **LOW COST** family of 802.16d (802.16-2004) WiMAX Products for the 3.5GHz and 5.8GHz spectrum including indoor and outdoor Subscriber Units, pico Base Stations as a turnkey solution, and mini PCI cards for system developers.

WiMAX is designed for "last mile" point to multi-point solutions. Like Wi-Fi, it can support multi-megabit throughput. However, WiMAX has an inherent Quality of Service protocol and is designed to operate over longer distances compared to Wi-Fi. WiMAX can operate in the unlicensed 5.1-5.8GHz spectrum similar to Wi-Fi and it can also operate in the 3.3-3.8GHz licensed spectrum. The 3GHz licensed spectrum allows for higher data rates and can transmit over longer distances since there is no interference from competing services.

WiMAX 802.16d requires a base station (BS) and subscriber units (CPE). The base station manages all subscriber units and the base station determines when the subscriber units can transmit or receive based on a Time Division Duplex (TDD) algorithm that assigns guaranteed time slots for each subscriber unit. This enables Quality of Service (QoS) mechanisms that can guarantee levels of service (guaranteed bandwidth or priority).

Outdoor subscriber unit

Indoor subscriber unit

Pico-Base station solution

3.5 and 5.8 GHz 802.16d WiMAX Solutions

Applications for Point to Multipoint to 20 miles include:

- Last mile broadband (SOHO, residences and up)
- Back haul for Wi-Fi hotspots, MESH nodes
- Back haul for other telecom applications

PLUS:

1. Lowest cost solution in it's class
2. Easy installation and maintenance
3. Rear alignment and signal strength display (left)
4. POE(Power of Ethernet)

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Subscriber Unit

SPECIFICATIONS

RADIO		
Product Operation	LOS, NLOS Point-to-Multipoint Subscriber Unit	
RF Band	3.3 to 3.8 GHz[1]	
Channel Bandwidths	3.5 MHz	
Frequency Resolution	250 kHz steps	
Spectral Efficiency	5 bits/sec/Hz (64-QAM unencoded)	
Receive Sensitivity typical for BER <10^{-6}	Burst Type	3.5MHz
	BPSK ½	-95.0
	QPSK ½	-93.0
	QPSK ¾	-89.5
	16-QAM ½	-86.5
	16-QAM ¾	-83.0
	64-QAM ⅔	-79.0
	64-QAM ¾	-77.0
Modulation	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)	
Radio Access Method	TDD	
RF Output Power	+20 dBm max	
RF Output Dynamic Range	30 dB	
Antenna	Integrated 17dBi flat panel antenna	
[1]Not all channels approved for use in all areas		
DATA COMMUNICATIONS		
RF	IEEE 802.16-2004	
Data	IEEE 802.3 CSMA/CD	
VLAN support	IEEE 802.1Q	
Error Control Coding	Concatenated Reed-Solomon Convolutional Code	
Polarization	Horizontal or Vertical	
Throughput	Up to 35 Mbps[2]	
[2]Raw data in BER test mode		
MANAGEMENT		
LED Display	signal strength / power	
Network Protocol	TCP/IP	
Encryption Protocol	Supports popular cryptography algorithms such as: 56-bit DES, 3DES 28-bit, AES 128-bit, RSA 1024-bit	
Subscriber Unit monitoring	SNMP, CLI, Web-based GUI, Telnet, SSH	
Subscriber Unit management	CLI, Web-based GUI	
Ethernet Connector	10/100Base-T (water tight RJ-45)	
	Designed to exceed IP67/NEMA 6	
PHYSICAL AND ENVIRONMENTAL		
Dimensions	13" x 10-1/8" x 2" (330mm x 257mm x 51mm)	
Weight	3lbs (1.35kg)	
Operating Temperature	-49° F to 158°F (-45°C to +70°C)	
Power requirement	IEEE 802.3 (PoE) and Auxillary POE	
STANDARDS AND REGULATIONS		
EMC: EN 301 489-1, EN 301 489-4,EN 55022/CISPR 22	RF: EN 301 021, EN 301 753, INDUSTRY CANADA:RSS-192	
WARRANTY	3 years depot, repair or replace	

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RADITEK

WiMAX
ISU

Indoor Subscriber Unit Carrier Class, Point to Multi-Point

Combines 802.11a MESH networking with 802.11b/g access points for Wi-Fi enabled devices.

- Full Range of Base Stations and Subscriber
- products, suitable for Indoor and Outdoor Units.
- Suitable for Enterprise, SOHO
- and residential applications.
- Adheres to IEEE 902.16-2004 standard
- Remote upgradeable
- Advanced management system

The RWiMAX-3.5-ISU-P2MP-j8 is a 3.5GHz Indoor Subscriber Unit based on our family of low cost subscriber units based on the IEEE802.16-2004 standard.

The family of indoor and outdoor subscriber units are designed to ensure seamless interoperability with all WiMAX Certified TM base stations.

All subscriber units are designed for the best price/performance.

The ease of installation of the unit ensures low installation costs by personnel with little or no training.

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Indoor Subscriber Unit Carrier Class, Point to Multi-Point

Combines 802.11a MESH networking with 802.11b/g access points for Wi-Fi enabled devices.

SPECIFICATIONS

RADIO			
Product Operation	LOS, NLOS Point-to-Multipoint Subscriber Unit		
RF Band	3.3 to 3.8 GHz[1]		
Channel Bandwidths	3.5 MHz, 7MHz selectable		
Frequency Resolution	250 kHz steps		
Spectral Efficiency	5 bits/sec/Hz (64-QAM unencoded)		
Receive Sensitivity typical for BER <10^{-6}	Burst Type	3.5MHz	7MHz
	BPSK ½	-94.0	-91
	QPSK ½	-91.0	-90
	QPSK ¾	-90.0	-87
	16-QAM ½	-87.0	-84
	16-QAM ¾	-84.0	-81
	64-QAM ⅔	-80.0	-77
	64-QAM ¾	-78.0	-75
Modulation	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)		
Radio Access Method	TDD		
RF Output Power (64QAM)	+20 dBm max (3.3-3.6GHz) +17 dBm (3.6-3.8GHz)		
RF Output Dynamic Range	30 dB		
Antenna	SMA connector with external 5dBi omni antenna included		
[1]Not all channels approved for use in all areas			
DATA COMMUNICATIONS			
RF	IEEE 802.16-2004		
Data	IEEE 802.3 CSMA/CD		
VLAN support	IEEE 802.1Q		
Error Control Coding	Concatenated Reed-Solomon Convolutional Code		
MANAGEMENT			
LED Display	SIGNAL STRENGTH / POWER		
Network Protocol	TCP/IP		
Encryption Protocol	DES-CBC, AES-CCM		
Subscriber Unit monitoring	SNMP, Web-based GUI, Telnet, SSH		
Subscriber Unit management	Web-based GUI		
Ethernet Connector	10/100Base-T		
PHYSICAL AND ENVIRONMENTAL			
Dimensions	4⅝" x 4⅛" x 1½" (117mm x 105mm x 38.1mm)		
Weight	13.5oz (378 grams)		
Operating Temperature	0°C to +40°C		
Power requirement	18v DC Power		
STANDARDS AND REGULATIONS			
Industry Canada/CE EN 302-502, EN301-489, EN55022			
WARRANTY	3 year parts and labor		

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RADITEK

WiMAX
ODU

3.5GHz, Outdoor Subscriber Unit, Carrier Class, Point to Multi-Point

- **Full Range of Base Stations and Subscriber products, suitable for Indoor and Outdoor Units.**
- **Suitable for Enterprise, SOHO and residential applications.**
- **Suitable for Enterprise, SOHO**
- **Adheres to IEEE 902.16-2004 standard**
- **Remote upgradeable**
- **Advanced management system**

The RWiMAX-3.5-OSU-P2MP-j8 is a 3.5GHz Outdoor Subscriber Unit based on our family of low cost subscriber units based on the IEEE802.16-2004 standard.

The family of indoor and outdoor subscriber units are designed to ensure seamless interoperability with all WiMAX Certified TM base stations.

All subscriber units are designed for the best price/performance.

The ease of installation of the unit ensures low installation costs by personnel with little or no training.

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3.5GHz, Outdoor Subscriber Unit,
Carrier Class, Point to Multi-Point

SPECIFICATIONS

RADIO			
Product Operation	LOS, NLOS Point-to-Multipoint Subscriber Unit		
RF Band	3.3 to 3.8 GHz[1]		
Channel Bandwidths	3.5 MHz, 7MHz selectable		
Frequency Resolution	250 kHz steps		
Spectral Efficiency	5 bits/sec/Hz (64-QAM unencoded)		
Receive Sensitivity typical for BER <10^{-6}	Burst Type	3.5MHz	7MHz
	BPSK ½	-94.0	-91
	QPSK ½	-91.0	-90
	QPSK ¾	-90.0	-87
	16-QAM ½	-87.0	-84
	16-QAM ¾	-84.0	-81
	64-QAM ⅔	-80.0	-77
	64-QAM ¾	-78.0	-75
Modulation	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)		
Radio Access Method	TDD		
RF Output Power (64QAM)	+20 dBm max (3.3-3.6GHz) +17 dBm (3.6-3.8GHz)		
RF Output Dynamic Range	30 dB		
Antenna Options	17dBi or 20dBi integrated antenna or N-type connector		
[1] Not all channels approved for use in all areas			
DATA COMMUNICATIONS			
RF	IEEE 802.16-2004		
Data	IEEE 802.3 CSMA/CD		
VLAN support	IEEE 802.1Q		
Error Control Coding	Concatenated Reed-Solomon Convolutional Code		
Polarization	Horizontal or Vertical		
MANAGEMENT			
LED Display	signal strength / power		
Network Protocol	TCP/IP		
Encryption Protocol	DES-CBC, AES-CCM		
Subscriber Unit monitoring	SNMP, Web-based GUI, Telnet, SSH		
Subscriber Unit management	Web-based GUI		
Ethernet Connector	10/100Base-T (water tight RJ-45)		
ENVIRONMENTAL			
Operating Temperature	-40C to +55C		
Power requirement	IEEE 802.3 (PoE) and Auxillary POE		
STANDARDS AND REGULATIONS			
CE/Industry Canada, FCC Part 90 (3.65GHz), EMC: EN 301 489, Safety: EN 60950, Radio: EN 302 217, IP67, RoHS			
WARRANTY	3 year parts and labor		
ORDERING INFORMATION			
TR-WMX-3.5-17-W	Dimensions	10-3/8" x 8-5/8" x 2-1/2" (264mm x 219mm x 64mm)	
	Weight	1.79lbs (0.81kg)	
TR-WMX-3.5-20-W	Dimensions	16" x 14-1/4" x 2-1/2" (406mm x 362mm x 64mm)	
	Weight	2.2lbs (1kg)	
TR-WMX-3.5-N-W	Dimensions	10-3/8" x 8-5/8" x 2-1/2" (264mm x 219mm x 64mm)	
	Weight	1.79lbs (0.81kg)	

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RADITEK

WiMAX
Base Station

Base Station, Carrier Class, Point to Multi-Point

- **Full Range of Base Stations and Subscriber products, suitable for Indoor and Outdoor Units.**
- **Suitable for Enterprise, SOHO and residential applications.**
- **Suitable for Enterprise, SOHO**
- **Adheres to IEEE 902.16-2004 standard**
- **Remote upgradeable**
- **Advanced management system**

The RWiMAX-3.5-BS-P2MP-j8 deployed with RADITEK's family of subscriber units is the most cost-effective WiMAX solution for delivering broadband wireless applications in outdoor environments.

Suitable for last-mile communication encompassing 3.5GHz licensed-band systems and 5.8GHz unlicensed band systems comprising a low-cost Base Station, centrally managed subscriber units, and an intuitive Management System.

The ease of installation of the complete system ensures low installation costs by personnel with little or no training.

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Base Station, Carrier Class, Point to Multi-Point
RWiMAX-3.5-BS-P2MP-j8

SPECIFICATIONS

RADIO	
System Capatability	LOS, NLOS Point-to-Multipoint Cellular Architecture
RF Band	3.4 to 3.6 GHz
Channel Bandwidth	3.5 MHz, 7MHz
Frequency Resolution	250 kHz steps
Receiver Sensitivity	-95 dBm (BPSK1/2) -79dBm (64 QAM 2/3)
Modulation	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Radio Access Method	TDD
RF Output Power	+20 dBm
RF Output Dynamic Range	30 dB
Typical Tx Constellation Error at maximum power	-31.5dB
Antenna	Selection of antennas from 14-20dBi / Omni and Sector
DATA COMMUNICATIONS	
RF	IEEE 802.16-2004
Data	IEEE 802.3 CSMA/CD
VLAN support	IEEE 802.1Q
Error Coding	Concatenated Reed-Solomon Convolution Code
MULTI-SERVICE / MULTI-USER SUPPORT	
Traffic Classification	ToS, Protocol, Address, Source Port, MAC Address, User Priority, VLAN ID
VLAN	Address, Mask, MAC Address, ToS type, Port, Rule Priority
QoS—SCHEDULING	
BE, rTPS	
MANAGEMENT	
Airsync™ Element Management System	Remote Monitoring, management, and provisioning
Protocol	TCP/IP
Airsync™ OSS—Upgradeable	Autonomous rules-based QoS
HARDWARE SPECIFICATIONS	
Ethernet	10/100 base-T (water tight RJ-45)
Power supply	Power over Ethernet (POE)
Power	15 W maximum
Dimensions	13" X 10⅛" X 2½" (33cm X 25.7cm X 6.4cm)
Weight	10 lbs (4.5kg)
ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature	-35C to +50C
Weather rating	IP67 weathertight
APPROVALS	
FCC CFR 47 Part 15, Class B , ETSI 302 502, RoHS Compliant	
WARRANTY	1 year parts and labor

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RADITEK

WiMAX
Base Station

Base Station, Carrier Class, Point to Multi-Point

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- **Suitable for Enterprise, SOHO and residential applications.**
- **Suitable for Enterprise, SOHO**
- **Adheres to IEEE 902.16-2004 standard**
- **Remote upgradeable**
- **Advanced management system**

The RWiMAX-5.8-BS-P2MP-j8 deployed with RADITEK's family of subscriber units is the most cost-effective WiMAX solution for delivering broadband wireless applications in outdoor environments.

Suitable for last-mile communication encompassing 3.5GHz licensed-band systems and 5.8GHz unlicensed band systems comprising a low-cost Base Station, centrally managed subscriber units, and an intuitive Management System.

The ease of installation of the complete system ensures low installation costs by personnel with little or no training.

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Base Station, Carrier Class, Point to Multi-Point
RWiMAX-5.8-BS-P2MP-j8

SPECIFICATIONS

RADIO	
System Capatability	LOS, NLOS Point-to-Multipoint Cellular Architecture
RF Band	5.725 to 5.875 GHz
Channel Bandwidth	10 MHz
Frequency Resolution	5 MHz steps
Receiver Sensitivity	-89 dBm (BPSK1/2) -72dBm (64 QAM 2/3)
Modulation	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Radio Access Method	TDD
RF Output Power	+17 dBm
RF Output Dynamic Range	30 dB
Typical Tx Constellation Error at maximum power	-30dB
Antenna	Selection of Omni and Sector Antennas
DATA COMMUNICATIONS	
RF	IEEE 802.16-2004
Data	IEEE 802.3 CSMA/CD
VLAN support	IEEE 802.1Q
Error Coding	Concatenated Reed-Solomon Convolution Code
MULTI-SERVICE / MULTI-USER SUPPORT	
Traffic Classification	ToS, Protocol, Address, Source Port, MAC Address, User Priority, VLAN ID
VLAN	Address, Mask, MAC Address, ToS type, Port, Rule Priority
QoS—SCHEDULING	
BE, rTPS	
MANAGEMENT	
Airsync™ Element Management System	Remote Monitoring, management, and provisioning
Protocol	TCP/IP
Airsync™ OSS—Upgradeable	Autonomous rules-based QoS
HARDWARE SPECIFICATIONS	
Ethernet	10/100 base-T (water tight RJ-45)
Power supply	Power over Ethernet (POE)
Power	15 W maximum
Dimensions	13" X 10⅛" X 2.½" (33cm X 25.7cm X 6.4cm)
Weight	10 lbs (4.5kg)
ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature	-35C to +50C
Weather rating	IP67 weathertight
APPROVALS	
FCC CFR 47 Part 15, Class B , ETSI 302 502, RoHS Compliant	
WARRANTY	1 year parts and labor

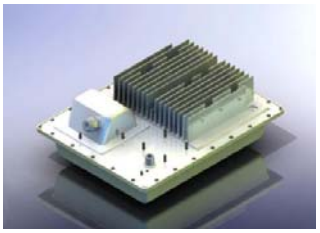
WORLD HQ: 1702L Meridian Ave. Suite 127, San Jose, Ca 95125, U.S.A.
Tel: (408) 266-7404 FAX: (408) 266-4483
WEB: www.raditek.com E-mail: sales@raditek.com

WiMAX Pico Base Station

3.4-3.6GHz, Nf Antenna Connect, 20dBm Transmit Power, 15W

RoHS COMPLIANT

Code-j8



Key Features

- IEEE 802.16-2004 Compliant
- Based on the Wavesat Chipset
- Up to +20dBm Transmit Power
- Full QoS Traffic Classifier and Scheduling: UGS, rtPS, nrtPS, BE
- IEEE 802.1Q Management VLAN
- IEEE 802.1d Transparent Bridging
- Element Management System (EMS)
- Remote Firmware Upgrade and Software Management
- Power-over-Ethernet (PoE)
- IP67 & NEMA Type 4X Enclosure

Order Examples: RWiMAX-pBS-3.4-3.6-Nf-20dBm-15W-j8
Description: (WiMAX 3.4-3.6 N female Antenna Connect. 20dBm Transmit power, 15W)

Economical Pico Base Station

This is a carrier-class WiMAX Pico Base Station (pBS) that is fully compliant with the IEEE 802.16-2004 standard (802.16d). Combined with the full line of subscriber units. provides the most economical turn-key solution for wireless broadband applications in the license-free 5.8GHz band.

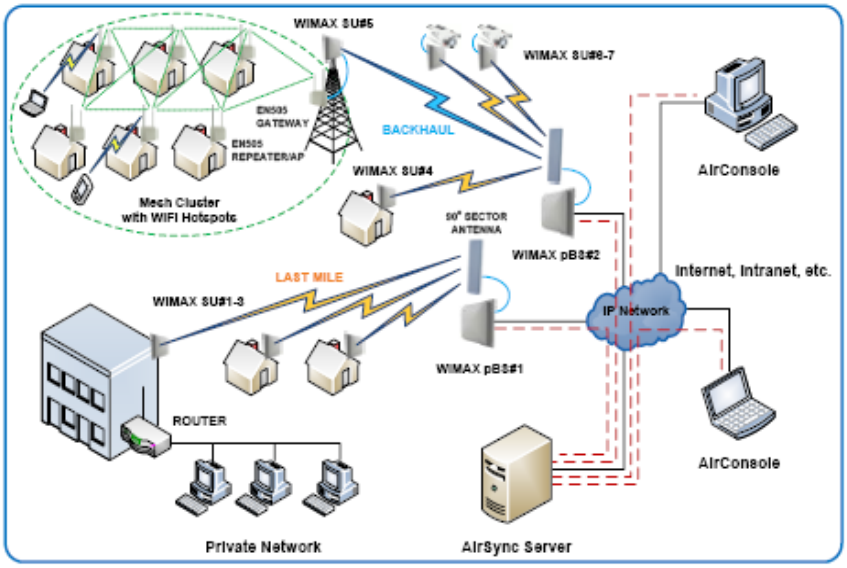
Ideal for rapid deployment and low to medium density applications including rural and enterprise networks, our WiMAX products are designed for the lowest total cost of ownership (TCO) and superior performance, offering incredible return on Investment (ROI).providing the highest quality and lowest price.

The ruggedized weatherproof design meets IP67 and NEMA Type 4X environmental standards, requiring minimum installation and maintenance costs in conditions ranging from -35 to +50°C.

It is also backed by Raditek's 1-Year Parts & Labor Warranty and Technical Support for worry-free network operation.

Applications

- **Internet Service**
- **Community Broadband**
- **Data Acquisition**
- **Security and Surveillance**
- **VoIP and IPTV Service**
- **Backhaul**



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WiMAX Pico Base Station

3.4-3.6GHz, Nf Antenna Connect, 20dBm Transmit Power, 15W

Specifications			
Radio Interface and Model Information			
Standards	IEEE 802.16-2004 (802.16d)		
Product Operation	Pico Base Station (LOS, NLOS, Point-to-Multipoint Cellular Architecture)		
Frequency Range	3.4-3.6 GHz		
Channel Bandwidths (1)	3.5 MHz, 7 MHz (Selectable)		
Frequency Resolution	250kHz Steps		
Duplex Method	TDD, OFDM 256-FFT		
Adaptive Modulation	64-QAM, 16-QAM, QPSK, BPSK		
Spectral Efficiency	5 bits/sec/Hz (64-QAM un-encoded)		
Receiver Sensitivity	**Burst Type**	**3.5MHz**	**7MHz**
	BPSK ½	-95	-93
	QPSK ½	-93	-90
	QPSK ¾	-91	-86
	16-QAM ½	-87	-83
	16-QAM ¾	-83	-81
	64-QAM ⅔	-79	-76
	64-QAM ¾	-76	-73
Transmit Power	+20 dBm (max)		
RF Output Dynamic Range	30 dB		
Tx Constellation Error at Maximum Power	-31.5 dB (Typ.)		
Antenna Connector	N-Type Female Connector		
Networking and Management			
Management, Provisioning & Monitoring	Element Management System		
Network Protocols	TCP/IP, UDP, NAT, DHCP Client/Server, VPN Pass-Through		
Bridging	IEEE 802.1d Transparent Bridge		
VLAN Support	IEEE 802.1Q Management VLAN		
QoS/Scheduling	UGS, rtPS, nrtPS, BE		
QoS/Traffic Classifier	ToS, Protocol, Address, Source Port, MAC address, User Priority, VLAN ID		
Bandwidth Control	Asymmetric Bandwidth Control		
Error Control	Concatenated Reed-Solomon Convolution Code		
Ethernet	1 x 10/100Base-T with Auto-Sense (Water-Tight RJ-45)		
Power Supply			
Power Consumption	15 Watts (max)		
Power Supply	Power over Ethernet (PoE)		
DC Adapter	24VDC/2.0A (INPUT: 120-240VAC~ 50-60Hz, 0.4A) f-Model: Fixed UL Plug (US only) W-Model: Snap-In Plugs for US, UK, and EU included		
Mechanical and Environmental			
Dimensions	13.25” x 10.25” x 5.50” (337mm x 260mm x 140mm)		
Weight	6.4 lbs (2.9 Kg)		
Installation Hardware (included)	PoE Injector with Built-in Surge Protection, DC Adapter, Ethernet Boot Cover with Weatherproof Gasket, L-Bracket and U-Bolt for Pole Mounting, GPS Active Antenna with 3m Cable		
Weather Rating	IP67 and NEMA Type 4X		
Operating Temperature	-35°C to +50°C		
Compliance and Warranty			
Export Control	HTC 8517.69.0000, ECCN 5A002 ENC, ECL 1-5.A.2.A.1		
Compliance & Approvals	RoHS, FCC Part 15, Industry Canada (RSS210), CE! (EMC: EN 301 489, Safety: EN 60950, Radio: EN 302 502)		
Warranty	1-Year Parts and Labour		

(1) Not all channels are approved for use in all regions.

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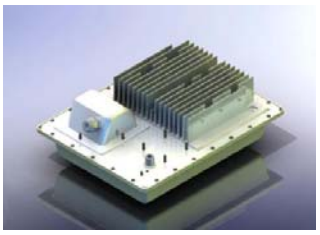
RADITEK

WiMAX
5.8 pBS-PlusG

WiMAX Pico Base Station

5.8GHz (unlicensed frequency band)

RoHS COMPLIANT
Code-j8



Key Features

- IEEE 802.16-2004 Compliant
- Based on the Wavesat Chipset
- Up to +20dBm Transmit Power
- Synchronization with Built-in GPS Receiver
- Full QoS Traffic Classifier and Scheduling: UGS, rtPS, nrtPS, BE
- IEEE 802.1Q Management VLAN
- IEEE 802.1d Transparent Bridging
- AirSyncTM Element Management System (EMS)
- Remote Firmware Upgrade and Software Management
- Power-over-Ethernet (PoE)
- IP67 & NEMA Type 4X Enclosure

Comprising: WiMAX Pico Base Station (pBS) and Outdoor Subscriber Unit (OSU)

Order Examples: RWiMAX-pBS-5.725-5.875-Nf-20dBm-j8
Description: (WiMAX 5725-5875GHz, 20dBm Transmit Power, N to N female Antenna Connect, 20dbm)

Economical Pico Base Station

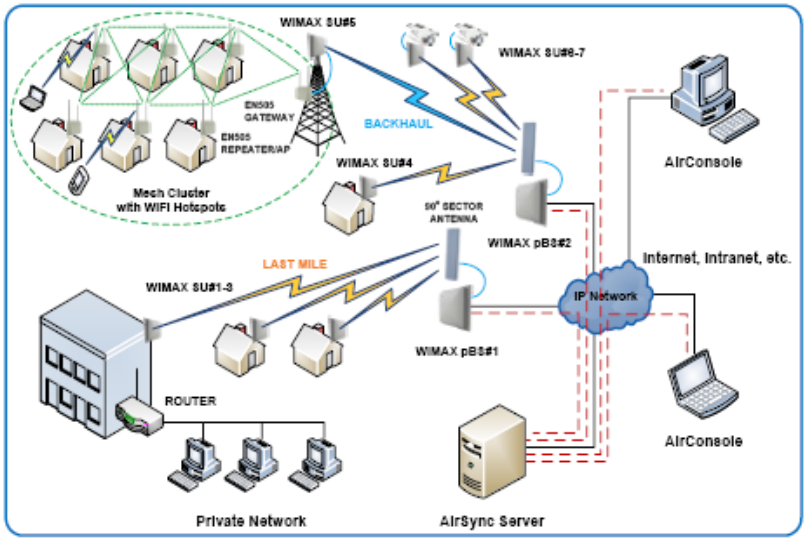
This is a carrier-class WiMAX Pico Base Station (pBS) that is fully compliant with the IEEE 802.16-2004 standard (802.16d). Featuring a high performance radio with a built-in GPS receiver for synchronization with neighboring (identical) base stations to provide highly efficient spectrum utilization. Combined with the full line of subscriber units. provides the most economical turn-key solution for wireless broadband applications in the license-free 5.8GHz band.

Ideal for rapid deployment and low to medium density applications including rural and enterprise networks, our WiMAX products are designed for the lowest total cost of ownership (TCO) and superior performance, offering incredible return on Investment (ROI).providing the highest quality and lowest price.

The ruggedized weatherproof design meets IP67 and NEMA Type 4X environmental standards, requiring minimum installation and maintenance costs in conditions ranging from -35 ^{o}C to +50 ^{o}C. The TR-WMX-5.8-pBS-PlusG is also backed by RADITEK's 1-Year Parts & Labor Warranty and unparalleled Lifetime Technical Support for worry-free network operation.

Applications

- Internet Service
- Community Broadband
- Data Acquisition
- Security and Surveillance
- VoIP and IPTV Service
- Backhaul



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WiMAX Pico Base Station

5.8GHz (unlicenced frequency band)

Pico Base Station

Specifications		
Radio Interface and Model Information		
Standards	IEEE 802.16-2004 (802.16d)	
Product Operation	Pico Base Station (LOS, NLOS, Point-to-Multipoint Cellular Architecture)	
Frequency Range	5.725 – 5.875GHz	
Channel Bandwidths (1)	10MHz	
Frequency Resolution	5 MHz Steps	
Duplex Method	TDD, OFDM 256-FFT	
Adaptive Modulation	64-QAM, 16-QAM, QPSK, BPSK	
Spectral Efficiency	5 bits/sec/Hz (64-QAM un-encoded)	
Receiver Sensitivity	**Burst Type**	**10MHz**
	BPSK ½	-92
	QPSK ½	-89
	QPSK ¾	-86
	16-QAM ½	-84
	16-QAM ¾	-80
	64-QAM ⅔	-75
	64-QAM ¾	-72.5
Transmit Power	+20 dBm (max)	
RF Output Dynamic Range	30 dB	
Synchronization	Built-in GPS receiver with 1 pps signal for synchronization with neighboring units	
Antenna Connector	N-Type Female Connector	
Model No. (2)	RWiMAX-pBS-5.725-5.875-Nf-20dBm-PlusG-f/W	
Networking and Management		
Management, Provisioning & Monitoring	Airsync TM Element Management System	
Network Protocols	TCP/IP, UDP, NAT, DHCP Client/Server, VPN Pass-Through	
Bridging	IEEE 802.1d Transparent Bridge	
VLAN Support	IEEE 802.1Q Management VLAN	
QoS/Scheduling	UGS, rtPS, nrtPS, BE	
QoS/Traffic Classifier	ToS, Protocol, Address, Source Port, MAC address, User Priority, VLAN ID	
Bandwidth Control	Asymmetric Bandwidth Control	
Error Control	Concatenated Reed-Solomon Convolution Code	
Ethernet	1 x 10/100Base-T with Auto-Sense (Water-Tight RJ-45)	
Power Supply		
Power Consumption	15 Watts (max)	
Power Supply	Power over Ethernet (PoE)	
DC Adapter	24VDC/2.0A (INPUT: 120-240VAC~ 50-60Hz, 0.4A) f-Model: Fixed UL Plug (US only) W-Model: Snap-In Plugs for US, UK, and EU included	
Mechanical and Environmental		
Dimensions	13.25” x 10.25” x 5.50” (337mm x 260mm x 140mm)	
Weight	6.4 lbs (2.9 Kg)	
Installation Hardware (included)	PoE Injector with Built-in Surge Protection, DC Adapter, Ethernet Boot Cover with Weatherproof Gasket, L-Bracket and U-Bolt for Pole Mounting, GPS Active Antenna with 3m Cable	
Weather Rating	IP67 and NEMA Type 4X	
Wind Load	182 N @ 100 mph and 285 N @ 125 mph	
Operating Temperature	-35°C to +50°C	
Compliance and Warranty		
Export Control	HTC 8517.69.0000, ECCN 5A002 ENC, ECL 1-5.A.2.A.1	
Compliance & Approvals	RoHS, FCC Part 15, Industry Canada (RSS210), CE! (EMC: EN 301 489, Safety: EN 60950, Radio: EN 302 502)	
Warranty	1-Year Parts and Labour	

(1) Not all channels are approved for use in all regions. (2) f: FCC Model (for use in the USA only), W: World Model (subject to local regulatory requirements). Specifications are subject to change without notice. Raditek and the Raditek logo are registered trademarks of Raditek Wireless Technologies Inc. All other trademarks mentioned herein are the property of their respective owners.

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All-in-One Outdoor Subscriber Unit (OSU)

4 Options

Series of Units, fully compliant with the IEEE802.16-2004 standard (802.16d), and support operation in the license-free 5.8GHz band. full spectrum of indoor and outdoor subscriber units are also based on a WiMAX Forum Certified TM design ensuring seamless interoperability with all WiMAX certified Base Stations (BS).

Order Example	RWiMAX- OSU -5725-5875M-16dBi-j8	*(WiMAX OSU 5.725-5.875GHz 16dBi Panel Antenna Internal)*
	RWiMAX- OSU -5725-5875M-xdBm-N-15W-j8	*(WiMAX OSU 5.725-5.875GHz xdBm Transmit power, N female Antenna Connect External, 15Watts Power)*

Radio Interface and Model Information					
Standards	IEEE 802.16-2004 (802.16d)		**Frequency Resolution**	500kHz Steps	
Radio Operation	Subscriber Unit (Point-to-Multipoint, LOS, NLOS)		**Duplex Method**	TDD, OFDM 256-FFT	
Frequency Range	5.150 – 5.875 GHz		**Adaptive Modulation**	64-QAM, 16-QAM, QPSK, BPSK	
Channel Bandwidths (1)	3.5 MHz, 5 MHz, 7 MHz, 10 MHz (Selectable)		**Spectral Efficiency**	5 bits/sec/Hz (64-QAM un-encoded)	
Receiver Sensitivity	**Burst Type**	**3.5MHz**	**5MHz**	**7MHz**	**10MHz**
	BPSK ½	-95	-93	-92	-89.5
	QPSK ½	-93	-91	-90	-88
	QPSK ¾	-91	-89	-88	-85.5
	16-QAM ½	-88	-86	-85	-82.5
	16-QAM ¾	-85	-83	-81	-79
	64-QAM ⅔	-80	-78	-77	-74.5
	64-QAM ¾	-78	-76	-75	-72.5
Transmit Power	+ 20 dBm (max) @ 5.725-5.875GHz		**RF Output Dynamic Range :** 30 dB		
	+17 dBm (max) @ 5.150-5.725GHz		**Antenna Polarization :** Horizontal or Vertical		

Antenna Options and Model Information					
Model No. (4 OSU Options)	**Antenna Options**	**Beamwidth**		**Wind Load (N)**	
		Horizontal	**Vertical**	**100 mph**	**125 mph**
RWiMAX-OSU -5.725 -5.875-xdBm-N	N-Female Connector (external)	N/A	N/A	72	112
RWiMAX-OSU -5.725 -5.875 16	16dBi Panel Antenna (internal)	17°	18°	72	112
RWiMAX-OSU -5.725 -5.875 20	20dBi Panel Antenna (internal)	8.7°	7.7°	105	165
RWiMAX-OSU -5.725 -5.875 24	24dBi Panel Antenna (internal)	8.7°	7.7°	182	285

Networking and Management		
Management, Provisioning & Monitoring		Web-based Management, Centralized EMS, Remote Firmware Upgrades, SSH , SNMP (MIB-II, 802.11 MIB
Network Protocols		TCP/IP, UDP, NAT, DHCP Client/Server, VPN Pass-Through
Bridging & VLAN Support		IEEE 802.1d Transparent Bridge, IEEE 802.1Q VLAN Tagging and Management VLAN
Authentication & Encryption Protocols		X.509, DES-CBC, AES-CCM
QoS/Scheduling		UGS, rtPS, nrtPS, BE
QoS/Traffic Classifier		ToS, Protocol, Address, Source Port, MAC address, User Priority, VLAN ID
Bandwidth Control		Asymmetric Bandwidth Control
Error Control		Concatenated Reed-Solomon Convolution Code
Ethernet		1 x 10/100Base-T with Auto-Sense (Water-Tight RJ-45)
Power Supply	Power Consumption	TBC Watts (max)
	Power Supply	Power over Ethernet (PoE)
	DC Adapter	18VDC/1.1A(INPUT:120-240VAC~ 50-60Hz, 0.6A) f-Model: Fixed UL Plug (US only) W-Model: Snap-In Plugs for US, UK, & EU incl

Mechanical and Environmental			
	RWiMAX-OSU -5.725, -5.875 16	RWiMAX-OSU -5.725, -5.875 20	RWiMAX-OSU -5.725, -5.875 24
Dimensions	10.38" x 8.63" x 3.00" (264mm x 219mm x 76mm)	13.22" x 10.28" x 3.50" (336mm x 261mm x 89mm)	16.18" x 14.43" x 3.50" (411mm x 367mm x 89mm)
Weight	1.79 lbs (0.81 Kg)	1.79 lbs (0.81 Kg)	4.36 lbs (1.98 Kg)
LED Display	Radio, LAN, Status, Signal Strength, Power		
Installation Hardware (included)	PoE Injector with Built-in Surge Protection, DC Adapter, Ethernet Boot with Weatherproof Gasket, L-Bracket and U-Bolt with up to 20o Up/Down Tilt for Pole Mounting		
Weather Rating	IP67 and NEMA Type 4X		
Operating Temperature	-40°C to +55°C		

Compliance and Warranty	
Export Control	HTC 8517.69.0000, ECCN 5A002 ENC, ECL 1-5.A.2.A.1
Compliance & Approvals	RoHS, FCC Part 15, Industry Canada (RSS210), CE! (EMC: EN 301 489, Safety: EN 60950, Radio: EN 302 502)
Warranty	3-Year Parts and Labor

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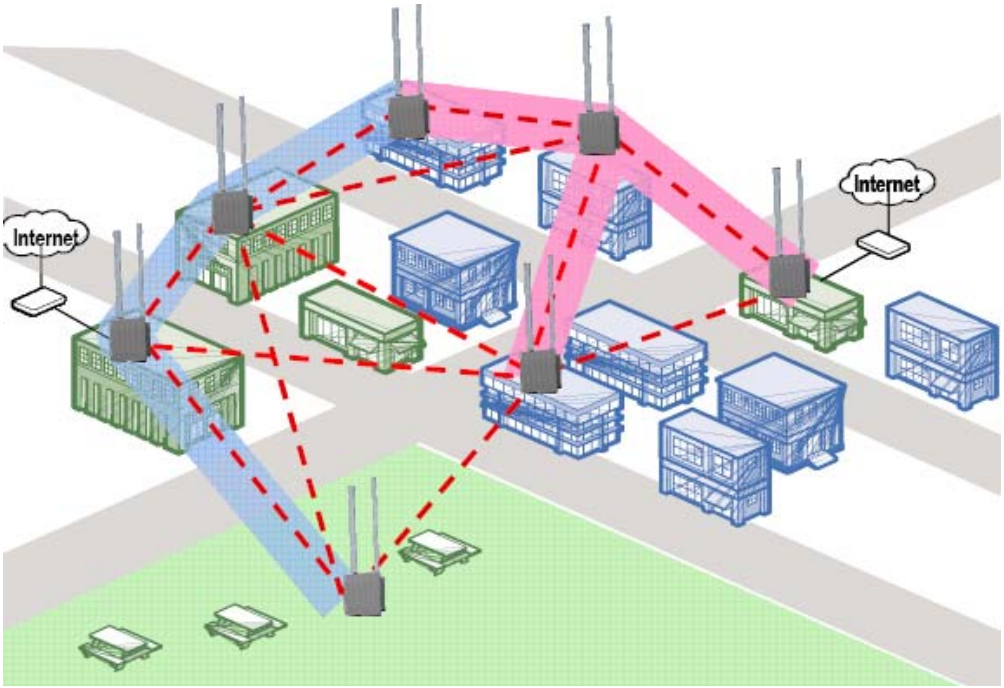
RM500 MESH ROUTER/INTRA NETWORK REPEATER

Combines 802.11a MESH networking with 802.11b/g access points for Wi-Fi enabled devices.

- **Self-assembles upon power-up, eliminating field configuration or human intervention**
- **Self-heals to maintain optimal connectivity due to changes in the environment.**
- **Intelligently repeats and routes data to extend network range beyond the radio range and provides redundant routing paths for network reliability in intermittent environments**
- **Prioritizes traffic with an advanced QoS for VoIP, Video and Data**
- **Supports secure Virtual Private Networks (VPN)**
- **Supports multiple user classes with four ESSIDs**
- **Supports roaming clients through out the network.**
- **Optimizes broadcast data using an advanced multicast routing algorithm.**
- **Enables remote element management and software upgrades with a Web-GUI, CLI or SNMP**



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