**EC SYSTEM ECM-S5-A19R**

**Description**
EC SYSTEM Medium -capacity lightweight Integrated 19 dBi Dual-polarization Antenna Point-to-Point Backhaul

**Performance**
- 8 Mbps (up to 8 Mbps net)
- 20 Mbps (up to 20 Mbps net)
- 50 Mbps (up to 50 Mbps net)
- 300 Mbps (up to 180 Mbps net)
- License upgradeable

**Distances**
up to 5-10 km

**Radio**
- Radio technology: MIMO 2x2 with OFDM 64/128
- Modulation types: BPSK ½ to QAM64 5/6
- Transmit power: up to 18 dBm
- Receiver sensitivity: -67...-97 dBm
- Frequency bands: 4.9-6.0 GHz
- Channel bandwidth: 5/10/20/40 MHz
- 19 dBi dual-pol integrated antenna

**Wired Interfaces**
- 1x Fast Ethernet (10/100 Base-T) RJ-45 connector

**Power Consumption**
Consumption:
- Up to 7 Watts
Power options:
- 110-240 VAC @ 50/60 Hz
- +9..56 VDC

**Form Factor and Dimensions**
- Outdoor Unit (ODU):
  207 x 207 x 67 mm, 1.0 kg
- Indoor Unit (IDU-CPE): 85 x 76 x 36 mm, 0.15 kg

**Part Number Options**

<table>
<thead>
<tr>
<th>Part Number Options</th>
<th>ECM-S5A19R</th>
<th>Option</th>
<th>Output Power</th>
<th>Capacity</th>
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<td>63</td>
<td>2x63</td>
<td>LBM</td>
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<td>180 Mbps</td>
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**Part Number Example**
ECM-S5A19R63-300M
Features

RADIO
- Voice/RTI Aware Superpacking
  - to minimize jitter and latency for multimedia applications
- DFS
  - intelligent search for a cleanest channel
  - interference avoidance
  - radar detection (depending on regulatory domain)
  - continuous background spectrum monitoring (for instant DFS enabled units only)
- seamless channel change in case of congestion or radar detection (for instant DFS enabled units only)
- Automatic Bitrate Control
  - to ensure 100% stable link irrelevant of changes in external conditions
- Automatic Transmit Power Control
  - to track and keep optimal input signal level to maximize performance for each link and reduce overall interference within a given transmit power and ERP limitations
- Automatic Distance Learning
  - to optimize performance for any link distances from dozens of meters to 130 km and above
- Channel Time Adjustment
  - to improve performance on heavily loaded links
- Spectrum Analyzer mode
  - interference detection
  - non-invasive spectrum analysis (for instant DFS enabled units only)
- Channel testing tools
  - channel performance measurement
  - advanced diagnostics

MANAGEMENT FEATURES
- Web-interface
  - basic settings
  - channel diagnostics: spectrum analysis, antenna alignment, channel throughput measurement
  - unit and RF link monitoring
  - maintenance: firmware upgrade, license and configuration import/export
  - tech support diagnostic reports generation
  - command-line access
- Command-line interface for in-depth configuration and diagnostics accessible via:
  - secure shell (SSH)
  - telnet
  - serial port
  - remote shell
- SNMPv1 / SNMPv3 support
  (MIB II, private MIB)
- Configurable SNMP Traps

NETWORKING
- Ethernet over-IP tunneling
- ARP protocol support
- MAC/IP filtering
- Full-routed 2nd layer switches
  - Transparent transport for any type of Ethernet traffic including MPLS, stacked VLANs, etc.
  - Multiple switching groups
  - Full VLAN support including Q-in-Q (IEEE 802.1q and 802.1ad)
  - STP+STP support
  - IGMP Snooping with Querier mode
  - Trunk groups support
- RSVP / OSPFv2 / static routing
- Tunneling
  (Ethernet over-IP, IP-over-IP)
- L2/L3 Firewall
- NAT/multiport, H.323-aware
- DHCP client/server/relay

QUALITY-OF-SERVICE
With many QoS permutations, QoS implementation works transparently in the network based on IEEE802.1p standard as well as ToS/DiffServ, guaranteeing optimal performance under any load conditions and lowest jitter/delay for priority traffic.

Quality-of-Service features:
- 16 priority queues
- IEEE 802.1p support
- IP TOS / DiffServ support
- Full voice support
- Traffic limiting
  (absolute, relative, mixed)
- Traffic redirection

MAC
- Dynamic adaptive Polling
  - Centralized marker grant mode
  - Dynamically takes into account channel activity
  - Permanent channel testing
- Pseudo-radio Interface
  - unique/wireless feature to join Wireless networks via 3rd party equipment
  (Wired Ethernet segments, IP clouds)
- Automatic over-the-air firmware upgrade

STANDARD COMPLIANCE
- Radio
  - EN 301 893 v.1.5.1
  - EN 302 502 v.1.2.1
  - FCC part 15.247
- EMC
  - EN 301 489-1
  - EN 301 489-17
- FCC Part 15 Class B
- Safety
  - EN 60 950-1:2006
- RoHS
  - Directive 2002/95/EC

SECURITY FEATURES
- Storm / flood protection
- Password protection
- Protocol messages encryption
- Secure command-line access via SSH protocol

ENVIRONMENTAL
- Outdoor Units:
  - -40+60°C, 100% humidity, condensing
- Indoor Unit:
  - 0+40°C, 95% humidity, non-condensing

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