



## AVIAT WTM 4000 NEXT GENERATION MICROWAVE RADIO

The new WTM 4000 microwave solution from Aviat Networks delivers ultra-high capacity capability in single or dual-header architecture options, optimized for all-outdoor applications. With up to 2.5 Gbit/s of throughput and cutting edge microwave networking features, such as unique A2C, the WTM 4000 sets a new benchmark for 4G and 5G backhaul requirements.

### Ultra-High, 5G-Ready Capacity

WTM 4000 builds in all the very latest capacity innovations, including 4096QAM, wide 112 MHz channel support, enhanced Ethernet Optimization using multi-Layer Header Compression (ML-HC), and line-of-sight MIMO. WTM 4000 is available in single header (WTM 4100, with one transceiver) and dual-header (WTM 4200, with two transceiver) configurations, enabling capacities up to 5 Gbit/s per link. WTM 4000 is also the only microwave platform to support adaptive dual-carrier (A2C) capability, enabling double capacity on a low cost single transceiver (WTM 4100) design.

### Multi-Architecture Design Options

WTM 4000 incorporates fully self-contained design, with high speed Ethernet switch, which is optimized for fully-outdoor implementation. Where needed, WTM 4000 can also support split-mount operation connected to Aviat CTR 8000 microwave router, in a single, integrated network element. Together with Aviat's leading split-mount solution with CTR and ODU600, WTM 4000 provides the best solution for operators who are trying to simplify their network designs for reduce OPEX.

### High Performance and Advanced Microwave Features

Next generation, highly integrated RF technology enables WTM 4000 to support best-in-class RF performance across all frequency bands for longer reach, smaller antennas, improved link availability and lower total cost of ownership. All advanced radio features are all supported, such as super-efficient 4096QAM modulation, co-channel operation, radio link bonding and wide RF channels.

### Advanced Carrier Ethernet, IP/MPLS Networking and SDN

The WTM 4000 offers advanced networking options and flexibility to address evolving backhaul and enterprise service needs, by combining the very latest in Carrier Ethernet switching, Ethernet OAM and packet-based synchronization, to deliver a single versatile platform for multiple applications. WTM 4000 is also fully upgradeable to support L3 IP routing and Multi-Protocol Label Switching (MPLS), and is the only platform prepared for SDN, Open Flow, Open Daylight, Netconf and Yang.



### KEY FEATURES AT A GLANCE

- Operating frequencies from 6 to 42 GHz;
- QPSK to 4096QAM Adaptive Modulation;
- Channel sizes up to 112 MHz;
- Single- (1Tx/Rx) or dual- (2Tx/RX) header options;
- Unique Aviat Adaptive Dual Channel (A2C) feature doubles link capacity using a single transceiver;
- Zero-footprint, all-outdoor design;
- Compact mechanical design, with fully integrated coupler/OMT;
- Co-channel operation with XPIC for up to 2.5 Gbit/s, and up to 5 Gbit/s with 4+0 and optional LOS MIMO;
- 4x user traffic ports, with electrical/PoE and optical interface options, including 1/2.5/10 GE;
- Layer 2 Ethernet Services: 802.1ad (QinQ), L2 VPN, STP/MSTP, L2LA (802.1AX), LACP, ERP (G.8032);
- Advanced Ethernet OAM, including IEEE 802.1ag, 802.3ah and ITU-T Y.1731;
- Packet Synchronization options including IEEE 1588v2 and Synchronous Ethernet (SyncE);
- Microwave configurations supported include 1+0, 1+0 repeater, 1+1 MHSB and 2+0 with optional XPIC;
- Mobile device configuration using Wi-Fi via embedded web server;
- End-to-end Network Management via Aviat ProVision.
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## AVIAT WTM 4000 SPECIFICATIONS

### RADIO NETWORKING:

- Frequency Band Options:
  - L6/U6, 7, 8, 10, 11, 13, 15, 18, 23, 26, 28, 32, 38 and 42 GHz
- Fixed or Adaptive Coding and Modulation (ACM):
  - QPSK, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096 QAM
- Channel Sizes:
  - 7, 13.75/14, 27.5/28, 40, 55/56, 112 MHz
- Capacity Range:
  - Airlink Capacity: up to 1093 Mbit/s (single channel WTM 4100) or 2186 Mbit/s (dual channel operation WTM 4100 with A2C, or WTM 4200)
  - Ethernet Throughput: up to 2500 Mbit/s, single or dual channel, with Multi-Layer Header Compression (actual throughput dependent upon traffic/frame size mix)
- Configuration Support:
  - 1+0, 1+1 & 2+2 Hot-Standby with optional Space Diversity
  - 2+0 Co-Channel Operation with/without XPIC
  - 2+0 Radio Channel Aggregation with Layer 1 Link Aggregation (L1LA)
  - 4+0 LAG with/without LOS MIMO (up to 5Gbps)

### TRANSMITTER SPECIFICATIONS:

- High Power, up to 30.5 dBm
- Frequency Stability:  $\pm 5$  ppm
- Manual Transmitter Power Control range: 0 - 25 dB
- Automatic Transmitter Power Control (ATPC): configurable over available manual attenuation range
- Tx Mute: >50 dB

### RECEIVER SPECIFICATIONS:

- Frequency Stability:  $\pm 5$  ppm
- Receiver Overload/Max Receiver Input Level,  $BER=1 \times 10^{-6}$  /  $BER=1 \times 10^{-3}$ : -15 dBm / 0 dBm
- Residual (Background) Bit Error Rate  $1 \times 10^{-13}$

### USER INTERFACES:

- 2x 10/100/1000Base-T (RJ-45) fixed ports (one port optional PoE)
- 2x optional SFP ports – 1, 2.5 or 10GB SFPs
- DC Power Supply Input, +24/-48VDC (SELV) – wide-mouth
- Console Maintenance Ports (USB)
- Receive Signal Indicator: dual voltmeter pins

### SYNCHRONIZATION:

- Synchronous Ethernet (ITU-T G.8262)
- ESMC/SSM (ITU-T G.8264)
- Precision Time Protocol (IEEE 1588v2) – TC/BC

### CARRIER ETHERNET (LAYER 2) SERVICES:

- Switch capability: 50 Gbps non-blocking
- Quality of Service (QoS): 8 COS, Scheduling, Policing, Storm Control, Shaping

- QoS Mapping: PCP (802.1p), DSCP, MPLS EXP, H-QoS
- VLANs IEEE 802.1Q and IEEE 802.1ad (Q-in-Q)
- Spanning Tree: Rapid and multiple protocols (RSTP, MSTP)
- Ethernet OAM: IEEE 802.3ah, IEEE 802.1ag, ITU-T Y.1731
- Congestion Avoidance: RED and WRED, per queue
- Jumbo frames: Up to 9600 bytes
- ERPS (8032v2)

### ELEMENT AND NETWORK MANAGEMENT:

- Local Management via USB
  - Configuration save & load
  - Wireless dongle to support Bluetooth/Wi-Fi (optional)
  - Optional config backup via memory stick
  - Aviat OS software upgrade
- Event and Alarm capture, time stamp and logging
- Statistics: RMON 1 Ethernet and radio performance statistics
- Network Management: ProVision, NETCONF/Yang or SNMPv2c MIB interface support
- IPv4/6 addressing with an In-Band Management VLAN. Telnet or SSH access
- Simple Network Time Protocol (SNTP V4), embedded real time clock

### MECHANICAL AND ENVIRONMENTAL:

- Operating Temperature: -40° to +55°C
- Extended Temperature: -45° to +65°C
- Humidity: 0 to 100%, non-condensing
- Altitude: 5,000 meters
- Input voltage: +24/-48 VDC (SELV), nominal
- Input voltage range: +/-18 to +/- 72 VDC
- Power over Ethernet: PoE++ (proprietary)
- Power consumption: < 50W (typical, WTM 4100), or <28W with Power Save
- Size (h-w-d), including built-in coupler/OMT: 295mm x 270mm x 95mm
- Weight, including coupler/OMT: 5.5 kg (WTM 4100), 11 kg (WTM 4200)

### STANDARDS COMPLIANCE:

- EMC: EN 301 489-1, EN 301 489-4
- Operation: EN 300 019 Class 4.1
- Safety: IEC/EN 60950-1, IEC/EN 60950-22
- RF Performance: EN 302 217-2-2
- Water Ingress: IEC 60529, IPX6
- Lightning Protection (internal): IEC-61000-4-5, Class 5

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