

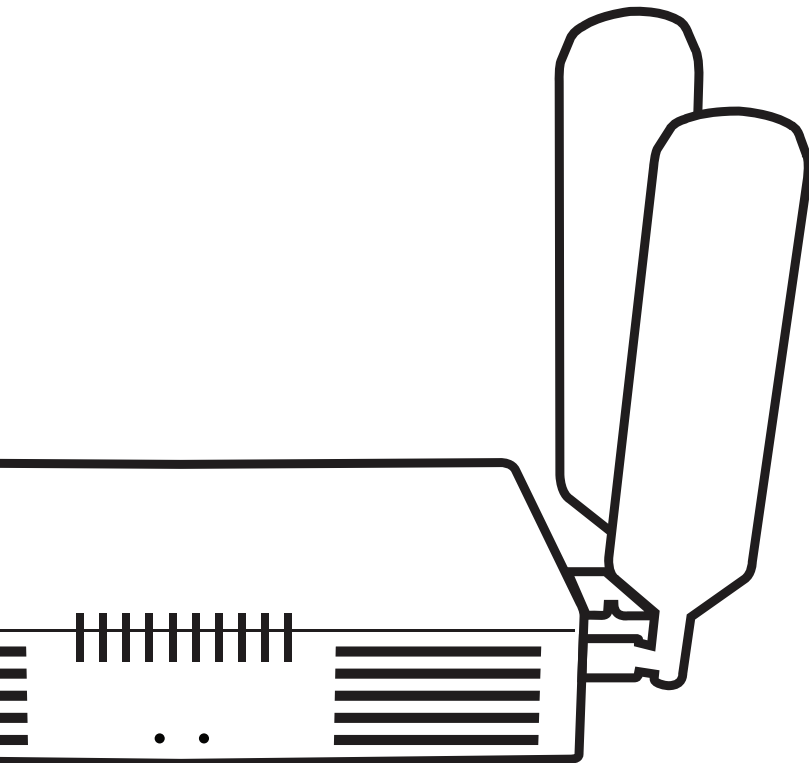


Global Leader in 4G LTE Network Solutions

# AER Series Router

**AER1600 / AER1650**

Spec Sheet



[cradlepoint.com](http://cradlepoint.com)

## WHAT'S IN THE BOX

The Cradlepoint AER1600/AER1650 is available with different modem options:

- LPE models include an embedded modem and a slot to add an MC400 modem
- LP6 and LP3 models include a bundled MC400 modem and do not include an embedded modem
- AER1600/AER1650 only include a slot for an MC400 modem and do not include an embedded modem

### Also included:

- MC400 3G/4G Modem with Antennas\*
- External 3G/4G mobile broadband modem antennas<sup>†</sup> (2) (SMA) w/ multiplexing for GPS; finger tighten only
- 12V 3A AC/DC power adapter (**WARNING:** using a power adapter other than the one provided may damage the device and will void the warranty)
- Ethernet cable
- Quick Start Guide
- Mounting hardware
- Modem door screw
- Warranty/Regulatory information

\* - Included with LP6 and LP3 models, optional for AER1600/AER1650 and LPE models

† - LP6 and LP3 models only

## KEY FEATURES

### WAN

- LP6 Modems: LTE Advanced LTE/HSPA+ for all North American carriers and European operators (SIM-based Auto-Carrier Selection)
- LPE Modems: 4G LTE/HSPA+/EVDO (multi-carrier, North America, dual-modem capable)
- LP3 Modems: 4G LTE/HSPA+ (Europe, Middle East, Africa, Australia, New Zealand)
- Dual integrated modem option (LPE only)
- Dual SIM slot in each modem
- Most models include support for active GPS
- Five 10/100/1000 Ethernet ports (WAN/LAN switchable)
- WiFi as WAN (only on AER1600)
- Failover/Failback
- Load Balancing
- Advance Modem Failure Check
- WAN Port Speed Control
- WAN/LAN Affinity
- IP Passthrough
- Standby

### LAN

- Five 10/100/1000 Ethernet ports (WAN/LAN switchable)
- LLDP support
- VLAN 802.1Q
- DHCP Server, Client, Relay
- DNS and DNS Proxy
- DynDNS
- Split DNS

- UPnP
- DMZ
- Multicast/Multicast Proxy
- QoS (DSCP and Priority Queuing)
- MAC Address Filtering

### WIFI (ONLY ON AER1600)

- Dual-Band Dual-Concurrent (2×2 MIMO; internal antennas)
- 802.11 (a/b/g/n/ac)
- Up to 128 connected devices (64 per channel – 2.4 GHz and 5 GHz)
- WEP Auto, WPA/WPA2 Personal, WPA2 Enterprise (WiFi)
- Hotspot/Captive Portal
- SSID-based Priority

### MANAGEMENT

- OOBM (Out-of-Band Management) via USB to Serial
- Cradlepoint Enterprise Cloud Manager (ECM)<sup>2</sup>
- Web UI, API, CLI
- GPS Location
- Data Usage Alerts (router and per client)
- Advanced Troubleshooting (support)<sup>5</sup>
- Device Alerts
- SNMP
- SMS control

### VPN AND ROUTING

- IPsec Tunnel – up to 20 concurrent sessions
- OpenVPN (SSL VPN)<sup>1</sup>
- L2TP<sup>1</sup>
- GRE Tunnel
- OSPF/BGP/RIP<sup>1</sup>
- Route Filters (Access Control Lists, Prefix Filters, Route Maps, Communities for BGP)
- Per-Interface Routing
- Static Routing
- Policy-based Routing
- NAT-less Routing
- Virtual Server/Port Forwarding
- VTI Tunnel Support
- NEMO/DMNR<sup>1</sup>
- IPv6
- VRRP<sup>1</sup>
- STP<sup>1</sup>
- NHRP<sup>1</sup>

### SECURITY

- RADIUS and TACACS+ support\*
- 802.1x authentication for Wireless and Wired Networks
- Zscaler Internet Security<sup>4</sup>
- Certificate support

- ALGs
- MAC Address Filtering
- CP Secure Threat Management<sup>3</sup>
- Advanced Security Mode (local user management only)
- Per-Client Web Filtering
- IP Filtering
- Content Filtering (basic)
- Website Filtering

\* - Native support for authentication. Authorization and accounting support through hotspot/captive portal services.

## CLOUD OPTIMIZED IP COMMUNICATIONS

- Automated WAN Failover/Failback support
- WAN Affinity and QoS allow prioritization of VoIP services
- Advanced VPN connectivity options to HQ
- SIP ALG and NAT to allow VoIP and UC communications to traverse firewall
- MAC Address Filtering
- 802.1p/q for LAN QoS segmentation and treatment of VoIP on LAN
- Private Network support (wired and 4G WAN)
- Cloud-based management<sup>2</sup>

1 – Requires an [ECM PRIME](#) subscription or an [Extended Enterprise License](#)

2 – [Enterprise Cloud Manager](#) requires a subscription

3 – Requires a [CP Secure Threat Management](#) license

4 – Requires [Zscaler](#) Internet Security License

5 - Requires [CradleCare](#) Support

## SUPPORT AND WARRANTY

CradleCare Support available with technical support, software upgrades, and advanced hardware exchange – 1-, 3-, and 5-year options.

One-year limited hardware warranty available in the US and Canada; two-year limited hardware warranty for integrated EU products when purchased from an authorized EU distributor – extend warranty to 2, 3, or 5 years.

## SPECIFICATIONS

### WAN:

- Integrated LP6 Category 6 LTE Advanced LTE modem (with DC-HSPA+ failover) or LPE 4G LTE modem (with HSPA+/EVDO/3G and 2G failover) or LP3 4G LTE modem (with HSPA+ and 2G failover)
- Embedded 4G LTE (one modem included; dual-modem option) Multi-Carrier Software-Defined radio (LPE models)
- 5 10/100/1000 Ethernet ports (cable/DSL/T1/satellite/Metro Ethernet; WAN/LAN switchable)
- WiFi\* (as WAN; Metro WiFi) 2x2 MIMO 2.4 GHz or 5 GHz (802.11 a/b/g/n/ac; internal antennas)

### LAN:

- Dual-band dual-concurrent WiFi\* (802.11 a/b/g/n/ac)
- 5 10/100/1000 Ethernet ports (WAN/LAN switchable)

### TEMPERATURE:

- 0°C to 50°C (32°F to 122°F) operating

- -20°C to 70°C (-4°F to 158°F) storage

**HUMIDITY (non-condensing):**

- 10% to 85% operating
- 5% to 90% storage

**MEMORY:** 256 MB DRAM; 16MB SPI Flash; 256 MB NAND Flash**SIZE:**

- 8.3 x 6.6 x 1.7 in (210 x 167 x 44 mm)
- 1U height for rack mount

**WEIGHT:** 1 lb 4.4 oz (.58 kg)**CERTIFICATIONS:** FCC, WiFi Alliance, CE, IC, carrier certifications**WAN TO LAN:** 940 Mbps**LAN TO WAN:** 947 Mbps**WIFI POWER (FCC):**

- 2402-2483.5 MHz (2.4 GHz band): 28.51 dBm conducted
- 5150-5250 MHz (5 GHz band 1): 26.66 dBm conducted
- 5725-5850 MHz (5 GHz band 3): 23.54 dBm conducted

**WIFI POWER (Europe/Rest of World):**

- 2.4 GHz band: 19.95 dBm EIRP
- 5150-5250 MHz: 22.98 dBm EIRP

\*-only on AER1600

## ACCESSORIES

- Second integrated 4G LTE modem
  - MC400LP6 (North America or EU)
  - MC400LPE-VZ (Verizon)
  - MC400LPE-AT (AT&T)
  - MC400LPE-SP (Sprint)
  - MC400LPE-GN (generic – for use on T-Mobile in the U.S. and Rogers, Bell, & TELUS in Canada)
  - MC400LP3-EU (Europe)
- 700 MHz – 2700 MHz Wide Band Directional Antenna (Yagi/Log- Periodic) Part #: 170588-000
- 12" Mag-Mount Antenna with SMA Male Connector Part #: 170605-000
- 4" Mini Mag-Mount Antenna with SMA Male Connector Part #: 170606-000
- 2.4/5 GHz Dual-band Dual-concurrent WiFi Antenna Part #: 170628-000 (WiFi models only)
- Universal 3G/4G/LTE Modem Antenna Part #: 170649-000
- GPS Screw-Mount Antenna Part #: 170651-000
- GPS Mag-Mount Antenna Part #: 170652-000
- Multi-Band Omni-Directional Antenna Part #: 170668-000
- Indoor/Outdoor Panel Patch Part #: 170669-000

## BUSINESS-GRADE MODEM SPECIFICATIONS

AER1600/AER1650 LP6 models do not include an embedded 4G LTE modem and do not support dual-modem capability.

**AER1600/AER1650 LP6 models** include an integrated LTE Advanced Category 6 4G LTE modem. The LP6 modems support SIM-Based Auto-Carrier selection so there is only one model for all of North America or EU. Simply insert the SIM and wait for the router to automatically detect the SIM and establish a connection.

The LTE bands certified for each carrier are listed below.

**AER1600LP6-NA-M, AER1650LP6-NA-M, AER1600LP6-EU-M, AER1650LP6-EU-M**

- **Technology:** LTE Advanced, HSPA+
- **Downlink Rates:** LTE 300 Mbps, HSPA+ 42.2 Mbps
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps
- **Frequency Bands:**
  - **LTE Bands 1-5, 7, 8, 12, 13, 17, 20, 25, 26, 29, 30, 41**
    - **Verizon:** 2, 4, 5, 13 (XLTE support w/carrier aggregation)
    - **AT&T:** 2, 4, 5, 12/17, 29, 30
    - **Sprint:** 25, 26, 41 (LTE Plus Support)
    - **T-Mobile:** 2, 4, 12 (T-Mobile Wideband LTE Support)
    - **Generic:** all
- **Carrier Aggregation:**
  - 1+ 8
  - 2+ 2/5/12 (17 w/MFBI)/13/29
  - 3+ 7/20
  - 4+ 4/5/12 (17 w/MFBI)/13/29
  - 5+ 2/4/30
  - 7+ 3/7/20
  - 8+ 1
  - 12 (17 w/MFBI) + 2/4/30
  - 13+ 2/4
  - 20+ 3/7
  - 30+ 5/12 (17 w/MFBI)
  - 41+ 41
- **Fallback:** WCDMA/DC-HSPA+ (42/5.76 Mbps): Bands 1, 2, 3, 4, 5, 8
- **Power:** LTE 23 dBm +/- 1, HSPA+ 23 dBm +/- 1
- **Antennas:** two SMA male (plug), finger tighten only (maximum torque spec is 7 kgfcm)
- **GPS:** active GPS support
- **SMS:** SMS support
- **Industry Standards & Certs:** CE, FCC, GCF-CC, IC, PTCRB, AT&T, Sprint (pending certification), Verizon

Some AER1600/AER1650 models include an embedded 4G LTE modem. See page 2 for specific models.

Please note that LPE models are flexible and support bands for multiple cellular providers; however, only the frequency bands in **bold** below are supported by the listed provider.

**AER1600LPE-VZ – 4G LTE/HSPA+/EVDO for Verizon**

- **Technology:** LTE, HSPA+, EVDO Rev A
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- **Frequency Bands:**
  - LTE Band 2 (1900 MHz), **Band 4 – AWS (1700/2100 MHz)**, Band 5 (850 MHz), **Band 13 (700 MHz)**, Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - **CDMA EVDO Rev A/1xRTT (800/1900 MHz)**
- **Power:** LTE 23 dBm +/- 1, HSPA+ 23 dBm +/- 1, EVDO 24 dBm +0.5/-1 (typical conducted)
- **Antennas:** two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf-cm)
- **GPS:** active GPS support

- Industry Standards & Certs: FCC, Verizon

#### AER1650LPE-VZ – 4G LTE/HSPA+/EVDO for Verizon

- **Technology:** LTE, HSPA+, EVDO Rev A
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- **Frequency Bands:**
  - LTE Band 2 (1900 MHz), **Band 4 – AWS (1700/2100 MHz)**, Band 5 (850 MHz), **Band 13 (700 MHz)**, Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - **CDMA EVDO Rev A/1xRTT (800/1900 MHz)**
- **Power:** LTE 23 dBm +/- 1, HSPA+ 23 dBm +/- 1, EVDO 24 dBm +0.5/-1 (typical conducted)
- **Antennas:** two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf-cm)
- **GPS:** active GPS support
- Industry Standards & Certs: FCC, Verizon

#### AER1600LPE-AT – 4G LTE/HSPA+/EVDO for AT&T

- **Technology:** LTE, HSPA+, EVDO Rev A
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- **Frequency Bands:**
  - LTE **Band 2 (1900 MHz)**, **Band 4 – AWS (1700/2100 MHz)**, **Band 5 (850 MHz)**, Band 13 (700 MHz), **Band 17 (700 MHz)**, Band 25 (1900 MHz)
  - **HSPA+/UMTS (850/900/1900/2100 MHz, AWS)**
  - **GSM/GPRS/EDGE (850/900/1800/1900 MHz)**
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- **Power:** LTE 23 dBm +/- 1, HSPA+ 23 dBm +/- 1, EVDO 24 dBm +0.5/-1 (typical conducted)
- **Antennas:** two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf-cm)
- **GPS:** active GPS support
- Industry Standards & Certs: PTCRB, FCC, IC, AT&T

#### AER1650LPE-AT – 4G LTE/HSPA+/EVDO for AT&T

- **Technology:** LTE, HSPA+, EVDO Rev A
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- **Frequency Bands:**
  - LTE **Band 2 (1900 MHz)**, **Band 4 – AWS (1700/2100 MHz)**, **Band 5 (850 MHz)**, Band 13 (700 MHz), **Band 17 (700 MHz)**, Band 25 (1900 MHz)
  - **HSPA+/UMTS (850/900/1900/2100 MHz, AWS)**
  - **GSM/GPRS/EDGE (850/900/1800/1900 MHz)**
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- **Power:** LTE 23 dBm +/- 1, HSPA+ 23 dBm +/- 1, EVDO 24 dBm +0.5/-1 (typical conducted)
- **Antennas:** two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf-cm)

- **GPS:** active GPS support
- **Industry Standards & Certs:** PTCRB, FCC, IC, AT&T

#### **AER1600LPE-SP – 4G LTE/HSPA+/EVDO for Sprint**

- **Technology:** LTE, HSPA+, EVDO Rev A
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- **Frequency Bands:**
  - LTE Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), **Band 25 (1900 MHz)**
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - **CDMA EVDO Rev A/1xRTT (800/1900 MHz)**
- **Power:** LTE 23 dBm +/- 1, HSPA+ 23 dBm +/- 1, EVDO 24 dBm +0.5/-1 (typical conducted)
- **Antennas:** two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf-cm)
- **GPS:** active GPS support
- **Industry Standards & Certs:** FCC, Sprint

#### **AER1650LPE-SP – 4G LTE/HSPA+/EVDO for Sprint**

- **Technology:** LTE, HSPA+, EVDO Rev A
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- **Frequency Bands:**
  - LTE Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), **Band 25 (1900 MHz)**
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - **CDMA EVDO Rev A/1xRTT (800/1900 MHz)**
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- **Antennas:** two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf-cm)
- **GPS:** active GPS support
- **Industry Standards & Certs:** FCC, Sprint

#### **AER1600LP3-EU – 4G LTE/HSPA+ for Europe**

- **Technology:** LTE, HSPA+
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps (theoretical)
- **Frequency Bands:**
  - **LTE Band 1 (2100 MHz), Band 3 (1800 MHz), Band 7 (2600 MHz), Band 8 (900 MHz), Band 20 (800 MHz)**
  - **HSPA+/UMTS (800/850/900/1900/2100 MHz)**
  - **GSM/GPRS/EDGE Quad-Band (850/900/1800/1900 MHz)**
- **Power:** LTE Band 1/3/8/20 – 23 dBm +/- 1; LTE Band 7 – 22 dBm +/- 1, HSPA+ 23 dBm +/- 1 (typical conducted)
- **Antennas:** two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only
- **GPS:** active GPS support
- **Industry Standards & Certs:** CE, GCF-CC



- Modem Part Number: MC400LP3

#### **AER1650LP3-EU – 4G LTE/HSPA+ for Europe**

- **Technology:** LTE, HSPA+
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps (theoretical)
- **Frequency Bands:**
  - **LTE Band 1 (2100 MHz), Band 3 (1800 MHz), Band 7 (2600 MHz), Band 8 (900 MHz), Band 20 (800 MHz)**
  - **HSPA+/UMTS (800/850/900/1900/2100 MHz)**
  - **GSM/GPRS/EDGE Quad-Band (850/900/1800/1900 MHz)**
- **Power:** LTE Band 1/3/8/20 – 23 dBm +/- 1; LTE Band 7 – 22 dBm +/- 1, HSPA+ 23 dBm +/- 1 (typical conducted)
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- **GPS:** active GPS support
- **Industry Standards & Certs:** CE, GCF-CC
- Modem Part Number: MC400LP3

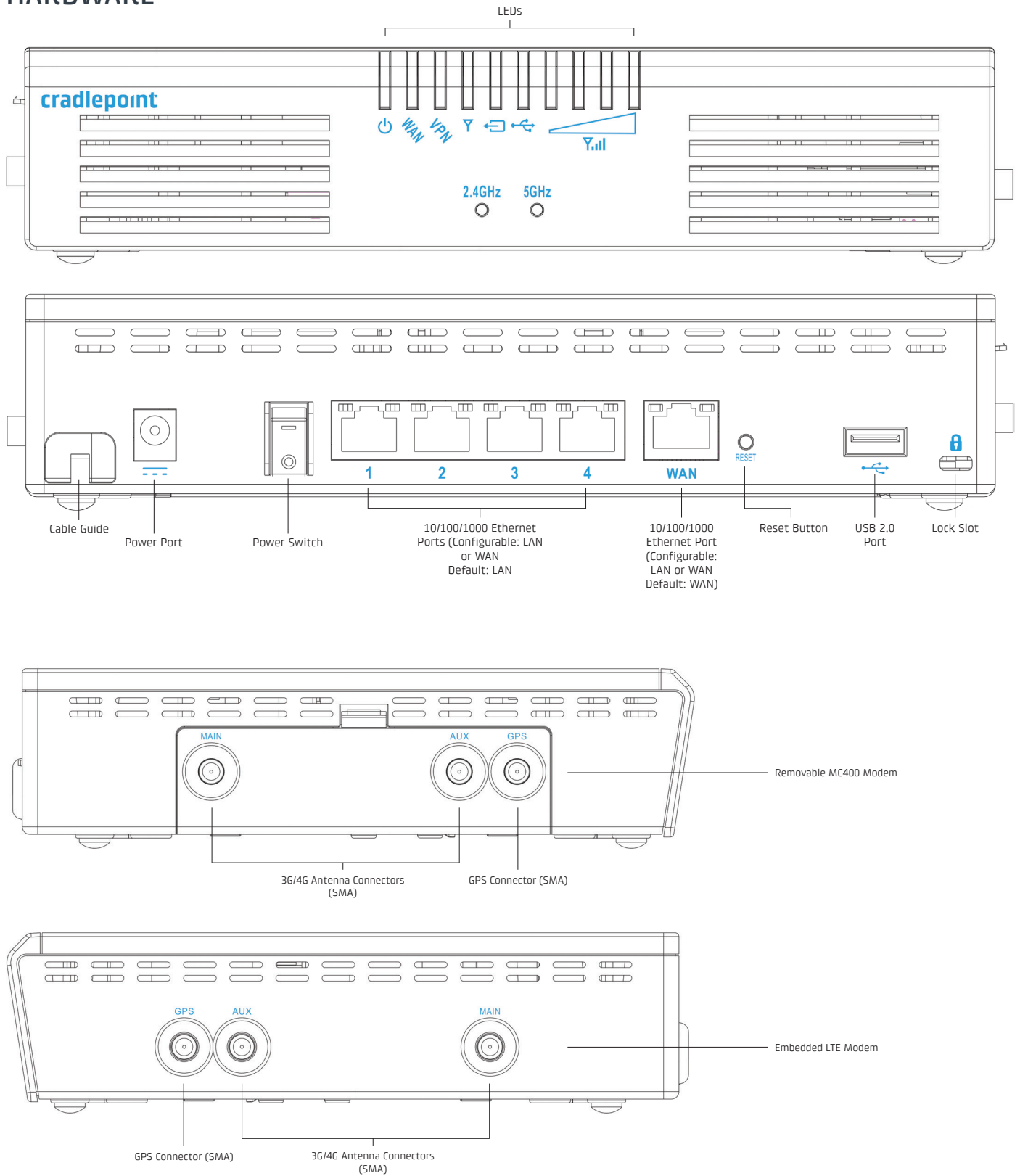
#### **AER1600LPE-GN – 4G LTE/HSPA+/EVDO (generic – for use on T-Mobile in the U.S. and Rogers, Bell, & TELUS in Canada)**

- **Technology:** LTE, HSPA+, EVDO Rev A
- **Downlink Rates:** LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- **Uplink Rates:** LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- **Frequency Bands:**
  - **LTE Band 2 (1900 MHz), Band 4 (AWS), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)**
  - **HSPA+/UMTS (850/900/1900/2100 MHz, AWS)**
  - **GSM/GPRS/EDGE (850/900/1800/1900 MHz)**
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- **Antennas:** two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf-cm)
- **GPS:** active GPS support
- **Industry Standards & Certs:** PTCRB, FCC, IC

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- **Frequency Bands:**
  - **LTE Band 2 (1900 MHz), Band 4 (AWS), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)**
  - **HSPA+/UMTS (850/900/1900/2100 MHz, AWS)**
  - **GSM/GPRS/EDGE (850/900/1800/1900 MHz)**
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- **Industry Standards & Certs:** PTCRB, FCC, IC

# HARDWARE



Specifications subject to change without notice.