

# Enterprise Multi-Service CBRS LTE Router

## Mobile & Broadband Access Solutions



BEC 6500AEL R21



The BEC 6500AEL R21 Enterprise Multi-Service CBRS LTE Router is an high-performance platform featuring Dual-WAN interfaces (4G/LTE and GigaConnect® Ethernet WAN), 4-port Gigabit Ethernet Switch, USB 2.0, high-power 802.11ac dual-band Wi-Fi access point, hotspot/captive portal, dynamic routing and a robust Firewall security.

The 6500AEL R21 provides businesses with a 4G LTE Advanced Pro integrated solution for unprecedented LTE speeds, bandwidth, and network performance for CBRS shared spectrum commercial deployments. Dual WAN connectivity allows the 6500AEL R21 to support a variety of wired broadband connections types, including ADSL2+ / VDSL2 / FTTH / Cable modems, with data rates reaching up to 1Gbps.

**Robust Firewall** helps to enforce security policies to restrict network activities from preventing outsider attacks

**Virtual LAN** supports up to 16 VLAN rules to support on various network services on different LAN segments

**Quality of Service (QoS)** optimizes network traffic and bandwidth utilization

**Parental Control** offers safe Internet accesses by restricting types of websites and setting time limits on specific network devices

**Management Tools** includes LTE signal strength, RSRP/RSRQ/RSSI/SNR information, traffic monitoring, system log, remote-access management, etc., and much more

Equipped with 11ac and dual bands technologies with high transmit RF power on both frequency bands, the 6500AEL R21 is capable to provide simultaneous dual band connections with dedicated Wi-Fi streams for specific network applications such as media, entertainment streaming, online gaming in 5GHz band and Internet browsing, e-mail exchange in 2.4GHz. High power Access Point extends Wi-Fi signal providing outstanding range and coverage throughout the home or office.

### Mobile and Fixed Broadband Services Ready

The 6500AEL R21 provides 4G LTE mobile and gigabit wired Ethernet WAN interfaces and is featuring an auto-failover to ensure maximum Internet accessibility with minimum service interruption. This seamless automatic failover with traffic prioritization in the event of an Internet connectivity failure of the primary WAN interface, traffic is automatically redirected to the secondary WAN interface within seconds. This functionality operates regardless of whether the primary connection is LTE or a wired connection.

### Advanced Quality of Service (QoS) Framework

The 6500AEL R21 supports a QoS framework based on the EPS bearer model. Default bearers are supported for best effort services and multiple dedicated bearers, GBR (guaranteed bit rate) resource types and QoS class of identifiers (QCI) are supported for real-time voice and video applications that require dedicated network resources. BEC's comprehensive QoS capabilities, leverage IP QoS concepts and standards such as DiffServ along with the LTE QoS framework to achieve the best QoE (Quality of Experience) for each subscriber.

### New Experience with Wi-Fi Speed and Coverage

With the next wireless generation, 802.11ac, integrated in the 6500AEL R21, the router delivers fast Wi-Fi speeds of up to 1200Mbps. The 6500AEL R21 supports a link rate up to 300Mbps in 2.4GHz frequency range & 866Mbps in 5GHz range and is also backward compatible with existing 802.11 a / b / g / n wireless equipment in the network. The Wireless Protected Access (WPA-PSK/WPA2-PSK) and Wireless Encryption Protocol (WEP) features enhance the level of transmission security and access control over Wireless LAN. The 6500AEL R21 also supports Wi-Fi Protected Setup (WPS) standard for easy and secure establishment of a wireless home network. If the user's network requires wider coverage, the built-in Wireless Distribution System (WDS) repeater function expands the wireless network without needing any external wires or cables.

### Wi-Fi Hotspot with Captive Portal

The 6500AEL R21 offers Wi-Fi hotspot to share the Internet connection via mobile (4G/LTE) or a wired connection, an existing FTTH, cable, DSL network or modem, with any wireless-enabled devices which is completed separate from the private Wi-Fi network. The captive portal enables highly secure connectivity with multiple authentication options and extensive controls for access and bandwidth management. Customization options allow for operator logos, branding or advertisement placement.

## FCC Part 96 Authorized EUD

### Key Features

#### High Performance and Network Resilience

- Offers 4G LTE Advanced Pro broadband connectivity
- Automatic Fail-Over and dual-WAN (4G/LTE & EWAN) interface for network resilience and reliable connectivity
- 4-Port Gigabit Auto-MDI/MDI-X Switch
- Advanced SX Antenna Technology for increased coverage, signal reception and efficiency
- LTE Multi-Service APN Selection and Management

#### Enterprise Class Routing and Secured VPN

- BGP and OSPF Dynamic Routing Protocols
- Secured VPN: IPSec, GRE, L2TP, PPTP and OpenVPN
- Advanced secure VPN sessions up to 40 simultaneous connections

#### QoS (Quality of Service)

- Traffic prioritization based-on IP protocol, port number, and IP address
- Enhanced IGMP, Proxy/Snooping and Fast Leave

#### Superior Wireless Technology

- Carrier-Grade High-Power 802.11AC Wave 2
- Simultaneous Dual Band Wi-Fi (2.4GHz & 5GHz)
- Wi-Fi Hotspot with Captive Portal
- Supports Wi-Fi Multimedia (WMM) Wireless QoS
- mSSID (4), Client isolation and MAC Filtering
- Multiple Operation Modes: Access Point, Bridge and Repeater

#### Firewall

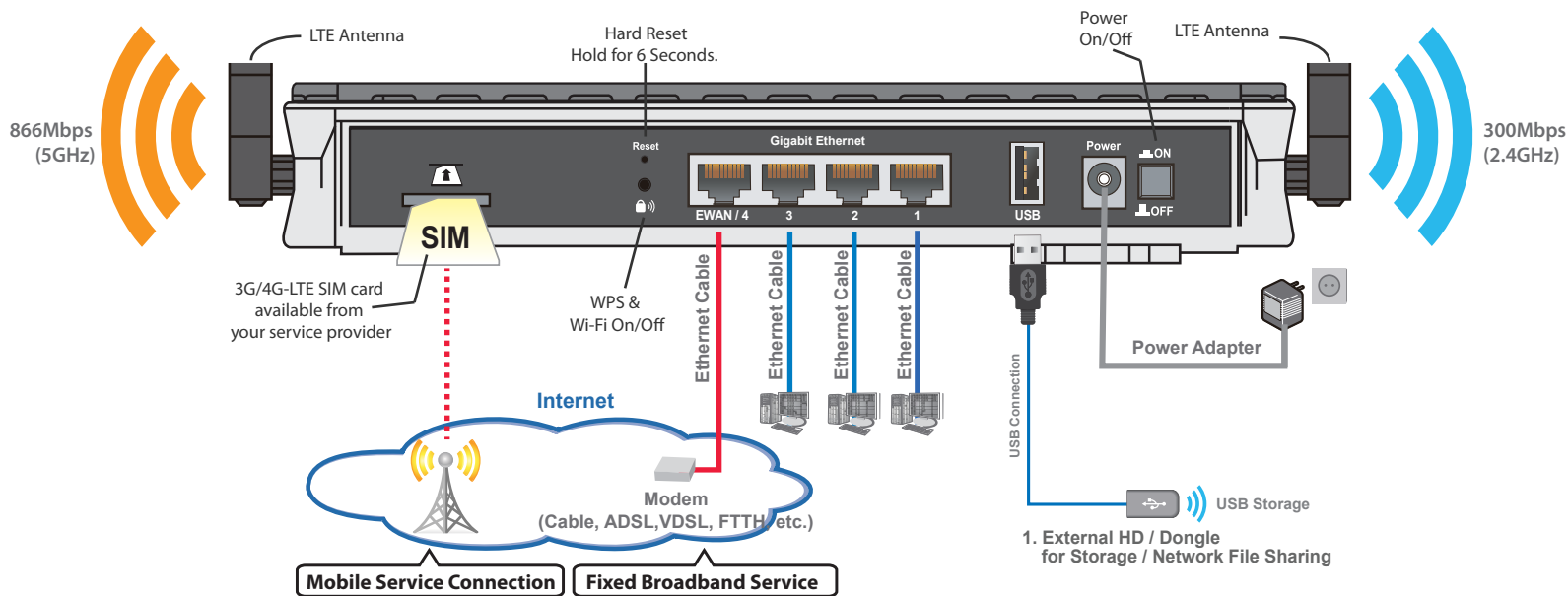
- Built-in NAT Firewall
- Stateful Packet Inspection (SPI)
- Prevents DoS attacks including Land Attack, Ping of Death, etc.
- VPN pass-through

#### Management

- Web-based GUI for remote and local management
- SNMP v1, v2, v3, MIB-I and MIB-II support
- TR-069 remote management
- SMS Control function for status and reboot
- Supported by BECentral®, BEC's Cloud-Based device management platform, to extend network visibility and control of devices remotely



## Application Diagram



## Features & Specifications

### Availability and Resilience

- Dual-WAN ports (4G & Ethernet WAN)
- Load balancing - Maximizing bandwidth of outbound traffic
- Auto fail-over between 4G and EWAN

### Supported Frequency Bands

#### • 4G/LTE: TDD

- B42 (3400MHz ~ 3600MHz)
- B43 (3600MHz ~ 3800MHz)
- B48 (3550MHz ~ 3700MHz)

#### • Downlink speeds up to 430Mbps (Cat.12: 60MHz 3CA with 256QAM)

#### • Uplink speeds up to 20Mbps

(Cat.13: Intra-band contiguous 2CA with 64 QAM)

#### • Channel Bandwidth

1.4/3/5/10/15/20/40 (2xCA)MHz

#### • RF Transmit Power

Transmit Power: +23dBm +/- 2dB

#### • Carrier Aggregation Bands

- DL 2CA: B42+B42 ; B48+B48
- DL 3CA: B42+B42+B42; B48+B48+B48
- UL 2CA: B42+B42

#### • Antenna

4X4 MIMO

### Network Protocols and Features

- IPv4, IPv6, IPv4 / IPv6 dual stack
- IP Tunnel IPv6 in IPv4 (6RD)
- IP Tunnel IPv4 in IPv6 (DS-Lite)
- NAT, static routing and RIP-1/2
- Universal Plug and Play (UPnP) compliant
- Dynamic Domain Name System (DDNS)
- Virtual server and DMZ
- SNTP, DNS relay, IGMP proxy and IGMP snooping for video service
- MLD proxy and MLD snooping for video service
- Supports port-based Virtual LAN (VLAN)

### Quality of Service Control

- Traffic prioritization based-on IP protocol, port number, and IP address

### Firewall

- Built-in NAT Firewall
- Stateful Packet Inspection (SPI)
- Prevents DoS attacks including Land Attack, Ping of Death, etc.
- Access Control
- IP Filtering, MAC Filtering, URL Filtering

### Carrier Grade Wireless LAN

- Compliant with IEEE 802.11 a/b/g/n/ac standards
- 2.4GHz & 5GHz frequency range
- 20/40-MHz channel bandwidth
- Up to 300Mbps (2.4GHz) & 866Mbps (5GHz) wireless data phy rate
- 64/128 bits WEP supported for encryption
- Wireless security with WPA-PSK, WPA2-PSK, Mixed WPA/WAP2-PSK, (TKIP/AES), 802.1x/Radius
- AP, Client Bridge and WDS Operational Modes
- Multiple SSID (4 SSIDs), BSSID
- Wireless MAC filtering
- Wireless Client Isolation
- Wi-Fi Hotspot with Captive Portal
- Dynamic, Wi-Fi client rate-limiting

### VPN/Tunneling (Optional)

- IPSec VPN Tunneling
- OpenVPN Tunneling
- PPTP VPN Tunneling
- L2TP over IPSec VPN Tunneling
- GRE
- Embedded PPTP / L2TP / IPSec / OpenVPN Client and Server
- IKE Key Management
- MPPE Encryption for PPTP
- IPSec DES, 3DES and AES encryption

### Dynamic Routing Protocols (Optional)

- BGP and OSPF

### USB Application Server

- Storage: FTP server and Samba server

### Management

- Quick Installation Wizard
- Web-based GUI for remote and local management
- Firmware upgrade and configuration data upload and download via web-based GUI and over-the-air
- Supports DHCP server/client/relay
- TR-069 supports remote management
- BECentral® Cloud Management
- SNMP v1, v2, v3, MIB-I and MIB-II support
- Syslog monitoring
- SMS Control function for status and reboot

### Hardware Specifications

#### Physical Interface

- 4G LTE Antennas:
  - Four (4) detachable antennas
- Wi-Fi Antennas:
  - Four (4) internal antennas
  - Two (2) external antennas
- WAN: 4G/LTE & Ethernet WAN (EWAN)
- Ethernet LAN: 4-port 10/100/1000Mbps auto-crossover (MDI/MDI-X) switch
- USB 2.0: One (1) Interface
- SIM Card Slot (2FF)
- Reset Button
- Wireless On/Off and WPS Push Button
- Power Jack
- LED Indicators

#### Physical Specifications

- Dimensions: 9.04"(W) x 6.10"(D4) x 1.69"(H) (229.5 mm x 155 mm x 43 mm)

#### Power Requirements

- Input: 15V DC, 1.6A

#### Operating Environment

- Operating temperature: 32 to 104° F (0 to 40° C)
- Storage temperature: - 4 to 158° F (- 20 to 70° C)
- Humidity: 20 ~ 95% non-condensing