

# Liberator E1000e



## High capacity 70/80 GHz band radio powers mobile backhaul, HD CCTV, and enterprise connectivity

The Liberator E1000e is an easy to deploy, cost-effective, wireless Ethernet point-to-point bridge operating in the 70/80 GHz millimeter wave E band, delivering full duplex capacity of up to 1 Gbit/s over distances of up to 4 km. With 30 or 60 cm antennas, the E1000e is an all-outdoor, small form factor platform for low profile street or roof deployments. With interference free operation, multiple radios can be co-located, maximizing flexibility and minimizing site acquisition costs. Combining carrier class performance and advanced features such as adaptive modulation, multi-channel operation, low latency, software-activated flexible link throughput and AES 256 bit encryption, the E1000e supports many backhaul and connectivity applications.

### Ideal for high speed backhaul and short haul connectivity

Anywhere that high capacity, short haul point-to-point connectivity is required, the Liberator E1000e shines. Applications include:

- Small cell 3G and LTE backhaul
- Last mile broadband Internet Service Provision
- Backbone / fiber extension and wired network bridging
- Wireless security and video surveillance / CCTV backhaul
- Building to building private links and campus connectivity

### Novel & Innovative Technology

A combination of leading-edge technology and superior attention to detail in every element of design and manufacture means that the E1000e radio packs huge performance and resilience into a small form factor platform. All housed in a lightweight robust aluminum housing to withstand even harsh weather conditions. The use of frequency division duplexing (FDD) means that the full capacity of the radio is available in both directions simultaneously, rather than being shared.

### About the E band

The E band is a pair of 5 GHz-wide channels between 71–76 GHz and 81–86 GHz. This 10 GHz of spectrum, which is typically available on a lightly licensed basis, supports much higher throughput than traditional microwave technology, while also enabling link distances of up to 4 km. Multiple channel options in the 70/80 GHz E band allow deployment without interference, ideal for a wide variety of high capacity connectivity and backhaul applications.

### Practicality and performance in a powerful, feature-packed, lightweight device.

- Interference-free operation in 70/80 GHz millimeter wave E band
- Up to 4km range
- Up to 1 Gbit/s full duplex capacity with FDD
- Flexible capacity license keys, from 500 Mbit/s to 1 Gbit/s
- All outdoor unit, small form factor, lightweight antennas
- Robust aluminum housing to withstand weather conditions
- 256 bit AES encryption option available for added security
- SyncE and IEEE 1588 compliant synchronization



*Liberator E1000e millimeter wave E band radio*

## Specifications

|                                   |                                                                  |
|-----------------------------------|------------------------------------------------------------------|
| Frequency bands                   | 71-76/81-86 GHz paired                                           |
| Modulation                        | 8-PSK/QPSK                                                       |
| Range                             | Up to 4000 meters                                                |
| Ethernet throughput               | Full duplex: 1 Gbit/s (8-PSK)/700 Mbit/s (QPSK)/500 Mbit/s       |
| Maximum Tx power                  | +7 dBm                                                           |
| Channel width                     | 500 MHz                                                          |
| Antenna gain                      | 44 dBi/51 dBi                                                    |
| Link adaptation                   | Adaptive coding and modulation, ATPC                             |
| Ultra-fast boot time              | 10 seconds from power-up to full data transmission               |
| Availability                      | Up to 99.999% (use Link Availability Calculator)                 |
| Mean time between failures (MTBF) | 25 years                                                         |
| Wind load                         | 160 km/h (operating) and 200 km/h (survival)                     |
| Latency                           | <250 microseconds                                                |
| Synchronization                   | SyncE with patent-pending "Snapback" technology, and IEEE 1588v2 |
| VLAN for management               | IEEE 802.1Q                                                      |
| Quality of service (QoS)          | 802.1p, DiffServ, 8 queues                                       |
| Network management                | SNMP v1, v2C, v3                                                 |
| Graphical user interface (GUI)    | HTTP web browser                                                 |
| Alarms                            | User-defined alarms and thresholds on GUI, Syslog, SNMP          |
| Statistics                        | 1 min, 15 min, 24 hour statistics over 30 days, downloadable     |
| Firmware control                  | Dual firmware banks with safety rollback feature                 |
| Encryption                        | AES 256 bit available as a hardware option                       |
| Data ports                        | GigE, with 2 port version available                              |
| Alignment                         | Voltmeter port, professional long-range alignment scope          |
| Outdoor unit (ODU) terminal size  | 182 x 182 x 100 mm                                               |
| Weight                            | 2.5 kg (ODU only)                                                |
| Power supply                      | Power Over Ethernet ("Ultra-PoE"/PoE++), consumption 40W         |
| Operating temperature             | -40°C to +55°C                                                   |

## About Fastback Networks

Fastback Networks was founded with a vision to deliver innovative technology for the mobile infrastructure of the future. Fastback solutions enable network operators to expand and enhance services, and private networks to secure, monitor and manage operations via high capacity data connectivity. With insights derived from the collective team's experience building leading edge radio and data networking solutions, Fastback Networks looks at the challenges of 4G/5G LTE deployment with fresh eyes and better ideas, and develops transformational mobile backhaul solutions that enable the acceleration of the mobile future. Fastback Networks is a privately held company funded by Business Growth Fund, Foundation Capital, Granite Ventures, Harmony Partners, Juniper Networks Junos Innovation Fund, and Matrix Partners. More information is available at [www.fastbacknetworks.com](http://www.fastbacknetworks.com).



### Fastback Networks

2460 North First Street, Suite 200  
San Jose, CA 95131  
408-430-5440  
[www.fastbacknetworks.com](http://www.fastbacknetworks.com)