

# Liberator V1000

## High capacity 60GHz band radio powers macro and small cell backhaul and enterprise connectivity

The Liberator V1000 is an easy to deploy, cost-effective, wireless Ethernet point-to-point bridge operating in the 60 GHz millimeter wave V band, delivering full duplex capacity of up to 1 Gbit/s. Link distances of up to 800 meters are supported. With a minimal 18 x 18 cm form factor, this all-outdoor platform is optimized for invisible street level deployments in challenging high density networks. A high gain antenna with low sidelobes, combined with the option to use multiple channels, ensures excellent interference immunity for colocated radios on a single pole. The antenna beam-width is sufficiently wide to allow for the pole sway, twist and tilt encountered with small cell backhaul links. Combining carrier class performance with advanced features such as adaptive modulation, multi-channel operation, low latency, software-activated flexible link throughput and AES 256 bit encryption, the V1000 supports a variety of short haul connectivity and backhaul applications.

### Backhaul and Short Haul Applications

The Liberator V1000 is optimal anywhere that high capacity, short haul point-to-point connectivity is needed, including dense urban networks. Applications include:

- Small cell 3G and LTE backhaul
- Campus connectivity and building to building private links
- Backbone / fiber extension and wired network bridging

### Novel & Innovative Technology

A combination of leading-edge technology and superior attention to detail in every element of design and manufacture means that the V1000 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 V Band

The V band, between 57 and 64 GHz, is available on a licence-exempt basis, enabling backhaul and connectivity links to be rapidly and cost-effectively deployed. In this band, radios can operate without interference issues, even when deployed in close proximity in highly dense networks, due to the oxygen absorption characteristics of this millimeter wave band. Large networks can be deployed and operate at extremely high densities with tens of links on a single rooftop or street.

### Form and function combined in powerful, feature-packed device

- Interference-free operation, 60 GHz millimeter wave V band
- Link distances up to 800 meter range
- Up to 1 Gbit/s full duplex capacity with FDD
- Flexible capacity licence keys, from 500 Mbit/s to 1 Gbit/s
- All outdoor unit
- Minimal form factor & integrated antenna
- Robust aluminum housing withstands weather conditions
- 256 bit AES encryption option available for added security
- SyncE and IEEE 1588 compliant synchronization



*Liberator V1000 millimeter wave V band radio*

## Specifications

Frequency bands	57-64 GHz band
Modulation	8-PSK/QPSK
Range	Up to 800 meters
Ethernet throughput	Full duplex: 1 Gbit/s (8-PSK)/700 Mbit/s (QPSK)/500 Mbit/s
Maximum Tx power	+6 dBm
Maximum EIRP	44 dBm
Channel width	500 MHz
Antenna gain	38 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 and IEEE 1588v2
VLAN for management	IEEE 802.1Q
Quality of service (QoS)	802.1p, 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
Alignment	Voltmeter port, compact alignment scope
Outdoor unit (ODU) terminal size	182 x 182 x 68 mm
Weight	2.5 kg (ODU only)
Power supply	Power Over Ethernet ("Ultra-PoE"/PoE++), consumption 35W
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).



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