

Outdoor LiFi Point-to-Point Link

Optical Wireless Backhaul for 6G



AT A GLANCE

Laser-based Optical Wireless Communication (OWC) links are a cost-effective alternative to wired connections and ideally suited for future 6G small-cell backhaul.

fiber-like delivers high-speed OWC links based on Fraunhofer HHI's LiFi 2.0 technology. Proven reliability in adverse weather and flexible deployment make it a key technology for future mobile network rollouts.

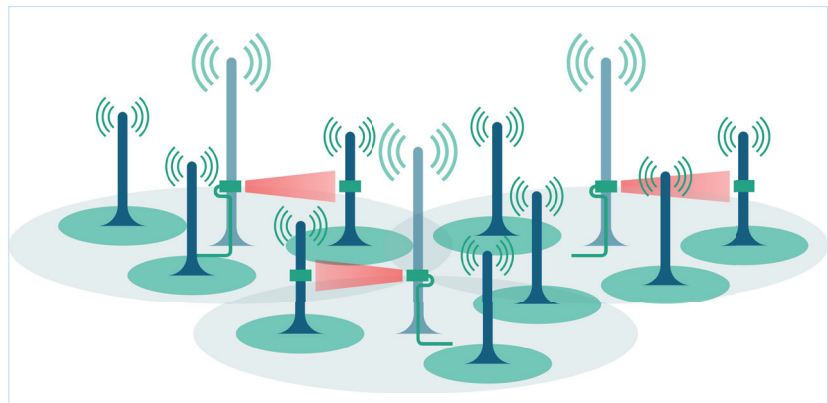
Target Parameters

- High-power VCSEL array transmitters with large beam spots
- Large-area APD array receivers with individually selectable pixels for simplified link alignment
- Up to 1 km range at 10 Gbit/s data rate
- > 99.99% availability in adverse weather conditions
- Full bi-directional data transmission
- Dynamic data rate and power adaptation
- Ultra-low latency (<1 ms)
- Power-over-Ethernet (PoE) support

Background

Exponential growth in data demand and the number of end users calls for further network densification in future mobile networks like 6G. Wired backhaul deployment remains slow and costly. Optical Wireless Communication links offer a flexible backhaul solution, operating in the unlicensed optical spectrum and requiring no interference coordination.

fiber-like links deliver high symmetrical data rates with low latency, making them ideal for live applications. Adaptive rate and power control ensure availability in challenging weather and optimize energy use. High-power, wide-beam VCSEL-array transmitters combined with large-area APD-array receivers enable easy installation and reliable link alignment.

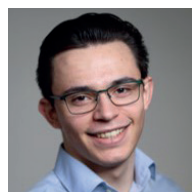


Optical wireless links for 6G small-cell backhaul

Benefits

- Cost-effective optical wireless link using VCSEL arrays
- Enhanced robustness and energy efficiency through adaptive rate and power control
- Flexible deployment with straightforward link alignment
- No interference coordination required – operates in unlicensed spectrum
- Secure and exclusive channel access

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