

## OPTICAL WIRELESS COMMUNICATION

Optical Wireless Communication (OWC), also known as free space optical communication (FSOC), uses a pair of laser “terminals” separated by as little as 100m or as much as 50km, to transmit information at 10X to 100X times faster than rates achieved by radio frequency (RF) communications. Laser beams establish a free-space optical link between the two terminals at bandwidths between 1 GHz to over 100 GHz, depending on the configuration. For certain applications, laser communication

has clear advantages over RF communication and fiber-optic communication. While OWC technology is not new, advancements in the component technology (i.e. lasers and detectors), availability and lower costs of these components, and expectation for higher bandwidth communications everywhere, all underline the need for a new class of OWC products and availability.



## THE CASE FOR OPTICAL WIRELESS COMMUNICATION

The telecommunication market has matured to the point where fiber optic telecommunications are ubiquitous and expected to carry ever increasing demands of cell phone users and big data providers. Yet security, bandwidth, and infrastructure are proving to be real challenges. Lasercom offers a real alternative to RF and fiber package and deliver greater amounts of data at higher speeds than radio waves. OWC’s use of lasers saves on the cost and time of laying fiber cables and infrastructure. Furthermore, since OWC does not interfere in RF bandwidth frequencies, lasercom can both save on licensing and red tape as no spectrum allocation is required and it offers alternatives for areas already too saturated by RF frequencies. Finally, the highly directional, point-to-point nature of laser beams make Optical Wireless Communication systems considerably less vulnerable to interception and jamming than RF-based communication systems.



## THE X-LUMIN SHORT-RANGE OWC SYSTEM

The X-lumin Short-Range Optical Wireless Communication (XOWC) System is designed to incorporate the latest advancements in telecom and photonic technology, addressing both commercial and DoD needs in a cost-effective manner. XOWC is also compatible with existing fiber networks. The XOWC ‘base’ system is comprised of two OWC terminals manufactured using high-quality and proven telecom infrastructure hardware. The terminals are suitable for mounting on buildings, tripods, and other moving objects. The highly directional, point-to-point nature

of laser beams makes data transferred through the system nearly impossible to intercept. Supporting integration with DWDM architecture, the XOWC system is both compatible and able to securely integrate into diverse networks such as: banking, data warehousing, 4G/5G platforms, mobile tactical operations, space-to-ground scenarios, etc. Complete with remote administration and easy configuration, the XOWC is managed by X-lumin's Operating System (XOS) which provides a web-based user interface to operate the OWC system and is available on multiple platforms including Windows, Linux, Mac, Android and IOS.

## FIXED ASSET APPLICATIONS

- Building to building in cities (not subject to RF interference)
- Banks (secure)
- Government infrastructure (secure)
- 5G tower backbone infrastructure
- QKD over short haul
- Mountainous areas
- Power plants (with high RF)

## MOBILE ASSET APPLICATIONS

- Ship-to-Shore, Ship-to-Platform (oil)
- Concerts & Sporting Events (ad hoc 4G/5G networks)
- Air ships
- Off-shore / Island 5G
- Tac Ops & remote area military coms
- Disaster & Emergency Response
- Space-to-Ground scenarios

## SHORT-RANGE OWC APPLICATIONS

X-lumin's Short Range OWC Lasercom system is designed to work across fixed sites and mobile assets, as well as with temporary infrastructure applications. Its customizable compact size, built-in atmospheric turbulence compensation, weatherized package make it ideally suited to a variety of applications. Fixed site applications might include building-to-building, power plants, mountainous regions, or islands/areas where underground cabling is restricted. Mobile assets might include ship-to-shore or ship-to-oil platform communications, infrastructure sending data to remote areas, or even moving platforms. The XOWC system can be set up for temporary or "as needed" bandwidth allowing for ad hoc 4G/5G networks at concerts and sporting events, and for remote area communications. The XOWC can also be easily adapted for rapid deployment of temporary OWC infrastructure in the case of emergencies or natural disasters.



## XOWC: MOBILITY, FLEXIBILITY, & CUSTOMIZATION



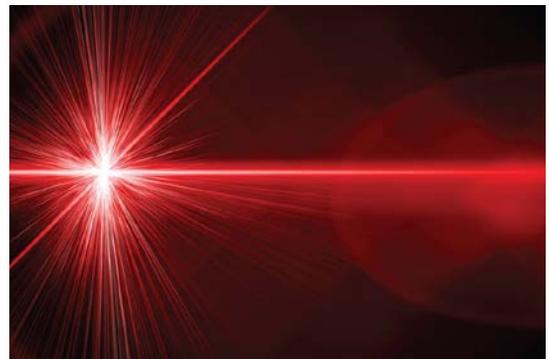
The flexible and adaptable operating system (XOS) that manages the XOWC allows for state-of-the-art pointing and tracking capabilities such as: manual and automatic guiding; remote control; motion stabilization; video tracking; calibration & alignment; target acquisition; and a highly configurable control interface. In addition, the XOWC system can be custom designed for specific deployment parameters allowing it to meet a variety of housing, size, weight, and portability requirements. Intended to conform at a commercial standard

to a wide variety of user applications, the XOWC system can be adapted for rapid or emergency deployment and transport that allows for quick install and easy takedown events.



## OPTIONAL LASER SAFETY FOR HIGH-POWER BEAMS

As an add-on feature, the XOWC system can be fitted with the X-lumin Laser Safety System (X-LSS), a highly adaptable safety management system for use with applications requiring moving platforms or high-powered laser beams. Managed by XOS, the X-LSS constantly monitors the laser system and the surrounding environment for safety conflicts. Upon identification, the system intelligently pauses laser emission until the potential conflict has cleared, and then resumes normal operations. The X-LSS can be programmed to deconflict laser operations with static constraints such as azimuth and elevation, as well as 3D and timebased keep-out areas. Optional sensors provide situational data that ensures against the unintentional lasing of buildings, aircraft, sea craft, satellites, UAVs, moving vehicles, people and wildlife.



## SPECS: XOWC BASE MODEL

- Wavelength: 1550nm
- Range: 1-2km
- Bandwidth: 1 Gbit
- Size: compact, small form factor
- Eye safe: at 1G, 1-2 km

## FEATURES

- Atmospheric turbulence compensation
- Weatherized package
- Supports industry standard DWDM architecture
- Web-based management interface; includes remote admin capability

## OPTIONAL UPGRADES

- Range upgradable to 5, 10, or 20km
- Upgradable Bandwidth extension to 10G to 100G depending on distances and hardware infrastructure
- Integration with existing RF networks
- Moving platforms: with additional hardware & software
- Custom packaging
- Laser Safety

### ABOUT X-LUMIN

X-lumin is on a quest to build an effective and efficient bridge between existing optical communications technology and the need for a high-speed data highway to meet exploding IoT demands. Our innovative and cutting-edge solutions incorporate state-of-the-art optical and photonic components which comes from over 25 years of experience in the design, development and integration of optical technologies and solutions, laser systems, tracking and surveillance, atmospheric propagation, and video and image processing. While the early foundations of our products and solutions focused on universities and government agencies, our solutions today allow us to bring these leading-edge solutions to the commercial marketplace which create new standards and solutions that have broader impact.

For more info, contact us at:  
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