The Role of Free Space Optics

What is a Free Space Optical Transmission System?

A Free Space Optical transmission system is a wireless form of connection designed for the interconnection of two points which have a direct line of sight. The systems operate by taking a standard data or telecommunications signal, converting it into a digital format and transmitting it through free space. The carrier used for the transmission of this signal is Infrared and is generated by either high power LED or laser diode. The easiest way to visualise how the systems work is to imagine two points interconnected with fibre optic cable then remove the fibre. The basic principles for the transmission of a signal along a fibre are the same as for transmission through free space.

What are the benefits of using Free Space Optical technology?

There are many benefits to using Free Space Optical technology:

- Full channel speeds
- No license requirements
- Ease of installation
- Highly secure
- Compatible with copper or fibre interfaces
- No bridge or router requirements
- Cost effective, rapid pay back
- No recurrent annual rental costs
- Internal or external mounting
- Excellent availability
- Fully portable
- Resistant to temperature and climatic changes
- Near zero latency over all distances
- Transparent to networks or protocols

What is a typical application?

There is no "typical application". Free Space Optical systems are being used by a wide variety of organisations. The only common factor is that they have multiple sites and wish to interconnect services.

Examples:

- Williams Renault Grand Prix team; equipment required to form final connection across pit lane to pit wall at Grand Prix circuits.
- The Rank Group Plc; connection of networks between sites.
- Vodacom, South Africa; connection of cell sites into the fixed network.
- The Boeing Company; equipment used to transmit data between two buildings on a flight line.
- Sky Television (c/o SkyNet Systems); connection of networks between sites.

Overall Free Space Optical systems offer a reliable, cost effective rapidly deployable form of connection enabling organisations to carry out installations in a fraction of the time of cable installations and without the "red tape" involved with microwave installations.

It is also an excellent way of carrying out short term temporary installations.

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