
Cablefree Solutions Limited

Secure High Performance Wireless Connectivity

Cablefree Virtual-Point-to-Multipoint™

Cablefree V-PMP™ for LMDS

Cablefree V-PMP™ systems enable implementation of License-free Local Multipoint Distribution Service (LMDS) networks using Optical Wireless technology.

Conventional LMDS uses microwave technology in licensed frequency bands to create wireless, two-way broadband networks which can bring a wide range of high-value, quality services to homes and businesses. Services using LMDS

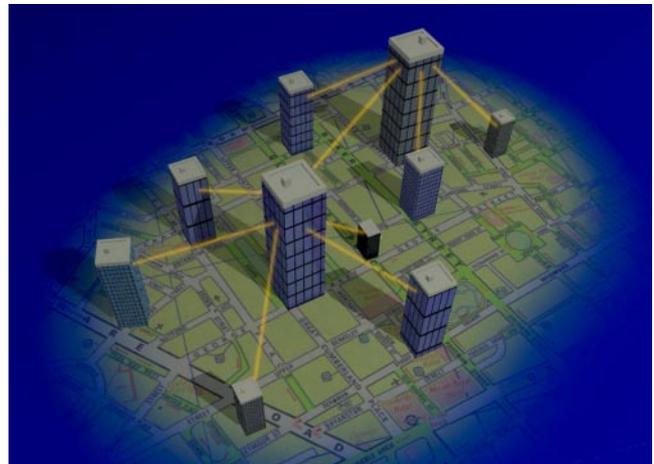
technology include high-speed Internet access, real-time multimedia file transfer, corporate local area network extensions, interactive video, video-on-demand, video conferencing, and telephony amongst many other potential applications.

Cablefree Solutions has applied its proven expertise in Optical Wireless to create License-free Next-Generation LMDS solutions using Virtual-Point-to-Multipoint™ technology. Key benefits of this technology are:

- License-free operation
- Non-shared bandwidth for each subscriber
- High symmetric bandwidths up to 1.5Gbps per subscriber
- Rapid network deployment and fast new-user connection
- Low cost of start-up
- No frequency planning
- Data Security against interference and interception
- Redundant 1+1 connection options including equipment and path diversity

Designed especially for the telecommunications market, **Cablefree V-PMP™** enables rapid rollout of wireless infrastructure for today's high-performance networks

Cablefree V-PMP™ combines Point-to-Point Optical Wireless technology and Intelligent Routers to create high-performance cellular networks offering high symmetrical bandwidths up to 1.5Gbps to end-users within the coverage area.



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Configuration and Performance

Deployment of networks using **Cablefree V-PMP™** assumes cellular deployment with coverage areas up to 2km in diameter. **Cablefree V-PMP™** cell-size limits are dictated by the geographic region of operation, with radius varying from 500m to 2km depending on local atmospheric conditions, offering network availability figures up to 99.97%.

Outdoor-Unit (ODU) options allow for hub-subscriber distances of 0.5, 1.0 or 2.0km, and data bandwidths up to 155, 622 or 1500Mbps. These units are transparent in bandwidth within their capacity, and allow simple plug-in module upgrades at the Indoor Unit (IDU) for bandwidths all the way from T1 (1.544Mbps) or E1 (2.048Mbps) up to the maximum 155, 622 or 1500Mbps capacity of the ODU.



This flexible architecture allows industry-standard PDH (Nx E1 or Nx T1), SDH (155 or 622Mbps) or native-format (10/100/1000 Ethernet, or ATM-155 or 622Mbps) connection to the Customer Premises Equipment (CPE), with complete ease of bandwidth upgrade at any point in time.

Advanced design features give the **Cablefree V-PMP™** superior performance over comparable Point-to-Multipoint technologies. Unlike microwave at 26 or 40GHz, **Cablefree** optical wireless technology is immune to 'rain-fade', with only atmospheric conditions such as fog, snow, sand-storms and thermal shimmer limiting transmission reliability over much longer distances. The use of 'wide beam' technology overcomes potential problems of vibration and building movement ensuring correct beam alignment at all times.

Cablefree V-PMP™ systems consist of ODU (outdoor) and IDU (indoor) elements. Outdoor Units are full-duplex **Cablefree** transceiver units in IP65 environmentally protected casings, together with mounting fixings. Indoor units contain the network interfaces and power supplies. Both ODU and IDU elements have in-built alignment aids, link-test and diagnostic functions to facilitate installation and service.

Advanced network management options allow integration using either the proprietary **Cablefree** Cluster Manager package or industry-standard SNMP platforms.

Cablefree V-PMP™ incorporates numerous safety features and meets the stringent eye-safety requirements of IEC825 and BS EN60825.

For further information regarding the **Cablefree V-PMP™** range please contact us.

Cablefree V-PMP™ Technical Data

Performance:

Subscriber Range	ODU systems for 500m, 1km, 2km
Data rates supported	ODU's from 64kbps to 155, 622 or 1500Mbps
Unfaded Bit Error Rate	Better than 1×10^{-10} at 155Mbps
Fade Margin	>20dB to overcome fog, rain, snow or shimmer
Link Availability	Greater than 99.9% for links under 0.5km

ODU Specification:

Size	Depends on range of system
Weight	5kg – 15kg depending on range of system
Unit Power Consumption	100W 24Vac
External Power Supply	115/230V ac, 48V dc option
Operating Temperature	-20 to 60° C

Optical sub-systems:

Operating Wavelength	780 or 980nm
Filtering	Narrow-band Infra-red filter removes interference from daylight
Beam divergence	Factory-preset to 0.5° or 0.25°
Optical classification	Eye-safety to Class 3b to IEC825 rev. 1996

Alignment aids:

Alignment sight	Mechanical 'gun-sight' for general alignment
RSSI meter	10-step signal strength meter and audible tone
FM audio	2-way 'voice link' for speech and RSSI tones

Data Formats:

End-User	Upgradable from 1xE1 to Gigabit Ethernet
Network interface	STM-1, STM-4 or Gigabit Ethernet interfaces

IDU (subscriber) Specification:

Size	19" 1U rack-mount unit
Weight	2kg
Unit Power Consumption	60W
External Power Supply	115/230V ac, 48V dc option
Operating Temperature	-10 to 60° C

Accessories & options

Installation	Pan & Tilt mount, Wall bracket, Tripod adaptors
Diagnostics	Bit-error-rate measurement, in-built system diagnostics, remote status monitoring

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