COFDM Wireless IP Bridge - IPM2 Product Overview

IPM2 is a range of professional COFDM IP transceivers which can create secure wireless point-to-point,point-to-multi-point and simple mesh links for transmission and reception of high speed data for 10/100 Ethernet enabled devices over extended distances. The resulting network is ideally suited for transmission of real-time D1 and HD digital video and audio for surveillance applications using IP cameras, video servers and decoders where low latency is critical. Typical real TCP-IP throughput is in the order of 20Mb/s on a good radio link.

IPM2 employs a COFDM modulation scheme. This scheme spreads and interleaves the digital data over multiple orthogonal narrow-band sub carriers which helps mitigate against multipath and frequency selective fading commonly associated with causing problems in analogue transmission systems. IPM2 is ideal for use in built up areas and non- line-of-sight applications (NLoS). Additionally, Forward Error Correction (FEC) is used together with adaptive modulation levels on each sub carrier.

An IP appliance connected to an IPM2 device instantly becomes a secure member of the network and is able to communicate at distances of greater than 1kM (LoS), as if connected through a wired switch. IPM2 devices support access password and network name differentiation together with AES-128 and AES-256 bit encryption. IPM2 devices are plug-and-play and optional parameters can be configured remotely for the whole network once operational or in advance, via the configuration tool which runs on a local PC.

Multiple secure virtual networks can be set-up over a single shared RF channel using different encryption parameters. Alternatively 4 user selectable (pre-programmed) channels can provide 4 separate full bandwidth links operating within the same coverage area.

The IPM2 product uses Time Division Duplex (TDD) transmission together with dynamic Time Division Multiple Access (TDMA) token based Media Access Control (MAC), which provides collision free packet transmission. By design, this allows prioritisation and quality of service support and has none of the "blind node" or "legacy" problems associated with WIFI based solutions.

Currently IPM2 devices are available on L Band frequencies, between 1200MHz and 1400MHz, with modulation bandwidths of 10MHz.

A main feature of the IPM2 is that it is extremely easy to set-up and operate with no manual adjustments required. After applying power, a link will be automatically established with other in-range IPM2 devices. The first device to be powered will automatically assume the role of network master — if required the network master role can be reassigned.

The network master controls all timing and allocates transmit slots to the other (Slave) devices by passing tokens. This allows non-contended peer-to-peer transfers to occur at maximum throughput. Each IPM2 device is also able to act as an automatic TDD relay by repeating packets to out-of-range peers. The fast spanning tree protocol keeps the topology of the network updated. Relaying is end-to-end, which means that no packet decoding takes place by the relay device(s) and therefore encryption is also end-to-end ensuring that the data remains fully secure.

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Three types of product are currently available:

OEM module (IPM2O)

This provides the most flexible solution and provides a variety of interfaces for ease of integration for the system integrator. This small module can be used "standalone" and requires only a 9.5 to 14V (12Watt) supply for basic operation. It also provides all the features needed to monitor and charge an external battery.

Portable unit (IPM2N/B)

This is a fully enclosed self-contained device which is ideal for use in mobile 'adhoc' applications. Turn the unit on, plug in an Ethernet appliance and the unit is ready for use. The unit is available with or without a built-in rechargeable battery pack, which can provide up to 2 hours of fully portable use. The unit can also provide power to the Ethernet appliance and provides visual survey mode.

Outdoor Unit (ODU)

This has a rugged IP67 rated enclosure suitable for pole mounting and for use in all weather conditions. The ODU is powered via Ethernet POE and is an 802.3af compliant powered device (PD). The ODU supports both visual and audible survey modes.

All IPM2 units are compatible with each other and support RSSI, power control, dynamic receive gain, LAN/LINK/TX/Channel indicators, console port, charge control, temperature, remote configuration and status.

The IPM2 range is designed and manufactured in the UK by adaptiveRF Limited

For further information, please contact us.

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