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Mikom's Wireless Optical Transport System Technology

Introduction

Mikom produces optical transport systems for most RF standards and frequencies. In an effort to maximize the flexibility and utility of these systems, Mikom has chosen to implement an amplitude modulation scheme for the transport mechanism. The benefit of this scheme is the ability to transport a composite complex waveform comprised of many simultaneous signals of vastly different levels and in a wide arrange of frequencies at a low cost with high thermal and special efficiency. This paper describes the method used for this transport and other transports and explains how it has NO impact on RF modulation.

Methods of Transport

Digital Optical Transport, a process Mikom does NOT do.

Consider an optical transport system that uses a digitizer. This digitizer is the "analog-to-digital circuit" (ADC) that takes the incoming RF analog signal(s) and converts this composite waveform into a number of "bits" of a predefined length. The conversion process is done on a regular basis (sample rate) to provide a reproduction of the analog signal in digital bits. The bits are then used to modulate a laser (effectively turning it "on" or "off" depending on the bit polarity or change). This "on" or "off" signal is then pushed down a fiber for transport. At the other end of the fiber, the light is received by a photodiode. The "bits" are reconvered via a "digital-to-analog" circuit (DAC) into a reproduction of the original analog signal(s).

One could compare this type of system to a bus where all of the robots that wanted to go somewhere would have to place their heads, legs, arms and bodies on separate buses and have them re-assembled when the got off. Although it is possible to label each one of the parts and assembly them back together correctly sometimes mistakes are made and there are errors.

Analog Optical Transport, Mikom's process.

An analog modulated laser such as used in Mikom's products, provides a completely broadband input, with conversion processes. The input RF signal is modulated on top of the original laser signal without regard to the modulation scheme. This maintains the original signals spurious free dynamic range (SFDR) and standard dynamic range (DR).

If this system were compared to a bus used to move robots around, the entire robot in its current state would be allowed on the bus. No disassembly or assembly would be necessary for movement. As there are no changes to the robots it is impossible that a "mistake" could be made.

Conclusion

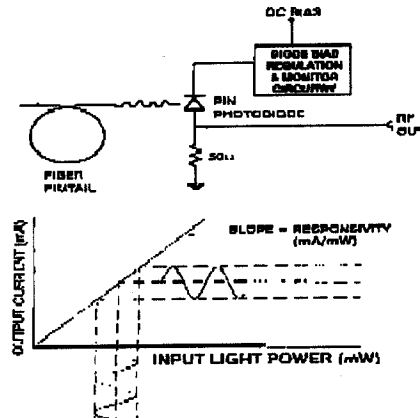
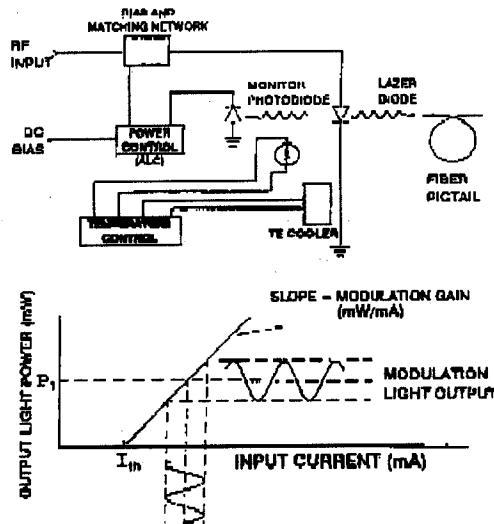
Mikom's method of optical transport does not demodulate the RF signal. It simply rides on top of the laser and uses it as a transportation bus. Mikom therefore believes there is no need to do any modulation dependent testing on the conversion.

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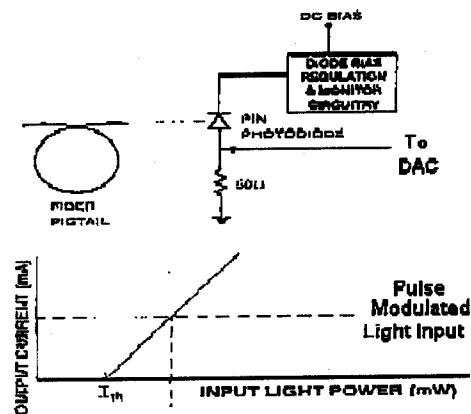
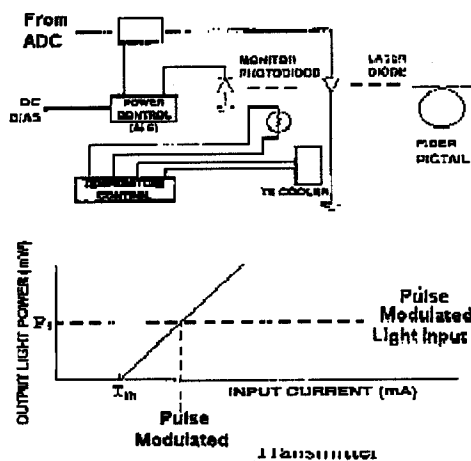
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Analog Modulated Optical System (Mikom's System)

Receiver

Note that there is no demodulation. The input RF source is transported in its present state and is identical to the output signal.

Digitally Modulated Optical System (NOT Mikom's System)

Receiver

Note that the RF signal is demodulated in an ADC and remodulated in a DAC. The input RF source has been converted to a digital pulse train and then reconverted back to an RF signal, creating a "copy" of the signal.