



Abstract

A group of Danish researchers has invented a simpler and cheaper method and/or device provided for e.g. detecting a transmitted information signal superimposed on a high frequency carrier signal. A wirelessly transmitted signal may comprise a transmitted information signal superimposed on a carrier signal with a high(er) frequency. The client is looking for co-operation with developers interested in licencing agreement, technical co-operation or alternatively taking over the patent.

Description

In order to utilise this information, a way to extract it from the carrier, what is referred to as frequency down-conversion, must be devised so that these data may be transmitted further or processed locally, depending on the application of the transmitted signal. The general concept of the invention is to use an all-optical half-wave rectifier followed by an optical envelop detector to downconvert wireless signals to the baseband frequency domain. Envelop detection can be realised in the optical or electrical (e.g. photodetector) domains for further optical transmission or electronic processing purposes. As this invention takes advantage of an all-optical half-wave rectification followed by envelope detection concept, it eliminates most of the problems related to the current downconverting topologies.

Nowadays frequency down-converting methods for ultra-high bandwidth wireless signals rely on very expensive high frequency electronic mixers and local signal oscillators, which are used as phase comparators for continuous locking and high quality reference signals. These local oscillators are required to be tuned with substantial accuracy to the frequency of the received carrier signal. In addition, the bandwidth of the RF mixer and the frequency of the local oscillator are commonly fixed. As a result, these

devices are constrained to a given frequency and bandwidth operation, which greatly limits the upgrading capabilities of the system as higher data capacity is required. This invention uses an all-optical half-wave rectification followed by envelope detection, which mostly eliminates the above mentioned problems.

Innovations and advantages of the offer

- High speed wireless communication
- No frequency mixers and oscillators
- Flexible frequency and large bandwidth
- Link capacity upgrade ready
- Integration with optical fibre links

Current and Potential Domain of Application

The invention can be used for various different applications within the consumer goods industry (high speed wireless LAN market, computers, game consoles, music players, wireless TV/video and data communication), the automotive industry (automotive radars), and telecommunication backhubs. The invention also offers a range of possibilities for the military market as future combat systems, satellite communication, military phased array market, and communication.

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