Abstracts

A Balanced Fiberoptic Communication Link Featuring Laser RIN Cancellation

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This paper presents a novel scheme of a balanced optical communication link intended to reduce the effect of the transmitter laser RIN on the total noise figure and dynamic range of the link. The method is based on splitting the laser's power into two fibers, and modulating only one branch by the RF signal. Maintaining perfect amplitude and phase balancing allows complete cancellation of the laser RIN. In practice, to achieve 20 db of laser noise reduction an amplitude balancing of 0.5 db or phase balancing of 6 degrees is required. To maintain the balancing under changing conditions it might be necessary to use an adaptive circuit. The method presented is particularly important for microwave high dynamic range links, which may be limited by laser noise.

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