Abstracts

On the noise properties of balanced amplifiers

A.R. Kerr. "On the noise properties of balanced amplifiers." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 390-392.

The balanced amplifier is used in applications requiring a better input match than is possible with a single-ended amplifier. While the impedance matching property of the balanced amplifier is well known, its noise behavior appears not to be widely understood. It is shown that the outgoing noise waves at the input and output of a balanced amplifier are uncorrelated even though they originate in the same components. Hence, a sliding short-circuit at the input produces no variation in the output noise of the amplifier. The properties of a balanced amplifier are similar to those of an amplifier preceded by an isolator, although the noise wave emerging from inputs of the two circuits originates in different elements. The noise theory of the balanced amplifier applies also to balanced mixers based on quadrature hybrids.

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