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Fluctuations of Transfer Factor of the Mixer Based on Schottky Diode

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Abstract : Fluctuations of Schottky diode parameters in a structure of the mixer are investigated. These fluctuations are manifested in two ways. At the first, they lead to fluctuations in the transfer factor that is lead to the amplitude fluctuations in the signal of intermediate frequency. On the basis of the measurement data of 1/f noise of the diode at forward current, the estimation of a spectrum of relative fluctuations in transfer factor of the mixer is executed. Current dependence of the spectrum of relative fluctuations in transfer factor of the mixer and dependence of the spectrum of relative fluctuations in transfer factor of the mixer on the amplitude of the heterodyne signal are investigated. At the second, fluctuations in parameters of the diode lead to the occurrence of 1/f noise in the output signal of the mixer. This noise limits the sensitivity of the mixer to the value of received signal.

Keywords : current-voltage characteristic, fluctuations, mixer, Schottky diode, 1/f noise
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