Abstracts

Noise in IMPATT Diode Amplifiers and Oscillators (Comment and Authors' Reply)

B. Schiek, K. Schunemann, H.-J. Thaler, G. Ulrich and G. Weidmann. "Noise in IMPATT Diode Amplifiers and Oscillators (Comment and Authors' Reply)." 1972 Transactions on Microwave Theory and Techniques 20.9 (Sep. 1972 [T-MTT]): 631-632.

In the above paper, an extensive contribution on the noise of IMPATT oscillators was presented, which is based on the theory of Kurokawa. In our opinion, however, the theoretical results of this work do not apply in all cases to the experiments reported. The authors define a load angle Theta (15a) which appears in the equations for the AM and FM noise [(16b) and (17b)] and the correlation coefficient [(18b). Eqs. (16b), (17 b), and (18b)] describe the noise of the current through the diode, which is of minor interest and difficult to measure. The AM noise of the load current, which in reality was measured, differs considerably from the noise of the diode current if Theta /spl sim/ 90°. In this case, an additional FM - AM conversion term appears which, under certain conditions, cancels exactly the load-angle-dependent terms in the expression for the AM noise of the diode current. These conditions are as follows.

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