Abstracts

Application of a Backward-Wave Amplifier to Microwave Autodyne Reception

J.K. Pulfer. "Application of a Backward-Wave Amplifier to Microwave Autodyne Reception." 1959 Transactions on Microwave Theory and Techniques 7.3 (Jul. 1959 [T-MTT]): 356-359.

A microwave receiver using a single-circuit backward-wave amplifier as a combination radio-frequency ampliier and homodyne local oscillator is described. The amplitler tube is operated at a value of beam current just above that required to maintain oscillation. It is shown that in this way, the high gain and narrow bandwidth of the single-circuit backward-wave amplifier may be utilized in an electronically tunable microwave receiver. The resultant sensitivity is 10 to 15 db worse than that obtainable from a good superheterodyne. The loss in sensitivity is due entirely to the high noise figure of the backward-wave amplifier, which can theoretically be reduced to a value comparable with that of a supereterodyne. The advantages of the receiver are its simplicity and its lack of image diffculties. Rejection of off-frequency signals is such that they are attenuated by at least 50 db.

❑ Return to main document.