Abstracts

Compact Microwave Single-Sideband Modulator Using Ferrites

J.C. Cacheris and H.A. Dropkin. "Compact Microwave Single-Sideband Modulator Using Ferrites." 1956 Transactions on Microwave Theory and Techniques 4.3 (Jul. 1956 [T-MTT]): 152-155.

This paper describes a single-sideband modulator for shifting the frequency of an x-band signal by means of a rotating magnetic field transverse to a ferrite differential half-wave section. The device is one of the first practical applications of the double-refraction properties of ferrites. Improvements over an earlier model include reduction in size and continuous operation without drift. An efficient and compact magnetic structure has been designed for producing the rotating magnetic field. Excessive heating of the ferrite and voltage breakdown of the coils is eliminated by a forced-air cooling system. The modulator shifts the microwave-carrier frequency of 9375 mc by plus or minus 20 kc. With a rotating field of approximately 200 oersteds the microwave insertion loss is 1.0 db. The undesired sideband suppression is above 40 db while the carrier suppression is 23 db. For a frequency bandwidth of 500 mc, the insertion loss remains below 5 db.

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