

Abstracts

YIG Filters as Envelope Limiters

R.C. Cumming and D.W. Howell. "YIG Filters as Envelope Limiters." 1965 Transactions on Microwave Theory and Techniques 13.5 (Sep. 1965 [T-MTT]): 616-621.

Envelope limiters are used in such applications as FM demodulation and power leveling. Recently, the envelope-limiting properties of yttrium-iron-garnet (YIG) filters were reported for the special cases of unmodulated and pulsed input signals. Measured data is presented hereon the response of a YIG limiter to AM carriers having modulation index of the order of 50 percent. Sinusoidal, square-wave, and low-pass noise modulating signals were used in the measurements. It was found that a YIG filter will give good envelope limiting for modulating frequencies in the submegacycle range. At these low frequencies the carrier and the side frequencies are not limited selectively. At higher modulating frequencies where the limiting is frequency selective, the YIG filter will not remove the variations. In fact, in the particular filter tested, the modulation index was increased, rather than decreased, at modulating frequencies greater than about 750 kc/s. A graph is given showing the measured factor of reduction (or increase) of modulation index, as a function of modulating frequency. The response of the limiter as a function of carrier frequency, modulating frequency, and input power is shown by oscilloscope displays produced by sweeping the carrier frequency or input power. In addition, selected photographs of output envelope waveforms are given.

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