Abstracts

A Technique for Measuring Phase Modulation or Rapid Phase Changes of a Microwave Signal (Jan. 1965 [T-MTT])

W.P. Ernst. "A Technique for Measuring Phase Modulation or Rapid Phase Changes of a Microwave Signal (Jan. 1965 [T-MTT])." 1965 Transactions on Microwave Theory and Techniques 13.1 (Jan. 1965 [T-MTT]): 70-76.

The system takes advantage of the fact that a phase-modulated carrier signal will produce equivalent frequency modulation, where the change of frequency is proportional to the time rate of change of the phase variation. A mirowave carrier frequency, FC, is shifted in a single sideband generator to a frequency, FC+FM. The upper sideband is transmitted through the phase modulating medium and then mixed with the original carrier frequency. The difference frequency FM contains the phase modulation information and, after preamplification, the signal is put through a wide-band limiter-discriminator of center frequency, FM. The discriminator output voltage will be directly proportional to the rate of phase change. To compensate for the time rate of change dependency, the discriminator output is followed by an integrating network (E/sub 0/~1/f) which will produce an output voltage proportional to the phase change only. Calibration is accomplished by imposing a known amount of phase modulation on the sideband modulating signal FM and observing the system output signal. This measuring scheme has been built in the 70 Gc/s band and is capable of following a wide range of phase changes over microsecond periods.

❑ Return to main document.