Abstracts

Transmission Phase Relations of Four-Frequency Parametric Devices

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The transmission-phase properties of parametric amplifiers are tantamount to gain, bandwidth, excess noise temperature, and pump power in angular detection systems such as monopulse radars and interferometers. These angle detection systems employ antenna and hybrid junction labyrinths which derive even and odd spatial components of the antenna diffraction pattern. The labyrinth ports usually supply even, elevation odd, azimuth odd, and quadrupolar components. The source signal or target echo, differential amplitude and differential phase, between labyrinth ports contain spatial information of position, extent, and shape of the target. Consequently, to employ the potential of parametric devices in monopulse detection systems requires an understanding of the transmission phase properties of parametric devices. It is the purpose of this paper to delineate these properties.

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