Abstracts

Experimental demonstration of optical guided-wave Butler matrices

J.T. Gallo and R. DeSalvo. "Experimental demonstration of optical guided-wave Butler matrices." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part II [T-MTT]): 1501-1507.

We report fully functional fiber-optic and integrated-optic Butler matrices, each with four input channels and four output channels. Simulated antenna excitation is modulated onto the four input optical channels to predict these devices' performance when employed with circular antenna arrays for angle-of-arrival applications. Heterodyne detection techniques are employed to recover the RF signal at the optical output of the matrices and for conversion to an intermediate frequency. An RF pilot tone is injected at the input to calibrate the system, and an active feedback loop maintains the proper phasing of the light channels.

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