Abstracts

Low-loss compact Butler matrix for a microstrip antenna

M. Bona, L. Manholm, J.P. Starski and B. Svensson. "Low-loss compact Butler matrix for a microstrip antenna." 2002 Transactions on Microwave Theory and Techniques 50.9 (Sep. 2002 [T-MTT]): 2069-2075.

This paper presents the design and realization of a double four-port Butler matrix to feed a four-column array antenna with two orthogonally polarized signals (to obtain polarization diversity). The main goals of this study are the reduction of the size and the losses of the network. In order to meet those requirements, a bi-layer structure, the suspended stripline, has been adopted to support the circuit. Moreover, the complete network has been integrated in a single unit. The double four-port Butler matrix has been etched on both sides of the suspended substrate to solve the problem of the cross between the lines. The broadside suspended 3-dB directional coupler has been chosen for the design of the 3-dB hybrid coupler. In order to change the side of the suspended substrate, contactless transitions have been used. The network is designed to work within the range of frequencies of the GSM-900-MHz standard: band 880 MHz-960 MHz, center frequency f/sub 0/=920 MHz. Measured losses for a 4/spl times/4 Butler matrix are 0.3 dB.

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