Abstracts

Performance of a K-band voltage-controlled Lange coupler using a ferroelectric tunable microstrip configuration

G. Subramanyam, F.A. Miranda, F. van Keuls, R.R. Romanofsky, C.L. Canedy, A.T. Venkatesan and R. Ramesh. "Performance of a K-band voltage-controlled Lange coupler using a ferroelectric tunable microstrip configuration." 2000 Microwave and Guided Wave Letters 10.4 (Apr. 2000 [MGWL]): 136-138.

We report for the first time on the performance of a Au/Ba/sub 0.6/Sr/sub 0.4/TiO/sub 3/(BSTO)/MgO two-layered microstrip voltage-controlled Lange coupler (VCLC) designed for Ku- and K-band frequencies at room temperature. Tight coupling of 3 dB or higher was obtained over a frequency range of 14-19 GHz. At K-band frequencies, the coupling was voltage-controllable using the nonlinear DC electric field dependence of the relative dielectric constant of BSTO (/spl epsiv//sub rBSTO/). The coupling level was improved from -11.6 to -3.7 dB at 20 GHz with an applied DC electric field of 16 kV/cm. The introduction of the ferroelectric tuning layer enhances the bandwidth of the VCLC in comparison with a Lange coupler with no ferroelectric layer. This work demonstrates another advantageous application for ferroelectric thin films in passive microwave components.

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