Abstracts

Characteristics of Dielectric-Line-Loaded Conductor-Backed Slotline (CBS)

J.-W. Huang and C.-K.C. Tzuang. "Characteristics of Dielectric-Line-Loaded Conductor-Backed Slotline (CBS)." 1994 Microwave and Guided Wave Letters 4.7 (Jul. 1994 [MGWL]): 250-252.

The mode-coupling phenomenon prevents the conventional shielded conductor-backed slotline (CBS) from broadband applications. This paper proposes a modified CBS by adding a dielectric line of higher dielectric constant on the top of the slot region to circumvent the mode-coupling problem. The dispersion characteristics of the resultant dielectric line-loaded CBS are studied by using the full-wave space-domain Green's impedance function approach. The theoretic results show that the particular modified CBS significantly reduces mode-coupling phenomenon and is suitable for broadband applications. Furthermore, it is possible to adjust the values of the propagation constant and the characteristic impedance by changing the thickness of the dielectric line on top of the slot region. Finally, the design curves for the dielectric line-loaded CBS are provided for potential applications.

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