

Abstracts

A novel leaky NRD guide with a double-layer dielectric slab

Xiang-Yin Zeng, Kwai-Man Luk and Shan-Jia Xu. "A novel leaky NRD guide with a double-layer dielectric slab." 2001 *Transactions on Microwave Theory and Techniques* 49.4 (Apr. 2001, Part I [T-MTT]): 585-588.

A new leaky nonradiative dielectric guide with a double-layer dielectric slab is investigated in this paper by combining a multimode network theory with a mode-matching method. Numerical results show that proper selection of the permittivities can vary the leakage constant over a wide range. A leakage constant larger than 10% of free-space wavenumber can be obtained easily without entering the cutoff region. Leaky-wave antennas with shorter length and medium gain can thus be developed. In addition, the present leaky guide possesses the advantages of simple fabrication and physical stability. Extensive numerical results are provided to guide the antenna designs.

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