Abstracts

Coupling Between Different Leaky-Mode Types in Stub-Loaded Leaky Waveguides

H. Shigesawa, M. Tsuji, P. Lampariello, F. Frezza and A.A. Oliner. "Coupling Between Different Leaky-Mode Types in Stub-Loaded Leaky Waveguides." 1994 Transactions on Microwave Theory and Techniques 42.8 (Aug. 1994 [T-MTT]): 1548-1560.

Several leaky-wave antennas have been described in recent years that possess excellent properties, and they all have in common a parallel-plate stub guide of finite height as part of the cross section. For taller stubs and for larger leakage rates (wider radiated beams), some interesting new exotic interactions occur due to coupling between the desired leaky mode and another leaky mode, which is a modification of the "channel-guide" mode. Although we have described such coupling behavior briefly previously, this basic new feature (the coupling between two leaky (complex) modes) is not generally known, and is discussed here in more detail and in a more general context. In addition to a broad qualitative discussion, numerical results are presented for structures based on NRD guide and on stub-loaded rectangular guide. We believe that these effects are universal to all leaky-wave structures that possess a finite stub height in the cross section, so that the discussion here serves as a model for what to expect for other structures.

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