Abstracts

Excitation of complex and backward mode on shielded lossless printed lines

M.J. Freire, F. Mesa and M. Horno. "Excitation of complex and backward mode on shielded lossless printed lines." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part I [T-MTT]): 1098-1105.

In this paper, the surface current density excited by a delta-gap voltage source on shielded printed lines is computed and its modal decomposition analyzed. This analysis specifically aims to determine the practical excitation of complex and/or backward modes in this kind of structures. It has been found that complex modes in reciprocal structures are always excited in pairs whose propagation constants and amplitudes of excitation have the same imaginary part and opposite sign real part. The combination of the pair of complex modes gives rise to an evanescent mode whose amplitude is modulated by a sinusoidal function. Backward modes have also been found to be part of the modal spectrum excited by the source and, thus, in a frequency sweep, they appear after the attenuation constant of a pair of complex modes goes to zero.

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