Abstracts

Low-frequency dispersion features of a new complex mode for a periodic strip grating on a grounded dielectric slab (2001 Vol. II [MWSYM])

P. Burghignoli, P. Baccarelli, F. Frezza, A. Galli, P. Lampariello and A.A. Oliner. "Low-frequency dispersion features of a new complex mode for a periodic strip grating on a grounded dielectric slab (2001 Vol. II [MWSYM])." 2001 MTT-S International Microwave Symposium Digest 01.2 (2001 Vol. II [MWSYM]): 719-722 vol.2.

A new leaky mode with TE polarization has been found recently on a periodic metallic strip grating placed on a grounded dielectric slab. At low frequencies the dispersion behavior of the fundamental TE mode is completely different when the grating structure is almost closed as compared to when it is almost open, that is, when the ratio of the strip width (s) to the grating period (p) is close to unity or close to zero. As is discussed here, this difference led to initially puzzling behavior as the ratio s/p was varied, and the behavior became clear only after the new complex modal solution was discovered. Results were obtained previously for only one value of dielectric constant and for only two values of s/p, leaving many open questions. This paper presents the results of a systematic parametric study which answers most of these questions, and also yields information on what ranges of the parameters can provide values of /spl beta//k/sub 0/ and /spl alpha//k/sub 0/ suitable for a class of practical leaky-wave antennas.

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