Abstracts

Propagation characteristics of the slotline first higher order mode

Jyh-Wen Sheen and Yu-De Lin. "Propagation characteristics of the slotline first higher order mode." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1774-1781.

The propagation characteristics of the slotline first higher order mode are presented in detail in this paper. It is found that the attenuation constants and the radiation band of this first higher order mode are larger than those of the microstripline first higher order mode. Dependence of the propagation characteristics on structural parameters and the effect of finite-conductor planes are analyzed. The propagation characteristics of the surface-wave-like modes are also discussed. In order to avoid inadvertent excitation of these surface-wave-like modes in antenna applications, the current and field distributions of the slotline first higher order mode and the surface-wave-like modes are compared and discussed. Excitation of the slotline first higher order mode was conducted by feeding the slotline with a coplanar waveguide and microstrip line. Experimental results show good agreement with our numerical results, and also confirm the existence of the slotline first higher order mode.

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