Abstracts

Measurement of Slot Line Characteristics

E. Mariani, C. Heinzman, J. Agrios and S.B. Cohn. "Measurement of Slot Line Characteristics." 1969 G-MTT International Microwave Symposium Digest of Technical Papers 69.1 (1969 [MWSYM]): 99-105.

The development of micrcwave integrated circuits has effected considerable interest in microstrip transmission lines on dielectric substrates. This paper discusses the slot line, a novel transmission line that may be used in association with, or as an alternative to microstrip. Slot line consists of a narrow slot in a thin conductive layer on one side of a high permittivity dielectric substrate; the other side is bare as shown in Fig. 1. The slot line offers some important advantages when compared to microstrip by virtue of the slot-made configuration, Fig. 2. The electric field is across the slot while the magnetic field is perpendicular to the slot and forms closed loops at half-wave intervals. Thus, the slot line possesses a region of elliptical polarization which should be useful for constructing a variety of non-reciprocal, ferrite, slot line devices such as resonance isolators, latching phase shifters, and circulators. Since the slot mode's voltage occurs across the slot on one side of the substrate, it is especially convenient for connecting shunt elements such as diodes, resistors and capacitors. Moreover, the same manufacturing techniques used for microstrip integrated circuits can be applied to slot line.

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