Abstracts

Mode-Coupling-Avoidance of Shielded Conductor-Backed Coplanar Waveguide (CBCPW) Using Dielectric Lines Compensation

J.-W. Huang and C.-K.C. Tzuang. "Mode-Coupling-Avoidance of Shielded Conductor-Backed Coplanar Waveguide (CBCPW) Using Dielectric Lines Compensation." 1994 MTT-S International Microwave Symposium Digest 94.1 (1994 Vol. I [MWSYM]): 149-152.

The mode coupling effects of the conventional CBCPW in a metallic enclosure have been investigated by rigorous theoretical analyses and experiments. A full-wave space-domain integral equation technique based on the Green's impedance function with a new set of basis functions is applied to determine the dispersion characteristics of the conventional and modified CBCPW. It can be shown by the rigorous field theory analyses that the mode coupling of the CPW mode, coupled slotline mode and parasitic waveguide mode exists and occupies a very wide frequency spectrum, e.g., 15 GHz to 32 GHz, for the particular 50 Omega asymmetric CBCPW. An experiment of the conventional CBCPW through line demonstrates that the mode-coupling phenomena do jeopardize the transmission coefficient of test circuit as expected. Then we propose a modified CBCPW which has two dielectric lines of relatively high dielectric constant placed on top of the slot regions of the CBCPW. Both theory and experiment show that the mode coupling effects can be suppressed.

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