Abstracts

Analysis of the Effects of Metal Discontinuities in Nonradiative Dielectric Waveguide

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The introduction of thin metallic elements (sheets, chips, etc.) is usual practice for a variety of devices in nonradiative dielectric (NRD) guide technology. The unexplored discontinuity effects due to such metal obstacles inserted in the NRD guide are theoretically investigated in this work. The transmission-line circuit characterization of the most typical metalizations (used for instance in NRD-guide mixers and oscillators) is achieved through a rigorous variational approach. The numerical implementation is then carried out for a vertical symmetrical diaphragm. Making also use of a reference approach developed through a FEM code, the reactive effects due to such discontinuities are quantified and discussed as a function of the structural parameters.

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