Abstracts

Low-Loss Rectangular Dielectric Image Line for Millimeter-Wave Integrated Circuits

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This paper describes some fundamental properties of a low-Ioss E/sub 11//sup x/ mode rectangular dielectric image line where the electric field is parallel to the metal image plane. This image line is characterized by its low transmission loss, compared with the conventional dominant E/sub 11//sup y/ mode rectangular dielectric image line. The transmission loss of this new image line is nearly less than half that of the E/sub 11//sub y/ mode rectangular dielectric image line. As an application example, a bandpass filter is developed using this E/sub 11//sup x/ mode rectangular dielectric image line and the measurement results of its frequency responses in the 50-GHz range are presented. Although the E/sub 11//sup x/ mode is a higher order mode in the rectangular dielectric image line, reasonable bandpass filter characteristics have been realized.

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