Abstracts

Low-loss millimeter-wave propagation characteristics of NRD-guide surface-mounted on planar substrate for hybrid integrated circuit

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We present a new guided-wave structure, which consists of a non-radiative dielectric (NRD) guide surface-mounted on the top of a relatively thin dielectric substrate. This new structure allows a direct hybrid integration of planar microstrip circuits with NRD-guide without resorting to our reported aperture-coupling scheme. This waveguide is, however, no longer a conventional NRD-guide because its asymmetry may generate unwanted leakage loss. Our present work shows that one of its most interesting features is that it can still preserve a great deal of the desired properties of the conventional NRD-guide under certain circumstances. It is expected to provide an alternative circuit building block to a class of 3-D multilayered millimeter-wave circuits and systems.

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