Abstracts

Characteristics of Ka band waveguide using electromagnetic crystal sidewalls

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Electromagnetic crystal structures have been used as sidewalls in special waveguides for the frequency range 30 to 40 GHz. They have the effect of substituting high impedance surfaces in place of the normal conducting metal sidewalls. The objectives in so doing are to obtain uniform electric field across the width of the waveguide and to force the wave in the guide to adopt the nature of a TEM wave. The measured insertion loss of Ka band waveguides is found to be low. The dependence of transmission phase on the center frequency of sidewall resonance has been measured and indicates that tunable sidewall resonance will provide simple and low loss phase shifting systems.

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