Abstracts

A novel quasi-optical resonator for the surface near-millimeter waves

K.N. Kocharyan, M.N. Afsar, Y.H. Avetissian, E.L. Sarkissian, A. Babajanian and I.I. Tkachov. "A novel quasi-optical resonator for the surface near-millimeter waves." 1999 Transactions on Microwave Theory and Techniques 47.1 (Jan. 1999 [T-MTT]): 27-33.

The theory and experimental investigations are presented for a new type of quasi-optical near-millimeter-wave prismatic resonator, which provides frequency selective transformation of the plane waves into the surface waves. Theoretical expressions are obtained for the Q-factor and finesse, which consider dielectric loss and the effect of prism finite aperture. The theoretical evaluations are verified by experimental measurements in the frequency range 300-500 GHz using a prismatic resonator made from the optical quality fused silica glass. The increase of intensity of surface waves by a factor of 10-25 is demonstrated for the prismatic resonator made from an extremely low-loss dielectric.

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