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DIVERGENCE OF RADIATION TRANSMITTED BY DOUBLY CONNECTED APERTURES WITH ELLIPTIC OR RECTILINEAR CONTOURS.

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Abstract

An analysis is made of a radiator with an aperture which is a doubly connected region with elliptic or rectangular contours that are linked by the scaling transformation. The ratio of the sizes of the outer and inner contours is M greater than 1. A model of an ideal radiator (with a homogeneous distribution of the field over the aperture) is used in a study of the far-field distributions of the intensity and radiation energy. The intensity limits of the divergence angles are established. It is shown that variation of the shape of the aperture involving an increase in the eccentricity of the mutual positions of the contours can result in a considerable (by a factor of nearly 2 if 1 less than M APP 1STH 2) reduction in the divergence of the energy compared with a concentric aperture.