Abstracts

An Analysis of a Coupled-Ring Rotary Joint Design (Short Papers)

E.D. Evans. "An Analysis of a Coupled-Ring Rotary Joint Design (Short Papers)." 1992 Transactions on Microwave Theory and Techniques 40.3 (Mar. 1992 [T-MTT]): 577-581.

This paper describes a theoretical and experimental analysis of a coupled-ring rotary joint design. A rotary joint of this type is commonly used for mechanically scanned, multichannel radars. The main goal of the analysis is to develop a better understanding for the transfer of energy through the joint's highly coupled rings. We first consider the geometry of a typical single channel and then describe a coupled transmission line model for the coupled-ring network. Using the model, we determine the type of ring network needed for low channel loss and small rotational variations of this loss. A series of measurements on some test models support the predictions of the analysis.

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