

A dielectric resonator antenna array using dielectric insular image guide

Abstract

In this communication, a double-sided Taylor-distribution dielectric resonator antenna array using dielectric insular image guide (DIIG) is presented. Analysis of the dielectric insular resonator antenna (DIRA) is performed with the effective dielectric constant (EDC) method, verified using HFSS™ simulations based on the finite element method (FEM). In order to enhance the gain, the DIRA array is made double-sided, i.e., a mirror image of the array is placed on the other side of the DIIG. The Taylor distribution technique is employed here to suppress the sidelobes. Finally, a 10-element linear DIRA array is fabricated and measured, and a high gain of 15.8 dBi at 36 GHz has been achieved.