RADIATION CHARACTERISTIC OF CYLINDRICAL DIELECTRIC RESONATOR ANTENNA SIMULATION USING CST MICROWAVE STUDIO.

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ABSTRACT

CST Microwave Studio is the new software that gives us choice between four powerful solver modules, the Transient Solver, the Eigenmode Solver, the Frequency Domain Solver and MOR solver, each offering distinct advantages in their own domains. But in this project, we are using Transient Solver to see the characteristic of the DRA. Besides the one dimensional, signal like results, CST Microwave Studio also allows to define many different 2D/3D monitors. And for every result type there is a variety of different plot options to visualize them.

Cylindrical dielectric resonator antenna (DRA) using $HEM_{11\delta}$ mode were examined using new 3D CST Microwave Studio to see the radiation pattern of the farfield, field distribution of the electric and magnetic field, resonant frequency and return loss of the DRAs. In this project, the radiation of cylindrical DRA is examined using four different structures, with three different positions of feed probe, CDRA that isolated in free space and CDRA with different permittivity.

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CHAPTER 1

INTRODUCTION

1.1 CST Microwave Studio.

Development speed is a major concern in today's products' life cycle. Ranking alongside the raw costs involved with prototyping a device, time-to-market is the one key constraint imposed on design engineers. Consequently, any innovative or competitive advantage can easily be lost if advanced ideas get stuck in a long pipeline of reiterations before finally becoming a marketable product. In an increasing number of disciplines, full 3D electromagnetic field simulation is becoming the sine qua non, to advance the prototyping, virtually, to a stage where the realization does not unexpectedly deviate from expectations. In many respects, a simulation is much more informative than a prototype, as it grants unlimited insight into the mechanism that makes a device succeed or fail.

In response, CST is taking up the challenge of implementing leading-edge technology, providing versatility and increasing usability with the development of Version 5 of CST MICROWAVE STUDIO (CST MWS). But in this project, the simulation involved was using the CST MWS Version 3. Based on a long software history, the very general theoretical approach reveals its full power in the wide range of applicability, covering static and low frequency applications to the highest frequencies.

The most significant change in the user interface is the organization of the 3D structure administration itself. Logical assemblies are supported; the parts of such a component may be built of different materials. Materials properties are administered separately, either project oriented or in a central material database. The selection of multiple objects directly in the drawing frame or in the