A MULTILAYER ULTRA WIDEBAND PATCH ANTENNA WITH LTCC TECHNOLOGY

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ABSTRACT

In this work, a simple design of Ultra-wideband antenna has been proposed. The antennas are designed to operate at 7GHz which are in the range of 3.10 GHz to 10.6 GHz for Ultra Wideband. The antenna consists of rectangular and circular patch with a few techniques that been studied in this paper. Ferro A6-S is used as a material for the substrate at each layer. The main purposes of those techniques are used to enhance the operating bandwidth which to support the requirement for Ultra Wideband application in LTCC technology. One of the advantages using low temperature co-fired ceramic (LTCC) technology is the reduction of the antenna size is higher compared to the FR-4 material. The performances of the antenna are being investigated in this paper. The CST Microwave Studio software is being used for all the simulations. Detail of the designed antenna and results is presented and discussed.

Four designs of antennas with direct feeding are presented in this thesis. The antenna achieved the operational bandwidth for UWB application of up to 7 GHz which exceeds the minimum requirement for UWB needs (500 MHz @ 20 % of resonant frequency). Besides that, by using LTCC technology with high dielectric permittivity, (εr = 5.9) for Ferro A6-S material, a compact size of an antenna has successfully designed.

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