

Simulation for Frequency Response of Transmission of UWB Signal in a Beating Heart

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Abstract

This paper presents i) a model for ultra-wideband (UWB) wave propagation through a human thorax and ii) estimation via simulation, of transmission coefficient at various frequencies in the UWB range 1-10 GHz using CST Microwave Studio. This study clearly indicates that the variation of power transmission coefficient of UWB signal has a strong correlation to the instantaneous dimension of the heart in a cardiac cycle, a feature that can be exploited in detecting cardiac activity of human being in inaccessible conditions using radar based principles.

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