**ABSTRACT**

An ultra-wide band pentagon antenna is designed and simulated using CST microwave studio for detecting the tumour present in the brain. It is operating at the range 3.67 GHz to 13.2 GHz in free space. The antenna is designed using Flame Retardant (FR-4) substrate. The dimensions of the antenna are 44\*30mm2.For improving the bandwidth and directivity modifications is made in the patch and ground. The input radiations from the antenna are allowed to penetrate into the human head phantom with three layers namely skin-outer layer, skull-middle layer and brain- inner layer containing tumour. The receiver antenna is used to record the output response. From the output signal various statistical parameters are determined to

accurately detect the tumour.

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**LIST OF ABBREVIATIONS**

MRI Magnetic resonance imaging PET Positron emission tomography CT Computed tomography

UWB Ultra-wide band

NET Neuroectodermal Tumour VSWR Voltage Standing Wave Radio RHC Right Hand Circular

LHC Left Hand Circular

RFID Radio Frequency Identification

WIMAX Worldwide Interoperability for Microwave Access

MATLAB Matrix Laboratory RMS Root Mean Square dB Decibel

dBi Decibel Isotropic

ISM Industrial Scientific Medical

MHz Mega Hertz

GHz Giga Hertz