

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 $44 \times 30 \text{ mm}^2$. 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 Ratio
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
dB _i	Decibel Isotropic
ISM	Industrial Scientific Medical
MHz	Mega Hertz
GHz	Giga Hertz