



UWB ANTENNA FOR BRAIN STROKE AND BRAIN TUMOR DETECTION

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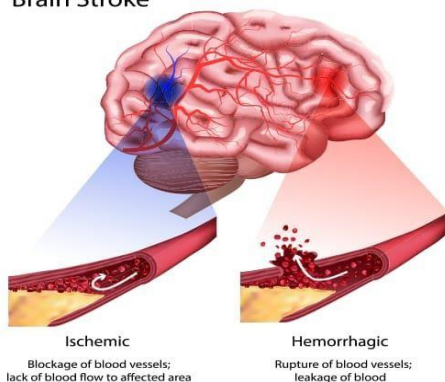
ABSTRACT:

Nowadays, Brain stroke is one of the leading disability for most of the people. Stroke mainly happens due to blood clot in the brain. The blood flows to the brain stops. While this stoppage of blood to the brain it creates a blood clot. Stroke cause major disabilities like walking, speaking and it cause lack of understanding. It affect the normal function of the body and it sometimes stop the working function of the parts. The lack of treatment cause the permanent in the disability. And for the most of the people the lack of treatment is due to the late identification of the stroke. And for some other people it happens due to economic issue. So in this paper we use the Ultra-Wideband technique for the tumor detection. These UWB antenna transmits emits signal bandwidth exceeds lesser of 500MHz. It is portable, less cost. So, the all the people can have a chance to test with minimum cost. Its size is very small. The people no need to strain the whole body. Finally, we get the result easily and immediately.

INTRODUCTION

Brain is the most important organ of the human body. The whole body is controlled by the human brain. The functions of human brain are controlling the emotion, thought, feelings like every process is controlled by the human brain. In this it is clear that brain is the Central Nervous System of the body. Current scenario is that most of the patient are not able to identify and understand the problem initially. And also after take a body test the patient wait for some days to get a result. But it creates more tension and fear about the result. It leads to depression, stress and angry among the circle. For some cases most of the people are cannot able to walk but for testing the patient need to go the scanning room. And for some patients it leads to abnormal cramping, diarrhea, nausea, vomiting etc...

Brain Stroke



In order to overcome all these problem. It is necessary to find out the equipment which is small in size, reduced side effects, and which not disturb the patient. It must avoid the to go the scanning room and the gives the result immediately.

So we go for the antenna which are smaller in size and to reduce the cost. It enough to travel the signal with minimum distance. The antenna are of different types. But some are larger in size. We can select for our requirements.

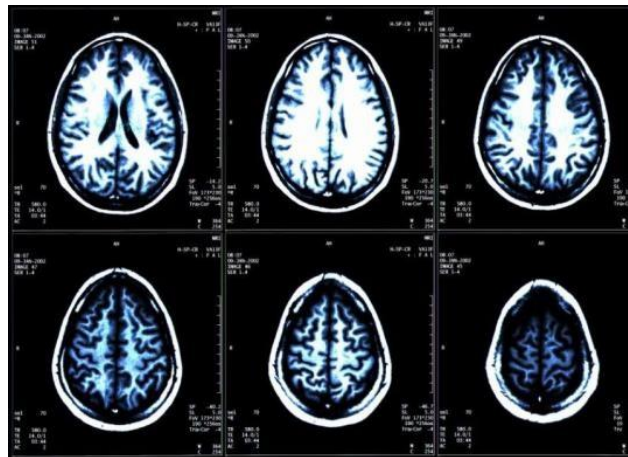
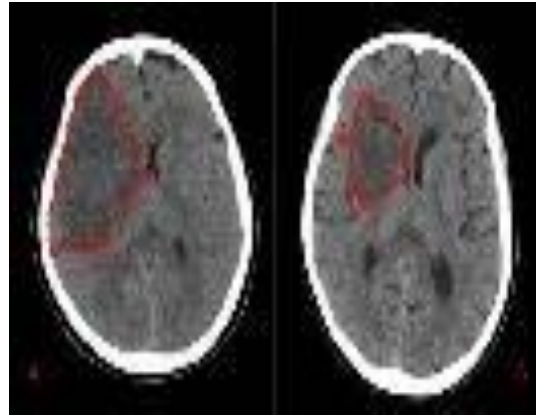
EXISTING SYSTEM

In this tumors is detected by some test for example CT scan, MRIs can, ultrasound, X-ray.

CT scan is the most common test for identify the tumor. This CT scan gives the detailed images of the body like bone tumors and fractures. But the cost of CT scan is high. So the people cannot able to use this sometimes.

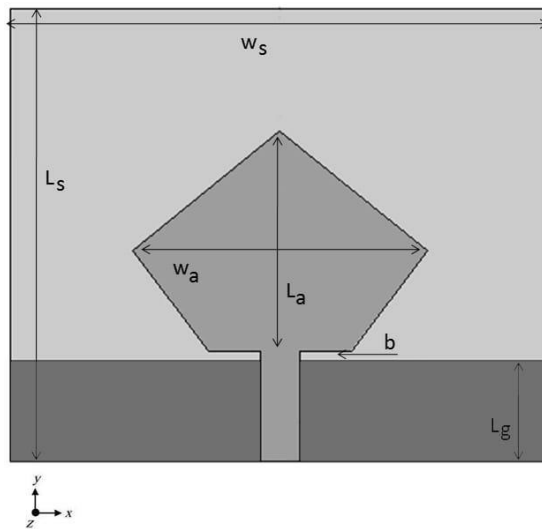
Magnetic Resonance Imaging is normally used to detect the functionality of brain. For example tumors, bleeding, infections, inflammatory condition or some other problems in the brain.

X-ray is same as Magnetic Resonance Imaging but the difference between is MRI used magnetic wave, whereas the X-ray uses radiation. But the MRI is best way for evaluating soft tissues.



PROPOSED SYSTEM

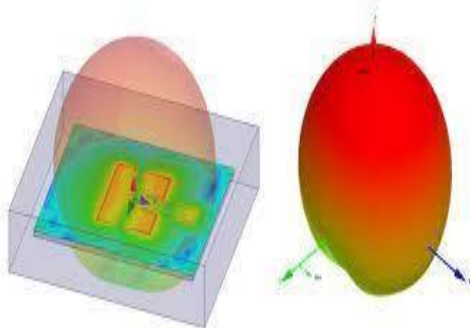
In order to overcome these issues people want some other technique. And also the CT scan needs the patient to strain the whole body for the test. So, for the aged people sometimes disturbed. Hence in this paper we detected by using UWB antenna. UWB antenna means Ultra Wide Band antenna. The UWB antenna travels for a short-range, it uses very less energy. It is normally used in mobile phones. An UWB pentagon antenna is implemented on FR4-substrate with relative permittivity 4.4, and thickness 1.5 mm. It has dimensions 44x 30mm².



The design and implementation of a pentagon antenna for brain cancer and stroke detection, positioned directly on human's head. It is simulated using HFSS software that is High Frequency Structure Simulator Software and fabricated on FR-4 substrate with relative permittivity 4.4 and thickness 1.5mm. The HFSS antenna gives the result in 3D format. It mainly used with the products like antennas, antenna arrays, printed circuit board etc...

IMPLEMENTATION DETAIL

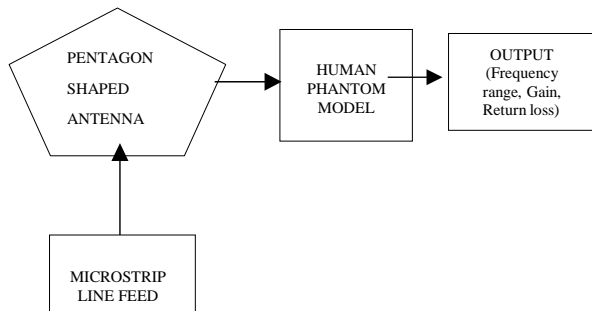
HFSS software is the tool to identify the tumor. The acronym for HFSS software is High Frequency Structural Simulator. The HFSS software gives result in the 3D format. It is a best solver for High frequency and High speed Electronics Components Designs.



The substrate is placed to limit the signal pass from the antenna. This helps the user to use the signal for their requirement. If we use the signal unlimitedly in the initially it is tough to identify the tumor for the users.

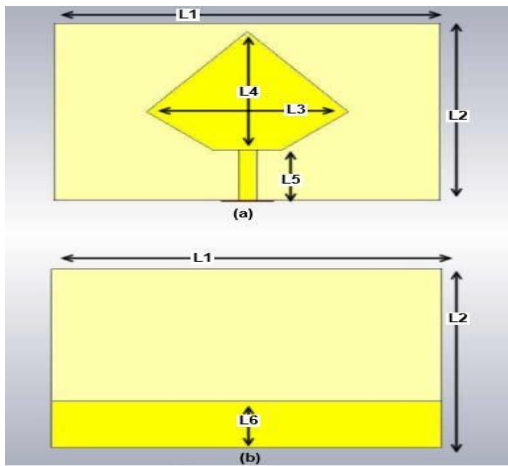
The conducting strip width is designed as compared to that of the patch and this kind of feed arrangement has the advantage

RESULTS

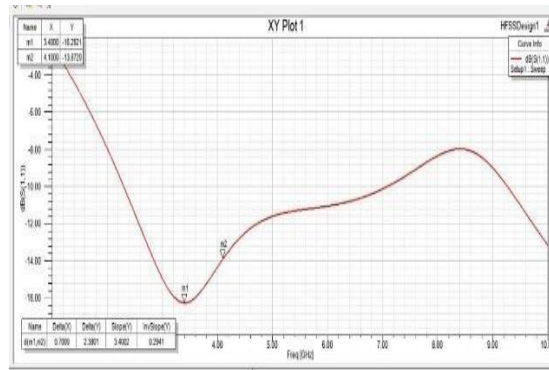


that the feed can be etched on the same substrate to provide a planar structure.

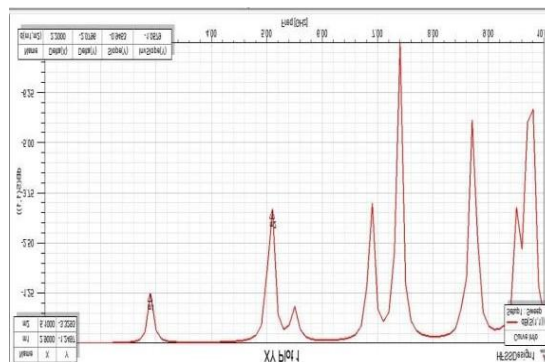
In this Brain tumor detection we use the UWB pentagon antenna with the FR-4 substrate and the relative permittivity 4.4, and the thickness is 1.5 mm. The UWB antenna is feeded through a 50 ohm microstrip line. The dimensions is 44x 30mm². The radiation can able to transmit from any direction.



The human brain is very soft when the signal enter into the human brain .It travels all over the brain by moving the antenna for our requirements. We have check insome ways. The signal first passes into the brain which does not having tumor.



After that we can check with the model having some tumor model. The signal passes from the antenna. The return loss identify the brain having tumor or not.



CONCLUSION

In this paper it is clear that UWB antenna are very useful to know about the detailed result of tumor. The patient also can quickly analyses and get ready for the next step. The main purpose is to reduce the cost and want to be portable for any places. The use of HFSS software is main to get the #D image. Because if 3D the patient also know about their result.

REFERENCES

- [1] M. Garcia and A. Jemal, "Global Cancer Facts and Figures 2011," Atlanta, GA: American Cancer Society, 2011.
- [2] D. Ireland and M. Bialkowski, "microwave head imaging for stroke Detection," School of ITEE, University of Queensland St. Lucia, Brisbane, Australia, 2011.
- [3] E. Widmaier, H. Raff, K. Strang, and A. Vander, "Human physiology: the mechanisms of body function," McGraw Hill, 2008.
- [1] Ma, H., J. Ly, and G. A. Donnan, "TIA and stroke: A management guide for GPs," *Medicine Today*, Vol. 7, No. 5, May 2006.
- [2] World Stroke Academy, "Let's talk about a stroke diagnosis," vol. 2011, no. 20 May, 2007.
- [3] Y. Rahmat-Samii and J. Kim, "Implanted Antennas in Medical Wireless Communication" University of California at Los Angeles, Morgan & Claypool, 2006.
- [4] F. Balsiger, "Brain Tumor volume calculation" Linköping University, July, 2012.
- [5] Y. Done-Sik, K. Boneg-Seok, C. Hyung-Do, Aekyoung, P. Jeoy.Ki "The Dielectric properties of cancerous", Chungnam National University, Daejeon 305-764, Korea.