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Design of Micro stripantenna for UWB application

KEYWORDS

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ABSTRACT *A L-shaped with tapering end micro strip antenna are presented in this paper. This antenna works for frequency from 3.1to 5.4 GHz .This antenna exhibits 10 dB return loss bandwidth for entire lower band. FR4 substrate is used to design this antenna.*

Introduction:-
Ultra wide band cover maximum frequency band from 3.1 to 10.6 GHz and this antenna covers the frequency band from 3.1 to 5.4 GHz. Ultra wide band include most of the applications like wireless communications ,tracking sensing ,imaging and radar. The purpose is to utilize this band is most of the house hold appliances works in this frequency band.

This ultra wide band is divided into 14 channels having channel frequency 500 MHz to 7.6 MHz. Most of the countries utilized almost all the channels. We can reuse the UWB band or any channel because UWB has some properties like

1) It provides highly secured communication.
2) It provides the non interference to other communication system.
3) It can pass the wall and doors.

Because of this properties UWB band provides application in military like in collision and obstacles avoidance, precision altimetry, intrusion detection (see through walls),wireless intercom system, etc.

Design :- In this paper use the micro strip antenna with printed planer geometry ,to make the antenna portable .The design is as shown below.

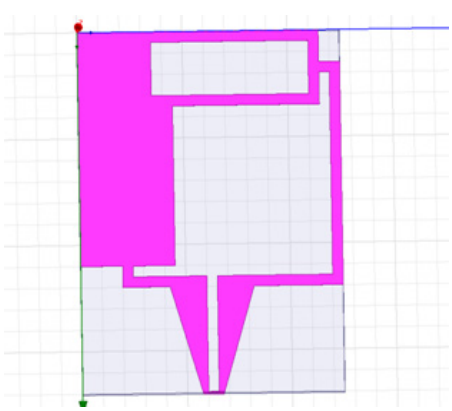

Fig. Design of antenna
In this fig. there is large L- shape ,the entire L-shape (without notch) gives the badwidth up 2 GHz . The provided notch gives the improvement in the band width up to 0.3 GHz

This is maximum achieved improved bandwidth. The extra stub gives the stable radiation pattern .The tapper transmission line gives maximum impedence matching.

Results:-
1) S- parameter :- this gives the relation between input output port. The total lower frequency band lies below the 0 dB which shows the antenna radiate for all frequency band. Maximum radiation occure at 3.15GHz and at 4.8 GHz.

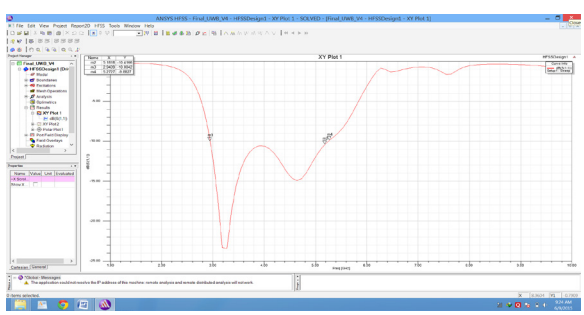

Fig. S11 parameter

2) SWR :- It is measure that numerically describe how well the antenna impedance matched to radio or transmission line it is connected to . The S11 and the SWR related if S11 is zero then all power is reflected which produces standing waves in the transmission lines .This gives high value of VSWR. The graph is shown below.

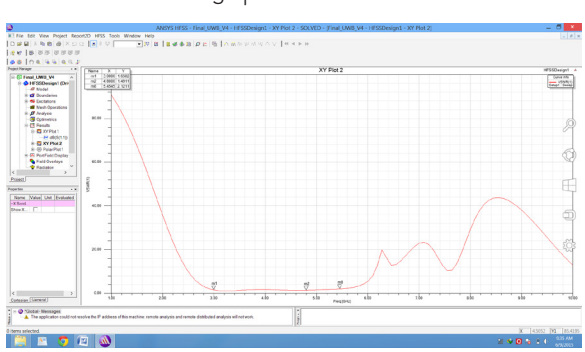

Fig. VSWR of the design

Conclusion:- This design gives better results and simple design .S11 parameter and SWR gives the system performance and the radiation pattern gives the stability of the antenna. The gain is too low i.e below 2 dB to work for long distance communication. This antenna can be applicable for short distance communication.