A REVIEW ON DIFFERENT TECHNIQUES USED IN DESIGN OF ULTRA WIDEBAND SLOT ANTENNA FOR IMPROVEMENT OF VARIOUS PARAMETER

Miss. Vaishali S. Varpe
PG student, Dept. of E&TC,
Amrutvahini College of Engineering,
Sangamner, Maharashtra, India

.Prof. Mrs. R P.Labade
Head, Dept. of E&TC,
Amrutvahini College of Engineering,
Sangamner, Maharashtra, India

ABSTRACT
An Ultra-Wideband patch antenna plays a major role in communications. This article deals with the broad review of Micro strip patch antenna design parameters such as Reflection Coeffient,VSWR,Impedance,Gain,Effiency,Radiation Pattern etc. various slots for different applications i.e. designs, development of output factors etc. In this modern world a dual band and triple band antenna with notch characteristics plays a vital role in wireless communications like UWB, WLAN, WiMAX etc. In this paper we study about the dual band and triple band characteristics and applications. The good impedance bandwidth, efficiency, Radiation pattern, VSWR can be improved by using the different slots, truncating corner of ground Plane ,feeding techniques, resonance frequency, and dielectric substrate.

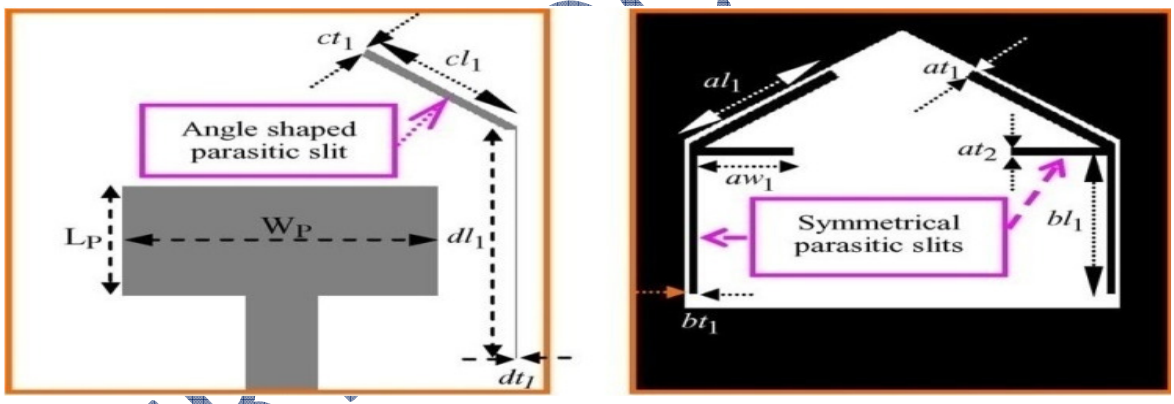
INTRODUCTION
According to FCC UWB is entitled to operate within 3.1–10.6-GHz band, there are some narrow bands that may interfere with the UWB system. Worldwide Interoperability for Microwave Access (WiMAX) operating in the frequency band of 3.3–3.8 GHz and wireless local area network (WLAN) operating at 5.15–5.825-GHz band are the main narrow bands that can cause serious interference to the UWB system.Therefore, it is necessary to design the UWB antenna with band-notched characteristic in the frequency bands of 3.3–3.8GHz and 5.15–5.825 GHz to mitigate the electromagnetic interferences between WiMAX, WLAN, and UWB systems.To reduce electromagnetic interference Different techniques have already been proposed to design UWB antennas with band-notch characteristics. ultra-wideband (UWB) technology become the most promising candidate for a wide range of applications that will provide significant benefits for public safety, business and consumers, and attracted a lot attention both in industry and academia.

LITERATURE SURVEY
A number of UWB Planer antennas with different notching techniques such as embedment of different types of slot on the radiating patch or on the bottom side of ground plane to be done. Author Rezaul Azim, Mohammad Tariqul Islam proposed "Design of a Dual Band-Notch UWB Slot Antenna by Means of Simple Parasitic Slits" [1]. In this letter, a compact tapered slot antenna is proposed for UWB applications. To filter out the WiMAX band, an angle-shaped parasitic slit is asymmetrically etched out along with the tuning stub, while two symmetrical parasitic slits are placed inside the tapered slot to create another notch band for

WLAN. It is found that by appropriate selection of the parameters of the parasitic slits, the proposed antenna can achieve UWB band with dual notched bands of 3.35–3.8GHZ and 5.12–5.84 GHz.The various parameter and geometry of the proposed antenna is shown in Table .1 and Figure.1,respectively.

Table 1:Various parameter for antenna component [1]

Antenna Component	**Symbols and their values for the proposed antenna**
Substrate Dimension	22 mm x24 mm x 1.6mm
Substrate used	FR4
Notching	WiMAX(3.35–3.8GHz) WLAN(5.12–5.84 GHz)
Impedence Bandwidth	3.04 to 10.88GHz
Relative permittivity	4.4
Loss Tangent	0.02



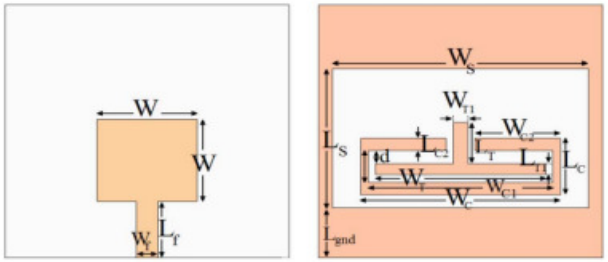
(a) (b)

Figure 1:Geometry of the proposed antenna. (a) Front view. (b) Back view [1]

Author Mohammad Ojaroudi and Nasser Ojaroudi proposed "Ultra-Wideband Small Rectangular Slot Antenna With Variable Band-Stop Function".[2] To increase the impedance bandwidth of the rectangular slot antenna and achieve UWB coverage, we use an inverted T-shaped conductor backed plane inside the rectangular slot on the other side of the substrate. Additionally, by using a coupled rotated C-shaped strip around the inverted T-shaped conductor backed plane, a frequency notched band performance has been obtained. The various parameter and geometry of the proposed antenna is shown in Table.2 and Figure 2,respectively.

Table 2:Various parameter for antenna component [2]

Antenna Component	Symbols and their values for the proposed antenna
Substrate Dimension	20 mm x 20 mm x 0.8 mm
Substrate used	FR4
Notching	5.03 to 5.94 GHz
Impedence Bandwidth	3.04 to 10.87GHz
Relative permittivity	4.4
Loss tangent	0.018



(a) **(b)**

Figure 2: Geometry of the proposed slot antenna, (a) top layer (b) bottom layer [2]

Author Seyed Ramin Emadian and Javad Ahmadi-Shokouh proposed "Very Small Dual Band Notched Rectangular Slot Antenna with Enhanced Impedance Bandwidth"[3].This antenna consists of a rectangular slot, a beveled rectangular patch, two S-shaped slits cut in the ground plane and an elliptical ring slot (ERS) etched in the patch. The corners of a simple rectangular patch are beveled to improve the impedance bandwidth, especially at the middle frequencies of the band. In addition, a pair of semi-circle slots are etched in the ground plane to enhance the bandwidth to more than 23 GHz. A pair of S-shaped slits connected to the rectangular slot, and an elliptical ring slot cut in the beveled rectangular patch, are employed to create band notched performances in WiMAX and WLAN spectrum, respectively. The various parameter and geometry of the proposed antenna is shown in Table.3 and Figure. 3 ,respectively.

Table 3:Various parameter for antenna component [3]

Antenna Component	Symbols and their values for the proposed antenna
Substrate Dimension	15 mm x15 mm x1.6 mm
Substrate used	FR4
Notching	WiMAX,WLAN
Impedence Bandwidth	2.6 to 23GHz
Relative permittivity	4.4
Loss tangent	0.0018

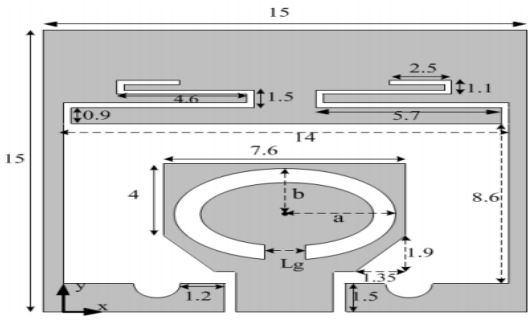


Figure 3. Geometry of the proposed slot antenna with dual band notched function [3]

Author Peng Gao proposed "Compact Printed Wide-Slot UWB Antenna With 3.5/5.5-GHz Dual Band-Notched Characteristics"[4].The antenna consists of an inverted U-shaped slot on the ground plane and a radiation patch similar to the slot that is fed by a 50- microstrip line. By etching a C-shaped slot on the radiation patch and extruding an L-shaped stub from the ground plane, dual band-notched properties are achieved. The various parameter and geometry of the proposed antenna is shown in Table.4 and Figure.4,respectively.

Table 4:Various parameter for antenna component [4]

Antenna Component	Symbols and their values for the proposed antenna
Substrate Dimension	20mm x 27mm x 1mm
Substrate used	FR4
Notching	WiMAX (3.4–3.69 GHz), WLAN (5.15–5.825 GHz)
Impedence Bandwidth	2.89 to 11.52 GHz
Relative permittivity	4.4

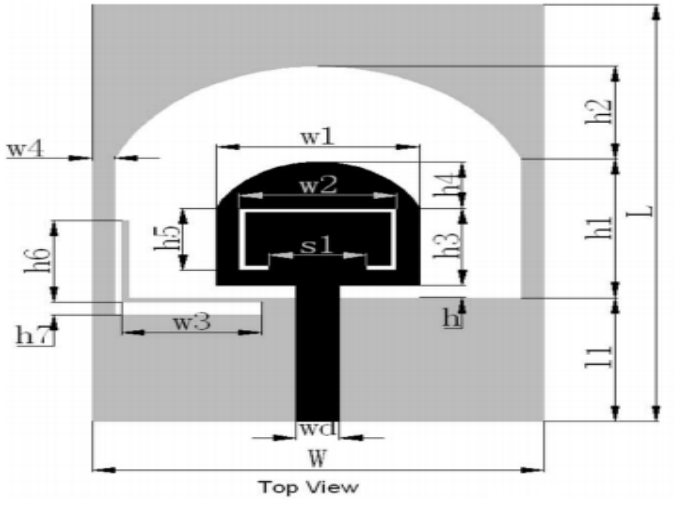
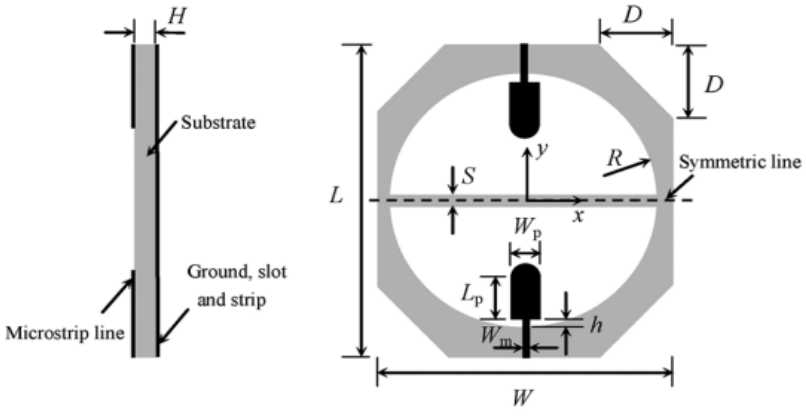


Figure 4. Geometry of the proposed antenna with top view [4]

Author Li Li,Jing Yang proposed "Ultra-Wideband Differential Wide-Slot Antenna With Improved Radiation Patterns and Gain" [5] .In this Antenna with the same radiation pattern and the stable gain in the whole frequency range can be achieved. By truncating the corners of the ground plane, the current distribution in it becomes more ordered and the radiation performance of the proposed DWSA in the upper frequency band is effectively improved. Further, one strip line is loaded in the ground plane along the symmetric line in order to strengthen the virtual ground and reduce the influence of asymmetry factor brought by the processing error. The measured results show, the fabricated DWSA presents a -10 dB impedance bandwidth from2.49 to 12.41 GHz..Moreover, in the whole band, the antenna basically keeps the same radiation pattern and the gain The proposed antenna is excited by the differential feeding. The various parameter and geometry of the proposed antenna is shown in Table.5 and Figure.5,respectively.

Table 5:Various parameter for antenna component [5]

Antenna Component	Symbols and their values for the proposed antenna
Substrate Dimension	29.6 mm x 33.6mm x 0.635mm
Notching	-
Impedence Bandwidth	2.49GHz to 12.41GHz (133.1%)
Relative permittivity	6.15
Gain	1.3 dBi



(a) **(b)**

Figure 5: Geometries of the proposed DWSA. (a) section view, (b) top view [5]

CONCLUSION

This paper shows the review and survey of various techniques used in designing of ultra wideband slot antenna employing different slot shape,structure of radiating patch and compact structure in order to improve antenna characteristics for specified Bandwidth .Different antennas that have been discussed show the return loss that is less than -10dB.

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