

Dual Band Notched Antenna for Ultra Wide Band Applications

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Abstract — Wireless communications have progressed very rapidly in recent years, and many mobile units are becoming smaller and smaller. To meet this miniaturization requirement, the antennas employed in mobile terminals their dimensions must be reduced accordingly. Micro strip antennas have the attractive features of low profile small size, and conform-ability to mounting posts. In this design our aim is to design a single antenna which works for two band range frequencies. Thus we can use a single antenna for dual band. our design antenna will work for ultra wide band range frequency applications. The designed antenna is smaller when compared to the other ultra wide band antennas.

I. INTRODUCTION

IN the most recent couple of years, the ultra wide band (UWB) innovation has been created generally and quickly. Business UWB frameworks require little minimal effort antennas with equal directional radiation and vast data transfer capacity. It is a verifiable truth that planar mono pole receiving wires present truly engaging physical components, for example, straightforward structure, little size, and minimal effort. Because of all these fascinating qualities, planar mono poles are to a great degree alluring to be utilized in developing UWB applications, and developing examination movement is being centered around them. Thus, various planar mono poles with various geometries have been tentatively described. The recurrence range for UWB frameworks between 3.1–10.6 GHz will make impedance the current remote correspondence frameworks, for example, the remote neighborhood double band execution is required. As of late, mono poles have been as of late proposed. Different shapes of slots are utilized to get the wanted band scored qualities. Single and numerous half-wavelength U-molded to create the recurrence band-score capacity, altered planar openings are implanted in the radiation patch to create the single what's more, various band-scored capacities, separately. Band-indent capacity is accomplished by utilizing a T-formed coupled parasitic component in the ground plane. In this letter, another double band-indent printed mono pole receiving wire with multi resonance execution is displayed. To start with, by embedding rectangular strip on the ground

plane, extra resonances are energized, and the transmission capacity is moved forward, which accomplishes a fragmentary transmission capacity with multi resonance execution of more than 140%. In the proposed structure, single band-indent capacity is given by cutting a couple of L-formed openings toward the sides of a square emanating patch, and double band trademark is acquired by cutting an E-molded opening in the emanating patch. The extent of the composed antenna is littler than the UWB receiving wires with band-indent capacity reported as of late, which has a size reduction of 35% as for the past comparable radio wire. Great return misfortune and radiation design attributes are acquired in the recurrence band of characteristics. Recreated and measured results are exhibited to accept the helpfulness of the proposed radio wire structure for UWB applications.

II. ANTENNA CONFIGURATION

As showed in Fig. 1, a couple of L-formed openings toward the edges of the emanating patch and an E-molded opening irritate the resounding reaction further more go about as a half-wave thunderous structure. At the indent recurrence, the current concentrated on the edges of the inside and outside of the opening. As a result, the craved high lessening close to the indent recurrence can be delivered. The ideal measurements of the composed antenna are indicated in Table I.

Parameter	mm	Parameter	mm	Parameter	mm
W_{Sub}	10	L_{Sub}	16	L_f	6
L_V	1.5	L_S	7	L_{S2}	7
W_P	9	L	0.5	W	0.5
W_{S1}	2	L_{S1}	0.5	W_{S2}	3
W_{S3}	1	L_{S3}	2.5	W_V	2
W_{V1}	1	W_{V2}	1	L_{gnd}	1

Table 1: Measurements of the antenna

In this segment, the micro strip mono pole antenna with different plane parameters was developed, and the numerical and trial aftereffects of the information impedance and radiation qualities are introduced and talked about. The parameters of this proposed changing so as to receiving wire are contemplated one parameter at a time and altering the others. The reenacted results are acquired utilizing the Ansoft recreation programming High Frequency Structure Test system (HFSS). To plan a novel radio wire, furthermore keeping in mind the end goal to build the upper recurrence transmission capacity, an adjusted rectangular strip is embedded in the ground plane of the proposed reception apparatus. By legitimately tuning the inside and outside point of rectangular strip, the receiving wire can really transmit over a wide recurrence band taking into account a coupling condition of the rectangular strip on the impedance transmission capacity. The estimation of the edge is playing an imperative part in the broadband attributes and in deciding the affectability of impedance coordinating of this receiving wire since it can modify the electromagnetic coupling impacts between the patch what's more, the ground plane and enhances its impedance data transfer capacity with no expense of size or cost

III. RESULTS AND DISCUSSIONS

It is found that by embeddings the rectangular strip with at the ground plane, extra reverberation is energized, what's more, thus much more extensive impedance transmission capacity with multi resonance qualities can be delivered, particularly at the higher band dual band execution reproduction ponders. VSWR attributes for a normal square fix reception apparatus with a rectangular strip. To produce single band-score attributes we utilize two L-formed openings toward the edges of the transmitting patch. By including an E-formed space in the focal point of the emanating patch. To comprehend the wonder behind this double band-score execution, the mimicked current appropriation on the transmitting patch for the proposed receiving wire at the score frequencies of 3.9 and 5.01 GHz is introduced. This structure has a novel current way design that comprises of a part arrange associated with rectangular port on its base. The proposed antenna with ideal configuration, as appeared in antenna attributes of the proposed radio wire. The created reception apparatus has the recurrence band off 1 to more than 11 GHz with two functional groups around 3.47–4.3 and 5.1–5.95 GHz.. The primary reason for the radiation designs is to exhibit that the receiving wire really emanates over a wide recurrence band.

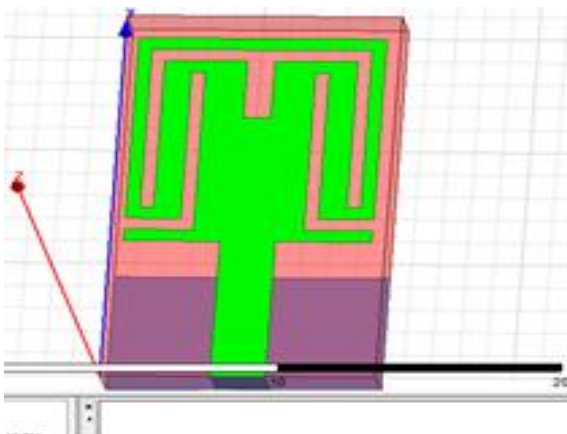


Fig1: Top view of designed antenna

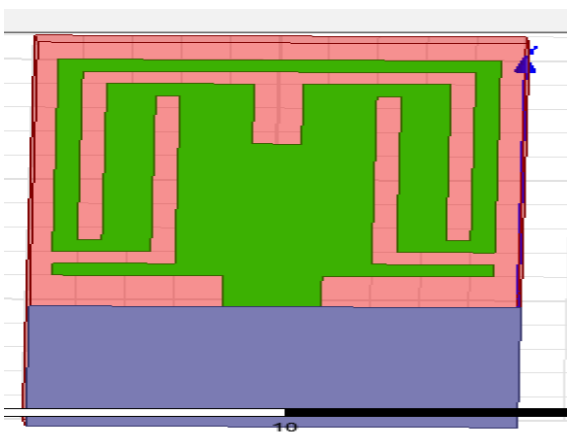


Fig2: Bottom view of the antenna

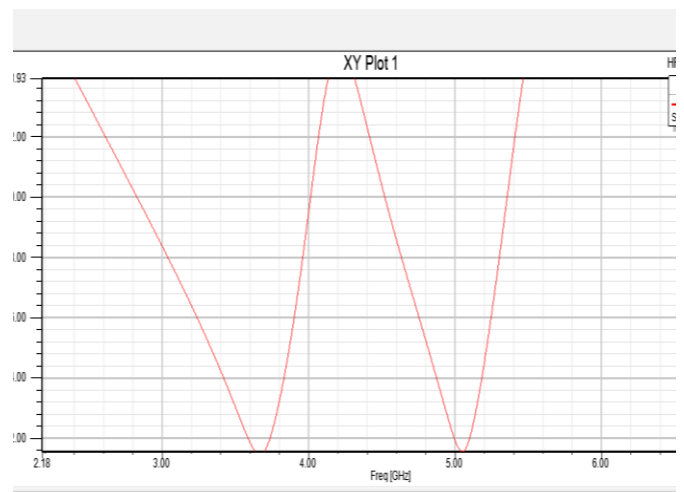


Fig3: VSWR plot of designed antenna

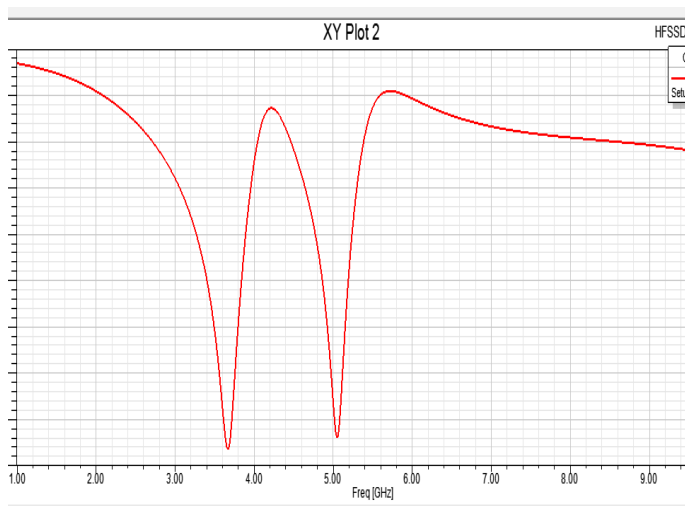


Fig4: Reflection co-efficient plot of designed antenna

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