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A Novel UWB Planar Antenna for Biomedical Applications based  
on CB - CPW Technique

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This paper presents, an Ultra-Wide Band CB-CPW based planar antenna design for biomedical applications. The proposed low-profile antenna boasts a compact size, measuring  $66 \times 52 \times 1.57 \text{ mm}^3$ . Here, a comparative analysis is performed of designed antenna with and without the CB-CPW technique. The designed antenna operates at resonance frequencies of 1.9 GHz and 5.37 GHz. It exhibits significant bandwidth from 1.6 to 6GHz. The gain of designed antenna is 2.8 dBi and 4.8 dBi at 2.45 GHz and 5.78 GHz respectively. Here, the designed UWB planar antenna is simulated using CST MWS and the results are verified experimentally. The antenna with CB-CPW technique demonstrates efficiency of 88.2% at 2.45 GHz and 78% at 5.8 GHz. The designed antenna is simulated with body phantom and also against the structural deformation (Bending).The antenna simulated and the experimental results demonstrate the efficacious performance of the designed antenna, even when subjected to structural deformation like bending. SAR analysis of the designed antenna has been simulated with HUGO human body model of VOXEL family using CST MWS software. Moreover, designed antenna indicate a significant low specific absorption rate (SAR) value with in the IEEE and FCC guidelines. The proposed antenna has low profile, compact size, low SAR, negligible backward radiation, broad bandwidth and high gain, position it as an excellent choice for BAN biomedical applications.