

An efficient electronic beam steering technique in time modulated linear array (TMLA) is proposed, where the first positive and negative sidebands are utilised to implement the electronic steering process. In this technique, new periodic time sequences are used, in which a positive-ON, negative-ON, and OFF durations are utilised to obtain high sufficient steering in TMLA. Furthermore, it is shown that by using these time sequences, the non-steerable array pattern at the fundamental frequency and also the even sidebands can be eliminated and nulled to zero. In addition, the radiation power and the directivity of this proposed steered-TMLA are formulated in their closed form. The genetic algorithm is implemented to optimise the steered-TMLA by suppressing the remaining odd sidebands and increasing the power radiation at the first positive and negative sidebands. © The Institution of Engineering and Technology 2020