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Circular Equivalent Planar Array - A new approach (Conference Paper)

Asadullah, G.M. ✉, Islam, M.S. ✉, Islam, M.R. ✉, Adnan, N.H.M. ✉

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Abstract

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In this paper, a new configuration of four elements circular equivalent planar array has been proposed to achieve high gain and directivity with lower sidelobe level. After being designed and simulated, the proposed antenna array has achieved high directivity of 15.3 dBi with 85 % radiation efficiency. Besides, the array has a maximum realized gain of 14.51 dB and low sidelobe level of - 16 dB. The proposed antenna array has been evaluated by comparing its performances with four elements of MIMO and planar antenna arrays. It is observed that the proposed array shows greater performances in terms of all parameters compared to the other two arrays. Also, the proposed array has maximum isolation of below - 35 dB between two nearby elements. In turn, the high directivity of the proposed antenna array resonating at 5.8 GHz with very minimum return loss which makes it suitable for Radar application. Contribution-High gain and directivity have been achieved by proposing a new Circular Equivalent Planar Array with lower sidelobe level and minimum mutual coupling effect. © 2020 IEEE.

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