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Optimum concentric circular array antenna with high gain and side lobe reduction at 5.8 GHz (Conference Paper) [\(Open Access\)](#)

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Abstract

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The significance of high gain directional antennas stems from the need to cope up with the everyday progressing wireless communication systems. Due to low gain of the widely used microstrip antenna, combining multiple antennas in proper geometry increases the gain with good directive property. Over other array forms, this paper uses concentric circular array configuration for its compact structure and inherent symmetry in azimuth. This proposed array is composed of 9 elements on FR-4 substrate, which is designed for WLAN applications at 5.8GHz. Antenna Magus software is used for synthesis, while CST software is used for optimization. The proposed array is designed with optimum inter-element spacing and number of elements achieving a high directional gain of 15.7 dB compared to 14.2 dB of available literature, with a high reduction in side lobe level of -17.6 dB. © Published under licence by IOP Publishing Ltd.

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