Adaptive MICROSTRIP Array Antennae Design and Characterization for Wi-MAX Transceiver

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Abstract

Array antennae are preferred over other type of antennae for the use in Wi-MAX mobile communication systems due to increasing demand for higher capacity, better coverage and higher transmission quality. Further more if the antennae array is adaptive in nature, it can maximize the efficiency of transceiver. This research work concentrates on three different microstrip antennae array configurations, namely uniform circular, uniform concentric and
modified uniform concentric circular for 3.3 GHz frequency band for Wi-MAX application [1], [2].
The configurations of antennae arrays considered three parameters - half power beamwidth, number of side lobes and main lobe to side lobe ratio. The simulations have been performed for three antennae arrays using MATLAB version 7.5 platforms for standard IBM PCs. A series of LMS adaptive algorithms are used to update weight vectors of the received noisy signals to match with desired signals. The simulation results show that modified concentric circular array outperforms other array configurations in terms of half power beamwidth, number of side lobes and main lobe to side lobe ratio.

Reference

- M. Dessouky, H. Sharshar, and Y. Albagory, 2006, “Efficient Side lobe Reduction Technique For Small-Sized Concentric Circular Arrays”, Department of Electronics and Electrical Communications Engineering, Faculty of Electronic Engineering, Menouf, Egypt,

Index Terms

Computer Science  Wireless

Key words

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Computing
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LMS algorithm
Modeling and Simulation
WiMAX Transceiver