

Polyomino sub-arraying with arbitrary array boundaries

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Abstract

Nowadays, large-scale phased antenna arrays are being more and more widely used in both terrestrial and space applications. As a matter of fact, they allow generating single or multiple beam patterns which can be electronically scanned thus enabling their use for new and challenging applications. The growing demand of reducing as much as possible costs, weights and losses of such large antenna structures has led to the study and development of several approaches to reduce the number of active components in phased arrays. In this framework, the sub-array technology provides methods for reducing the number of active elements in the antenna beam forming network. Standard rectangular sub-arrays are the simplest example. Such sub-arrays fill the array ideally and obviously but their radiation pattern has poor performance with high undesired lobes. To avoid this drawback, sub-arrays with irregular forms can be used.

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