The Impact of Higher Order Sectorisation on the Performance of Millimetre Wave 5G Network

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Abstract:

The fifth Generation (5G) mobile network will provide services with extreme data rate and latency demands compared to current cellular network, and provide massive capacity and connectivity to multitude of devices with diverse requirements and applications. Therefore, it is important to utilise all network resources to provide the 5G vision. In this paper, performance evaluations and impact of higher order horizontal sectorisation on next generation 5G mobile access is presented. The study has been focused on busy urban areas in high carrier frequency. Millimetre wave band has precious wide unexploited bandwidth that can be harnessed for mobile communication. The results for these scenarios show that higher-order horizontal sectorisation in millimetre wave based smallcell deployment can significantly increase the network capacity to meet the future requirement of 5G network, and provide high data rate and connectivity to huge number of devices. Moreover, beamforming can highly increase the data rate by efficiently increase signal power and suppress interference from unwanted directions.