

5G capacity design based on user demand in single high altitude platform network

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Abstrak

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HAPS (High Altitude Platform Station) is an alternative technology to an existing communication systems named terrestrial and satellite systems. One of the applications that can be employed in HAPS system is cellular 5G technology. However, interference is one of problems in achieving maximum capacity. Multispot beam and the power control are both used to overcome the problem. This multispot beam antenna works like a base station on a terrestrial system. The multispot beam antenna lies at a close distance on the platform. Thus the path passed by the signal of each user has a nearly equal length of trajectory. Almost the same trajectory causes the shadowing experienced by each user almost the same value. This is in contrast to the terrestrial system in which each user gets the power control of the BTS residing in each cell. The length of the path taken by each user's signal is different so the shadowing value is also different. This paper aims at evaluating the capacity of 5G cellular in single HAPS system in which the bandwidths used are 0.1 GHz and 1 GHz. Simulation result shows that outage probability using 0.1 GHz bandwidth resulting the capacity in single HAPS system, which is maximum 550 users in reference cell can achieve 10-15 and it also happen when using 1 GHz with maximum 5500 users in reference cell.