

The role of 5G outdoor base stations





Overview

Due to the high propagation loss and blockage-sensitive characteristics of millimeter waves (mmWaves), constructing fifth-generation (5G) cellular networks involves deploying ultra-dense base stations (BS).

How to optimize base station deployment in 5G wireless networks?

In previous research on 5 G wireless networks, the optimization of base station deployment primarily relied on human expertise, simulation software, and algorithmic optimization.

Should 5G base stations be tripled?

To cover the same area as traditional cellular networks (2G, 3G, and 4G), the number of 5G base stations (BSs) could be tripled (Wang et al., 2014). Furthermore, Ge, Tu, Mao, Wang, and Han, (2016) suggested that to achieve seamless coverage services, the density of 5G BSs would reach 40-50 BSs/km².

How can a 5G cellular network be developed?

The developed model can facilitate the rollout of 5G technology. Due to the high propagation loss and blockage-sensitive characteristics of millimeter waves (mmWaves), constructing fifth-generation (5G) cellular networks involves deploying ultra-dense base stations (BSs) to achieve satisfactory communication service coverage.

Does GIS support 5G cellular network planning in urban outdoor areas?

In this study, we developed a GIS-based optimization model to support 5G cellular network planning in urban outdoor areas. First, we employed GIS to simulate the LOS propagation of 5G signals in urban outdoor areas in a spatially explicit way.



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