

# **Outdoor intelligent base station design**





## Overview

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What is a passive is-integrated base station?

In particular, integrating passive IS into the base station (BS) is a novel solution to enhance the wireless network throughput and coverage, both cost-effectively and energy-efficiently. In this article, we provide an overview of IS-integrated BSs for wireless networks.

Why are base stations important?

As critical nodes in wireless network connectivity, base stations, if not deployed with foresight and scientific planning, may not only lead to resource wastage, but also cause signal interference, directly affecting network coverage, signal quality, and user experience, thereby increasing the complexity of network management and operational costs.

Can intelligent algorithm-based base station deployment be based on a real world map?

However, most researchers focusing on intelligent algorithm-based base station deployment consider only two-dimensional map environments, neglecting the impact of real three-dimensional geographic environments on signal propagation and the actual random distribution of users based on real-world streets and other settings.

How to optimize base station layout?

Moreover, we propose a dynamically adjusted quantum genetic algorithm (DAQGA) to optimize base station layout, with coverage and construction cost as objective functions. A signal reception strength metric is introduced to evaluate the effectiveness of the optimal layout.



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