
5g base station power optimization ideas

What is 5G base station?

1. Introduction 5G base station (BS), as an important electrical load, has been growing rapidly in the number and density to cope with the exponential growth of mobile data traffic. It is predicted that by 2025, there will be about 13.1 million BSs in the world, and the BS energy consumption will reach 200 billion kWh.

What is a minimal 5G BS energy consumption optimization model?

Therefore, the problem can be formulated as a minimal 5G BS energy consumption optimization model, i.e., the energy consumption reduced by reasonably switching off the idle or lightly loaded BSs and reasonably associate UEs with BSs (i.e., the BS switching state and BS-UE association state scheme).

How does mobile data traffic affect the energy consumption of 5G base stations?

The explosive growth of mobile data traffic has resulted in a significant increase in the energy consumption of 5G base stations (BSs).

How to evaluate a 5G energy-optimised network?

To properly examine an energy-optimised network, it is very crucial to select the most suitable EE metric for 5G networks. EE is the ratio of transmitted bits for every joule of energy expended. Therefore, while measuring it, different perspectives need to be considered such as from the network or user's point of view.

An energy consumption optimization strategy of 5G base stations (BSs) considering variable threshold sleep mechanism (ECOS-BS) is proposed, which includes the initial ...

Technical Report ITU-T Smart Energy Saving of 5G Base Station: Based on AI and other emerging technologies to forecast and optimize the management of 5G wireless network ...

However, the uncertainty of distributed renewable energy and communication loads poses challenges to the safe operation of 5G base stations and the power grid. ...

In today's 5G era, the energy efficiency (EE) of cellular base stations is crucial for sustainable communication. Recognizing this, Mobile Network Operators are actively prioritizing EE for ...

Optimizing energy consumption and aggregating energy storage capacity can alleviate 5G base station (BS) operation cost, ensure power supply reliability, and provide ...

With the maturity and large-scale deployment of 5G technology, the proportion of energy consumption of base stations in the smart grid is increasing, and there is an urgent ...

For macro base stations, Cheng Wentao of Infineon gave some suggestions on the optimization of primary and secondary power supplies. "In terms of primary power supply, we ...

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