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Title: Energy method for large and slender communication base stations

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Is a 5 G base station energy-saving?

This paper proposes an energy-saving operation model of 5 G base station that incorporates communication caching and linearization techniques. On one hand, the model characterizes the electrical consumption characteristics within the 5 G base station, focusing on each electrical component.

What are the standardized energy-saving metrics for a base station?

(1) Energy-saving reward: after choosing a shallower sleep strategy for a base station, the system may save more energy if a deeper sleep mode can be chosen, and in this paper, the standardized energy-saving metrics are defined as $(18) R_{ie} = E_{SM=0} E_{SM=i} E_{SM=0} E_{SM=3}$

How to reduce the energy consumption of a base station?

Using this technique, the energy consumption of a base station can be reduced by turning off energy-intensive devices inside the base station, or by turning off the entire base station and keeping only the sensing module to wake up the base station.

How can a 5G base station save energy?

(1) Incorporation of Communication Caching Technology: The model includes communication caching technology, which fully leverages the delay-tolerant characteristics of communication flows, further enabling energy saving in 5G base stations.

Aiming at minimizing the base station (BS) energy consumption under low and medium load scenarios, the 3GPP recently completed a Release 18 study on energy saving techniques for ...

A significant number of 5G base stations (gNBs) and their backup energy storage systems (BESSs) are redundantly configured, possessing surplus capacit...

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 both ...

On the basis of ensuring smooth user communication and normal operation of base stations, it realizes orderly regulation of energy storage for large-scale base stations, participates in ...

References (150) Figures (10) Abstract and Figures In today's 5G era, the energy efficiency (EE) of cellular base stations is crucial for sustainable communication.

In this paper, we present a power consumption model for 5G AAUs based on artificial neural networks. We demonstrate that this model achieves good estimation performance, and it is ...

To further explore the energy-saving potential of 5 G base stations, this paper proposes an energy-saving operation model for 5 G base stations that incorporates communication caching and ...

Overview Various approaches have been proposed to reduce the energy consumption of an RBS, for instance, passive cooling techniques, energy-efficient backhaul solutions, and distributed ...

Threshold-based base station sleep strategy is a common base station management method in wireless communication networks, which adjusts the operating state of the base station to ...

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