5G base station power consumption analysis

Is 5G base station power consumption accurate?
esan@huawei.comAbstract--The energy consumption of the fifth generation (5G) of mobile networks is one of the major co cerns of the telecom industry. However,there is not currently an accurateand tractable approach to evaluate 5G base stations (BSs) power consumption. In this article,we pr

Should power consumption models be used in 5G networks?
This restricts the potential use of the power models, as their validity and accuracy remain unclear. Future work includes the further development of the power consumption models to form a unified evaluation framework that enables the quantification and optimization of energy consumption and energy efficiency of 5G networks.

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 increasein the energy consumption of 5G base stations (BSs).

Does a balanced dataset improve energy prediction of 5G base stations?
For energy prediction of 5G base stations,this thesis finds that using a more balanced dataset,in terms of the number of samples for each product,has a positive impactfor the ANN and the Gradient Boosted Trees model while the linear regression performs worse.

Notably, the power consumption of a gNB is very high, up to 3-4 times of the power consumption of a 4G base stations (BSs). The substantial quantity, rapid growth rate, and high ...

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 ...

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 ...

Accurate energy consumption modeling is essential for developing energy-efficient strategies, enabling operators to optimize resource uti-lization while maintaining network ...

The energy consumption of the fifth generation(5G) of mobile networks is one of the major concerns of the telecom industry. However, there is not currently an accurate and ...

A literature review is presented on energy consumption and heat transfer in recent fifth-generation (5G) antennas in network base ...

The analysis yields a steady-state solution, with reward rates assigned to each state based on the energy consumption of individual BS components. This approach enables ...

The high-energy consumption and high construction density of 5G base stations have greatly increased the demand for backup energy storage batteries. To maximize overall ...

This paper conducts a literature survey of relevant power consumption models for 5G cellular network base stations and provides a comparison of the models. It highlights ...

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

Base stations are evolving into "power plants!" With the widespread adoption of 5G technology, the number of telecom sites is increasing, leading to higher energy consumption. ...

Mathematical optimization of energy consumption requires a model of the prob-lem at hand. In this thesis linear regression is compared with the gradient boosted trees method and a neural ...

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