
5G base station power consumption measurement and monitoring

Can 3GPP reduce base station energy consumption in 5G NR BS?

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 5G NR BSs. A broad range of techniques was evaluated in terms of the obtained network energy saving (NES) gain and their impact to the user-perceived throughput (UPT).

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 concerns of the telecom industry. However, there is not currently an accurate and 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.

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 impact for the ANN and the Gradient Boosted Trees model while the linear regression performs worse.

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

This paper presents the design and implementation of a cloud-based energy monitoring system specifically developed for 5G base stations, with a focus on optimizing ...

In this paper, we propose and validate a measurement-based approach to analyze the power consumption of a virtualized 5G core network (5GC) deployment.

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 ...

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 ...

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However, there is still a need to understand the power consumption behavior of state-of-the-art base station architectures, such as multi-carrier active antenna units (AAUs), ...

TS 103 786 - V1.2.1 - Environmental Engineering (EE); Measurement method for energy efficiency of wireless access network equipment; Dynamic energy efficiency ...

Mathematical optimization of energy consumption requires a model of the problem at hand. In this thesis

linear regression is compared with the gradient boosted trees method and a neural ...

Accurate power consumption forecasting plays a pivotal role in energy management, influencing both utility operations and customer experience. With increasing ...

The 5G network is a dynamic system that consumes energy continually and responds to spikes in network activity. Over 70% of this energy is consumed by RAN ...

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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 ...

The work considers experimentally probing the power consumption of a 5G base station component, which has been implemented on an open Radio Access Network (RAN) ...

This work has explored the power consumption of an outdoor commercial 5G NR base station using an inexpensive and custom-built power measurement setup.

Base Stations (BSs) sleeping strategy is an efficient way to obtain the energy efficiency of cellular networks. To meet the increasing demand of high-data-rate for wireless ...

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