
Power consumption of 5G base stations in the next five years

What is the energy consumption of a 5G network?

The energy consumption of 5G networks is one of the pressing concerns in green communications. Recent research is focused towards energy saving techniques of base stations (BSs). BSs are one of the most power consuming elements of a 5G network. It is important to model their energy consumption for analyzing overall energy efficiency of a network.

Does 5G increase energy consumption?

However, this technological leap comes with a substantial increase in energy consumption. Compared to its predecessor, the fourth-generation (4G) network, the energy consumption of the 5G network is approximately three times higher.

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

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Reports on the Increasing Energy Consumption of Wireless Systems and Digital Ecosystem
The more we use wireless electronic devices, the more energy we will consume. 5G will ...

A portion of the dataset is published on GitHub. We develop high-accuracy models to profile 4G and 5G base station energy consumption, revealing 5G inefficiencies under low ...

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

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

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 ...

To investigate the future development and potential energy impact of 5G, this study focuses on modelling the development of 5G base stations in the UK in the next ten years by ...

Change Log This document contains Version 1.0 of the ITU-T Technical Report on "Smart Energy Saving of 5G Base Station: Based on AI and other emerging technologies to ...

We decomposed the CO₂ footprint of China's 5G networks and assessed the contribution of the number of 5G base stations and mobile data traffic to 5G-induced CO₂ ...

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), ...

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

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 ...

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

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