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# Base station communication equipment power consumption

How do base stations affect mobile cellular network power consumption?

Base stations represent the main contributor to the energy consumption of a mobile cellular network. Since traffic load in mobile networks significantly varies during a working or weekend day, it is important to quantify the influence of these variations on the base station power consumption.

Do base stations dominate the energy consumption of the radio access network?

Furthermore, the base stations dominate the energy consumption of the radio access network. Therefore, it is reasonable to focus on the power consumption of the base stations first, while other aspects such as virtualization of compute in the 5G core or the energy consumption of user equipment should be considered at a later stage.

Is there a direct relationship between base station traffic load and power consumption?

The real data in terms of the power consumption and traffic load have been obtained from continuous measurements performed on a fully operated base station site. Measurements show the existence of a direct relationship between base station traffic load and power consumption.

What are base station models?

The base station models vary in their approaches and potential use cases. Hereafter, the models are grouped according to these aspects. Main component models only model the power consumption of the main base station components (power amplifier, analog frontend, baseband unit, active cooling, power supply) separately.

Abstract Energy consumption in mobile communication base stations (BTS) significantly impacts operational costs and the environmental footprint of mobile networks.

Abstract--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 ...

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In wireless communications micro cells are potentially more energy efficient than conventional macro cells due to the high path loss exponent. Also, heterogeneous ...

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The power parameters of the communication base station can be monitored in real time by installing smart meters, sensors, and other ...

The study also explores power consumption models in new radio and idle power consumption modes. Furthermore, this paper investigates power consumption in wireless networks, ...

This paper proposes a power control algorithm based on energy efficiency, which combines cell breathing technology and base station sleep technology to reduce base station ...

For 5 G base station software management strategies, there is already a certain amount of research available. Dynamic power consumption modeling for base stations is a ...

Many countries have made significant investments in digital infrastructure, including 5G base stations which have become a critical component of this infrastructure. However, due ...

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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