

Power consumption of a mobile base station device





Overview

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.

What is a base station power consumption model?

In recent years, many models for base station power consumption have been proposed in the literature. The work in [7] proposed a widely used power consumption model, which explicitly shows the linear relationship between the power transmitted by the BS and its consumed power.

What is the largest energy consumer in a base station?

The largest energy consumer in the BS is the power amplifier, which has a share of around 65% of the total energy consumption [7]. Of the other base station elements, significant energy consumers are: air conditioning (17.5%), digital signal processing (10%) and AC/DC conversion elements (7.5%) [8].



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[Measurements and Modelling of Base Station Power Consumption ...](#)

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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), ...

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[What is the Power Consumption of a 5G Base Station?](#)

Why is 5G Power Consumption Higher? 1. Increased Data Processing and Complexity These 5G base stations consume about three times the power of the 4G stations. ...

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[Power consumption models of base station : measurements ...](#)

This thesis presents a comprehensive analysis of power consumption models of base stations. The research delves into the distribution of power consumption across different types of base ...



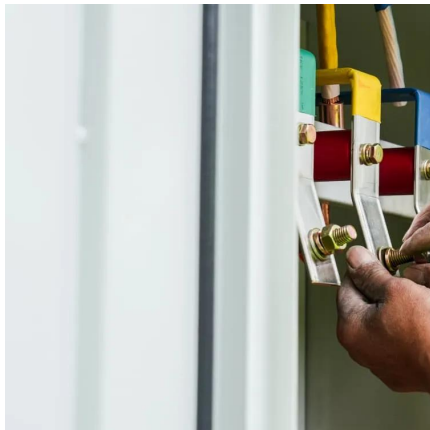
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[Power Consumption Assessment of Telecommunication Base Stations](#)

The simulations indicate that construction materials and methods influence the energy efficiency of base stations, while ventilation and photo-voltaics can reduce ...

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Comparison of Power Consumption Models for 5G Cellular Network Base

The first step when modeling the energy consumption of wireless communication systems is to derive models of the power consumption for the main system components, which ...

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INVESTIGATORY ANALYSIS OF ENERGY REQUIREMENT OF A MULTI-TENANT MOBILE

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

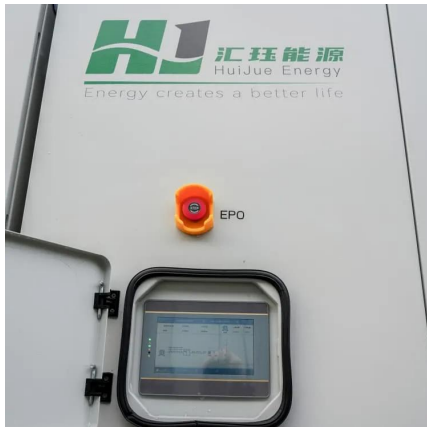
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[Power consumption based on 5G communication](#)

At present, 5G mobile traffic base stations in energy consumption accounted for 60% ~ 80%, compared with 4G energy consumption increased three times. In the future, high ...

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Measurements and Modelling of Base Station Power Consumption under Real

Abstract 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 ...

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[Energy Consumption Modelling for 5G Radio Base ...](#)

In this thesis ML techniques, as described above are used to predict the energy consumption of radio base stations in a mobile telecommunication network. To predict the energy consumption ...

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