

Power consumption of various communication base stations





Overview

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 [1] proposed a widely used power consumption model, which explicitly shows the linear relationship between the power transmitted by the BS and its consumed power.

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.

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.

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 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. 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%) .

What is the power consumption of baseband processing?

The power consumption of the baseband processing is defined as a constant value in the Auer, Holtkamp, and Piovesan models. In the Holtkamp model, it is scaled linearly with the bandwidth and the number of employed antennas.



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Power consumption models of base station : measurements and ...

The research delves into the distribution of power consumption across different types of base stations, highlighting the significant role of power amplifiers in macro stations and baseband ...

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We introduce five base station energy models for the state-of-the-art EnergyPlus simulator, and we present the development of an OpenStudio Measure for the ...

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[Power Consumption Modeling of 5G Multi-Carrier Base ...](#)

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), as well as the ...

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[Power consumption of different parts of wireless base ...](#)

Download Table , Power consumption of different parts of wireless base stations from publication: Energy- and Spectral-Efficient Wireless Cellular Networks , ...



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Power consumption modeling of different base station types in

In this paper we developed such power models for macro and micro base stations relying on data sheets of several GSM and UMTS base stations with focus on component ...

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Power consumption models for base stations are briefly discussed as part of the development of a model for life cycle assessment. An overview of relevant base station power ...

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Power Consumption Modeling of Different Base Station...

Abstract: In wireless communications micro cells are potentially more energy efficient than conventional macro cells due to the high path loss exponent. Also, hetero-geneous ...

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Energy Consumption Assessment of Mobile Cellular Networks

II. BASE STATION SITE POWER CONSUMPTION MODEL Since the energy efficiency metrics of a mobile cellular network cannot be formulated with an understanding of the power ...

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Analysis of power consumption in standalone 5G network and ...

This paper proposes two modified power consumption models that would accurately depict the power consumption for a 5G base station in a standalone network and a novel ...

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Power Consumption Modeling of Base Station as per Traffic ...

Abstract Base Station is the main contributor of energy consumption in cellular mobile communication. The traffic of base station varies over time and space. Therefore, it is ...

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Power Consumption: Base Stations of

It shows the power consumption by component in a base station; the largest energy consumer in base stations is the radiofrequency equipment (power amplifier plus the transceivers and ...

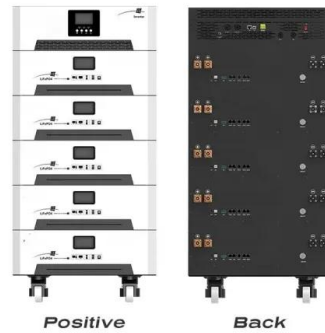
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The considerable energy consumption overhead involved in flying or hovering UAVs makes them less appealing for green wireless communications. Therefore, in this work, we ...

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[\(PDF\) Flexible power modeling of LTE base stations](#)

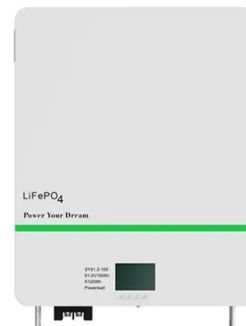
With the explosion of wireless communications in number of users and data rates, the reduction of network power consumption becomes more and more critical. ...

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[Power Consumption Modeling of Different Base Station ...](#)

In this paper we have developed a power consumption model for macro base stations which comprises of a static power consumption part only. In contrast to that, a power consumption ...

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