

Power consumption of different 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 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.

Can power models be used for macro and micro base stations?

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 level, e.g., power amplifier and cooling equipment. In a first application of the model a traditional macro cell deployment and a heterogeneous deployment are compared.

Can a base station Power model be combined?

As the main components are common to most of the models, they can be easily combined to form a new model. Most of the base station power models are based on measurements of LTE (4G) hardware or theoretical assumptions. For the more recent models, based on measurements of 5G hardware, the parameter values are not publicly available.



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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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[A Parameterized Base Station Power Model](#)

Power models are needed to assess the power consumption of cellular base stations (BSs) on an abstract level. Currently available models are either too simplified to ...

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Measurements and Modelling of Base Station Power Consumption under Real

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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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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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Resource management in cellular base stations powered by ...

Power consumption of different modules for some known BS types is given in Table 3 and i.e., power consumption of radio equipment comprising power amplifier (PA), BB, and ...

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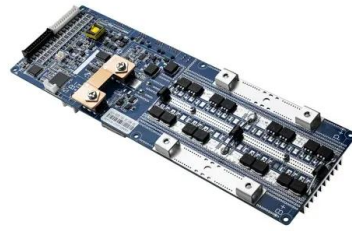
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[Power Consumption Modeling of 5G Multi-Carrier Base ...](#)

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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