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Energy consumption calculation of communication base station inverter grid-connected equipment

Overview

How can a power consumption model be used to estimate power consumption?

Quantification models are most suitable for quantifying overall power consumption of base station or even networks as part of large-scale evaluations. The number and complexity of parameters is limited, and simple usage with load profiles or traffic models is possible to estimate total energy consumption.

How do you calculate energy consumption of wireless communication systems?

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 are then combined with time-dependent traffic load models to estimate the consumed energy.

What is a LTE power consumption model?

The model by Auer et al. described in , was developed as part of the EARTH (Energy Aware Radio and neTwork tecHnologies) project. It is based on measurements of LTE hardware. Most notably, the model proposes a linear increase of power consumption with the output power (or load) of the base station.

How do Björnson/Hossain/Peesapati models calculate baseband processing power consumption?

The Björnson/Hossain/Peesapati models calculate the baseband processing power consumption as the sum of the power required for channel estimation, coding and decoding and linear processing. It depends on the number of antennas at the base station, the number of users, the data rate per user, and the bandwidth.

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.

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.

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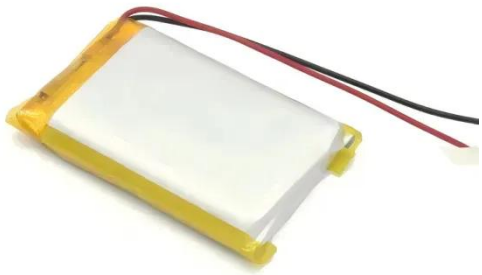

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