

Estimation of power consumption of communication base stations

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.

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 are the main energy consumers of a base station?

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%). terms of three levels: component, link and network. efficiency of the power amplifier. Efficiency can be improved using a specially designed power

Abstract and Figures Base stations represent the main contributor to the energy consumption of a mobile cellular network.

The energy consumption of the Radio Access Network (RAN) represents almost 80% of the total mobile network energy consumption. RAN mainly consists of a large number of distributed ...

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

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 ...

The architectural differences of these networks are highlighted and power consumption analytical models that characterize the energy consumption of radio resource heads (RRHs), base ...

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Therefore, this paper investigates changes in the instantaneous power consumption of GSM (Global System for Mobile Communications) and UMTS (Universal Mobile Telecommunications ...

The fifth generation of the Radio Access Network (RAN) has brought new services, technologies, and paradigms with the corresponding societal benefits. However, the energy ...

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 commonly ...

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