



LLSE CONTAINERS

# Base station power consumption management





## 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.

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 [ 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 ].



## Base station power consumption management



### [Energy Management of Base Station in 5G and B5G: Revisited](#)

Apr 19, 2024 · Since mmWave base stations (gNodeB) are typically capable of radiating up to 200-400 meters in urban locality. Therefore, high density of these stations is required for ...

### [Threshold-based 5G NR base station management for energy ...](#)

Mar 1, 2025 · In spite of promising outcomes in optimizing energy usage for Radio Access Network (RAN) Base Station (BS) hardware, deployment, and resource management, existing



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

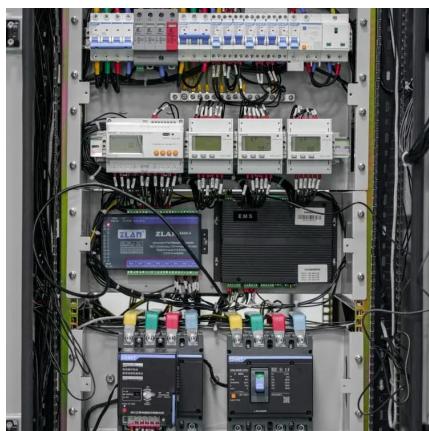
Jan 23, 2023 · However, there is still a need to understand the power consumption behavior of state-of-the-art base station architectures, such as multi-carrier active antenna units (AAUs), ...

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

Mar 28, 2012 · 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.



...



### [A Power Consumption Model and Energy Saving Techniques ...](#)

Download Citation , On May 28, 2023, Maria Oikonomakou and others published A Power Consumption Model and Energy Saving Techniques for 5G-Advanced Base Stations , Find, ...



### [5G Base Station Power Consumption Using Machine Learning](#)

Apr 25, 2025 · Accurate power consumption forecasting plays a pivotal role in energy management, influencing both utility operations and customer experience. With increasing ...



## 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 ...



## Energy-saving control strategy for ultra-dense network base stations

Aug 1, 2025 · To reduce the extra power consumption due to frequent sleep mode switching of base stations, a sleep mode switching decision algorithm is proposed. The algorithm reduces ...

## Comparison of Power Consumption Models for 5G Cellular Network Base

Jul 1, 2024 · 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 ...



## **Contact Us**

---

For catalog requests, pricing, or partnerships, please visit:  
<https://www.llsolarenergy.co.za>



**Scan QR Code for More Information**



<https://www.llsolarenergy.co.za>