



BUHLE POWER

# Mobile 5G base station power consumption





## Overview

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Is 5G base station power consumption accurate?

esan@huawei.comAbstract—The energy consumption of the fifth generation (5G) of mobile networks is one of the major concerns of the telecom industry. However, there is not currently an accurate and tractable approach to evaluate 5G base stations (BSs) power consumption. In this article, we pr.

How does mobile data traffic affect the energy consumption of 5G base stations?

The explosive growth of mobile data traffic has resulted in a significant increase in the energy consumption of 5G base stations (BSs).

Should power consumption models be used in 5G networks?

This restricts the potential use of the power models, as their validity and accuracy remain unclear. Future work includes the further development of the power consumption models to form a unified evaluation framework that enables the quantification and optimization of energy consumption and energy efficiency of 5G networks.

What is 5G base station?

1. Introduction 5G base station (BS), as an important electrical load, has been growing rapidly in the number and density to cope with the exponential growth of mobile data traffic . It is predicted that by 2025, there will be about 13.1 million BSs in the world, and the BS energy consumption will reach 200 billion kWh .



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### [Comparison of Power Consumption Models for 5G Cellular Network Base](#)

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### [Machine Learning and Analytical Power Consumption ...](#)

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Sep 15, 2025 · Accurate energy consumption modeling is essential for developing energy-efficient strategies, enabling operators to optimize resource utilization while maintaining network ...

### [Power consumption based on 5G communication](#)

Oct 17, 2021 · At present, 5G mobile traffic base stations in energy consumption accounted for 60% ~ 80%, compared with 4G energy consumption increased three times. In the future, high ...



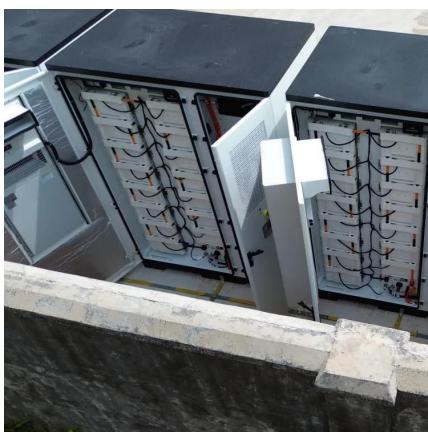
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### [What is the Power Consumption of a 5G Base Station?](#)

Nov 15, 2024 · Why is 5G Power Consumption Higher? 1. Increased Data Processing and Complexity These 5G base stations consume about three times the power of the 4G stations.

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### **Research on energy-saving technology of 5G base stations in the mobile**

With the rapidly expanding coverage of the mobile Internet, the large-scale deployment of 5G base stations (BSs) has accelerated significantly. However, the substantial energy ...



## Final draft of deliverable D.WG3-02-Smart Energy Saving ...

May 7, 2021 · Change Log This document contains Version 1.0 of the ITU-T Technical Report on "Smart Energy Saving of 5G Base Station: Based on AI and other emerging technologies to ...



## A technical look at 5G energy consumption and performance

Sep 17, 2019 · How can 5G increase performance and ensure low energy consumption? Find out in our latest Research blog post.

## 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 ...



## A technical look at 5G energy consumption and performance

Base Station Power Consumption  
Energy Saving Features of 5G New Radio  
How Much Energy Can We Save with Nr Sleep Modes?  
Impact on Energy Efficiency and Performance in A Super Dense Urban Scenario  
Further Reading  
Today we see that a major part of energy consumption in mobile networks comes from the radio base station sites and that the consumption is stable. We can also see that even in densely deployed networks, as in city centers, the network traffic



load can fluctuate very much during the day, with significant periods of almost no traffic in the base sta See more on ericsson Missing: base stationMust include: base stationScienceDirect

## **Energy consumption optimization of 5G base stations ...**

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