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# Power consumption of 5G base stations by manufacturers





## Overview

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Is 5G base station power consumption accurate?

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Abstract—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 much power does a 5G station use?

The power consumption of a single 5G station is 2.5 to 3.5 times higher than that of a single 4G station. The main factor behind this increase in 5G power consumption is the high power usage of the active antenna unit (AAU). Under a full workload, a single station uses nearly 3700W.

Is 5G more energy efficient than 4G?

Although the absolute value of the power consumption of 5G base stations is increasing, their energy efficiency ratio is much lower than that of 4G stations. In other words, with the same power consumption, the network capacity of 5G will be as dozens of times larger than 4G, so the power consumption per bit is sharply reduced.

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.



## Power consumption of 5G base stations by manufacturers



### [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 ...

### [Energy consumption optimization of 5G base stations ...](#)

Aug 1, 2023 · The explosive growth of mobile data traffic has resulted in a significant increase in the energy consumption of 5G base stations (BSs). However, the e...



### [Modelling the 5G Energy Consumption Using Real-world ...](#)

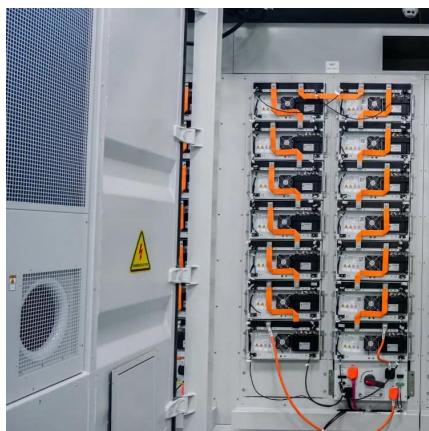
Sep 15, 2025 · Accurate energy consumption modeling is essential for developing energy-efficient strategies, enabling operators to optimize resource utilization while maintaining network ...

### [Energy Consumption Modelling for 5G Radio Base ...](#)

Mathematical optimization of energy consumption requires a model of the problem at hand. In this thesis linear regression is compared with the gradient boosted trees method and a



neural ...



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### [Front Line Data Study about 5G Power Consumption](#)

The two figures above show the actual power consumption test results of 5G base stations from different manufacturers, ZTE and HUAWEI, in Guangzhou and Shenzhen, by an anonymous ...



### [5G Base Station Power Supply Market Demand and Consumption ...](#)

Mar 25, 2025 · The 5G Base Station Power Supply market, valued at \$7203 million in 2025, is experiencing robust growth, projected at a 7.3% CAGR from 2025 to 2033. This expansion is ...



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## Why does 5g base station consume so much power and how ...

Apr 3, 2025 · The power consumption of the 5G base station mainly comes from the AU module processing and conversion and high power-consuming high radio frequency signals, the ...

## The energy use implications of 5G: Reviewing whole network ...

Apr 1, 2022 · Addressing this gap, we conduct a literature review to examine whole network level assessments of the operational energy use implications of 5G, the embodied energy use ...



## 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. ...



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

Download Citation , On Jul 1, 2024, Alexander M. Busch and others published Comparison of Power Consumption Models for 5G Cellular Network Base Stations , Find, read and cite all the ...



## Machine Learning and Analytical Power Consumption ...

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## How terrible is the power consumption of 5G base stations?

In short, the power consumption of 5G equipment is a severe challenge facing operators and a major obstacle to our promotion of 5G construction. If the power consumption problem cannot ...



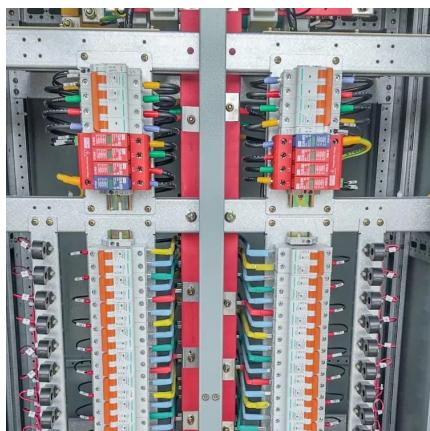
## Sustainable Connections: Exploring Energy Efficiency in 5G ...

Dec 9, 2024 · Our dataset includes traffic volume, energy consumption, and base station attributes spanning May 2022, July 2023, and April 2024, covering over 10,000 4G and 5,000 ...



## 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), ...



## 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 ...

## 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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