

# 5G base station power consumption comparison

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.

Is 5G base station power consumption accurate?

esan@huawei.com 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

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.

Why does 5G use so much power?

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. This necessitates a number of updates to existing networks, such as more powerful supplies and increased performance output from supporting facilities.

What is a 5G base station?

A 5G base station is mainly composed of the baseband unit (BBU) and the AAU -- in 4G terms, the AAU is the remote radio unit (RRU) plus antenna. The role of the BBU is to handle baseband digital signal processing, while the AAU converts the baseband digital signal into an analog signal, and then modulates it into a high-frequency radio signal.

Power consumption models for base stations are briefly discussed as part of the development of a model for life cycle assessment. An overview of relevant base station power ...

In today's 5G era, the energy efficiency (EE) of cellular base stations is crucial for sustainable

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communication. Recognizing this, Mobile Network Operators are actively prioritizing EE for ...

This paper proposes a novel 5G base stations energy consumption modelling method by learning from a real-world dataset used in the ITU 5G Base Station Energy Consumption Modelling ...

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However, a significant reduction of ca. 42.8% can be achieved by optimizing the power structure and base station layout strategy and reducing equipment power consumption. ...

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), ...

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 made ...

**Abstract** The new 5G category RedCap has been introduced to address small, energy-efficient 5G devices with relaxed requirements on data rates. This work performs an empirical study on ...

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 ...

In both 4G and future 5G networks, operators will probably run their base stations so they transmit at the maximum power allowed by their licenses, in order to maximize the ...

We demonstrate that this model achieves good estimation performance, and it is able to capture the benefits of energy saving when dealing with the complexity of multi-carrier ...

Compared with the fourth generation (4G) technology, the fifth generation (5G) network possesses higher transmission rate, larger system capacity and lower transmission ...



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