

Power consumption of China Mobile 5G base stations





Overview

Does China Mobile have a 5G base station?

China Mobile has tried using lower cost deployments of MIMO antennas, specifically 32T32R and sometimes 8T8R rather than 64T64R, according to MTN. However, Li says 5G base stations are carrying five times the traffic as when equipped with only 4G, pushing up power consumption.

Are 5G base stations causing more energy consumption?

However, Li says 5G base stations are carrying five times the traffic as when equipped with only 4G, pushing up power consumption. The carrier is seeking subsidies from the Chinese government to help with the increased energy usage.

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.

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).



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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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.

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To keep up with the exponential growth of mobile traffic globally, mobile network operators (MNOs) are massively deploying 5G networks. At ...

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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 ...



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Energy-efficiency schemes for base stations in 5G heterogeneous

In today's 5G era, the energy efficiency (EE) of cellular base stations is crucial for sustainable communication. Recognizing this, Mobile Network Operators are actively prioritizing EE for ...

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A picture tells you why 5G base stations consume so much power

However, the energy consumption pressure of 5G base station construction and network access to operators has not been known to the outside world. Recently, China ...

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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-density ...

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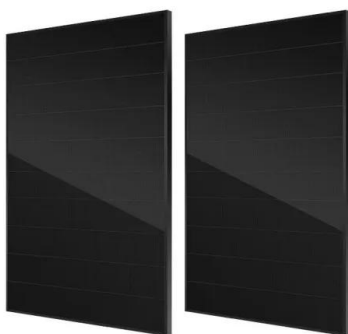
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[5G Power: Creating a green grid that slashes costs, emissions](#)

Once 5G networks are deployed, the power consumption of telecoms networks in China will exceed an estimated 100 billion kWh, generating annual carbon emissions of 27.2 billion kg.

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Further reducing power consumption and scaling these power saving solutions to all sites are key to addressing energy use and emissions from mobile networks. To explore the potential for ...

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The increased power consumption of next-generation basestations may be one of the dirty little secrets of 5G, which might not be a secret much longer as operators roll out ...

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[China Mobile - Renewable energy and green base station upgrades](#)

Through these interventions, China Mobile added 467,000 5G base stations while achieving a 2% reduction in overall base station energy consumption in 2024, demonstrating the ability to ...

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[Modeling and aggregated control of large-scale 5G base stations ...](#)

The limited penetration capability of millimeter waves necessitates the deployment of significantly more 5G base stations (the next generation Node B, gNB) than their 4G ...

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[China Mobile Reduces the Power Consumption of 5G Base Station](#)

The large operator has built more than 50% of the 5G base stations in the world. In July 2021, China Mobile announced that the power consumption of the 5G base station had ...

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[A technical look at 5G energy consumption and performance](#)

Figure 1: Global mobile data traffic outlook [Ericsson Mobility Report, June 2019]. Base station power consumption Today we see that a major part of energy consumption in ...

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The power consumption of a 5G basestation is three times that of its 4G LTE predecessor, according to Zhengmao Li, EVP at China Mobile, at a presentation at Mobile ...

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[ZTE launches power-saving 5G base station chip](#)

But with the release of ZTE's 7nm base-station chip, and even next year's 5nm chip, the problem of high power consumption in 5G base stations should be alleviated, and it ...

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