

# **Power consumption of 5G and 4G base stations**





## Overview

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To understand this, we need to look closer at the base station power consumption characteristics (Figure 3). The model shows that there is significant energy consumption in the base station.

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.

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.

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.

How will 5G affect the energy consumption of mobile operators?

Edge compute facilities needed to support local processing and new internet of things (IoT) services will also add to overall network power usage. Exact estimates differ by source, but MTN says the industry consensus is that 5G will double to triple energy consumption for mobile operators, once networks scale.



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

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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### [Power consumption evaluation of mobile radio access ...](#)

Therefore, this work aims to estimate the total energy consumption of broadband RANs in Belgium in 2020, and to forecast it by 2025 using six scenarios of 5G deployment. Models of ...

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### [How Much Power Does 5G Base Station Consume?](#)

Have you ever wondered how much energy our hyper-connected world is consuming? 5G base stations, the backbone of next-gen connectivity, now draw 3-4 times more power than their 4G ...

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

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 ...

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

To understand this, we need to look closer at the base station power consumption characteristics (Figure 3). The model shows that there is significant energy consumption in the ...

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### **5G base stations use a lot more energy than 4G base stations: MTN**

A typical 5G base station consumes up to twice or more the power of a 4G base station, writes MTN Consulting Chief Analyst Matt Walker in a new report entitled " Operators ...

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### **A Power Consumption Model and Energy Saving Techniques for 5G ...**

Aiming at minimizing the base station (BS) energy consumption under low and medium load scenarios, the 3GPP recently completed a Release 18 study on energy saving ...

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## Power Consumption: 5G Basestations Are Hungry, Hungry Hippos

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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## Optimal configuration of 5G base station energy storage ...

The high-energy consumption and high construction density of 5G base stations have greatly increased the demand for backup energy storage batteries. To maximize overall ...

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## Modelling the 5G Energy Consumption using Real-world ...

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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## Carbon emissions and mitigation potentials of 5G base station in ...

Due to the high radio frequency and limited network coverage of 5G base stations, the number of the 5G base stations are 1.4~2 times than that of the 4G base stations, and ...

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

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 forecast and ...

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### Technical Requirements and Market Prospects of 5G Base Station ...

5G base station chips play a critical role in the construction of 5G networks. As technology continues to advance, base station chips will demonstrate higher performance and ...

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### 5G Base Stations: The Energy Consumption Challenge

Early deployments indicate that 5G base stations require 2.5-3.5 times more power compared to a 4G one. Moreover, C-band, i.e., 3.4 GHz to 4.2 GHz, is deemed as the most popular 5G ...

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