



MODERNIZATION SOLAR

# Power consumption of Huawei 5G base stations





## Overview

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Energy consumption per unit of data (watt/bit) is much less for 5G than 4G, but power consumption is much higher. In the 5G era, the maximum energy consumption of a 64T64R active antenna unit (A.

How much electricity does China use per base station?

For China, based on a single base station power's energy consumption of 11.5 KWh (Huawei, 2019), we estimate that the electricity consumed by its 5G network by 2030 will be  $6.04 \times 10^5$  GW for 6 million base stations, the equivalents of 8.4 % of China's national total power generation in 2019, respectively.

How much electricity will China's 5G network consume in 2030?

Under the scenario of business-estimated six million base stations in 2030, the share of electricity consumed by China's 5G networks in 2030 could reach 8.4 % of the national total power generation, causing 0.44 GtCO<sub>2</sub> /yr CO<sub>2</sub> emissions.

How much power does 5G use?

According to Huawei's report, the maximum power consumption of a 5G site is >10-20 KW (Huawei, 2019). An Ericsson report (2020) estimated that, by the end of 2025, 5G would have 2.8 billion subscribers globally, accounting for approximately 30 % of all mobile subscriptions.

Does China have a 5G network?

Given that China currently has the largest 5G network in the world (~1.53 million base stations by the end of 2021, Table S1) and that base station number was projected by up to 6-8 million by 2030 (CCID Consulting, 2020), concerns are being expressed regarding 5G mobile networks' environmental effects and sustainability.



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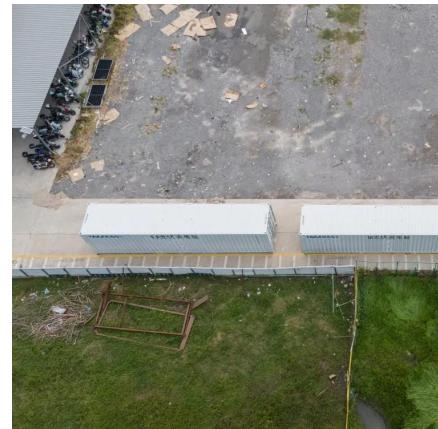
### How energy-efficient are Huawei's 5G base stations ...

Power Consumption: Huawei's 5G base stations have significantly lower power consumption compared to their 4G counterparts. This is achieved through advanced power management

...

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### **5G Power Whitepaper**

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## What is the Power Consumption of a 5G Base Station?

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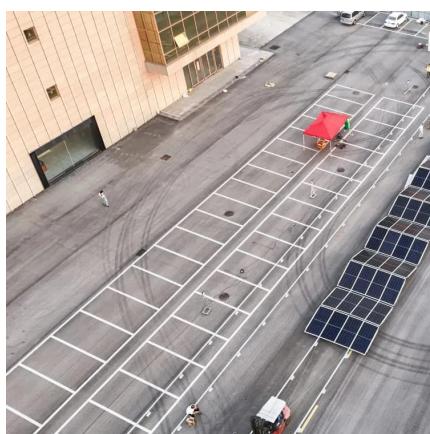


## Why does 5g base station consume so much power and how ...

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## Power Consumption Modeling of 5G Multi-Carrier Base ...

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## Why does 5g base station consume so much ...

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