

# **Power consumption of a large 5G base station**



## 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 stat.

Do 5G base stations consume a lot of energy?

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.

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.

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.

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.

How does 5G ran work?

In 5G-RAN, the gNB systems within designated areas are combined into gNBs-

clusters by aggregators. All gNBs-clusters are powered by the power system plane through power feeders, so switching the modes of a certain number of gNBs (sleep/active) and BESSs (charge/idle/discharge) can alter the power injection of the power system.

How a 5G network can support a power system?

The 5G network and power system are coupled energetically by power feeders. Based on gNB-sleep actions and mode switching of their BESSs, 5G network can provide power support to the power system when the grid frequency deviation reaches the threshold.

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