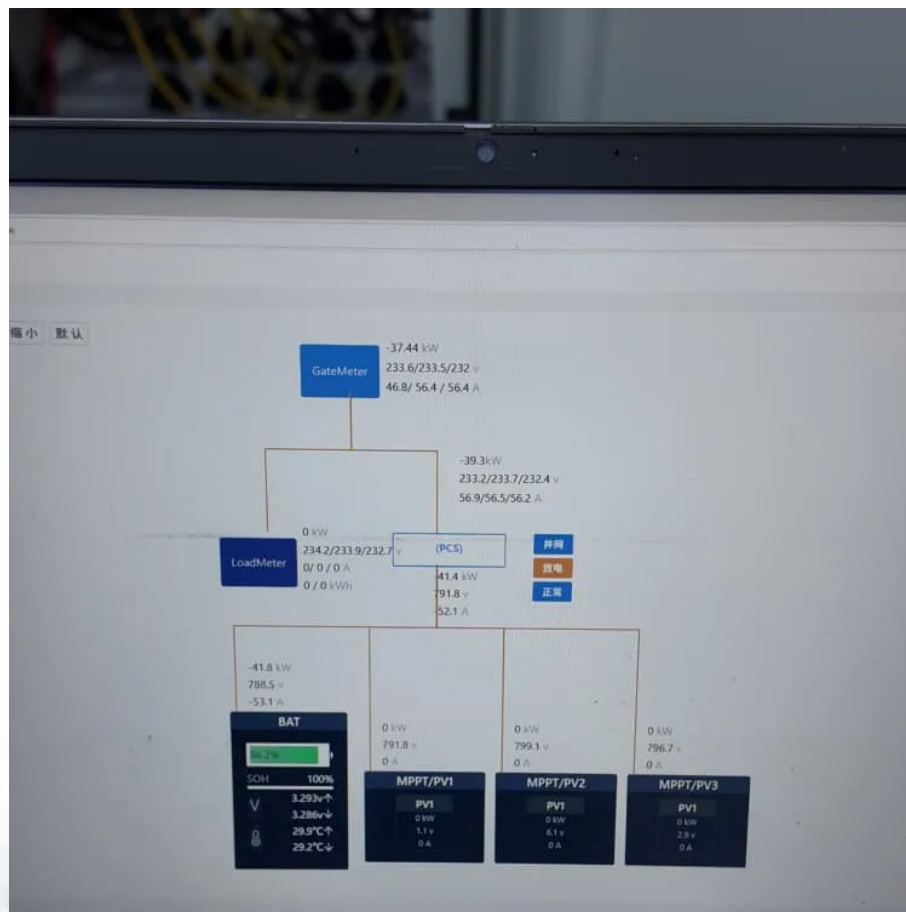


High power consumption problem of communication base stations





Overview

Do base stations dominate the energy consumption of the radio access network?

Furthermore, the base stations dominate the energy consumption of the radio access network. Therefore, it is reasonable to focus on the power consumption of the base stations first, while other aspects such as virtualization of compute in the 5G core or the energy consumption of user equipment should be considered at a later stage.

How do base stations affect mobile cellular network power consumption?

Base stations represent the main contributor to the energy consumption of a mobile cellular network. Since traffic load in mobile networks significantly varies during a working or weekend day, it is important to quantify the influence of these variations on the base station power consumption.

What is the largest energy consumer in a base station?

The largest energy consumer in the BS is the power amplifier, which has a share of around 65% of the total energy consumption . Of the other base station elements, significant energy consumers are: air conditioning (17.5%), digital signal processing (10%) and AC/DC conversion elements (7.5%) .

What is the power consumption of a base station?

The power consumption of each base station is considered about the number of mobile subscribers and random mobility to minimize the energy-saving cost of the cellular network.

Why does network sensitivity affect the energy consumption of base stations?

In addition, the high sensitivity of the existing policies to network conditions during the period when the network load is relatively smooth may lead to unnecessary and frequent switching of the sleep mode of the base stations, thus adding non-negligible additional energy consumption.



Why do base stations waste so much energy?

When there is little or no communication activity, base stations typically consume more than 80% of their peak power consumption, leading to significant energy waste . This energy waste not only increases operational costs, but also burdens the environment, which is contrary to global sustainability goals .



High power consumption problem of communication base stations



[\(PDF\) INVESTIGATORY ANALYSIS OF ENERGY ...](#)

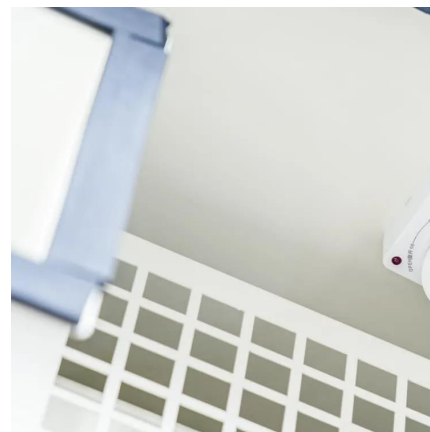
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[Improving energy performance in 5G networks and beyond](#)

The graph on the right shows the projected power consumption of a mature NR base station beyond 2025. Figure 1: The energy performance journey of mobile networks In ...

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This paper studies the combined problem of base station location and optimal power allocation, in



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Measurements and Modelling of Base Station Power ...

Base stations represent the main contributor to the energy consumption of a mobile cellular network. Since traffic load in mobile networks significantly varies during a working or weekend ...

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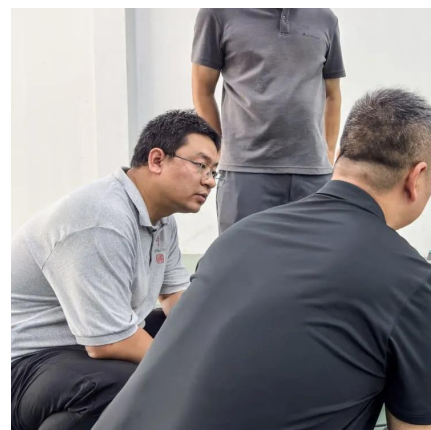
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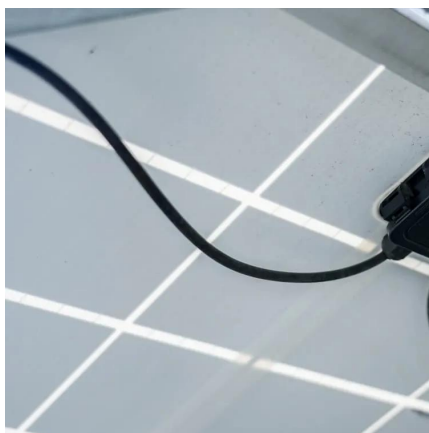




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Measurements and Modelling of Base Station Power Consumption under Real

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

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[Energy Consumption Optimization in Mobile Communication ...](#)

ency in terms of energy consumption per transmitted bit of data. In the 5G standard, this will be achieved trough intelligent switching of each cell's operation between active phases and sleep ...

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Importantly, this study item indicates that new 5G power consumption models are needed to accurately develop and optimize new energy saving solutions, while also considering the ...

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