

Georgia 5G base station and power grid cooperation





Overview

What is a 5G 'wireless power grid'?

A 5G 'wireless power grid' refers to the electromagnetic energy that 5G base stations emit, which can be harvested by a small device for wireless powering of IoT devices. Researchers at Georgia Tech have envisioned this concept, similar to how 3G and 4G cell phone towers radiate electromagnetic energy.

What is the energy consumption of 5G communication base stations?

Overall, 5G communication base stations' energy consumption comprises static and dynamic power consumption. Among them, static power consumption pertains to the reduction in energy required in 5G communication base stations that remains constant regardless of service load or output transmission power.

What equipment does a 5G base station have?

Among them, the former mainly includes an active antenna unit (AAU), baseband processing unit (BBU), and signal transmission equipment (e.g., optical fiber), while the latter mainly includes distribution grid access power and energy storage battery. Equipment composition of 5G communication base stations.

Could 5G make us say goodbye to batteries for good?

Researchers at Georgia Tech have come up with a concept for a wireless power grid that might make it possible to say goodbye to batteries for good, using 5G's mm-wave frequencies. Because 5G base stations beam data through densely packed electromagnetic waves, the scientists have designed a device to capture that energy.

What is the energy storage battery capacity of a 5G base station?

The energy storage battery for each base station has a rated capacity of 18 kWh, a maximum charge/discharge power of 3 kW, a SOC range from 10% to



90%, and an efficiency of 0.85. Modified IEEE 33-bus distribution network. Basic parameters of 5G communication base stations.

Where are 5G communication base stations located?

Furthermore, 5G communication base stations with energy storage are located at nodes 6, 8, 15, and 31, each group containing 100 base stations, labeled as groups 1, 2, 3, and 4. The fundamental parameters of the base stations are listed in Table 1.



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Research on Interaction between Power Grid and 5G Communication Base

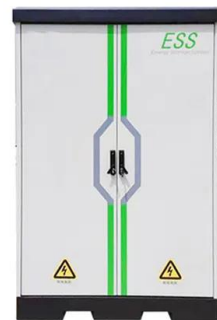
5G communication, as the future of network technology revolution, is increasingly influencing people's lifestyle. However, due to the high power consumption of

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[Impact of 5G base station participating in grid interaction](#)

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Georgia Tech harvests 5G network power for wireless device ...

Georgia Tech scientists say they've found a way to channel energy from densely packed 5G waves to devices, including those that are part of the Internet of Things (IoT).

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[Georgia Tech researchers tap into 5G's excess energy.](#)

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[Georgia Tech Readies 'Wireless Power Grid' for 5G](#)

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[Leveraging the 5G Network to Wirelessly Power IoT Devices](#)

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[We Could Really Have a Wireless Power Grid That Runs on 5G](#)

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[The business model of 5G base station energy storage ...](#)

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