

Kongres Container

What is the power consumption density of 5G base stations



Overview

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.

Why does 5G use more power than 4G?

The data here all comes from operators on the front lines, and we can draw the following valuable conclusions: 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).

Does 5G configuration affect base station capacity?

In this study, we mainly focused on the commercial 5G non-standalone networks, and the configurations (transmit and receive antennas, spectrum frequency and bandwidth) defined in this part has a decisive impact on base station capacity (see Eq.1).

What is a 5G base station?

A 5G base station is mainly composed of the baseband unit (BBU) and the AAU — in 4G terms, the AAU is the remote radio unit (RRU) plus antenna. The role of the BBU is to handle baseband digital signal processing, while the AAU converts the baseband digital signal into an analog signal, and then modulates it into a high-frequency radio signal.

How will 5G impact MNOs?

Nevertheless, the overall energy usage by 5G base stations needs to be reduced as it will account for approximately 2%–3% of total UK's energy consumption in 2030. Energy costs account for 19% - 23% of RAN OpEx, which

will seriously affect MNOs' mainstream profits.

What are the key features of 5G?

In terms of key features of 5G, enhanced mobile broadband (eMBB) and multiple input multiple output (MIMO) were taken into consideration, and an 8T8R (8 transmit antennas and 8 receive antennas) MIMO system was assumed to be used in all 5G base stations.

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