

## Kongres Container

# Large heat dissipation power supply for base stations



## Overview

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Does a 5G base station have heat dissipation?

Currently, the majority of research concerning heat dissipation in 5G base stations is primarily focusing on passive cooling methods. Today, there is a clear gap in the literature in terms of research investigations that tend to quantify the temperature performances in 5G electronic devices.

Can a microchannel thermosyphon array improve the design of 5G heat-dissipation devices?

Feng et al., 2024 , proposed a new heat sink solution based on a microchannel thermosyphon array with air cooling; this was an attempt to optimize the design of 5G heat-dissipation devices. Their experimental measurements focused on the temperature uniformity across various filling ratios, heating power levels, and wind speeds.

Are enhanced liquid-cooled base transceiver stations possible?

Many authors have been trying over the years to develop enhanced liquid-based coolers of base transceiver stations . For example, Figure 11 illustrates an enhanced liquid-cooled base transceiver station (BTS) developed by Huttunen et al., 2020 , compared to an old one with a traditional heat sink.

What materials are used to dissipate heat in 5g-enabled portable electronics?

Senthilkumar et al., 2024 , discussed the important role of various materials, such as hydrogels, metal-organic frameworks, and PCMs, in dissipating heat in 5G-enabled portable electronics in addition to their potential challenges and improvements.

How many base stations are in a heterogeneous network?

As an example, one can mention the transition from homogeneous networks (comprising 1 to 3 base stations (BSs) per km<sup>2</sup>) to heterogeneous networks (comprising 10 to 100 nodes per km<sup>2</sup>). Furthermore, the growing need for

larger storage capacities adds to energy requirements.

Why is heat-dissipation important?

Innovative heat-dissipation solutions are necessary in preventing overheating and ensuring the reliable operation of future antennas and equipment. Energy consumption reduction should be developed in combination with a reduction in operational costs, all while retaining respect for the environment.

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