Low-frequency emergency communication base station energy management system

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What is a 5G base station energy storage device?

During main power failures,the energy storage device provides emergency power for the communication equipment. A set of 5G base station main communication equipment is generally composed of a baseband BBU unit and multiple RF AAU units. Equation 1 serves as the base station load model:

How much energy does a communication base station use?

In this region, the communication base stations are equipped with energy storage systems with a rated capacity of 48 kWh and a maximum charge/discharge power of 15.84 kW. The self-discharge efficiency is set at 0.99, and the state of charge (SOC) is allowed to range between a maximum of 0.9 and a minimum of 0.1. Figure 3.

What is a Lora-based emergency communication system (ECS)?

The LoRa-based ECS facilitates reliable communication over vast distances; enabling emergency personnel to coordinate efficiently even in remote areas where traditional communication methods may fail. The system's low power consumption ensures prolonged operation,crucial for scenarios where access to power sources is limited.

How can a 5G base station save energy?

(1) Incorporation of Communication Caching Technology: The model includes communication caching technology,which fully leverages the delay-tolerant characteristics of communication flows,further enabling energy saving in 5G base stations.

We found this method can effectively meet the emergency communication needs, maximize the energy efficiency ratio of the air base station, qualify the user"s communication quality ...

The proposed system includes PS-LTE functionalities, mission-critical push-to-talk, proximity-based services, and isolated E-UTRAN operation to ensure the reliable and secure ...

On the basis of ensuring smooth user communication and normal operation of base stations, it realizes orderly regulation of energy storage for large-scale base stations, participates in ...

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This chapter addresses some aspects of a satellite communications system that go beyond digital communications theory, and introduces the Open Systems Interconnect (OSI) ...

This paper presents the design considerations and optimization of an energy management system (EMS) tailored for telecommunication base stations (BS) powered by ...

The research on the location deployment of air base station can effectively enhance the flexibility, real-time and adaptability of the network, and get full use of the energy, and provide new ...

The energy storage system is used to store excess electrical energy during low communication demand periods and release it during high communication demand periods, in order ...

With the development of 5G technology, a convenient and fast emergency communication solution is needed when the local ground base station is unavailable for disaster. ...

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