Communications industry standards for 4G base station power generation

What is a 4G base station?

The base station sits at the heart of the network platform. Traditional 4G LTE base stations contain one,two or possibly even four transmitters and usually operate on core band frequencies of up to 2.5 GHz,sometimes even 3.5 GHz and 5 GHz.

How do base stations affect mobile cellular network power consumption?

Base stations represent the main contributorto 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.

Are 4G user equipment output power level distributions based on data applications?

The aim of this paper is to present results on output power level distributions of 4G user equipment (UE) using data applications based on a very large number of samples collected over seven days in a Long Term Evolution (LTE) operating network.

How much power does a cellular base station use?

This problem exists particularly among the mobile telephony towers in rural areas,that lack quality grid power supply. A cellular base station can use anywhere from 1 to 5 kW power per hourdepending upon the number of transceivers attached to the base station,the age of cell towers,and energy needed for air conditioning.

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 triggered the 4th generation of mobile communication systems?

Additional spectrum proposed for IMT systems by WRC-07 in 2007 (in 450 MHz band,in UHF band (698-960 MHz),in 2.3-2.4 GHz band,in C-band (3400-4200 MHz)) as well as the ITU-R request for the development of an IMT-Advanced radio interface(Circular Letter of March 2008) triggered developments of the 4th generation of mobile communication systems.

IEEE 802.16m standard is the 4G system proposed by International Mobile Telecommunications-Advanced (IMT-Advanced). These new standards promise higher data rates for mobile phones ...

It is important for China"s communications industry to reduce its reliance on grid-powered systems to lower base station energy costs and meet national carbon targets. This study examines ...

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Therefore, this paper investigates changes in the instantaneous power consumption of GSM (Global System for Mobile Communications) and UMTS (Universal Mobile ...

With an emphasis on western Uganda, the current study examined the on-site energy consumption in base stations of telecommunication for Airtel locations in Uganda. In this work, ...

The TMS320TCI6618 is a new multistandard wireless base station system-on-chip (SoC) that delivers double the LTE performance over exist-ing 40-nm solutions while reducing the SoC ...

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