

5g base station millimeter wave communication





Overview

Can millimeter wave spectrum be used to build 5G base stations?

Utilizing millimeter wave spectrum to build 5G base stations is an inevitable trend. However, communication links in the millimeter wave frequency range have serious transmission loss issues, and the transmission distance of millimeter wave signals is very short.

Are 5G mm-wave antennas suitable for base station applications?

The antennas mentioned above are dedicated for the 5G mobile devices but cannot be adopted for base station applications because of their low gain. Consequently, in this work, we propose a novel antenna array suitable for 5G mm-wave base station applications.

Can mm-wave 5G communication systems have a high gain antenna array?

This paper presents the design and analysis of an antenna array for high gain performance of future mm-wave 5G communication systems. The proposed antenna is based on planar microstrip technology and fabricated on 0.254 mm thick dielectric substrate (Rogers-5880) having a relative permittivity of 2.2 and loss tangent of 0.0009.

How do mmWave antennas affect 5G system performance?

As the critical interface for signal transmission, mmWave antennas directly affect system performance, reliability, and application scope. This paper reviews the current state of mmWave antenna technologies in 5G systems, focusing on antenna types, design considerations, and integration strategies.



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Design of high gain base station antenna array for mm-wave ...

Mar 25, 2023 · This paper presents the design and analysis of an antenna array for high gain performance of future mm-wave 5G communication systems.

Advanced Compact 5G MIMO Base Station for Sub-6 GHz and Millimeter Wave

Jun 16, 2025 · A novel compact 5G multiple-input-multiple-output (MIMO) base station (5G-BS) is introduced for enhancing communications in underground mine environments. The structure ...

Optimization of Millimeter-Wave Base Station Deployment in 5G ...

Jul 8, 2022 · In the fifth-generation (5G) technology for broadband cellular networks, one of the striking problems is the millimeter wave (mmWave) transmission that enables high speed and ...

5G Millimeter Wave Communications Technology

2 days ago · In millimeter-wave small base stations, when using array antenna beamforming technology, the base station is able to focus signals to specific users or directions, improving ...

A Novel Sub-6 GHz and Millimeter Wave Shared ...

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Millimetre Wave Antennas for 5G Mobile Terminals and Base Stations

Sep 29, 2020 · The book serves as a reference and a handy guide for graduate students and PhD students involved in the field of millimeter wave antenna design.

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This article is organized into three major topics. In the first section, we will discuss some of the leading use cases for millimeter wave communications and set the stage for the analysis that ...



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Bits to Beams: RF Technology Evolution for 5G Millimeter Wave ...

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Development of Local 5G mmWave Base Station Using ...

May 22, 2025 · (Note 1) Software-defined radio technology: Technology that allows the functionality of wireless communication systems to be flexibly customized using software, ...

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