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Telecom Millimeter Wave MMW Market - Global Industry Size, Share, Trends, Opportunity, and Forecast Segmented By Licensing Type (Fully-licensed, Light-licensed, Unlicensed), By Frequency Band (V-band, E-band), By Application (Military, Civil), By Region & Competition, 2021-2031F

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Abstracts

The Global Telecom Millimeter Wave MMW Market is projected to expand from USD 824.11 Million in 2025 to USD 2527.97 Million by 2031, registering a compound annual growth rate of 20.54%. This sector defines the radio frequency spectrum between 24 GHz and 100 GHz, which is essential for enabling low-latency, high-speed wireless communications. The primary force propelling this market is the increasing global requirement for significant bandwidth capacity to support dense 5G network rollouts in urban areas, which acts as the main catalyst for infrastructure investment and technological advancement within the industry.

However, a major obstacle impeding wider market growth is the limited propagation capability of these high-frequency waves, which struggle to penetrate physical barriers such as buildings and foliage. This technical limitation necessitates a dense and expensive infrastructure network to guarantee reliable service coverage. Despite the financial and logistical challenges associated with network densification, adoption is increasing; the Global mobile Suppliers Association projected that shipment volumes of 5G devices equipped with millimeter-wave capabilities would rise by 22 percent in 2024, illustrating continued market interest.

Market Driver

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The rapid deployment of 5G network infrastructure serves as the central engine for the global telecom millimeter wave market, as high-band spectrum is required to deliver the ultra-wide bandwidth and low latency characteristic of fifth-generation mobile technology. Telecom operators are aggressively upgrading their architectures to support high-frequency bands, which are crucial for achieving multi-gigabit speeds in crowded urban environments. This expansion relies heavily on regulatory bodies releasing spectrum licenses; according to the Global mobile Suppliers Association's 'Spectrum Auction Update' in April 2024, 140 operators across 29 countries held public licenses for high-band spectrum usage to facilitate these high-capacity deployments.

Simultaneously, the growth of Fixed Wireless Access (FWA) has become a critical use case, utilizing millimeter wave capabilities to provide fiber-like broadband speeds to residences and businesses without physical cables, allowing operators to monetize assets where fiber deployment is difficult. This technology supports bandwidth-heavy applications like cloud gaming and 4K streaming. According to the June 2024 'Ericsson Mobility Report', FWA data traffic is expected to account for nearly 30 percent of total mobile network traffic by 2029, a trend underpinned by 5G Americas' report of 1.9 billion global 5G connections in the first quarter of 2024, signaling robust demand for enhanced capacity.

Market Challenge

The restricted signal propagation of millimeter-wave frequencies presents a severe barrier to market scalability. Since these high-frequency signals cannot travel long distances or effectively penetrate obstacles like walls and glass, telecom operators must implement extreme network densification, requiring significantly more base stations per square kilometer compared to lower-frequency bands. This necessity results in an exponential rise in capital and operational costs for power, backhaul, and site acquisition, making widespread deployment financially precarious for many service providers.

Consequently, this financial and logistical burden limits the commercial viability of the technology to specific urban pockets rather than broad national networks, causing actual commercialization to lag behind initial testing phases. Data from the Global mobile Suppliers Association in July 2025 reveals that while 203 operators globally were investing in millimeter-wave technology through trials or licenses, only 24 had successfully launched commercial 5G networks using this spectrum. This significant gap emphasizes how the prohibitive economics of overcoming propagation deficits continue to stall mass market adoption and confine the spectrum's utility.

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Market Trends

The adoption of Private 5G mmWave networks for Industry 4.0 is emerging as a dominant trend, leveraging the spectrum's low latency to support industrial automation. Manufacturing sectors are increasingly deploying these dedicated networks to manage massive data loads in environments where Wi-Fi faces capacity limitations, driven by the realization of rapid economic benefits from high-performance private infrastructure. In its 'Industrial Digitalization Report' from June 2024, Nokia noted that 78 percent of enterprises reported a positive return on investment within six months of deploying private wireless networks, confirming the commercial validity of this application.

At the same time, the integration of Artificial Intelligence into network optimization is becoming vital for managing complex millimeter-wave beamforming. Because high-band signals are vulnerable to obstruction, operators are utilizing AI algorithms to dynamically adjust beam direction and power levels, thereby solving propagation challenges and improving energy efficiency without compromising throughput. According to the June 2024 'Mobility Report' by Ericsson, the application of AI-based reinforcement learning allowed Swisscom to reduce cell downlink transmission power by 20 percent, demonstrating how machine intelligence effectively mitigates the operational costs associated with dense high-frequency networks.

Key Market Players

Keysight Technologies, Inc.

NEC Corporation

Bridgewave Communications, Inc.

Siklu Communication Ltd.

Sage Millimeter, Inc.

Smiths Group plc

L3Harris Technologies, Inc.

Siae Microelettronica S.p.A.

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Vubiq Networks, Inc.

Millimeter Wave Products Inc

Report Scope

In this report, the Global Telecom Millimeter Wave MMW Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Telecom Millimeter Wave MMW Market, By Licensing Type

Fully-licensed

Light-licensed

Unlicensed

Telecom Millimeter Wave MMW Market, By Frequency Band

V-band

E-band

Telecom Millimeter Wave MMW Market, By Application

Military

Civil

Telecom Millimeter Wave MMW Market, By Region

North America

United States

Canada

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- Mexico

Europe

- France
- United Kingdom
- Italy
- Germany
- Spain

Asia Pacific

- China
- India
- Japan
- Australia
- South Korea

South America

- Brazil
- Argentina
- Colombia

Middle East & Africa

- South Africa

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Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Telecom Millimeter Wave MMW Market.

Available Customizations:

Global Telecom Millimeter Wave MMW Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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