

Millimeter Wave Technology - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2030)

<https://marketpublishers.com/r/MF9EBD6212EFEN.html>

Date: July 2024

Pages: 135

Price: US\$ 4,750.00 (Single User License)

ID: MF9EBD6212EFEN

Abstracts

The Millimeter Wave Technology Market size is estimated at USD 3.63 billion in 2024, and is expected to reach USD 13.61 billion by 2030, growing at a CAGR of 24.60% during the forecast period (2024-2030).

Key Highlights

The technology accommodates the massive increase in data demands from connected homes, AR/VR devices, cloud gaming systems, and other cloud-connected devices. Furthermore, mmWave bands above 50 GHz can provide over 20 GHz additional bandwidth in large, heavy chunks, allowing higher data rates. Some traditional wireless bands, notably 26 GHz and 28 GHz, have an uncertain future for backhaul since they are now targeted for 5G radio access. ETSI's mWT ISG already expressed concern regarding the need, while allocating mmWave bands for 5G, to consider operators' ability to continue operating the backhaul for their 3G and 4G networks.?

The rising use of millimeter-wave bands, owing to the advantages such as frequency re-usability and large channel bandwidths, make millimeter-wave and sub-millimeter, suitable for the high capacities required by 5G enhanced Mobile Broadband. Thus, the use of millimeter-wave bands for the access networks to increase the throughput of the User Equipment and backhaul of the base stations is adding demand for Millimeter Wave Technology.

The market is expected to grow moderately during the forecasted period. The government initiatives toward the deployment of 5G and advancement in new technologies like IoT and smart cities are pushing the market players to develop new

services/solutions to capture the market share.

Migration from 4G to 5G has increased the demand for mmWave bands with wider bandwidths and high-speed data rates, increasing manufacturing costs. These higher costs for components and operations in high-volume manufacturing parts have forced manufacturers to rethink the economics of automated component testing. Demands for compatible millimeter wave components are adding substantial expense to manufacturers. mmWave 5G devices are substantially expensive to produce and sell. The challenge of deploying enough of the mmWave small cells to cover entire cities is anticipated to slow down market adoption in recent years.

The pandemic caused significant supply chain interruptions that slowed down the expanded rollout of 5G at the beginning of 2020, but with the increasing mobile data traffic, the demand for high-speed communications such as 5G has grown significantly during the post-pandemic period. It was expected that 5G network operators would launch the network within both urban and rural areas, taking considerable advantage of the move by telecom regulators to free up spectrum in a few frequency bands.

Millimeter Wave Technology Market Trends

Antennas and Transceivers Segment Holds Significant Market Share

High-performing millimeter-wave devices require efficient low-profile antennas to ensure reliable and interference-free communications, and due to small wavelength, mmWave technology infrastructure requires large antenna arrays to be packed in miniature physical dimensions, which fueling the requirement of antennas and transceivers designed for the millimeter (mm) wave technology, fueling the market growth.

The higher data transfer rate of the mmWave technology has various uses in real-time gaming, high-quality video streaming, and other bandwidth-intensive applications, which require antennas and transceivers for relaying and transforming the signals, creating a demand for microstrip, on-chip integrated horn, lens, and reflector, and other antennas for mmWave technology.

According to a recent GSMA report, 5G adoption is anticipated to reach around a billion connections by 2030. The technology will likely underpin future mobile innovation and boost ongoing deployments, adding almost USD 1 trillion to the global economy in 2030. The report states that throughout 2023, 30 new markets across Africa and Asia will launch 5G services. As 5G adoption continues to scale, network operators are

increasing their efforts to expand their 5G fixed wireless access (FWA) offerings. Markets with low fixed broadband penetration and rising incomes will also see faster-than-average 5G growth.

Market vendors are undergoing strategic initiatives to expand antennas and transceivers' product portfolio for mmWave technology applications and hold a major market share. For instance, in October 2023, Malaysia's 5G network operator, Digital Nasional Berhad (DNB), partnered with Telekom Malaysia (TM) and Chinese vendor ZTE Corporation to conduct a 5G live trial which would deliver speeds up to 28 Gbps. ZTE stated that this partnership was expected to help leverage TM's established network infrastructure, digital expertise, and ZTE's mmWave active antenna unit to deliver the first standalone 5G core of Malaysia for the next-generation transport network.

In August 2023, Marki Microwave, a provider of radio frequency and microwave products, acquired the waveguide business of Precision Millimeter Wave LLC, a supplier of sub-THz waveguide technology. Marki Microwave plans to offer over 100 standard commercial waveguide products and multiple custom waveguide products like mmWave to sub-THz, including antennas, connectors, switches, and isolators.

The need for high-speed communications in various end-user applications and the need for phase antennas and highly capable transceivers for mmWave communication add growth to the market, which is supported by acquisitions, investments, and collaborations among the millimeter wave technology market stakeholders.

North America is Expected to Hold Significant Market Share

The United States has made significant strides in utilizing the millimeter wave spectrum for various applications. Regulatory bodies like the Federal Communications Commission (FCC) have allocated and auctioned millimeter wave frequency bands for licensed and unlicensed use. Notably, the FCC opened spectrum in the 28 GHz, 37 GHz, 39 GHz, and 47 GHz bands for 5G and other wireless communication technologies.

The rollout of 5G networks in the United States has driven the adoption of millimeter wave technology. Moreover, Viavi Solutions, an Arizona-based network test and measurement company, stated that the United States was one of the significant global

countries with the most cities adopting network access.

For instance, as of April 2023, around 503 cities adopted 5G network access in the country. China followed in second, with 5G availability in 356 cities. As a result, millimeter wave frequencies are a key component of 5G, particularly in deploying high-speed, low-latency 5G networks in urban areas. Telecom companies have been actively deploying 5G infrastructure that includes millimeter wave spectrum to deliver ultra-fast internet speeds and support emerging use cases like augmented reality (AR), virtual reality (VR), and IoT.

According to CTIA (July 2023), the United States was the leading country in the world to deploy 5G, with more 5G accessibility than any other nation. 5G's more responsive networks and faster speeds drive strong enterprise and consumer adoption. The wireless sector is distributing 5G ahead of schedule, capitalizing records and world-leading capital amounts to deploy 5G faster than any preceding generation of wireless. It is expected that 5G will eventually add USD 1.5 trillion to the nation's economy and create new jobs (at least 4.5 million). 5G networks across the country already cover over 325 million individuals, giving the world's most accessible 5G networks. Ookla places the United States as the world leader in accessibility, with more than 54% of connections from 5G-capable handsets linking to a 5G network most of the time.

Canada has made substantial strides in leveraging the millimeter wave spectrum for various applications. Regulatory authorities, such as Innovation, Science, and Economic Development Canada (ISED), allocate and control the use of millimeter wave frequencies for licensed and unlicensed purposes. Frequencies in the 26 GHz, 28 GHz, 38 GHz, and other bands are significant assets for millimeter wave applications.

Moreover, the country's rising need for 5G networks that leverage millimeter wave frequencies to deliver ultra-fast internet speeds and low latency is increasing. For instance, according to Ericsson reports, as of November 2022, in the upcoming 12 to 15 months, four million Canadian smartphone users intend to upgrade to 5G service. Additionally, only a third of Canadian 5G users believe they are connected to the network more than 50% of the time, while 45% of users still stated they have coverage concerns. Such significant concerns are anticipated to focus on deploying high-frequency radio waves in the millimeter wave spectrum to capture the growing demand.

Millimeter Wave Technology Industry Overview

The millimeter wave technology market is fragmented with the presence of major players like Siklu Communication Ltd (Ceragon Networks Ltd), Bridgewave Communications Inc. (Remec Broadband Wireless International), E-band Communications LLC (Axxcss Wireless Solutions Inc.), Millimeter Wave Products Inc., and Ducommun Incorporated. Players in the market are adopting strategies such as partnerships and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

December 2023 - Eravant (SAGE Millimeter Inc.) received a patent related to a novel series of electrical connectors used in the rapidly growing field of millimeter-wave electronics. The patented devices are compatible with the existing coaxial interfaces. Uni-Guide waveguide connectors help component manufacturers offer a wide range of waveguide sizes and orientations using a reduced number of package designs.

August 2023 - Siklu, a global provider of millimeter wave (mmWave) solutions for Digital City and Gigabit Wireless Access (GWA), launched its new MultiHaul TG T261 terminal unit. The T261 mainly represents Siklu's fourth addition to the MultiHaul TG family of point-to-multipoint 60 GHz products and is Terragraph (TG) certified.

Additional Benefits:

The market estimate (ME) sheet in Excel format

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