Millimeter Wave Technology - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 132 pages | Mordor Intelligence

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Report description:

The Millimeter Wave Technology Market size is estimated at USD 3.74 billion in 2024, and is expected to reach USD 9.91 billion by 2029, growing at a CAGR of 21.49% during the forecast period (2024-2029).

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.
-There is a rise in advanced beam management, higher peak rates, multi-user MIMO, higher effective isotropic radiated power (EIRP), lower noise figure, and fronthaul sharing in the market studied. In the long term, new flexible solutions are expected to add more capacity and boost performance, thereby raising the cost of manufacturing compatible components. 5G uses higher operating frequencies to facilitate faster data rates. Therefore, they must be calibrated and coordinated. Designers of 5G-enabled devices face many product development obstacles, price considerations, and complex connectivity challenges. 5G has already been commercialized, and mmWave still needs to be improved in terms of its high costs. The short range of mmWave requires large base stations to be installed, thus making it expensive. A rise in manufacturing costs for compatible components is anticipated to restrict the market's growth during the forecast period.
-The growing demand for wireless connections, along with the impact of COVID-19, contributes to the growth rate of the market. According to CITA, wireless service providers have spent USD 121 billion on their networks and USD 635 billion on the wireless industry since the introduction of 5G in 2018 in the United States.

-According to the CTIA's 2022 Annual Wireless Sector Survey, the wireless sector in America spent USD 35 billion in 2021 on expanding, enhancing, and operating their networks. The investment set a new record and was the fourth year in which capital expenses increased.
-Moreover, during inflation, competition in the wireless business also contributed to maintaining low costs. Despite an overall rise in pricing, wireless costs decreased, following a 10-year trend in which the cost of wireless services decreased to 43% as speeds increased to 85 times. These factors are significantly boosting the adoption of wireless technology and mobile devices, thereby positively impacting the growth rate of the market. The growing collaborations in deploying 5G are also expected to bolster the market's growth rate during the forecast period.

Millimeter Wave Technology Market Trends

Antennas and Transceivers to Hold Major 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 fuels 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.
- 5G mmWave are found in the range of 24GHz to 40GHz and deliver large quantities of spectrum and capacity over the shortest distances. Millimeter wave technology utilizes massive MIMO to expand capacity and extend coverage. The technology offers a broad range of segments available for 5G with lower latency. Spectrum allocations for mmWave are extensive, with an 800 MHz band, which delivers improved handling of peak rates. Wide radio carriers enable shorter transmission time intervals and lower radio-interface latency to facilitate introducing and supporting low-latency-sensitive applications. 5G is expected to deliver 100 Gbps-class high-speed, high-capacity communications achieved using the sub-terahertz band (100 to 300 GHz), which can provide a bandwidth of 10 GHz or more. Network operators continue to advance millimeter-wave technological development by leveraging the knowledge of high-frequency bands cultivated through developing and operating radio equipment for 5G base stations. In some countries, high-band spectrum allocations are being chosen for the next wave of Industry 4.0 applications to get the necessary flexibility through wireless connectivity.
- For instance, Verizon deployed 5G mmWave networks in 25 NFL stadiums, where fans watched the action from multiple angles on their handsets and experienced AR games and services. Verizon's low latency 5G Ultra-Wideband network enables fans to buy food, beverages, and merchandise. Ericsson is evolving its 5G solutions to maximize the benefits of the high band by extending cell coverage. Service providers are trying to support the 5G uplink on a low band, with the 5G downlink operating on a high band, thereby providing higher data speeds. Aggregating the 5G low band with the 5G high band can improve high-band coverage by up to 10 dB.
- Additionally, in February 2023, Verizon partnered with the radio access network equipment vendor Verana Networks for its plans to solve challenging millimeter-wave (mmWave)-based 5G deployments by adopting Verizon is tapping upstart radio access network equipment vendor Verana Networks for its plans to solve challenging millimeter-wave (mmWave)-based 5G deployments by Verana's Integrated Access and Backhaul platform packages a mmWave antenna, which would raise the demand for antenna

and transceiver components in the market of mm-wave technology.
- Therefore, the need for high-speed communications in various end-user applications and the need for phase antennas and highly capable transceivers for mmWave communication is creating a growth of the antennas and transceiver component market growth, which is supported by the acquisitions, investments, and collaborations among the stakeholders of the millimeter wave technology market during the forecast period.

North America to Hold Major 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 has opened up spectrum in the 28 GHz, 37 GHz, 39 GHz, and 47 GHz bands, among others, for 5G and other wireless communication technologies.
- In addition, the rollout of 5G networks in the United States has been a driving factor behind the adoption of millimeter wave technology. Moreover, Viavi Solutions, an Arizona-based network test and measurement company, stated that the United States is one of the significant global countries with the most cities adopting network access.
- Antennas and transceiver components are expected to gain significant prominence in the United States owing to the wide range of applications, including 5G base stations, wireless backhaul systems, fixed wireless access (FWA) equipment, and radar systems. Also, the rollout of 5G networks, which heavily rely on millimeter wave technology, has driven the demand for high-performance antennas and transceivers.
- The United States millimeter wave technology market is experiencing robust growth due to the convergence of 5G deployment, spectrum availability, data demand, and FWA expansion. In addition to these factors, corporate collaborations and regulatory support position the market for continued expansion and innovation in the coming years.
- 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 comprises several players for attention in a fairly contested market space. The firm concentration ratio is expected to grow more during the forecast period because several firms observe this market as a lucrative opportunity to expand. Some of the prominent market players are Siklu Communication Ltd, E-band Communications LLC (Axxcss Wireless Solutions Inc.), Bridgewave Communications Inc. (Remec Broadband Wireless International), Ducommun Incorporated, and Millimeter Wave Products Inc., among others.

- August 2023 - Siklu, a global provider of millimeter wave (mmWave) solutions for Digital City and Gigabit Wireless Access (GWA), announced the availability of its new MultiHaul TG T261 terminal unit. The T261 represents Siklu's fourth addition to the MultiHaul

TG family of point-to-multipoint 60 GHz products and is Terragraph (TG) certified. Measuring only 4.3 x 6.2 x 2 in. (10.8 x 15.7 x 5.2 cm), the T261 is easily installed on almost any exterior surface. It is connected to a MultiHaul TG distribution node to serve as an endpoint in a fully-meshed MH TG topology.
- October 2022 - Ducommun announced the opening of its new facility in Guaymas, Mexico. The new facility spans 1,15,000 square feet and has multiple capabilities, including metal bond, VersaCore Composites, cable and harness assembly, and hard metal fabrication. Ducommun's expanded operations in Mexico will allow the company to continue its successful legacy of providing the highest product and process quality while delivering maximum competitive value to its OEM customers.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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