Millimeter Wave Technology: Increasing Demand and The Future of Telecommunication Industry


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PORTLAND, OREGON, UNITED STATES, January 13, 2022 /EINPresswire.com/ -- The emergence of COVID-19 pandemic has caused an irrevocable loss across the world, in terms of mankind as well as economic. It has severely affected different sectors, including agriculture, healthcare, education, infrastructure, and tourism. The consumer electronics sector witnessed a marginal dip in 2020, owing to the global health crisis, as there was restriction on movement and lockdown across various countries. It resulted in shortage of equipment and disruptions of the supply chain. These restrictions forced the market players to explore new opportunities by leveraging technologies.

Millimeter wave is an electromagnetic technology used in various products such as phones, cars, and medical devices to ensure wireless broadband communications at a higher speed. It exhibits extremely high frequency (EHF), as its signal spectrum ranges from 30GHz to 300GHz with a wavelength between 1 and 10 mm. Rise in demand for connected devices such as smartphones and tablets is driving the market growth for millimeter wave technology. The millimeter wave technology offers various advantages over fiber optics such as high bandwidth, high speed, and more secured transmission.

This millimeter wave technology is experiencing significant adoption across various industrial and commercial sectors such as providing wireless communication in smart wearable, smartphones, and smartwatches. Technological advances in digital networks connect number of devices and sensors together, which ensure advances in healthcare, education, transportation, automotive, telecommunication, and other industries. Hospitals are now using autonomous millimeter wave technology for medical imaging. Military and aerospace use millimeter wave technology in segments such as radar and satellite communications, which are majorly deployed

by the military in combat scenarios. The telecommunication industry uses millimeter wave technology for transmitting the data over long distances.

Impact of COVID-19 on several industries in context with millimeter wave technology
The COVID-19 crisis is resulting in uncertainty in the stock market, immense slow ranging of the supply chain, falling business confidence, and increasing panic among the customer segments. The overall impact of the pandemic is impacting the production process of several industries, including semiconductor and electronics. Trade barriers are further constraining the demand and supply outlook. As the government of different countries has already announced total lockdown and temporarily shutdown of industries, the overall production process is adversely affected.

Increase in focus toward the development of smart cities is expected to offer lucrative opportunities for market expansion, which further propels the demand for unmanned vehicles in the transportation and automotive sectors. This is expected to create potential opportunities for the millimeter wave technology market growth, owing to shift in preference of consumers from normal cars to smart driver's assistant cars, which help in GPS navigation, blind spot detection, and prevents collision.

Telecommunications is a people-driven industry, with a dynamic and mobile workforce, including teams in offices, in the field, onsite, on trucks, and in retail stores. Working from home is expected to reduce productivity and impact business continuity. In addition, remote work can increase security and infrastructure risks.

In the telecommunication industry, the trend in the U.S., Europe, China, South Korea, and Japan is focusing toward a regional supply chain model that would increase visibility and potentially reduce the risk of supply interruptions from countries that are expected to face a second wave of infection. Another priority is to add more intelligence to the supply chain to ensure continuity of supply in a time of heightened uncertainty.

Key player strategies to tackle negative impact
The economic impact of coronavirus pandemic globally has been largely disruptive. The companies operating in semiconductor industry state that temporarily shut down of production sites will lead to decline in revenues for the financial year 2020–2021. The various measures undertaken by players to tackle the negative impact are as follow ranges:

1. Limiting cuts to R&D expense
2. Focusing on next-generation products
3. Shift toward agile supply chain model

Post COVID-19 scenario
The demand from the wireless communication segment is expected to increase due to factors such as increased broadband usage, higher demand for cloud services, and video streaming. In

addition, in the medium to long term, COVID-19 is expected to further augment the need for digital transformation; technologies such as 5G, the IoT, and AI; and intelligent edge computing for future optimizations.

Recent news in the millimeter wave technology market during the pandemic
Millimeter wave radio links are considered to be significant backhaul solution in the telecommunication infrastructure, majorly used for cellular wireless access. 5G technology uses millimeter waves with frequency bands more than 10 times higher than 4G, and is expected to contribute to a wide range of services that provide high-speed, large-capacity, low-latency, and multiple connections.

The 4G LTE technology currently uses lower frequency spectrum, generally below 1 gigahertz (GHz), to deliver data at great speed. However, this is expected to change in the future with the advent of 5G networking. The 5G network is expected to be based on higher frequencies such as the 28 GHz and 39 GHz, which is also known as millimeter wave spectrum. These frequencies can carry massive volume of data at very high speeds and with little latency or disturbance, thus making them suitable for use in applications such as mobile phones, connected homes, AR/VR devices, cloud gaming systems, self-driving vehicles, IoT sensors, and other cloud-connected devices.

Presently, automotive players are incorporating advance driver assistance system (ADAS) in their products to reduce car accidents. Automotive suppliers are jointly developing this system using millimeter wave radar technology. With higher resolution and range, automotive mmWave radar can enable safer driving in any condition. The frequency range of millimeter wave radar in automotive application ranges from 76 GHz to 81 GHz.

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