

Terahertz Technology Market by Type (Terahertz Imaging, Terahertz Spectroscopy, Terahertz Communication Systems), Application (Laboratory Research, Medical & Healthcare, Satellite Communication), and Geography (2022-2027)

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Abstracts

The global terahertz technology market was valued at USD 0.6 billion in 2022 and is projected to reach USD 1.2 billion by 2027, registering a CAGR of 14.7% during the forecast period. The rise in demand for terahertz technology-based products is also attributed to stringent government regulations for public safety and homeland security, the rise in demand for terahertz technology in the medical sector, and the adoption of terahertz systems in the semiconductor industry.

Stringent government regulations for public safety and homeland security and a rise in demand for terahertz technology in the medical sector fuel the growth of the terahertz technology market. Likewise, the increasing demand for 6G communication is expected to create lucrative opportunities for the terahertz technology market.

“Terahertz Imaging: The fastest-growing segment of the terahertz technology market.”

The terahertz frequency range enables the detection of concealed weapons and other illegal explosives, even under clothing. Terahertz imaging is a scanning technique that uses extremely high-frequency waves to penetrate dense surfaces. They can pass through clothing, paper, cardboard, wood, masonry, plastics, and ceramics and penetrate fog and clouds. Their wavelength is shorter than microwaves and longer than infrared, which corresponds revealingly with biomolecular vibrations. These systems take images using transmission or reflection geometry. These factors are expected to propel the growth of the terahertz imaging in terahertz technology market.

“Satellite Communication: The highest growing application of terahertz communication system in terahertz technology market.”

Satellite communication application is expected to grow with the highest CAGR during the forecast period. Satellite communication plays a vital role in data transmission in the global telecommunication system. The key advantages of satellite communications are that wireless and mobile communication applications can be effortlessly established irrespective of the location, covers a wide geographical area of the earth with just one satellite, and enables point to multipoint communication. The high-frequency radio waves and microwaves used for satellite communications travel by line of sight and are expected to be obstructed by the earth's curve. Terahertz frequency offers greater communications bandwidth than radio waves and microwave frequencies. With the explosion of wireless data rates, the terahertz band (0.1–10 THz) is seen as a key to breaking the existing bandwidth blockage and satisfying the ever-increasing capacity demand. Terahertz band (0.1–10 THz) wireless communications enable high data rates on the order of Terabits per second. The use of terahertz technology facilitates larger bandwidth and, therefore, a higher transmission rate compared with microwave communications. Hence, satellite communications surge the demand for terahertz communications systems during the forecast period.

“North America: The largest region in the terahertz technology market in 2021.”

North America held the largest share of ~49% of the terahertz technology market in 2021, and a similar trend is expected to be observed during the forecast period. The growth of the terahertz technology market in North America is attributed to the factors such as the growing number of homeland security issues and investments in defense and terahertz communication systems. North America has a huge demand for terahertz technology-based products for industrial applications, such as paints and coatings defect identification, structure analysis of ceramics and composites, semiconductor and electronics wafer thickness measurement, electronic circuit inspection, and food quality inspection, in the US and Canada. The department of homeland security (DHS) and transportation security administration (TSA) have adopted terahertz technology for security screening of people at airports or big events.

Breakdown of primaries

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

Terahertz Technology Market by Type (Terahertz Imaging, Terahertz Spectroscopy, Terahertz Communication System...

By Company Type— Tier 1- 45%, Tier 2- 30% Tier 3 - 25%

By Designation— C level - 35%, Managers - 30%, Other Level - 35%

By Region— North America - 35%, Asia Pacific - 30%, Europe - 25%, RoW - 10%,

The terahertz technology market is dominated by a few globally established players such as ADVANTEST CORPORATION (Japan), Luna Innovations (US), TeraView Limited. (UK), TOPTICA Photonics AG (Germany), H?BNER GmbH & Co. KG (Germany).

The study includes an in-depth competitive analysis of these key players in the terahertz technology market, with their company profiles, recent developments, and key market strategies.

Research Coverage:

The report segments the terahertz technology market and forecasts its size, by volume and value, based on region (Asia Pacific, Europe, North America, and RoW), by type(Terahertz Imaging, Terahertz Spectroscopy, Terahertz Communication Systems),application (Laboratory Research, Medical & Healthcare, Medical & Healthcare, Military & Homeland Security, Industrial Non-destructive Testing (NDT), Satellite Communications, Tactical/Military Communications, and Outdoor/Indoor Wireless Communications).

The report also provides a comprehensive review of market drivers, restraints, opportunities, and challenges in the terahertz technology market. The report also covers qualitative aspects in addition to the quantitative aspects of these markets.

Key Benefits of Buying the Report:

The report will help the leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall market and the sub-segments. This report will help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the terahertz technology market and provides them information on key market drivers, restraints,

challenges, and opportunities.

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