

Middle East & Africa Terahertz Technology Market Size and Forecast (2021-2031), Regional Share, Trend, and Growth Opportunity Analysis Report Coverage: By Component (Terahertz Detectors and Terahertz Sources), Type (Terahertz Imaging Systems, Terahertz Spectroscopy Systems, and Terahertz Communication Systems), and Application (Industrial, Medical and Healthcare, Defense and Security, Semiconductor, Food and Agriculture, and Other Applications)

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Abstracts

The terahertz technology market in the Middle East and Africa (MEA) is poised for significant growth, with projections indicating that it will reach approximately USD 111.07 million by 2031, up from USD 36.60 million in 2024. This growth represents a compound annual growth rate (CAGR) of 17.3% from 2025 to 2031, highlighting the increasing adoption and commercialization of terahertz technology across various sectors in the region.

Executive Summary and Market Analysis

The MEA terahertz technology market is categorized into several key regions, including South Africa, Saudi Arabia, the UAE, and the Rest of MEA. The region is expected to experience rapid industrialization and commercialization, which will further enhance the growth of various industrial sectors. Countries like the UAE, Saudi Arabia, and South Africa are leading the way in adopting advanced technologies, including artificial intelligence, the Internet of Things (IoT), cellular technologies, and smart grid solutions within utility firms.

A significant driver of terahertz technology adoption in the MEA is the presence of research institutions dedicated to its development. A notable milestone was achieved in May 2021 with the introduction of the first terahertz imaging technology in North Africa, developed through a collaborative effort under the NATO Science for Peace and Security Programme (SPS). This advanced scanning system, designed to detect hazardous materials such as firearms and explosives, was inaugurated during a virtual ceremony attended by NATO officials and scientists from Algeria, France, and Sweden. This development underscores the growing importance of terahertz technology in enhancing security measures and addressing threats, particularly in vulnerable areas.

Strategic Insights

The MEA terahertz technology market can be segmented based on components, types, and applications.

By Component: The market is divided into terahertz detectors and terahertz sources, with the detectors segment holding a larger market share in 2024.

By Type: The market includes terahertz imaging systems, terahertz spectroscopy systems, and terahertz communication systems, with imaging systems leading the market share in 2024.

By Application: The applications of terahertz technology span across industrial, medical and healthcare, defense and security, semiconductor, food and agriculture, among others, with the industrial segment dominating the market in 2024.

Market Outlook

Terahertz technology presents substantial opportunities in information and communication technology (ICT), wireless communication, high-speed data processing, and satellite communications. As interest in satellite networks for navigation, communication, and remote sensing grows, terahertz technology is becoming essential for meeting the demand for high-speed connections. Its ability to facilitate terabit-per-second wireless links, due to its wide frequency band and high speed, positions it as a key player in the future of wireless communication.

Recent advancements in terahertz technology, including the development of III-V semiconductors and Quantum Cascade Lasers, enable frequency generation from 0.34 THz to 1 THz. A notable collaboration between Ericsson and the King Abdullah University of Science and Technology (KAUST) in Saudi Arabia, announced in November 2021, aims to explore 6G technologies, including terahertz and free-space optical communications. This partnership focuses on creating essential components for future wireless networks, emphasizing the strategic importance of terahertz technology in revolutionizing satellite communications and enhancing global connectivity.

Country Insights

The terahertz technology market in the MEA is significantly influenced by key countries, particularly Saudi Arabia, the UAE, and South Africa. In 2024, Saudi Arabia held the largest market share, driven by the increasing use of terahertz technology in security and surveillance applications. The country's economic diversification and revitalization of the construction sector have led to the adoption of advanced security systems. For instance, customs authorities in Jeddah and Dammam utilize high-energy cargo X-ray screening systems to enhance security measures.

Government initiatives, such as Saudi Vision 2030 and the National Transformation Program, are expected to bolster the growth of the non-oil sector and promote the adoption of advanced security technologies. Investments in healthcare infrastructure under Vision 2030 also present opportunities for terahertz technology in medical imaging and diagnostics.

Company Profiles

Key players in the MEA terahertz technology market include NTT Electric Co., Advantest Corporation, H?BNER GmbH & Co. KG, Luna Innovations Inc., Menlo Systems GmbH, Microtech Instrument Inc., Terasense Group Inc., Canon Inc., Horiba Ltd., Teraview Limited, and Toptica Photonics AG. These companies are actively pursuing strategies such as expansion, product innovation, and mergers and acquisitions to enhance their market presence and deliver innovative solutions to consumers.

In conclusion, the Middle East and Africa terahertz technology market is on a promising growth trajectory, driven by advancements in technology, strategic collaborations, and increasing applications across various sectors.

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