OTA Testing - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The OTA Testing Market size is estimated at USD 3.59 billion in 2025, and is expected to reach USD 5.75 billion by 2030, at a CAGR of greater than 9.87% during the forecast period (2025-2030).

The market growth is driven by increased usage of Internet of Things (IoT) technologies and smart devices. Furthermore, increasing smart city projects and efforts are likely to contribute to market revenue development.

Key Highlights
- OTA testing is essential for assessing the multipath impact on RF performance due to the increasing adoption of Multi-User Microphone (MIMO) radios. As the antennas are essential to the integrated concept, RF performance tests must be conducted with the antenna in mind. To achieve this, OTA measurement is necessary, as well as the simulation of the RF propagation model. Most industry players are focusing on optimizing their designs to understand and evaluate essential properties such as antenna diagrams, Directivity, and Gain. Consequently, they are gradually adopting OTA methods to measure the radio frequency produced by an antenna while in the air.
- OTA testing is expected to grow rapidly because most OEMs are focused on adding OTA capabilities to autonomous vehicles. Platforms test single or multi-purpose antenna functionality and dependability on products such as automobiles, mobile devices, and similar designs under controlled conditions before commercialization. This is expected to drive significant market revenue growth as more and more vehicles become autonomous and connected.
- Over-the-air (OTA) testing is most commonly used to measure the device's MIMO Radio Frequency (MHz) and antenna RF Performance. The OTA test is essential for assessing and certifying the reliability and RF performance of wireless devices, whether mobile or fixed location. The 5G NR (5G) paradigm shift has increased the need for 5G OTA testing in the development, validation, and commercialization of devices. 5G OTA (over the air) testing has become standard in 5G base stations (BPS) and UEE testing,

especially in mmWave.
- Antenna techniques that are optimized for efficient radio frequency wave transmission or reception enable high-fidelity communications for mmWave frequency 5G systems. However, this complexity adds to the testing challenges. The built-in antenna is integrated with the TRx circuitry. However, the built-in antennas are small and difficult to probe between the antenna circuits and the TRx. Due to the complexity of the chipset, there is a growing need for better antenna systems and/or frontends for over-the-air measurement (OTA) and product development.
- However, antenna array and deployment issues, as well as high testing equipment costs, are expected to slow down some growth in the OTA market over the forecast period. The automotive sector was one of the most affected industries by COVID-19. While manufacturing sales decreased in the first half, automotive sales increased significantly in the second half of COVID-19, negatively impacting the studied market.

Over-the-Air Testing Market Trends

Telecommunication and Consumer Devices Segment Expected to Witness Significant Growth

- Some IoT devices have very poor RF antenna performance, which leads to a poor user experience. IoT devices are different from traditional devices in terms of size, shape, and material and work in various environments. This poses challenges when it comes to OTA testing IoT devices. CTIA (Cellular Telecommunications & Internet Association) has established an IoT Task Force and published OTA test methodologies for LTE-M devices.
- Due to the rapid growth of the Internet of Things (IoT) industry, the significance of OTA measurement, and the current state of standardization, the GSMA is creating OTA testing specifications for IoT devices. The specifications include test setup, test methodology, test procedure, and performance requirements. A smart gadget is able to receive firmware updates through the cloud. The firmware updates the processor, the hardware peripherals, and the application running on top of it. These updates are expected to lead the market.
- The use of OTA (over-the-top) methods for testing 5G parts and wireless devices, rather than the conventional cabled methods, is primarily necessary to validate the performance of 5G technologies and devices. While the challenges of 5G testing are complex, engineers around the world are already creating new test tools and methods, such as OTA, which are essential for making 5G ubiquitous.
- In January 2022, Vodafone renewed its CETECOM certification for OTA testing. CETECOM can now conduct testing in accordance with the Vodafone Specification for Terminals on Over-the-Air RF Performance V5.1. OTA testing is used to validate the performance and dependability of wireless devices, antennas, and other components. Additionally, major wireless service providers, like Verizon, AT&T, and Sprint, among others, require their suppliers first to verify that the wireless devices can function seamlessly under numerous conditions.
- According to Ericsson, 5G subscriptions are expected to skyrocket globally between 2019 and 2027, rising from over 12 million to over 4 billion. Subscriptions are predicted to be highest in North East Asia, Southeast Asia, India, Nepal, and Bhutan. Moreover, the number of smart cities worldwide has been increasing rapidly, which has been significantly increasing the number of smart and wireless-connected devices. This is anticipated to drive the demand for OTA testing services for all wireless devices to meet industry standards and facilitate the assessment of receiver and antenna performance.

North America Expected to Witness Significant Growth

- North America is expected to generate significant revenue during the forecast period due to an increase in the number of smart cities, increased research activities to develop next-generation wireless technology, and rising adoption of 5G technology in the

telecom sector, automotive industry, aerospace industry, and defense industry. Furthermore, rising demand for autonomous vehicles and increased production of self-driving cars are boosting market revenue growth.
- By performing OTA tests regularly, manufacturers can detect and fix defects before they become critical issues. This helps to reduce production costs, speed up time to market, and enhance vehicle quality. The vast automotive production would be the driving force of the studied market. For example, according to the Office for Industry Cooperation and Development (OICA), the U.S. automotive industry produced 9.17 million vehicles last year.
- According to the Ericsson Mobility report, in the North American region, 5G subscriptions are predicted to account for 55% of mobile subscriptions by 2024. According to GSMA's report on the state of the global mobile economy, the North American region is expected to be a "leader" in 5G deployment in the coming years following deployments by the four major U.S. telecoms. The group estimates that, by 2025, 48% of connections on the continent will be on 5G networks, trailing only behind Asia at 50%.
- The companies are working together to better serve their customers. For instance, Eurofins, part of the global network of laboratories known as Eurofins, announced that it is now able to provide FR1, FR2, and FR1 OTA (over-the-air) pre-tests at its lab facility in Santa Clara. For FR2, Eurofins is using the 5G FR2 mmWave (mmWave) test chamber. For FR2 OTA (5G mmWave) pre-tests, Eurofins will use the European Telecommunications Standards Agency's (ETS) AmS-5705 compact antenna test range (CTAR) chamber, an excellent solution for 5G mmWave.
- In October 2022, Applitools, the provider of the next-generation test automation platform powered by Visual AI, announced the formal launch of its Partner Program with leading GSIs, SIs, and VARs such as Accenture, Apexon, Cap Gemini, EPAM, Infosys, Tech Mahindra, TTC, and others. Applitools' mission is to construct the necessary infrastructure and understand what partners require most in order to collaborate on building a scalable business that also satisfies the needs of its combined consumers. This includes training and certification pathways, official routes to market that align with the way its partners go to market, and a Partner Resource Center.

Over-the-Air Testing Industry Overview

The OTA testing market is semi-consolidated owing to the presence of several players in the market operating in the domestic and international markets. The market appears to be moderately concentrated, with major players adopting strategies like product innovation, strategic partnerships, and mergers and acquisitions to expand their product portfolio and expand their geographic reach in order to stay competitive in the market. Some of the major players in the market are Intertek Group PLC, Bureau Veritas SA, Anritsu Corporation, and Keysight Technologies, among others.

In January 2023, Aurora Labs and NTT DATA announced a global strategic alliance in the Automobile Industry, starting with collaborative projects in Manufacturing and Logistics. The intelligent integration of AI technology and 5G enables scalable and agile OTA software upgrades with greater scalability and improved security from start to finish, including the 5G transport layer.

In December 2022, Elektrobit and Airbiquity announced the availability of a pre-integrated over-the-air (OTA) solution that was expected to enable the next generation of safe and secure OTA services for the mobility industry. The solution integrated Elektrobit's in-car OTA update software products with Airbiquity's multi-ECU OTA software management platform, allowing OEMs to source and create an end-to-end OTA system for their vehicle fleets more easily.

Additional Benefits:

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

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