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5th January 2026

India Critical Test, Measurement, & Simulation Technologies Market Outlook to 2030F - Driven by rising demand fo customized testing and simulation solutions, higher focus on quality assurance across defense and aerospace industry

INDUSTRY OVERVIEW

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Ken Research Report, 5th January 2026 has been prepared by Ken Research Private Limited at the specific request of our Company. The market research process for the report has been undertaken thorough secondary / desktop research as well as primary research, which involves discussing the status of the market with leading participants and experts.

The research methodology used is the Expert Opinion Methodology. Quantitative market information was sourced from interviews by way of primary research as well as from trusted portals, and therefore, the information is subject to fluctuations due to possible changes in the business and market climate. Ken Research's estimates and assumptions are based on varying levels of quantitative and qualitative analyses, including industry journals, company reports and information in the public domain.
Forecasts, estimates, predictions, and other forward-looking statements contained in this report are inherently uncertain because of changes in factors underlying their assumptions, or events or combinations of events that cannot be reasonably foreseen. Actual results and future events could differ materially from such forecasts, estimates, predictions, or such statements.

Ken Research has prepared this study in an independent and objective manner, and it has taken adequate care to ensure its accuracy and completeness. Ken Research believes that this study presents a true and fair view of bus industry, its key segments pertaining to technologies, end-user industry and competition within the limitations of, among others, secondary statistics and primary research, and it does not purport to be exhaustive. Research has been conducted with an "overall industry" perspective, and it will not necessarily reflect the performance of individual companies in the industry. Ken Research shall not be liable for any loss suffered because of reliance on the information contained in this study. This study should also not be considered as are commendation to buy or not to buy the shares of any company or companies as mentioned in it or otherwise.

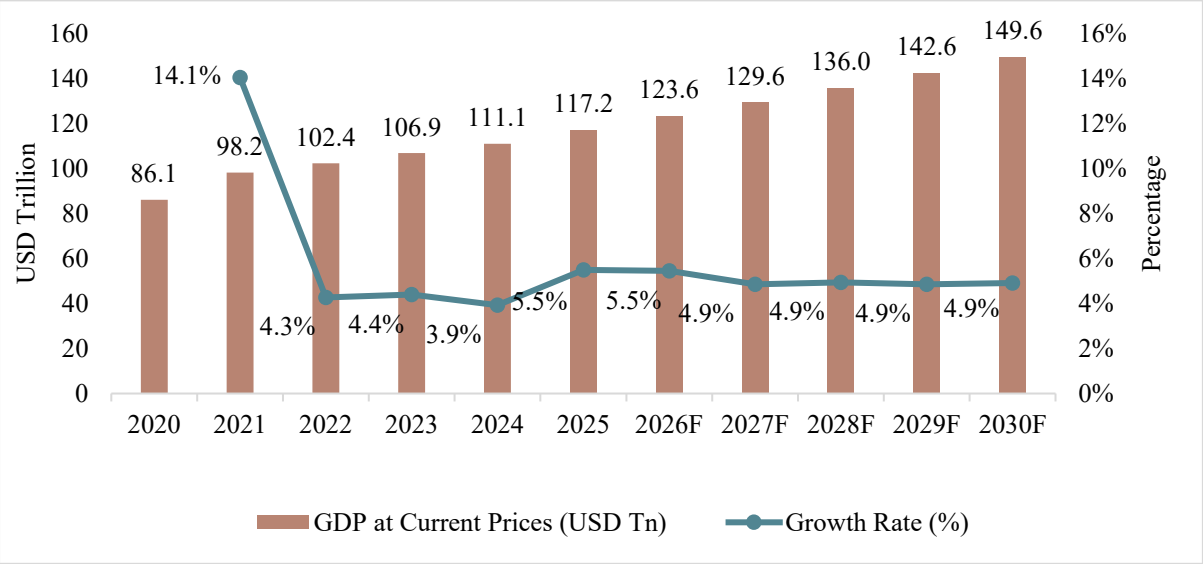
1. Global Macroeconomic Landscape

1.1. Global Economic Landscape

The nominal Gross Domestic Product (GDP) at a global level stood at USD 117.2 Tn in 2025 and witnessed a CAGR of 6.4% between 2020-2025. The same is expected to grow at a CAGR of 6.4% during 2025-2030.

The global economic growth is primarily driven by fiscal and monetary stimulus, stabilized supply chains, increased consumer spending, and renewed Global economic growth is driven by fiscal and monetary stimulus, stabilized supply chains, increased consumer business investments. Additionally, subsiding inflation rates and eased fiscal policies in advanced economies support this growth.

Figure 1-1: Global GDP in USD Trillion (at current prices) and Growth Rate in (%) Outlook, 2020-2030F



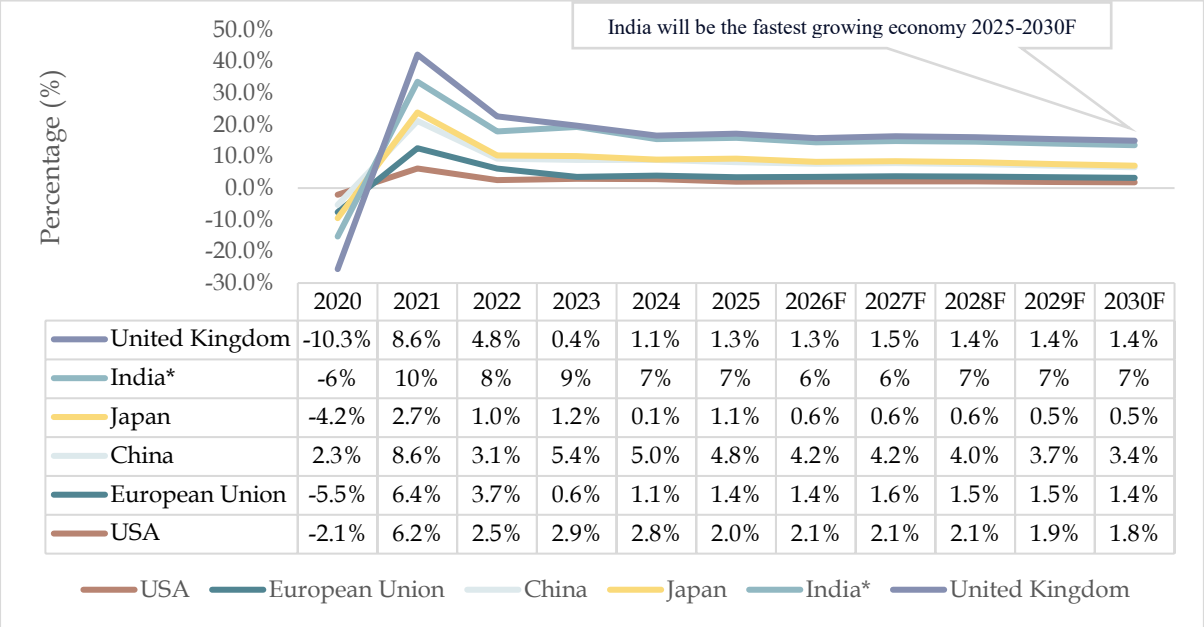
Source: Word Economic Outlook, 2025 (IMF)
Note: F represents Forecasted figures

Advanced economies are expected witness moderation in growth rates from 4.2% in 2024 to 5.7% in 2025.

The US GDP growth is expected to drop from 5.3% in 2024 to 4.5% in 2025. Japan and the EU will see growth rates of -4.4% and 4.4% in 2024. Emerging economies will grow from 3.5% to 5.1%. China's growth will rise from 2.6% to 3.5% due to increased demand and market confidence.

By 2027, India is projected to become the world's third-largest economy, surpassing Japan and Germany. Despite global challenges like COVID-19, geopolitical conflicts, and high interest rates, India remains a significant contributor to world economic growth and is increasing its foreign trade.

Figure 1-2: GDP Growth of Major Economies (Growth Rates, in %), 2020-2030F



	2020	2021	2022	2023	2024	2025	2026F	2027F	2028F	2029F	2030F
United Kingdom	-10.3%	8.6%	4.8%	0.4%	1.1%	1.3%	1.3%	1.5%	1.4%	1.4%	1.4%
India*	-6%	10%	8%	9%	7%	7%	6%	6%	7%	7%	7%
Japan	-4.2%	2.7%	1.0%	1.2%	0.1%	1.1%	0.6%	0.6%	0.6%	0.5%	0.5%
China	2.3%	8.6%	3.1%	5.4%	5.0%	4.8%	4.2%	4.2%	4.0%	3.7%	3.4%
European Union	-5.5%	6.4%	3.7%	0.6%	1.1%	1.4%	1.4%	1.6%	1.5%	1.5%	1.4%
USA	-2.1%	6.2%	2.5%	2.9%	2.8%	2.0%	2.1%	2.1%	2.1%	1.9%	1.8%

Source: Word Economic Outlook, 2025 (IMF) and Ken Research Analysis
Note: F represents Forecasted figures

1.2. Overview of Global Defence & Aerospace Sector

The global defence and aerospace sector is undergoing a significant transformation fueled by geopolitical tensions, rapid tech advancements, and rising government spending. This has led to higher military expenditures and robust order pipelines for leading aerospace firms.

Global Defence Spending Overview

Between 2019 and 2025, global military expenditure saw a steady growth, reaching USD 2,718.2 billion in 2025. This increase is primarily driven by evolving security threats, regional conflicts, and accelerated defence modernization efforts.

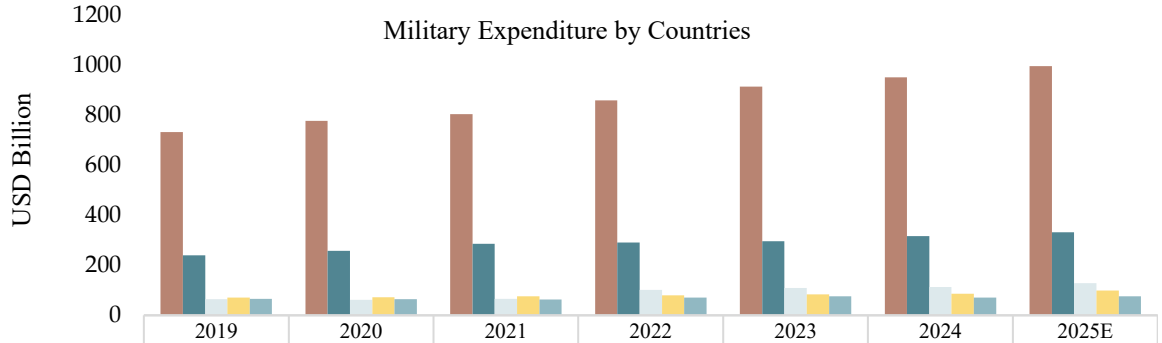
The United States remained the world's largest military spending nation, with its budget rising from USD 778.4 billion in 2020 to USD 1,027.0 billion in 2025. This sustained growth reflects ongoing investments in global military presence, advanced defence systems, nuclear capabilities, and cyber warfare infrastructure.

Russia's military expenditure experienced a sharp rise after 2018, growing from USD 61.7 billion in 2020 to an estimated USD 152.0 billion in 2025. This surge is attributed to the prolonged conflict in Ukraine and the strategic realignment of defence spending toward long-term military readiness.

Further, India's military expenditure growth reflects its focus on strengthening border security, regional tensions with Pakistan and China, upgrading defence infrastructure, and promoting indigenous manufacturing through defence self-reliance initiatives.

Overall, the composition of military expenditure has evolved, with increasing focus on cyber capabilities, autonomous systems, and high-tech warfare, aligning defence strategies.

Figure 1-3: Global Military Expenditure by Top Countries (in USD Billions), 2019-2025E



	2019	2020	2021	2022	2023	2024	2025E
USA	734.3	778.4	806.2	860.7	916.0	953.8	998.0
China	240.3	258.0	285.9	292.0	296.4	317.8	332.6
Russia	65.2	61.7	65.9	102.4	109.5	113.2	128.3
India	71.5	72.9	76.3	80.0	83.6	86.6	98.6
Saudi Arabia	65.4	64.6	63.2	70.9	75.8	71.2	75.6

Source: Stockholm International Peace Research Institute (SIPRI), Ken Research Analysis
Note1: E represents estimated figures
Note 2: RoW represents rest of the world

"India's share of global arms imports decreased to 8.4% during 2020-2024 due to country's push for indigenous defence production under the 'Make in India' and 'Aatmanirbhar Bharat' initiatives."

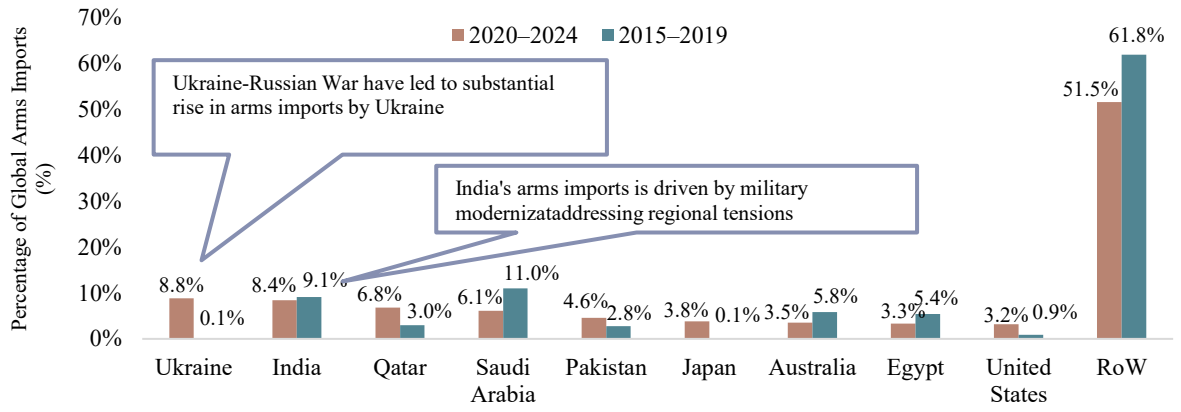
Global Arms Imports by Country

The global arms import is being shaped due to regional conflicts, evolving threat perceptions, and national defence modernization strategies. **Ukraine and India have emerged as the top two importers of arms in the 2020–2024 period, accounting for 8.8% and 8.4% of global arms imports, respectively**. While Ukraine's rapid rise in share is a result of active wartime procurement following the Russia-Ukraine conflict, India's position reflects its long-standing reliance on foreign suppliers to support large-scale defence modernization.

India's share of global arms imports is declining owing to Indian government's increased push for indigenous defence production under the 'Make in India' and 'Aatmanirbhar Bharat' initiatives. India's defence procurement strategy over the past few years has emphasized diversification of suppliers while maintaining long-standing defence partnerships with Russia, France, the United States, and Israel, with increasing emphasis on transfer of technology and co-production agreements.

The Rest of the World (RoW) accounts for 51.5% of global arms imports—down from 61.8%—indicating a growing concentration of arms purchases among a few high-demand countries amid shifting global power dynamics.

Figure 1-4: Arms Imports by top 10 Countries, 2020-2024 Vs 2015-2019



Source: Stockholm International Peace Research Institute (SIPRI), Ken Research Analysis
Note: RoW represents Rest of the World

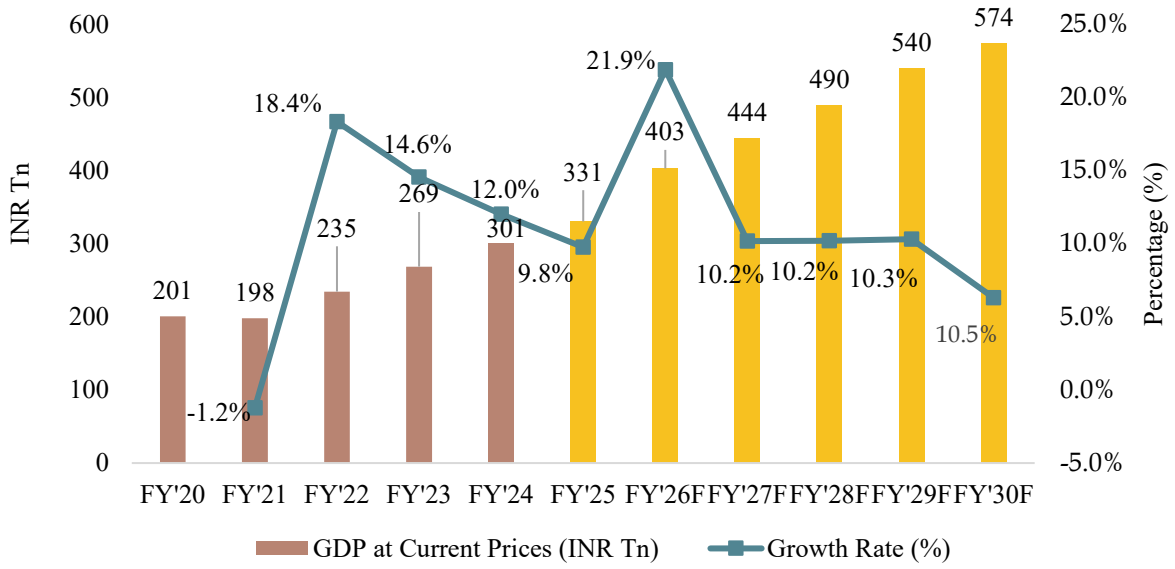
2. Indian Economic Outlook Landscape

2.1. Overview of Indian Economic Environment

"India has emerged as the fastest-growing major economy in the world with nominal GDP growth rate, backed by its robust democracy and strong partnerships."

India's investment appeal has strengthened amid global volatility, with record funding in 2022 highlighting investor confidence in the "Invest in India" narrative.

Figure 2-1: Indian GDP (at current prices in INR Trillion) and Growth Rate (in %), FY'20 - FY'30F



Source: Ministry of Statistics and Programme Implementation (MoSPI), Word Economic Outlook, 2024 (IMF), Ken Research Analysis
Note: F represents Forecasted figures

2.2. Key Economic Indicators & Impact on Defence and Aerospace Industry in India

India's defence sector is backed by robust government spending and structural policy reforms. ***The total defence budget allocation for FY 2025–26, excluding pensions, stands at INR 6.8 lakh crore—reflecting the government's strong commitment to strengthening military capability and indigenous manufacturing. (Source: Ministry of Defence, Government of India)***

Further, the capital influx on indigenization through the 'Aatmanirbhar Bharat' initiative. Strategic reforms, including positive indigenization lists, production-linked incentives (PLIs), and defence testing infrastructure schemes, are accelerating domestic production capabilities in aerospace, armaments, and next-generation technologies.

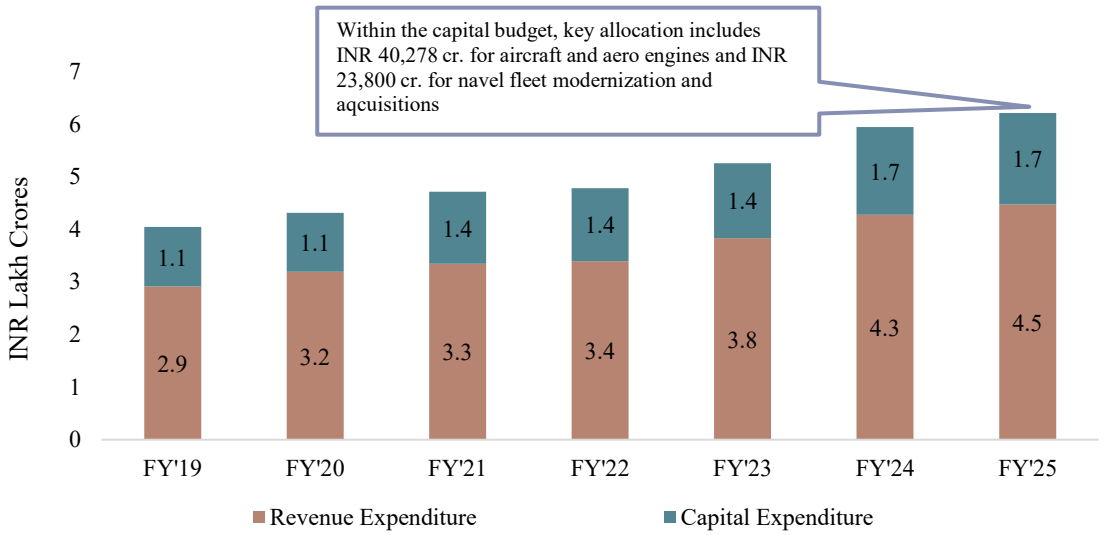
India has also emerged as one of the top global investment destinations, driven by liberalized FDI norms—up to 74% through the automatic route and 100% via government approval. (Source: Press Information Bureau, Government of India)

Government, Private Capital Expenditure & Initiatives for Aerospace and Defence Sectoral Growth

The total Defence budget allocation for FY'24–25, excluding pensions, stands at **INR 6.2 lakh crore**, reflecting a **7.1% increase** over FY'23–24. Of this, **INR 4.5 lakh crore** is earmarked for **revenue expenditure**, while **INR 1.7 lakh crore** has been allocated to **capital expenditure**.

The capital expenditure for FY'24–25 continues to be presented as a consolidated allocation for Defence Services, rather than being split among the Army, Navy, and Air Force—a budgeting approach that has become institutionalized over recent years. Higher capital allocation highlights the government's continued focus on modernizing military infrastructure and strengthening force readiness through the procurement of next-generation platforms and technologies. (Source: Ministry of Defence, Government of India)

Figure 2-2: India's Defence Budget by Revenue and Capital Expenditure (in INR Lakh Crores), FY'19-FY'25

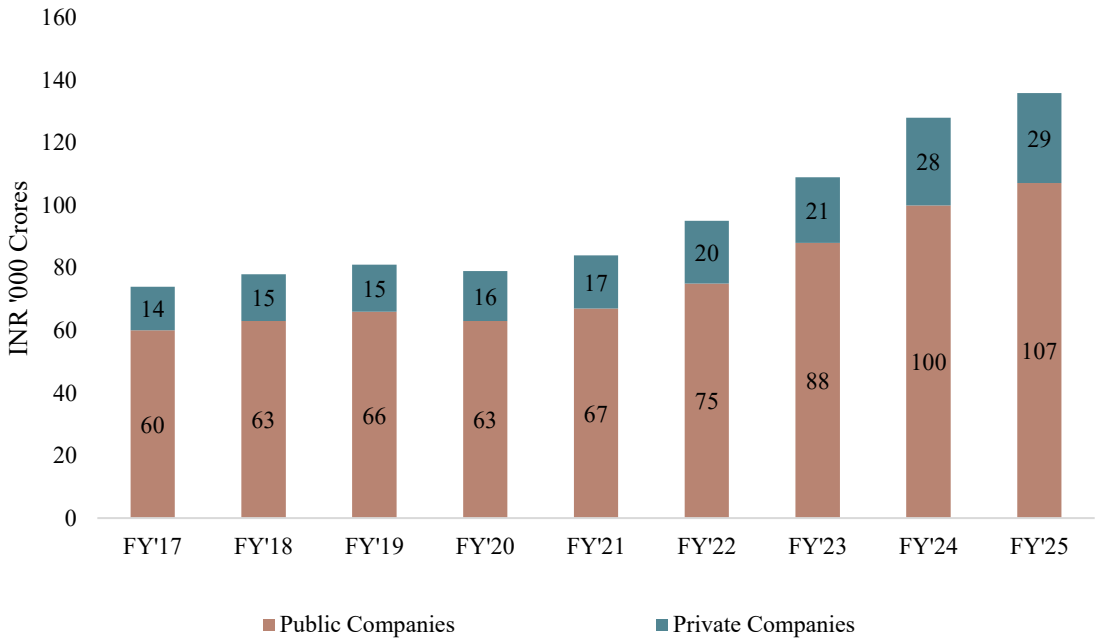


Source: Union Budgets of India, FY'19-25 & Ken Research Analysis
Note: FY refers to financial year ending March

Contribution by Public & Private Players in India's Aerospace and Defence Sector: India's Aerospace and Defence Sector is witnessing a visible shift with the private sector gaining ground alongside traditional public sector entities. Since FY2017, the share of private companies has grown at a **compound annual growth rate (CAGR) of 8.0%**, highlighting increased participation, policy support, and greater involvement in critical defence manufacturing programs.

By FY'25, private sector revenue reached **INR 28,800 crore,** while the public sector **generated INR 1,07,100 crore.** This reflects doubling of private sector revenue over seven years, driven by liberalised policies and greater technology access. One of the key enablers for this growth has been the delicensing of 65% of components and sub-systems, creating ample room for private players to enter traditionally restricted areas.

Figure 2-3: India's Aerospace and Defence Sector's Revenue Contribution (in INR'000 Crores) by Public & Private Players, FY'17-FY'25

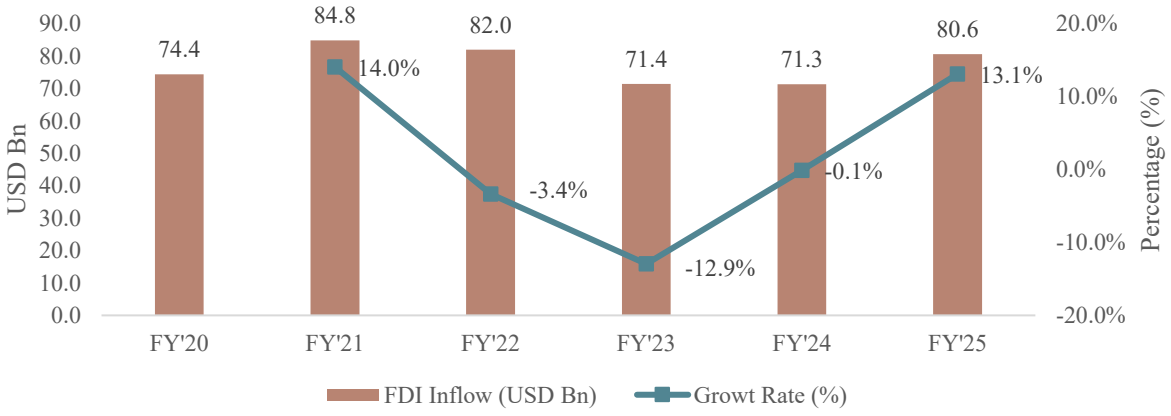


Source: Department of Defence Production, MOD & Ken Research Analysis
Note: FY refers to financial year ending March

FDI Flow, Investment Climate and Trends in India

India is a leading FDI destination with a total inflow of USD 80.6 billion and FDI equity inflows at USD 18.6 billion in FY'25. **The top sectors receiving FDI equity inflows are Manufacturing (20%), Electricity and Other Energy Generation Distribution & Transmission (12%),** Computer Services (11%), Financial Services (10%), and Retail and Wholesale Trade (9%).

Figure 2-4: Foreign Direct Investment (in USD Billion) and Y-o-Y Growth Rates (in %), FY'20-FY'25



Source: Invest India, Make in India & Ken Research Analysis

FDI Scenario of Defence Sector in India: From 2018 to 2024, the Government of India have liberalized its FDI policy in the defence and aerospace sector to attract foreign capital, bring in cutting-edge technologies, and reduce import dependency. **In September 2020, the government raised the automatic FDI cap to 74%, marking a pivotal shift that allowed foreign** Original Equipment Manufacturers (**OEMs**) to hold a majority stake.

"Before 2020, FDI in defence manufacturing was capped at 49% via the automatic route. In September 2020, the cap was raised to 74%, automatically and 100% through the government route."

The post-2020 policy environment encouraged greater foreign participation in Joint Ventures and greenfield projects. Companies such as Airbus (with Tata), Elbit (with Adani), and Nexter (with L&T) leveraged this policy change to set up advanced manufacturing lines in India, including facilities for aircraft assembly, electronic warfare systems, and smart munitions.

Additionally, **in 2022–2023, the government introduced exemptions and eased entry norms for defence-related start-ups and MSMEs**. This allowed smaller technology ventures to receive FDI below the threshold without extensive compliance burdens.

- **The current threshold stands at 74% under the automatic route and up to 100% under the government route** in cases where it brings in advanced technologies or enhances India's defence capabilities.

Currency Dynamics Linked to Rupee-Dollar Exchange Rate

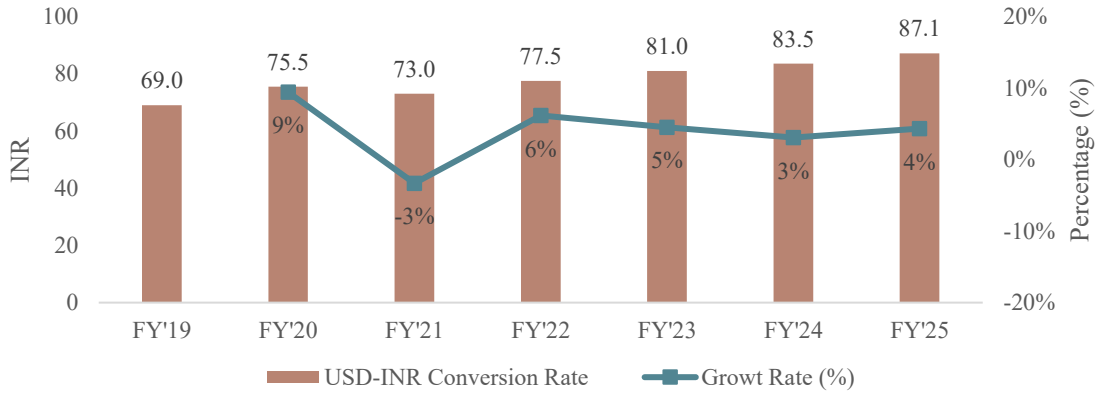
Understanding the dynamics of currency exchange between the INR and the USD is crucial for navigating India's economic landscape. As of 2025, the exchange rate hovers around 87.1 INR per USD, influenced by key factors listed below.

- **Inflation rate:** The Y-o-Y inflation rate based on CPI moderated to 3.3% in FY'25, slightly easing pressure on the INR's purchasing power. While lower inflation helps domestic consumption, it may reduce the relative export advantage by stabilizing the INR against the USD. (Source: Ministry of Statistics & Programme Implementation)

- **Trade balance:** India recorded a trade deficit of USD 78.12 billion, a 35.77% improvement from USD 121.62 billion in FY'23, indicating a narrowing gap between imports and exports. However, the deficit shows imports still exceed exports, increasing demand for foreign currencies like the USD. FY'24 trade includes USD 776.68 billion in exports and USD 854.8 billion in imports. (Source: Ministry of Commerce & Industry)

- **Geopolitical events and economic trends:** Global oil prices rose from USD 55.6 per barrel in 2019 to USD 80.5 per barrel in 2024, increasing India's import costs and impacting the INR. As a major oil importer, higher prices drive up USD demand, weakening the INR.

Figure 2-5: Currency Exchange Rate from USD to INR and Growth Rate in (%), FY'19 – FY'25



Source: Reserve Bank of India (RBI) & Ken Research Analysis
Note 1: FY represents Financial Year (April-March)
Note 2: The data is given for average exchange rate for the financial year

3. Regulatory Landscape

The regulatory landscape for the Critical Test, Measurement, and Simulation Technologies Market in India is shaped by a set of robust, defence-specific frameworks that ensure operational reliability, technical airworthiness, and compliance with national security standards. These regulations govern the design, testing, certification, and deployment of TMS systems which are Backed by institutions like DRDO, CEMILAC, and the Ministry of Defence, the ecosystem emphasizes indigenous development under the Make-in-India initiative. Key regulations governing the TMS space are as follows:

Figure 3-1: Key Regulations in India Critical Test, Measurement, and Simulation Technologies Market

Regulation	Details	Impact on TMS Market
Indian Military Technical Airworthiness Requirements (IMTAR-21)	• Establishes technical airworthiness for military air systems • Covers full lifecycle of aviation test systems	• Mandatory for ATEs, radar, avionic test tools • Requires internal validation infrastructure • Non-compliance leads to program disqualification
Defence Design, Development, Production and Military Airworthiness Standards (DDPMAS-2021)	• Covers design-to-certification for military-grade equipment • Emphasizes reliability across development lifecycle	• Used in MoD procurement evaluation • Impacts simulation tool qualification • Encourages self-reliant production cycles
AQA Directive on QTP & ATP of Ground Equipment	• Defines test protocols for actuator, checkout, support systems • Enforces test jigs and procedure standards	• Raises compliance threshold for MSMEs • Mandatory QTP/ATP for IAF acceptance • Impacts project readiness and documentation cycles
Framework for Simulators in Armed Forces (2021)	• Provides simulation guidelines for training and evaluation • Applicable to radar, cockpit, control systems	• Enables simulator funding via Defence budgets • Encourages public-private simulator partnerships • Influences procurement in modern warfare training

Source: Ken Research Analysis

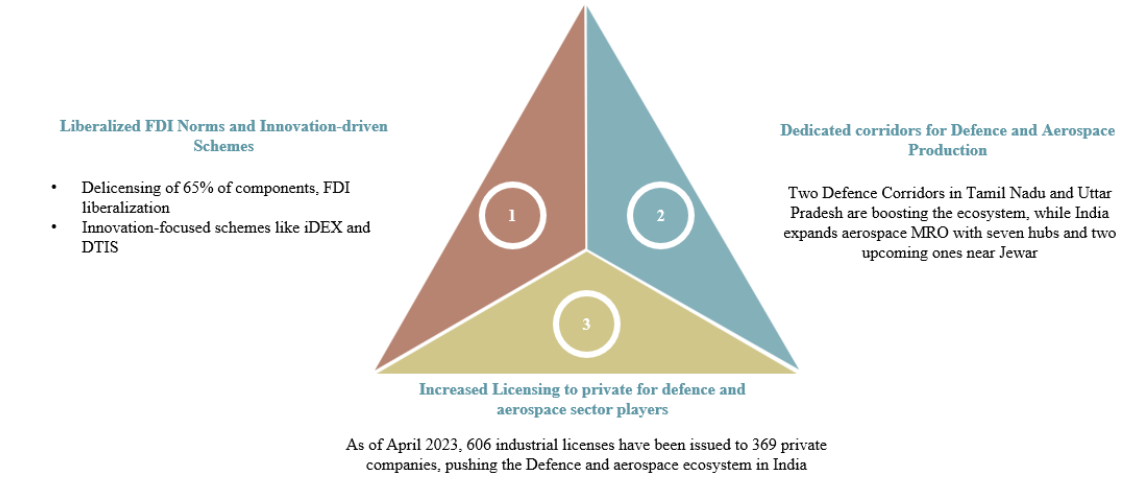
Impact of India's Growing Focus on 'Indigenization' and 'Make in India' for Defence and Aerospace Production

India's defence sector is undergoing structural transformation, driven by strong policy reforms under the **'Aatmanirbhar Bharat' initiative**.

- In FY'24, total Defence production reached a record INR 1,26,887 crore, up from INR 74,054 crore in FY'17—reflecting a 68% growth over seven years.
- The private sector's participation has been strengthened by measures such as the **delicensing of 65% of components, FDI liberalisation (up to 74% automatic, 100% government route),** and innovation-focused schemes like iDEX and DTIS.
- **Two Defence Industrial Corridors in Tamil Nadu and Uttar Pradesh are facilitating ecosystem development**, while India strengthens its aerospace MRO capabilities through seven existing hubs and two new ones near Jewar.
- The Ministry of Defence received a record INR 6,21,941 crore in FY'24–25, accounting for 13% of government spending but still below 2% of GDP. The budget supports indigenous manufacturing, capability modernisation, and job creation.
- **India targets USD 26 billion in aerospace and Defence manufacturing turnover by 2025,** including USD 5 billion in exports.

- **As of March 2025, 700+ industrial licenses have been issued to 436 companies**, reflecting rising private sector participation and momentum toward self-reliance.

Figure 3-2: Key Initiatives under 'Aatmanirbhar Bharat' and 'Make in India' for Defence and Aerospace Sector

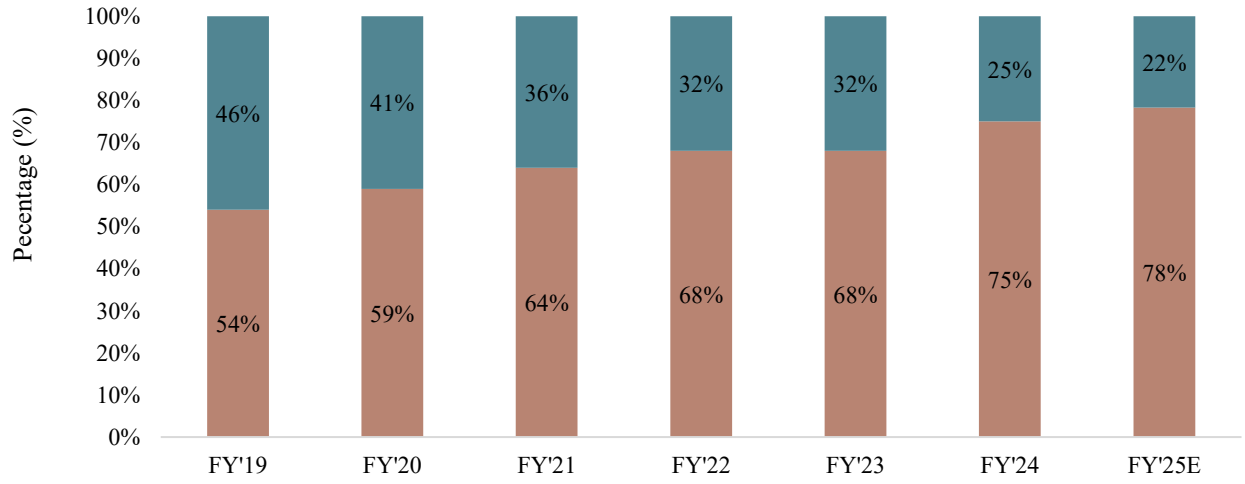


Source: Department of Defence Production, Ministry of Defence & Ken Research Analysis

Import Vs Domestic Production Scenario in India's A&D sector: As of FY'23, 68% of total capital contract value was awarded to domestic vendors, with the government targeting 75% in FY'24. This shift aligns with India's broader push for self-reliance under the 'Aatmanirbhar Bharat' initiative.

This transition has been driven by a suite of favorable policy measures, including the Buy (Indian-IDDM) category, import embargoes on 500+ items, and positive indigenization lists published by the Department of Military Affairs.

Figure 3-3: India's Aerospace and Defence Indigenous Production Vs Imports (in %) on the basis of Value in (INR Lakh Crores), FY'19-25E



Source: Department of Defence Production, Ministry of Defence & Ken Research Analysis

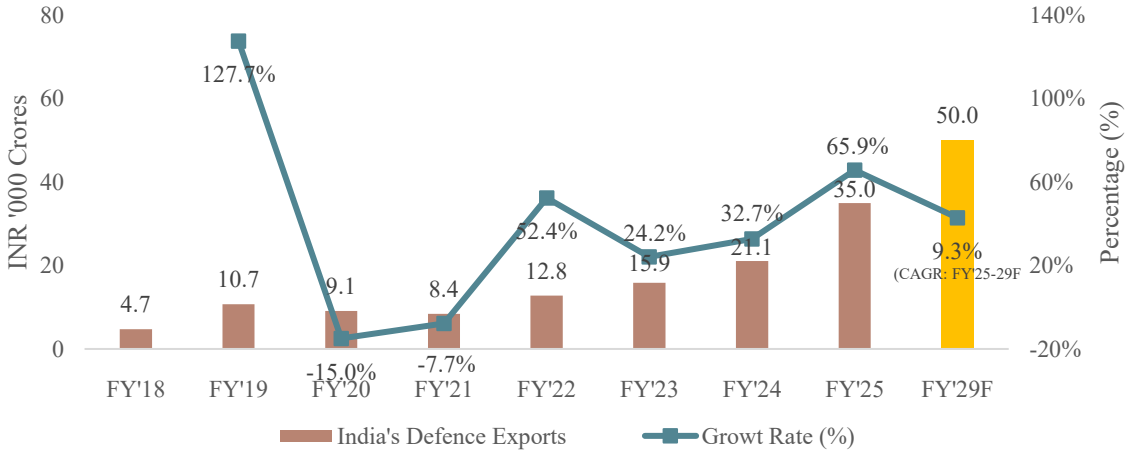
Note 1: FY represents Financial Year (April-March)

India's Defence Exports Scenario: India, once ranked as the world's second-largest has recently emerged as of the top 25 global arms exporters. This progress is attributed to the combined efforts of Defence Public Sector Undertakings (DPSUs) and an increasingly active private sector, both of which have played a pivotal role in boosting defence exports to record levels.

- In FY'24, India issued 1,507 export authorisations, up from 1,414 in FY'23, indicating growing international demand and stronger engagement with global partners.
- Over 100 Indian companies are currently exporting a wide range of defence equipment to more than 85 countries. These exports include highly regarded systems and platforms such as the Dornier-228 aircraft, 155 mm Advanced Towed Artillery Guns (ATAGS), BrahMos missiles, Akash Missile Systems, PINAKA rocket launchers, radars, simulators, and armoured vehicles.

India's evolving defence export narrative underscores a broader vision—strengthening self-reliance while expanding the country's footprint in the global defence market.

Figure 3-4: India's Defence Exports on the basis of Value (in '000 Crores) and Y-o-Y Growth Rate (in %), FY'18-FY'29



Source: Department of Defence Production, Ministry of Defence; Press Information Bureau & Ken Research Analysis
Note: FY represents Financial Year (April-March)

INDIA AEROSPACE SECTOR OVERVIEW – FOCUS ON ISRO BUDGETS & MISSIONS

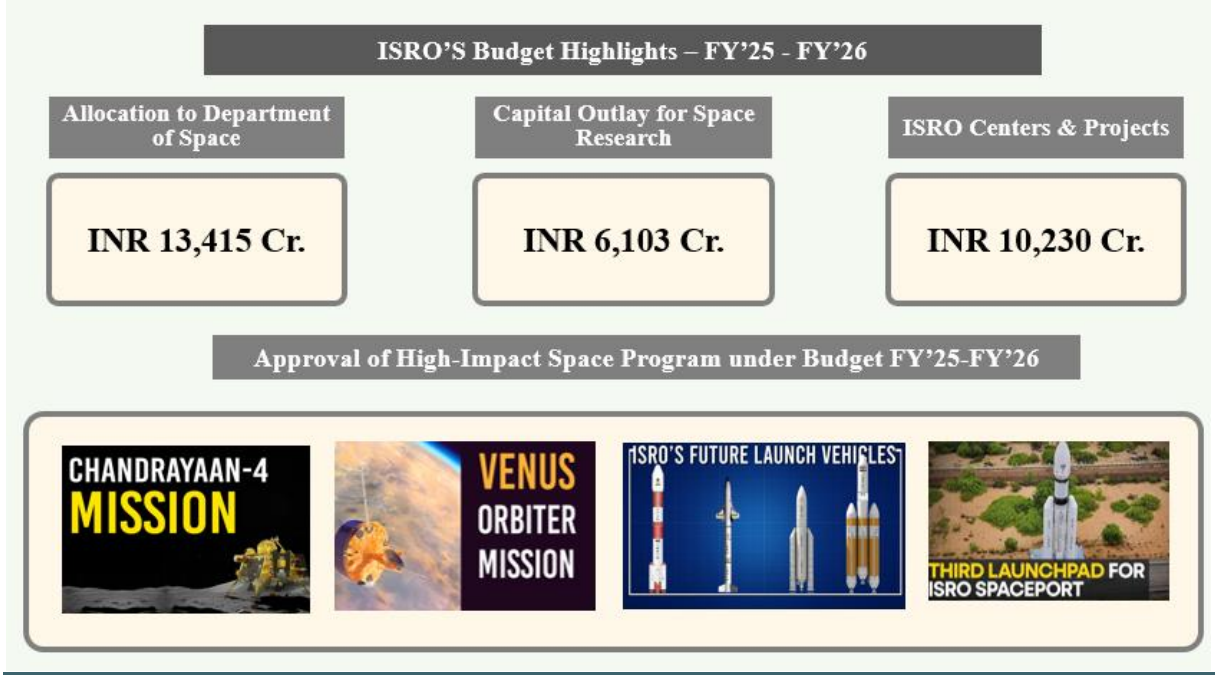
India's space ambitions received a significant push in the Union Budget 2025–26, with increased focus on domestic innovation, public-private partnerships, and strategic missions.

- Funding targeting deeper integration of satellite-based technologies in areas like agriculture, disaster response, and smart urban planning announced.
- Aligning national initiatives such as the National Geospatial Mission and the National Manufacturing Mission, reinforcing India's push for advanced technological self-reliance.

- In addition, the budget promotes public-private collaboration through a liberalized FDI policy, allowing up to 100% FDI in satellite and related system manufacturing:

Further, the increased allocation towards space research and the announcement of complex missions such as Chandrayaan-4 and the Venus Orbiter are likely to intensify the technical requirements for testing and validation, also necessitating the need for advanced TMS systems—capable of supporting high-frequency, real-time diagnostics and performance evaluation.

Figure 3-5: Key Highlights of ISRO'S Budget (In INR Crores) for FY'25 – FY'26



Source: Indian Space Research Organisation
Note: FY represents Financial Year (April-March)

Importance of India's Critical Test, Measurement, and Simulation Technologies Market in Defence & Aerospace Industry

Critical test, measurement, and simulation technologies plays a vital role in ensuring the seamless integration and operational effectiveness of defence and aerospace systems. This market primarily focuses on providing system and subsystem solutions such as Avionic Test Systems, Checkout Systems, Actuator Test Systems, Radar Test and Evaluation Systems, Automated Test Equipment (ATE), and Digital Receiver Systems. These solutions are critical in reducing risks, ensuring quality, and meeting stringent regulatory standards, which are all essential for maintaining the competitiveness and reliability of India's defence and aerospace sectors.

- **Avionic Test Systems** ensure reliable performance of flight-critical avionics, minimize integration risks, and support regulatory compliance through comprehensive subsystem validation.
- **Checkout Systems** verify operational readiness, conduct in-depth diagnostics, and enhance quality assurance prior to platform deployment.
- **Actuator Test Systems** simulate mechanical stress conditions to validate actuator reliability, precision, and durability in mission environments.
- **Radar Test and Evaluation Systems** assess radar accuracy, signal quality, and environmental performance to ensure operational effectiveness and threat detection.
- **ATE** enables high-speed, error-free testing of electronic systems, improving fault isolation and accelerating **quality control.**
- **Digital Receiver Systems** process real-time digital signals for communication and radar platforms, enhancing data analytics, signal integrity, and situational awareness

Business Opportunity for Electronic Components in Defence and Aerospace Sectors via Built to Specs (BTS) and Built to Print (BTP)

There is a growing need for application-specific electronic components that meet the performance, integration, and lifecycle requirements of defence and aerospace testing platforms. Two prominent manufacturing approaches—**Built-to-Specs (BTS)** and **Built-to-Print (BTP)**—are increasingly relevant in addressing these demands:

- **Built-to-Specs (BTS)** involves the design and production of components strictly based on performance and technical specifications provided by system integrators, defence R&D organizations (e.g., DRDO, ISRO), or OEMs. These often include signal processing units, FPGA-based modules, embedded controllers, and custom analog-digital converters tailored to platform-specific needs.
- **Built-to-Print (BTP)** refers to manufacturing components according to detailed design documents, drawings, and specifications provided by the client. This approach emphasizes precision in execution, adherence to prescribed standards, and rigorous quality control, with no design input or modification by the manufacturer. It is ideally suited for producing legacy components, standardized parts, or assemblies where the design is fully finalized and validated by the client.

The requirement for BTS and BTP components is being driven by factors such as:

- The need for high-frequency, EMI-resistant components in airborne and naval testing environments,
- Platform-specific constraints related to size, weight, and power (SWaP),
- Long lifecycle maintenance support for mission-critical systems,
- The limited availability of off-the-shelf components suitable for TMS platforms.

Between the two models, **Built-to-Specs (BTS)** is generally the better approach when innovation, performance optimization, and platform-specific customization are critical. BTS allows manufacturers to leverage their design expertise to create components that meet evolving technical requirements, particularly in high-complexity domains like aerospace and defence.

Nevertheless, both BTS and BTP models present an opportunity to reduce import dependency by enabling targeted, local manufacturing at the component level. Private-sector players and MSMEs are beginning to explore this niche, often through co-development programs with public sector entities or under government-backed schemes such as the DRDO Technology Development Fund.

4. Market Analysis

4.1. Global Critical Test, Measurement, and Simulation Technologies Market Size, CY'19 - CY'25 - CY'30F

"Rising military spending driven by geopolitical tensions and modernization is fueling demand for test and simulation systems in the Global Critical Test, Measurement, and Simulation Technologies Market.

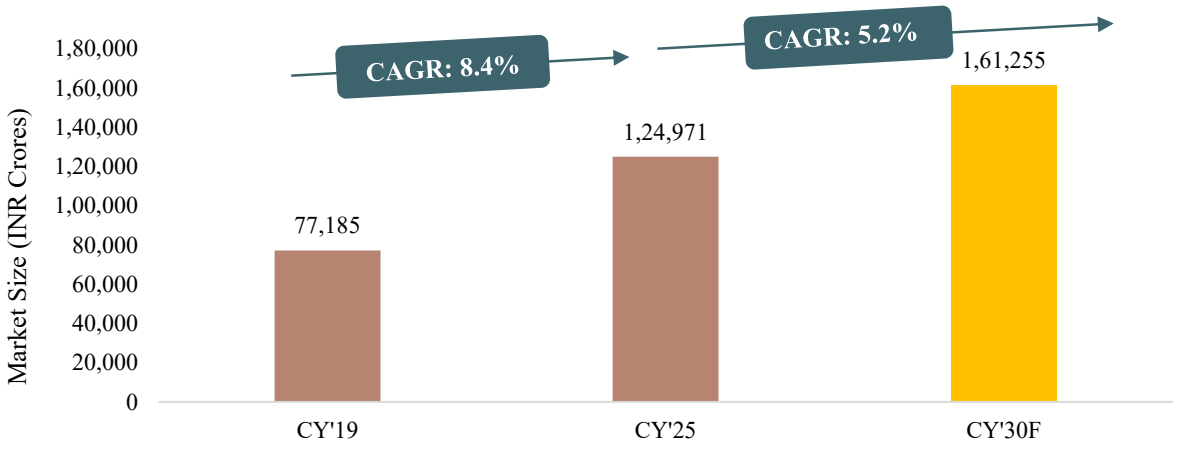
The Global Critical Test, Measurement, and Simulation Technologies Market has demonstrated robust growth, and is projected to reach INR 161,255 crore by CY'30F, growing at a CAGR of 5.2% between CY'25 and CY'30F. This growth trajectory is being fueled by rise in global defence spending, which reached a record USD 2.7 trillion in 2024—an increase of 9.4% YoY, and the steepest spike since the Cold War. (Source: SIPRI)

The rise in spending is largely driven by ongoing geopolitical tensions and modernization initiatives, especially across Europe, Asia, and the Middle East, where military procurement cycles are intensifying. Products such as Avionic Test Systems, Automated Test Equipment (ATE), Radar Test & Evaluation Systems, and Actuator Test Systems are seeing heightened demand to support next-gen defence platforms and electronic warfare systems.

Simultaneously, the commercial aerospace sector is reinforcing market expansion. Airbus and Boeing collectively hold over 15,000 unfulfilled aircraft orders, translating to nearly a decade-long backlog—underscoring a sustained pipeline of demand.

Additionally, the space sector is driven by surge in demand for high-precision test and simulation solutions supporting satellite deployment, launch vehicle integration, and orbital systems validation.

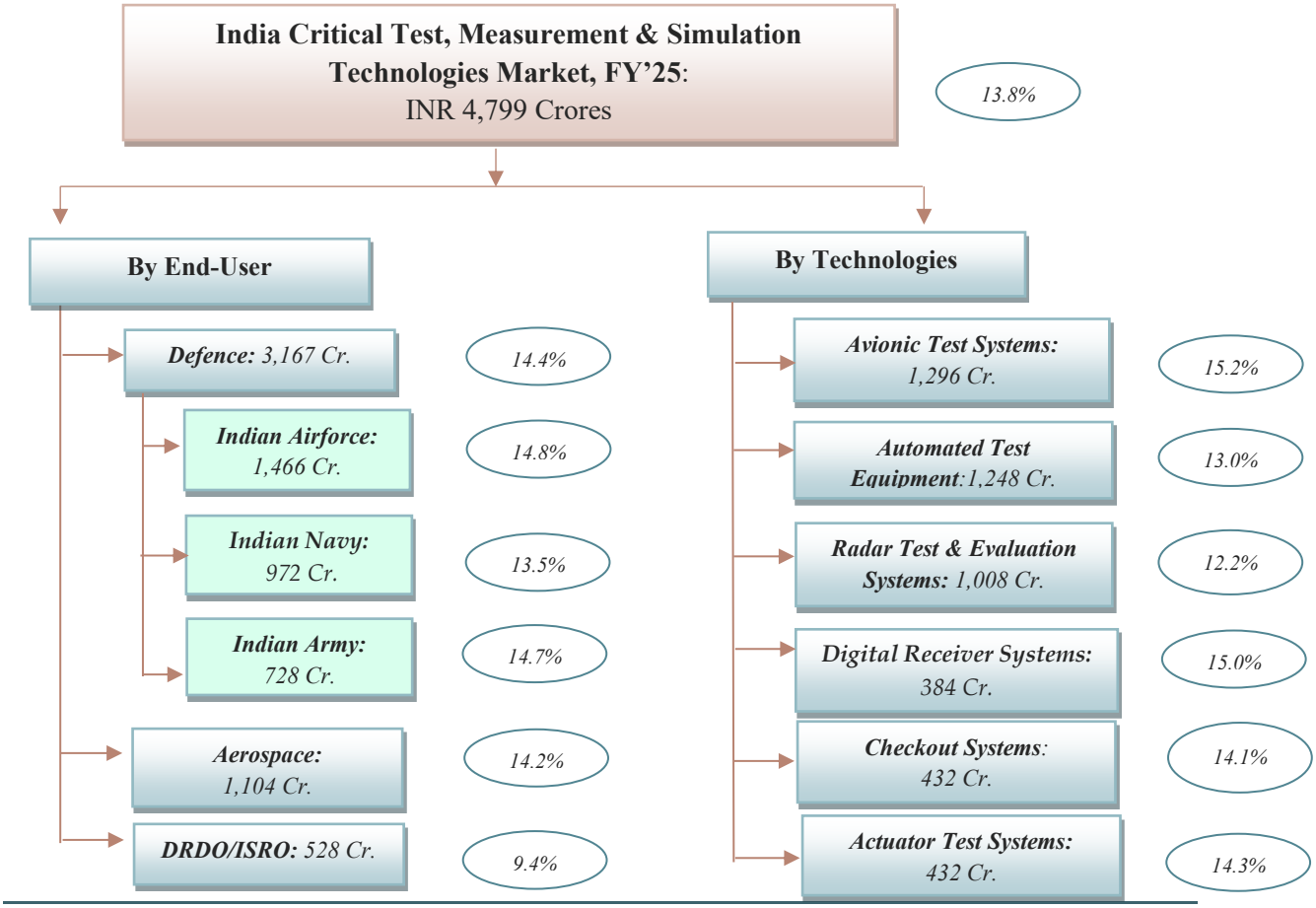
Figure 4-1: Global Critical Test, Measurement, and Simulation Technologies Market Size on the Basis of Revenue in INR Crores, CY'19 - CY'25 – CY'30F



Source: Interviews with Industry Experts, Industry Articles & Ken Research Analysis

4.2. INDIAN CRITICAL TEST, MEASUREMENT, AND SIMULATION TECHNOLOGIES MARKET SIZE, FY'19-FY'24-FY'30F

Figure 4-2: Taxonomy & Market Size of India Critical Test, Measurement & Simulation Technologies Market, FY'25

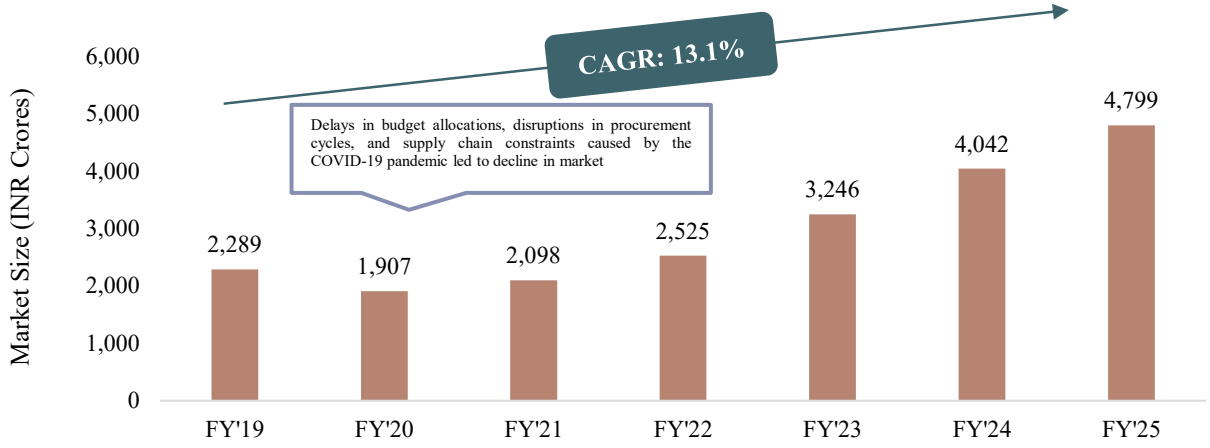


Source: Ken Research Analysis
Note: FY refers to financial year ending March
Indicates CAGR from FY'25-FY30F

India's critical test, measurement, and simulation technologies (TMS) market forms a part of strategic electronics market. The TMS market reached INR 4,799 crore in FY'25, witnessing a CAGR of ~13% during FY'19-FY'25. This steady growth trajectory reflects surging investments in indigenous defence capabilities and R&D, and ISRO's escalating slate of space missions. Government initiatives such as **Make in India** and **Atmanirbhar Bharat** have been pivotal in boosting local manufacturing and technological development in critical testing and simulation domains, by prioritizing domestic production and innovation in defence technology.

Simultaneously, growing participation from private players like **Data Patterns (India) Ltd., Ananth Technologies Pvt. Ltd, and Digilogic Systems Limited.** has strengthened indigenous defence production capabilities, with these firms expanding local manufacturing through collaborations and cutting-edge projects, in line with India's self-reliance goals.

Figure 4-3: India Critical Test, Measurement, and Simulation Technologies Market Size on the Basis of Revenue in INR Crore, FY'19-FY'25

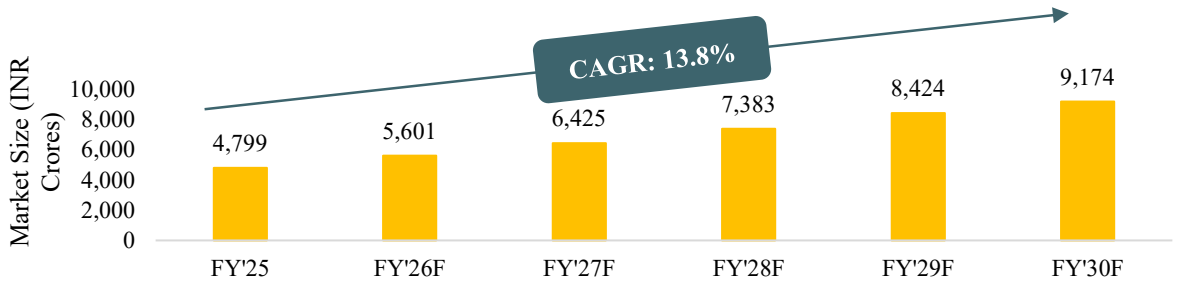


Source: Interviews with Industry Experts, Industry Articles & Ken Research Analysis
Note: FY refers to financial year ending March

By FY'30, critical test, measurement, and simulation technologies market is projected to reach INR 9,174 crore. This growth is fueled by a structural shift in India's defence procurement strategy—from import-dependence to indigenous development:

- **Creating sustained demand for sophisticated T&M systems** in weapons testing, radar validation, electronic warfare, and missile simulation.
- **DRDO's ramp-up in prototype development cycles, alongside defence PSU modernization programs**, is expected to significantly increase procurement of simulation environments that enable virtual testing and AI-based stress scenarios.
- **Entry of private sector integrators in high-value contracts—particularly in electronic warfare, UAVs, and indigenous missile systems**—has made rigorous compliance testing a baseline requirement rather than a value-add.
- **Defence export ambitions, with India targeting INR 50,000 crore in exports by 2029**, are also boosting global-standard certification and validation demands, which will deepen the market for precision measurement and simulation platforms. (Source: Ministry of Defence)

Figure 4-4: India Critical Test, Measurement, and Simulation Technologies Market Size on the Basis of Revenue in INR Crore, FY'25-FY'30F



Source: Interviews with Industry Experts, Industry Articles & Ken Research Analysis
Note: FY refers to financial year ending March

4.3. Market Segmentation of India Critical Test, Measurement, and Simulation Technologies Market, FY'25 & FY'30F

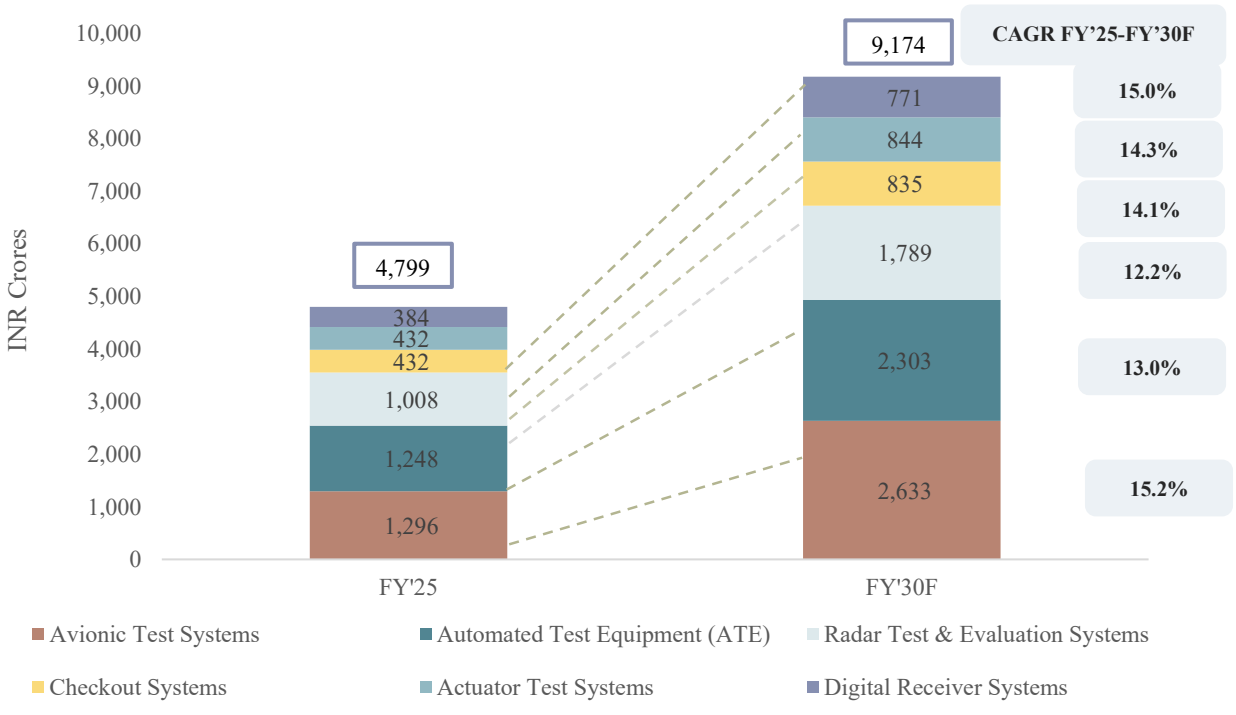
By Technology Type (FY'25 & FY'30F):

As of FY'25 **Avionic Test Systems emerged as the largest technology segment in the market**, which is projected to grow significantly to INR 2,633 crore by FY'30, making it the fastest-growing segment at a CAGR of 15.2%. This growth is driven by increasing modernization of combat and surveillance aircraft within the Indian Air Force, as well as indigenous development programs such as the LCA Tejas, AMCA, and upcoming unmanned aerial platforms—each of which demands high-precision avionic validation and system integration testing.

The Automated Test Equipment (ATE) segment follows closely, driven by expanded use in defence electronics manufacturing, especially for complex PCB, radar, and missile components, making it a highly lucrative segment with steady CAGR of 13.0% during FY'25-FY'30F.

Although Checkout Systems, Radar Test & Evaluation Systems, and Digital Receiver Systems report lower revenue bases and moderate CAGRs (~15% each), they continue to be critical enablers in system-level readiness and electronic warfare domains—especially as India advances towards integrated, network-centric warfare capabilities.

Figure 4-5: India Critical Test, Measurement, and Simulation Technologies Market Segmentation by Technology Type on the basis of Revenue in INR Cr, FY'25 & FY'30F



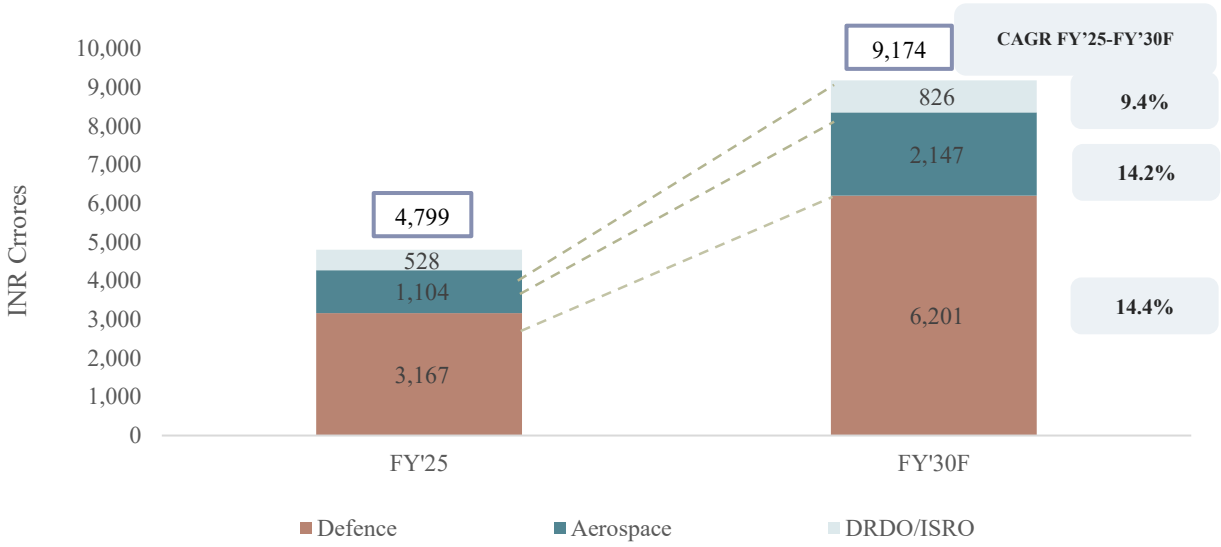
Source: Interviews with Industry Experts, Industry Articles & Ken Research Analysis
Note 1: F indicates forecasted year
Note 2: FY refers to financial year ending March

BY END-USER INDUSTRY (FY'25 & FY'30F):

As of FY'25, the **defence sector** dominates the market and will continue to remain so, with the segment projected to surge to INR 6,201 crore by FY'30, driven by the sustained modernization of India's armed forces, increased indigenous manufacturing, and robust R&D activities in line with the Defence Acquisition Procedure (DAP) and Make in India initiatives.

Meanwhile, the **DRDO/ISRO segment** will indicate a healthy **CAGR of 9.4% during FY'25-FY30F**, fueled by cutting-edge research in satellite launch systems, interplanetary missions, defence space programs, and next-gen propulsion technologies

Figure 4-6: India Critical Test, Measurement, and Simulation Technologies Market Segmentation by End-User Industry on the Basis of Revenue in INR Cr, FY'25 & FY'30F



Source: Interviews with Industry Experts, Industry Articles & Ken Research Analysis
Note 1: F indicates forecasted year
Note 2: FY refers to financial year ending March

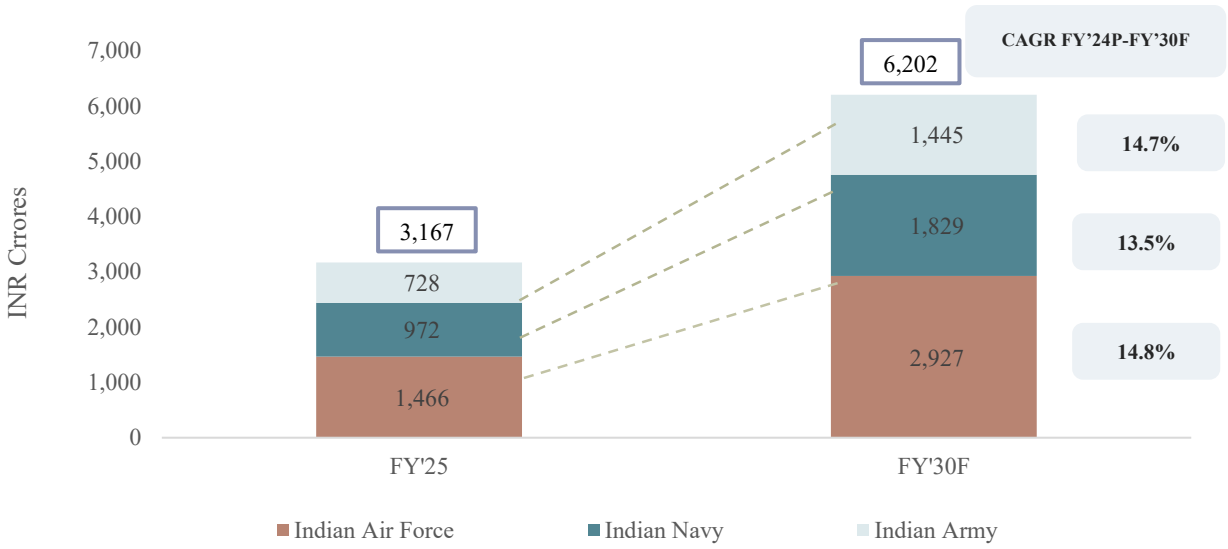
BY DEFENCE-SECTOR (FY'25 & FY'30F):

Within the defence sector, the **Indian Air Force** holds the position of the **largest end-user**. This dominance is driven by the Air Force's increasing procurement of indigenous fighter platforms (Tejas Mk2, AMCA), modernization of avionics systems, and demand for high-fidelity flight simulators, radar calibration tools, and avionics validation test beds.

Indian Navy is also a **lucrative and steadily growing market for these technologies** and its rise is propelled by the Navy's modernization of surface and subsurface platforms—including indigenous aircraft carriers, advanced submarines, and UAVs—necessitating complex system integration, electronics testing, and simulation capabilities for naval operations.

Within the Indian **Army** segment, demand surge is linked to increased deployment of advanced land systems, battlefield management systems, and indigenous missile programs, requiring extensive actuator testing, mobile ATEs, and mission rehearsal simulations.

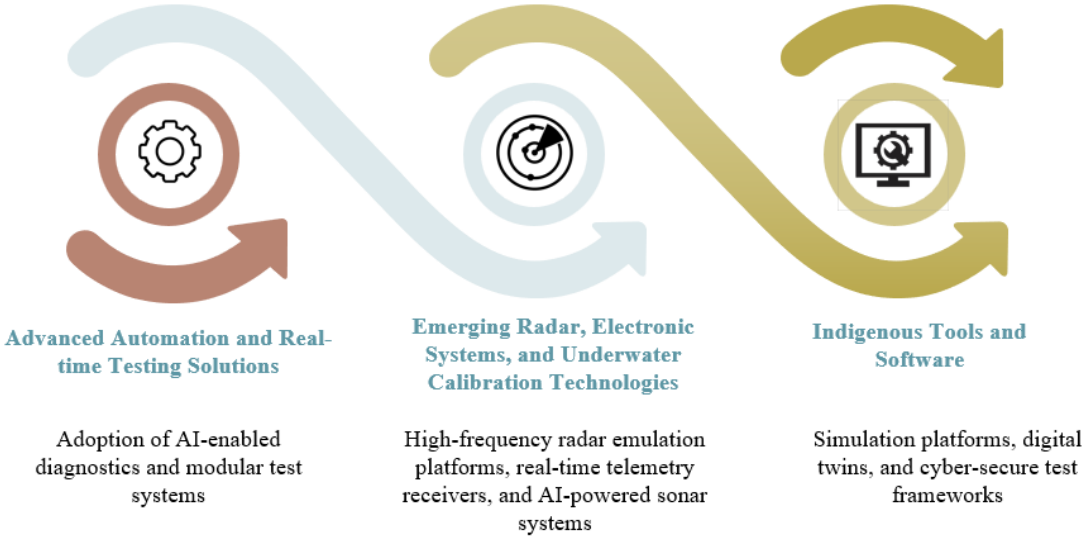
Figure 4-7: India Critical Test, Measurement, and Simulation Technologies Market Segmentation in Defence Sector on the Basis of Revenue in INR Cr, FY'25 & FY'30F



Source: Interviews with Industry Experts, Industry Articles & Ken Research Analysis
Note 1: F indicates forecasted year
Note 2: FY refers to financial year ending March

5. TECHNOLOGICAL LANDSCAPE

Figure 5-1: Technological Advancement in India TMS Market



Source: Interviews with Industry Experts, Industry Articles & Ken Research Analysis

5.1. ADVANCEMENTS IN AUTOMATION AND REAL-TIME TESTING SOLUTIONS

Organizations have increasingly adopted AI-enabled diagnostics and modular test systems to enhance efficiency, accuracy, and responsiveness across all operational stages. Some of the notable examples of such technological developments are as follows:

- Data Patterns (India) Ltd. developed real-time embedded computing platforms equipped with AI-driven diagnostics. These systems enabled live fault detection, supporting several DRDO initiatives between 2023 and 2025.
- Zen Technologies Ltd. introduced advanced simulation platforms featuring data-rich environments, **securing a INR 152 crore contract in 2025** for the Integrated Air Defence Combat Simulator (IADCS). Additionally, it signed an MoU with TXT Group to strengthen pilot training capabilities.
- Tecknotrove Systems Pvt. Ltd. deployed simulators incorporating gesture recognition and real-time bio-feedback, which the Indian Air Force adopted in 2024.

5.2. EMERGING TRENDS IN RADAR, ELECTRONIC SYSTEMS, AND UNDERWATER CALIBRATION TECHNOLOGIES

Focus on proactive surveillance and threat anticipation has driven investments in radar systems, electronic warfare solutions, and underwater calibration technologies in India. Defence contractors are developing a range of high-frequency radar emulation platforms, real-time telemetry receivers, and AI-powered sonar systems to enhance strategic and tactical responses.

- Paras Defence & Space Technologies Ltd. expanded its radar and anti-drone capabilities. In 2025, the company secured a DRDO contract for an advanced Laser Dome system and committed INR500 crore to establish an optical systems development facility.

5.3. Development of Indigenous Tools and Software to Meet Industry-Specific Requirements

Indian firms are designing and deploying simulation platforms, digital twins, and cyber-secure test frameworks to meet specialized requirements across aerospace and defence domains:

- **Tata Elxsi Ltd.** developed a mission-ready simulation platform for UAV avionics using MATLAB and an in-house RTOS, significantly accelerating validation cycles.

6. KEY GROWTH DRIVERS

Initiatives Promoting Technological Advancements and Automation in TMS Space:

India's growing emphasis on indigenization in defence technology is significantly boosting the Test, Measurement, and Simulation (TMS) technologies market. The **FY 2024–25 Union Budget allocation for the Defence Research and Development Organisation (DRDO)** has been **raised to INR 23,855 crore**, compared to **INR 23,263.9 crore in FY 2023–24**, reinforcing India's commitment to advanced, self-reliant defence tech capabilities. The budget is allocated to following programs of DRDO:

- INR 13,208 crore (55%) is earmarked for capital expenditure, enabling DRDO to invest in high-end simulation platforms, and advance defence hardware.
- The Technology Development Fund (TDF) allocation of INR 60 crore encourages private players, MSMEs, and academic institutions to collaborate with DRDO, with the possibility of encouraging niche technologies such as real-time data emulation systems.
- Additionally, the iDEX program has seen an allocation of INR 518 crore, which fuels innovations in defence testing through startups and next-gen thinkers. This funding can potentially accelerate AI-integrated testing software, drone simulation platforms tailored for Indian defence scenarios. (Source: Ministry of Defence)

With India fostering a dual-use tech environment between defence and civil aviation, TMS technologies are seeing cross-sectoral adoption. The Government's promotion of Def-Tech convergence with civil aviation and ISRO collaborations is fostering high-fidelity simulation systems for satellite payload testing, aerospace engine diagnostics, and rocket staging simulations.

Table 6-1: Budgetary Allocation of different Programs Under DRDO's Budget (in INR Crores), FY'24-FY'25

Allocations	Budget Spent (INR Cr.)
Capital Expenditure	**13,208**
iDEX program	518
Technology Development Fund	**60**
Other Allocations	10,069
Total	**23,855**

Source: Ministry of Defence & Ken Research Analysis
Note: FY refers to financial year ending March

Increasing Focus on Quality Assurance:

India's Critical Test, Measurement, and Simulation Technologies Market is driven by an increasing focus on quality assurance across the defence and aerospace sectors, as the Government prioritizes platform reliability, mission-readiness, and operational excellence. This heightened emphasis is reflected in the INR 92,088 crore capital allocation in FY 2024–25 for sustenance and operational readiness—aimed at enabling the Armed Forces to maintain strict quality control over their high-value assets including aircraft, warships, and missile systems. (Source: Ministry of Defence)

With rising technological complexity and evolving threat environments, quality assurance has become a continuous process integrated into the lifecycle of defence equipment, requiring robust simulation, predictive diagnostics, and advanced measurement frameworks.

The Government's broader defence budget of INR 6.2 Lakh crore includes strategic investments in simulation-based quality validation systems that can test components under extreme, real-world conditions to eliminate failure points before deployment. Additionally, the launch of the iDEX-ADITI scheme with INR 400 crore in funding, offering up to INR 25 crore per applicant, is aimed at enabling start-ups and MSMEs to develop indigenous, next-generation QA tools—that possibly include AI-enabled fault detection, automated stress testing, and condition-based monitoring systems. These initiatives signify a paradigm shift in defence quality assurance, transforming it from a compliance requirement into a strategic priority in India's defence infrastructure.

Rising Demand for Customized Test and Simulation Solutions:

The Ministry of Defence (MoD) has made a **landmark allocation of INR 1.1 lakh crores**, representing **75% of its modernization budget for FY 2024–25**, specifically for **procurement through domestic industries**. (Source: Ministry of Defence). This policy initiative is fostering a significant shift toward **localized, tailor-made test and simulation solutions** to meet unique defence requirements. Some of the developments as a result of policy initiatives are as follows:

- Indian defence OEMs and system integrators are now investing in customizable Hardware-in-Loop (HIL) systems, Mission-critical Simulation Rigs, and Synthetic Environment Modeling tools designed to replicate Indian battlefield conditions.
- This domestic procurement model ensures rapid iteration cycles of test environments for UAV systems, radar calibration, and missile interface validation tailored for diverse geographic zones—from deserts to high-altitude zones.

AI-powered simulation engines are now being customized to simulate real-time operational dynamics, such as drone swarm behavior, autonomous mission planning, or hypersonic flight control—technologies where off-the-shelf solutions fall short.

- Customized models enable defence labs to train AI algorithms on localized terrain and threat libraries, ensuring more robust and context-aware system development.
- AI integration is also accelerating adaptive testing environments, which automatically tweak parameters based on prior test data—reducing time-to-certification significantly.

Rapid Missile Integration increasing demand for TMS solutions:

In missile development programs, precision testing and simulation tools are indispensable for seamless system integration. India's growing focus on strengthening indigenous missile capabilities—ranging from surface-to-air and air-to-air to long-range strategic systems—has created a strong demand for specialized test environments. Avionic test systems and checkout systems are particularly vital during the final stages of integration, ensuring that subsystems like navigation, propulsion, control, and telemetry function cohesively.
Automated Test Equipment (ATE) is being increasingly deployed to validate electronic payloads, inertial guidance systems, and other mission-critical components under realistic operating conditions. The need for repeatable, high-fidelity testing is further reinforced by the strategic importance of these defence assets, pushing for greater investment in simulation-based validation and test frameworks.

Growing defence electronic manufacturing leading to increased integration of ATE and other systems:

With India evolving into a key hub for defence and aerospace electronics manufacturing, test and measurement technologies are at the heart of quality assurance. Modern production lines for radar systems, avionics, control

systems, and RF electronics require end-of-line validation and continuous fault detection to maintain high reliability standards. Automated Test Equipment (ATE) and digital receiver systems are being integrated into the production workflows to support high-throughput testing while reducing time-to-market. Additionally, as electronic assemblies grow increasingly complex and miniaturized, simulation tools are essential in the design verification and performance modeling stages. The increasing localization of production under initiatives like "Make in India" and "Atmanirbhar Bharat" is further driving the adoption of indigenous test solutions, tailored to meet the specific requirements of Indian defence programs.

Quality assurance prompting need for ESS Testing (Environmental Testing):

Environmental Stress Screening (ESS) and qualification testing are critical to ensuring the survivability and performance of electronic and mechanical systems under extreme operational conditions. India's climatic diversity and the operational demands of defence systems—from deserts to high-altitude terrain—necessitate robust environmental testing protocols.

Radar test systems, actuator test systems, and avionic test platforms are routinely subjected to thermal, vibration, humidity, and shock testing, mimicking real-world mission environments. The increasing deployment of mobile and field-deployable test systems also reflects the need for on-site validation and calibration. Moreover, digital simulation tools are enabling virtual ESS testing during early design stages, reducing physical test cycles and associated costs.

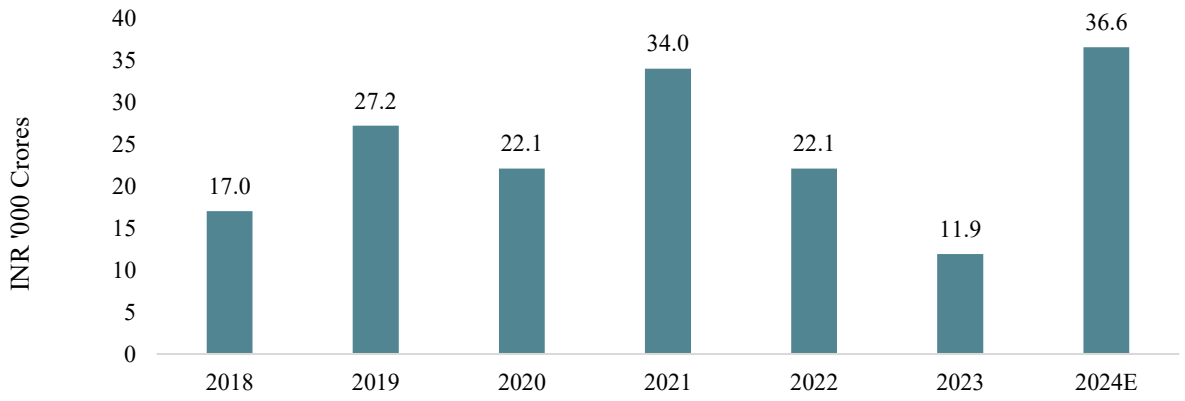
7. MARKET CHALLENGES AND THREATS

Higher Reliance on Imports for Critical Test, Measurement, and Simulation Technologies:

India's defence and aerospace industry face challenges due to a **high reliance on imports** for critical **Test, Measurement, and Simulation (TMS) technologies**. Despite government efforts to boost indigenization, majority **of high-end TMS subsystems** are still imported, primarily from the US, Israel, Germany, and France. This dependence has led to extended lead times (8–12 months), high foreign exchange-driven cost volatility (10–14% increase), and vulnerability to export control regimes like ITAR and Wassenaar Arrangement.
Furthermore, India's indigenous TMS integration capability remains low. While domestic firms such as BEL, Data Patterns, and Astra Microwave have made incremental progress, they still rely heavily on foreign COTS modules for core components. Additional challenges include a lack of standardized national simulation infrastructure, limited collaboration between DRDO, ISRO, and private R&D players.

These factors collectively pose **strategic, operational, and cost-related risks**, especially as India expands its indigenous platform portfolio.

Figure 7-1: India's Arms Imports on the basis of Value (in INR '000 Crores), 2018–2024E



Source: Stockholm International Peace Research Institute

Regulatory and Bureaucratic Hurdles & Procurement Delays:

Overlapping jurisdictions among defence regulatory bodies, licensing bottlenecks under the Offset Policy, and strict import/export controls on dual-use technologies like RF receivers have significantly delayed technology acquisition and deployment. These hurdles have been particularly impactful in time-sensitive areas such as radar test systems and avionics test benches, where lengthy approval and clearance processes have hampered operational readiness.

Procurement delays added to these issues, with average acquisition timelines for test systems stretching beyond 24–30 months due to extended tendering processes, and unclear technical evaluation metrics. Frequent re-tendering, and the absence of standardized compliance benchmarks disrupted the timely execution of projects.

Talent Shortage and High R&D Costs:

The industry struggles with a shortage of highly skilled professionals, especially in specialized fields such as avionics and systems engineering. Initiatives like RTX Corp's expansion and the Defence Institute of Advanced Technology (DIAT) are helping bridge the gap by training and hiring skilled workers. Indian defence firms invest

less in R&D compared to global counterparts, with only about 1.2% of revenue allocated to R&D, considerably lower than the global average of 3.4%. (Source: IIFL Securities). However, government initiatives, including increased funding for DRDO and support for academia and private industry, aim to reduce R&D costs and foster innovation.

Domestic Market Limitations:

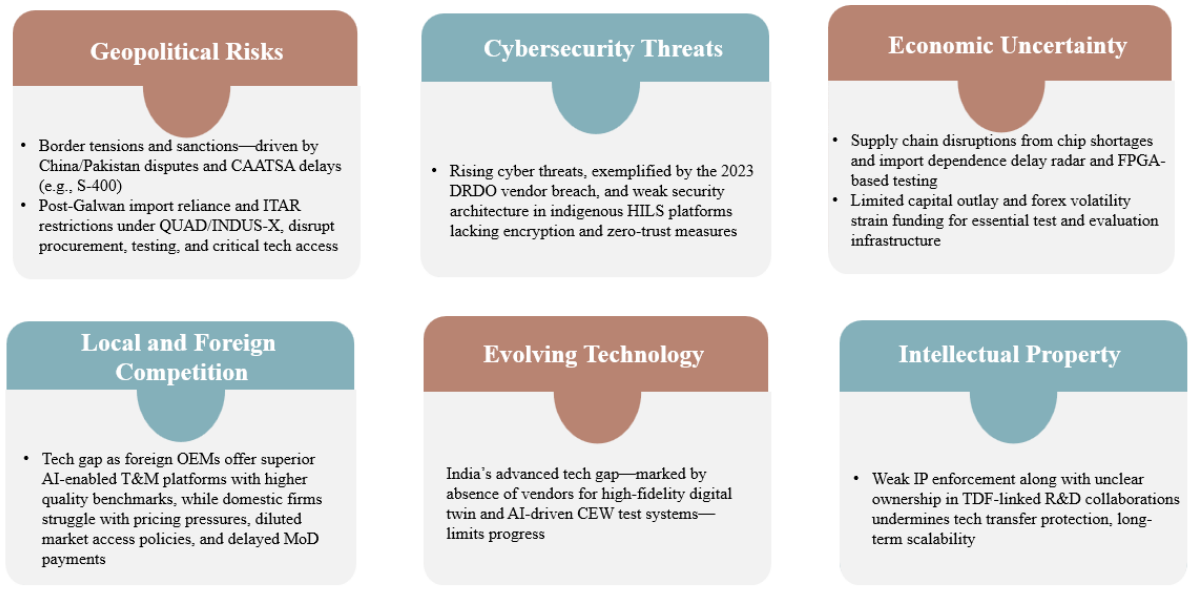
The complexities of obtaining certifications, along with limited opportunities for market entry, restrict the ability of emerging companies to compete and innovate. As a result, the market remains dominated by established players, and India's reliance on foreign suppliers for critical technologies persists, limiting the full development of indigenous capabilities in defence and aerospace sectors.

- The certification process is lengthy and complex, causing significant delays in product introduction.
- Domestic players face difficulty in securing government and defence contracts due to the strong presence of established players.
- Limited access to cutting-edge testing and simulation facilities hampers the ability of new entrants to compete in the market.
- Regulatory red tape and bureaucratic hurdles delay product development, discouraging potential investment.

7.1. Threat & Risks

The rapidly evolving landscape of defence and aerospace technologies presents a complex array of threats and risks, including geopolitical instability, intense competition from both local and international players, growing cybersecurity vulnerabilities, and the rapid pace of technological advancements.

Figure 7-2: Threat and Risks in India's India Test, Measurement, and Simulation Technologies Market



Source: Ken Research Analysis

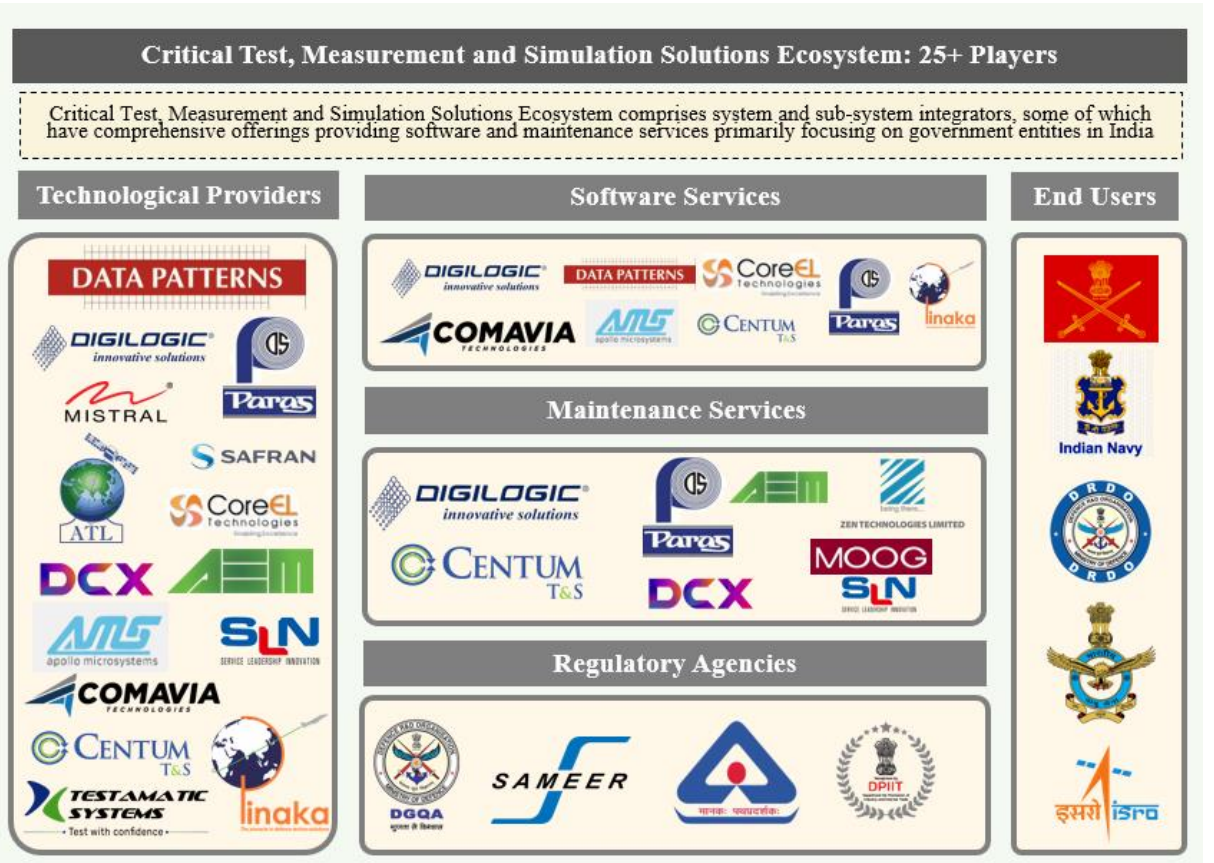
8. Competition Landscape - India Critical Test, Measurement and Simulation Technologies Market

8.1. Major Critical Test, Measurement and Simulation Technologies Suppliers in the Industry

The Critical Test, Measurement, and Simulation Solutions market is fairly consolidated with a certain number of players showing trend towards vertical integration, where players like Data Patterns, Digilogic Systems Limited, ComAvia, and Centum Electronics offer end-to-end solutions. These companies are active across the value chain — from providing core technological solutions and hardware platforms to delivering software development, testing, and maintenance support services. Their comprehensive capabilities across avionics systems, radar testing, automated test equipment, and simulation testing, as reflected in the heat map, enable them to serve critical defence and space sectors like the Defence, Aerospace and DRDO/ISRO efficiently. Their ability to handle both system development and post-deployment support gives them a competitive edge and secures long-term strategic partnerships with government entities.

Within the **Critical Test, Maintenance, and Simulation Solutions ecosystem**, **Digilogic Systems Limited** emerges as a uniquely positioned player showcasing strong **presence** across **technological solutions (hardware)**, **software**, **and maintenance** services.

Figure 8-1: Ecosystem of Key Players in India Critical Test, Measurement and Simulation Technologies Market



Source: Ken Research Analysis and Companies' Websites

Positioning of Digilogic Systems Limited in the Indian Test, Measurement, and Simulation Technologies Space:

"Digilogic Systems Limited has positioned itself as niche player serving as one stop solution for critical testing, measurement and simulation solutions, its software and maintenance services"

The Critical Test, Measurement and Simulation Technologies market in India comprises approximately 25–30 system integrators/ strategic electronic component manufacturers, including both large-scale enterprises (revenue of over INR 1,000 cr) and small (revenue of less than INR 250 cr) to mid-sized companies (revenue of 250 Cr-1000 cr). The landscape features a mix of players —offering a wide range of hardware/technological solutions—and other players that specialize in integrated software solutions and maintenance services for defence and aerospace systems and subsystems.

Within the SME segment, around 15 companies operate across both horizontal (portfolio breadth presence across all segments) and vertical business models (portfolio presence in less than 2 categories). These players maintain manufacturing capabilities for one or more specialized product categories such as avionic test systems, automated test equipment (ATE), radar test & evaluation systems, checkout systems, actuator test systems, and digital receiver systems.

A niche group of 5 companies stands out in the market as integrated solution providers spanning three key service lines: hardware, software, and maintenance services. Prominent names in this segment include Digilogic Systems Limited, Centum Electronics Ltd., Paras Defence and Space Technologies Ltd, SLN Technologies Pvt. Ltd., and Safran Data Systems India Pvt. Ltd.

Among many system integrators that treat each prototype as a standalone exercise, Niche players such as Digilogic Systems Limited has formalized its prototyping software and algorithms into a maintainable library of reusable software IPs. These software IPs enables players to win testing and maintenance orders with reduced non-engineering expense and shortening the path from proposal to deployment. With this positioning, Digilogic Systems Limited has the market share of 1.5% in Critical testing, measurement and simulation technologies market in India in FY'2025.

Niche players stands out by offering a **full-spectrum capability**, from developing core automated and avionics test systems to delivering customized software solutions and long-term maintenance support. This end-to-end service capability allows Digilogic Systems Limited to seamlessly address client needs across the entire lifecycle of critical defence and aerospace projects, particularly in high-stakes environments like the Indian Armed Forces and DRDO/ISRO initiatives.

8.2. Cross-Comparison of Peers in India Critical Test, Measurement and Simulation Technologies Market

Some of the key competitors competing in the country's Critical Test, Measurement and Simulation Technologies space are benchmarked on the basis of operational and financial parameters as follows:

Table 8-1: Cross-Comparison of Peers in India Critical Test, Measurement and Simulation Technologies Market on basis of Operational Parameters, As on January 2026 (1/5)

Players	HQ	Geographical Presence (India)	Founded Year	Key Product Offerings
Ananth Technologies Private Limited	Hyderabad, Telangana	Hyderabad, Bengaluru, Trivandrum	1992	• Telemetry, Tracking, and Command (TTC) Units • Digital and RF/Microwave Systems • Simulators and Automatic Checkout Systems • Digital IF (Intermediate Frequency) Processors and Waveform Generators
Apollo Micro System Limited	Hyderabad, Telangana	Hyderabad	1985	• Integrated Avionics Modules • Missile Hardware Simulators • Launcher Controllers • Turret Control Units • Ruggedized COTS-embedded hardware and software solutions • Cockpit Displays • PV2 Junction Boxes and Steadi Copter systems
Data Patterns (India) Limited	Chennai, Tamil Nadu	Chennai, Bengaluru, Hyderabad, New Delhi, Trivandrum	1985	• Precision Approach & Weather Radars • Electronic Warfare Systems • Avionics Systems & Cockpit Displays • Automated Test Equipment (ATE) • RF & Microwave Products • Naval and Communication Systems • Identify Friend or Foe (IFF) Solutions • Software Development and Embedded Systems Services
Zen Technologies Limited	Hyderabad, Telangana	Hyderabad, Kondapur, Rangareddy,	1993	• Combat Training Solutions • Counter-Drone Solutions • Combat Training Centre (CTC)
DCX Systems Limited	Bengaluru, Karnataka	Bengaluru	2011	• Cable & Wire Harness Assemblies • Backplane Assemblies • Printed Circuit Board Assemblies (PCBA) • Electro-Mechanical Box Assemblies • System Integration Platforms • Kitting Solutions • Environmental Stress Screening & Test Systems
Digilogic Systems Limited	Hyderabad, Telangana	Bengaluru, Hyderabad	2007	• Avionic Test Systems • Checkout Systems • Actuator Test System • Radar Test and Evaluation System

Players	HQ	Geographical Presence (India)	Founded Year	Key Product Offerings
				• Automated Test Equipments • Digital Receiver System

Source: Ken Research Analysis, Companies' Websites, Annual Reports

Table 8-2: Cross-Comparison of Peers in India Critical Test, Measurement and Simulation Technologies Market on basis of Strengths and Weaknesses, As on January 2026 (2/5)

Players	Strengths	Weaknesses
Ananth Technologies Private Limited	• Deep expertise in indigenous hardware: HDR+I9S, EIMT & MISE tools for PSLV telemetry, tracking & harness integration • Proven proprietary platforms (Antaris cloud, SatOS, XDLinx) that cut satellite integration time and cost	• High engineering overhead can inflate project economics
Apollo Micro System Limited	• End-to-end IV&V and real-time embedded-OS capabilities ensure early defect catch and compliance • Advanced defence solutions (VMCSDS, SDUHS) demonstrate cutting-edge algorithmic strength in radar & torpedo guidance	• Solutions are highly customized, slowing broader scalability
Data Patterns (India) Limited	• Broad indigenous systems portfolio (Precision Approach Radar, Nano Satellite, EW suite) across platforms • DP-CHRONO IDE accelerates embedded-software development with compliance (DO-178B) and rich debugging/profiling toolchain	• Engineering-first approach leads to longer development cycles • Limited plug-and-play IP offerings for non-defence clients
Zen Technologies Limited	• Portfolio of AI-driven defence products (Prahasta, Hawkeye, Barbarik, AI drones) leveraging LIDAR and reinforcement-learning algorithms • Strong software autonomy capabilities for real-time targeting and surveillance	• High R&D intensity impacts margin and time-to-market
DCX Systems Limited	• Core strength in cable/harness manufacturing and full-system integration (PCBA, RF, power & data cables) for EW and comms systems • Established supply-chain relationships in defence electronics	• Primarily hardware-centric, with minimal value uplift from software offerings
Digilogic Systems Limited	• Strength in modular test and measurement platforms (PXIe/cPCI/LXI) for defence applications, with end-to-end capabilities in design, development, and system integration.	• Limited focus on test and simulation systems limits exposure to end-use defence applications, reducing opportunities for higher-margin, mission-critical system integration.

Players	Strengths	Weaknesses
	• Domain expertise in radar and electronic warfare testing, advanced FPGA/DSP-based signal processing and LabVIEW-driven automation frameworks.	

Source: Ken Research Analysis, Companies' Websites, Annual Reports, News Articles, Companies Announcement

Table 8-3: Cross-Comparison of Peers in India Critical Test, Measurement and Simulation Technologies Market on basis of Recent Contracts, As on January 2026 (3/5)

Players	Recent Contracts
Ananth Technologies Private Limited	• **Nov'24:** Disclosed a ~₹900 crore order book largely from established defence/aerospace counterparties, providing medium-term execution visibility
Apollo Micro System Limited	• **Sept'24:** Apollo Micro Systems Ltd. (AMSL) secured a INR 5.7 crore contract to develop and supply rocket-guided bombs for anti-submarine warfare, integrating subsystems like MINI-MIU, SPU, and Unified Avionics Computer
Data Patterns (India) Limited	• **Feb'25:** At Aero India 2025, Data Patterns unveiled the HAWK I 2700, an indigenously developed radar for the Sukhoi-30MKI, offering a 250 km search range, 200 km tracking range, and electronic jamming capabilities to replace the Russian N011 Bars radar. • **Mar'23:** For BrahMos missile program, company supplied critical components like Fire Control Systems (FCS) for land and air platforms, including the Sukhoi-30. The company also developed checkout systems for missile production testing, enabling significant cost savings through indigenization and adaptability.
Zen Technologies Limited	• **Mar'25:** Received INR 152-crore order from the Indian Ministry of Defence (MoD) to deliver an advanced integrated air defence combat simulator which incorporates high-resolution dome projection, recoil simulation, fire control radar, drone threat simulation, and performance assessment features for advanced training. • **Feb'25:** Launch of the 'Vyom Kavach' anti-drone system with a 20 km range integrates multi-layered detection, RF jamming, and kinetic interceptors, while the airborne killer drone hat features Vertical Takeoff and Landing (VTOL) Platform, autonomous deployment, and AI-powered targeting. • **Sep'23:** Zen Technologies' received order of INR 227.65 crore for anti-drone system, that integrates RF detection, video tracking, radar, data fusion, RF jamming, and hard kill mechanisms like machine guns and net catchers to counter drone threats.

Players	Recent Contracts
DCX Systems Limited	• **April '25:** Israel Aerospace Industries (IAI) and DCX Systems have formed a joint venture, ELTX, to co-develop and manufacture advanced defence systems—such as airborne radars, ground-based platforms, and electronic warfare technologies—for the Indian Armed Forces. • **Sept 23:** DCX Systems, via its subsidiary RASPL, has expanded in-house integration in defence and aerospace, covering electronic warfare, radar, communication, and missile guidance subsystems. RASPL offers electronics manufacturing, Printed Circuit Board (PCB) assembly, and system integration, and is licensed to produce and test microwave submodules for missile command units.
Digilogic Systems Limited	• **Jun'24:** Digilogic Systems Limited partnered with **SPHEREA France** to develop and deliver advanced test and simulation solutions for the defence sector, particularly targeting DRDO, HAL, and various Public Sector Undertakings (PSUs). • **Oct'23:** Digilogic Systems Limited partnered with Poland-based SATIM for the co-development of a Synthetic Aperture Radar (SAR) Environment Simulator.

Source: Ken Research Analysis, Companies' Websites, Annual Reports, News Articles, Companies Announcement

Table 8-4: Cross-Comparison of Major Key Peers in India Critical Test, Measurement and Simulation Technologies Market on basis of Financial Parameters, FY'23 – FY'26 (H1) (4/5)

Company	Financial Year	Revenue From Operations (INR Cr)	Y-o-Y Growth in Revenue from Ops. (%)	EBITDA (INR Cr)	EBIDTA Margin (%)	PAT (INR Cr)	PAT Margins (%)
Ananth Technologies Private Limited	FY'25	N/A	N/A	N/A	N/A	N/A	N/A
	FY'24	272.45	25.28%	69.57	25.53%	44.12	20.29%
	FY'23	217.47	6.58%	54.78	25.19%	33.21	16.28%
Apollo Micro System Limited	FY'26 (H1)	358.85	N/A	95.79	26.53%	47.71	13.22%
	FY'25	562.07	(32.32%)	132.10	23.50%	56.36	10.03%
	FY'24	371.63	24.91%	85.68	23.06%	31.10	8.37%
	FY'23	297.53	22.34%	64.92	21.82%	18.74	6.30%
Data Patterns (India) Limited	FY'26 (H1)	406.79	N/A	115.99	27.40%	74.69	17.65%
	FY'25	708.35	36.27%	321.34	45.36%	221.81	31.31%
	FY'24	519.80	14.63%	267.65	51.49%	181.69	34.95%
	FY'23	453.45	45.87%	181.03	39.92%	124.00	27.35%
Zen Technologies Limited	FY'26 (H1)	331.79	N/A	174.09	45.95%	114.98	30.35%
	FY'25	973.64	12.87%	431.90	44.36%	299.33	30.74%
	FY'24	439.85	100.98%	195.70	44.49%	129.50	29.44%
	FY'23	218.85	213.76%	79.87	36.50%	49.97	22.83%
DCX Systems Limited	FY'26 (H1)	415.02	N/A	14.79	3.35%	(4.98)	(1.13%)
	FY'25	1,083.67	(76.56%)	84.64	7.81%	38.87	3.59%
	FY'24	1,423.58	13.56%	129.54	9.10%	80.11	5.63%
	FY'23	1,253.63	13.73%	113.22	9.03%	69.66	5.56%

Digilogic Systems Limited	FY'26 (H1)	18.18	N/A	3.34	18.39%	1.61	8.87%
	FY'25	72.06	39.76%	13.40	18.60%	8.11	11.26%
	FY'24	51.56	(7.87%)	5.45	10.56%	2.40	4.65%
	FY'23	55.96	39.39%	5.28	9.43%	2.18	3.89%

Source: Ken Research Analysis, Companies' Websites, Annual Reports, Proprietary Databases
Note 1: FY'25 indicates financial year which starts from 1st April 2024 and ends on 31st March 2025
Note 3: N/A indicates not available; annual filling not reported to MCA.
Note 4: Financial data for Apollo Micro System Limited, Data Patterns (India) Limited, Zen Technologies Limited, DCX Systems Limited, DCX Systems Limited, Digilogic Systems Limited have been sourced directly from the annual report; for Ananth Technologies Private Limited the data has been computed as per the formula mentioned in the KPI Certificate of Digilogic Systems Limited.
Note 5: FY'25 data for Ananth Technologies Private Limited is not available in public domain as of September 2025
Note 6: FY'26 (H1) indicates half-yearly data for FY'26
Note 7: FY'26 (H1) figures for Data Patterns are presented on a standalone basis

Table 8-5: Cross-Comparison of Major Key Peers in India Critical Test, Measurement and Simulation Technologies Market on basis of Financial Parameters, FY'23 – FY'26 (H1) (5/5)

Company	Financial Year	Return on Net Worth (%)	ROCE (%)	Debt-Equity Ratio (times)	Working Capital Cycle (Days)*	Interest Coverage Ratio (times)
Ananth Technologies Private Limited	FY'25	N/A	N/A	N/A	N/A	N/A
	FY'24	7.55%	9.17%	0.50	298.62	9.53
	FY'23	6.09%	7.54%	0.51	248.99	5.71
Apollo Micro System Limited	FY'26 (H1)	5.66%	6.48%	0.34	N/A	3.78
	FY'25	10.02%	12.44%	0.52	381.35	3.31
	FY'24	6.90%	10.25%	0.55	482.14	2.46
	FY'23	5.33%	9.75%	0.37	434.70	2.29
Data Patterns (India) Limited	FY'26 (H1)	4.90%	6.78%	0.03	N/A	18.91
	FY'25	15.66%	20.38%	0.22	449.58	25.45
	FY'24	14.59%	18.99%	0.28	614.73	26.96
	FY'23	14.24%	14.78%	0.23	428.12	22.30
Zen Technologies Limited	FY'26 (H1)	6.43%	8.96%	0.04	N/A	29.95
	FY'25	27.85%	23.26%	0.18	242.57	56.67
	FY'24	33.87%	40.36%	0.61	257.06	82.64
	FY'23	16.68%	22.55%	0.43	214.98	18.54
DCX Systems Limited	FY'26 (H1)	(0.35%)	0.48%	0.29	N/A	4.21
	FY'25	3.14%	5.18%	0.38	140.04	3.08
	FY'24	9.70%	8.78%	0.64	109.52	4.17
	FY'23	21.45%	10.35%	1.15	59.70	4.35
Digilogic Systems Limited	FY'26 (H1)	4.71%	4.71%	0.63	212.00	6.59
	FY'25	34.57%	34.27%	0.40	113.00	12.00
	FY'24	19.53%	19.10%	0.60	34.00	3.80
	FY'23	21.76%	20.68%	0.98	26.00	3.93

Source: Ken Research Analysis, Companies' Websites, Annual Reports, Proprietary Databases

**Note 1: For the working capital cycle (in days), only inventory, debtors, and creditors have been considered; no other liabilities have been included.*

Note 2: FY'25 indicates financial year which starts from 1st April 2024 and ends on 31st March 2025

Note 3: Interest Coverage Ratio = Earnings Before Interest and Taxes / Interest Expense on Borrowings

Note 4: N/A indicates information Not Available

Note 5: Financial data for Apollo Micro System Limited, Data Patterns (India) Limited, Zen Technologies Limited, DCX Systems Limited, DCX Systems Limited, Digilogic Systems Limited have been sourced directly from the annual report; for Ananth Technologies Private Limited the data has been computed as per the formula mentioned in the KPI Certificate of Digilogic Systems Limited.

Note 6: FY'25 data for Ananth Technologies Private Limited is not available in public domain as of September 2025

Note 7: FY'26 (H1) indicates half-yearly data for FY'26

Note 8: FY'26 (H1) figures for Data Patterns are presented on a standalone basis

9. Conclusion – Way Forward

The India Critical Test, Measurement, and Simulation) Technologies market is on an accelerated growth path, to expanding from INR 4,799 crore in FY'25 to INR 9,174 crore by FY'30, at a CAGR of 13.8%. This momentum is driven by the Government's strong push for defence indigenization, rising R&D investment, and the modernization of validation infrastructure across DRDO, ISRO, and the Armed Forces.

Among the key segments, Avionic Test Systems (ATS) and Automated Test Equipment (ATE) will remain as the key growth segments due to their sizeable markets owing to growing deployment in indigenous aircraft programs, electronics manufacturing, and advanced radar systems.

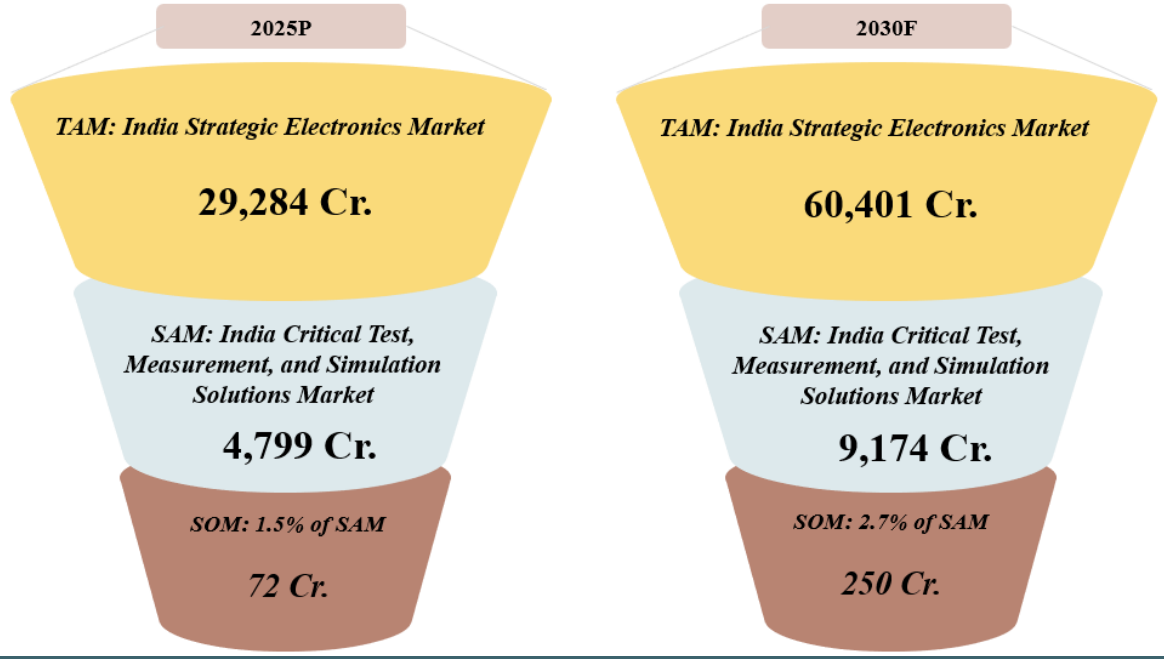
As the Indian defence sector modernizes its testing infrastructure and shifts towards automated and integrated test environments, the demand for advanced and customized TMS solutions is expected to rise sharply —offering lucrative opportunity for specialized solution providers like Digilogic Systems Limited. Digilogic Systems Limited stands out as an integrated solution provider in TMS space.

As of FY'25, Digilogic Systems Limited addresses a Serviceable Obtainable Market (SOM) of INR 72 crore, contributing ~1.5% of India's serviceable TMS market. By FY'30, this opportunity is expected to grow to INR 250 crore, supported by its scalable technology platforms and expanding demand for embedded testing, simulation environments, and digital validation tools.

To further strengthen its capabilities and cater to this rising demand, Digilogic Systems Limited is planning to set up a dedicated facility for the manufacturing of electronic sub-systems and environmental testing. This will enable the company to offer comprehensive in-house design-to-validation solutions, support faster product development cycles, and meet the high-reliability requirements of mission-critical defence and aerospace programs.

With its domain expertise, agile development capabilities, and deep government linkages, Digilogic Systems Limited is well-positioned to emerge as a core enabler in India's strategic electronics value chain, supporting both domestic needs and global defence collaborations.

Figure 9-1: Target Market Opportunity for Digilogic Systems Limited, 2025P & 2030F



Source: Ken Research Analysis
TAM: Target addressable market; SAM: Serviceable addressable market and SOM: Serviceable obtainable market

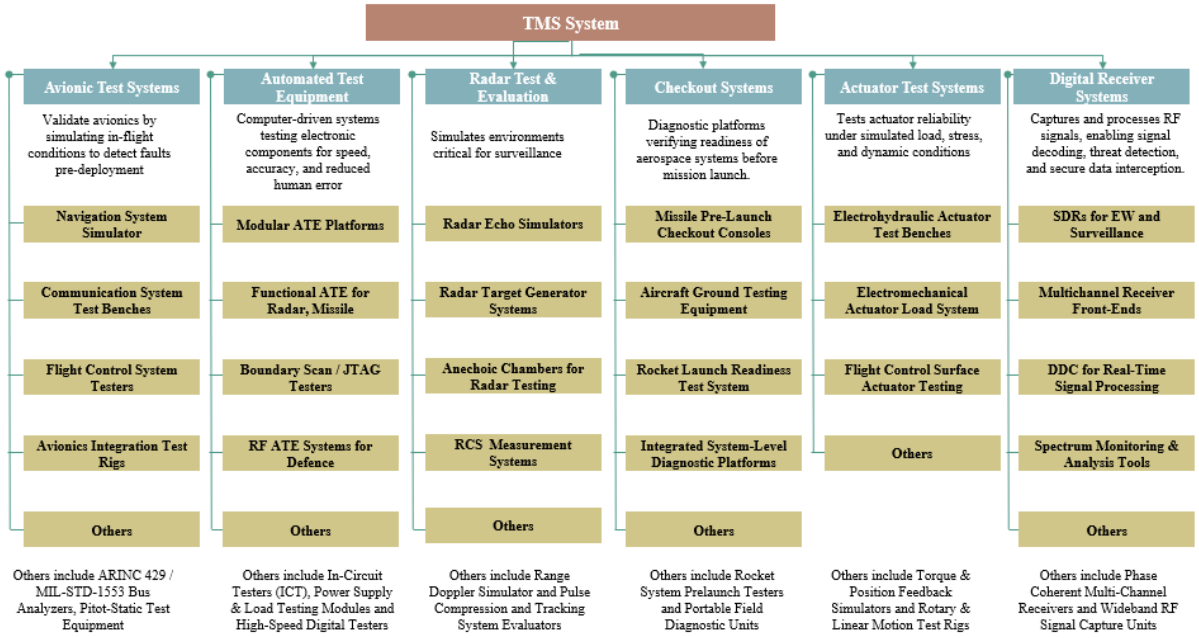
10.Research Methodology

10.1. Market Definitions

Critical Test, Measurement, & Simulation Technologies Market Size: Critical Test, Measurement, & Simulation Technologies Market is the sum of all the respective technological solution sold in India, encapsulating the different types (Avionic Test Systems, Automated Test Equipment (ATE), Radar Test & Evaluation Systems, Checkout Systems, Actuator Test Systems, Digital Receiver Systems).

The market value is calculated in INR Crores and refers to the industry revenue generated from sale of Critical Test, Measurement, & Simulation Technologies manufactured domestic, and imported within the country.

This market covers Critical Test, Measurement, & Simulation Technologies demand coming from India's defence aerospace sectors, ISRO and DRDO.



10.2. ABBREVIATIONS

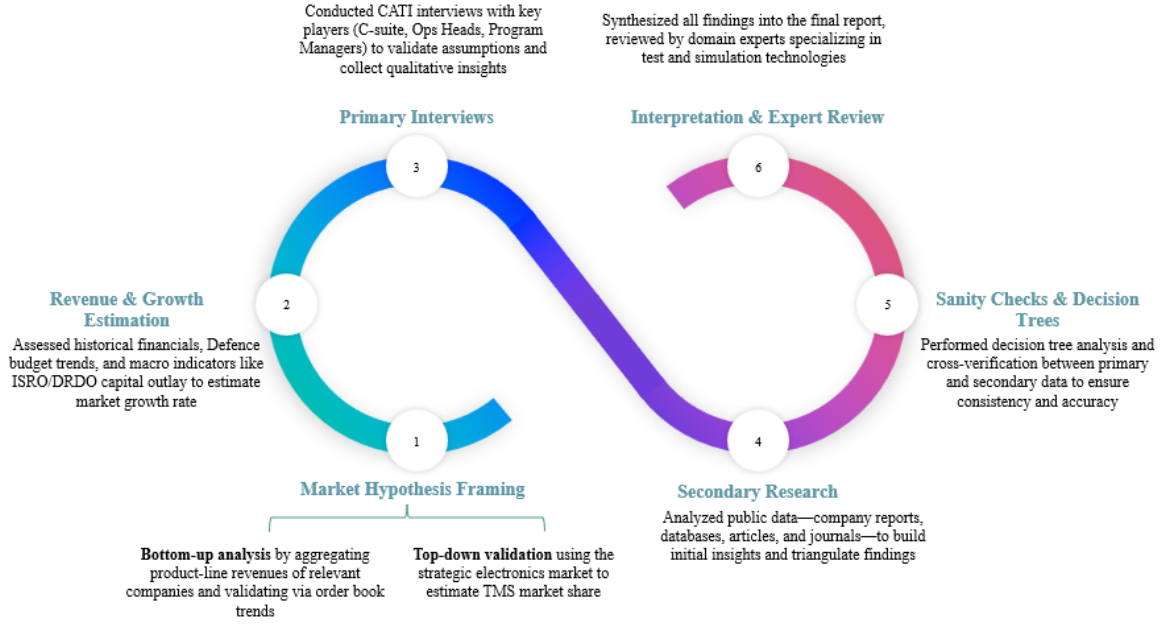
A&D – Aerospace & Defence
ADITI - Acing Development of Innovative Technologies with iDEX
AI – Artificial Intelligence
AMCA – Advance Medium Combat Aircraft
AQA – Automated Quality Assurance
ARINC429 – Aeronautical Radio INC 429
ATAGS - Advanced Towed Artillery Guns
ATE – Automated Test Equipment
ATP – Acceptance Test Procedure
Bn – Billion
CAATSA - Countering America's Adversaries Through Sanctions Act
CACPL - Chakradhara Aerospace and Cargo Private Limited
CAGR - Compound Annual Growth Rate
CEMILAC - Centre for Military Airworthiness & Certification
CEW – Combat Engineering Work
COTS - Commercial Off-the-Shelf
CPI - Consumer Price Index
CPI – Consumer Price Index
Cr – Crores
CTC – Combat Training Centre
CY – Calendar Year
D1 – Demonstration 1
DAP – Defence Acquisition Procedure
DC-DC Converters – Direct Current to Direct Current Converters
Def-Tech – Defence Technology
DDC – Data Device Corporation
DIAT – Defence Institute of Advanced Technology
DOORS - Dynamic Object-Oriented Requirements System
DP-CHRONO - Data Patterns – Chronological Workbench
DPIIT – Department for Promotion of Industry and Internal Trade
DPSUs – Defence Public Sector Undertakings
DRDO – Defence Research and Development Organisation
DRHP - Draft Red Herring Prospectus
DSP – Digital Signal Processing
DTIS – Defence Testing & Integration System
EBITDA – Earning Before Interest, Tax, Depreciation, and Amortisation
ECM – Electronic Counter Measure
EIMT – Electronic Instrumentation and Measurement Technology
ELTX – Electronics
EO/IR – Electro-Optical / Infrared senso
EU – End User
EW – Electronic Warfare
FCS – Fire Control System
FDI - Foreign Direct Investment
FPGA – Field Programmable Gate Array
FY - Fiscal Year
GCC - GNU Compiler Collection
GDP - Gross Domestic Product

GOI - Government of India
HDR - High Dynamic Range
HIL – Hardware- in-Loop
HILS –-in-Loop Simulation
HQ – Head Quarter
I9S – Intelligent 9 Sensor/System
IADCS – Integrated Air Defence Combat Simulator
IAI – Israel Aerospace Industries
IB - Investment Bank
IDDM – Indigenous Design, Development and Manufacturing
IDE – Integrated Development Environment
iDEX – Innovation for Defence Excellence
IF – Intermediate Frequency
IFA – Independent Functional Audit
IIDM - Indigenously Designed, Developed and Manufactured
IIF – Identify Friend or Foe
IMF – International Monetary Fund
INR – Indian Rupees
IoT - Internet of Things
IP – Intellectual Property
IPO - Initial Public Offering
ISRO – Indian Space Research Organisation
ITAR - International Traffic in Arms Regulations
IV&V – Independent Verification & Validation
JTAG – Joint Test Action Group
LCA – Light Combat Aircraft
LIDAR – Light Detection and Ranging
LRU – Line Replaceable Unit
M&A - Mergers and Acquisitions
MATLAB – Matrix Laboratory
MHz – Megahertz
MINI-MIU – Miniature Missile Interface Unit
MISE – Mission Integration and System Engineering
Mk2 – Mark 2
Mn- Million
MoD – Ministry of Defence
MoSPI – Ministry of Statistics Programme Implementation
MoU – Memorandum of Understanding
MRO – Maintenance, Repair, and Overhaul
MSMEs – Micro, Small, and Medium Enterprise
NavIC – Navigation with Indian Constellation
OEMs – Original Equipment Manufactures
PAT – Profit After Tax
PCB – Printed Circuit Board
PCBA – Printed Circuit Board Assembly
PLI - Production Linked Incentive
PSLV – Polar Satellite Launch Vehicle
PSU – Public Sector Undertaking
Q1 – Quarter 1
QA - Quality Assurance

QTP – Qualification Test Procedure
R&D - Research and Development
R&M - Repair and Maintenance
RASPL – Rafael Advanced Systems Private Limited
RBI – Reserve Bank of India
RCS – Radar Cross Section
RF – Radio Frequency
ROCE – Return on Capital Employed
ROI - Return on Investment
RoW – Rest of the World
RTOS – Real-Time Operation System
SatOS – Satellite Operation System
SDUHS - Software Defined Universal Homing Systems
SIPRI – Stockholm International Peace Research Institute
SpaDeX – Space Docking Experience
SPU – Signal Processing Unit
T&M – Test & Measurement
TDF – Technology Development Fund
TDF – Technology Development Fund
TMS – Test, Measurement, and Simulation
Tn – Trillion
TR module – Transmit-Receive Modules
TTC – Telemetry, Tracking, and Command
UAVs - Unmanned Aerial Vehicles
URCWS - Ultralight Remote-Controlled Weapon Station
VMCSDS - Vehicle Mounted Counter Swarm Drone System
VSPU – Video Signal Processor Unit
VTOL – Vertical Takeoff and Landing
Y-o-Y – Year on Year

10.3. MARKET SIZING AND MODELING

CONSOLIDATED RESEARCH APPROACH



Hypothesis Testing: The research team has then conducted computer assisted telephonic interviews (CATIs) with the management of the Test, Measurement, and Simulation Technologies manufacturers such as Centum Electronics Ltd, Paras Defence & Space Ltd, Zen Technologies Limited, Data Patterns India Ltd, Tata Elxis, Pinaka Aerospace Ltd, Safran Data Systems India, CoreEL Technologies, Testamatic Systems Private Limited, Collins Aerospace and others (C-level executives, Regional Heads, Project Leads, Operations Managers, Business Development Managers, Head of Operations, Program Manager, Head of Embedded and EDA Business, and others) to get their insights on the market and to seek justification to the hypothesis framed by the team.

Table 10-1: Sample Composition Table by Stakeholders and Respondents in (%)

By Stakeholders	Sample Size: ~40 Respondents	Description
Test, Measurement, and Simulation Technologies Manufacturers	55%	Regional Heads, Project Leads, Operations Managers, Business Development Managers, Head of Operations, Program Manager, Strategy Heads, CXOs and others
End-Use Industries	30%	Procurement Heads, Program Managers, Strategy Managers, Operations Heads and Managers, Distribution Heads and others
Industry Experts	15%	Respondents working in regulatory authorities, Industry Consultants, Seasoned Professionals and others

Source: Ken Research Analysis

LIMITATIONS

- The operating and financial performance for each player has been compiled by reaching out to the sales head/program managers of each company. It can be the case that the sales head/program managers might

be bullish over the numbers. However, to avoid this limitation we have cross checked and revalidated the data from other sources.

- Growth rate in future is estimated on the basis of the growth rate of test, measurement, and simulation technologies demand in the industry and validated through interviews with industry experts from different segments of the industry; who are also employees of these companies and their estimate may not be exact and they may be bullish with the numbers. The sampling technique has limitation to extrapolate the market hypothesis. Ken Research has used sufficient strata for sample to reduce the significance level in the model. The significance level should not be more than 5-10%.

CONCLUSION

The expected value of India Test, Measurement, and Simulation Technologies Market is determined by using weighted average of the output of primary research, secondary research, expert opinions and subjective judgment. The weighted average method enables us to filter out the possible noise in each computation method and helps us to derive the best possible future projections.