

# **Space On-board Computing Platform Market Forecasts to 2030 – Global Analysis by Platform Type (Nano Satellite, Micro satellite, Small satellite, Medium satellite, Large satellite and Spacecraft), Communication Frequency, Orbit, Functionality, Technology, Application and By Geography**

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## **Abstracts**

According to Statistics MRC, the Global Space On-board Computing Platform Market is accounted for \$1.76 billion in 2024 and is expected to reach \$4.07 billion by 2030 growing at a CAGR of 14.9% during the forecast period. A Space On-board Computing Platform is a fully integrated system that handles data processing, control, and communication for spacecraft. It consists of a number of hardware and software elements that allow spaceship activities to be processed, monitored, and managed in real time. These systems handle tasks including navigation, cargo management, communications, and environmental control by having CPUs, memory, and interfaces. Space on-board computer platforms are frequently radiation-hardened and energy-efficient, designed to endure harsh space environments including radiation, temperature changes, and microgravity.

Market Dynamics:

Driver:

Increasing Space Exploration Missions

The rising number of space exploration missions raises the demand for space on-board computer solutions. Advanced, high-performance computer systems are becoming

more and more necessary as missions increase to encompass satellite constellations, Mars probes, and lunar exploration. These systems need more processing power and resilience to handle crucial functions including communication, data processing, and navigation. The need for longer-duration and more complicated missions propels advancements in computer technology, which in turn propels the market expansion for dependable, effective, and compact on-board systems.

Restraint:

### High Cost of Development and Deployment

The high development and deployment costs stifle the expansion of the space on-board computer platform business, limiting access for smaller enterprises and budding space initiatives. Financial obstacles are brought about by costly research, design, and production procedures, as well as the requirement for specific materials and stringent testing. This can restrict the number of space missions and hinder the adoption of new computer technology, particularly for initiatives with tight budgets, thus it limits market expansion.

Opportunity:

### Technological Advancements

Technological improvements have a substantial influence on the Space On-board Computing Platform, increasing computing power, energy efficiency, and downsizing. More dependable and effective systems for space missions are made possible by advancements in radiation-hardened processors, high-performance computing, and low-power designs. Smaller, lighter, and more capable platforms are made possible by these developments, which encourage their use in more complicated space applications. The potential of on-board computers in satellites, probes is further increased by advancements in data processing that allow for real-time decision-making.

Threat:

### Complexity and Reliability Challenges

The complexity and reliability challenges of space on-board computing platforms significantly hinder market growth by increasing development costs and extending design timelines. Ensuring high performance in extreme space conditions, such as

radiation exposure and temperature variations, requires advanced, costly technologies. These reliability concerns also demand extensive testing, which can delay deployment. Consequently, the need for highly specialized, durable systems limits accessibility and increases the overall cost of space missions.

#### Covid-19 Impact:

The COVID-19 pandemic temporarily disrupted the Space On-board Computing Platform market by delaying satellite launches, supply chain issues, and halting manufacturing processes. However, it also accelerated the adoption of remote monitoring and satellite-based communication technologies. As space missions resumed, there was an increased emphasis on cost-effective, high-performance computing solutions for satellite operations, boosting long-term demand for advanced on-board computing platforms in space exploration and communication sectors.

The scientific research segment is expected to be the largest during the forecast period

The scientific research segment is expected to be the largest during the forecast period because research into new materials, algorithms, and architectures enhances the performance, reliability, and miniaturization of on-board computing platforms, making them more suitable for space missions. Additionally, scientific advancements in artificial intelligence, machine learning, and autonomous systems further improve the capabilities of these platforms, enabling more complex and efficient space exploration and satellite operations.

The payload processing segment is expected to have the highest CAGR during the forecast period

The payload processing segment is expected to have the highest CAGR during the forecast period due to demand for advanced computing systems capable of handling complex data from scientific instruments, sensors, and communication payloads. As space missions expand to include high-resolution imaging, Earth observation, and scientific research, the need for powerful, efficient, and reliable processing platforms grows. These systems enable real-time data analysis and optimize payload performance, fostering the adoption of sophisticated on-board computing technologies.

#### Region with largest share:

North America is projected to hold the largest market share during the forecast period

due to growing demand for advanced satellite communication, Earth observation, and defence applications further propels the market. Technological advancements in radiation-hardened processors, miniaturization, and energy efficiency enhance mission capabilities. Additionally, the rise of private space companies and commercial satellite launches contributes to the expanding adoption of space on-board computing platforms in the region.

Region with highest CAGR:

Asia Pacific is projected to witness the highest CAGR over the forecast period owing to increasing space exploration activities, satellite launches, and advancements in communication and Earth observation systems. The region's growing investment in space infrastructure, coupled with the demand for high-performance, reliable, and energy-efficient computing solutions, propels market growth. Additionally, the rise of private space ventures and government initiatives supporting space technology development further boosts the adoption.

Key players in the market

Some of the key players in Space On-board Computing Platform market include Airbus, BAE Systems, Ball Corporation, Blue Canyon Technologies, Boeing, General Dynamics Mission Systems Inc., Hewlett Packard Enterprise Development LP, Honeywell International Inc., L3Harris Technologies, Inc., Lockheed Martin Corporation, Maxar Technologies, Northrop Grumman, Redwire Corporation, RTX and Teledyne Technologies.

Key Developments:

In December 2024, Honeywell announced the signing of a strategic agreement with Bombardier, to provide advanced technology for current and future Bombardier aircraft in avionics, propulsion and satellite communications technologies.

In October 2024, Honeywell and Google Cloud announced a unique collaboration connecting artificial intelligence (AI) agents with assets, people and processes to accelerate safer, autonomous operations for the industrial sector.

In September 2022, Honeywell Launched First Integrated Aspirating Smoke Detection And Indoor Air Quality Monitoring System. Integrates early warning smoke detection and advanced IAQ parameter monitoring into single system to help identify

environmental concerns before they become problems.

#### Platform Types Covered:

Nano Satellite

Micro Satellite

Small Satellite

Medium Satellite

Large Satellite

Spacecraft

#### Communication Frequencies Covered:

X-band

S-band

K-band

UHF/VHF Band

#### Orbits Covered:

Low Earth Orbit (LEO)

Medium Earth Orbit (MEO)

Geostationary Earth Orbit (GEO)

#### Functionalities Covered:

Attitude and Orbit Control System (AOCS)

Data Handling and Processing

Payload Processing

Command and Control Systems

Technologies Covered:

Radiation-Hardened Computing Platforms

Radiation-Tolerant Computing Platforms

Applications Covered:

Earth Observation

Telecommunication

Navigation and Positioning

Scientific Research

Defense and Surveillance

Other Applications

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2022, 2023, 2024, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

## Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

## Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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