TROY TECHNICAL

SPACE INDUSTRY
WEEKLY REPORT

November 14 - November 20, 2026 | Issue 2026-W46

Mission evidence, launch economics, resilient supply and regulatory access

11	10
ANALYZED ARTICLES	PRIORITY THEMES

Issued 2026-11-20 | English edition | fixed approved cover artwork



Space Industry: the boundary moved from isolated claims to qualification evidence

11 English articles were reviewed independently from the Japanese edition. Ten themes are retained for management decisions.

SIGNAL 01 | COMPONENTS

LIDE Nanosatellite: Tyvak's 5G NTN In-Orbit Test and TIDE Roadmap

Tyvak International has successfully completed the LIDE (LIve DEmonstration) mission, validating bidirectional 5G communication between a LEO nanosatellite and ground terminals.

SIGNAL 02 | SPACECRAFT

TBIRD Laser Link: 200 Gbps Space-to-Ground Specs and Design

The TBIRD payload achieved a record-breaking 200 gigabit per second optical communication link between a small satellite and a ground station.

SIGNAL 03 | LAUNCH

Q/V-Band Wireless Communication: China's 27Gbps Satellite Link Specs

Researchers in China have achieved a record bidirectional wireless communication rate of 27Gbps in the Q/V-band using high-order modulation.

SIGNAL 04 | ON-ORBIT SERVICE

LeoSpace LCT: Laser Communication Terminal Specs and Roadmap

LeoSpace is developing a Laser Communication Terminal (LCT) for low Earth orbit (LEO) satellites to overcome the bandwidth and security limitations of radio frequency (RF) communications.

DECISION

Focus this week's management attention on mission evidence, launch economics, resilient supply and regulatory access. Move only when the linked evidence can be reproduced under your own operating conditions.

THREE MANAGEMENT MOVES

1. Buyers: separate announced missions from funded, licensed, launched and operational capability.
2. Suppliers: qualify components and services against mission environment, traceability and cadence.
3. Executives: track funding, licensing, launch date, on-orbit performance, capacity and insurance.

EVIDENCE DISCIPLINE

FACT states what the collected English source reports. BUSINESS READ and ACTION are editorial interpretations. UNKNOWN lists information that the source file does not establish. A linked article is not treated as independent confirmation of every claim.

Numbers and evidence anchors that require conditions

5G
A08

SOURCE-BOUND CONDITION
Tyvak International has successfully completed the LIDE (LIve DEmonstration) mission, validating bidirectional 5G communication between a LEO nanosatellite and ground terminals.

200 g
A09

SOURCE-BOUND CONDITION
The TBIRD payload achieved a record-breaking 200 gigabit per second optical communication link between a small satellite and a ground station.

27G
A06

SOURCE-BOUND CONDITION
Researchers in China have achieved a record bidirectional wireless communication rate of 27Gbps in the Q/V-band using high-order modulation.

47km
A05

SOURCE-BOUND CONDITION
The company has successfully demonstrated ground-to-ground transmission over 47km and plans to integrate optical cameras into the "JinjuSat" satellite in 2027.

400G
A11

SOURCE-BOUND CONDITION
By integrating IOWN devices and "optical ground stations," the company seeks to enable 400Gbps data transfers and establish space-based data centers.

HOW TO USE THESE NUMBERS
Each value is shown with the condition stated in the collected English article. Do not compare values across different test methods, device sizes, operating temperatures or commercial stages without normalizing those conditions.

Where the value chain moved

Each stage combines one leading theme and one supporting theme. The report treats handoffs as evidence transfers, not decorative arrows.

1

Components

P01/P06

Tyvak International has successfully completed the LIDE (LIve DEmonstration) mission, validating bidirectional 5G.

2

Spacecraft

P02/P07

The TBIRD payload achieved a record-breaking 200 gigabit per second optical communication link between a small satellite and.

3

Launch

P03/P08

Researchers in China have achieved a record bidirectional wireless communication rate of 27Gbps in the Q/V-band using.

4

On-orbit service

P04/P09

LeoSpace is developing a Laser Communication Terminal (LCT) for low Earth orbit (LEO) satellites to overcome the bandwidth.

5

Downstream market

P05/P10

NTT is developing an optical communication infrastructure to overcome the capacity limits of radio-frequency satellite links.

EVIDENCE REQUIRED AT EACH HANDOFF

Components to Spacecraft	Transfer test conditions, acceptance criteria, failure data, owner and decision date. Recheck funding, licensing, launch date, on-orbit performance, capacity and insurance.
Spacecraft to Launch	Transfer test conditions, acceptance criteria, failure data, owner and decision date. Recheck funding, licensing, launch date, on-orbit performance, capacity and insurance.
Launch to On-orbit service	Transfer test conditions, acceptance criteria, failure data, owner and decision date. Recheck funding, licensing, launch date, on-orbit performance, capacity and insurance.
On-orbit service to Downstream market	Transfer test conditions, acceptance criteria, failure data, owner and decision date. Recheck funding, licensing, launch date, on-orbit performance, capacity and insurance.

COMMON CONTROL POINT

No theme moves to a commercial commitment until a named owner has reproduced the relevant evidence and documented funding, licensing, launch date, on-orbit performance, capacity and insurance.

Priority map: maturity and next decision locus



P01	LIDE Nanosatellite: Tyvak's 5G NTN In-Orbit Test and TIDE Roadmap Business / rules | cue: standards
P02	TBIRD Laser Link: 200 Gbps Space-to-Ground Specs and Design Business / rules | cue: capacity
P03	Q/V-Band Wireless Communication: China's 27Gbps Satellite Link Specs System / adoption | cue: order
P04	LeoSpace LCT: Laser Communication Terminal Specs and Roadmap System / adoption | cue: integrate
P05	NTT Space AIOWN: Optical Satellite Communication Roadmap Business / rules | cue: infrastructure
P06	Space AIOWN: NTT's Optical Satellite Network Roadmap to 2029 Business / rules | cue: infrastructure
P07	SpaceX Starship: First Ship Catch Success in Flight 15 Test System / adoption | cue: launch
P08	Zhuque-3 Rocket: Land-Recovered Engines Ready for Reuse in 2026 Tech / process | cue: no system/business cue
P09	Luminescent Ionic Liquids: High-Efficiency 2026 Material Specs Tech / process | cue: no system/business cue
P10	Canon SPAD Satellite: JAXA-funded orbital demo for 24/7 imaging System / adoption | cue: integrates

REPRODUCIBLE POSITIONING RULE

Horizontal position uses five discrete stages: Research, Prototype, Joint evaluation, Product adoption and Scale. The vertical bands classify the next decision locus: Tech / process, System / adoption, or Business / rules (including supply systems). Article-title cues take precedence; the overview is used only when the title is silent. These are categories, not impact ranks. Bubble diameter reflects the editorial score.

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P01 LIDE Nanosatellite: Tyvak's 5G NTN In-Orbit Test and TIDE Roadmap

A08 | Components | Joint evaluation

2026-11-16

FACT

Tyvak International has successfully completed the LIDE (LIve DEmonstration) mission, validating bidirectional 5G communication between a LEO nanosatellite and ground terminals. The mission confirms the viability of 3GPP standards for Non-Terrestrial Networks (NTN), paving the way for the subsequent TIDE mission starting in 2027.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P01.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 21/25 | MATURITY 3/5 | DECISION LOCUS: BUSINESS / RULES

P02 TBIRD Laser Link: 200 Gbps Space-to-Ground Specs and Design

A09 | Spacecraft | Product adoption

Prior release 2026-11-13

FACT

The TBIRD payload achieved a record-breaking 200 gigabit per second optical communication link between a small satellite and a ground station. By eliminating the gimbal and using the spacecraft's entire body for aiming, the system demonstrated that high-capacity data transfer is possible with a compact, low-complexity hardware footprint.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P02.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 20/25 | MATURITY 4/5 | DECISION LOCUS: BUSINESS / RULES

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P03 Q/V-Band Wireless Communication: China's 27Gbps Satellite Link Specs

A06 | Launch | Product adoption

2026-11-17

FACT

Researchers in China have achieved a record bidirectional wireless communication rate of 27Gbps in the Q/V-band using high-order modulation. This experimental validation supports the development of 6G and next-generation low-earth orbit (LEO) high-throughput satellite internet.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P03.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 20/25 | MATURITY 4/5 | DECISION LOCUS: SYSTEM / ADOPTION

P04 LeoSpace LCT: Laser Communication Terminal Specs and Roadmap

A05 | On-orbit service | Research

2026-11-16

FACT

LeoSpace is developing a Laser Communication Terminal (LCT) for low Earth orbit (LEO) satellites to overcome the bandwidth and security limitations of radio frequency (RF) communications. The company has successfully demonstrated ground-to-ground transmission over 47km and plans to integrate optical cameras into the "JinjuSat" satellite in 2027.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P04.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 19/25 | MATURITY 1/5 | DECISION LOCUS: SYSTEM / ADOPTION

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P05 NTT Space AIOWN: Optical Satellite Communication Roadmap

A11 | Downstream market | Product adoption

2026-11-17

FACT

NTT is developing an optical communication infrastructure to overcome the capacity limits of radio-frequency satellite links. By integrating IOWN devices and "optical ground stations," the company seeks to enable 400Gbps data transfers and establish space-based data centers.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P05.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 19/25 | MATURITY 4/5 | DECISION LOCUS: BUSINESS / RULES

P06 Space AIOWN: NTT's Optical Satellite Network Roadmap to 2029

A03 | Components | Product adoption

2026-11-17

FACT

NTT is expanding its IOWN and AI-native "AIOWN" infrastructure into space to overcome current satellite communication constraints. By utilizing optical laser terminals and the All-Photonics Network (APN), the company intends to enable real-time, high-capacity data transmission with a business rollout planned for 2028-2029.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P06.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 19/25 | MATURITY 4/5 | DECISION LOCUS: BUSINESS / RULES

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P07 SpaceX Starship: First Ship Catch Success in Flight 15 Test

A04 | Spacecraft | Research

2026-11-15

FACT

SpaceX successfully achieved the first-ever return and catch of the Starship spacecraft at the launch tower during its 15th flight test. While the Super Heavy booster was diverted to a sea landing, the recovery of the upper stage marks a critical milestone toward full vehicle reusability.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P07.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 19/25 | MATURITY 1/5 | DECISION LOCUS: SYSTEM / ADOPTION

P08 Zhuque-3 Rocket: Land-Recovered Engines Ready for Reuse in 2026

A07 | Launch | Research

2026-11-20

FACT

LandSpace has completed re-firing tests on all nine engines from the recovered Zhuque-3 Flight 2 rocket, confirming they meet reuse requirements. The tests verified assembly quality and performance consistency, supporting a design goal of at least 20 reuses per first stage.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P08.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 19/25 | MATURITY 1/5 | DECISION LOCUS: TECH / PROCESS

FACT is source-bound. BUSINESS READ, ACTION and UNKNOWN are explicit editorial layers.

P09 Luminescent Ionic Liquids: High-Efficiency 2026 Material Specs

A10 | On-orbit service | Pilot

2026-11-20

FACT

Researchers have developed a fluorescent ionic liquid that remains liquid at room temperature while achieving a fluorescence quantum yield of 80%. The material exhibits extreme durability, resisting decomposition at temperatures exceeding 400°C and maintaining luminescence at 300°C.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P09.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 19/25 | MATURITY 2/5 | DECISION LOCUS: TECH / PROCESS

P10 Canon SPAD Satellite: JAXA-funded orbital demo for 24/7 imaging

A01 | Downstream market | Research

2026-11-17

FACT

Canon has been selected for JAXA's Space Strategy Fund (Phase III) to develop and orbitally demonstrate a high-sensitivity SPAD satellite. The project integrates SPAD image sensors with Canon Electronics' satellite systems to enable high-resolution color Earth observation across all lighting conditions.

WHY IT MATTERS

The decision relevance is mission evidence, launch economics, resilient supply and regulatory access. The signal should be tested at the application and operating-system level, not accepted from a headline alone.

BUSINESS READ

For operating companies, compare the reported change with current qualification, sourcing and product-roadmap assumptions. For suppliers, qualify components and services against mission environment, traceability and cadence.

ACTION

Within 30 days, separate announced missions from funded, licensed, launched and operational capability; record the evidence and owner against P10.

UNKNOWN

Still unproven or incompletely stated: funding, licensing, launch date, on-orbit performance, capacity and insurance.

EDITORIAL SCORE 18/25 | MATURITY 1/5 | DECISION LOCUS: SYSTEM / ADOPTION

Playbook and 0-5 year roadmap

STAKEHOLDER	NOW | 0-30 DAYS	NEXT | 1-12 MONTHS	LATER | 1-5 YEARS
Operating companies	separate announced missions from funded, licensed, launched and operational capability	Run production-like qualification with explicit acceptance and stop criteria.	Build a portfolio and architecture that can absorb technology and supplier changes.
Materials, equipment and technology suppliers	qualify components and services against mission environment, traceability and cadence	Create shared reliability, process-window and failure-analysis data with customers.	Standardize interfaces, traceability, lifecycle support and recovery services.
Trading, investment and legal teams	Map funding, licensing, launch date, on-orbit performance, capacity and insurance.	Contract for capacity, quality, change notice, liability, alternatives and exit.	Diversify regional, technical and customer concentration risk.

ROADMAP

NOW | 0-30 DAYS
Evidence ledger
Owner: Strategy + quality
Deliverable: claim, source, condition, owner

NOW | 0-30 DAYS
Risk screen
Owner: Procurement + legal
Deliverable: unknowns, alternatives, stop

NEXT | 1-12 MONTHS
Joint qualification
Owner: R&D + supplier
Deliverable: process window and failure data

NEXT | 1-12 MONTHS
Commercial gate
Owner: Business + finance
Deliverable: unit economics and capacity

LATER | 1-5 YEARS
Platform strategy
Owner: Executive team
Deliverable: portfolio and interface roadmap

LATER | 1-5 YEARS
Service layer
Owner: Operations + channel
Deliverable: monitoring, maintenance and recovery

GO / NO-GO GATES

GATE	OWNER	REQUIRED EVIDENCE	NO-GO CONDITION
G1 Evidence	**Quality**	Source, test conditions and reproducibility	No traceable evidence
G2 Integration	**R&D**	Interface, process window and failure analysis	Cannot meet system conditions
G3 Commercial	**Business**	Capacity, total cost, contract and alternatives	Economics or supply cannot be supported
G4 Lifecycle	**Operations**	Monitoring, maintenance, change notice and exit	No accountable operating plan

ANALYZED ARTICLES | ITEMS 01-11

Every title and URL is displayed in full. URLs wrap without shortening and remain clickable. A verified-reference label means the translated HTML did not retain its original source URL.

ID	FULL ARTICLE TITLE	FULL SOURCE / VERIFIED REFERENCE URL - CLICKABLE
A01	Canon SPAD Satellite: JAXA-funded orbital demo for 24/7 imaging	https://global.canon/ja/news/2026/20261117.html
A02	Hera Mission: Asteroid Surveying Specs and Planetary Defence Goals	https://www.esa.int/articles/about-us/directorates/operations/space-safety/hera/hera-surveying-asteroids-with-superhuman-vision
A03	Space AIOWN: NTT's Optical Satellite Network Roadmap to 2029	https://eetimes.itmedia.co.jp/ee/articles/2611/17/news057.html
A04	SpaceX Starship: First Ship Catch Success in Flight 15 Test	https://sorae.info/space/20261115-starship-15.html
A05	LeoSpace LCT: Laser Communication Terminal Specs and Roadmap	https://news.jkn.co.kr/post/1097771
A06	Q/V-Band Wireless Communication: China's 27Gbps Satellite Link Specs	https://finance.sina.com.cn/roll/2026-11-17/doc-iniyznqc1741247.shtml
A07	Zhuque-3 Rocket: Land-Recovered Engines Ready for Reuse in 2026	https://www.hkcna.hk/cn/content/s6afff1ebe4b04d9df119f68c.html
A08	LIDE Nanosatellite: Tyvak's 5G NTN In-Orbit Test and TIDE Roadmap	https://www.asdnews.com/news/defense/2026/11/16/tyvak-international-successfully-completes-lide-nanosatellite-mission-following-1st-successful-inorbit-5g-test
A09	TBIRD Laser Link: 200 Gbps Space-to-Ground Specs and Design	https://gcn.com/200-gigabit-laser-link-beamed-tissue/23223/
A10	Luminescent Ionic Liquids: High-Efficiency 2026 Material Specs	https://www.kyoto-u.ac.jp/ja/research-news/2026-11-20
A11	NTT Space AIOWN: Optical Satellite Communication Roadmap	https://k-tai.watch.impress.co.jp/docs/news/2156875.html

SpaceIndustry — Selected Articles

Date: 2026-11-21

Articles: 11

Table of Contents

#01 Canon SPAD Satellite: JAXA-funded orbital demo for 24/7 imaging

#02 Hera Mission: Asteroid Surveying Specs and Planetary Defence Goals

#03 Space AIOWN: NTT's Optical Satellite Network Roadmap to 2029

#04 SpaceX Starship: First Ship Catch Success in Flight 15 Test

#05 LeoSpace LCT: Laser Communication Terminal Specs and Roadmap

#06 Q/V-Band Wireless Communication: China's 27Gbps Satellite Link Specs

#07 Zhuque-3 Rocket: Land-Recovered Engines Ready for Reuse in 2026

#08 LIDE Nanosatellite: Tyvak's 5G NTN In-Orbit Test and TIDE Roadmap

#09 TBIRD Laser Link: 200 Gbps Space-to-Ground Specs and Design

#10 Luminescent Ionic Liquids: High-Efficiency 2026 Material Specs

#11 NTT Space AIOWN: Optical Satellite Communication Roadmap

#01 Canon SPAD Satellite: JAXA-funded orbital demo for 24/7 imaging

Published November 17, 2026　キヤノン　Japan



OVERVIEW

Canon has been selected for JAXA's Space Strategy Fund (Phase III) to develop and orbitally demonstrate a high-sensitivity SPAD satellite. The project integrates SPAD image sensors with Canon Electronics' satellite systems to enable high-resolution color Earth observation across all lighting conditions.

IN DEPTH

Key Findings

Canon's project, "Development and Orbital Demonstration of an Ultra-High Sensitivity SPAD Satellite Capable of High-Resolution Color Imaging Day and Night," has been adopted under JAXA's Space Strategy Fund (Phase III) within the "Optical and Quantum Sensing Technology for Satellite Applications" theme. The initiative focuses on achieving high-resolution optical Earth observation that functions regardless of the time of day.

Technical Details

The satellite will utilize Single Photon Avalanche Diode (SPAD) image sensors, which are capable of measuring individual photons. This technology allows for high-resolution color photography even in low-light environments. Canon aims to achieve the following technical improvements compared to existing satellite-mounted sensors:

- Significant improvement in low-light performance (minimum subject illuminance).
- A dramatic increase in dynamic range, reducing highlights (white-out) and shadows (black-out) in scenes with high contrast.

The development is a group-wide effort: Canon provides the SPAD sensor technology, while Canon Electronics leverages its "CE-SAT" small satellite series expertise to handle the satellite system development. Data processing and utilization will be conducted in collaboration with Tenchijin Co., Ltd. and Marble Visions Co., Ltd. The launch is planned to take place within Japan.

Background & Context

Current optical Earth observation faces challenges in capturing high-resolution details of the ground at night. This project aligns with Canon's "Global Excellent Corporation Group Concept Phase VII" medium-to-long-term management plan, which marks the company's full-scale entry into the space business.

Significance & Outlook

By integrating sensors and satellite development internally, Canon intends to create a competitive Japanese space business. The company plans to expand into diverse business models, including the sale of sensors and camera modules, the provision of satellite development, and the offering of satellite data services. Target application fields include disaster prevention and mitigation, infrastructure monitoring, and maritime surveillance.

Source: https://global.canon/ja/news/2026/20261117.html

Collected: November 21, 2026 | Automated Research System (AI)

#02 Hera Mission: Asteroid Surveying Specs and Planetary Defence Goals

Published November 17, 2026 ESA Europe



OVERVIEW

The European Space Agency's Hera mission is utilizing a suite of multispectral and thermal infrared instruments to survey the Didymos and Dimorphos asteroids. By analyzing surface composition and thermal properties, the mission seeks to quantify the effects of NASA's DART kinetic impact on asteroid structure and mass.

IN DEPTH

Key Findings

The Hera spacecraft has captured high-resolution imagery of the asteroid Didymos from a distance of 28.5 km. Initial observations reveal a spinning-top shape characterized by a dramatic equatorial ridge, boulder-rich areas, and potential landslide traces. The mission is specifically designed to investigate the "crash site" of the smaller moonlet, Dimorphos, to determine how a kinetic impact reshapes an asteroid body.

Technical Details

Hera employs three primary instruments to achieve "superhuman vision" beyond the visible spectrum:

- **Asteroid Framing Camera:** Provides monochrome images for navigation and science with a spatial resolution of approximately 2.7 m per pixel.
- **HyperScout H:** Captures the surface in 25 different hues, ranging from visible red to near-infrared, to identify spectral signatures linked to mineral composition.
- **Thermal Infrared Imager (TIRI):** Provided by JAXA, this instrument maps temperature variations to distinguish between solid rock, porous rock, and dust.

While Dimorphos (151-m diameter) appears mostly in shadow in visible light, the TIRI instrument allows for full visualization of the moonlet via thermal infrared.

Background and Context

The mission follows a planetary defence experiment conducted on 26 September 2022, when NASA’s 580-kg DART spacecraft impacted Dimorphos at 6.1 km/s. This collision created a debris plume extending 10,000 km and altered the asteroid's orbit by approximately 33 minutes. Hera's objective is to resolve unknowns regarding the precise makeup, mass, and structure of Dimorphos to understand why the deflection exceeded simulation predictions.

Significance and Outlook

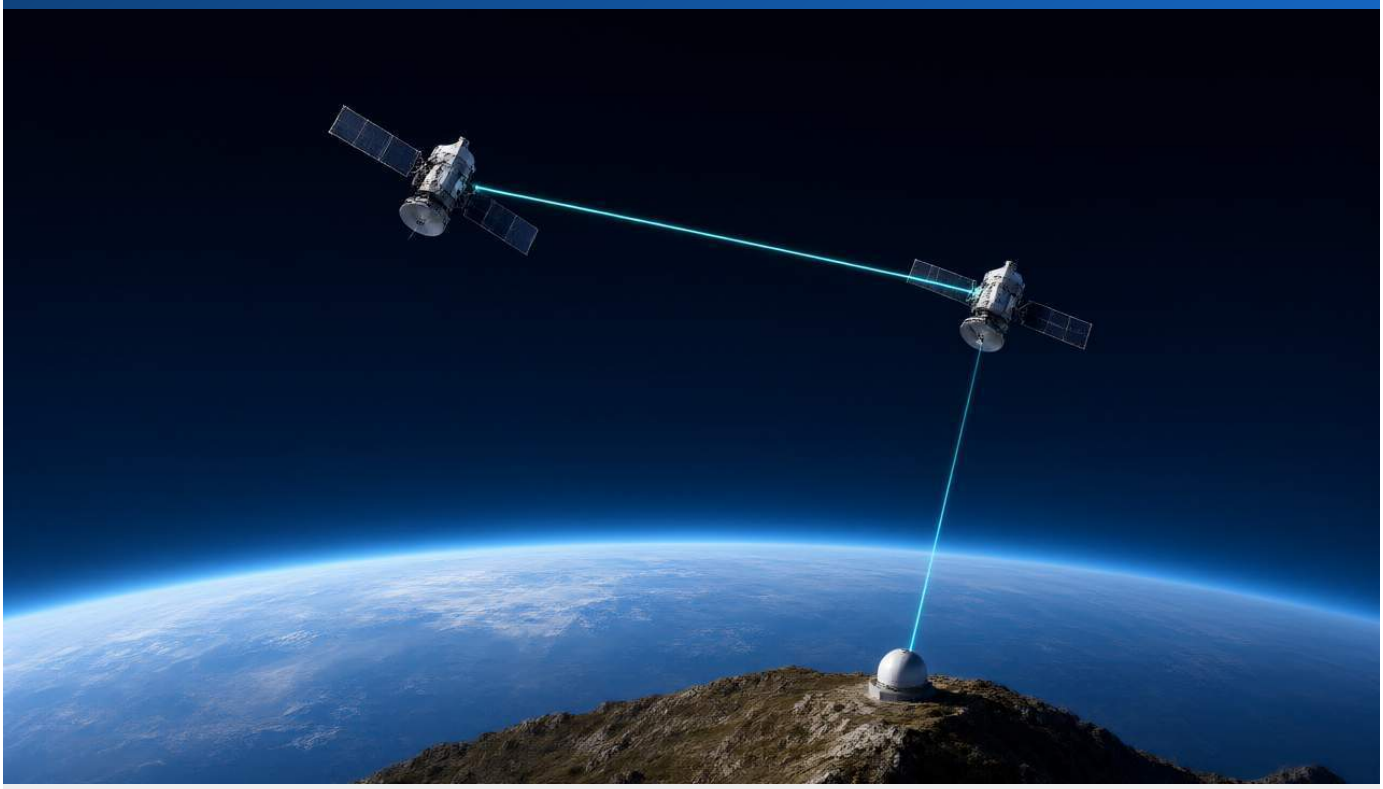
Detailed images of both asteroids are scheduled for release on 25 November. In the coming months, Hera will conduct a close-up investigation of Dimorphos, deploying two shoebox-sized CubeSats for high-proximity surveying and eventually progressing toward a landing. These data points are critical for refining the kinetic impact method as a viable planetary defence technique.

Source: https://www.esa.int/articles/about-us/directorates/operations/space-safety/hera/hera-surveying-asteroids-with-superhuman-vision

Collected: November 21, 2026 | Automated Research System (AI)

#03 Space AIOWN: NTT's Optical Satellite Network Roadmap to 2029

Published November 17, 2026 EE Times Japan Japan



OVERVIEW

NTT is expanding its IOWN and AI-native "AIOWN" infrastructure into space to overcome current satellite communication constraints. By utilizing optical laser terminals and the All-Photonics Network (APN), the company intends to enable real-time, high-capacity data transmission with a business rollout planned for 2028–2029.

IN DEPTH

Key Findings

NTT has introduced the "Space AIOWN" concept, which integrates optical communication technology into satellite networks to eliminate the capacity and latency bottlenecks of traditional radio-frequency systems. The initiative is supported by a "mega-constellation" collaboration involving NTT, NTT Docomo Business, Mitsubishi Electric, MUFG Bank, and the Development Bank of Japan (DBJ), who signed a memorandum of understanding on November 9, 2026.

Technical Details

The system utilizes laser terminals equipped with NTT's optical transceiver modules and digital coherent technology. Technical specifications include:

- **Transmission Speeds:** Capability for speeds exceeding 400Gbps, or a stable 25Gbps for long-distance communication up to 5,000km.
- **Mobility Compensation:** Proprietary correction technology that handles velocity differences of up to 10km per second.
- **Atmospheric Mitigation:** Integration of technology to correct light distortion caused by atmospheric turbulence and network control to predict optimal communication paths based on weather and satellite movement.
- **Infrastructure:** The use of the All-Photonics Network (APN) to dynamically route data between satellites and ground stations located near data centers to ensure low-latency transmission.

Background & Context

Current satellite communications face significant constraints; low Earth orbit (LEO) satellites typically communicate with ground stations only once every 90 minutes on average. With daily communication volumes projected to reach 230PB by 2033, NTT argues that the wider frequency bandwidth of light—compared to radio waves—is essential to prevent congestion and interference.

Significance & Outlook

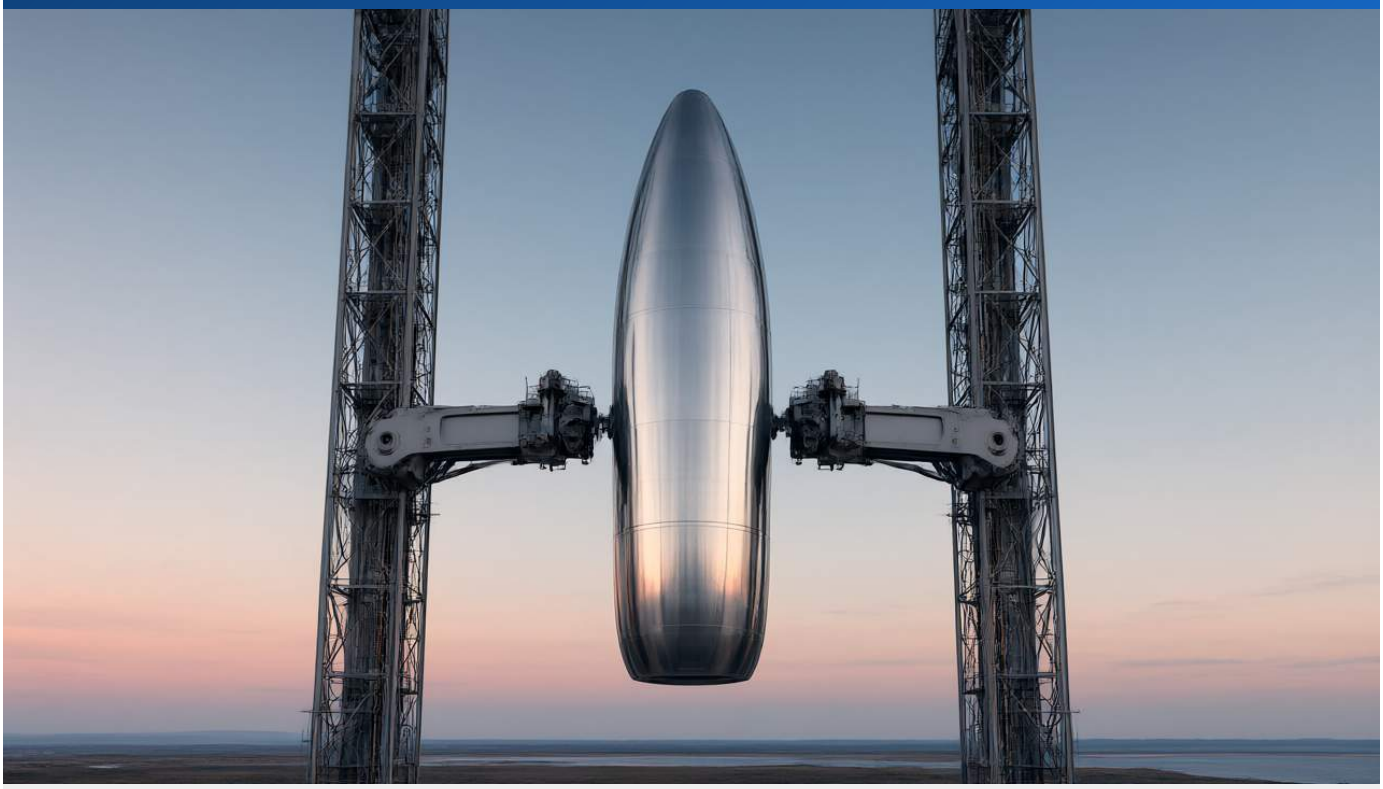
NTT expects to begin business operations using optical ground stations between 2028 and 2029. Future extensions of the project include the development of space-based data centers for distributed processing to reduce the volume of data sent to Earth, as well as extending optical communications to the lunar surface and developing laser-based power supply for lunar probes.

Source: https://eetimes.itmedia.co.jp/ee/articles/2611/17/news057.html

Collected: November 21, 2026 | Automated Research System (AI)

#04 SpaceX Starship: First Ship Catch Success in Flight 15 Test

Published November 15, 2026 sorae Japan



OVERVIEW

SpaceX successfully achieved the first-ever return and catch of the Starship spacecraft at the launch tower during its 15th flight test. While the Super Heavy booster was diverted to a sea landing, the recovery of the upper stage marks a critical milestone toward full vehicle reusability.

IN DEPTH

Key Findings

On November 15, 2026 (JST), SpaceX successfully executed the first return and catch of the Starship spacecraft at the Starbase launch site in Texas. The spacecraft was captured by the launch tower's mechanical arms approximately 22 hours and 32 minutes after liftoff. This event marks the first time the second-stage spacecraft has been recovered at the launch site, though the accompanying Super Heavy booster failed to return to the tower, opting for a sea landing instead.

Technical Details

The mission began on November 14, 2026, at 7:47 JST. The flight sequence proceeded as follows:

- **Separation and Orbit:** The Super Heavy booster and Starship spacecraft separated approximately 2 minutes and 30 seconds after liftoff. The spacecraft reached orbit approximately 26 minutes and 30 seconds after liftoff.
- **Payload Deployment:** Approximately 9 minutes after reaching orbit, Starship deployed 26 Starlink V3 third-generation satellites.
- **Return Sequence:** Following a period of inertial flight lasting over 21 hours, the spacecraft performed a deorbit burn over the Indian Ocean at 5:23 JST on November 15. It re-entered the atmosphere over the Pacific Ocean, passing over Mexico and Texas before being caught by the tower arms at 6:20 JST.

Booster Recovery Analysis

The Super Heavy booster was originally scheduled for a tower return, similar to three previous successful recoveries. However, Elon Musk stated that a slight shortage of propellant necessitated a change to a sea landing. To address this, SpaceX plans to reduce performance variance among the 33 Raptor 3 engines and adjust the engine shutdown timing to be one second earlier.

Significance and Outlook

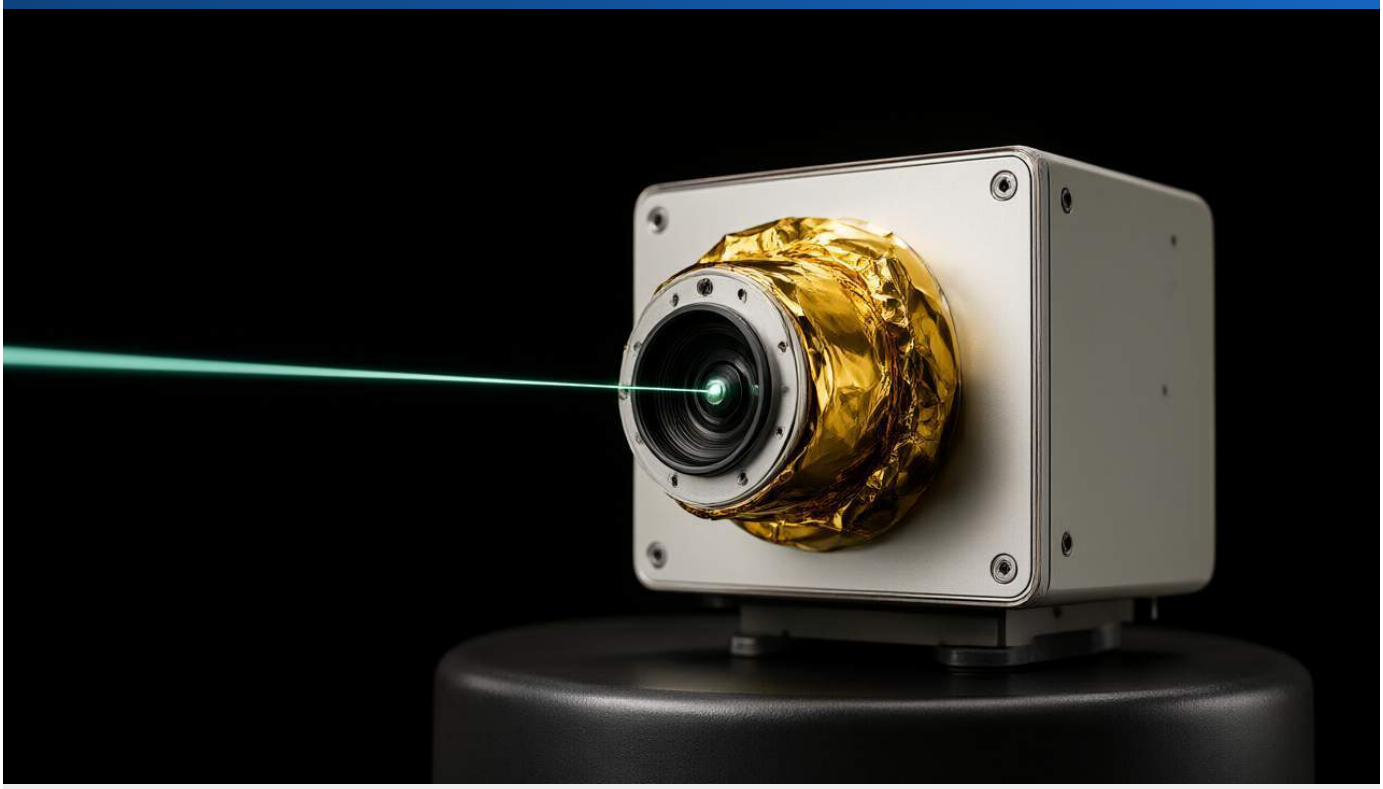
The successful catch of the spacecraft demonstrates the technical feasibility of recovering both stages of the Starship system. Future tests will focus on simultaneous recovery of both stages in a single mission, the flight of previously recovered hardware, and the verification of the turnaround time and maintenance required between flights.

Source: https://sorae.info/space/20261115-starship-15.html

Collected: November 21, 2026 | Automated Research System (AI)

#05 LeoSpace LCT: Laser Communication Terminal Specs and Roadmap

Published November 16, 2026 재경일보 South Korea



OVERVIEW

LeoSpace is developing a Laser Communication Terminal (LCT) for low Earth orbit (LEO) satellites to overcome the bandwidth and security limitations of radio frequency (RF) communications. The company has successfully demonstrated ground-to-ground transmission over 47km and plans to integrate optical cameras into the "JinjuSat" satellite in 2027.

IN DEPTH

Key Findings

LeoSpace is developing a laser-based free-space optical communication system to eliminate data bottlenecks in LEO satellite networks. The company has secured a cumulative investment of 10 billion KRW to advance this technology, moving from initial stages to Technology Readiness Level (TRL) 5–6 through the Deep Tech TIPS project supported by the Ministry of SMEs and Startups.

Technical Details

The LCT utilizes the terahertz (THz) frequency band, which offers significantly wider bandwidth than the gigahertz (GHz) bands used in traditional RF communications. Theoretically, this allows for data processing speeds 1,000 times faster than RF, with a realistic minimum increase of 100 times without latency.

- **Ground Validation:** In July, the company achieved communication over a 30km section from N Seoul Tower to Suwon Hwaseong. Two months later, this distance was extended to 47km.
- **Hardware Specs:** The optical system features a diameter of 63mm, designed to meet Space, Weight, and Power (SWaP) requirements for space-grade products.
- **Projected Performance:** Based on the 50km ground tests conducted despite atmospheric obstacles, LeoSpace analyzes that communication distances of over 1,000km are possible in the vacuum of space.

Background & Context

CEO Lee Hyung-kwon, an expert in physical and quantum optics with experience at Cymer and Green Optics, founded LeoSpace in 2021. To complete the terminal, the company integrated optical modulation technology transferred from the Electronics and Telecommunications Research Institute (ETRI) with its existing optical and structural design capabilities.

Significance & Outlook

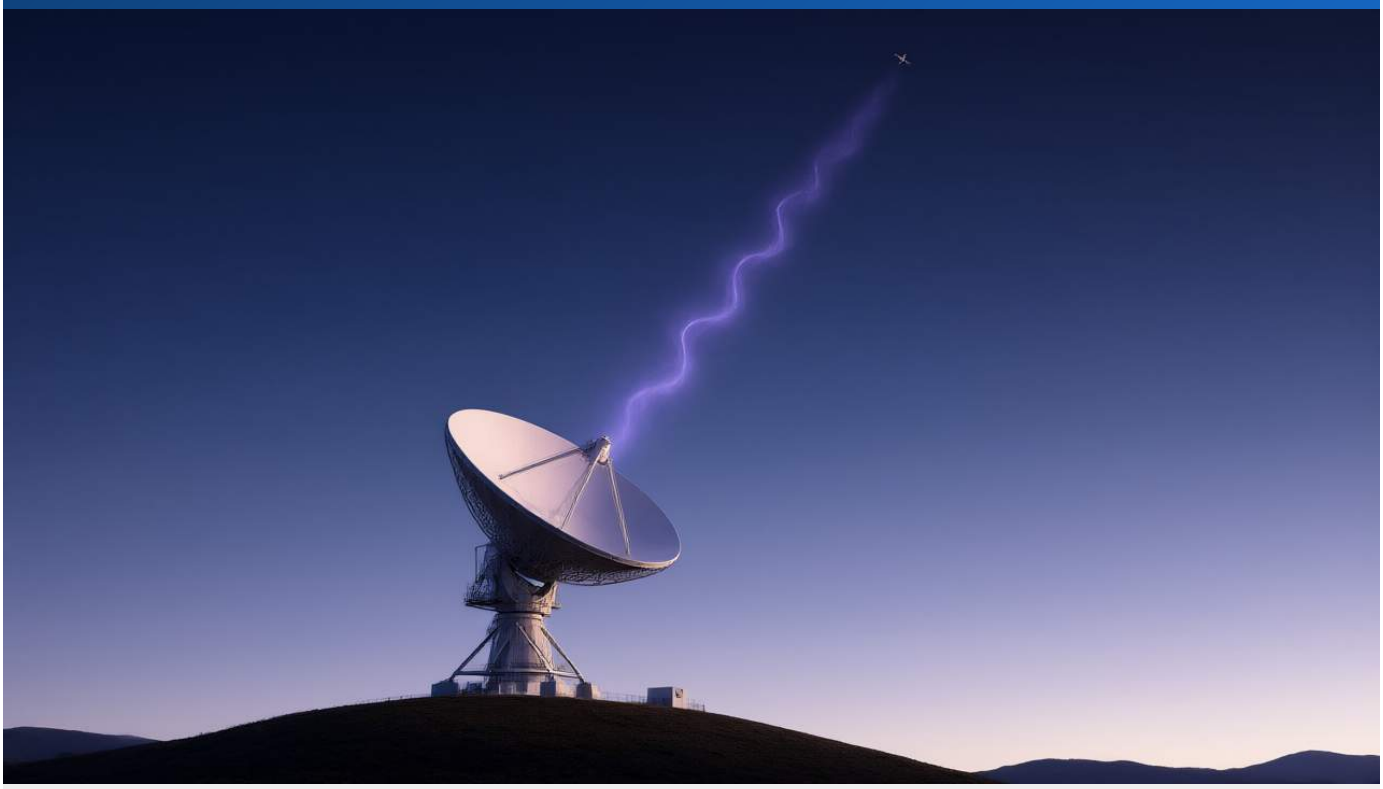
The company is pursuing a "Space First, Ground Later" commercialization strategy. Because space is a vacuum free from weather interference and urban obstacles, LeoSpace will first target satellite manufacturers and communication system providers. The technology will be integrated into the "JinjuSat" ultra-small ocean observation satellite scheduled for launch in 2027. Future applications include maintaining communications during ground infrastructure failures and connecting space-based data centers.

Source: https://news.jkn.co.kr/post/1097771

Collected: November 21, 2026 | Automated Research System (AI)

#06 Q/V-Band Wireless Communication: China's 27Gbps Satellite Link Specs

Published November 17, 2026　新浪财经（中国新闻网）　China



OVERVIEW

Researchers in China have achieved a record bidirectional wireless communication rate of 27Gbps in the Q/V-band using high-order modulation. This experimental validation supports the development of 6G and next-generation low-earth orbit (LEO) high-throughput satellite internet.

IN DEPTH

Key Findings

A joint research team led by the Chinese Academy of Sciences (CAS) Aerospace Information Research Institute has successfully verified a record-breaking bidirectional communication rate of 27Gbps in the Q/V-band. The experiment, conducted at the Lijiang station of the China Remote Sensing Satellite Ground Station, utilized double carrier frequencies and polarization multiplexing to reach this peak rate. In a single-channel configuration using 512QAM, the team achieved a maximum bidirectional transmission rate of 6.75Gbps, which is 2.25 times faster than existing Chinese transmission rates in the same frequency band.

Technical Details

The experiment followed a three-step implementation process: wired closed-loop testing, far-field wireless docking, and full-link comprehensive performance assessment. The team utilized domestically developed antennas, power amplifiers, channels, and baseband equipment. Key technical achievements include:

- **Modulation Testing:** Systematic testing of 64QAM, 128QAM, 256QAM, and 512QAM to evaluate transmission rate improvements.
- **Technical Hurdles:** Overcoming Q/V-band millimeter-wave sensitivities to phase noise and RF nonlinearity.
- **Innovations:** Development of lightweight Q/V antennas, intelligent signal compensation, and phase noise compensation.

Background & Context

The Q/V-band is critical for 6G and satellite internet due to its rich spectrum resources, offering an available bandwidth of approximately 10GHz. The project was a collaborative effort between the CAS Aerospace Information Research Institute, Beijing Rongwei Technology Co., Ltd., the 13th Research Institute of China Electronics Technology Group Corporation, and Nanjing Diange Communication Technology Co., Ltd. The testing leveraged the China Remote Sensing Satellite Ground Station, a national major scientific and technological infrastructure.

Significance & Outlook

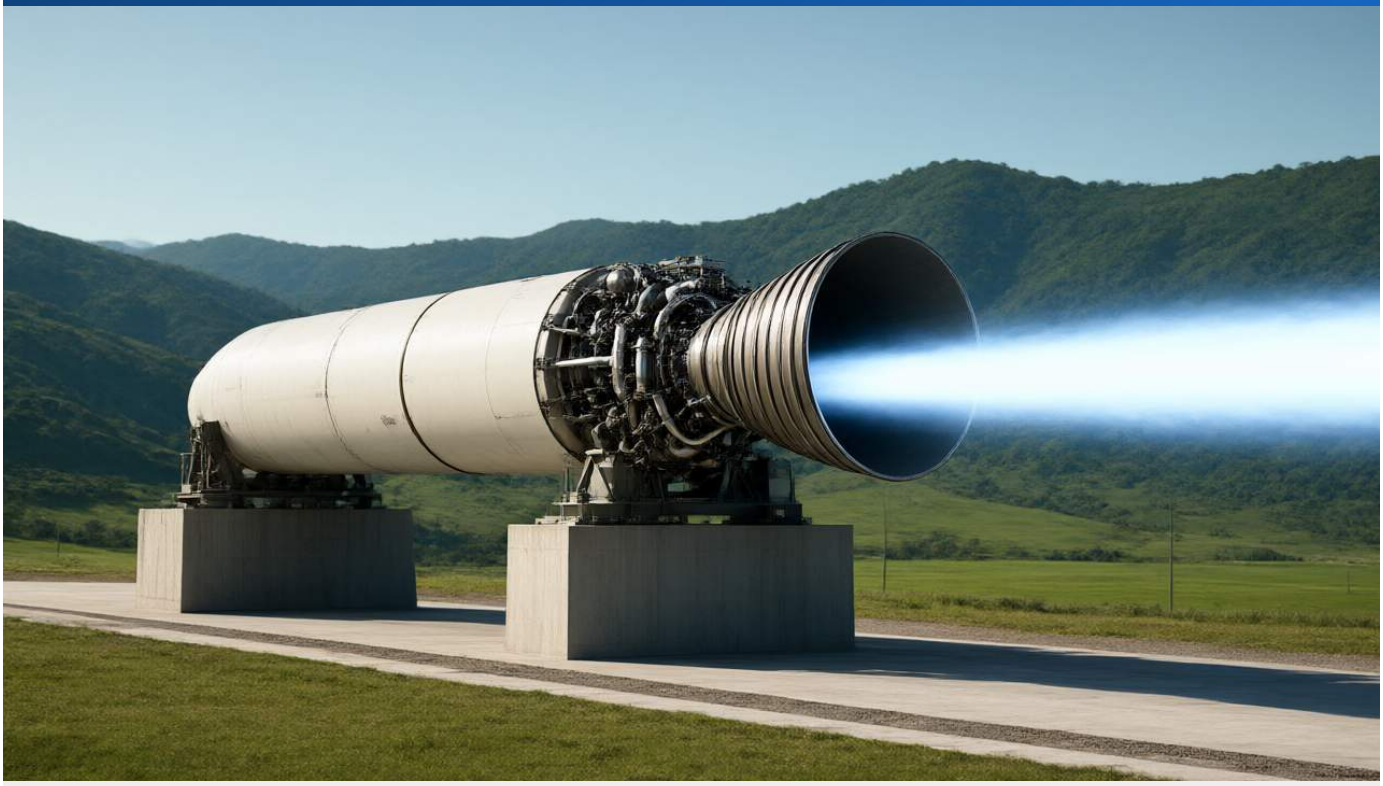
This validation confirms the engineering value of high-order modulation and demodulation in the Q/V-band. The research team intends to further improve technical indicators to achieve bidirectional transmission capabilities exceeding 50Gbps. These advancements provide core technical support for the design and implementation of next-generation LEO high-throughput satellite internet and China's positioning in the global 6G competition.

Source: https://finance.sina.com.cn/roll/2026-11-17/doc-iniyznqc1741247.shtml

Collected: November 21, 2026 | Automated Research System (AI)

#07 Zhuque-3 Rocket: Land-Recovered Engines Ready for Reuse in 2026

Published November 20, 2026 香港新闻网 China



OVERVIEW

LandSpace has completed re-firing tests on all nine engines from the recovered Zhuque-3 Flight 2 rocket, confirming they meet reuse requirements. The tests verified assembly quality and performance consistency, supporting a design goal of at least 20 reuses per first stage.

IN DEPTH

Key Findings

LandSpace has announced that all nine engines from the previously recovered Zhuque-3 Flight 2 rocket have successfully completed re-firing tests. Conducted at a test stand in Huzhou, Zhejiang, the engines demonstrated stable operation during a test lasting approximately 185 seconds. According to Hu Pengrui, Deputy Director of the Power Test Department, the engines exhibited performance consistency and met all delivery conditions for reuse when compared to pre-flight data.

Technical Details

The re-firing tests focused on two primary objectives: verifying the quality of engine assembly and acquiring real-world performance data across various operating conditions following flight and re-assembly. The Zhuque-3 is a stainless steel liquid-fuel launch vehicle with the following specifications:

- **Total Length:** 66.1 meters
- **Diameter:** 4.5 meters
- **Liftoff Weight:** Approximately 570 tons
- **First Stage Configuration:** 9 Tianque-12A liquid oxygen-methane engines

Background and Context

The Zhuque-3 Flight 2 rocket was successfully recovered on land in Minqin, Gansu, on August 19, 2026. This mission marked China's first successful orbital launch followed by a controlled land recovery using landing legs. This achievement followed the sea-based recovery of the Long March 10B first stage via a net system on July 10.

Significance and Outlook

The successful validation of these recovered engines is a critical step toward LandSpace's goal of reducing space access costs. The company has designed the Zhuque-3 first stage for a minimum of 20 reuses. Through this reusability, LandSpace aims to lower launch costs to below 20,000 RMB per kilogram.

Source: https://www.hkcna.hk/cn/content/s6afff1ebe4b04d9df119f68c.html

Collected: November 21, 2026 | Automated Research System (AI)

#08 LIDE Nanosatellite: Tyvak's 5G NTN In-Orbit Test and TIDE Roadmap

Published November 16, 2026　ASDNews（Terran Orbital Corporation プレスリリース）　USA



OVERVIEW

Tyvak International has successfully completed the LIDE (LIve DEmonstration) mission, validating bidirectional 5G communication between a LEO nanosatellite and ground terminals. The mission confirms the viability of 3GPP standards for Non-Terrestrial Networks (NTN), paving the way for the subsequent TIDE mission starting in 2027.

IN DEPTH

Key Findings

The LIDE mission has successfully demonstrated the first in-orbit 5G communication link via a Low Earth Orbit (LEO) nanosatellite. Launched in July 2025, the mission validated that 5G connectivity is a tangible reality for space-to-ground communications, utilizing 3GPP standards to ensure interoperability between different vendors' hardware and software.

Technical Details

The mission utilized a 12U CubeSat developed by Tyvak International and an Italian consortium, featuring an advanced payload from Picosats. Technical achievements include:

- **Connectivity:** Established a bidirectional link with terminals at the ESTEC 5G/6G Lab in Noordwijk, Netherlands.
- **Performance:** Maintained signal stability at extremely low elevation angles, allowing for the precise measurement of signal-to-noise ratio (SNR) and throughput.
- **Interoperability:** Celeste Technologies used the satellite's transparent payload to establish an end-to-end link compliant with 3GPP Release 17 between a SmartgNB and a third-party ground terminal.

Background & Context

LIDE was funded by the European Space Agency (ESA) under the "Space for 5G/6G & Sustainable Connectivity" program (specifically the Advanced Research in Telecommunications Systems, or ARTES) and supported by the Italian Space Agency (ASI). The project aimed to create an in-orbit experimental platform for the industrial ecosystem to verify 5G NTN links using compact ground terminals.

Significance & Outlook

The validation of 5G standards in orbit supports strategic applications in telemedicine, civil protection during natural disasters, and defense. By leveraging open standards, ASI and ESA aim to integrate satellite connectivity seamlessly with terrestrial networks while fostering industrial competition.

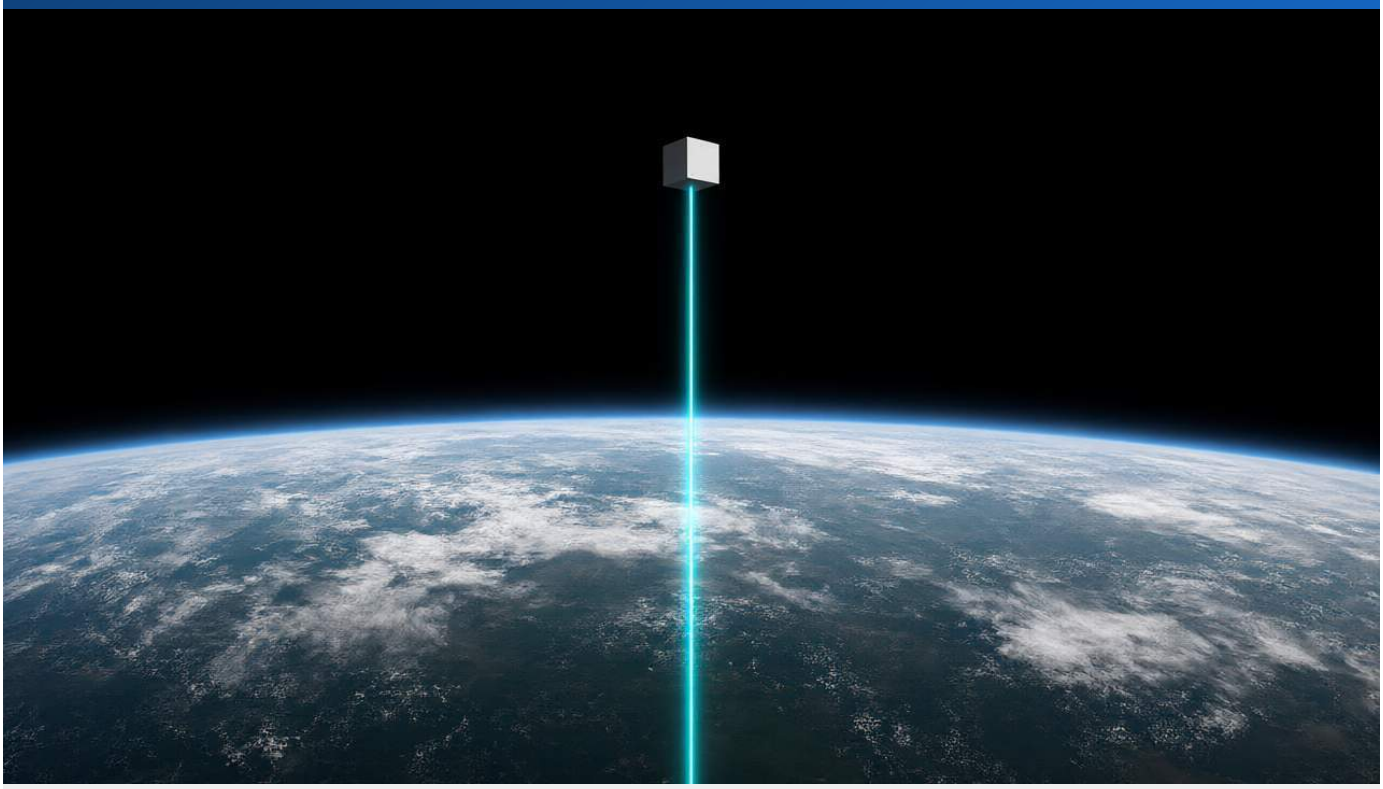
Following the success of LIDE, ESA has commissioned Tyvak International to lead a new consortium—including Picosats and Celeste Technologies—to develop the TIDE mission. The definition phase for TIDE is scheduled for completion by the end of 2026, with implementation expected to begin in 2027.

Source: https://www.asdnews.com/news/defense/2026/11/16/tyvak-international-successfully-completes-lide-nanosatellite-mission-following-1st-successful-inorbit-5g-test

Collected: November 21, 2026 | Automated Research System (AI)

#09 TBIRD Laser Link: 200 Gbps Space-to-Ground Specs and Design

Published November 13, 2026 GCN USA



OVERVIEW

The TBIRD payload achieved a record-breaking 200 gigabit per second optical communication link between a small satellite and a ground station. By eliminating the gimbal and using the spacecraft's entire body for aiming, the system demonstrated that high-capacity data transfer is possible with a compact, low-complexity hardware footprint.

IN DEPTH

Key Findings

The TeraByte InfraRed Delivery (TBIRD) payload has established a new record for space-to-ground laser communication, reaching a link speed of 200 gigabits per second on April 28. This follows an earlier milestone reached roughly a month after its May 2022 launch, where it delivered data at 100 gigabits per second. In a single five-minute pass over a ground station, the system transmitted nearly five terabytes of data.

Technical Details

Unlike traditional laser communication systems that utilize powered swivel mounts or gimbals to point narrow beams, TBIRD employs a design with zero steerable parts. The system relies on a laboratory-developed error signaling concept to achieve precision pointing. This requires the entire CubeSat bus to physically rotate, swivel, and tilt to keep the infrared beam locked on a telescope located on a mountainside in California.

- **Pointing Mechanism:** Entire spacecraft body acts as the aiming mechanism.
- **Hardware Profile:** Compact payload size, described as being similar to a tissue box or lunchbox.
- **Operational Environment:** Orbiting 300 miles above Earth's surface.
- **Stability:** The body must remain rock steady to overcome atmospheric drag and orbital speeds exceeding 17,000 miles per hour without real-time gimbal correction.

Background and Context

Developed through a government and industry partnership involving MIT Lincoln Laboratory, NASA, and other institutions, TBIRD was originally intended for a six-month demonstration window. However, the mission extended to over two years. Recent tests with a low-cost ground terminal confirmed that a three-minute connection could return over five terabytes of science data, equivalent to approximately 2,500 hours of high-definition video.

Significance and Outlook

The removal of the gimbal reduces weight, volume, and potential failure points, allowing for significantly smaller payloads. While the approach proves high-speed viability, limitations remain; the narrow beam requires near-perfect alignment and is susceptible to degradation from clouds and atmospheric turbulence, unlike broader radio signals.

Source: https://gcn.com/200-gigabit-laser-link-beamed-tissue/23223/

Collected: November 21, 2026 | Automated Research System (AI)

#10 Luminescent Ionic Liquids: High-Efficiency 2026 Material Specs

Published November 20, 2026 京都大学 Japan



OVERVIEW

Researchers have developed a fluorescent ionic liquid that remains liquid at room temperature while achieving a fluorescence quantum yield of 80%. The material exhibits extreme durability, resisting decomposition at temperatures exceeding 400°C and maintaining luminescence at 300°C.

IN DEPTH

Key Findings

A research group led by Assistant Professor Shota Mizuno and Professor Kazumasa Funabiki of Gifu University, in collaboration with Kyoto University and other institutions, has developed a "fluorescent ionic liquid." This material achieves a fluorescence quantum yield of 80% while remaining in a liquid state at room temperature, overcoming the conventional limitation where molecular motion in liquids typically weakens light emission.

Technical Details

The material is synthesized by combining a cation featuring a nitrogen-incorporated fluorene skeleton with a bulky anion containing fluorine. This specific combination allows the liquid to maintain high luminescence efficiency. The material demonstrates significant stability under harsh conditions:

- **Thermal Stability:** The liquid does not decompose at temperatures exceeding 400°C and continues to emit light at 300°C.
- **Chemical Resistance:** The material shows high durability against strong ultraviolet (UV) light, as well as acids and bases.

Background and Context

There is a growing demand for "soft" light-emitting materials capable of functioning in extreme environments for applications such as soft robots, space equipment, and flexible optical devices. Previously, organic materials in a liquid state without solvents were prone to decomposition from heat, UV light, and chemicals. Furthermore, active molecular motion and contact between molecules typically caused a decrease in light intensity.

Significance and Outlook

By utilizing the anion as a "key" to stabilize the system, the researchers have challenged the established scientific assumption that liquids are inherently difficult to make luminescent due to molecular mobility. This development provides a robust, high-efficiency light-emitting liquid that is expected to be applied to flexible optical devices and other hardware requiring durability in extreme environments. The findings were published in the online edition of *Advanced Materials* on November 10, 2026.

Source: https://www.kyoto-u.ac.jp/ja/research-news/2026-11-20

Collected: November 21, 2026 | Automated Research System (AI)

#11 NTT Space AIOWN: Optical Satellite Communication Roadmap

Published November 17, 2026　ケータイ Watch　Japan



OVERVIEW

NTT is developing an optical communication infrastructure to overcome the capacity limits of radio-frequency satellite links. By integrating IOWN devices and "optical ground stations," the company seeks to enable 400Gbps data transfers and establish space-based data centers.

IN DEPTH

Key Findings

NTT is implementing the "Space AIOWN" concept to create a seamless network between Earth and space using optical communication. The initiative addresses the projected surge in satellite data, which is expected to reach 230PB per day by 2033. To manage this volume, NTT is developing satellite-to-satellite relay systems and optical ground stations to bypass the bandwidth limitations of traditional radio waves.

Technical Details

The system utilizes optical communication paths that offer bandwidths in the hundreds of GHz, compared to the few GHz available via radio waves. Key technical specifications and developments include:

- **Satellite-to-Satellite Links:** Using IOWN devices, NTT has developed equipment capable of 400Gbps data transmission over distances of 5000km, maintaining stability between satellites moving at 8km/s in different orbits.
- **Optical Ground Stations:** To mitigate atmospheric turbulence and cloud interference, NTT is developing ground stations that coordinate via the All Photonics Network (APN) to select optimal routing based on weather and satellite positioning.
- **Space Data Centers:** NTT plans to deploy data centers in space to perform distributed processing and AI-driven data extraction, reducing the volume of data transmitted to Earth.
- **Lunar Infrastructure:** Research is ongoing for "ultra-low noise optical amplifiers" for long-distance lunar communication and wireless power transmission, which has already been demonstrated over 1km in terrestrial tests.

Background & Context

Current satellite communications face challenges with real-time data delivery due to the limited windows of time low-earth orbit satellites spend over ground stations. While NTT has provided satellite services since the 1990s via "WideStar" and currently offers "docomo Starlink Direct," the increasing demand for high-resolution observation and autonomous vehicle connectivity requires a shift toward optical solutions.

Significance & Outlook

The project is being advanced as a "mega-constellation" through a five-company partnership including NTT, NTT Docomo Business, Mitsubishi Electric, MUFG Bank, and Development Bank of Japan. By placing optical ground stations near existing data centers, NTT intends to minimize latency and enhance the speed of disaster response and environmental monitoring.

Source: https://k-tai.watch.impress.co.jp/docs/news/2156875.html

Collected: November 21, 2026 | Automated Research System (AI)