

ZED-X20D

23 September 2026

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**X MARKS THE
WAY FORWARD**

All-band, high precision
GNSS heading. [ZED-X20D](#).

Agenda

u-blox X20D highlight

Product Feature and Performance

Evaluation tools

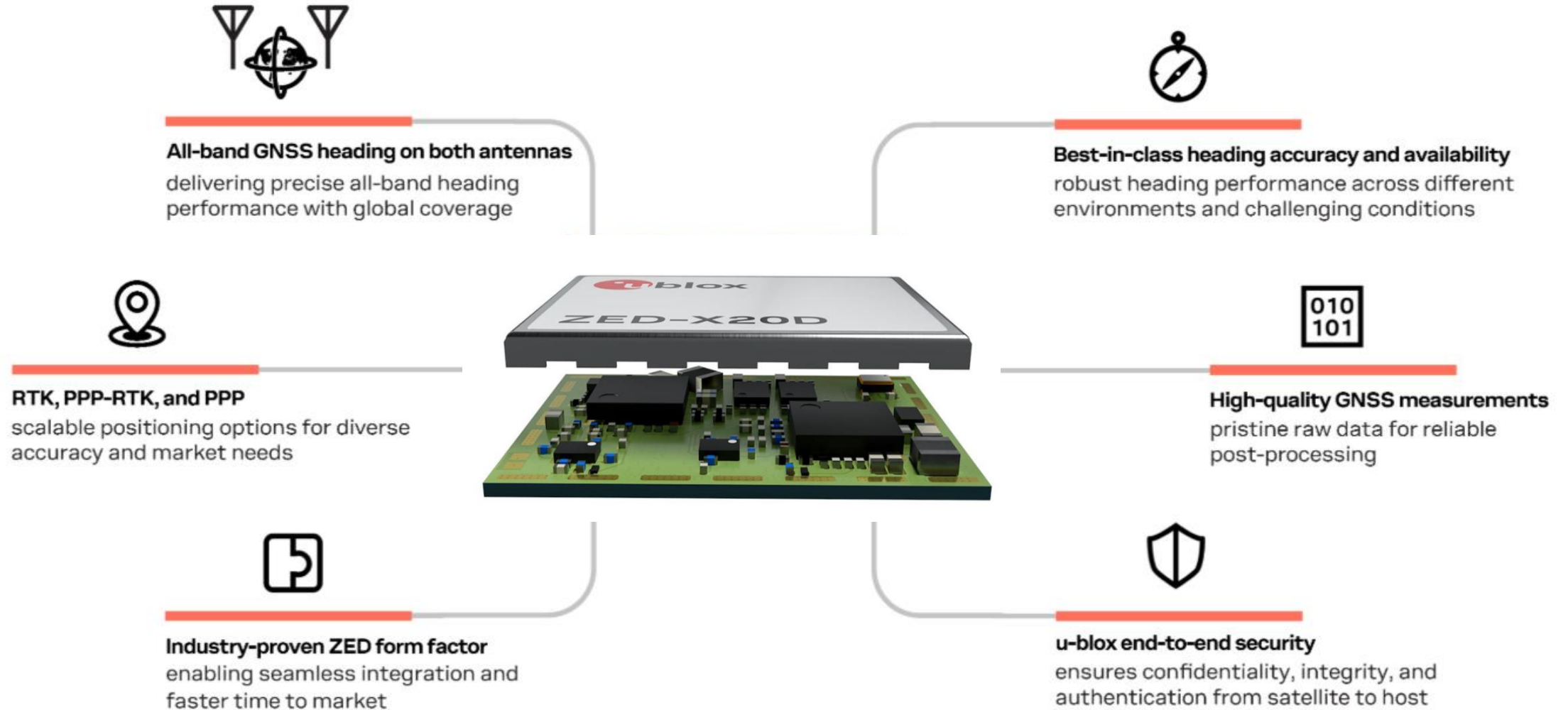
Product Availability

Target Market

Ecosystem

Summary - takeaways

Highlight



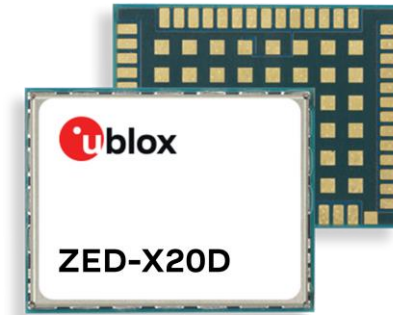
Product features



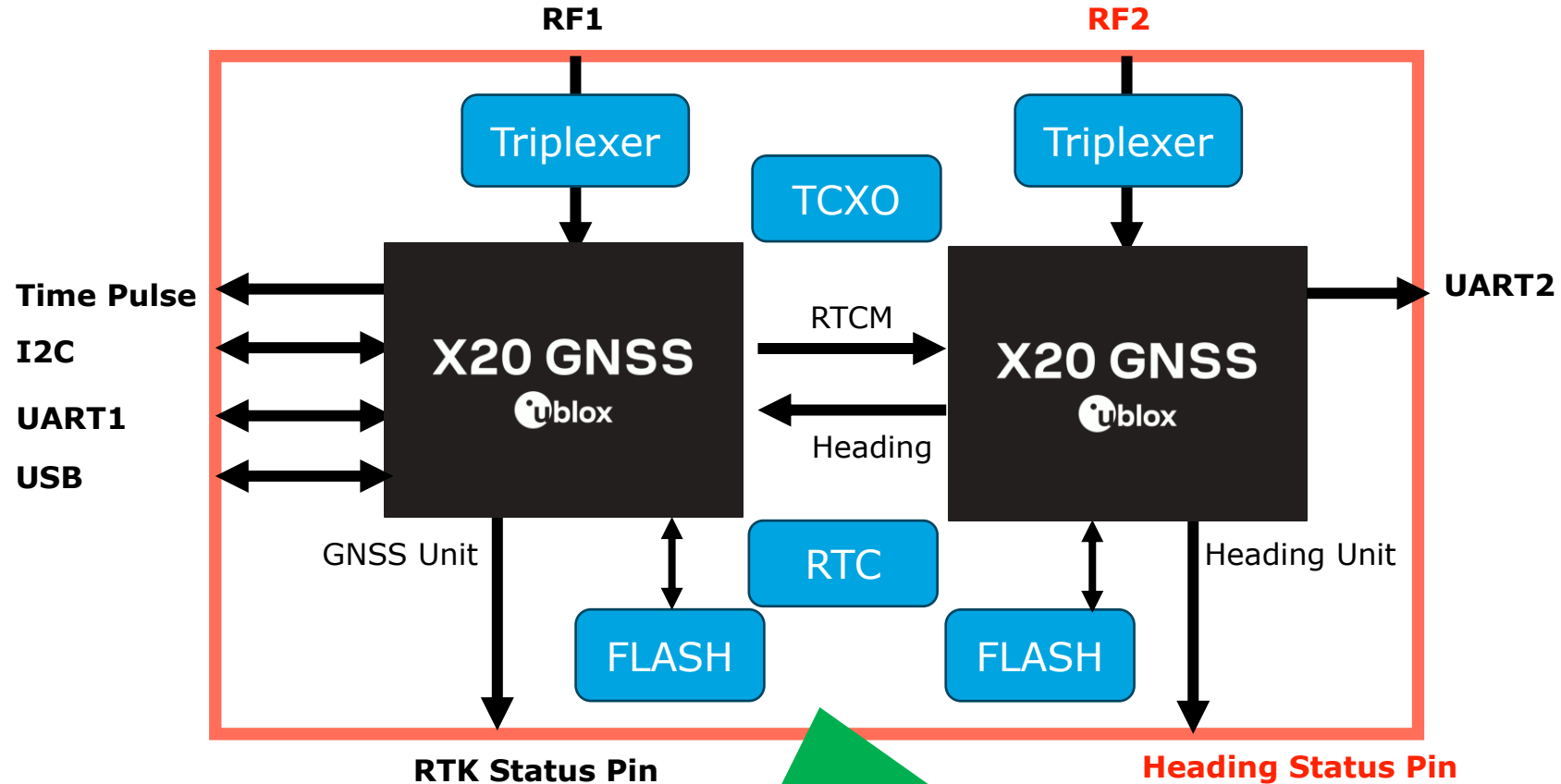
ZED-X20D – dual antenna, all-band heading

Heading for the real world

- Heading module with **all-band** GNSS (L1/L2/L5/L6 + L-band) on **both antennas**
 - Antenna 1: ZED-X20P feature set and performance
 - Antenna 2: Reliable all-band GNSS-based heading
- World leading RTK, PPP-RTK and PPP support including Galileo High Accuracy Services (HAS)



ZED-X20D architecture



- Synchronized GNSS using common TCXO
- UART1, USB and I2C as main interfaces, incl. heading info.
- UART2: input for RTCM and SPARTN correction

Designed as a robust & easy device, providing excellent, out-of-the-box heading solution

Product features

Not Recommended
for New Design

	ZED-X20D	ZED-X20P	ZED-F9H
Receiver type	All-band		Multi-band
GNSS Signal support	GPS L1C/A, L2C, L5 GAL E1, E5a, E6 BDS B1I, B1C, B2a, B3I GLO* L1OF, L2OF QZSS L1C/A, L1C/B, L1S, L2C, L5, L6 NAVIC L1**, L5 SBAS L1		GPS L1C/A, L2C GAL E1, E5b BDS B1I, B2I GLO L1OF, L2OF QZSS L1C/A, L1S, L2C SBAS L1
Accuracy by mode	Standalone: 1.2m RTK: 0.6cm + 1ppm PPP-RTK: <6cm PPP: <10cm		Standalone: 1.5m RTK: 1cm + 1ppm PPP-RTK: <6cm (ZED-F9P)
RTK/PPP-RTK availability, fast convergence	●●●		●●○
Security	●●●		●●○
Max update rate	25 Hz		8 Hz
L-band support	Integrated (1539-1559MHz)**		NEO-D9S
Heading	Single module solution	Moving base with 2pcs ZED-X20P	Moving base with ZED-F9P + ZED-F9H
u-blox Correction Service	PointPerfect Live, Flex, Global (PPP)**		PointPerfect Live, Flex

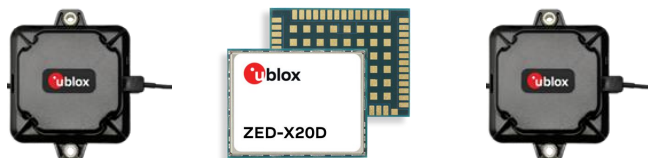
* GLONASS generally available, restricted in some geographical areas

** In development

Product performance



Heading performance test (static)



Heading accuracy (24h static, 1m baseline) with ANN-MB2

ZED-X20D

0.1°(RMS*)



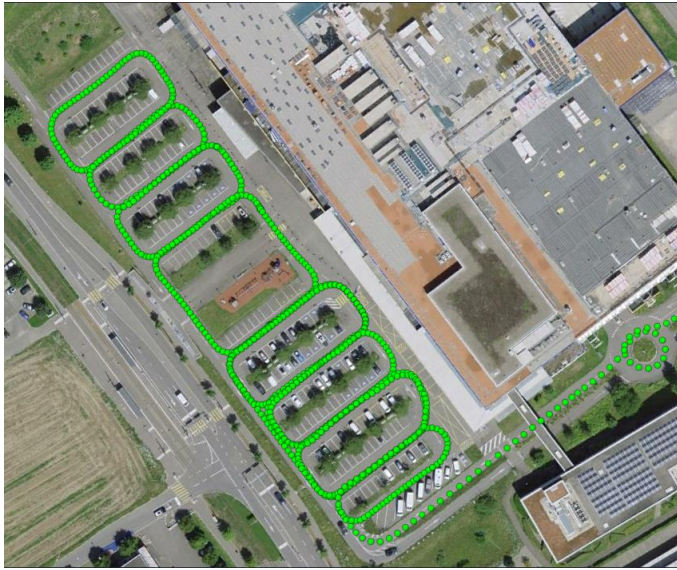
**High-end
heading module
(as reference)**

0.1° (RMS*)

* Calculated relative to the 24-hour empirical mean. Represents the internal consistency and short-term stability of the GNSS heading, not absolute angular accuracy.

ZED-X20D demonstrates industry standard
0.1 degree heading accuracy @ 1m baseline,
with ANN-MB2 all-band antennas.

Heading performance test (dynamic)



- Test site: Thalwil, Switzerland
- 35min drive (incl. turns around parking place)
- Using NovAtel NOV850 survey-grade antennas
- Antenna baseline: 2m
- ZED-X20D, 1Hz heading

ZED-X20D Dynamic Heading at a Glance

Predictable, responsive heading you can trust

0.09°

RMS Heading Accuracy

Meets the 0.1° spec

0.19 s

**Mean Settling Time
(Efficiency)**

Among the fastest in class

98%

**1-Sigma Coverage
(Trustworthy)**

Highest in test

99.4%

Heading Fix Rate

Reliable convergence

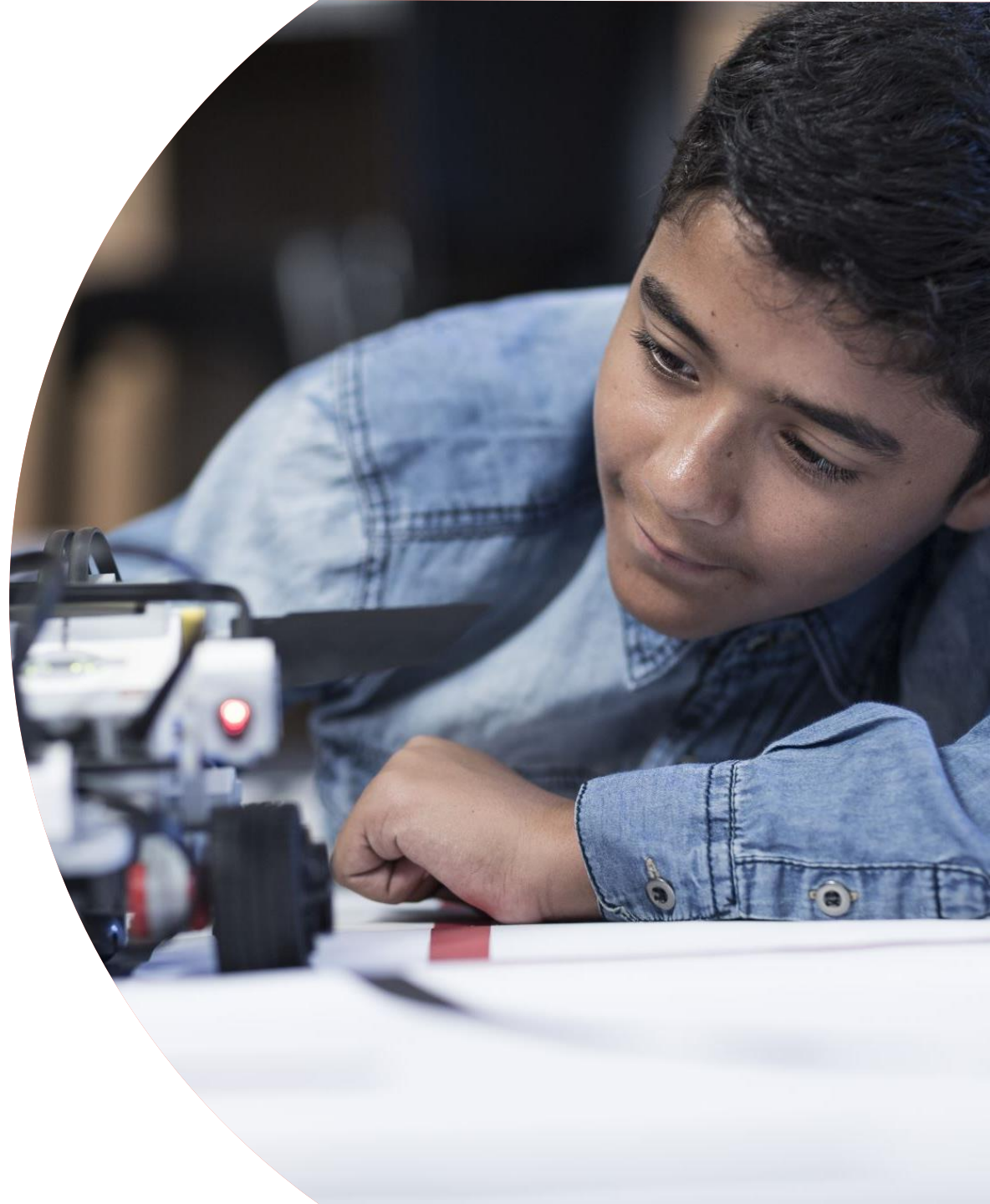
Benefits for CUSTOMERS

- **Ready to use, fast.** Automatic baseline configuration. Heading reconverges in 0.19 s after turns — Efficient, out-of-the-box solution.
- **Stable and predictable.** Tight error distribution across straight-line and dynamic motion — for consistency real-world systems.
- **Trustworthy.** The reported heading accuracy estimate is very reliable. When ZED-X20D reports its accuracy, it's right 98% of the time — Customers get a confidence value they can act on.

Source: u-blox in-vehicle drive test, Dietikon (CH)

Test conditions: 2 m antenna baseline – same drive – same NovAtel NOV850 ground truth – 1Hz output – survey-grade antennas / | X20D firmware HDG200B00

Evaluation tools



Evaluation kit: EVK-X20D

Heading status LED



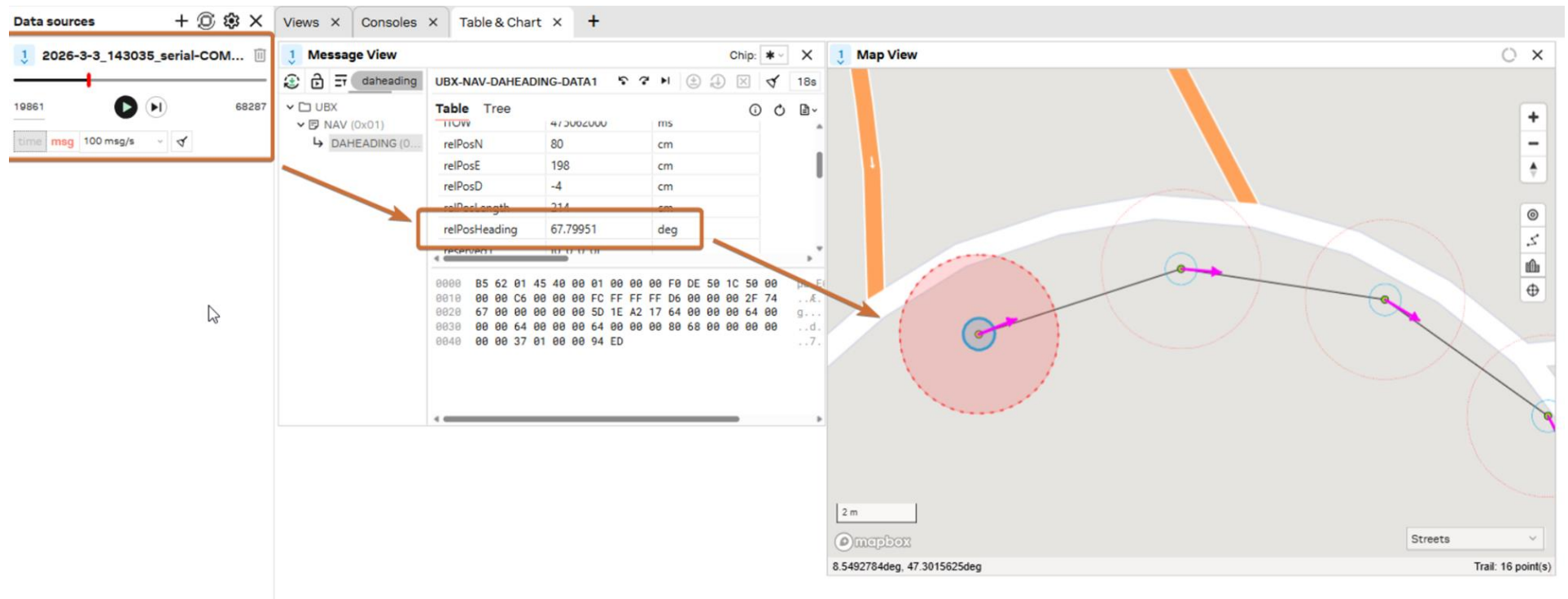
Dual RF connectors



2 sets ANN-MB2 antenna with 12cm ground planes

u-center 2 evaluation software

- Use u-center 2 version 26.05.4 or later version for ZED-X20D
- Heading visualization available – new feature in u-center 2



Timeline

ZED-X20D, EVK-X20D

- ES sample available (FW HDG2.00)
- IP: Oct 2026 (FW HDG2.01)

	2026									
	01	02	03	04	05	06	07	08	09	10
ZED-X20D			PT				ES			IP
EVK-X20D						PT	ES			IP



Firmware overview

FW Version	Products	Schedule	Features
HDG 2.01	ZED-X20D-00B	IP: Oct 2026	• All-band heading module with RTK, PPP-RTK, PPP support • Dual antenna (all-band) support • Dual raw data output • Heading output, up to 20 Hz • GLONASS enabled, with geo-blocking* • Galileo HAS • RTCM and SPARNT correction on UART2 (input) • Anti-jamming and anti-spoofing improvements (same as ZED-X20P-01B) • QZSS L1C/B support • Support GGA message output on UART2 (NTRIP use case)

* GLONASS generally available, restricted in some geographical areas

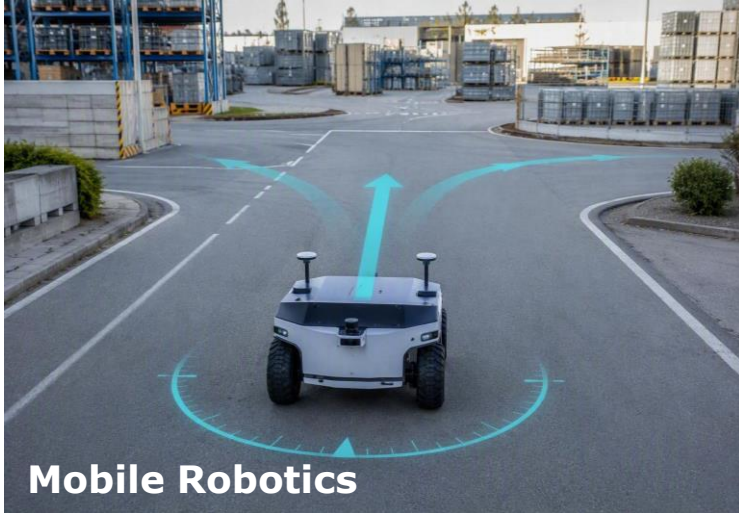
Target market



Typical Applications



Other opportunities



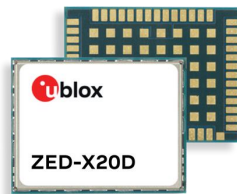
ZED-X20D ecosystem



ZED-X20D ecosystem

A complete solution that brings GNSS receiver, antenna, and correction service together, minimizes design efforts and accelerates mass adoption.

Advanced high-precision GNSS heading module



High Performance antenna



Best fit correction service



Summary



ZED-X20D takeaways

- 1 All-band, dual-antenna, motion independent heading for real-world applications
- 2 Out-of-the-box heading solution: easy integration
- 3 Value added Ecosystem
 - Market leading ANN-MB2 all-band antenna
 - In-house PointPerfect correction service



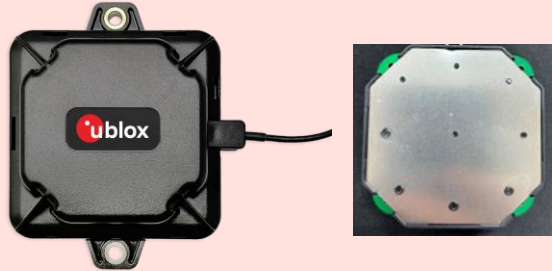
Q&A

Backup slides

All-band antenna

Market leading all-band ANN-MB2 antenna:

- Made & tuned for X20 all-band high precision GNSS platform
- Excellent price-performance ratio, support mass adoption
- Value-added antenna customization service

ANN-MB2	
	
Dimension (external active antenna)	92.9x108.5x24.7 mm
Dimension (internal active antenna)	64x64x21.8 mm
Supported bands	All-band (L1/L2/L5/L6+L-band)

PointPerfect Service

PointPerfect Live (RTK)

Superior performance for the most demanding applications

Challenging conditions:

Construction, surveying, precision agriculture, mining

PointPerfect Flex (RTK-PPP)

Scalable and flexible solutions for wide-ranging use cases

Large fleets:

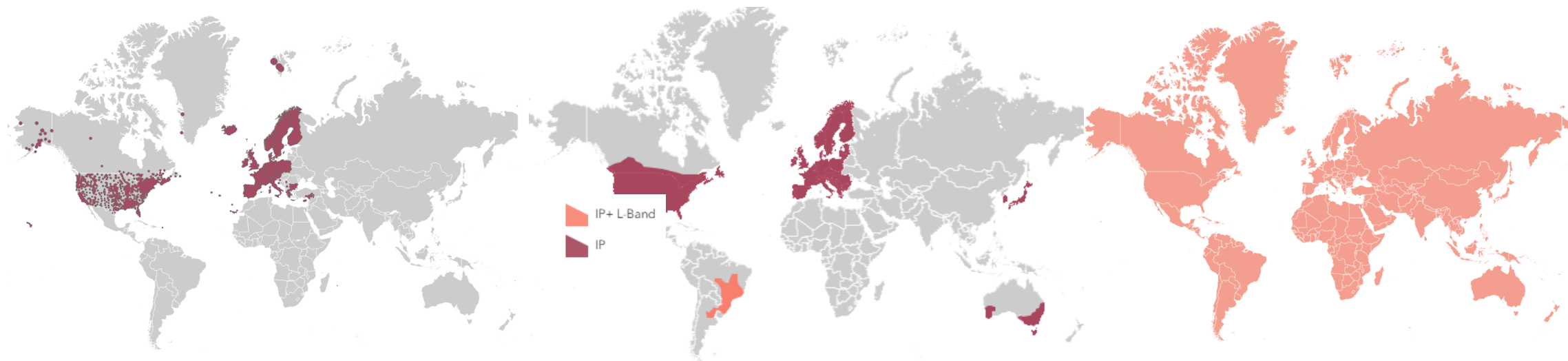
Mobile outdoor robotics, automotive, precision agriculture, UAVs

PointPerfect Global*

Seamless worldwide coverage for truly global solutions

Remote locations/ anywhere access:

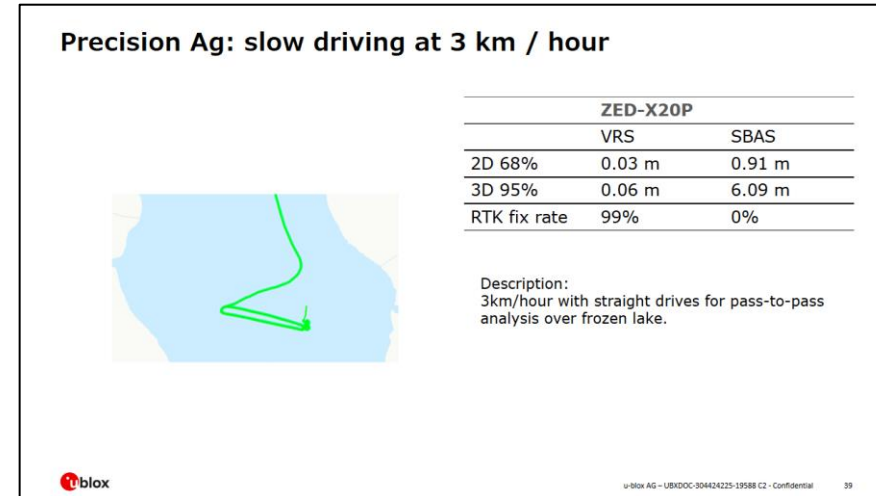
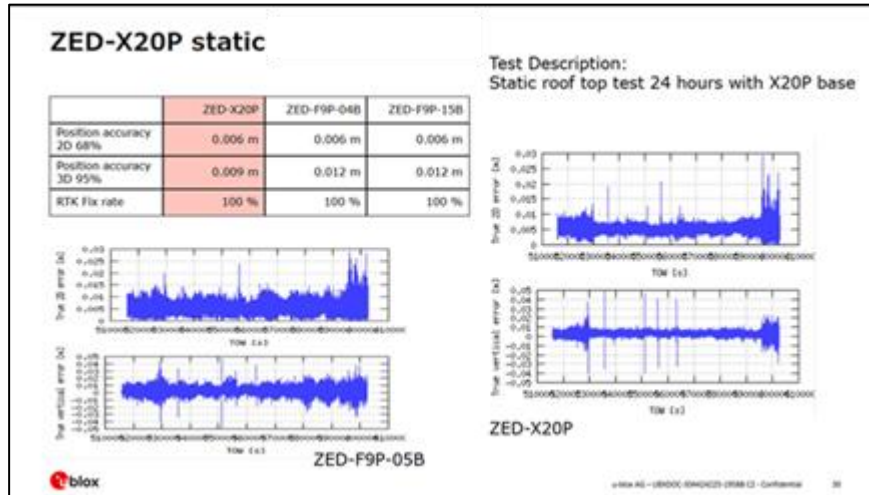
Precision agriculture, outdoor robotics, UAVs



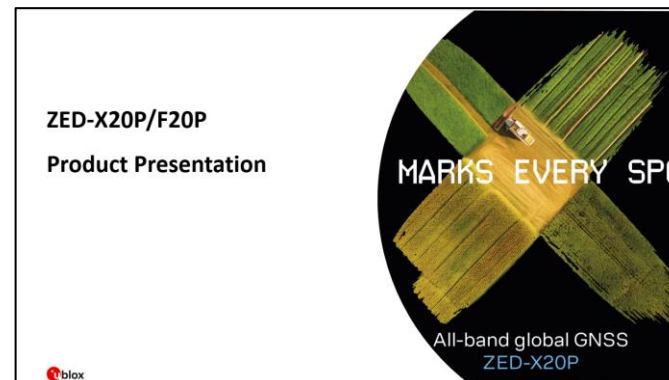
<https://www.u-blox.com/en/pointperfect-service-coverage>

*Upcoming service to be launched during 2026

ZED-X20P feature and performance



Refer to: [ZED-X20P_ProductPresentation_UBXDOC-304424225-19588.pptx](#)



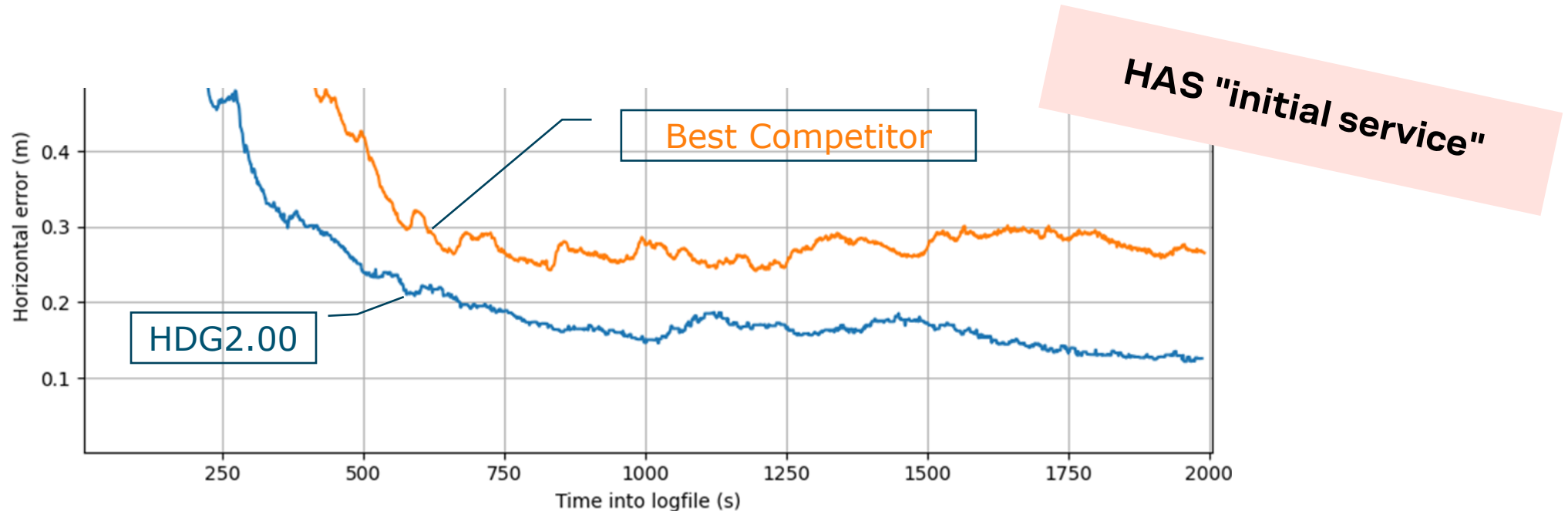
GAL HAS Official Targets

	Service Level 1 (SL1)	Service Level 2 (SL2)
 Coverage	Global	European Coverage Area (ECA)
 Corrections	Orbit, clock, biases (code and phase)	Orbit, clock, biases (code and phase) + atmospheric corrections
 Format	Open format similar to Compact- CSSR	
 Dissemination	Galileo E6B using 448 bits per satellite per second / terrestrial (internet)	
 Constellations	Galileo and GPS	
 Corrected Frequencies	Galileo E1/E5a/E5b/E6/E5 AltBOC GPS L1/L5/L2C	
 Horizontal Accuracy (95%)	<20cm	<20cm
 Vertical Accuracy (95%)	<40cm	<40cm
 Convergence Time	<300s	<100s
 Availability	99%	99%
 User HelpDesk	24/7	24/7

- **Today: Initial Service** since 2023 with reduced performance and only "Service Level 1"
- **Q4/26 (indicative) : Full-Service operation** and updated message specification
 - Phase biases introduced => Allows for fixing ambiguities => **Results in (even) better accuracy, faster convergence, faster re-convergence, better availability.**
- **Q2/27 (indicative): Full-Service declaration**, both Service Level 1 & 2

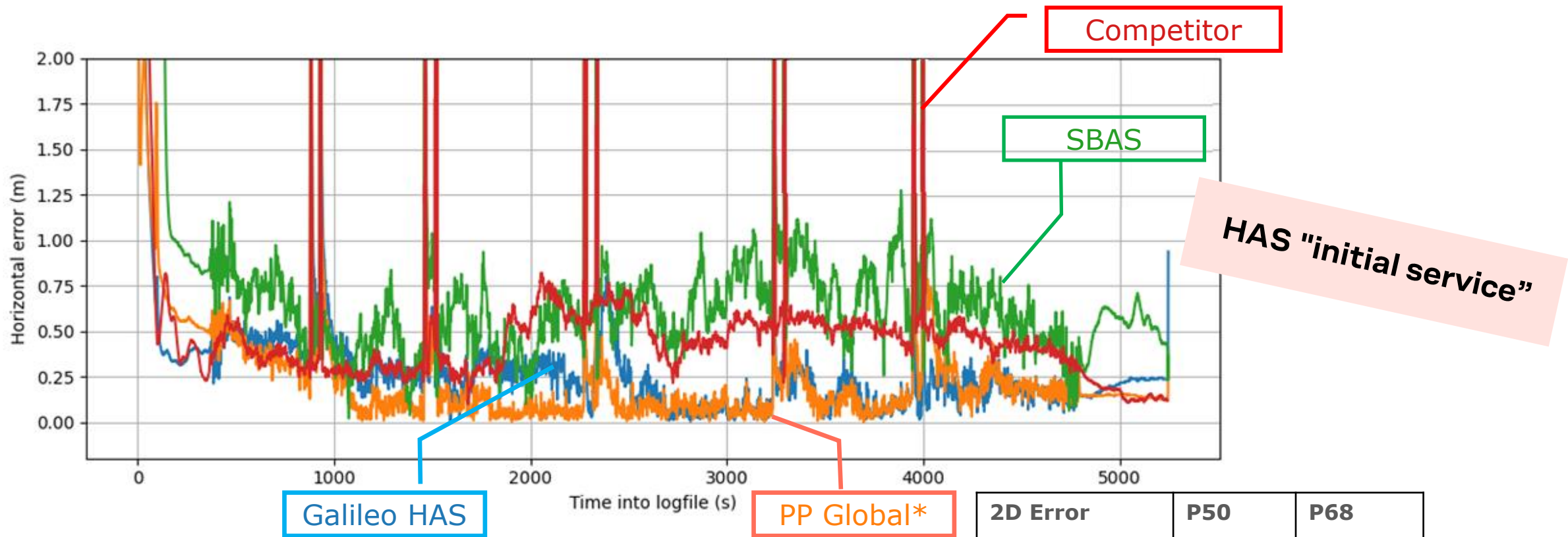
Static convergence – ZED-X20D-00B vs. Best Competitor

Thalwil – 50h (68%)



	P50	P68
ZED-X20D	14cm	22cm
Best Competitor	24cm	37cm

Kinematic scenarios – open sky road test



- A new level of performance better than SBAS
- Sneak preview for July demo

* In development

**Trust isn't a
feature – it's
infrastructure**



Trust from the satellites to the host

- Root of Trust inside every module is the foundation for all device operations
- Authenticated firmware only
 - Meet cybersecurity standards by running software signed and verified by u-blox
 - Ensure authentic replacement parts at system level
- End-to-end secure communications
 - Module to host prevents tampering and data leaks
- Encrypted data storage keeps sensitive information secure
- Device-bound identity
 - Enables services and features uniquely linked to a specific unit or fleet

Built by a trusted supplier

- Independent, transparent, and accountable under strong data protection laws
- No hidden back doors for anyone
- Compliance to ensure your assets remain yours
- Global supply chain integrity backed by ethical sourcing and long-term stability

Jammertest 2025

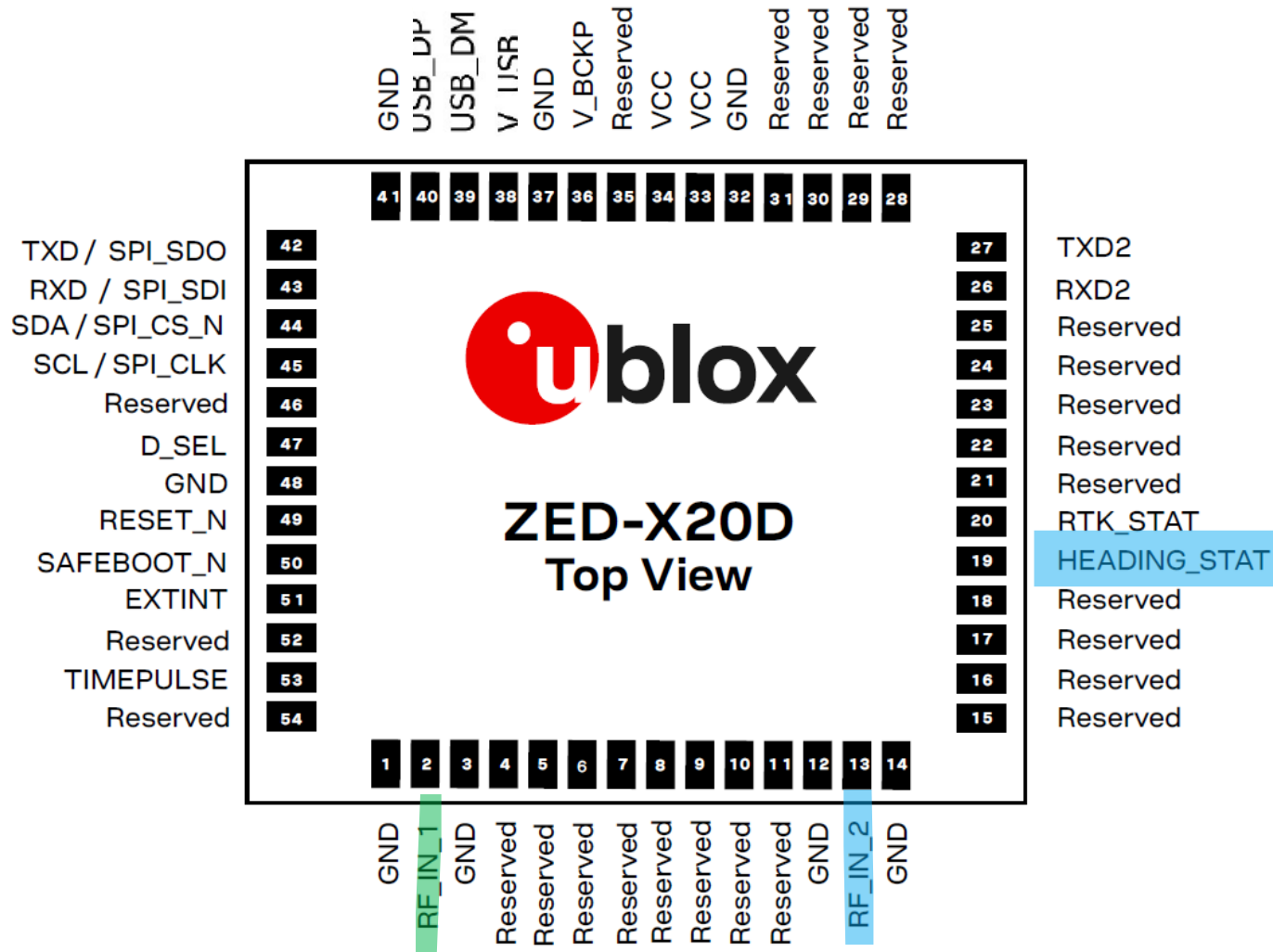
- Key results: [GNSS Jamming & Spoofing Detection at Jammertest 2025](#)
- Webinar: [The Future of Secure Positioning and Timing: Insights from Jammertest 2025](#)

Takeaways: u-blox X20 all-band platform is more robust than other receivers

- Advanced All-Band Capabilities for Robust Performance
 - Supports L1/L2/L5/L6 – Enhanced redundancy with multiple frequency bands. Jammers have to jam at all frequencies to be effective and raises the cost to attack.
 - Reliable jamming detection – Expanded to all bands
- Spoofing detection – Supports Galileo OSNMA and DHS allow-list verification



ZED-X20D pinout vs. ZED-X20P, ZED-F9P/F9H



Changes compared to ZED-X20P/F9P/F9H

➤ Dropped pins

- Antenna supervisor (VCC_RF, ANT_DETECT, ANT_OFF, ANT_SHORT_N)
- TX_READY
- GEOFENCE_STAT

➤ Added pins

- RF_IN_2: all-band RF for Antenna 2
- HEADING_STAT

➤ Modified pins

- RF_IN_1: all-band RF for Antenna 1



Locate and connect every thing.