TANNAI / PRECISION ROBOTICS SOURCING

Technical Fit Review

SAMPLE 01 / INDOOR MOBILE ROBOT / 2D LiDAR

An evidence-led way to shortlist components before you place an order.

DEMONSTRATION REPORT - NOT AN ACTUAL CLIENT ENGAGEMENT.
The buyer brief below is hypothetical. All product data are taken from publicly accessible manufacturer/product documentation checked on 28 Oct 2026. There was no physical testing, supplier outreach or purchase.

Executive decision brief

The decision. An educational lab is considering one 360-degree 2D LiDAR for an indoor Raspberry Pi-class mobile robot. ROS 2 integration is desired but the distribution and operating system have not been specified.

Conditional finding. RPLIDAR C1 deserves initial examination if dark-object ranges and 8-12 Hz nominal rotation are important. RPLIDAR A1 documents a slower typical 5.5 Hz speed and larger dimensions. The Waveshare D500 developer kit has a documented bundle and a compact scan-head specification. None can be chosen without clarifying OS/ROS, target reflectivity, mechanical envelope and exact kit contents.

What is still missing

- Exact OS + ROS 2 distribution and driver version
- Obstacle reflectivity, minimum useful range and desired scan rate
- Mounting clearance, cable path, 5V budget and serial interface
- Budget, quantity, delivery country and target purchase date
- Measurable acceptance test for the navigation application

Buyer outcome: a clear shortlist hypothesis, traceable published numbers, open risks and a concrete verification plan - not an unearned compatibility guarantee.

01 / DOCUMENTED DATA

Candidate comparison

Specifications are shown only where an identified source supports them. Maximum advertised range is not the same as real-world detection across all target materials.

Criterion	SLAMTEC C1 [S1]	SLAMTEC A1 [S2]	Waveshare D500 Kit [S3-S4]
Published range	C1: white 70% 0.05-12m; black 10% 0.05-6m	A1: 0.15-12m	D500 Kit: 0.03-12m
Scan rotation	8-12 Hz (10 typical)	5.5 Hz	6-13 Hz (10 typical)
Electrical / interface	TTL UART @ 460800	5V supply, UART 3.3V level	5V supply, UART @230400
Package contents	Exact USB bridge: not established	Exact USB bridge: not established	Adapter, USB cable and 4-pin cable listed for kit; verify revision
ROS 2 on buyer host	NOT VERIFIED	NOT VERIFIED	NOT VERIFIED

How to read this matrix

Reflectivity matters: the C1 supplier explicitly separates a 12 m result for 70%-reflectivity white targets from 6 m for 10%-reflectivity black targets. Do not copy “12 m” alone into a purchase acceptance plan.

Names do not prove identical goods: the Waveshare D500 LiDAR Kit is NOT established as the same configuration or source as TANNAI public TR-LID-D500.

Interface != integration: a UART specification does not prove current ROS 2 driver compatibility, cable contents or host readiness.

Manufacturer / retailer sources

S1 SLAMTEC RPLIDAR C1 - official source link

S2 SLAMTEC RPLIDAR A1 - official source link

S3 Waveshare D500 Kit - official source link

S4 Waveshare D500 Wiki - official source link

02 / RISKS & ACCEPTANCE

What must be verified

A useful fit review is as much about identifying unanswered questions as comparing published numbers.

Risk	Evidence gap	Action
OS / ROS 2	Unverified driver distribution, package versions and launch evidence	Request exact OS/ROS build and executable demonstration
Serial + power	Host and kit may require adapter or level-shift; 5V capacity unknown	Confirm full kit BOM, adapter, logic levels and current draw
Optical field conditions	Dark material, glass, sunlight and near objects may change usable results	Write target/lighting test plan and log failure cases
Mechanical fit	Rotation, lens clearance, cables and mounting are not defined	Confirm CAD envelope and mounted cable clearance
Procurement	No real supplier quotation, exact stock, shipping or warranty obtained	Get written quote and order terms for exact variant

Five buyer acceptance gates

01 / Version gate: Driver and ROS 2 distribution supported in writing for the exact device.

02 / Data gate: Target computer ingests scans at the agreed rate through the installed USB/UART chain.

03 / Detection gate: Real-world near-field and dark-obstacle field test passes a documented criterion.

04 / Mechanical gate: Mounting drawings, cabling and battery power pass integration review.

05 / Commercial gate: Price, exact variant, package, freight, warranty and returns confirmed in writing.

03 / ACTION PLAN

From evidence to purchase

A compact action plan gives the engineering buyer an unambiguous next step.

Questions for the buyer

- Which host operating system and ROS 2 distribution are required?
- What is the closest obstacle, darkest material and light environment?
- What mounting envelope and 5V/interface restrictions exist?
- What is the shipping destination, quantity and purchasing window?
- What exact detection and scan criteria will count as acceptance?

Action sequence

Step	Action	Owner
1	Complete missing application and OS / ROS requirements	Buyer
2	Re-check exact datasheets, revisions, drivers and supply contents	Analyst + supplier
3	Approve written test plan and obtain physical sample separately if needed	Buyer / integrator
4	Confirm commercial terms and only then place an order	Purchaser

Service boundary: This sample illustrates a proposed US$199 fixed-scope desktop research deliverable. It does not include physical test, coding, manufacturer authorisation, certification, customs or legal advice, guaranteed product suitability or delivery. One clarification round is a proposed service term, subject to the final service agreement.

TANNAI ROBOTICS / TECHNICAL SELECTION & SOURCING

For an actual project, start with the free brief. The review is scoped and accepted before any charge.

Source review date: 2026-10-28 | Sample revision: 1.0 | Not an invoice or a customer case