

Hardware and Software Validation for Scalable sUAS Production

COTS Electronics Can't Be Assumed Safe and Reliable

While the COTS manufacturer may have tested their product and provide a guarantee that the product functions as expected, these guarantees might not cover all dependencies that your product relies on. This can lead to catastrophic malfunctions in the field causing damage and loss of reputation.

Palitronica gives manufacturers a fast, objective way to verify whether newly received COTS electronics are the same as the parts they previously qualified, before they are integrated into flight-critical systems.

Everything Must Be Proven Reliable

Suppliers can and do make internal changes to hardware and software without notification, and they are under no obligation to disclose those changes.

For drone manufacturers, this creates persistent uncertainty:
Are the parts I just received actually the same as the ones I qualified before?

The Anvil Checkpoint addresses this reality directly without assumptions, reverse engineering, or access to supplier IP.

Incoming Inspection and Reliability Validation

Palitronica enables hardware and software inspection and validation through a technology rooted in physics and AI.

It's flagship product, the Anvil Checkpoint, leverages radio frequency (RF) measurements to build detailed, non-invasive profiles of COTS products.

The Anvil Checkpoint measures RF response from the product on standard ports, reaches internal electrical components and constructs a unique electromagnetic signature that reflects the product's makeup and configuration. This profile enables real-time detection of deviations when the COTS manufacturer changes the configuration, all without requiring product change notification from the supplier.

THE RESULT: Scalable sUAS production



Enable Faster Incoming Inspection

Rapidly assess large batches of received products without exhaustive re-testing. Your production keeps moving with confidence in consistent parts.



Catch Changes to Products You Use

Detect internal hardware or software differences even when part numbers, labels, and external appearance remain unchanged.



Reduce Cost of Quality

Avoid unnecessary re-integration testing while preventing escapes that lead to field failures, RMAs, and brand damage.



Audit-Ready Evidence

Generate objective, repeatable inspection data to support quarantine decisions, supplier scorecards, and traceable quality records.

Why Anvil Checkpoint

A black-box approach to detecting reliability risk in COTS electronics, at scale

Verify Incoming COTS Batches

When hundreds or thousands of units arrive, Anvil Checkpoint verifies whether they behave the same, without assuming sameness.

- Confirm batch homogeneity before integration
- Isolate outliers quickly when differences are detected
- Decide whether re-testing or escalation is required

Support Confident Production Decisions

Anvil Checkpoint is not about collecting more data; it's about enabling faster, higher-confidence decisions.

- Do I need to pause production?
- Can I ship on schedule?
- Do I need a full integration test?
- Do I need to escalate to my supplier?

Anvil Checkpoint provides the objective evidence needed to act decisively.

Catch Silent Design or Process Changes

Suppliers may substitute components, upgrade hardware, or change layouts without notice. Anvil Checkpoint detects these differences through a novel approach rooted in physics and AI, without the need of golden samples or baseline matching.

- Flag unexpected changes even when part numbers remain the same
- Detect drift across production runs
- Maintain continuity over long lifecycle programs

Reduce Escapes and RMAs

By detecting meaningful differences early, Anvil Checkpoint helps prevent latent failures from reaching the field.

- Fewer No Fault Found returns
- Faster triage when issues arise
- Lower long-term cost of quality

ANVIL CHECKPOINT

Faster decisions, fewer surprises, confidence at scale

For manufacturers who need to scale production using COTS parts without sacrificing reliability. It determines whether received components are functionally homogeneous or meaningfully different, using a single, repeatable test.



Fully black box

Requires no prior knowledge of the target hardware, making it ideal for supplier validation and incoming inspection.



Broad-spectrum Detection

Identifies any difference from the known good unit, no matter the origin.



Flexible and Reusable

Compatible with existing connectors or adaptable bed-of-nails setups. Used in benchtop testing or in a fully-automated environment.