CAT-72 Procedure

Conformance Assessment Test

Version 1.1 — January 2026 — Procedural Specification

CAT-72 is the formal evidentiary procedure establishing that an autonomous system operates within its declared Operational Design Domain with ENVELO-compliant enforcement. CAT-72 completion is mandatory for ODDC determination. No waivers are issued.

1. Purpose and Scope

CAT-72 serves three functions:

Evidentiary Demonstration: System maintains bounded operation across operational regimes

Enforcement Verification: ENVELO-compliant mechanisms activate correctly on boundary approach

Audit Generation: Cryptographically sealed records suitable for underwriting and incident reconstruction

This procedure applies to all applicants seeking initial ODDC determination or renewal. Partial completion does not satisfy requirements.

2. Test Duration

Parameter	Standard	Extended
Minimum Duration	72 hours (4,320 minutes)	Up to 168 hours
Continuity	Cumulative (active intervals)	Cumulative (active intervals)
Applicability	Standard risk profiles	High-risk domains, complex ODDs

2.1 Interruption Events

Any of the following events constitute an interruption requiring test restart:

- System shutdown, restart, or power cycle (planned or unplanned)
- Loss of evidentiary recording for any duration
- Manual override or intervention (except emergency safety stops)
- ENVELO enforcement activation resulting in system halt
- Loss of communication with Sentinel Authority witness infrastructure
- Any modification to system configuration, ODD parameters, or enforcement settings

3. Demonstration Requirements

3.1 Convergence Demonstration

The system must demonstrate sustained operation within declared ODD bounds. Convergence is measured by:

- Mean operating point stability within declared tolerance bands
- Variance bounded within declared limits for all critical state variables
- No excursions beyond declared ODD boundaries

3.2 Enforcement Demonstration

ENVELO enforcement must be demonstrated through:

- Boundary approach scenarios showing correct enforcement activation
- Negative testing confirming no bypass pathways exist
- Fail-closed behavior verification on simulated enforcement failure

4. Evidence Requirements

Artifact	Format	Integrity
Telemetry Log	Time-series state data	Cryptographically signed
State Recordings	Snapshot sequence	Hash-chain linked
Interlock Events	Enforcement actions	Timestamped + signed
Convergence Metrics	Statistical summary	Boundary proximity calc

5. Tolerance Declaration

Applicants declare operational tolerances prior to CAT-72 based on:

- Equipment manufacturer specifications
- Applicable regulatory requirements
- Risk profile and consequence severity
- Industry standards and best practices

IMPORTANT: Tolerances cannot be modified during the test period.

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