TESTING PROCEDURE

CAT-72 Procedure

Conformance Assessment Test

Version v2.0 · February 2026 · CONFIDENTIAL

CAT-72 Procedure · v2.0

SENTINEL AUTHORITY — ODD Conformance Determination

CAT-72 Procedure

Conformance Assessment Test

Version 2.0 — February 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 three-tier 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:

All three ENVELO enforcement tiers activate correctly

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

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\

· Tier 3 ENVELO enforcement activation resulting in system halt

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· Loss of communication with Sentinel Authority witness infrastructure

· Any modification to system configuration, ODD parameters, or enforcement settings

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3. Demonstration Requirements

3.1 Phase 1 — Continuous Demo (Hours 0\22624\

The system operates for 24 continuous hours under normal conditions within its declared ODD. The system's

own internal safeguards handle any approach to the ODD boundary. ENVELO monitors without intervention.

Convergence Criteria:

· Mean operating point stability within declared tolerance bands

· Variance bounded within declared limits for all critical state variables

· No excursions beyond declared ODD boundaries

· Tier 1 self-correction events observed and logged

· Continuous hash chain integrity maintained

3.2 Phase 2 — Stress Testing (Hours 24\22648\

Edge conditions are introduced to force the system toward and across ODD boundaries. This phase verifies

that ENVELO's Tier 2 enforcement correctly intervenes when the system breaches the ODD, decelerating it to a

Minimum Risk Condition before reaching the ENVELO wall.

Success Criteria:

· Boundary approach scenarios show correct Tier 1 self-correction

· All ODD breaches trigger Tier 2 (MRC\

· MRC achieved within enforcement margin for all events

· System recovers from MRC to normal operation

· All enforcement events logged with full context

3.3 Phase 3 — Enforcement Proof (Hours 48\22672\

This phase verifies the complete enforcement chain including hard halt. Conditions are created where MRC is

insufficient to verify Tier 3 behavior.

· Tier 3 hard halt activates when MRC is insufficient

· Halt is instantaneous and non-bypassable

· System requires full restart after halt

· Negative testing confirms no bypass pathways exist

· ENVELO correctly defaults to halt on uncertainty

· Complete audit trail covers all three tiers

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4. Evidence Requirements

Artifact

Format

Integrity

Telemetry Log

Time-series state data

Cryptographically signed

State Recordings

Snapshot sequence

Hash-chain linked

Tier Transition Events

Tier level + context + action

Timestamped + signed

MRC Records

Declared vs. achieved MRC state

Convergence Metrics

Statistical summary

Boundary proximity calc

5. Tolerance Declaration

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

· Equipment manufacturer specifications

· Applicable regulatory requirements

· Risk profile and consequence severity

· Industry standards and best practices

· Declared MRC for each operational context

IMPORTANT: Tolerances and MRC declarations cannot be modified during the test period.

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