

Final Integrated Candidate — Draft

Operator Qualification Checklist · SMI Controllers 1751136 / 1751219

Operator: _____

Candidate version: _____

SREC SHA-256: _____

Setup A: 1751136 / J-Link 69664082

Installed card A: _____

Date: _____

Source commit: _____

Image loaded on A/B: ☐ Same

Setup B: 1751219 / J-Link 69660123

Installed card B: _____

Controller A: the owner reports its temperature alarm was re-enabled on 2026-07-20. Confirm the enabled state and complete the controlled audible-alarm regression; keep independent over-temperature protection available.

Draft gate: do not begin final qualification until all intended firmware changes are complete, clean gates pass, one source commit and image hash are frozen, and that exact image is loaded on both controllers. Use a fresh checklist for that run.

Prior 00.04.13 development evidence: clean builds, automated checks, both target loads, nominal logging, J-Link source debugging, restored wave files, and SOUND_1 playback passed. Reconfirm release-critical behavior on the frozen final candidate.

1. Basic controller and configuration regression

Check	A	B	Notes
Displayed firmware version matches the frozen candidate version recorded above.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
Engineering/J-Link: identity and hidden configuration, including calibration offsets and PID values, match an approved controller-specific baseline. Do not infer this from customer screens or service values alone.	☐ Pass ☐ Fail ☐ Blocked	☐ Pass ☐ Fail ☐ Blocked	Baseline/capture report:
Operator: displayed model/serial, setpoint, alarm enable/thresholds, and logging choices match the intended setup or work order.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
SD reports Ready without automatically formatting or resizing the installed card.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
New periodic records appear in both mirrors with equal counts and no SD/FileX/drop/mirror errors.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
Temperature control remains stable while opening, refreshing, zooming, and panning the graph.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	

Evidence rule: pass the engineering row only when the report identifies the physical controller, approved baseline and capture hashes, compared fields, and result. With no approved reference, mark Blocked; a plausible-looking value is not proof.

Basic-check notes

Calibration bounds and recovery

Record the approved absolute interval and all pre/post readings.

2. Temperature calibration

Check	A	B	Readings / evidence
J-Link stored correction is finite and inside the approved absolute interval.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
Normal calibration accepts both endpoints and cannot enter a value beyond either endpoint.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
Service 514 uses the same fixed interval; repetition from either endpoint cannot expand it.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
Cancel and timeout do not change or save the correction.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
Valid correction survives save, reboot, and firmware-update preservation without drift.	☐ Pass ☐ Fail	☐ Pass ☐ Fail	
Authorized fault test: invalid persisted correction is visible, inhibits heat, retains diagnostics, and is recoverable.	☐ Pass ☐ Fail ☐ N/A	☐ Pass ☐ Fail ☐ N/A	

Approved interval: _____ Reference instrument/accuracy: _____

Record raw temperature, stored correction, adjusted temperature, VEEPROM/J-Link evidence, and recovery disposition below.

Do not inject invalid persistence on an energized or unauthorized target.

Graph and export checks

Perform the manual matrix on both controller assemblies.

3. Temperature graph

- ☐ Default graph has no approximately 20% black future-data region.
- ☐ Right boundary represents the newest real logged record; compare the newest displayed value and timestamp with its SD record.
- ☐ Exercise 1-, 3-, 6-, 12-, and 24-hour views.
- ☐ Pan completely left/right and exercise every area-zoom action at the oldest and newest limits.
- ☐ Leave graph open for at least three logging intervals; new data appears without reopening, UI stalls, or SD errors.
- ☐ Power-off and missing-record gaps remain visibly distinct and are not bridged with fabricated temperatures.
- ☐ Temperature, target-change, alarm, warning, door, and power-event priorities remain correct at each zoom level.
- ☐ Representative displayed points match the underlying 64-byte SD records.

Graph result	A	B	Notes
Overall disposition	☐ Pass ☐ Fail	☐ Pass ☐ Fail	

4. USB export — test both entry points

Repeat from Graph export and Menu Settings export. Every rejection must identify the reason, return to range entry, and create no file or USB activity.

Boundary case	Expected	Graph	Menu
Exact five-minute range	Accept	☐	☐
Less than five minutes	Reject: too short	☐	☐
Start equal to or after end	Reject: invalid ordering	☐	☐
End equal to now / one second in future	Accept / Reject future	☐	☐
Start exactly 90 days old / one second older	Accept / Reject too old	☐	☐
10 min, 1 hr, 1 day, and 30 day ranges	Accept without file-boundary alignment	☐	☐
Accepted file contents	Only records inside selected timestamps	☐	☐

Graph/export notes

Do not treat a visual pass as SD-record equivalence; compare representative timestamps and values.

Alarm, deferred tests, and disposition

5. Alarm and audio regression

- ☐ Wave address/length tables are valid on A and B after the final candidate load.
- ☐ SOUND_1 completes on both controllers with zero audio-processing errors.
- ☐ Controller A temperature alarm is enabled before normal operation.
- ☐ A real or controlled over-temperature alarm produces the visible alarm and audible SOUND_1.
- ☐ Mute stops repeated annunciation; a genuinely new alarm condition clears mute as intended.
- ☐ External alarm output/relay follows alarm state.

6. Destructive SD qualification — owner deferred

Do not perform these tests on the well-performing installed card. They require expendable inventoried media, explicit authority, verified recovery, and a separate execution checklist.

- ☐ Explicit full-capacity format across additional capacities/card models.
- ☐ Fill/read beyond the former 1.79 GiB boundary.
- ☐ Power interruption during create, append, close, flush, checkpoint, or journal recovery.
- ☐ Repeated endurance, media comparison, multi-sample, and long-duration campaigns.

Deferral does not approve additional card models or erase the unresolved EDGE-card 4 KiB lost-allocation-chain finding.

7. Final disposition

- ☐ PASS — minor-release checks completed with no unexplained regression.
- ☐ CONDITIONAL — accepted limitation documented below.
- ☐ FAIL — release/use blocked; issue and recovery state documented below.

Operator signature:

Date:

Reviewer/owner:

Date:

Detailed source: docs/firmware-00-04-13-plan.md · Destructive media campaign remains deferred by owner.