ALP LAB

E1M-AEN Errata

Known issues and advisories

Document Number: ER-AEN-001 **Revision:** 0.4 **Date:** November 2026 **Status:** Preliminary

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1 Scope

This document is the canonical errata list for the **E1M-AEN family** of Alp Lab System-on-Modules (`E1M-AEN301` through `E1M-AEN803`). It tracks:

- **Hardware** issues against specific module-PCB revisions.
- **Firmware** issues against specific factory-image revisions.
- **Documentation** errors against specific datasheet / HW-guide revisions.

This errata complements but does not replace the **Alif Semiconductor Ensemble** SoC errata (published separately by Alif). SoC-level issues are not duplicated here unless they materially affect the AEN module integration or have a different mitigation on the SoM.

Revision R3 also changes several carrier-visible pads and ratings: USB 2.0 moves to pads B1/C1/C2/D2, IO8 to IO11 become SoC GPIOs, IO21 to IO24 become Wi-Fi module GPIOs (never drive them while Wi-Fi is off), IO25 becomes RTC_WAKE_N, MODULE_EN and MODULE_STBY accept 1.8 V, 3.3 V and 5 V logic, VIO_OUT is limited to 100 mA, and the VDDIN operating range is 4.75–5.25 V. These are intentional design changes, not errata, and are not listed below. Check an R2 carrier against the datasheet section “Hardware Revisions” before fitting an R3 module.

2 Module-Revision History

Revision	Production status	Notes
R1	Early production	Superseded by R2.
R2	Production (shipping)	Board code 2626-R2. Released 2026-06-23. Current shipping revision.
R3	Next revision (preliminary)	Design frozen, not yet built. Fixes the CSI-2 lane polarity erratum and the missing brownout supervisor (E-02) below, and changes several carrier-visible pads; see the datasheet section “Hardware Revisions”.

Table 1 Module-PCB revision history

3 Errata at Current Revision (R2)

Note: Two known errata apply to R2 and are fixed in R3. When a new issue is identified, an entry will be added below describing the problem, affected SKUs and revisions, severity, status, and customer-side workaround (if any).

ID	Title	Affected SKUs	Affected rev.	Severity	Status / Workaround
E-01	MIPI CSI-2 lane polarity swapped at the module pads (R2)	All E1M-AEN SKUs	R2	**Major**	Fixed in R3. **Workaround for R2:** on the carrier, swap P and N of each CSI-2 lane when connecting to an R2 module, or route both polarities through 0R population options so one carrier layout can serve R2 and R3.
E-02	No reset or brownout supervisor on the module (R2): the SoC can be damaged by a slow or non-monotonic	All E1M-AEN SKUs	R2	**Critical** (permanent damage)	Fixed in R3, which has an on-module brownout supervisor that drives P0Rn (W1) low. **Workaround for R2:** the carrier must provide the

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ID	Title	Affected SKUs	Affected rev.	Severity	Status / Workaround
	supply ramp or a supply dip				supervisor; see the E-02 detail below.

Table 2 Active errata

E-01 detail. On R2 the P and N pads of each CSI-2 lane are swapped between the SoC and the E1 pads (verified in the R2 netlist). Pad P33 carries CSI clock N and pad P34 carries clock P; pads Q33 and Q34 carry lane 1 N and P; pads R33 and R34 carry lane 0 N and P. The datasheet pin table (P33 = CSI0_C_P, P34 = CSI0_C_N, Q33 = CSI0_1_P, Q34 = CSI0_1_N, R33 = CSI0_0_P, R34 = CSI0_0_N) is correct for R3 and describes the intended pad assignment.

E-02 detail. The Alif Ensemble SoC (errata AERR0012 ER004, which applies to E4, E6 and E8 in all silicon revisions, and the SoC datasheet operating conditions) requires that the supply rises monotonically at power-up and never drops below 1.65 V once 1.65 V is reached. If that cannot be guaranteed, an external reset supervisor must hold the SoC reset (P0Rn, active low) while the supply is below 1.65 V. Otherwise the SoC can be permanently damaged and no longer function.

On R2 the module has no supervisor: P0Rn (W1) is only pulled up on the module and brought out to the E1 pad. **Do not leave P0Rn floating on a product carrier built for an R2 module.** Fit a reset supervisor on the carrier that drives P0Rn low with an open-drain output before the module 1.8 V supply (`VIO_OUT`) falls below 1.65 V, and add enough decoupling that supply noise does not trip it. Do not add more than 1 nF of capacitance on P0Rn. The E1M-EVK is a development carrier; do not infer from it that a product carrier can omit the supervisor.

On R3 the supervisor is on the module and no carrier supervisor is needed. The datasheet pin table and the HW Design Guide describe the R3 behaviour; the P0Rn rules in them apply to R3 modules only. Read the hardware revision from the module identity EEPROM (reported by the Alp SDK) before applying either set of rules.

4 Resolved Errata

> **Note:** No resolved errata to report. Once an entry from the active list is closed, it moves here with its resolving module-revision tagged in the **Resolved-in** column.

ID	Title	Affected SKUs	Affected rev.	Resolved in
—	—	—	—	—

Table 3 Resolved errata

5 Severity Conventions

Level	Meaning
Critical	Renders the affected SKU unusable in the application class it is intended for. Field-recall criterion.
Major	Significant functional impact requiring a non-trivial customer-side mitigation. Documented in the active list with a clearly described workaround.
Minor	Observable but does not block any documented use case. Mitigation is optional.
Documentation	Wrong value or unclear statement in a published document; no hardware/firmware impact. Fixed in the next revision of the affected document.

Table 4 Severity levels

6 Reporting a New Issue

If you believe you've identified an issue not listed above:

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1. Identify the module: note the serial number and production date code laser-marked on the top side of the module (DS-AEN-001, Module Marking). The hardware revision (R2 or R3) is also stored in the module identity EEPROM and is reported by the Alp SDK.
2. Capture the symptom (logs, photos, oscilloscope traces, measurement conditions).
3. File a report through one of the channels in **DS-AEN-001 §18.4** (GitHub Issues at github.com/alplabai for SDK-related issues; contact@alplab.ai for hardware and NDA-covered conversations).

Alp Lab will respond within five business days with an initial triage classification (acknowledged / under-investigation / closed-as-expected).

7 Revision History (of This Document)

Revision	Changes	Date
0.1	• Initial published errata. • No active entries at this revision.	May 2026
0.2	• Module revisions renumbered R1/R2/R3 • added erratum E-01 (CSI-2 lane polarity, R2, fixed in R3) • added R3 pad-change note to Scope • added erratum E-02 (no brownout supervisor on R2, fixed in R3; carrier supervisor required for R2) • R3 `MODULE_EN` / `MODULE_STBY` accept 1.8 V logic.	October 2026
0.3	• Release history: every entry formatted as a bullet list.	October 2026
0.4	• Product name on page 1 links to the product page on alplab.ai.	November 2026

Table 5 Document revision history

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