ALP LAB

E1M-AEN RoHS / REACH / POPs Declaration

Declaration of Conformity — materials compliance

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Table of Contents

1 Declaration . . . 3
2 Scope . . . 3
3 RoHS 3 — Restricted Substances . . . 3
3.1 Annex III Exemptions . . . 4
4 REACH — Substances of Very High Concern . . . 4
5 POPs — Persistent Organic Pollutants . . . 4
6 Basis of Declaration . . . 4
7 Validity & Limitations . . . 5
8 Authorisation . . . 6
9 Revision History . . . 6

List of Tables

Table 1 Declaration coverage . . . 3
Table 2 RoHS 3 restricted substances and maximum concentration values . . 3
Table 3 RoHS Annex III exemptions potentially invoked at component level . . 4
Table 4 Component-supplier compliance basis (declaration tracker) . . . 5
Table 5 Document revision history . . . 6

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1 Declaration

Declaration of Conformity **Alp Lab AB** declares, on the basis of the component-supplier declarations referenced in Section 6, that the **E1M-AEN System-on-Module** family (`E1M-AEN301` through `E1M-AEN803`, hardware revision R3) conforms to:

- **EU RoHS 3** — Directive 2011/65/EU as amended by Delegated Directive (EU) 2015/863, restricting ten substances (Section 3);
- **EU REACH** — Regulation (EC) No 1907/2006, Article 33 (Substances of Very High Concern, Section 4);
- **EU POPs** — Regulation (EU) 2019/1021 on persistent organic pollutants (Section 5).

Status of this issue: This document is **Preliminary**. The declaration above is finalised — and re-issued as **Released** and signed (Section 8) — only once every supplier declaration in Section 6 is confirmed on file for the applicable module revision. Until then it states Alp Lab's **expected** conformity based on standard catalogue-part compliance, not a warranted legal declaration.

2 Scope

This declaration covers the E1M-AEN family of System-on-Modules manufactured by Alp Lab AB, across all seven MPN variants (`E1M-AEN301/501/701/401/601/801/803`), which share a common E1M™ footprint and bill of materials differing only in the Ensemble SoC variant and, for `E1M-AEN803`, the fitted external OSPI memories.

The declaration applies at the level of the **assembled module as delivered**. It covers all electrical components and the bare PCB, the assembly solder, and surface finishes. It does not extend to any carrier board, enclosure, cabling, or packaging supplied separately.

Item	Value
Product family	E1M-AEN System-on-Module (`-301` … `-803`)
Covered revisions	Module hardware revision R3 (see DS-AEN-001).
Assembly process	Pb-free SAC reflow (RoHS-compliant solder)
BOM basis	230 fitted electrical placements, 61 unique line items, 23 suppliers (hardware revision R3, E1M-AEN803 population with both external memories fitted)
Issued by	Alp Lab AB

Table 1 Declaration coverage

3 RoHS 3 — Restricted Substances

The module conforms to Directive 2011/65/EU as amended by (EU) 2015/863. No restricted substance is intentionally present above its maximum concentration value in any homogeneous material, except where covered by an Annex III exemption invoked at the component level (Section 3.1).

Restricted substance	Symbol	Max. conc. (wt% homogeneous)	Status
Lead	Pb	0.1%	Conform
Mercury	Hg	0.1%	Conform
Cadmium	Cd	0.01%	Conform
Hexavalent chromium	Cr(VI)	0.1%	Conform
Polybrominated biphenyls	PBB	0.1%	Conform
Polybrominated diphenyl ethers	PBDE	0.1%	Conform

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Restricted substance	Symbol	Max. conc. (wt% homogeneous)	Status
Bis(2-ethylhexyl) phthalate	DEHP	0.1%	Conform
Butyl benzyl phthalate	BBP	0.1%	Conform
Dibutyl phthalate	DBP	0.1%	Conform
Diisobutyl phthalate	DIBP	0.1%	Conform

Table 2 RoHS 3 restricted substances and maximum concentration values

3.1 Annex III Exemptions

Mainstream catalogue passives and ICs commonly rely on the following RoHS Annex III exemptions for lead in materials **internal to the component** (the module's assembly solder is Pb-free SAC). These are declared as potentially invoked pending each supplier's confirmation; they do not affect the module's RoHS-compliant status.

Exemption	Scope	Likely component classes
6(c)	Copper alloy containing up to 4% lead by weight	Connector contacts, component leads
7(a)	Lead in high-melting-temperature solders (≥85% Pb)	Internal die/terminal solder in some ICs
7(c)-I	Lead in dielectric/glass of ceramic & glass electronic components	MLCC capacitors, chip resistors
15(a)	Lead in solder to complete a viable electrical connection between die and carrier within an IC package	BGA / QFN / WLCSP ICs

Table 3 RoHS Annex III exemptions potentially invoked at component level

4 REACH — Substances of Very High Concern

Under Regulation (EC) No 1907/2006 (REACH), Article 33, a supplier of an article must communicate any Substance of Very High Concern (SVHC) on the ECHA Candidate List present in that article above 0.1% by weight (w/w).

Based on the supplier declarations referenced in Section 6, **no SVHC on the ECHA Candidate List (as last updated) is intentionally present above 0.1% w/w** in the E1M-AEN module as delivered, and no safe-use information beyond normal electronic-assembly handling is required.

> **Note:** REACH is a **moving target**: the ECHA Candidate List is updated approximately twice yearly. This declaration is valid against the Candidate List revision in force at the issue date. Alp Lab re-evaluates against each Candidate List update; customers requiring a declaration against a specific list revision should request a re-issue.

5 POPs — Persistent Organic Pollutants

The module conforms to Regulation (EU) 2019/1021 on persistent organic pollutants. None of the substances restricted under that regulation — including short-chain chlorinated paraffins (SCCPs), perfluorooctane sulfonic acid (PFOS), perfluorooctanoic acid (PFOA) and its salts/related compounds, hexabromo- cyclododecane (HBCDD), and the restricted polybrominated diphenyl ethers — is intentionally added or present above the applicable concentration limits.

6 Basis of Declaration

This declaration is a **roll-up of component-supplier declarations**, not the result of analytical testing of the assembled module by Alp Lab. Conformity rests on the RoHS, REACH and (where applicable) POPs declarations obtained from the component manufacturers below, covering all 61 line items of the E1M-AEN R3 BOM.

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Manufacturer	Component classes supplied	Declaration
Texas Instruments	Regulators (including the nano-power LDOs), supervisor, Ethernet PHY, logic buffers, temperature sensor	Public · per-part
onsemi	EEPROM	Public · per-part
NXP Semiconductors	Level shifter	Public · per-part
Nexperia	MOSFETs	Pending
Renesas Electronics	Power-control IC	Pending
ISSI	OSPI NOR flash	Pending
Murata Electronics	MLCC capacitors	Public · per-part
TDK Corporation	MLCC capacitors	Public · per-part
KEMET	MLCC capacitor	Pending
Yageo	Chip resistors	Public · company
Samsung Electro-Mechanics	MLCC capacitors, inductors, R	Public · company
Taiyo Yuden	MLCC capacitor	Public · company
Winbond Electronics	HyperRAM	Public · company
Diodes Incorporated	Load switches	Public · company
Kinetic Technologies	LED driver	Public · company
Delta Electronics / Cyntec	Power inductor	Public · company
Würth Elektronik	Power inductors	Pending
Micro Crystal AG	RTC	Public · company
ECS Inc.	32.768 kHz crystal	Public · company
Raltron Electronics	38.4 MHz crystal	Public · company
KYOCERA AVX	50 MHz oscillator	Public · company
Alif Semiconductor	Application SoC	On file · REC-001 r5
BDE Technology	Wi-Fi / BLE module	Request · direct

Table 4 Component-supplier compliance basis (declaration tracker)

Note: **Declaration** column: **Public · per-part** — supplier emits a signed declaration for the exact part number via a self-service material-content tool; **Public · company** — supplier publishes a company-level RoHS/REACH certificate covering the part; **On file · direct** — supplier-issued declaration obtained directly and filed; **Request · direct** — no declaration yet, obtained from the supplier directly; **Pending** — supplier added in R3; declaration source not yet located. Suppliers that only provide parts not fitted in the standard build (the RTC backup supercapacitor, the second EEPROM, the CAN transceiver, the secure element and the on-module RF connector, whose supplier I-PEX is an assembly-option supplier only) are not listed. The Alif row is now closed: **REC-001 Certificate of Compliance, Rev 5** certifies the FBGA/WLCSP Ensemble family as RoHS10-compliant, REACH-compliant (SVHC candidate list ed. 4 Feb 2026), and Halogen-Free (IEC 61249-2-21). One **Request** row remains open (BDE Wi-Fi/BLE module); the declaration is issued as **Released** once it is closed and all PDFs are on file. Source locations are maintained in the working index `supplier-declarations-index.md`.

7 Validity & Limitations

1. **Roll-up, not test.** Conformity is asserted from component-supplier declarations, consistent with normal practice for electronic assemblies. Alp Lab does not perform XRF/ICP analytical verification of every lot.
2. **Per-revision issue.** This declaration is issued per module revision; a BOM change (alternate part, second source) triggers re-evaluation and re-issue.

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3. **Regulatory currency.** RoHS exemptions expire and the REACH Candidate List grows; the declaration is valid against the regulatory state at the issue date.
4. **Scope boundary.** Covers the module as delivered only — not carrier boards, enclosures, or separately-supplied accessories.

8 Authorisation

Signed for and on behalf of **Alp Lab AB**:

Name: _____

Title: _____

_____

Signature

Date: _____

Place: _____

9 Revision History

Revision	Changes	Date
0.1	• Initial preliminary declaration drafted from the released E1M-AEN BOM (22 suppliers, 51 line items). • Awaiting supplier declarations and authorised signature before release.	June 2026
0.2	• Supplier declaration sources located: 20 of 22 public (8 per-part self-service, 12 company-level), 2 by direct request (Alif, BDE). • Tracker statuses updated; source URLs captured in the working index.	June 2026
0.3	• Alif direct declaration received and filed — REC-001 Certificate of Compliance Rev 5 (Ensemble FBGA/WLCSP: RoHS10, REACH SVHC list 4 Feb 2026, Halogen-Free IEC 61249-2-21). • Alif tracker row closed; one direct-request row remains (BDE Wi-Fi module).	July 2026
0.4	• BOM basis rebuilt from the October 2026 R3 bill of materials: 230 fitted placements, 61 line items, 23 suppliers. • The RTC backup supercapacitor is no longer fitted in the standard build, so its supplier (Seiko Instruments) is removed from the basis table; suppliers of parts that are not fitted (STMicroelectronics, and I-PEX for the DNP on-module RF connector) are removed as well. • Coverage extended to –803.	October 2026
0.5	• Release history: every entry formatted as a bullet list.	October 2026
0.6	• Table of Contents: each entry links to its section; the front-matter lists are set tighter.	October 2026
0.7	• Product name on page 1 links to the product page on alplab.ai. • On-module parts named by function; component designators removed.	November 2026

Table 5 Document revision history

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