Wireless Module Integration Evidence Matrix

A short guide to deciding what a pre-assessed radio module's evidence still covers once it is inside your product. Companion to the workbook (XLSX) and blank template (CSV).

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The question this matrix answers

Your BLE, Wi-Fi or LoRa module arrives with a CE mark, a supplier EU declaration of conformity and a set of reports. That evidence describes the module in the form the supplier sold it, usually measured on an evaluation board, with an approved antenna, a clean supply and the supplier's firmware settings. Once the module sits on your PCB, next to your regulator, behind your enclosure and running your firmware, you are the manufacturer of the finished radio equipment under Article 10 of the Radio Equipment Directive (RED), and the conformity of that product is yours to show.

So the useful question is not "is the module CE marked?" but: which conditions did the supplier's assessment depend on, which of them does the finished product keep, and what follows where it does not? The matrix asks that question once per requirement.

Two working rules. (1) Radio-spectrum evidence (RED Art. 3(2)) can often be reused when the supplier's integration conditions are preserved; ETSI EG 203 367 describes when reuse holds. (2) EMC, electrical and battery safety, RF exposure and cybersecurity are properties of the finished product. They normally need product-level assessment or a written justification.
The matrix is a review record, not a conformity determination. The manufacturer's competent reviewer decides; the matrix records what the decision rests on.

How to use it

1. Pin down module identity. Model, hardware revision and stack version on your BOM against those on the supplier's DoC and reports. If they differ, you are holding evidence for a different item.

2. List the integration conditions. From the supplier's integration instructions: approved antennas and maximum gain, keep-out from metal, supply range and ripple, grounding, RF power and firmware settings. Each one becomes a comparison.

3. Compare with the released design. Antenna placement and environment, enclosure, battery, regulator, ground plane, cables and ports, firmware, co-located radios, installation distance.

4. Decide per row, with criteria written down first. Start each conclusion with an outcome label (justified reuse, documentation-only correction, material gap, evidence missing). Where a pre-scan decides, record the pass criterion before the measurement.

5. Record the assessment route. Annex II self-assessment is available for Art. 3(2) and 3(3) only when harmonised standards are applied in full and no listed restriction applies to your product; otherwise a notified body is involved (Annex III or IV).

6. Put it under change control. Module revision or stack update, antenna, enclosure, regulator, PCB or supplier change, a new radio, an OJ restriction or a legal transition re-opens the affected rows.

What the starter rows cover

Rows	Topic
W01	Module identity and the supplier's integration conditions
W02, W03	Radio spectrum: antenna and RF configuration; spurious emissions and receiver performance (RED Art. 3(2))
W04	EMC of the finished device (Art. 3(1)(b))
W05, W06	Safety, including battery and enclosure, and human exposure to RF fields (Art. 3(1)(a))
W07, W13	Cybersecurity: RED Art. 3(3) via Delegated Regulation 2022/30, then the Cyber Resilience Act
W08	Conformity-assessment route (Art. 17)
W09, W10	Technical documentation, EU DoC of the finished product, instructions and marking
W11, W12	RoHS materials evidence; Batteries Regulation (EU) 2023/1542
W14	Co-location and simultaneous transmission of more than one radio
W15, W16	Production and change control; retention, WEEE, REACH/SCIP, packaging and the EU economic operator

Each row is a prompt to adapt to your product, not an exhaustive legal checklist. Mark rows that do not apply with a reason instead of deleting them.

Worked example: a battery-powered BLE environmental monitor

The example tab uses a fictional wall-mounted sensor, EX-ENV-20: sensor, MCU, BLE module (trace antenna on the PCB), a 1.2 MHz buck regulator, an in-house Li-ion pack, USB-C charging, a plastic enclosure on a metal mounting plate, reporting to a gateway. One physical decision, the mounting plate, runs through several rows. The table below sets the supplier's conditions against the release design.

Supplier assumption	Released design	Outcome and next step
Antenna keep-out of at least 10 mm from metal	Mounting plate 4 mm from the antenna; battery pack under it	MATERIAL GAP: detuning and pattern change cannot be bounded on paper. Radiated pre-scan with enclosure and battery fitted; criterion set beforehand (e.g. e.i.r.p. at least 6 dB below the limit and out-of-band mask met), otherwise a formal EN 300 328 test.
Clean supply (eval board, linear regulator, ripple below 50 mV)	Switching regulator placed 8 mm from the module, no shield, ground plane split under the module	MATERIAL GAP: supply-pin noise and radiated spurious checks on the production unit. The split ground plane is fixed in the next PCB revision whatever the result.
Module Rev 1.2, stack 3.4 on the DoC and reports	BOM carries Rev 1.3, stack 3.6	EVIDENCE MISSING: request an updated DoC, report and change notice; verify, do not assume, that RF parameters are unchanged.
Module EMC tested on the eval board	USB-C charging, sensor bus and regulator added	EVIDENCE MISSING: full-product EMC test in charging, transmitting and sleep modes.
Cell-level IEC 62133-2 summary	Pack, protection and charger assembled in-house; enclosure not assessed	EVIDENCE MISSING: pack test and product safety evaluation; decide who is the battery manufacturer under the Batteries Regulation.
Supplier says "complies with EN 62479"	Fixed mounting at 20 cm or more; about 4 mW e.i.r.p.; distance not in the instructions	DOCUMENTATION-ONLY CORRECTION: add the exposure calculation to the file and the mounting distance to the instructions.
Module alone is not internet-connected	Sensor reports to a gateway that connects to the cloud	SCOPE OPEN: document the architecture and decide whether RED Art. 3(3)(d) applies via the gateway.

All EX- identifiers, report numbers and values are teaching content. Headroom figures are decision criteria, not results. No measurements, test results or approvals are asserted.

Standards and status points that change the outcome

Limits follow the antenna, not the connector. The EN 300 328 limits are radiated quantities (e.i.r.p. and PSD). Change what surrounds the antenna and the result can move while conducted power stays exactly the same.

EMC edition. The RED list has cited V3.3.1 of EN 301 489-17 (with notices) since May 2025. A module report made to an earlier version gives your product no presumption of conformity.

Standards missing from the RED list. None of EN 62479, EN IEC 62368-1 or EN IEC 62133-2 is harmonised under the RED. You can still use them as the state of the art, but then your technical file must carry the full reasoning, not just a reference.

EN 18031 restrictions. The OJ citation of the EN 18031 standards carries restrictions. Where a restriction applies to your product (for example, the user may choose not to set a password), self-assessment is not available and a notified body is needed.

Cybersecurity and other dates

Date	What changes
1 August 2025	RED Art. 3(3)(d), (e), (f) apply through Delegated Regulation (EU) 2022/30, including equipment that reaches the internet via other equipment such as a gateway.
12 August 2026	Packaging and Packaging Waste Regulation (EU) 2025/40 applies to product packaging.
11 September 2026	Cyber Resilience Act reporting obligations apply (actively exploited vulnerabilities, severe incidents).
18 February 2027	Batteries Regulation removability and replaceability requirements for portable batteries.
11 December 2027	Cyber Resilience Act applies in full; Delegated Regulation (EU) 2026/339 repeals 2022/30 from this date.

Standards status: to be re-checked against the current Official Journal before publishing. Editions, citations and notices in this guide and the workbook reflect the Commission RED summary list of 7 September 2026 and checks made in November 2026. Open the current list for your placing-on-market date and record the access date in your file.

About this resource

Prepared by EcoComply GmbH, Heilbronn, with AI assistance. Version 1.0, last updated 27 November 2026. This guide is not legal advice and is a review record, not a conformity determination. Corrections: john@ecocomply.ai. Related reading: ecocomply.ai/blog/supplier-ce-test-reports and ecocomply.ai/resources/component-change-review-electronics.