

2.4 GHZ WIRELESS MODULE • ENGINEERING EVALUATION

AmbiConnect B22

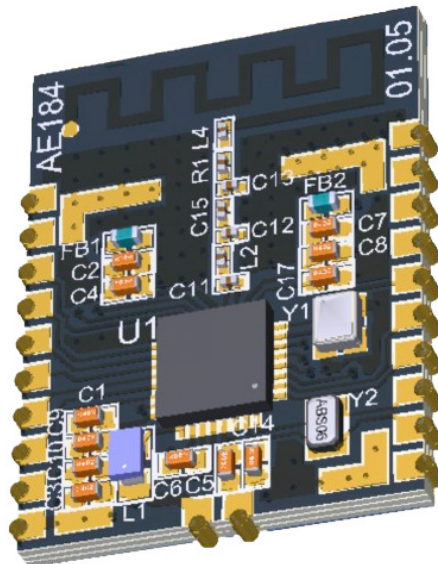
A compact 2.4 GHz wireless module on the Silicon Labs EFR32BG22 platform.

Designed by Ambimat as the hardware starting point for low-power connected products — and as the entry point into the engineering team that can take the rest of the product from architecture to manufacture.

ENGINEERING EVALUATION — NOT YET RELEASED FOR SALE

READ THIS FIRST

AmbiConnect B22 is at engineering / pre-release stage, and this brief is written to match. It states what has been verified today and says plainly when the rest follows; it does not fill a specification table with placeholder rows. The figures a silicon vendor publishes for a system-on-chip are not the figures for a module built around it — current consumption, range, output power and temperature behaviour all depend on the board, the antenna, the enclosure and the firmware — so Ambimat does not restate an EFR32BG22 datasheet maximum as an AmbiConnect B22 specification. Detailed electrical, mechanical and RF specifications will be released following completion of engineering validation.



AmbiConnect B22 — module PCB, angled view. 3D CAD render of board revision AE184_BG22_01.05; not a production photograph, and not a mechanical drawing. No substitute or third-party module image has been used anywhere in this document.

2.4 GHz	EFR32BG22	Ambimat	Eval	1982
Wireless band	Silicon Labs SoC platform	In-house RF, hardware and firmware design	Engineering-evaluation stage	Ambimat Electronics, established

Overview

AmbiConnect B22 is a compact wireless and embedded-processing module built by Ambimat Electronics on the Silicon Labs EFR32BG22 system-on-chip, operating in the 2.4 GHz band. It is intended for evaluation in low-power connected-device architectures: sensing and monitoring nodes, asset and presence devices, portable peripherals, and equipment that needs a short-range wireless link to a nearby handheld or gateway.

The module exists so that a conversation about a connected product can start against real hardware rather than a block diagram. Most connected-product programmes do not fail at the radio — they fail at the integration: the antenna environment, the power budget that looked fine on paper, the firmware that has to survive a field update, and the transition from a working prototype to a build that repeats. Evaluate the module, and Ambimat can take the work forward as far as a programme needs it to go.

KEY FEATURES

- 2.4 GHz wireless operation
- Silicon Labs EFR32BG22 system-on-chip platform
- Designed in-house by Ambimat — RF, hardware, firmware and security in one team
- Targeted at low-power, battery-constrained product architectures
- Intended as an integration starting point, not a finished end product
- Optional Ambimat design-in engineering for carrier boards, firmware and productisation

Features describe design intent and the platform the module is built on. Verified module-level information is listed separately below; anything not listed there has not yet been characterised for the assembled module.

CURRENT VERIFIED INFORMATION

ITEM	AMBICONNECT B22
Platform	Silicon Labs EFR32BG22
Frequency band	2.4 GHz
Product status	Engineering / pre-release
Intended role	Wireless and embedded-processing module for integration into a customer's own product
Integration and design support	Optional Ambimat engineering — carrier board, antenna and RF integration, firmware, and preparation for manufacture

Specification release. Detailed electrical, mechanical and RF specifications will be released following completion of engineering validation. Ambimat publishes a module-level parameter once it has been verified for the assembled module, and does not restate an EFR32BG22 datasheet figure as an AmbiConnect B22 specification in the meantime.

PRODUCT STATUS

ITEM	CURRENT STATUS
Product stage	Engineering evaluation
Commercial availability	Not yet released for sale
Wireless-technology qualification	Under review. No completed product qualification is claimed.
Geographic radio approvals	None published. Approvals are stated only once individually verified for this module.
Ordering codes	Issued with the applicable hardware revisions and configurations
Engineering samples	Availability on request — currently under preparation
Public datasheet	Issued on completion of engineering validation

Interpretation. This records where the module stands in Ambimat's own engineering process. It is a status statement, not a substitute for qualification and not a regulatory approval; everything in it may change before commercial release.

Typical applications

Three families of application, all at evaluation stage. These are applications the module is intended to enable, not deployments it has completed. Each requires its own product-level assessment.

Industrial sensing and retrofit

Condition and environmental monitoring points added to plant and buildings where running a cable is the expensive part. Battery-powered sensor interfaces where the power budget, not the feature list, sets the architecture. Machine-status peripherals reporting counters and faults from equipment that was never designed to report anything.

Asset, access and identity-aware devices

Asset and presence devices that confirm a thing, or a person, is where the system believes it is. Portable authorisation peripherals that grant a permission to a larger system rather than holding it. Commissioned sensors and service tools that must be brought into service by an identified person, with a record of who did it.

Connected-mobility and EV peripherals

EV-charger commissioning and service tools. Vehicle accessory and diagnostic peripherals that sit alongside a vehicle system rather than inside its safety path. Technician and asset-interaction devices. Local maintenance accessories around roadside equipment.

Mobility limitation. AmbiConnect B22 is not presented as a V2X radio, an automotive safety component, or an automotive-qualified module. Where it appears near a mobility system it is as a local commissioning, diagnostic or service interface. Mobility applications require product-level technical, environmental, regulatory and safety assessment. Ambimat's V2X and connected-mobility work is a separate specialist engineering offering.

DEVELOPMENT AND INTEGRATION

The module is the smallest part of a connected-product programme. Ambimat offers two structured engagements around it, and either can be taken without any commitment to further work.

ENGAGEMENT	WHAT IT COVERS
Integration Review	A structured review of an intended architecture against the module: power budget, antenna environment, host interface, mechanical constraints, and the security and regulatory questions that will decide the programme.
Architecture Sprint	A focused engineering block turning a product idea into a system architecture: block diagram, interface decisions, power and connectivity strategy, security tier, and the risks that need retiring first.

If one parameter decides your design — power budget, range, temperature, footprint — contact Ambimat with the intended architecture. We will tell you what has actually been measured rather than what the silicon is capable of.

A development kit, reference carrier board and software package are part of the module's roadmap. Neither the tools nor their release dates are established, and nothing here should be planned against.

WHAT AN EVALUATION LOOKS LIKE

Ambimat would rather have a short technical conversation before hardware changes hands than send a board into a design it does not suit. Useful things to tell us:

- ❑ The product, its power source and the expected battery life
- ❑ The enclosure, and what sits near the antenna
- ❑ The host controller and the interfaces it has spare
- ❑ The target markets, because that decides the approvals route
- ❑ What the wireless link actually has to do, and how often
- ❑ Programme volume and the timeline you are working to

From that, Ambimat can say whether the module suits the design as it stands, what would have to be characterised or changed first, and which of the two engagements — if either — is worth running.

Evaluation does not commit either side to anything beyond it, and no engineering engagement is a condition of obtaining the module.

ENGINEERING SUPPORT

A customer can integrate AmbiConnect B22 independently, with no further involvement from Ambimat. Where more is needed, the team that designed the module is available for:

- ❑ Carrier and baseboard design around the module
- ❑ Antenna environment and RF integration
- ❑ Application-specific hardware and sensor interfaces
- ❑ Embedded firmware, device drivers and update mechanisms
- ❑ Mobile, gateway and cloud integration
- ❑ Secure device identity, where the application requires it
- ❑ Validation, and preparation for manufacture

Engagement is optional and priced separately from the hardware. Scope is agreed per programme after technical review, not offered as an off-the-shelf entitlement. The resulting product belongs to the customer; Ambimat supplies the module and the engineering.

WHERE THE ENGINEERING FITS

Layer 1 — Product	The module, used independently. No services attached.
Layer 2 — Design-in	Integration Review or Architecture Sprint against the customer's intended design.
Layer 3 — Custom engineering	Customer-specific hardware, firmware and connected-product development where the standard module is not sufficient.
Layer 4 — Productionisation	Support in moving from engineering prototype toward manufacture.

Ambimat is not a network operator and does not seek to run deployed connectivity, fleets or IoT networks. The deployed application, cloud and connectivity are the customer's, or a partner they appoint.

ORDERING AND AVAILABILITY

ITEM	POSITION
Ordering part number	<i>Not yet issued</i>
Commercial availability	<i>Not yet released for sale</i>
Pricing	<i>Not published</i>
Minimum order quantity	<i>Not established</i>
Lead time	<i>Not established</i>
Packaging	<i>Not established</i>
Engineering samples	Availability on request — currently under preparation. Discuss availability and timing with Ambimat directly.

Commercial terms for distribution have not been established and are a matter for discussion with Ambimat and with the distributor.

CONTACT

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Ambimat Electronics has designed and manufactured embedded electronics since 1982. AmbiConnect B22 is developed by the same hardware, firmware and RF team that delivers customer product-development programmes.