

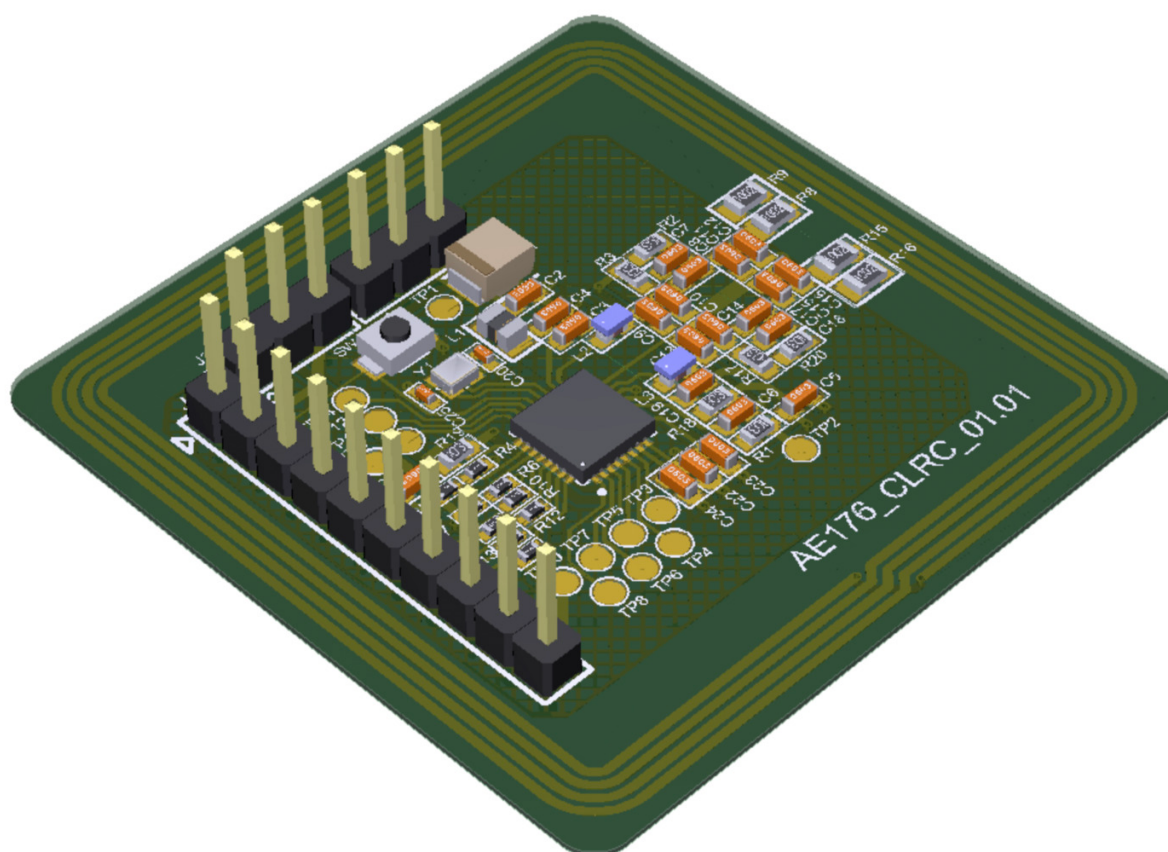
NFC READER MODULE • OEM HARDWARE

AmbiTap NFC Reader Module

Designed for EV charging. Built for embedded NFC.

India-made NFC reader module for EV chargers and embedded OEM applications, built on the NXP CLRC66303HNY NFC frontend.

PRELIMINARY – SPECIFICATIONS SUBJECT TO CHARACTERISATION AND FINAL VALIDATION



AmbiTap NFC reader module — assembled PCB, angled view. 3D CAD render of board revision AE176_CLRC_01.01. Not a production photograph; finish, colour and markings are representative of the design, not of a produced unit.

Made in India

Domestic design and
manufacture

42 × 42 mm

Compact square PCB
outline

**NXP NFC
frontend**

CLRC66303HNY

**Multiple host
interfaces**

SPI / UART / I²C-style

OEM support

Local engineering team

Product Overview

AmbiTap NFC Reader Module is a compact NFC reader platform designed and manufactured in India for integration into EV chargers and other embedded equipment.

It is intended for OEMs that require a locally sourced NFC interface with accessible host-control signals and support from an Indian engineering team. The module uses the NXP CLRC66303HNY NFC frontend and exposes the signals required for integration with an external host controller: a multifunction data group that can be operated as an SPI, UART or I²C-style link, an interrupt line to the host, and a hardware power-down control.

AmbiTap is reader hardware for an OEM system. It is not a complete terminal, and it is not a payment product on its own — the identification, authorisation and session logic remain in the host controller and the OEM's back end. See **Payment applications** on page 6.

KEY FEATURES

- Designed and manufactured in India
- NXP CLRC66303HNY NFC frontend
- Compact 42 mm × 42 mm PCB
- SPI / UART / I²C-style multifunction host signals
- IRQ signal available to the host
- PDOWN hardware control
- 5 V connection available on board
- 3.3 V connection available on board
- Designed for embedded and OEM integration
- Local Ambimat engineering support

Host-interface modes are described by the signal set the hardware exposes. Selection of a mode, and validation of that mode in a specific system, is part of integration and is confirmed per programme.

APPLICATIONS

PRIMARY — EV CHARGING



EV chargers

The contactless interface inside an AC or DC charger, where a driver taps a card, tag or credential to begin a session.



EV charging kiosks

Shared or forecourt kiosks that identify a user before routing them to a charging bay.



Charging-station authentication

The credential-presentation point in a station's authentication interface, ahead of the operator's authorisation policy.

ADDITIONAL EMBEDDED APPLICATIONS

Industrial equipment

Machine access, operator identification and shift handover on production equipment.

Access-control systems

Door controllers, gates and restricted-area readers in embedded installations.

Authentication terminals

Identity and attendance terminals where a credential is presented to a fixed reader.

Self-service kiosks

Unattended terminals that need a contactless interaction before dispensing or unlocking.

Vending equipment

Vending and unattended retail machines using a contactless credential at the point of selection.

Embedded NFC systems

General OEM products that need a host-controlled contactless front end on a compact board.

Module Architecture

Functional view of the module in an OEM system. Blocks describe function only; component selection, matching-network topology and component values are not disclosed.

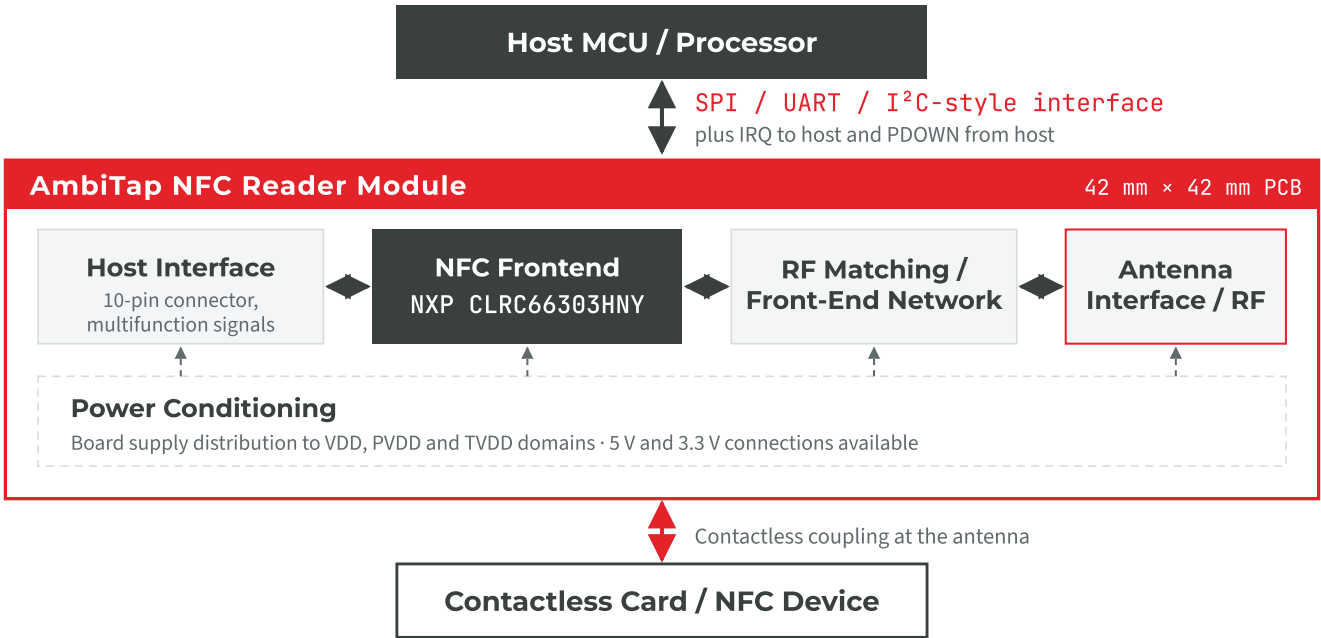


FIGURE 1 Conceptual functional block diagram. Not a schematic. Antenna design, matching-network values and layout are Ambimat design information; RF and antenna characterisation for the assembled module is pending (page 7).

Electrical Specifications

POWER SUPPLY

PARAMETER	SPECIFICATION
VDD	2.5 V to 5.5 V
PVDD	2.5 V to VDD
TVDD	2.5 V to 5.5 V
Available board connections	5 V, 3.3 V
Current consumption	Characterisation pending

BOARD POWER CONNECTIONS

GROUP	SIGNALS AVAILABLE
Host interface connector	5 V · 3.3 V · GND
Auxiliary power header	5 V · TVDD · 3.3 V
Power configuration header	5 V · VDD · 3.3 V

NFC FRONTEND

PARAMETER	SPECIFICATION
NFC frontend IC	NXP CLRC66303HNY

NFC protocol support. Protocol and card-technology support is not published in this revision. Ambimat publishes protocol claims only after they have been verified and approved at the assembled-module level; capabilities documented by the semiconductor manufacturer for the CLRC66303HNY are not carried across automatically. *Contact Ambimat for application-specific NFC protocol requirements.*

READING THIS TABLE

Signal groups only. Pin order, connector designation, orientation and physical position on the board are not established in this revision and will be issued with the final mechanical drawing. Confirm the intended supply arrangement with Ambimat engineering before wiring an evaluation setup.

Host Interface

AmbiTap exposes the host-control and communication signals needed to connect the NFC frontend to a charger controller or embedded host. The interface is a ten-way signal group carrying two supply connections, a ground return, four multifunction data lines and two control lines.

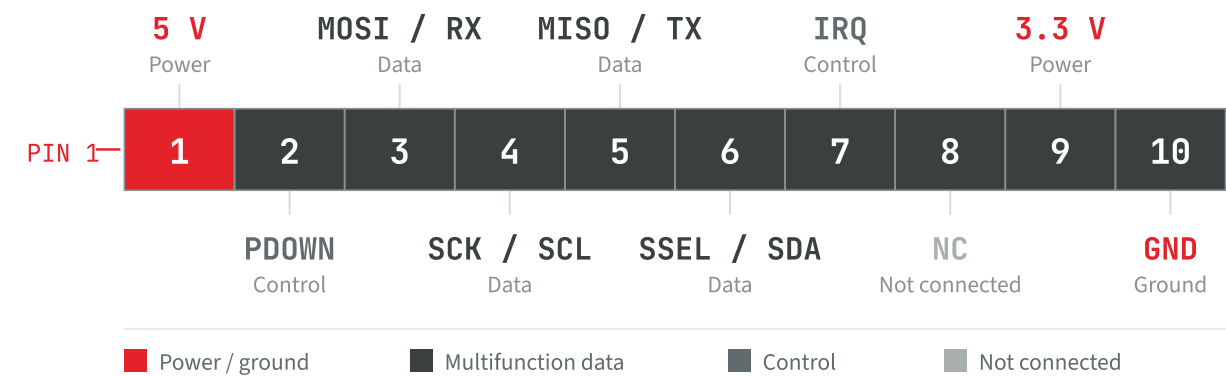


FIGURE 2 Host interface signal map. The drawing shows signal assignment and order only. Connector style, pitch, gender and physical position on the board are defined in the final mechanical drawing and are not asserted here.

HOST INTERFACE CONNECTOR

PIN	SIGNAL	TYPE
1	5 V	Power
2	PDOWN	Control
3	MOSI / RX	Data
4	SCK / SCL	Data
5	MISO / TX	Data
6	SSEL / SDA	Data
7	IRQ	Control
8	NC	Not connected
9	3.3 V	Power
10	GND	Ground

Multifunction signal usage depends on the selected host interface and system configuration. The paired names on pins 3 to 6 are the alternate functions carried on each line. Which set applies is determined by the interface selected for the design and by the firmware configuration on the host side.

CONTROL SIGNALS

- **IRQ** — interrupt output made available to the host controller.
- **PDOWN** — hardware power-down control driven by the host.

HOST INTEGRATION GUIDANCE

SELECTING A HOST INTERFACE

The module presents one physical signal group; the interface mode is a design decision, not a variant of the board. Choose it against the host controller you already have, the number of peripherals sharing that bus and the wiring run between the reader and the controller inside the enclosure.

The selected mode, and its behaviour in a specific system, is confirmed with Ambimat engineering during integration. Protocol and card-technology requirements are handled the same way — see page 3.

FOR AN INTEGRATION REVIEW, TELL US

- Host controller and the interface you intend to use
- Supply rails available at the reader position
- Mechanical envelope, mounting arrangement and fascia material
- Credential types the application has to work with
- Programme volume and timeline
- The incumbent module, if you are migrating from one

Mechanical Information

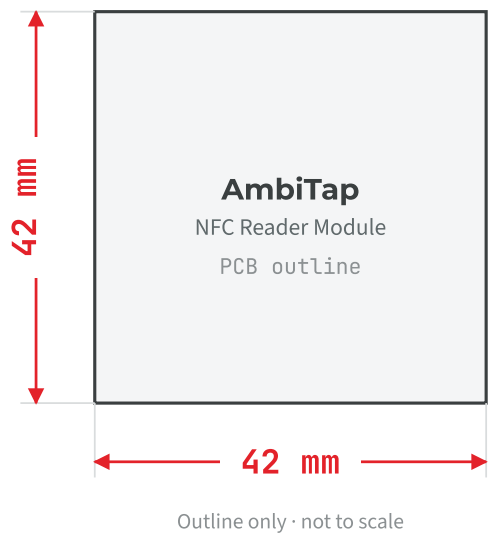


FIGURE 3 PCB outline. Component placement, connector positions, keep-out areas and mounting features are not shown and are not implied by this drawing.

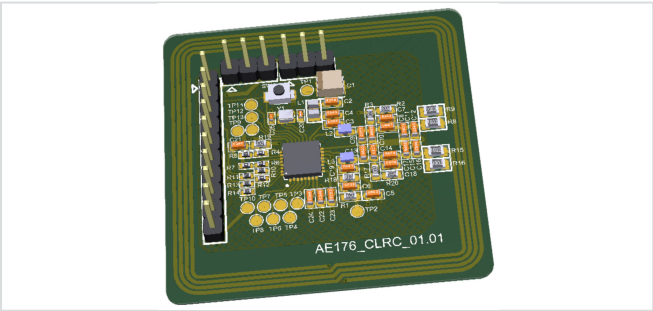
Integration note. The board outline is confirmed; the third dimension is not. Do not commit an enclosure, bracket or bezel design against this revision. Ambimat will issue a dimensioned mechanical drawing, and can review a proposed mounting arrangement and the antenna environment around it before the enclosure is fixed — the material and metalwork close to the reader affect RF behaviour and are worth discussing early.

MECHANICAL

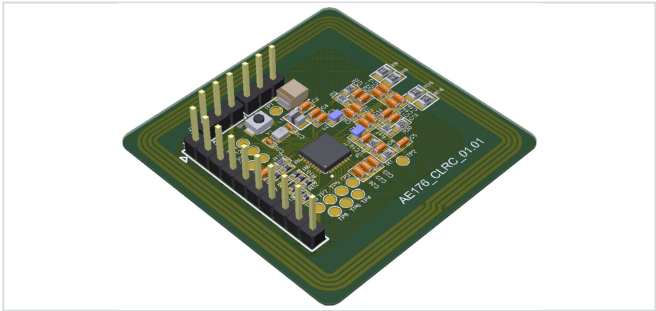
PARAMETER	SPECIFICATION
PCB dimensions	42 mm × 42 mm
PCB thickness	To be confirmed in final mechanical drawing
Mounting-hole pattern	To be confirmed in final mechanical drawing
Connector height	To be confirmed in final mechanical drawing
Maximum component height	To be confirmed in final mechanical drawing
Overall Z-height	To be confirmed in final mechanical drawing
Mass	To be confirmed in final mechanical drawing
Enclosure clearance	To be confirmed in final mechanical drawing

PRODUCT IMAGERY

3D CAD renders of board revision AE176_CLRC_01.01, released for publication at this revision. Not production photographs, and not a substitute for the mechanical drawing — read dimensions from Figure 3 and the table above, never from these renders.



Assembled PCB, near top-down view. Component reference designators and test-point labels are silkscreen on the board.



Assembled PCB, angled view. Host header shown with pins fitted; the header option is confirmed at order.

STILL OUTSTANDING AT REV 1.0

Rear-side view, transparent cutout, and in-situ photography

A rear-side view of the assembled board, an alpha-channel cutout, and a photograph of a produced unit installed behind a charger fascia are not available at this revision. The in-situ image is required only if an installation with photography clearance exists.

Where AmbiTap Sits in an EV Charger

In a charger, the reader is the point where a driver's credential meets the system. AmbiTap is the contactless hardware at the front of that sequence. Identification, authorisation and session logic stay in the charger controller and the operator's back end — the module does not make the authorisation decision.

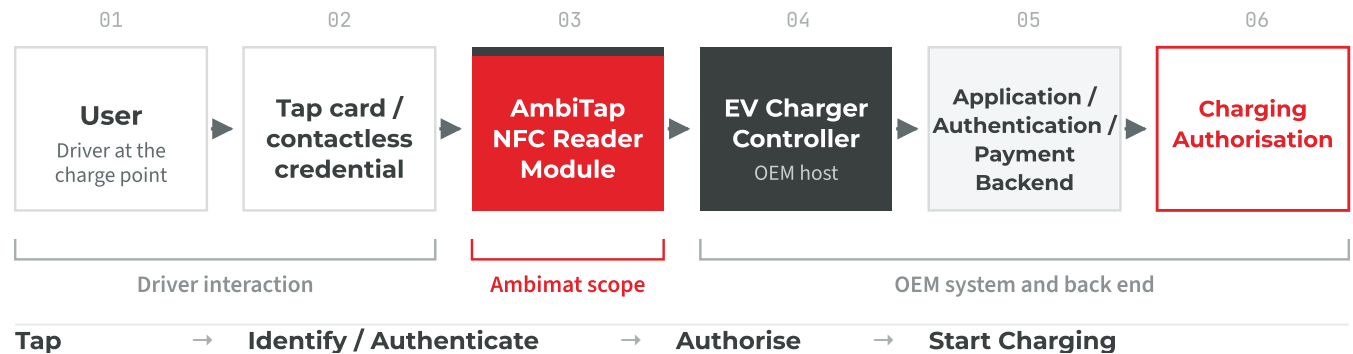


FIGURE 4 AmbiTap's place in a charging system. The module supplies the contactless read; every decision downstream of it belongs to the OEM's controller, application and back end.

Payment applications. AmbiTap provides the NFC/contactless reader hardware used as part of an embedded system. Payment acceptance and certification depend on the complete terminal architecture, payment software, security implementation, acquiring infrastructure and applicable certification requirements. AmbiTap is not by itself a certified payment terminal, and no payment-scheme, EMV or PCI certification is claimed for the module in this document.

Moving from an imported NFC reader module?

Many EV charger manufacturers depend on imported NFC reader modules for card interaction and contactless workflows. That works, but it ties a charger BOM to import lead times, forex exposure, customs handling and a support relationship conducted across time zones.

If your charger currently uses an imported CLRC663-based reader module, Ambimat can review it against AmbiTap and give you a straight assessment of what a migration would involve.

AMBIMAT CAN REVIEW

- ☐ Electrical interface
- ☐ Mechanical constraints
- ☐ Host interface
- ☐ Software integration
- ☐ Production-volume requirements

No compatibility claim is made in this document. Pin assignment, mechanical fit and firmware behaviour differ between modules. AmbiTap is not offered as a drop-in, pin-compatible or direct replacement for any incumbent module unless that has been specifically validated against your hardware.

WHAT A LOCALLY MANUFACTURED MODULE CHANGES

Made in India

The module is designed and manufactured in India, so the NFC interface in your charger is sourced domestically rather than imported.

Local engineering support

Work directly with an Indian engineering team during integration, in your timezone, on your schedule.

INR procurement

Purchase in rupees with GST invoicing and domestic logistics, without the forex and customs overhead of an imported line item.

OEM ready

Built for integration into chargers and embedded products, with scope for volume and OEM discussions as a programme scales.

Engineering Support

Ambimat has designed and manufactured embedded electronics since 1982. For an OEM programme the module is usually the smallest part of the problem — the work is in the integration, the enclosure, the antenna environment and getting a repeatable build. Depending on the programme, support can include:

- ☐ **Hardware integration guidance** — bringing the module into a charger or embedded product, and the supply arrangement around it.

☐ **Host-interface support** — selecting an interface mode and the host-side signal and timing questions that follow.
- ☐ **RF and antenna discussion** — the antenna environment, nearby metalwork and enclosure materials around the reader.

☐ **Firmware integration support** — host-side integration where applicable to the programme.
- ☐ **Production-volume planning** — prototype-to-production support, domestic manufacturing and volume discussions.

☐ **Qualified customer-specific modifications** — connector, mechanical or RF changes, considered after technical review.

Scope, commercial terms and design changes are agreed per programme after technical review. Nothing on this page constitutes an entitlement, a service-level commitment or a quotation.

Specifications Pending Final Characterisation

Not published in this revision. Additional module-level characterisation data will be incorporated in subsequent datasheet revisions as validation is completed. Values recorded by the semiconductor manufacturer for the CLRC66303HNY describe the integrated circuit, not the assembled module, and are not reproduced here. Where a parameter matters to your design, ask Ambimat — we will tell you what has been measured.

NFC read range	PENDING	EMC / EMI status	PENDING
RF performance	PENDING	Compliance and certification status	PENDING
Module current consumption	PENDING	Final mechanical tolerances	PENDING
Operating temperature range	PENDING	PCB thickness	PENDING
Antenna characterisation	PENDING	Maximum component height	PENDING
ESD performance	PENDING	NFC protocol support publication	PENDING

OEM Integration & Volume Requirements

For EV charger integration, OEM requirements, technical evaluation and production-volume enquiries, contact Ambimat Electronics.

Tell us what you are building, the host controller you are integrating with and the constraints you are working inside — mechanical, electrical or commercial. You will get an engineer, not a form response.

TALK TO AN ENGINEER

ambimat.com/contact/

Product page:
ambimat.com/ambitap-nfc-reader-module/

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DOCUMENT CONTROL

AmbiTap NFC Reader Module — Preliminary Technical Datasheet
Revision **0.9.1** · issued 9 September 2026
Supersedes Rev 0.9 (27 August 2026)
Status: **Preliminary** — specifications subject to characterisation and final validation.

0.9.1 — added approved AmbiTap PCB/product renders and updated the product-imagery sections; no expansion of unvalidated technical specifications

REVISION 1.0 GATE

Rev 1.0 follows once protocol-support publication is approved and read range, current consumption, operating temperature, the mechanical drawing, board thickness, maximum component height, compliance status, final photography and ordering information are available.

NOTICE

Preliminary specifications may change without notice. AmbiTap is an Ambimat Electronics product; CLRC66303HNY is an NXP Semiconductors device and IC-level specifications remain the responsibility of its manufacturer. No warranty, certification or fitness for a particular purpose is expressed or implied by this document.