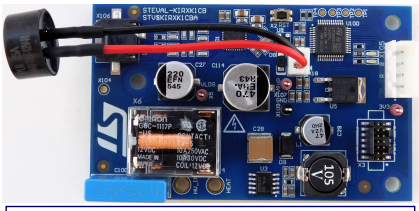
STEVAL-KIRXK1CB

Data brief

Ki cordless kitchen receiver (water kettle) evaluation board



The picture shown is for illustration purpose only.
Actual product may vary depending on buyer's selection and availability.

Features

- Designed for 2 kW Ki cordless kitchen receiver (water kettle)
- Static power transfer according to Ki control type 1
- NFC based communication between transmitter and receiver
  - Enables auxiliary power and bidirectional data path
  - Essential for interoperability and safety
- Comprehensive safety mechanisms
- Market-proven BOM, adopted in Ki-certified products currently available on the market

Product summary	
Ki cordless kitchen receiver (water kettle) evaluation board	STEVAL-KIRXK1CB
Ki cordless kitchen transmitter evaluation kit	STEVAL-KITXCB
Multi-purpose NFC transceiver	ST25R3918-AQET
Mainstream Arm Cortex-M0+ MCU with 128 Kbytes of Flash memory, 36 Kbytes RAM, 64 MHz CPU, 4x USART, timers, ADC, DAC, comm. I/F, 1.7-3.6V	STM32G071CBT6
VIPerPlus family: Low voltage energy saving fixed frequency high voltage converter	VIPER013HS
Applications	Induction cooking

Description

The STEVAL-KIRXK1CB is an evaluation board for Ki cordless kitchen receiver, specifically designed for water kettle appliances to be powered and controlled via a Ki wireless power transmitter (STEVAL-KITXCB).

Ki cordless kitchen is a relatively new standard for wireless power initiated by the Wireless Power Consortium (WPC). This standard targets to replace traditional kitchen appliances using power cords (for example, mixer, toaster, rice cooker, coffee makers) and to combine eventually with induction cooktop with efficiency > 90% of equivalent corded devices required up to 2.2 kW.

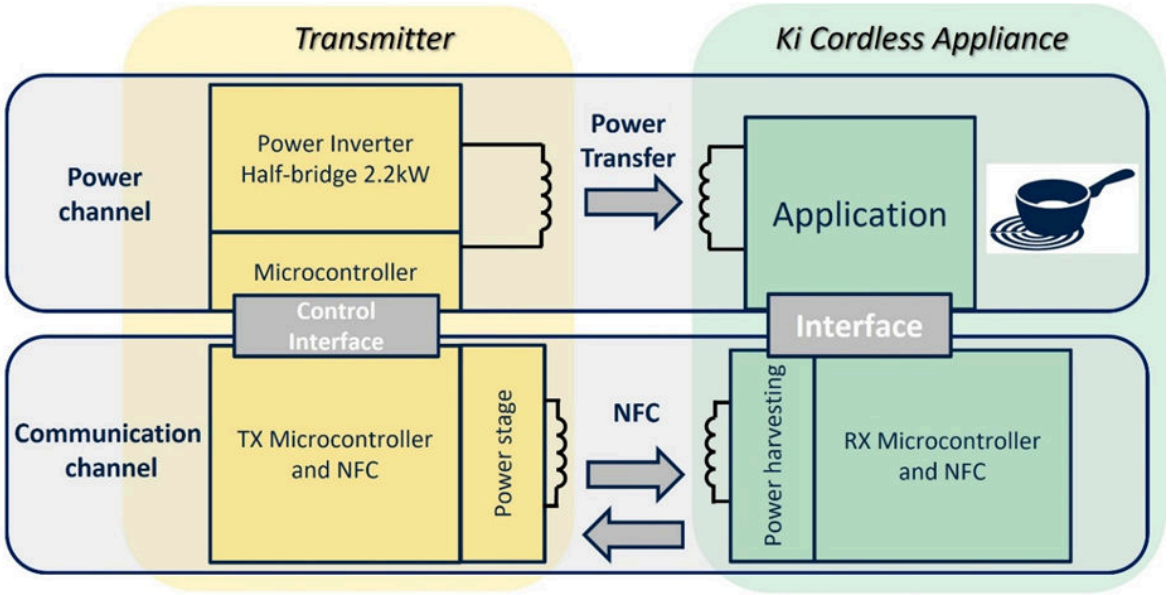
Thanks to the ST25R3918 multi-purpose NFC transceiver, the system ensures seamless communication and power negotiation with the base station (PTx) to optimize power transfer in static mode and ensure safety compliance.

The STEVAL-KIRXK1CB also integrates energy harvesting to power up the user interface, minimize standby energy consumption, and support low-power functions independently of the main power transfer.

Secure device authentication and pairing with the PTx is achieved using the STSAFE secure element, providing reliable verification.

1 Ki cordless kitchen architecture block diagram

Figure 1. **Ki cordless kitchen architecture**



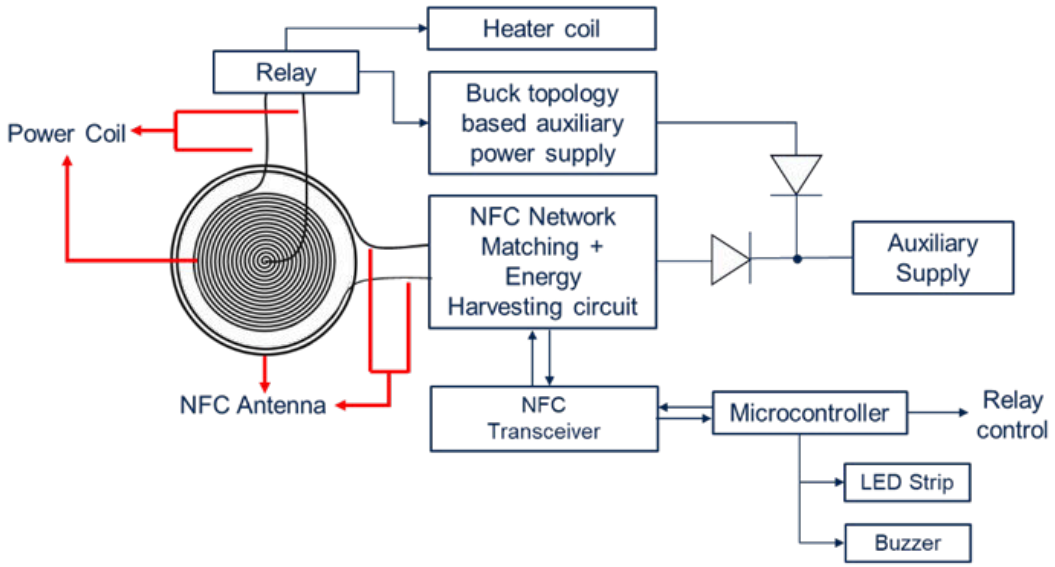
The architectural block diagram has been highlighted in Figure 1.

The kettle receives power wirelessly through inductive coupling, eliminating the need for direct electrical contacts, enhancing safety (no cords, liquids spilled) and convenience in kitchen environments.

The communication between transmitter and Ki appliances is based on NFC.

2 STEVAL-KIRXK1CB architecture block diagram

Figure 2. STEVAL- KIRXK1CB Ki cordless kitchen receiver (water kettle) block diagram



In addition to efficient power reception, the STEVAL-KIRXK1CB evaluation board features an integrated NFC section—including front-end circuitry and matching network—along with an NFC energy harvester, a high-voltage auxiliary power supply, and a load disconnect switch to support essential protection functions.

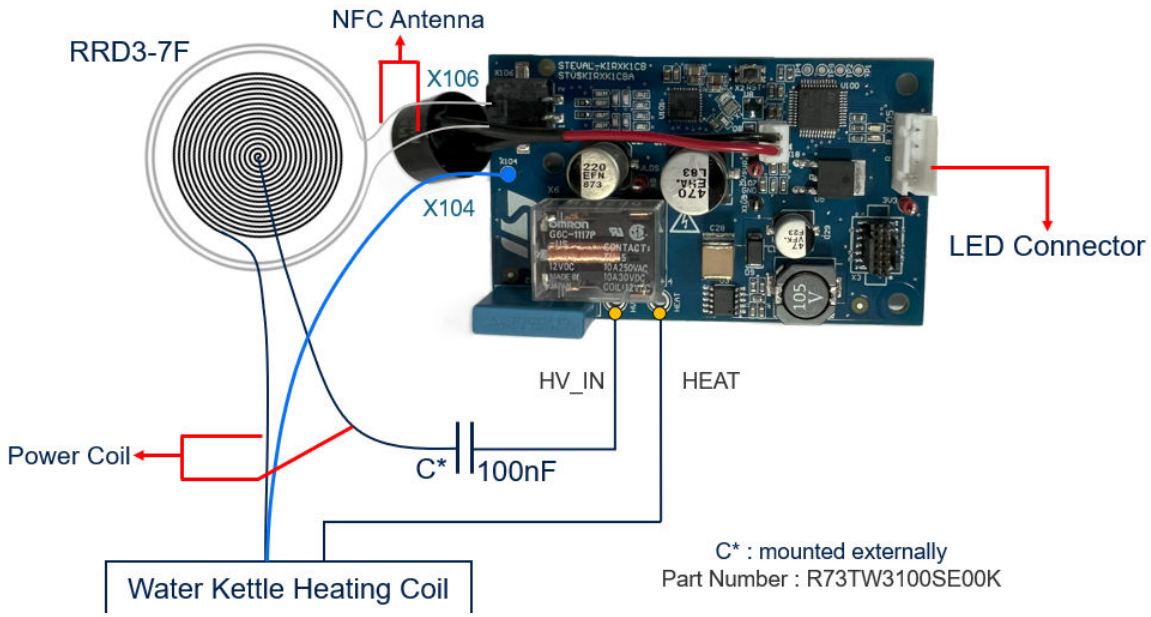
During connected mode the user interface of the receiver is supplied by NFC energy harvesting (limited to 200 mW).

During power mode the NFC energy harvesting stops and an auxiliary power supply is supplied by the buck topology-based circuitry.

To evaluate the performance, the connections of the evaluation board with water kettle have been highlighted below.

The power coil used is RRD3 and the STEVAL- KIRXK1CB has been tested and verified on 2 kW water kettle (PHILIPS HD9339 1.7 L glass water kettle).

Figure 3. STEVAL- KIRXK1CB connection diagram



3 Schematic diagrams

Notice: These schematics are for illustration purpose only. Actual product may vary depending on buyer's selection and availability.

Figure 4. STEVAL-KIRXK1CB - Circuit schematic (1 of 3)

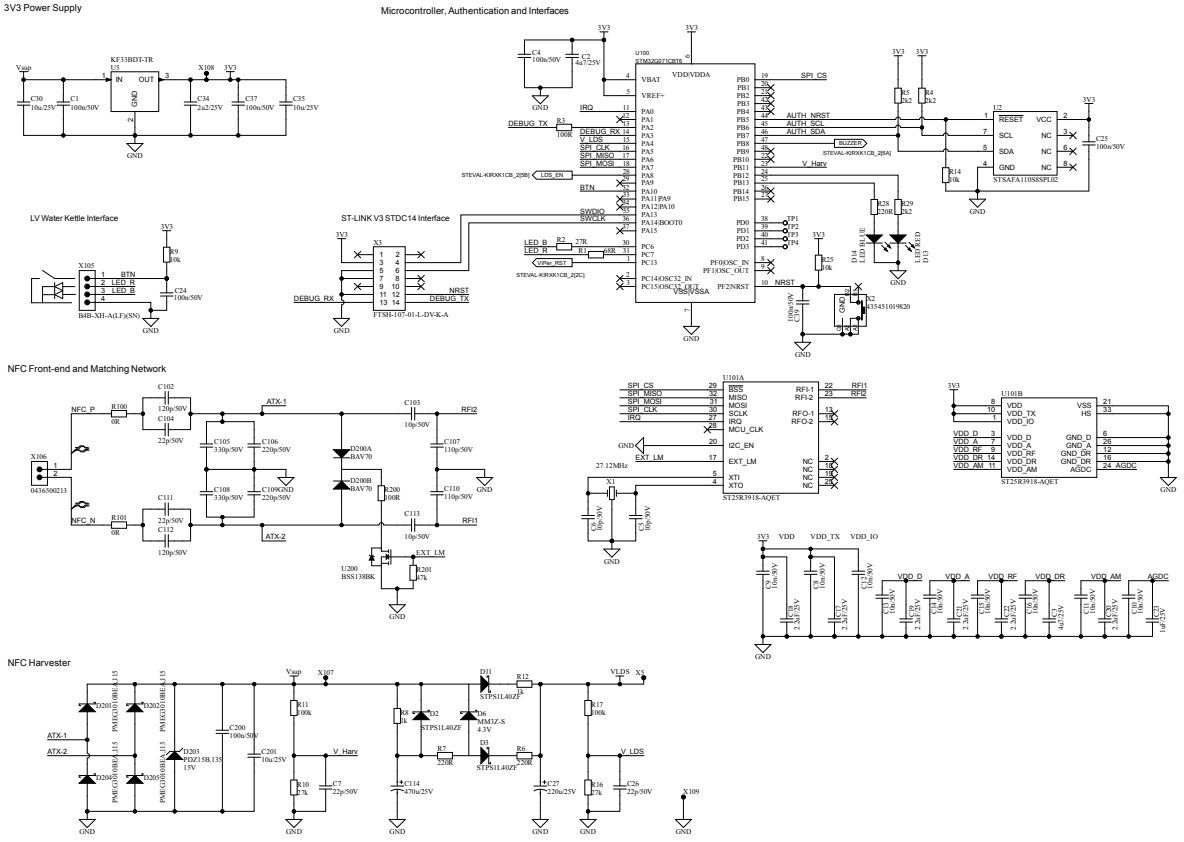
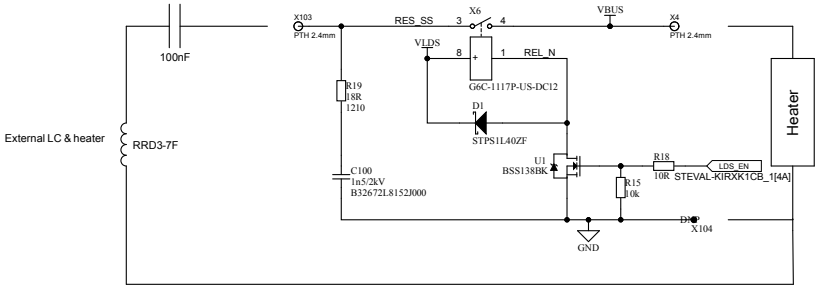
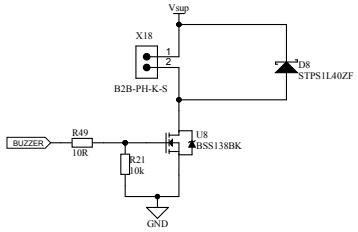


Figure 5. STEVAL-KIRXK1CB - Circuit schematic (2 of 3)

Load Disconnect Switch



BUZZER



VIPer 12V Power Supply

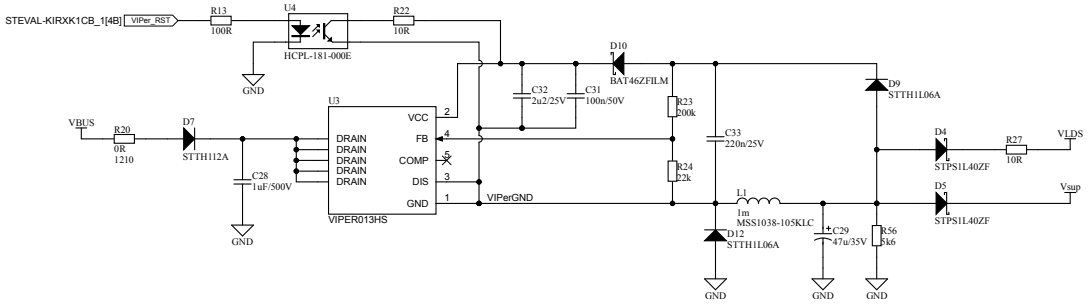
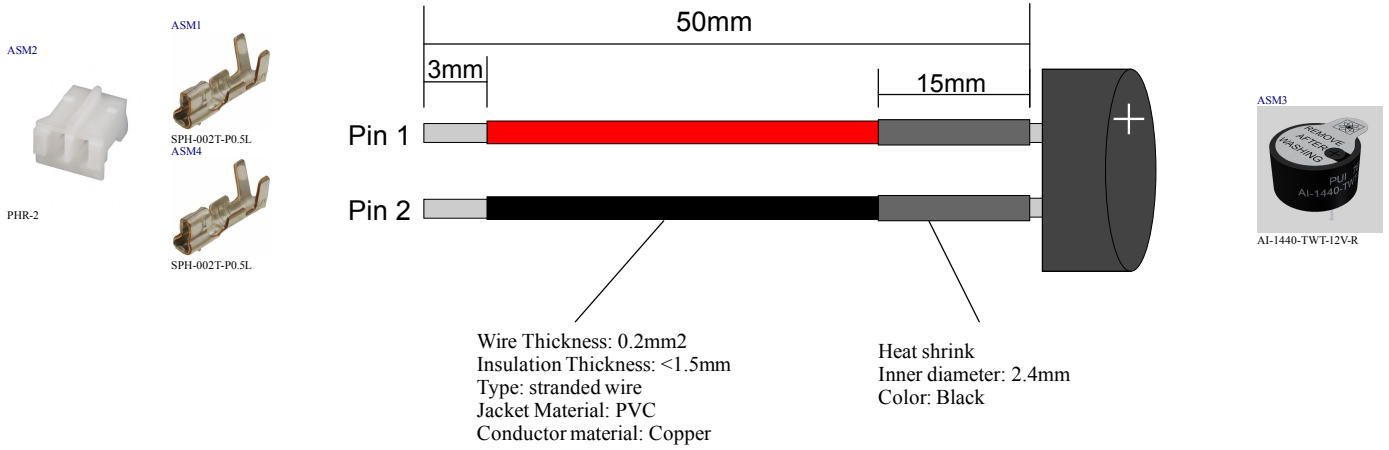


Figure 6. STEVAL-KIRXK1CB - Circuit schematic (3 of 3)

EXTERNAL BUZZER ASSEMBLY



4 Custom evaluation boards information

Notice: *These evaluation boards are custom designed and built, in small quantities, according to specific requests from customers and are destined for evaluation and testing of ST products in a research and development setting. Please contact ST to provide your specific requests and get your custom built board(s).*

Revision history

Table 1. **Document revision history**

Date	Revision	Changes
22-Dec-2025	1	Initial release.

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