Ki cordless kitchen transmitter evaluation kit

Features

- 2.2 kW at 230 Vac Ki cordless kitchen transmitter
  - New upcoming standard from Wireless Power Consortium - WPC
- Inverter topology: half-bridge
- Digitally controlled with user interface
- NFC based communication between transmitter and receiver
  - Enables auxiliary power and bidirectional data path
  - Provides advanced features via connectivity
  - Essential for interoperability and safety
- Fast and high-resolution power control
  - Phase cutting (reusing communications gaps)
  - Duty-cycle control
  - Frequency control
- Control type 0 and type 1
- Comprehensive safety mechanisms
  - Over current protection
  - Cycle-by-cycle current protection
  - Hard-switching detection
  - Over power protection
  - Over temperature protection

Description

The STEVAL-KITXCB is an evaluation kit for Ki cordless kitchen transmitter. The evaluation kit includes power inverter board, auxiliary power supply board, NFC board, inverter microcontroller board, power coil and NFC coil, and GUI display board. Thanks to the modular design approach, it becomes easier for the user to test and debug the various sections involved.

Ki cordless kitchen standard targets to replace traditional kitchen appliances using power cords (for example: mixer, toaster, rice cooker, coffee makers etc.) and to combine eventually with an induction cooktop. This Ki cordless kitchen standard defines wireless power transfer to all kitchen appliances up to 2.2 kW. At every zero-crossing of input mains voltage the power transfer is stopped to have reliable NFC communication with the receiver.
1 Block diagrams

1.1 Ki cordless kitchen architecture block diagram

Figure 1. Ki cordless kitchen architecture

1.2 STEVAL-KITXCB Ki cordless kitchen transmitter

Figure 2. STEVAL-KITXCB Ki cordless kitchen transmitter
**Schematic diagrams**

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

**Figure 3. STEVAL-KITXCB power board - input filter stage**
Figure 4. STEVAL-KITXCB power board - inverter stage
Figure 5. STEVAL-KITXCB power board - ADC sensing and heatsink
Figure 6. STEVAL-KITXCB power board - connectors

Inverter-interface

Supply Connectors
Figure 7. STEVAL-KITXCB power board - voltage regulators
Figure 8. STEVAL-KITXCB - auxiliary power supply

Supply Connector

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- **Supply Connector**
- **GND**
- **+24V**

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**Schematic Diagrams**
Figure 9. STEVAL-KITXCB MCU board - Microcontroller, LEDs
Figure 10. STEVAL-KITXCB MCU board - Microcontroller decoupling, voltage regulator
Figure 11. STEVAL-KITXCB MCU board - cook-type control, buzzer and unused GPIOs
Figure 12. STEVAL-KITXCB MCU board - connectors
Figure 13. STEVAL-KITXCB NFC board - NFC
Figure 14. STEVAL-KITXCB NFC board - power stage
Figure 15. STEVAL-KITXCB NFC board - power supply
Figure 16. STEVAL-KITXCB NFC board - Microcontroller
Figure 17. STEVAL-KITXCB NFC board - connectors

Interface A

Interface B

Test

JTAG
3 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

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<td>06-Dec-2023</td>
<td>1</td>
<td>Initial release.</td>
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<tr>
<td>05-Apr-2024</td>
<td>2</td>
<td>Minor text change in Section Description.</td>
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