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# ST Wireless Power Solutions

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Product Marketing Engineer - America Region



# Agenda



**Wireless Power: Transmitter**

**Wireless Power: Receiver**



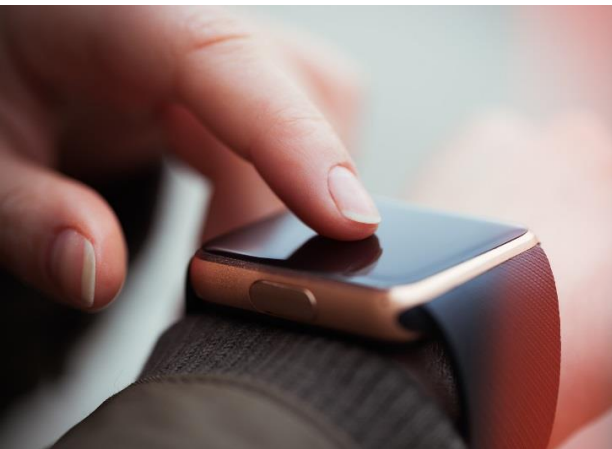
# ST Wireless Power: Transmitter

**1 - 2.5 W**

**Wearable Devices**

Optimized for ultra-compact  
battery-operated

**STWBC-WA**  
**STEVAL-ISB045V1**

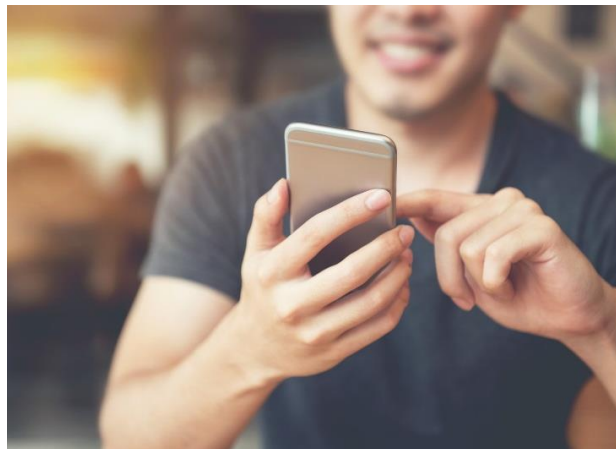


**5 W**

**Smartphones**

Qi 1.2.4 certified

**STWBC-EP**



**15 W**

**Smartphones & Tablets**

Charging up to 3 time faster  
Qi 1.2.4 certified

**STWBC-EP**  
**EVALSTWBC-EP**



**15 W Multi-coil**

**Multi-Market**

Larger charging area & freedom of  
positioning - Qi 1.2.4 certified

**STWBC-MC**  
**STEVAL-ISB047V1**



# Full bridge 2.5W Transmitter based on STWBC-WA

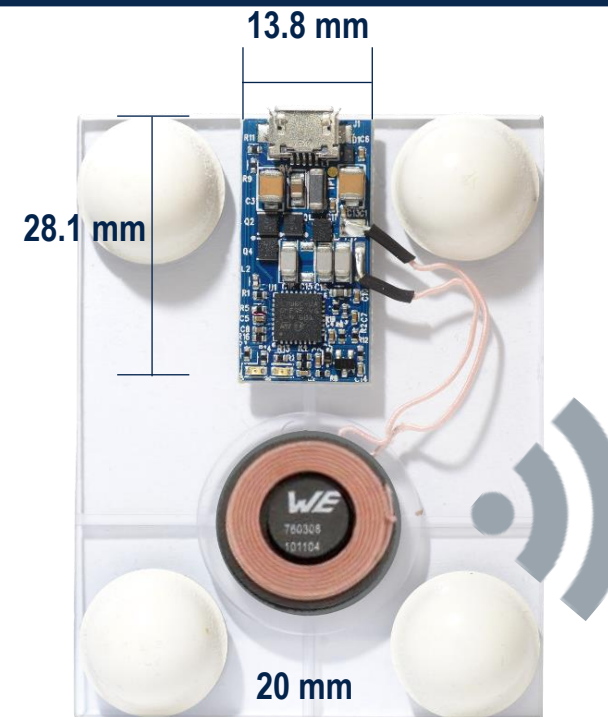
## Evaluation kit for wearable applications

5V 1A USB input power  
148.5kHz max → RED compliant

Smart standby, <3mW  
Automatic receiver recognition  
Open FOD for increased safety  
Patented demodulation

Wurth 760308101104  
20 mm diameter coil

2-layer PCB with optimized eBOM  
possible remote coil up to 1m



STEVAL-ISR045V1



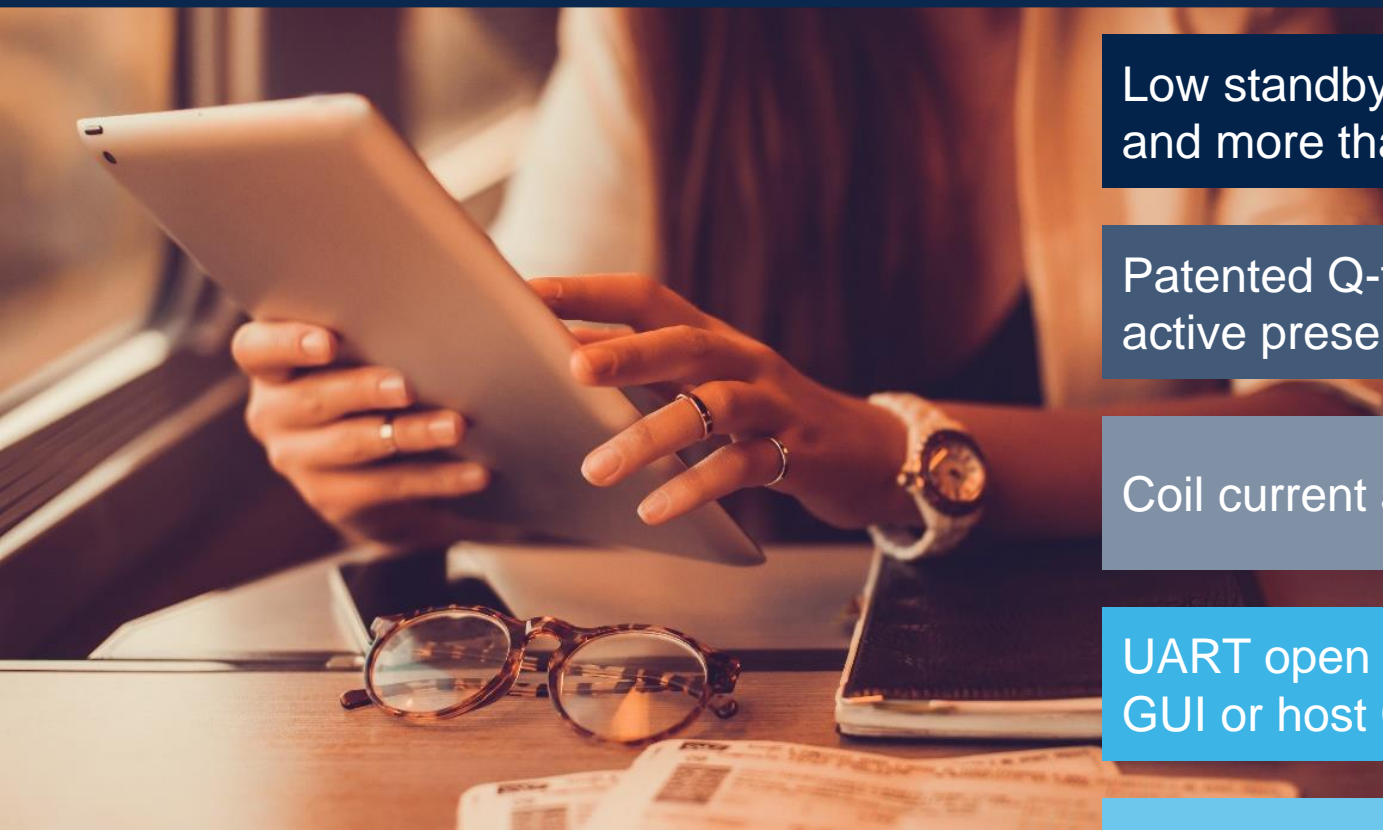
The GUI allows monitoring and  
customization, FW update,  
tuning and calibration





# STWBC-EP

## 15 W wireless battery charger transmitter for smartphones, tablets and accessories



Low standby power consumption down to 16 mW and more than 80% efficiency while charging

Patented Q-factor measurement for accurate FOD estimation and active presence detection. Maximum safety and fast wake up

Coil current and voltage monitoring for accurate power control

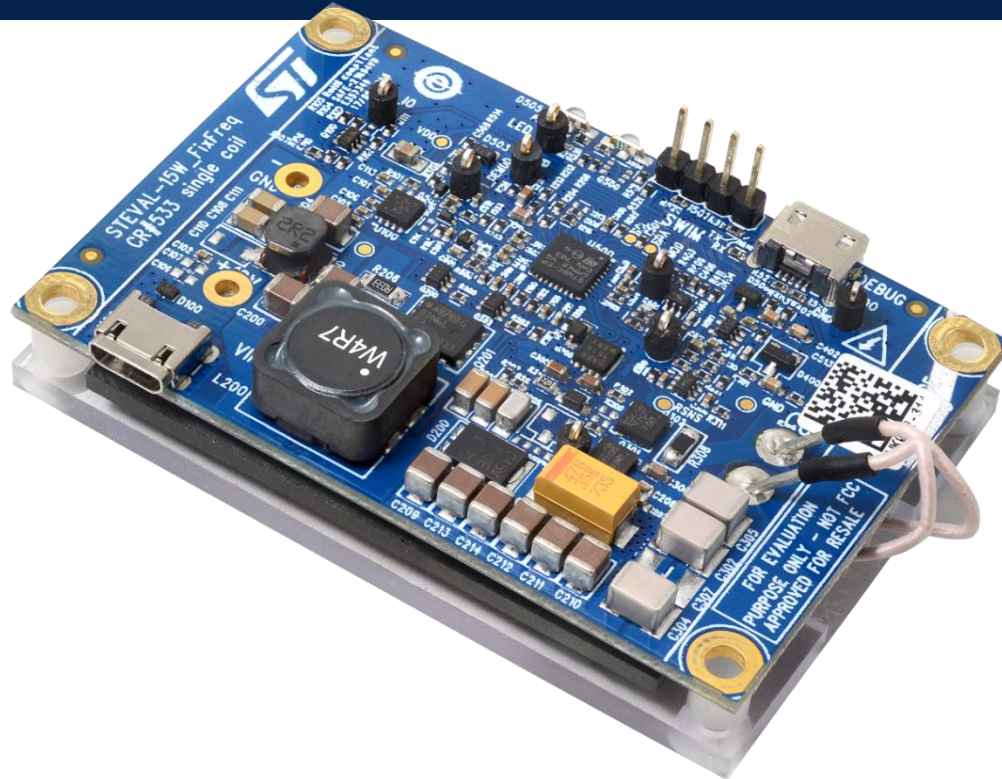
UART open protocol interface to control and monitor the system via GUI or host CPU. Dual LED status signaling

32-lead QFN (5 x 5 mm) package for a compact design



# EVALSTWBC-EP 15W Transmitter

## 15 W Fixed Frequency Single Coil WBC TX eval kit



EVALSTWBC-EP  
Available on  
[www.st.com](http://www.st.com)

### KEY APPLICATIONS

Wireless battery charging systems for smartphones and tablets, compatible with major smartphones manufacturers proprietary fast charge extensions

**Qi 1.2.4 EPP compliant\***  
MP-A15 SEPIC + Half bridge topology

**Freedom of positioning**  
with large active area (25x30mm)

**EU RED Compliant**  
127.7kHz fixed frequency operation

**Wireless Fast Charge**  
with most popular smartphones

**USB-QC compatible input**

\*certification based on 3-coil design



# STWBC-MC

**15 W wireless battery charger transmitter designed to control multi-coils, for a larger charging area/ freedom of positioning, and a better user experience**

**Fully compliant to Qi® 1.2.4 standard and with proprietary fast charge extensions from leading smartphone manufacturers**

**Maximum efficiency and safety**  
detects the presence of the RX and exits the standby mode, selects the most efficient coil and supports extended Foreign Object Detection (FOD) through bi-directional communication with the RX

**Coexistence with most advanced smartphones features**  
thanks to the embedded digital DC-DC controller, the STWBC-MC is capable of controlling the delivered power while keeping a fixed-frequency operation

- Low standby power consumption
- Coil current & voltage monitoring for accurate power control
- UART open protocol I/F for monitoring via GUI or host CPU
- 32-lead QFN (5 x 5 mm) package for a compact design





# STEVAL-ISB047V1 – 15W 3-coil Transmitter

## 15 W Fixed Frequency Single Coil WBC TX eval kit

**Qi 1.2.4 EPP certified**  
**MP-A15 SEPIC + Half bridge topology**

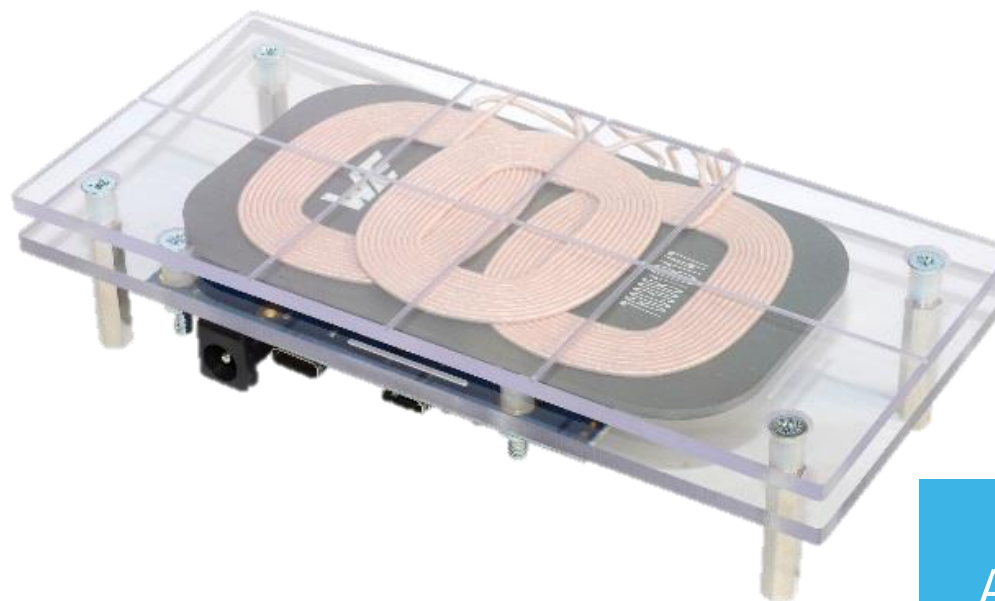
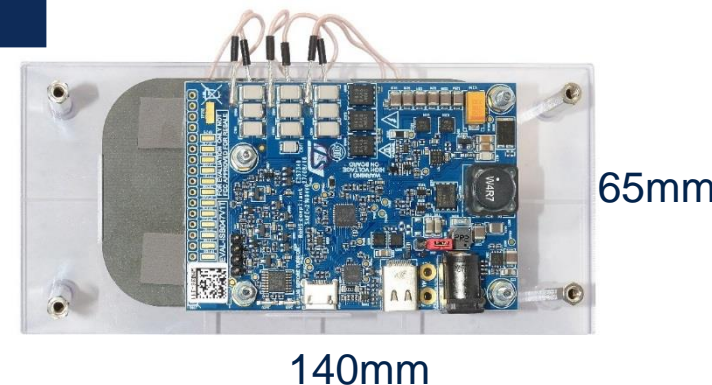
**Freedom of positioning**  
with large active area (25x30mm)

**EU RED Compliant**  
127.7kHz fixed frequency operation

**Wireless Fast Charge**  
with most popular smartphones

**USB-PD compatible input**

- Green with smart standby
- Safe with Q-factor based FOD
- Stable charge with patented triple path demodulation







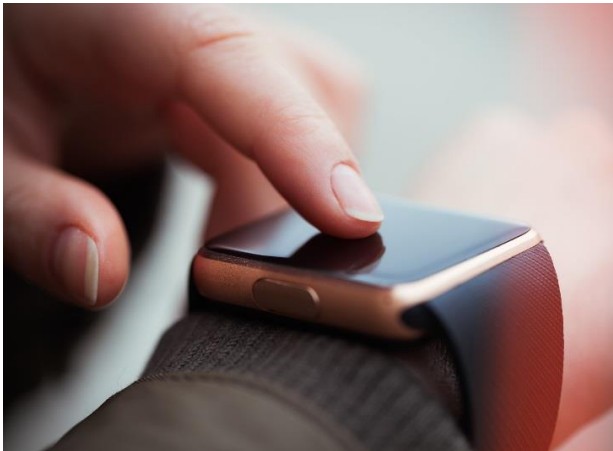
# ST Wireless Power: Receiver

**1 - 2.5 W**

**Wearable Devices**

Optimized for ultra-compact  
battery-operated

**STWLC68JRH**  
**STEVAL-ISB68WA**

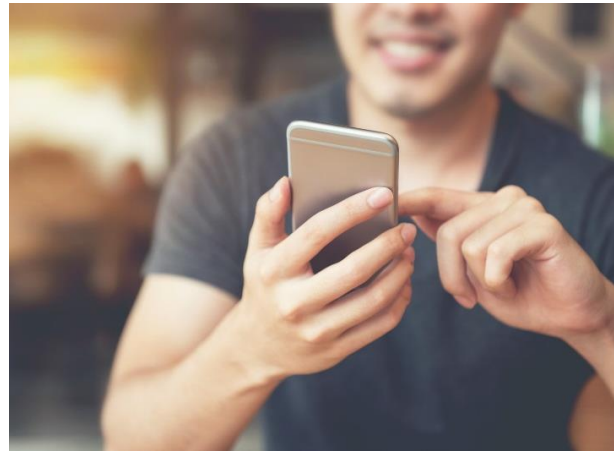


**5 W**

**Smartphones**

Qi 1.2.4 certified

**STWLC68JRH**  
**STEVAL-ISB68RX**



**15 W/20W**

**Smartphones & Tablets**

Proprietary Mode

**STWLC68JRF**



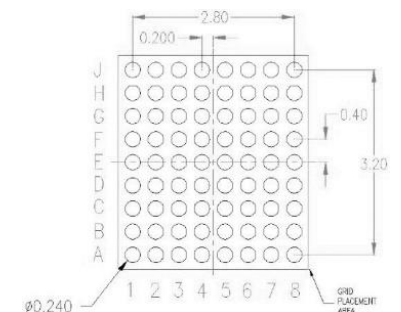
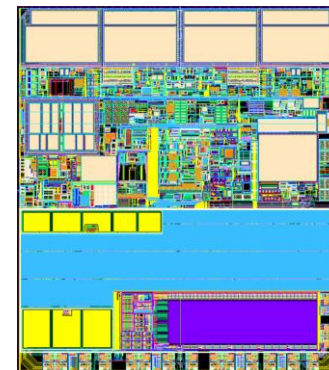


# STWLC68-Wireless Power Receiver

ST Wireless 20W Receiver

## STWLC68 Product Card

Rx Power (W)	Up to <b>20W</b> (STWLC68JRF) Up to <b>5W</b> (STWLC68JRH)
Tx Power (W)	Up to 5W, coil dependent (STWLC68JRF) Not available for STWLC68JRH
Output (V)	LDO regulation 5-20 programmable in steps of 25mV
Output stage	LDO or CV/CC battery charge mode
ADC	True 10 bits
Qi Certification	Qi 1.2.4 (Only for 5W BPP)
Interface	I2C 400kbit/s and SPI 8Mbps for NGC
GPIO	7
Memory	40kB ROM, 8kB RAM
Protection	OVP, OTP, OCP, Patented Over VDS
Rectifier	High efficiency, 50-300kHz
Communication	Qi In-Band FSK/ASK or Out Band NGC
MCU	32bit 64Mhz Cortex M0+
Ram patch	Available
Firmware patch	16kB OTP and optional attached Flash
Die Size	WLCSP 72 bumps 3.29 X 3.70 mm <sup>2</sup>





# 2.5W Receiver Based on STWLC68JRH

## Evaluation kit for wearable applications



Designed according to Qi 1.2.4 specifications

Constant 5 V output voltage (default setting)

Foreign Object Detection (FOD) supported

400 kHz I<sup>2</sup>C interface for communication with host system

Compact 10x10 mm application area, 15 mm diameter coil



STEVAL-USB68WA





# 5W Receiver Based on STWLC68JRH

## Evaluation kit for 5W Applications

Operates in Rx mode as Qi 1.2.4  
5W BPP

Constant 5V Output voltage (default  
settings)

Foreign object detection (FOD)  
supported

400 kHz I<sup>2</sup>C interface for  
communication with host system

Built-in USB-I<sup>2</sup>C convertor



STEVAL-ISB68RX

# Thank you