Wireless power for IoT devices

As the Internet of Things (IoT) pervades our everyday life, wearable devices represent one of the fastest-growing segments in consumer electronics. Together with mobile phones, the widespread adoption of wireless power is out there: in 2025, more than 2 billion receiver units are expected to be shipped worldwide*. Based on the STWBC-WA transmitter and STWLC04 receiver, ST’s wireless battery charging solution simplifies the design and shortens time-to-market. Their minuscule footprint and efficient power transfer, while ensuring maximum safety and reliability are the main advantages that will benefit designers.

* Source IHS 2016

Scalable and complete 1 W wireless battery charging solution with Rx and Tx for fast prototyping

KEY FEATURES & BENEFITS
- Boosts power transfer of 1 W over an ultra-compact coil of 11 mm in diameter
- Adapts the transmitted power to actual load conditions with digital feedback to the transmitting device for increased efficiency
- Enables safe operation with foreign object detection (FOD), and active presence detection stopping power transfers when metallic or magnetic objects are detected in the charging area (optional feature)
- Scalable solution supports low power applications from 1 to 3 W via different coils
- Ideal for different Li-ion and Li-pol battery chemistries
- Graphical user interface for system behavior monitoring

KEY APPLICATIONS
- Ultra-compact portable devices, like:
  - Wearable devices
  - Sports gear
  - Wellness and healthcare equipment
  - Sensors

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WIRELESS BATTERY CHARGING SOLUTION TAILORED FOR PORTABLE DEVICES

ST’s turnkey solution for wireless battery charging is designed for ultra-compact battery-operated devices such as wearables, sports gear, smart watches, sensors and wellness equipment.

The STEVAL-ISB038V1 reference design supports wireless power transfer of 1 W over an 11 mm coil on the receiver side and 20 mm on transmitter side and can be scaled-up to 3 W by using wider coils or by switching to full-bridge configuration on the transmitter side.

The STWBC-WA transmitter is based on a cost-effective half-bridge topology (optional full-bridge) and provides designers with increased flexibility thanks to a powerful software API which allows modifying the behavior of LED and GPIOs, as well as adding external interfaces via I2C and UART communication ports.

The STWLC04 receiver can deliver the output power in two modes: as a power supply with configured output voltage or as a CC/CV battery charger with configurable charging current and voltage.

The STEVAL-ISB038V1 reference design includes a wireless power transmitter board and a wireless power receiver board combined with a GUI and documentation to shorten your time-to-market.

The evaluation board for the transmitter (STEVAL-ISB038V1T) and the receiver (STEVAL-ISB038V1R) are also available separately.

STEVAL-ISB038V1: WEARABLE WIRELESS POWER SYSTEM

![Transmitter and Receiver Diagram]

The order code description development environment is as follows:

<table>
<thead>
<tr>
<th>Order code</th>
<th>Description</th>
<th>Development environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEVAL-ISB038V1</td>
<td>Wearable wireless power system based on STWBC-WA and STWLC04</td>
<td>Application note: AN4900</td>
</tr>
<tr>
<td>STEVAL-ISB038V1T</td>
<td>Wearable wireless power transmitter based on STWBC-WA</td>
<td>User manual: UM2099; Firmware: STSW-ISB038TFW; Graphical user interface: STSW-ISB038TGUI</td>
</tr>
<tr>
<td>STEVAL-ISB038V1R</td>
<td>Wearable wireless power receiver based on STWLC04</td>
<td>User manual: UM2098; Graphical user interface: STSW-ISB038RGUI</td>
</tr>
<tr>
<td>STWBC-WA</td>
<td>Digital controller for wireless battery charger (WBC) transmitters for wearable devices</td>
<td>Databrief, Gerber files, BOM, schematics</td>
</tr>
<tr>
<td>STWLC04</td>
<td>Wireless power receiver for wearable devices</td>
<td>Databrief, Gerber files, BOM, schematics</td>
</tr>
</tbody>
</table>