Overview

The Freescale wireless charging reference design uses inductive charging technology to power a tablet and recharge its internal battery. As wireless charging continues to gain significant market momentum, this wireless charging reference design scales the technology into higher power devices, such as tablets and laptops.

The reference design consists of two main components: a transmitter mat and a receiver that is embedded inside the back cover of the tablet. The reference design leverages our Smart Application Blueprint for Rapid Engineering (SABRE) platform for tablets embedded with an i.MX53 applications processor, however, it can be used with any tablet design.

The receiver seamlessly interfaces to the input power of the power management sub-system of the tablet. The receiver is powered from the transmitting mat during charging cycles, ensuring no energy is ever consumed from the battery.

The transmitter mat is designed to fit the shape of the tablet, allowing for easy visual alignment between the devices. Once the transmitter detects the tablet, the charging process is initiated and is indicated on the device display. The intelligent charging system is able to dynamically adjust charge current by receiving command messages from the receiver.

This software-controlled system provides tremendous benefits and flexibility in charging devices.

Target Applications
- Mobile devices, including:
  - Ereaders
  - Consumer tablets
  - Industrial tablets
  - Portable health care devices
Partnering on Standards
The Freescale reference design incorporates the framework of the Qi standard, as set forth by the Wireless Power Consortium (WPC), and extends these functions to medium power applications. The WPC is the leading industry group for wireless charging and promotes interoperability and compatibility. The standard ensures that any Qi-compliant transmitter functions with any Qi-compliant receiver and provides universal compatibility in the market. Freescale is a contributing member of the WPC and actively promotes Qi-compliant solutions based on customer needs.

Get to Market Fast
The inductive charging platform is a market-ready reference design that can be quickly optimized and made ready for production. By providing a complete wireless charging solution, OEMs and ODMs can significantly reduce time to market and focus engineering efforts on their core competencies. Freescale can also accommodate various proprietary systems for customers with opportunities for more customized designs.

Specifications

<table>
<thead>
<tr>
<th>Wireless Charging Transmitter</th>
<th>Wireless Charging Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Intelligent charge algorithms to maximize efficient power transfers</td>
<td>• Embedded communications protocol to control transmitter charging rate</td>
</tr>
<tr>
<td>• Digitally controlled H-bridge topology</td>
<td>• Battery current sensing</td>
</tr>
<tr>
<td>• Hardware-controlled over current cutoff</td>
<td>• Input power detection</td>
</tr>
</tbody>
</table>

For more information, visit freescale.com/wirelesscharging