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Qualcomm Incorporated

Qualcomm® WiPower™
Flexible Wireless Charging

3G/LTE Summit
September 14–16, 2015
Hong Kong

Qualcomm WiPower wireless charging technology is licensed by Qualcomm Incorporated. Qualcomm WiPower products are products of Qualcomm Technologies, Inc.
WiPower
Simultaneous wireless charging of multiple devices, with varying power requirements over a greater Z dimension

What’s unique

- Supports simultaneous charging of a range of devices, from wearables and smartphones to tablets and laptops
- Higher integration into the Qualcomm® Snapdragon™ platform

Benefits

- Designed to eliminate the need for multiple chargers and wires
- Allows charging at angles on and above the charging area
- Specification designed to enable 3rd parties to offer products that are compatible with the Rezence™ standard from the Alliance for Wireless Power
Video: WiPower
From low power to high power
WiPower chipset integration

Snapdragon chipsets

- WiPower is available with the Snapdragon 810 and 808 chipsets
- Anticipated expansion to other Snapdragon tiers
- Advantages:
  - Fewer components
  - Small footprint
  - Comprehensive testing and validation
  - Software support
WiPower enables wireless charging for metal devices

- First technology to prove ability to charge through metal back cover
- Allows OEM to include both metal body and wireless charging
- Unique to the resonant frequency of 6.78MHz at which WiPower operates
- Designed to be compliant with the Alliance for Wireless Power’s Rezence standard
Qualcomm leads the way in innovation
Patent portfolio rated highest in quality and quantity

Companies with maximum number of high-strength patents

<table>
<thead>
<tr>
<th>Company</th>
<th>Number</th>
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<tbody>
<tr>
<td>Qualcomm</td>
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<td>Samsung</td>
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<td>ACCESS Business Group</td>
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<td>LG</td>
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<td>WiTricity</td>
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<td>21</td>
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<td>19</td>
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<td>19</td>
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<tr>
<td>Black &amp; Decker</td>
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<td>KHW Promotion</td>
<td>13</td>
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Quality patents as the next highest company
Loosely coupled (resonant) and multi-mode technology will become the more prevalent technology.
Total wireless charging opportunity

Receiver and transmitter unit shipment projections (million’s of units)

Unit shipment forecasts show improvement in 2017 and beyond

IHS Research, February 2015
Alliance for Wireless Power

- Qualcomm Incorporated co-founded in 2012
- Qualcomm Technologies, Inc. certified multiple PRU and PTU
- Rapid member growth, over 180 today
  - Carriers, OEMs, consumer devices, components, furniture, automotive and more
- A4WP and PMA merger
  - High impact board of directors:
    - AT&T
    - Broadcom
    - Gill Electronics
    - Energy Star
    - Flextronics
    - IDT
    - Intel
    - MediaTek
    - ON Semiconductor
    - Powermat
    - Procter & Gamble
    - Qualcomm Incorporated
    - Samsung Electro-Mechanics
    - Samsung Electronics
    - Semtech
    - Starbucks
    - WiTricity
Path to commercialization

Qualcomm licensees planning to deploy in the next 12 months

250,000

Pending transmitter orders

- Restaurant chains
- Cafes and coffee shops
- Sporting venues
- Universities
- Automotive

Numbers by Qualcomm WiPower licensees.
## Supported power

**A4WP baseline system specification roadmap**

<table>
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<tr>
<th>Category</th>
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<th>PTX_IN_MAX’</th>
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<td>Class 1</td>
<td>See BSS V1.4 Roadmap</td>
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<td>50W</td>
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<td>37.5W</td>
<td>Class 6</td>
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<td>Class 7</td>
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Efficiency

Total charge time: consumers #1 concern

Tests prove Rezence-based wireless charging can be the same or quicker as both wired and other wireless charging technologies.

<table>
<thead>
<tr>
<th></th>
<th>WiPower multicharger</th>
<th>Commercially available inductive solution</th>
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<tbody>
<tr>
<td>Charge power (% of wired charger Power)</td>
<td>73%</td>
<td>57%</td>
</tr>
<tr>
<td>% of Max outside case temp</td>
<td>96%</td>
<td>81%</td>
</tr>
<tr>
<td>% of Max touchscreen temp</td>
<td>76%</td>
<td>Not measured</td>
</tr>
<tr>
<td>% of Max battery temp</td>
<td>76%</td>
<td>82%</td>
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<tr>
<td>Category 5</td>
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Regulatory considerations
Meets global regulatory requirements

- 6.78MHz wireless power transfer
- 2.4GHz Bluetooth communication
Flexible, scalable and convenient wireless charging

Compatible with A4WP’s Rezence™ standard and meet global regulatory requirements

Built-in support for certain Qualcomm Technologies chipsets

Ecosystem poised for growth, Qualcomm Technologies continues to innovate
Thank you

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For more information, visit us at:
www.qualcomm.com & www.qualcomm.com/blog

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