MEDIUM POWER WIRELESS CHARGING: 
EMERGING APPLICATIONS, CONSIDERATIONS AND OPPORTUNITIES
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THE CASE FOR A NEW MEDIUM POWER WIRELESS CHARGING STANDARD FOR PORTABLE PRODUCTS

Led by the Qi standard from the Wireless Power Consortium (WPC) and its more than 600 member companies, wireless charging for Low Power devices such as smartphones and transmitters, which require less than 15 watts, has proliferated in recent years.

Today, there are countless Qi-Certified devices on the market, including products from most leading smartphone and consumer electronics makers worldwide.

The Qi standard is now mainstream globally and growth continues. In order to build on this Low Power success, there is an opportunity to create a new Medium Power wireless standard with power transmitters and receivers able to support an array of battery-powered products operating in the 30- to 65-watt range (and eventually, up to 200 watts).

The new Medium Power standard will power an exciting new array of cord-free consumer products and applications, including domestic vacuum and lawn mowing robots, portable power tools, electronic bikes, robots and drones, medical devices and so much more.

An open Medium Power standard adds cord-free flexibility and freedom to these products, giving consumers a clear and easy way to keep their devices charged and ready to use.
The Medium Power specification remains in the early phases of development and continues to evolve rapidly. Now is a particularly compelling time to get involved in the specification and help guide it toward launch in a meaningful way.

This white paper explores the compelling case to develop a new Medium Power wireless charging standard. It delivers a road map to create a well-partitioned, safe, extendable and truly open Medium Power standard — built on core value propositions such as low-cost, high efficiency and implementation ease.

It also briefly recaps some of the primary technical considerations needed to make Medium Power a useful, safe and popular wireless charging standard.
Many manufacturers today are already developing Medium Power wireless charging products using proprietary standards.

As with standards like Universal Serial Bus (USB) and its numerous iterations, a global Medium Power wireless charging standard could serve as a universal means for manufacturers to concept, design and market a new class of products. Consumers benefit from ease of use and interoperability, further enhancing the growth prospects for an entire class of products and industries.

Standardization provides many other benefits beginning in the development and design of products according to regulatory requirements, stakeholder acceptance, market introduction, current and future environmental demands and product competitiveness based on the same standard.

Charging and existing wired solutions today are often considered as hassle. In many Medium Power devices, batteries must be regularly replaced to maintain operation. The true advantage (especially with reliable interoperation) is that the user will be able to pick up a bit of energy wherever there is a charging device, reducing that anxiety.

Regardless of the final Medium Power wireless power specification and resulting standard that is developed, there some common factors required to make it a success.

- It must be safe
- It must conform to global standards
- It should have an option for Qi (Low Power) implementation along with a Medium Power profile
- It should give OEMs and product designers as much room for creativity as possible for new form factors, innovative new product designs and differentiated features.
An open and accessible Medium Power wireless charging standard will almost certainly unleash new innovation and market opportunities. As we work on this new power standard that delivers on the promise of a safe, efficient and effective standard, awareness of several technical considerations are important.

Safety concerns

Perhaps it goes without saying, but all potential Medium Power wireless power transfer products must be safe and meet a variety of existing market applicable regulations and standards around the world.

The WPC’s Qi standard for Low Power, for example, underwent rigorous independent lab testing for safety, compatibility and other factors. Every Low Power product must pass these tests before they can be considered Qi-Certified. Unintended misuse of wireless power transfer products must be avoided by requirements and design according to regulations and standards. Of course, these regulations and standards will vary by region, but all of them should be taken into careful consideration.

Understanding Foreign Object Detection

One of the most challenging technical subjects in wireless charging is the concept and methodology of continuous Foreign Object Detection (FOD).

The requirement of continuous FOD in the Medium Power class is important because of the potential unwanted heating of foreign metallic objects in the vicinity of the Wireless Power transfer system.
However, providing a maximum of physical freedom in the positioning between the power transmitter and the power receiver is in contradiction to the requirement of lowering the risk of unwanted emissions based on the alternating magnetic field.

**Improving the User Experience**

One of the major challenges for improving user experience is to maximize positioning freedom between power transmitter and receiver in a way that is easy for users. However, achieving a maximum possible distance between transmitter and receiver in a way that delivers maximum efficiency and safety is often a tradeoff between the speed and quality of the charging experience versus the safety of the charge. Regardless, the wireless battery charging system should aim to be intuitive and user friendly.

**Interoperability Between Devices in Different Power Classes**

Using Medium Power transmitters in the 30- to 65-watt range (and eventually, up to 200-watts) along with Low Power receivers would be a desirable feature, and a strong selling point to customers. In order to realize this compatibility, certain aspects in the design must be considered, such as concentric coils or even an array of coils.
A BRIGHT FUTURE WITH MEDIUM POWER

Now is the time for a new, open Medium Power wireless charging standard. An array of new and emerging products is making the need for a standard greater than ever, and it is a growth trend that is likely to continue.

Developing a truly open standard allows developers and manufacturers to solve their Medium Power wireless charging needs once and for all, so they can focus on what they do best – making innovative, groundbreaking products that their customers crave.

The technical considerations included here are just the beginning. For more details on how to join the WPC and get started as a member on developing the new Medium Power standard, visit our website, www.wirelesspowerconsortium.com.
ABOUT THE WIRELESS POWER CONSORTIUM

Established in 2008, the Wireless Power Consortium is an open, collaborative standards development group of more than 600 company members around the globe. WPC’s members include:

- Apple
- ASUS
- Belkin
- Bosch
- Convenient Power
- Dell
- APTIV
- Google
- Haier
- Huawei
- IKEA
- Lenovo
- LG
- MediaTek
- mophie
- NXP
- Royal Philips
- Samsung
- Verizon Wireless
- Xiaomi

These companies — large and small competitors and ecosystem partners, from all parts of the industry and all parts of the globe — collaborate for a single purpose: to design and evolve the world’s most useful, safe and efficient standard for wireless power. For more information, visit www.wirelesspowerconsortium.com.