

## **Q&A - Powercast PowerSpot Power-Over-Distance Wireless Charging Transmitter for Consumer Devices**

### **1. Can Powercast charge mobile phones?**

Yes, Powercast's RF technology is absolutely capable of charging mobile phones over the air. However, our new PowerSpot transmitter targets phone and computer peripherals for now. At CES, we will show mobile phone charging as a technology demonstration two ways:

- 1) Phone case recharging using our PowerSpot and
- 2) Qi phone charging with Qi integrated into our PowerSpot.

Future Powercast product releases will target direct mobile phone recharging while addressing consumer expectations like charge time, product size, and cost.

### **2. Can you describe a far-field RF wireless power transmitter vs a near-field or mid-field one?**

There are two field regions: the near-field and the far-field. The exact boundary is debated by various types of engineers (antenna, EMC, etc.). Powercast defines the boundary as a distance of  $2D^2/\lambda$  where D is the largest dimension of the transmitting or receiving antenna and  $\lambda$  is the free space wavelength. The near-field can be divided into two sub-regions: the reactive near-field and the radiating near-field (sometimes called the transition region). The term Mid-Field is a marketing term and likely refers to one of the near-field regions. The far field is when the RF waves begin to travel away from the antenna into the air. Powercast transmitters are far-field transmitters but can operate in the near field as well, so exact definitions become less important.

### **3. Can you expand on the FCC's current regulations governing devices such as RF transmitters?**

The FCC must bless any wireless technology as safe, and non-interfering with authorized telecommunications. There are two sections of the US Federal Code of Regulations that regulate RF transmission devices – Part 15 and Part 18.

Part 15.247 limits both the transmitter's output power and antenna gain. In general, transmitters operating in the 915 MHz frequency band, like a PowerSpot transmitter, along with 2.45GHz and 5.8GHz transmitters, may output up to a watt of power to the transmitting antenna (under certain conditions). Typically, this requires using an antenna with a gain of 4 (6dBi) or less. This limits the output power to 4W EIRP (output power times antenna gain). Powercast's first, general-purpose TX91501 Powercaster® Transmitter and new TX91503 PowerSpot® Transmitter are certified under Part 15.247.

Part 18 regulates Industrial, Scientific, and Medical (ISM) equipment. Typical ISM applications are the production of physical, biological, or chemical effects such as heating, ionization of gases, mechanical vibrations, hair removal and acceleration of charged particles. Part 18 requires that the transmitter generate and use the RF energy locally. Powercast has also obtained approval under Part 18 in the past for several specific products.

**4. Can you tell us more about the two household consumer companies you've inked deals with to integrate your technology into their wireless charging ecosystems?**

Unfortunately, we have confidentially agreements with the majority of our customers. The referenced customers are household consumer names and we are actively working with them and others to integrate our technology and chips into their devices. As you would expect, public product announcements will not occur until they are ready for sale on the market, which we are expecting later in 2018 or early 2019.

**5. Are there plans to expand the PowerSpot transmitter into other regions?**

Yes, the PowerSpot transmitter is currently approved in the US and Canada. We are actively working on two other designs of the PowerSpot transmitter to support Europe and Asia.

**6. You mention that Powercast's technology has capabilities beyond today's permitted standards. What might Powercast have up its sleeve?**

Powercast continues to provide our customers viable, practical solutions that meet governmental regulations. In 2006, we helped the military develop and deploy a wireless power application where a moving receiver required over 5W of continuous output power and a recharging range of over 20 feet. However, current regulations do not allow that level of transmission power or the high-gain beam steering antenna that was used. See FAQ #3. Powercast will continue to align its product roadmap with current and planned regulations.

**7. Where are your transmitter's FCC and ISED (Canada) approval details?**

You can obtain our FCC details by searching our FCC ID, YESTX91503, [here](#). You can obtain our ISED details by searching our IC ID, 8985A-TX91503, [here](#).