



Wireless Power for Law Enforcement

Realities of charging officers' devices now and in the future

Police today carry multiple devices to safely respond to the communities they serve. With the benefits of these devices comes an increased burden of keeping them charged and accessible, typically wearing them on a belt or vest. To ensure these devices are ready-to-go, officers must rely on the internal battery performance, which degrades over time. Contingency planning requires officers to continuously monitor the charge level on multiple devices and periodically removing devices from the vest or belt to charge or replace the battery.

Unfortunately, wireless charging is not yet a realistic option for the devices that police officers carry.

5 Facts Police Chiefs Should Know About Wireless Charging

1 Of the devices that police officers carry, only cell phones can be charged wirelessly from their vehicles.

2 Wireless charging technologies, like those used for cell phones, still require both alignment and close proximity (within 1 cm), rendering the charging process to be almost functionally the same as wired charging.

3 FCC safety limit of 1W of transmission in the presence of people is not enough power to wirelessly charge a flashlight, radio, or camera.

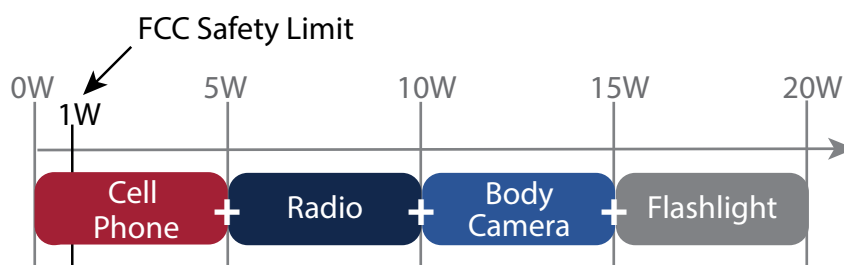
4 Although 5G signals can transmit power, the levels are insufficient to meet the device needs and are still bound by the FCC safety limit.

5 Because wireless charging is not yet a reality for police devices, battery life is still an issue; thus, agencies need to initially procure devices with power consumption profiles that best align with officer use patterns.



Today, the nirvana of hands-free, minds-free wireless charging is not a reality.

At present, vehicle-based wireless charging products on the market for police officers are limited. The Federal Communications Commission (FCC) safety limit of 1W wireless power transmission near humans, prohibits the realistic application of wireless charging because officers wear the devices on their bodies. As illustrated below, 1W of power is insufficient to charge most law enforcement devices.



Most devices require ~5W of power to reach full charge, and cumulatively, an officer's devices can require more than 20W of power.

Wireless charging uses either near-field or far-field technologies. Near-field solutions require the device to be aligned with, and within up to 1 cm of, the charging dock, whereas far-field technology transmits power across distances of a meter or more. Far-field can leverage various signal technologies including radio frequency (RF), light, sound, microwave, etc.

For future solutions to leverage these technologies, multiple barriers need to be overcome:

- Near-field wireless charging solutions would require all device manufacturers, including manufacturers of flashlights, cameras, radios, vests, belts, and seats, to agree to and implement wireless charging standards. The standards would need to govern both product design and implementation. Because many of these products are also used in civilian applications, a shift to a standard would have broader ramifications. Alternatively, a single company could develop a system-level solution, but this might require agencies to procure all new devices, belts/vests, and seats.
- Far-field wireless charging (e.g., 5G, Bluetooth, Wi-Fi) is possible only if the 1W safety limit is modified for police officers to be exempt (if proven to be safe).

Contact us for information and questions

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TECHNOLOGY-ENABLED PRODUCT CONCEPTS OF THE FUTURE

At a first glance, wireless charging appears to be a promising solution to the charging burden of today's officers.

One can imagine products where charging...



...begins when the officer sits in their cruiser using either near-field or far-field technologies.

- Cruisers equipped with far-field charging technology that charges officers' devices when in the vehicle.
- Near-field charging technology is built into the cruiser seat to charge a vest or belt when there is contact with the seat.



... is continuous by embedding battery storage in a belt or vest that charges devices that are effectively docked.

- A vest or belt is equipped with a battery and near-field technology that is compatible with all devices. In effect, each device charges via proper alignment, and the battery is recharged by sitting in the car.

But in reality, wireless charging for police devices does not yet exist, and that likely will not change anytime soon.