

March 18, 2022

U.S. Federal Communications Commission
Office of Engineering and Technology
Laboratory Division
45 L Street NE
Washington, DC 20554

Re: Comment to Publication 680106: Exposure Wireless Charging Apps DR04 44611

To Whom It May Concern:

Objects In Motion , LLC is providing the comments below to Knowledge Database (“KDB”) Publication 680106: Exposure Wireless Charging Apps DR04 44611 (the “**Proposal**”).

Objects In Motion , LLC is specializing in designing electromagnetic devices especially magnetically actuated devices and communication systems for the past 20 years . We appreciate the opportunity to comment on the U.S Federal Communications Commission (“FCC”) Proposal, particularly with respect to Section 5.2, “Part 18 Wireless Power Transfer Devices Beyond 1 Meter Distances.” As explained in further detail below, we believe that Section 5.2 of the Proposal can mistakenly be interpreted as applying to unintended technologies. This comment further offers language to clarify the technologies to which it is intended to apply in order to avoid such misinterpretation.

As the FCC is aware, KDB Publication 680106 was originally intended to apply to *inductive* wireless power transfer (“WPT”) technologies. Indeed, the Proposal asks, “[w]hat rules regulate short distance wireless *inductive* coupled charging pads or charging devices?” (Emphasis added.) This intent remains apparent in current KDB 680106 Do1 RF Exposure Wireless Charging App v03r01. However, as drafted, Section 5.2 of the Proposal inadvertently creates a pathway for *radiative* WPT technology certification. This is problematic for multiple reasons, principally due to the critical distinctions between inductive and radiative WPT technologies.

First, radiative WPT, particularly high-frequency phased-array transmitters, exhibit field patterns and radiation hazards that are fundamentally different from inductive WPT, and should therefore be considered distinct for certification by the FCC. More specifically, transmitters employing phased-array antennas and other radiative WPT generate electromagnetic fields that propagate (and not necessarily decay) in a complex manner.

Second, inductive WPT systems generate predominantly magnetic fields, consistent with the reference in Section 5.1 of the Proposal (Section 5 of current KDB 680106) pertaining to H-field exposure threshold. In stark contrast, radiative WPT systems induce EM fields, where the dominant source of hazard is the electric field (E-field).

Third, radiative WPT systems utilize phased-array antennas with the explicit purpose of creating electronically steerable radiation “hot spots” at a distance, often meters away from the transmitter, diverging from the intent of Section 5.2 of the Proposal to address inductive WPT.

Inductive and radiative WPT technologies are fundamentally different and prompt unique considerations for FCC certification. Therefore, finalizing the Proposal as drafted would bear unintended

consequences of inadvertently creating a pathway for *radiative* WPT technology certification. We believe that FCC understands the substantial distinctions between inductive and radiative WPT technology and that Section 5.2 of the Proposal can be clarified with respect to its scope.

For the reasons stated above, the following clarifications should be added to the Proposal:

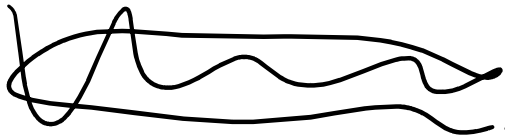
1. Section 5 should explicitly *exclude* radiative WPT, or at a minimum, all devices employing phased-array or multiple-antenna transmitters capable of forming constructive interference at a distance.
2. Section 5.2 should be amended to state, “Part 18 devices that would otherwise meet the requirements of Section 5.1(b)”. The Proposal should not invite misinterpretation and authorizations of radiative WPT systems at distances greater than 1 meter by allowing compliance to the very general Section 5.1(c) to the detriment of public safety.
3. Section 5.2(e) should be amended to remove the misleading phrase “in other words.” The sentence should instead state, “The applicant must demonstrate that the RF field in all locations anywhere at or beyond one meter is at or below the level that would be present within one meter when all devices being charged are within one meter of the transmitter. All RF emissions must be unaffected by the placement of the load/target device.”
4. Section 5.2(h) should be amended to not only require the installer to be *capable* of performing the necessary measurements, but to actually perform them. More specifically, Section 5.2(h) should be amended to state:

(h) Devices shall professionally installed, the installer should follow manufacturer-provided guidance and conduct necessary measurements and calculations to verify that conditions (2), (3) and (4), stated above, have been met.

Objects In Motion , LLC hopes that the comments provided herein are helpful to refine the scope of the Proposal and avoid its misinterpretation and application to unintended radiative WPT technologies.

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