

**Federal Communications Commission  
Office of Engineering and Technology  
Laboratory Division Public Draft Review**

**Draft Laboratory Division Publications Report**

**Title:** Evaluation and Approval Considerations for Handsets with Specific Wireless Charging Battery Covers

**Short Title:** Handset Wireless Battery Chargers

**Reason:** New publication

**Publication:** 853211

**Keyword/Subject:** Wireless Charger, RF Exposure, SAR, HAC, EMC, Battery Cover

**First Category:** Radio Service Rules

**Second Category:**

**Third Category:**

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**Question:**

What are the guidelines for testing a handset with a wireless charging battery cover?

**Answer:**

For handsets that implement Wireless Power Transfer Interface based on the definition and protocol requirements established by the Wireless Power Consortium (WPC standard) see the attachment 853211 Handset Wireless Battery Chargers v01 below.

For all other wireless charging handset and general guidance see KDB Publication 680106 (Part 15B, Part 18, Wireless Chargers, Inductive Chargers, Wireless Charging Pads) and its associated attachment 680106 D01 RF Exposure Wireless Charging Apps v01.

**Attachment**

[853211 Handset Wireless Battery Chargers v01](#)

## **Evaluation and Approval Considerations for Handsets with Specific Wireless Charging Battery Covers**

This document identifies the test and approval considerations for certain handsets with wireless charging capabilities. In particular, the procedures discussed in this note are only applicable to implementations based on the Wireless Power Transfer Interface Definition and Protocol requirements established by the Wireless Power Consortium (WPC standard), without modification, including operating frequencies, receiving coil design, and communication requirements.<sup>1</sup> The charging hardware must be incorporated as an integral part of the battery cover, which is supplied by the manufacturer or can be acquired as an optional accessory for a specific handset model from the manufacturer. For other implementations, a KDB inquiry should be submitted to confirm the test requirements and to avoid issues during equipment certification. When handsets are tested according to the procedures described in this document, a PBA is not required for TCB review and approval.

### **Equipment Authorization**

We require an accessory battery cover that allows a handset to charge its battery wirelessly according to the WPC standard to be tested and approved as an integral part of the handset, under the FCC ID of the handset.<sup>2</sup> Once authorized as an integral part of the handset, the wireless charging battery cover may also be sold separately as an accessory for the handset. We do not permit a separate FCC ID for wireless battery charging covers implemented according to the WPC standard.

If a wireless charging battery cover is designed for use with different handset models with unique FCC ID numbers, it must be tested independently with each handset model during equipment certification. For purposes of equipment authorization, the normal (without the wireless charging hardware) and wireless charging battery covers must be tested separately as an integral part of the handset for EMC, SAR and HAC requirements to ensure the handset is compliant. Manufacturers must ensure that wireless charging battery covers and all other accessories are identified in appropriate filings of the handset and permissive change requirements are applied to modifications made to wireless charging battery covers.

The application for equipment authorization must clearly identify the specific protocol and configurations defined in the WPC Standard documents. Thus, for example, the use of modes “A1”, “A2”, “B1” or “B2” etc. have to be clearly specified. The test reports must clearly identify that the passive communication mechanism defined in the WPC standard has been fully satisfied; that is, data message packets are conveyed back from the wireless charging battery cover to the charger (transmitter) by perturbing the magnetic field and load conditions sensed by the charger. According to the WPC standard, communication must be accomplished according to the defined capacitive or resistive switching mechanisms. We have noted that terms such as load modulation, impedance modulation, load switching or amplitude modulation etc. have been used to describe this type of wireless charging communication as well as other wireless charging communication protocols; however, we require wireless charging battery covers to implement specific protocols defined by the WPC standard to use the following procedures. We have determined that based on the communications protocol used in the WPC standard, the wireless charging battery cover must be tested as an integral part of a handset to satisfy Part 15 unintentional radiator requirements.

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<sup>1</sup> The applicable specifications and documents are available at  
<http://www.wirelesspowerconsortium.com/developers/specification.html>

<sup>2</sup> The charger requires a separate equipment authorization approval (see KDB Publication 680106)

Detailed descriptions and photos of the hardware incorporated in the wireless charging battery cover, including magnets, shields, coil locations and dimensions and other components intended for functions other than wireless charging must be included in the “Operational Description” exhibit for equipment authorization. The information on conditions that initiate, terminate, abort or establish a charging session to ensure chargers are not left unattended in undetermined operating conditions should also be included. Some description of the wireless charging function implemented by the handset is required in the test reports to support the test configurations and results.

## **SAR**

Initially, the handset must be tested according to all applicable SAR test procedures using the normal battery cover (without the wireless charging hardware). The highest SAR measured for each wireless technology (1xRTT, EVDO, WCDMA, GSM, Wi-Fi etc.), frequency band, operating mode (different modes/configurations within each wireless technology) and exposure condition (head, body-worn accessory, hotspot mode etc.) must be repeated using the wireless charging battery cover. In addition, for test cases where the measured SAR for a handset with normal battery cover is greater than 1.2 W/kg, these tests should be repeated with the wireless charging battery cover. If there are noticeable changes in SAR distribution between the normal and wireless charging covers, explanations for such changes should be included in the SAR report to support the test results.

## **EMC**

The EMC test report for a handset must include transmitter spurious emissions measurement data, as required by Part 22, 24, 27 etc., with the normal battery cover and also with the wireless charging battery cover. For purposes of performing spurious emission measurements, the handset should be placed on a representative charging pad under normal charging conditions and in simulated call configurations; for example, through a Bluetooth connection, if applicable to the specific handset.

## **HAC**

If the specific handset model (with a wireless charging battery cover supplied with the handset or sold separately as an accessory for the handset and the handset) is rated as Hearing aid-compatible (HAC) in accordance with Section 20.19, then the handset including the wireless charger covers must be evaluated with or included with the set of available batteries to determine the worst case battery used for establishing the HAC rating. Further guidance for initial applications and permissive changes for adding wireless charging battery operation can be found in KDB Publication 285076.