

# PUBLICLY AVAILABLE SPECIFICATION

## PRE-STANDARD



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**The Qi wireless power transfer system – Power class 0 specification –  
Part 2: Reference Designs Version.1.1.2**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 29.240.99; 33.160.99; 35.200

ISBN 978-2-8322-4459-3

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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POWER CLASS 0 SPECIFICATION –**
**Part 2: Reference Designs Version.1.1.2****FOREWORD**

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This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document

<b>Draft PAS</b>	<b>Report on voting</b>
100/2827/PAS	100/2862/RVDPAS

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# 1 General

## 1.1 Introduction

The Wireless Power Consortium (WPC) is a worldwide organization that aims to develop and promote global standards for wireless power transfer in various application areas. A first application area is wireless charging of low and medium power devices, such as mobile phones and tablet computers. The Wireless Power Consortium maintains the Qi logo for this application area.

## 1.2 Scope

This document, *Part 4: Reference Designs*, comprises reference designs for Power Class 0 Base Stations and Mobile Devices. Power Class 0 is the WPC designation for flat-surface devices, such as chargers, mobile phones, tablets, cameras, and battery packs, in the Baseline Power Profile ( $\leq 5$  W) and Extended Power Profile ( $\leq 15$  W).

### 1.2.1 Current Specification structure (introduced in version 1.2.1)

The Qi Wireless Power Transfer System for Power Class 0 Specification consists of the following documents.

- *Parts 1 and 2: Interface Definitions*
  - *Part 1: Primary Interface Definition*
  - *Part 2: Secondary Interface Definition*
- *Part 3: Compliance Testing*
- ***Part 4: Reference Designs*** (this document)

NOTE WPC publications prior to version 1.2.1 were structured differently, and are listed in Section 1.2.2 below. In particular, the Low Power and Medium Power publications were divided into separate System Description documents. Beginning with version 1.2.1, the Low Power and Medium Power System Descriptions have been merged into the Specification structure shown in this section. Additionally, the terms *Low Power* and *Medium Power* have been replaced in the current Specification by the terms *Baseline Power Profile* and *Extended Power Profile* respectively.

### **1.2.2 Earlier Specification structure (version 1.2.0 and below)**

Before release 1.2.1, the Wireless Power Transfer specification comprised the following documents.

- System Description, Wireless Power Transfer, Volume I: Low Power, Part 1: Interface Definition.
- System Description, Wireless Power Transfer, Volume I: Low Power, Part 2: Performance Requirements.
- System Description, Wireless Power Transfer, Volume I: Low Power, Part 3: Compliance Testing.
- System Description, Qi Wireless Power Transfer, Volume II: Medium Power.

## **1.3 Main features**

- A method of contactless power transfer from a Base Station to a Mobile Device that is based on near field magnetic induction between coils.
- A Baseline Power Profile supporting transfer of up to about 5 W and an Extended Power Profile supporting transfer of up to about 15 W of power using an appropriate Secondary Coil (having a typical outer dimension of around 40 mm).
- Operation at frequencies in the 87...205 kHz range.
- Support for two methods of placing the Mobile Device on the surface of the Base Station:
  - Guided Positioning helps a user to properly place the Mobile Device on the surface of a Base Station that provides power through a single or a few fixed locations of that surface.
  - Free Positioning enables arbitrary placement of the Mobile Device on the surface of a Base Station that can provide power through any location of that surface.
- A simple communications protocol enabling the Mobile Device to take full control of the power transfer.
- Considerable design flexibility for integration of the system into a Mobile Device.
- Very low stand-by power achievable (implementation dependent).



## 1.4 Conformance and references

### 1.4.1 Conformance

All provisions in The Qi Wireless Power Transfer System, Power Class 0 Specification are mandatory, unless specifically indicated as recommended, optional, note, example, or informative. Verbal expression of provisions in this Specification follow the rules provided in Annex H of ISO/IEC Directives, Part 2. For clarity, the word “**shall**” indicates a requirement that is to be followed strictly in order to conform to The Qi Wireless Power Transfer System, Power Class 0 Specification, and from which no deviation is permitted. The word “**should**” indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required, or that in the negative form a certain possibility or course of action is deprecated but not prohibited. The word “**may**” indicates a course of action permissible within the limits of The Qi Wireless Power Transfer System, Power Class 0 Specification. The word “**can**” indicates a possibility or capability, whether material, physical, or causal.

### 1.4.2 References

For undated references, the most recently published Specification applies. The most recent WPC publications can be downloaded from <http://www.wirelesspowerconsortium.com>. (See Section 1.2.1 for a list of documents included in The Qi Wireless Power Transfer System for Power Class 0 Specification.) In addition, the following documents are referenced within The Qi Wireless Power Transfer System for Power Class 0 Specification.

- Product Registration Procedure Web page (WPC Web site for members, Testing & Registration section)
- Qi Product Registration Manual, Logo Licensee/Manufacturer
- Qi Product Registration Manual, Authorized Test Lab
- Power Receiver Manufacturer Codes, Wireless Power Consortium
- The International System of Units (SI), Bureau International des Poids et Mesures