SLOVENSKI STANDARD
oSIST prEN IEC 63758-3:2026

01-november-2026

Specifikacija Qi - Različica 2.3 - 3. del: Dovajanje moči (hitri postopek)

Qi specification - Version 2.3 - Part 3: Power delivery (Fast Track)

Sample Document

Ta slovenski standard je istoveten z: **prEN IEC 63758-3:2026**

get full document from standards.iteh.ai

ICS:

29.240.99	Druga oprema v zvezi z omrežji za prenos in distribucijo električne energije	Other equipment related to power transmission and distribution networks
33.160.99	Druga avdio, video in avdiovizuelna oprema	Other audio, video and audiovisual equipment
35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment

oSIST prEN IEC 63758-3:2026 **en,fr,de**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

Sample Document

get full document from standards.iteh.ai

100/4541/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 63758-3 ED1**	
DATE OF CIRCULATION: **2026-09-18**	CLOSING DATE FOR VOTING: **2026-12-11**
SUPERSEDES DOCUMENTS:	

IEC TC 100 : AUDIO, VIDEO AND MULTIMEDIA SYSTEMS AND EQUIPMENT	
SECRETARIAT: Japan	SECRETARY: Ms Mahiru Uehara
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 106,TC 108	HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED:	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Sample Document
Get full document from standards.iteh.ai

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant “In Some Countries” clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Qi Specification - Version 2.3 - Part 3: Power delivery (Fast Track)

PROPOSED STABILITY DATE: 2029

NOTE FROM TC/SC OFFICERS:

As this is a fast-track process offered by WPC, the Word file is not provided.

Copyright © 2026 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

oSIST prEN IEC 63758-3:2026

WIRELESS POWER

CONSORTIUM

Qi Specification

Power Delivery

Sample Document

get full document from standards.iteh.ai

Version 2.3

Publish Date: 08 December 2025

oSIST prEN IEC 63758-3:2026 • https://standards.iteh.ai/catalog/standards/sist/702f48d9-73bf-4057-8e40-f2896e23ad6e/osist-pren-iec-63758-3-2026

DISCLAIMER

The information contained herein is believed to be accurate as of the date of publication, but is provided “as is” and may contain errors. The Wireless Power Consortium makes no warranty, express or implied, with respect to this document and its contents, including any warranty of title, ownership, merchantability, or fitness for a particular use or purpose. Neither the Wireless Power Consortium, nor any member of the Wireless Power Consortium will be liable for errors in this document or for any damages, including indirect or consequential, from use of or reliance on the accuracy of this document. For any further explanation of the contents of this document, or in case of any perceived inconsistency or ambiguity of interpretation, contact: info@wirelesspowerconsortium.com.

Sample Document

get full document from standards.iteh.ai

Contents

1. General 5

1.1 Structure of the Qi Specification 5
1.2 Scope 6
1.3 Compliance 6
1.4 References 6
1.5 Conventions 7
1.5.1 Notation of numbers 7
1.5.2 Tolerances 7
1.5.3 Fields in a data packet 7
1.5.4 Notation of text strings 8
1.5.5 Short-hand notation for data packets 8

2. Introduction 9

3. Power Receiver construction 10

3.1 Dual resonant circuit 12
3.2 Rectification circuit 13
3.3 Sensing circuits 13
3.4 Communications modulator 13
3.5 Communications demodulator 13
3.6 Output disconnect 13
3.7 Shielding 14

4. Power Receiver design guidelines (informative) 15

4.1 Large-signal resonance check 15
4.2 Power Receiver coil design 15

5. Power Transmitter construction 16

5.1 Power Transmitter reference designs 16
5.2 Power transfer control 16

6. Power consumption 19

7. Meaningful functionality 20

8. Unintentional Magnetic Field Susceptibility (Informative) 21

8.1 Limits 21
8.2 Protection 21
8.3 Power Transmitter detection 21

9. Load Steps 22

9.1 Load step test procedure 22
9.1.1 Baseline Power Profile load step test 22
9.1.2 Extended Power Profile load step test 23

Sample Document
Get full document from standards.iteh.ai

9.2 Load dump test procedure 24
9.2.1 Baseline Power Profile load dump test 24
9.2.2 Extended Power Profile load dump test 24
10. Over-voltage protection 26
11. External Power Input (Informative) 32
11.1 Available power—Extended Power Profile only 32
12. Power Levels (Extended Power Profile only) 33
12.1 Potential Load Power 33
12.2 Light load 33
13. System Efficiency (Informative) 34
13.1 Definition 34
13.2 Power Transmitter efficiency 35
13.2.1 Baseline Power Profile 35
13.2.2 Extended Power Profile 36
13.3 Power Receiver efficiency 37
14. Stand-by Power (Informative) 38
14.1 Transmitter Measurement Method 38
15. Object Detection (Informative) 39
15.1 Resonance shift 39
15.2 Capacitance change 40
16. Power Receiver Localization (Informative) 41
16.1 Primary Coil array based Free Positioning 41
16.1.1 A single Power Receiver covering multiple Primary Cells 41
16.1.2 Two Power Receivers covering two adjacent Primary Cells 41
16.2 Two Power Receivers covering a single Primary Cell 43
16.3 Moving Primary Coil based Free Positioning 44
16.4 User-assisted positioning 46
16.4.1 Example 1 46
16.4.2 Example 2 47

Sample Document
get full document from standards.iteh.ai

1. General

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. An important application area comprises flat-surface devices such as mobile phones and chargers operating at power levels up to 25 W.

1.1 Structure of the Qi Specification

General documents

- Introduction
- Glossary, Acronyms, and Symbols
- Technical System Overview
- Power Profiles

System description documents

- Mechanical, Thermal, and User Interface
- Power Delivery
- Communications Physical Layer
- Communications Protocol
- Foreign Object Detection
- NFC Tag Protection
- Authentication Protocol
- MPP Communications Protocol
- MPP Magnetics Design
- MPP Power Delivery
- MPP Communications Physical Layer
- MPP Foreign Object Detection
- MPP Design Guidelines (Informative)
- Magnetic Covers
- Active Alignment System
- Thermal Management Protocol

Sample Document
get full document from standards.iteh.ai

1.2 Scope

The *Qi Specification*, *Power Delivery* (this document) comprises guidelines and requirements for Power Receiver design, including circuitry, power consumption, operating power levels, power transfer efficiency, and standby power.

1.3 Compliance

All provisions in the *Qi 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 ISO/IEC Directives, Part 2.

Table 1 - Verbal forms for expressions of provisions

Provision	Verbal form
requirement	“shall” or “shall not”
recommendation	“should” or “should not”
permission	“may” or “may not”
capability	“can” or “cannot”

1.4 References

For undated references, the most recently published document applies. The most recent WPC publications can be downloaded from http://www.wirelesspowerconsortium.com.

Sample Document
get full document from standards.iteh.ai

1.5 Conventions

1.5.1 Notation of numbers

- Real numbers use the digits 0 to 9, a decimal point, and optionally an exponential part.
- Integer numbers in decimal notation use the digits 0 to 9.
- Integer numbers in hexadecimal notation use the hexadecimal digits 0 to 9 and A to F, and are prefixed by "0x" unless explicitly indicated otherwise.
- Single bit values use the words ZERO and ONE.

1.5.2 Tolerances

Unless indicated otherwise, all numeric values in the *Qi Specification* are exactly as specified and do not have any implied tolerance.

1.5.3 Fields in a data packet

A numeric value stored in a field of a data packet uses a big-endian format. Bits that are more significant are stored at a lower byte offset than bits that are less significant. Table 2 and Figure 1 provide examples of the interpretation of such fields.

Table 2 - Example of fields in a data packet (table)

Sample Document
get full document from standards.iteh.ai

	b_7	b_6	b_5	b_4	b_3	b_2	b_1	b_0
B_0	(msb)							
B_1	16-bit Numeric Data Field							(lsb)
B_2	Other Field					(msb)		
B_3	16-bit Numeric Data Field						(lsb)	Field

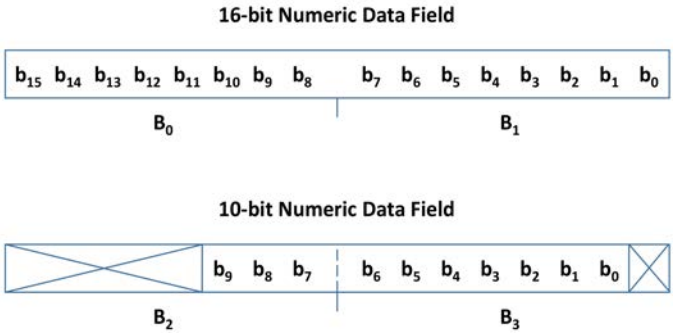


Figure 1 - Examples of fields in a data packet

1.5.4 Notation of text strings

Text strings consist of a sequence of printable ASCII characters (i.e. in the range of 0x20 to 0x7E) enclosed in double quotes ("). Text strings are stored in fields of data structures with the first character of the string at the lowest byte offset, and are padded with ASCII NUL (0x00) characters to the end of the field where necessary.

EXAMPLE: The text string “WPC” is stored in a six-byte fields as the sequence of characters 'W', 'P', 'C', NUL, NUL, and NUL. The text string “M:4D3A” is stored in a six-byte field as the sequence 'M', ':', '4', 'D', '3', and 'A'.

1.5.5 Short-hand notation for data packets

In many instances, the *Qi Specification* refers to a data packet using the following shorthand notation:

<MNEMONIC>/<modifier>

In this notation, <MNEMONIC> refers to the data packet's mnemonic defined in the *Qi Specification*, *Communications Protocol*, and <modifier> refers to a particular value in a field of the data packet. The definitions of the data packets in the *Qi Specification*,*Communications Protocol*, list the meanings of the modifiers.

For example, EPT/cc refers to an End Power Transfer data packet having its End Power Transfer code field set to 0x01.

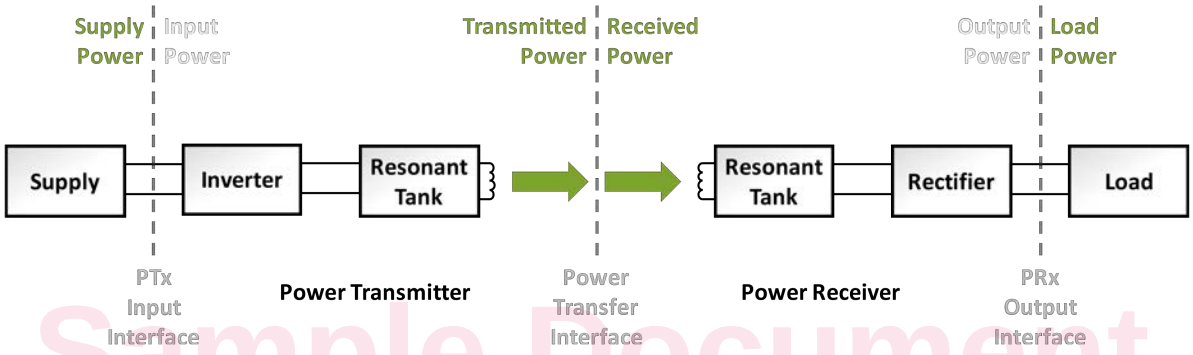
Sample Document

get full document from standards.iteh.ai

2. Introduction

Figure 2 provides a simplified model of a wireless power system, consisting of six blocks. The three blocks to the left of the power transfer interface represent a Power Transmitter and its supply. The three to the right represent a Power Receiver and its Load. Typically, these blocks comprise the following elements.

- *Supply:* in many cases a separate adapter such as a USB PD brick.
- *Inverter:* a half-bridge or full-bridge for DC/AC conversion.
- *Resonant Tank:* a coil and series capacitor boosting the power transfer capability.
- *Rectifier:* either a diode bridge or an active (synchronous) bridge for AC/DC conversion.
- *Load:* a power sink drawn by the Power Receiver Product, typically a mobile phone's power input to an internal battery charger.



Sample Document

Figure 2 - Simplified model of a wireless power transfer system

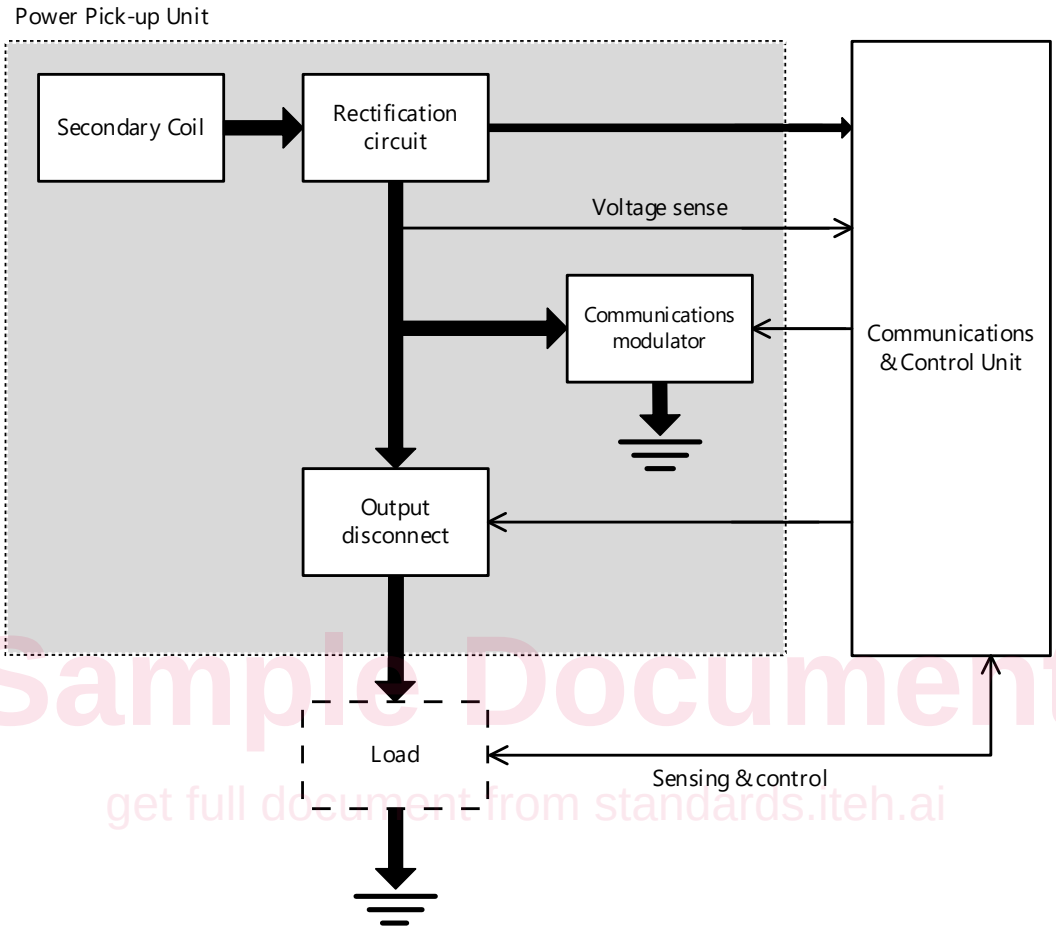
get full document from standards.iteh.ai

With reference to Figure 2, the following definitions are central to the understanding of a wireless power system.

- **Power Signal**—An alternating magnetic field.
- **Supply Power**—The power dissipated from the supply.
- **Power Transmitter**—A subsystem that can generate a Power Signal.
- **Power Transmitter Product**—A device containing one or more Power Transmitters.
- **Transmitted Power**—The power from the Power Signal dissipated by any object that is not an integral part of the Power Transmitter Product.
- **Power Receiver**—A subsystem that can extract electric power from a Power Signal.
- **Power Receiver Product**—A device containing a Power Receiver.
- **Received Power**—The power from the Power Signal dissipated by any component that is an integral part of the Power Receiver Product.
- **Test Power Transmitter**—A Power Transmitter Product designed to analyse and check the operation of a Power Receiver Product's wireless power functionality.
- **Test Power Receiver**—A Power Receiver Product designed to analyse and check the operation of a Power Transmitter Product's wireless power functionality.
- **Load Power**—The power dissipated in the Load.

3. Power Receiver construction

Figure 3 illustrates an example of a functional block diagram for a Baseline Power Profile Power Receiver.



Sample Document
get full document from standards.iteh.ai

Figure 3 - Functional block diagram for a Baseline Power Profile Power Receiver

In this example, the Power Receiver consists of a Power Pick-up Unit and a Communications and Control Unit. The Power Pick-up Unit on the left-hand side of Figure 3 comprises the analogue components of the Power Receiver:

- A dual resonant circuit consisting of a Secondary Coil plus series and parallel capacitances to enhance the power transfer efficiency and enable a resonant detection method (see *Section 3.1, Dual resonant circuit*).
- A rectification circuit that provides full-wave rectification of the AC waveform using, for example, four diodes in a full-bridge configuration or a suitable configuration of active components (see *Section 3.2, Rectification circuit*). The rectification circuit may perform output smoothing as well. In this example, the rectification circuit provides power to both the Communications and Control Unit of the Power Receiver and the output of the Power Receiver.

A communications modulator (see *Section 3.4, Communications modulator*). On the DC side of the Power Receiver, the communications modulator typically consists of a resistor in series with a switch. On the AC side of the Power Receiver, the communications modulator typically consists of a capacitor in series with a switch (not shown in Figure 3).

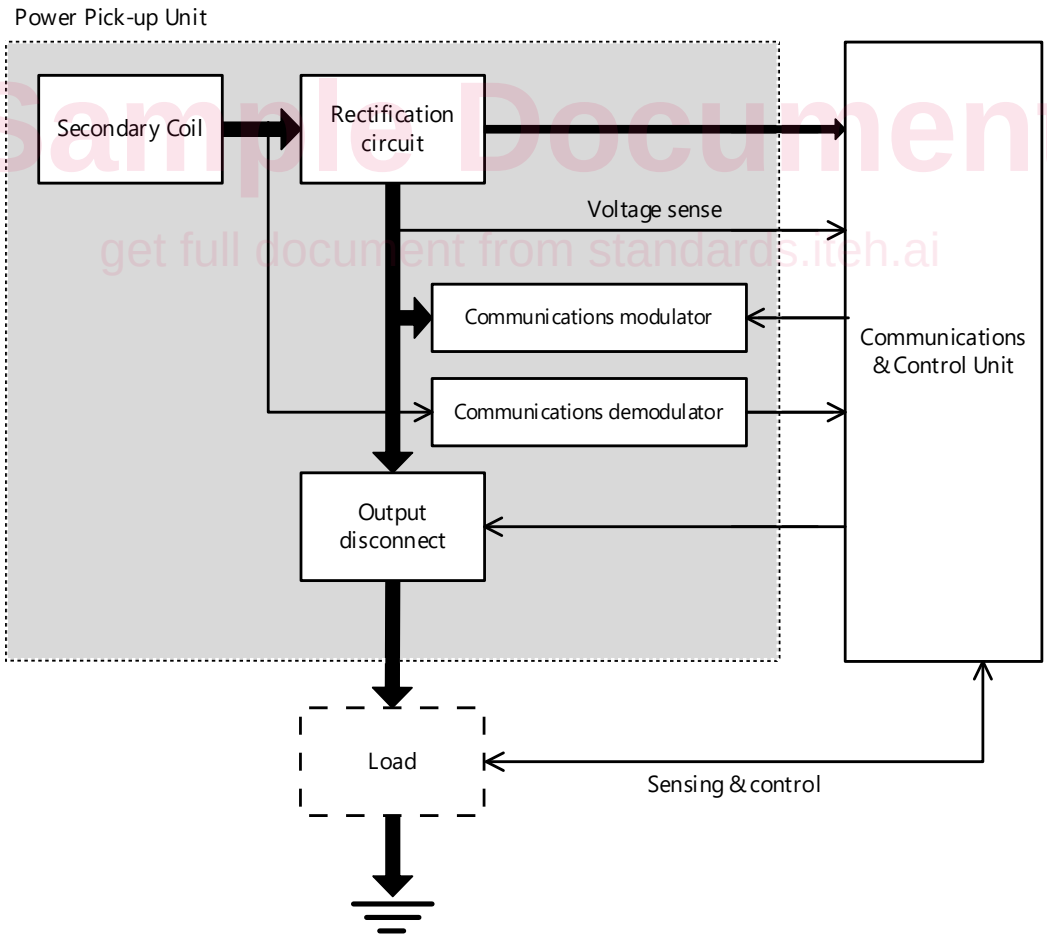
An output disconnect switch, which prevents current from flowing to the output when the Power Receiver does not provide power at its output. In addition, the output disconnect switch prevents current back flow into the Power Receiver when the Power Receiver does not provide power at its output. Moreover, the output disconnect switch

minimizes the power that the Power Receiver draws from the Power Transmitter when a Power Signal is first applied to the Secondary Coil.
A rectified voltage sense.

The Communications and Control Unit on the right-hand side of Figure 3 comprises the digital logic part of the Power Receiver. This unit executes the relevant power control algorithms and protocols, drives the communications modulator, controls the output disconnect switch, and monitors several sensing circuits in both the Power Pick-up Unit and the load. (A good example of a sensing circuit in the load is a circuit that measures the temperature of a rechargeable battery.)

NOTE: This version of the Specification minimizes the set of Power Receiver design requirements defined in this section. Accordingly, compliant Power Receiver designs that differ from the sample functional block diagram shown in Figure 3 are possible. For example, an alternative design includes post-regulation of the output of the rectification circuit (e.g., by using a buck converter, battery charging circuit, power management unit, etc.). In yet another design, the Communications and Control Unit interfaces with other subsystems of the Power Receiver Product, e.g. for user interface purposes.

Figure 4 illustrates an example of a functional block diagram for an Extended Power Profile Power Receiver. The communications demodulator enables the communication of data from the Power Transmitter to an Extended Power Profile Power Receiver. The presence of a communications demodulator is the only difference with the functional block diagram of a Baseline Power Profile Power Receiver.
Functional block diagram for an Extended Power Profile Power Receiver



Sample Document
get full document from standards.iteh.ai

Figure 4 - Functional block diagram for an Extended Power Profile Power Receiver

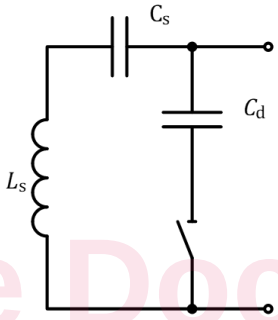
Power Pick-up Unit components are described in the subsections below.

A Power Receiver design shall include a dual resonant circuit as defined in *Section 3.1, Dual resonant circuit* , a rectification circuit as defined in *Section 3.2, Rectification circuit* , sensing circuits as defined in *Section 3.3, Sensing circuits* , a communications modulator as defined in *Section 3.4, Communications modulator* , and an output disconnect switch as defined in *Section 3.6, Output disconnect* .

A Power Receiver design for the Extended Power Profile shall also include a communications demodulator as defined in *Section 3.5, Communications demodulator* , and shall be able to function meaningfully if the Power Transmitter restrictions limit the output of power from the Power Receiver to 5 W; see *Section 3.7, Shielding* .

3.1 Dual resonant circuit

The dual resonant circuit of the Power Receiver comprises the Secondary Coil and two resonant capacitances. The purpose of the first resonant capacitance C_s is to enhance the power transfer efficiency. The purpose of the second resonant capacitance C_d is to enable a resonant detection of the receiver position on some Power Transmitter designs. Figure 5 illustrates the dual resonant circuit. The switch in the dual resonant circuit is optional. If the switch is not present, the capacitance C_d shall have a fixed connection to the Secondary Coil L_s. If the switch is present, it shall remain closed[i] until the Power Receiver transmits its first Packet (see the *Qi Specification*, *Communications Protocol*).



Sample Document

Figure 5 - Dual resonant circuit of a Power Receiver

get full document from standards.iteh.ai

The dual resonant circuit shall have the following resonant frequencies:

$$f'_s = \frac{1}{2\pi \cdot \sqrt{L'_s \cdot C_s}} = 100^{+x}_{-y}\ \text{kHz},$$

$$f_d = \frac{1}{2\pi \cdot \sqrt{L_s \cdot \left(\frac{1}{C_s} + \frac{1}{C_d}\right)^{-1}}} = (1000 \pm 10\%)\ \text{kHz}.$$

In these equations, L'_s is the self-inductance of the Secondary Coil when placed on the Interface Surface of a Power Transmitter and—if necessary—aligned to the Primary Cell; and L_s is the self-inductance of the Secondary Coil without magnetically active material that is not part of the Power Receiver design close to the Secondary Coil (e.g. away from the Interface Surface of a Power Transmitter). Moreover, the tolerances *x* and *y* on the resonant frequency f'_s are *x* = *y* = 5% for Power Receivers that specify a Maximum Power value in the Configuration Packet of 3 W and above, and *x* = 5% and *y* = 10% for all other Power Receivers.

NOTE: When determining the capacitance value C_d, make sure to account for any parasitic capacitances between the terminals of the dual resonant circuit that may affect the resonance frequency value f_d.

The quality factor Q of the loop consisting of the Secondary Coil, switch (if present), resonant capacitance C_s and resonant capacitance C_d, shall exceed the value 77. Here the quality factor Q is defined as:

$$Q = \frac{2\pi \cdot f_d \cdot L_s}{R}$$

[i]The switch shall remain closed even if no power is available from the Secondary Coil.