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**Qi Specification version 2.0 –
Part 11: MPP System Specification**

**Spécification Qi version 2.0 –
Partie 11: Spécification du système MPP**



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It is based on *Qi Specification version 2.0, MPP Communications Protocol* and was submitted as a Fast-Track document.

The text of this International Standard is based on the following documents:

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Full information on the voting for its approval can be found in the report on voting indicated in the above table.

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MPP Communications Protocol

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Version 2.0

April 2023

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Introduction

1

1.1 Overview

Magnetic power profile (MPP) is a protocol extension that provides additional messages, new power states/modes, new power transfer contract elements, and aims to provide the following functionalities:

- Operating Frequency Negotiation
- Cloaking (Power Pause)
- Generic Information Exchange
- Simultaneous Data Stream Transactions
- Fast PTx to PRx communication
- Maximum Power and Power Control Profiles Determination
- Extended Power Negotiation
- Extended PTx/PRx Identification and Capabilities
- Extended Control Error Packets and Received Power Packets
- Power Transmitter Battery Level Reporting
- Ecosystem Scalability

A summary of differences between Magnetic Power Profile and EPP is listed below in Table 1.1.

MPP extension allows devices to operate under Restricted mode (no PTx communication) at 360kHz without performing any explicit negotiation with the Power Transmitter. This flexibility enables devices with limited resources (e.g., devices with no FSK support) to take advantage of the frequency change feature.

Table 1.1: MPP Specifications Departure from Qi EPP

Feature	EPP	MPP
PTx Handshake Message	EPP FSK ACK Message	MPP FSK ACK Message (Section 2.3.1)
FSK Parameters Negotiation	EPP allows FSK parameters negotiation	Fixed FSK parameters
Data Streams	Single Stream Transfer	Multiple Concurrent Transfer
Foreign Object Detection	FOD Packet, Calibration, RP	Replaced with MPP Power Loss Accounting Packet

Magnetic Power Profile

2

2.1 Overview

This chapter describes the Power Receiver and Power Transmitter requirements for Magnetic Power Profile and the modes devices may use to communicate.

MPP supports two protocol modes:

1. **Restricted Mode:** One-way communication (PRx to PTx) with limited power levels (*5W PRECT*) using Qi Baseline Protocol
2. **Full Mode:** Supports bi-directional communication and enables negotiation of higher power levels

2.1.1 Restricted Mode

MPP Restricted mode allows PRx to establish a charging session with PTx using one-way communication (PRx to PTx) at 360kHz operating frequency using Qi Baseline Protocol.

PTx and PRx shall follow the Qi Baseline Protocol specifications when operating in Restricted mode.

(Informative)

MPP Restricted mode can be used when PRx is operating under a constrained environment e.g., device is fully discharged

PRx is allowed to transition from MPP Restricted to MPP Full mode to enable bi-directional communication and higher power levels. Refer to Section 4.6 for more details on how to perform the transition.

2.1.2 Full Mode

MPP Full mode enables a charging session with bi-directional communication between PTx and PRx allowing devices to perform more complex operations such as exchange of identification information, devices capabilities, ecosystem scalability coefficients, power negotiation and perform authentication.

In MPP Full mode, devices may transition between different protocol phases such as Negotiation, Power Transfer, Cloak and are able to negotiate higher power levels compared to Restricted mode.

MPP Full mode is based on Qi Extended Power Profile (EPP) protocol. PTx and PRx shall follow the Qi EPP specifications when operating in this mode. Changes to the EPP specifications are explicitly stated in this document.

Changes to specifications include:

1. Added MPP Power Transfer Contract Elements and removed support for EPP RP (Received Power) contract elements
2. Added MPP data packets and removed support for EPP FOD data packets
3. Overriding time parameters

2.2 Power Receiver Requirements

MPP ASK specification is based on Qi EPP, all the timing requirements/specifications specified by Extended Power Profile apply to MPP.

All standard Qi packets used in MPP follow the Qi specifications. Changes to the handling or the definition of the packets are explicitly stated in this document.

2.2.1 Amplitude Shift Keying (ASK)

MPP follows the Qi ASK specifications.

2.2.2 Startup Behavior

An MPP-compatible Power Receiver shall start by sending the following sequence of packets during the ping/configuration phase.

1. Signal Strength (SIG)
2. Identification (ID)
3. Extended Identification (XID)
4. Power Control Hold-Off (PCH) - *Optional*
5. Configuration Packet (CFG)

The packets shall contain the MPP identifiers as described in this section to allow an MPP-compatible Power Transmitter to identify the Power Receiver.

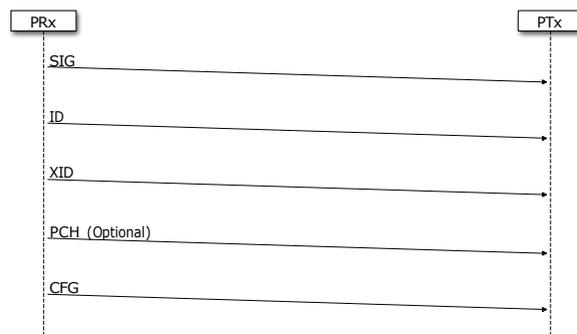


Figure 2.1: MPP ID/CFG Phase Packets

Signal Strength (SIG)

Power Receiver shall report the Signal Strength (SIG) data packet following the Qi specifications.