
**Cards and security devices for
personal identification — Contactless
proximity objects —**

**Part 4:
Transmission protocol**

**AMENDMENT 1: Dynamic power level
management**

*Cartes et dispositifs de sécurité pour l'identification personnelle —
Objets sans contact de proximité —*

Partie 4: Protocole de transmission

AMENDEMENT 1: Gestion dynamique de niveau de puissance



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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and security devices for personal identification*.

A list of all parts in the ISO/IEC 14443 series can be found on the ISO website.

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Cards and security devices for personal identification — Contactless proximity objects —

Part 4: Transmission protocol

AMENDMENT 1: Dynamic power level management

Page 3, Clause 4

Add the following symbols:

" H_{LP} "	minimum requested field strength"
" $H_{step, max}$ "	PCD maximum field strength step increase or step decrease"
" PLI_{CID} "	Power Level Indication in CID field"
" t_{PL} "	guard time for PCD power level change"

Page 15, 7.1

Replace the third dash of the 2nd paragraph (i.e. "power indication; and") with "power level indication (optional); and".

[ISO/IEC 14443-4:2018/Amd 1:2021](https://standards.iteh.ai/catalog/standards/iso/d76ca44a-fd18-451c-b2cd-c8d49c94121b/iso-iec-14443-4-2018-amd-1-2021)

Page 20, 7.4

Replace "1 byte long INF field that consists of two parts (see Figure 21)" at the end of the 1st paragraph with "1 byte long INF field that consists of three parts (see Figure 21)".

Replace the first dash after the 1st paragraph with:

- If b8 is set to (1)b, it indicates that the PICC requests the maximum available field strength to process the current and next commands until indicated otherwise by PLI_{CID} . In the operating volume of each supported class, the PCD shall provide at least the corresponding minimum field strength H_{min} specified in ISO/IEC 14443-2 and should provide more if available, while respecting all magnetic field strength requirements specified in 7.5. Interpretation of b8 by the PCD is optional.
- b7 codes t_{PL} value. $t_{PL} = 5$ ms if b7 is set to (1)b, otherwise t_{PL} equals the default value specified in ISO/IEC 14443-3:2018/Amd 1:2021, 6.5.2.3.

Page 20, 7.4, Figure 21

Replace Figure 21 with the following figure:

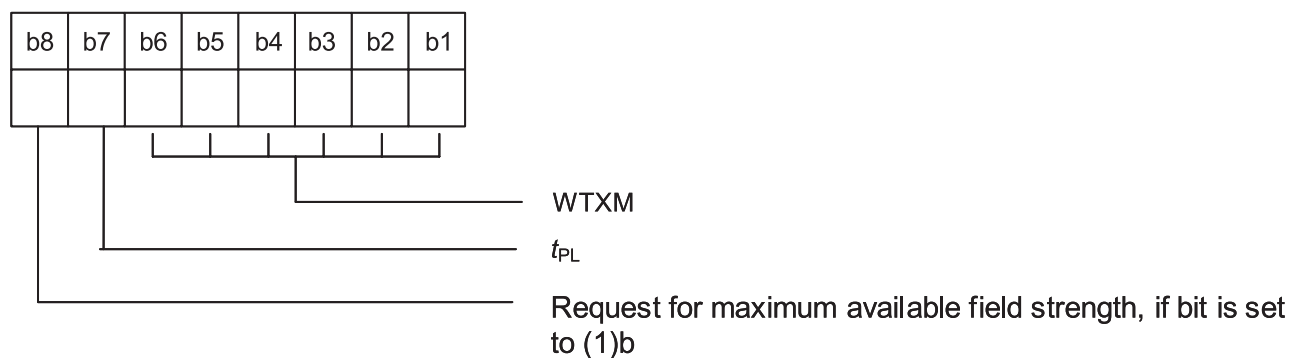


Figure 21 — Coding of INF field of an S(WTX) request

Page 21, 7.5

Replace the subclause with the following:

"

7.5 Power level indication (optional)

In the PROTOCOL state, the PICC may use PLI_{CID} to give power level indications to the PCD and PLI_{CID} shall be coded as specified in Table 4 using two bits embedded in the CID field (when present) sent by the PICC (see 7.2.2.2). See Annex H for examples of PLI_{CID} usage.

A PICC that codes:

- $PLI_{CID} = (00)b$ does not provide any received power level indication;
- $PLI_{CID} = (01)b$ indicates the received field strength is less than $(H_{LP} + H_{step, max})$ (see ISO/IEC 14443-2:2020/Amd 1); when receiving $PLI_{CID} = (01)b$, the PCD should not decrease its field strength;
- $PLI_{CID} = (10)b$ indicates the received field strength is at least $(H_{LP} + H_{step, max})$; and a one-step decrease may increase the PICC response time; when receiving $PLI_{CID} = (10)b$, the PCD may decrease its field strength by one step only;
- $PLI_{CID} = (11)b$ indicates the received field strength is at least $(H_{LP} + H_{step, max})$; and a one-step decrease is not expected to increase the PICC response time; when receiving $PLI_{CID} = (11)b$, the PCD may decrease its field strength by one step only.

The PCD may increase its field strength in one or several steps before any SOF or start of communication.

Table 4 — Coding of PLI_{CID}

PLI_{CID}	Power level indication
(00)b	No indication for field strength
(01)b	Field strength is less than $(H_{LP} + H_{step, max})$
(10)b	Field strength is at least $(H_{LP} + H_{step, max})$ One-step decrease may increase the PICC response time
(11)b	Field strength is at least $(H_{LP} + H_{step, max})$ One-step decrease is not expected to increase the PICC response time

After receiving the power level indication from the PICC, the PCD may change its magnetic field strength in accordance with the power level indication before sending the next block.