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

**Part 2:  
Radio frequency power and signal  
interface**

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**AMENDMENT 1: Dynamic power level  
management**

ISO/IEC 14443-2:2020/Amd 1:2021

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Objets sans contact de proximité*

*Partie 2: Interface radiofréquence et des signaux de communication*

*AMENDEMENT 1: Gestion dynamique de niveau de puissance*



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[ISO/IEC 14443-2:2020/Amd 1:2021  
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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*.

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

## Part 2: Radio frequency power and signal interface

### 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"

Page 6, 6.3

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Replace the first paragraph with the following text:

"Within the manufacturer specified operating volumes (see 3.6),

- the PCD shall generate a field strength of at least  $H_{min}$  and not exceeding  $H_{max}$  under unmodulated conditions, see Table 1;
- the PCD may generate a field strength lower than  $H_{min}$  only in case the PICC allows a decrease in the PCD field strength as specified in other parts of ISO/IEC 14443 and only for the processing of that PICC.

The PCD field strength step increase and step decrease shall be less than  $H_{step, max} = 3$  dB (a factor of ~1,4) and may be achieved by any wave shape, e.g., by several increments.

**WARNING — The PCD design shall take into account the field strength variation caused by the two different loading effects used in the associated test."**

Add the following paragraphs just before Table 2:

"Additionally, if the PICC allows a decrease in the PCD field strength down to a value less than  $H_{min}$ , then the PICC shall be able to operate as intended continuously between that value and  $H_{min}$  defined for its class, see Table 2.

The minimum requested field strength  $H_{LP}$  is  $H_{step, max}$  below the lowest field strength at which the PICC indicates  $PLI_{ATQ} = (11)b$  or  $PLI_{CID} = (10)b$  or  $(11)b$  (see ISO/IEC 14443-3:2018/Amd 1 and ISO/IEC 14443-4:2018/Amd 1)."

Page 24, 8.2.2.2, Table 22

Replace " $22/H^{0,5}$ " with " $\text{Min}(18 ; 22/H^{0,5})$ " for  $V_{\text{LMA, min, PICC}}$  requirement (first column) for "Class 1" PICC (first row).

Page 34, 9.1.2

Add the following paragraph just before Figure 22:

"Additionally, if the PICC allows a decrease in the PCD field strength down to a value less than  $H_{\text{min}}$ , then the PICC shall be able to receive for any bit combination a modulation waveform with a modulation index,  $m$ , greater than 8 % and less than 15 % for bit rates of  $f_c/128$ ,  $f_c/64$ ,  $f_c/32$  and  $f_c/16$  between that value and  $H_{\text{min}}$  defined for its class, see Table 2."

Page 43, 10.2

Add the following paragraph just after NOTE 1 (i.e. before the paragraph starting with "During this low EMD time"):

"Additionally, if the PICC allows a decrease in the PCD field strength down to a value less than  $H_{\text{min}}$ , then for all PICC classes, the EMD level before PICC data transmission shall be less than  $V_{\text{E, PICC}}$  defined for  $H_{\text{min}}$  that is  $2/3 + 3/H_{\text{min}}^2$  [mV (peak)]."

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