
**Identification cards — Contactless
integrated circuit cards — Proximity
cards —**

**Part 4:
Transmission protocol**

**AMENDMENT 4: Frame with error
correction**

*Cartes d'identification — Cartes à circuit(s) intégré(s) sans contact —
Cartes de proximité —*

Partie 4: Protocole de transmission

AMENDEMENT 4: Trame avec correction d'erreur



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Amendment 4 to ISO/IEC 14443-4:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and personal identification*.

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Part 4: Transmission protocol

AMENDMENT 4: Frame with error correction

Page 2, NOTE in 3.4

Replace NOTE with

“

NOTE The PICC independent from its type may use the frame with error correction defined in [clause 10](#). Alternatively the PICC Type A may use one of the standard frames defined for Type A and the PICC Type B may use the frame defined for Type B. This Type B frame is called standard frame, too, within this specification.

“

Page 2, Clause 4

Add new symbols and abbreviations in alphabetic order

“

A	Hamming control bits generation matrix (6 rows, 56 columns)
CRC_32	Cyclic Redundancy Check error detection code used within enhanced block
c_n	Hamming control bit n
d	vector containing 56 data bits
d_n	data bit n
H	matrix needed to calculate Hamming syndrome $\underline{s}$ (6 rows, 62 columns)
$h'_{m,n}$	element in row m and column n of matrix H'
H'	matrix needed to get matrix A (6 rows, 62 columns)
$\underline{h}'_n$	column vector of matrix H'
I_{6x6}	6 by 6 Identity matrix
LEN	two bytes LENgth field used within enhanced block
n	column index
m	row index
SYNC	SYNChronization sequence
$\underline{s}$	6-bit vector containing Hamming syndrome

s'	error position code
s	error position
$\underline{y}$	62-bit vector ($\underline{y}'$ with no padding bits)
$\underline{y}'$	64-bit vector containing received modified Hamming sub-block
y'_n	received bit n in each modified Hamming sub-block
“	

Page 14, 7.1

Replace first paragraph with

“

The block format depends on the frame format used for its transmission.

The standard block format as specified in Figure 14 shall be used in standard frames as defined in ISO/IEC 14443-3 and consists of:

- a prologue field (mandatory);
- an information field (optional);
- a two-byte epilogue field (mandatory).

The enhanced block format specified in [Figure 15](#) shall be used in frames with error correction as defined in [Clause 10](#) and consists of:

- a length field (mandatory);
- a prologue field (mandatory);
- an information field (optional);
- a four-byte epilogue field (mandatory).

“

Page 15, after Figure 14

Add a new [Figure 15](#), renumber all figures, add new [subclause 7.1.1](#) and renumber all subsequent subclauses.

“

NOTE The items in brackets indicate optional requirements.