INTERNATIONAL STANDARD

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AMENDMENT 1
2005-06-01

Identification cards — Contactless integrated circuit(s) cards — Proximity cards —

Part 2:
Radio frequency power and signal interface

AMENDMENT 1: Bit rates of fc/64, fc/32 and fc/16

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

Partie 2: Interface radio fréquence et des signaux de communication

AMENDEMENT 1: Débits binaires de fc/64, fc/32 et fc/16

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ISO/IEC 14443-2:2001/Amd 1:2005
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Foreword

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Amendment 1 to ISO/IEC 14443-2:2001 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 17, *Cards and personal identification.*

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Identification cards — Contactless integrated circuit(s) cards — Proximity cards —

Part 2:
Radio frequency power and signal interface

AMENDMENT 1: Bit rates of *fc*/64, *fc*/32 and *fc*/16

Page 3, clause 7

Replace last sentence with the following:

"Figures 1 and Amd.1-1 illustrate the concepts described in the following clauses."

Page 4, clause 7
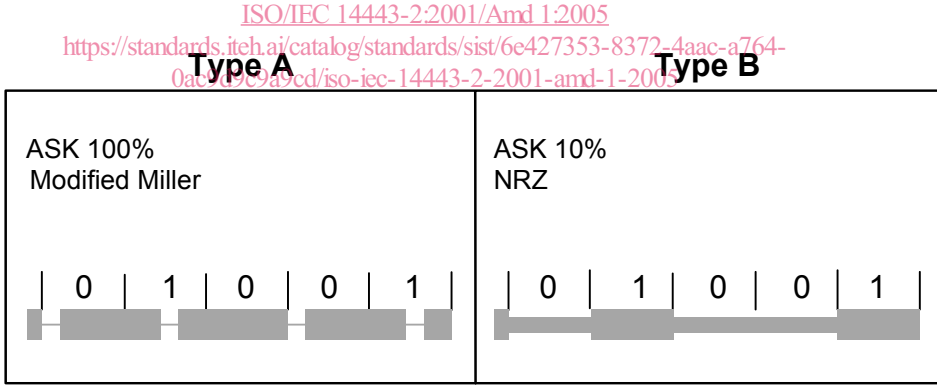
Replace figure 1 with the following:

"

Figure 1 — Example PCD to PICC communication signals for Type A and Type B interfaces

"

Page 4, clause 7
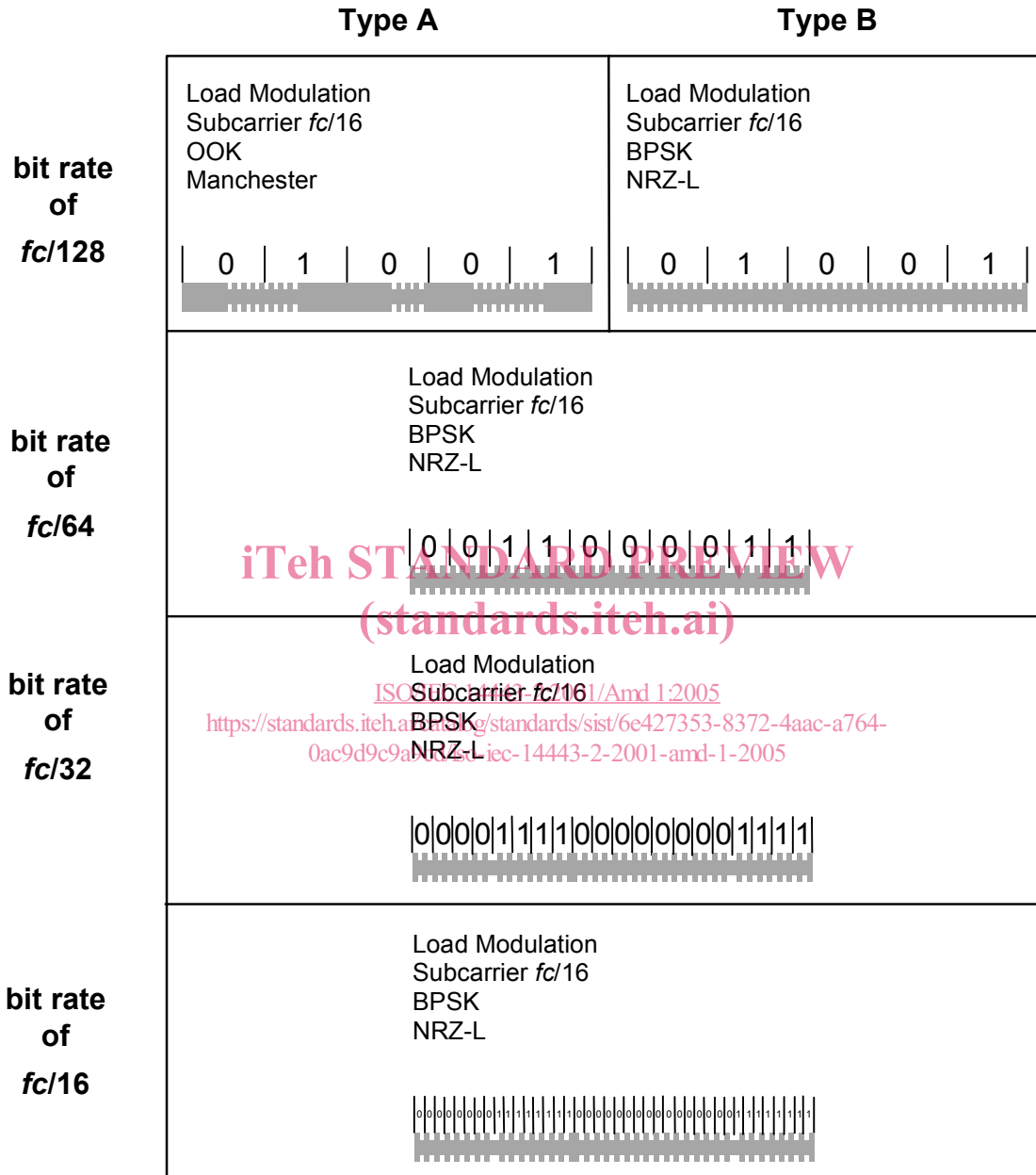
Add the following new figure after figure 1:

"

Type A	Type B

Figure Amd.1-1 — Example PICC to PCD communication signals for Type A and Type B interfaces

"

Page 4, subclause 8.1.1

Add the following text at the end of the subclause:

"The bit rate for the transmission after initialization and anticollision shall be one of the following:

— *fc*/128 (~106 kbit/s),

— *fc*/64 (~212 kbit/s),

— *fc*/32 (~424 kbit/s),

— *fc*/16 (~847 kbit/s)."

Page 4, subclause 8.1.2

Insert new subclause 8.1.2.1 with the following title and move all existing text and figures of subclause 8.1.2 into this new subclause 8.1.2.1:

"**8.1.2.1 Modulation for a bit rate of *fc*/128**"

Page 5, subclause 8.1.2 that has been renumbered to 8.1.2.1

Replace the title of figure 2 with the following: "**Pause for a bit rate of *fc*/128**"

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Page 6, subclause 8.1.2 that has been renumbered to 8.1.2.1

Delete the NOTE in figure 3 and replace the title of figure 3 with the following: "**Definition of "End of Pause" for a bit rate of *fc*/128**"
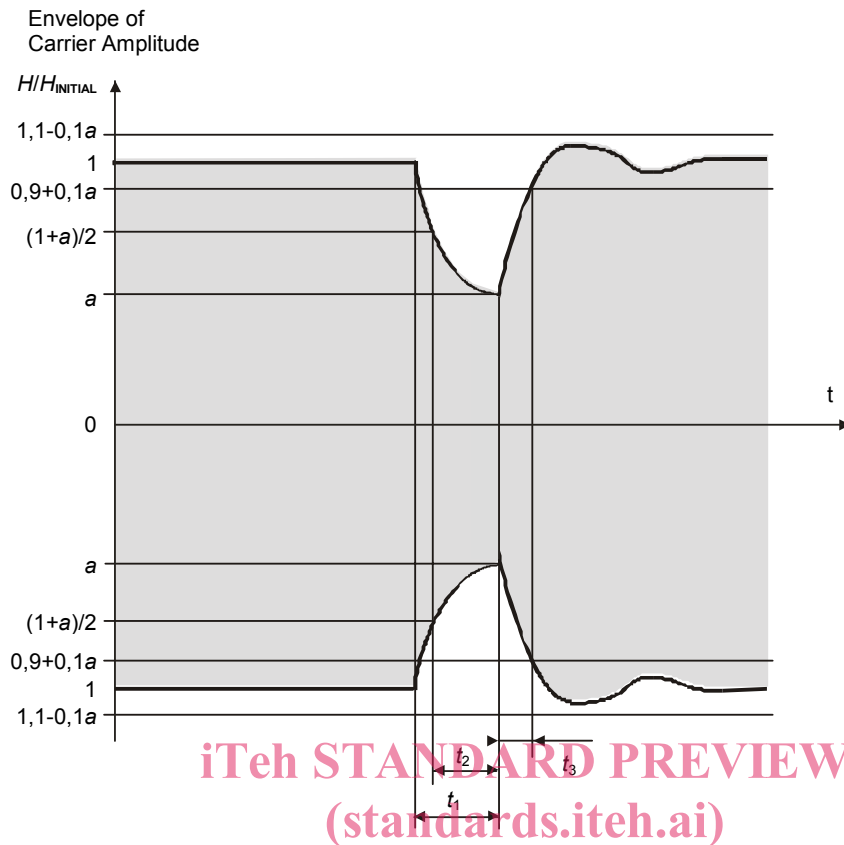
Page 6, subclause 8.1.2

Insert the following new subclause 8.1.2.2 after subclause 8.1.2.1:

"**8.1.2.2 Modulation for bit rates of *fc*/64, *fc*/32 and *fc*/16**

Communication from PCD to PICC for bit rates of *fc*/64 (~212 kbit/s), *fc*/32 (~424 kbit/s) and *fc*/16 (~847 kbit/s) shall use the modulation principle of ASK of the RF operating field to create a pause as shown in figure Amd.1-2.

The envelope of the PCD field shall decrease monotonically to less than 60% of its initial value. This envelope shall comply with figure Amd.1-2.

Envelope of
Carrier Amplitude

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0ac9d9c9a9cd/iso-iec-14443-2-2001-amd-1-2005

Figure Amd.1-2 — Pause for bit rates of fc/64, fc/32 and fc/16

Overshoots shall remain within $\pm$ 0,1 x (1-a) of $H_{INITIAL}$.

The parameter a in figure Amd.1-2 shall be between 0 and 0,6 for bit rates of fc/64, fc/32 and fc/16.

The parameters t_1, t_2 and t_3 are specified in table1.

Table 1 — Modulation timing

Timing parameter	Bit rate					
	fc/64		fc/32		fc/16	
	Min	Max	Min	Max	Min	Max
t_1	15/fc	20/fc	8/fc	10/fc	4/fc	5/fc
t_2	8/fc	t_1	4/fc	t_1	2/fc	t_1
t_3	0	12/fc	0	10/fc	0	8/fc

"

Page 6, subclause 8.1.3

Add the following text, figure and table after definition of sequence Z (after fourth line):

"Figure Amd.1-3, together with the timing parameters in table 2, illustrates sequences X, Y and Z.
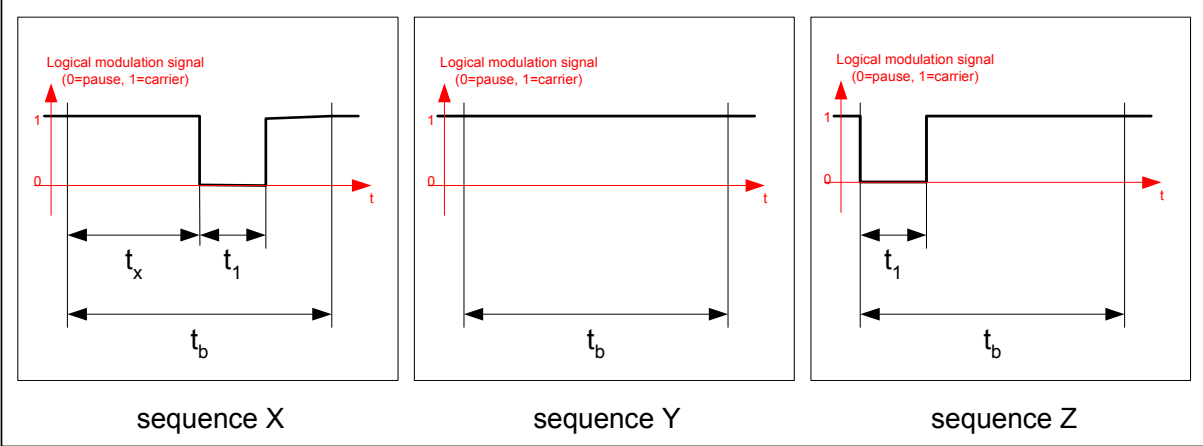

Figure Amd.1-3 — Signal shapes for sequences

Table 2 — Parameters for sequences

Parameter	Bit rate			
	fc/128	*fc*/64	*fc*/32	*fc*/16
t_b	128/*fc*	64/*fc*	32/*fc*	16/*fc*
t_x	64/*fc*	32/*fc*	16/*fc*	8/*fc*
t_1	see t_1 of figure 2	see t_1 of figure Amd.1-2		

"

Page 7, subclause 8.2.1

Add the following text at the end of the subclause:

"The bit rate for the transmission after initialization and anticollision shall be one of the following:

— *fc*/128 (~106 kbit/s),

— *fc*/64 (~212 kbit/s),

— *fc*/32 (~424 kbit/s),

— *fc*/16 (~847 kbit/s)."

Page 7, subclause 8.2.4

Replace the last sentence of the subclause with the following:

"At the bit rate of *fc*/128 the subcarrier is modulated using OOK with the sequences defined in 8.2.5.1. At bit rates of *fc*/64, *fc*/32 and *fc*/16 the subcarrier is modulated using BPSK with the sequences defined in 8.2.5.2."