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**China financial integrated circuit card specifications. Part 11:
Contactless integrated circuit card communication
specification**

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1 Scope

This Part mainly includes the following contents:

- specifies the symbolic coding technique used by the contactless communication and defines the different logical values according to the symbols and their sequences, and also defines the Type A and Type B respectively according to bit encoding of PCD->PICC and PICC->PCD communication;
- specifies the data frame format used by Type A and Type B. The data bits are transmitted between PCD and PICC as the frame type;
- specifies the Composition mode of Type A and Type B data frames, frame size, frame time sequence, etc.;
- specifies valid command format of PCD in polling, collision detection and PICC activation;
- specifies contents of Type A and Type B PICC at initialization, polling, collision detection and state machine;
- specifies PCD processing flow at the initialization, poll and collision detection of

PICC as well as its activation and shifting out.

The half-duplex block transmission protocol defined in this Part is applicable to Type A and Type B and it is used to transmit information (C-APDU and R-APDU) defined by the application layer. The requirements for application layer are not defined in this Part.

This Part is applicable to the financial contactless integrated circuit card issued or received by the banks. The using objects are mainly the relevant departments for such card design, manufacture, management, issuance and acceptance and those for the development, integration and maintenance of the application system.

2 Normative references

The following referenced documents are indispensable for the application of this

3.5

Proximity coupling device (PCD)

The read-write equipment which provides energy to PICC with inductance coupling and controls the data exchange with PICC.

3.6

Bit duration

The time during which a logic state is determined and at the end of this time, a new bit will start.

3.7

Binary phase shift keying (BPSK)

Phase shift keying of 180 ° phase shift, making two phase states possible.

3.8

Modulation index

Defined as $[a - b]/[a + b]$, in which, a and b are peak value and minimum value of signal amplitude.

3.9

Non-return to zero (NRZ-L)

The bit encoding mode; the logic state in bit duration may be expressed by either of two defined physical states of the telecommunication media.

3.10

Subcarrier

RF signal generated by modulation of carrier frequency f_c at the frequency f_s .

3.11

Anticollision loop

In PCD exciting field, algorithm used when the PCD makes dialogues with one or more PICCs.

3.12

Time slot protocol

A method by which PCD establishes logical channel with one or more PICC and this method responds and uses time slot locating, similar to slotted-Aloha method.

3.19

Unique identifier (UID)

A number required by Type A anticollision algorithm.

3.20

Block

A special frame, containing efficient protocol data format.

NOTE: Efficient protocol data format includes I-block, R-block or S-block.

3.21

Prologue field

The first part of the block, containing the protocol control byte (PCB) (unused in CID and NAD defined in JR/T 0025.8).

3.22

Epilogue field

The last part of block, including error detection code (EDC).

4 Symbols and Abbreviations

For the purposes of this document, the following symbols and abbreviations apply.

AC AntiCollision

ACK Positive ACKnowledgement

ADC Application Data Coding, Type B

AFI Application Family Identifier, Type B