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Timing Requirements for Time-out Handling

This Specification Bulletin clarifies the timing requirements for time-out handling in requirements 9.5.1.8, 9.6.1.3, 10.3.5.5 and 10.3.5.8.

Applicability

This Specification Bulletin applies to:

- *EMV Level 1 Specifications for Payment Systems, EMV Contactless Interface Specification, Version 3.0 – February 2018.*

Related Documents

- *None*

Description

This specification clarifies the timing requirements for time-out handling in requirements 9.5.1.8, 9.6.1.3, 10.3.5.5 and 10.3.5.8.

Specification Change

Change Requirement 9.5.1.8 as follows:

Requirements 9.9: Removal Procedure for Type B

PCD	
…	
9.5.1.8	~~The PCD shall send up to two more WUPB commands. The PCD shall retransmit the WUPB commands no later than $t_{RETRANSMISSION}$ after the maximum allowed response time (refer to section 4.8)~~ The PCD shall send a second WUPB command within $FWT_{ATQB} + \Delta T_{PCD} + t_{RETRANSMISSION}$ after the first WUPB command. If no response is received, then the PCD shall send a third WUPB command within $FWT_{ATQB} + \Delta T_{PCD} + t_{RETRANSMISSION}$ after the second WUPB command. If the PCD receives any response (correct or not) to the second or third WUPB command, then the PCD shall continue with 9.5.1.7. If no response is received to the third WUPB command, then the PCD shall report a time-out error to the terminal and terminate the removal procedure.

Change Requirement 9.6.1.3 as follows:

Requirements 9.10: Exception Processing

PCD	
…	
9.6.1.3	On detection of a time-out error (except during the polling and removal procedures): • The PCD shall retransmit the command a maximum of two times. ○ For the SELECT and ANTICOLLISION commands, the PCD shall retransmit the command after $FDT_{PICC,MAX}$ + $t_{MIN,RETRANSMISSION}$ and before $FDT_{PICC,MAX}$ + $t_{RETRANSMISSION}$. ○ For the RATS and ATTRIB commands, the PCD shall retransmit the command after $FDT_{PICC,MAX}$ + $t_{MIN,RETRANSMISSION}$ and before $FDT_{PICC,MAX}$ + ΔT_{PCD} + $t_{RETRANSMISSION}$. Refer to Annex A.5 for the value of $t_{MIN,RETRANSMISSION}$. • If on the second retransmission (third transmission), no valid response has been received: ○ The PCD shall report a time-out error to the terminal, reset the Operating Field (as defined in section 3.2.6) and return to the polling procedure. ○ The PCD shall start the reset of the PICC no later than $t_{RESETDELAY}$ after the maximum allowed response time applicable for the command.

Change requirements 10.3.5.5 and 10.3.5.8 as follows:

Requirements 10.14: Exception Processing – PCD

PCD	
…	
10.3.5.5	If a time-out error occurs after receipt of a block not indicating chaining, then: • Up to two R(NAK) blocks shall be sent to ask for retransmission. • The PCD shall send the R(NAK) block after $t_{TIMEOUT}$ and before $t_{TIMEOUT}$ + ΔT_{PCD} + $t_{RETRANSMISSION}$. If a time-out error occurs after the second R(NAK) block, or if the PCD has detected a time-out after having re-transmitted an S(WTX) response block two times (i.e. the PCD twice consecutively repeats the sequence of detecting a time-out error following an S(WTX) response block, sending R(NAK) block(s), receiving an S(WTX) request, and sending the S(WTX) response), then the PCD shall report a time-out error to the terminal and continue as specified in requirement 10.3.5.9 within $t_{TIMEOUT}$ and $t_{TIMEOUT}$ + $t_{RESETDELAY}$. If no frame waiting time extension is requested by the PICC, then $t_{TIMEOUT}$ is equal to FWT + Δ**FWT**. Otherwise, $t_{TIMEOUT}$ is equal to (FWT x WTXM) + Δ**FWT**.
…	

PCD	
10.3.5.8	If a time-out error occurs after receipt of a block indicating chaining: • The last R(ACK) block sent by the PCD shall be retransmitted up to two times to ask for retransmission. • The PCD shall send the R(ACK) block after $t_{TIMEOUT}$ and before $t_{TIMEOUT}$ + ΔT_{PCD} + $t_{RETRANSMISSION}$. If a time-out error occurs after the second R(ACK) block, then the PCD shall report a time-out error to the terminal and continue as specified in 10.3.5.9 within $t_{TIMEOUT}$ and $t_{TIMEOUT}$ + $t_{RESETDELAY}$. If no frame waiting time extension is requested by the PICC, then $t_{TIMEOUT}$ is equal to FWT + Δ**FWT**. Otherwise, $t_{TIMEOUT}$ is equal to (FWT x WTXM) + Δ**FWT**.

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