

99.4.5 Receive processing

The Receive processing-Processing function receives mFrames from the underlying PHY and then delivers to either pMAC or eMAC, depending on whether the received mFrame is a preemptable frame or an express frame, respectively. The receiving MAC is selected based on the SMD value in the received mFrame (see 99.3.3 for details).

The process of receiving a preemptable frame starts with the Receive Processing function asserting PLS_DATA_VALID.indication(DATA_VALID) to pMAC. The Receive Processing function increases the expected FRAG_COUNT for the following mFrame, relying on the fragment counter to detect missing mFrames. The fragment counter is set to 0 in the initial frame fragment. The Receive Processing function replaces the SMD in the received mFrame with an SFD and then starts transmission of data to pMAC via a series of PLS_DATA.indication primitives. Once all data is transmitted to pMAC, no further PLS_DATA.indication primitives are transmitted until the next mFrame is received.

The Receive Processing function calculates the CRC for each received mFrame and separately for the reassembled MAC frame. If the value of the CRC calculated for the received mFrame matches the CRC in the received mFrame, CRC is not transmitted to pMAC. If the value of CRC calculated for the received mFrame does not match the CRC in the received mFrame, but the CRC calculated for the whole reassembled MAC frame matches the CRC in the received mFrame, CRC is transmitted to pMAC in the FCS field. Otherwise, the received mFrame is discarded. Receive processing checks the SMD of each received mFrame. If an mFrame contains an SMD-E, receive processing ignores the mFrame.

When the SMD contains an SMD-S, that indicates the initial mFrame of a preemptable frame.

If the receive-Receive processing-Processing function detects was processing an incomplete preempted frame or otherwise invalid mFrame, the receive-Receive processing-Processing function causes shall ensure that the pMAC will to detect a FrameCheckError prior to indicating-asserting PLS_DATA_VALID.indication(DATA_NOT_VALID) primitive.

The Receive Processing function shall implement the process defined in Figure 99-5. DATA_NOT_VALID to the pMAC. It may do this by checking that the prior four octets sent to the MAC did not match the CRC of the data sent before them or by sending eight additional PLS_DATA.indication primitives to the pMAC or by implementation dependent means. Then PLS_DATA_VALID.indication(DATA_NOT_VALID) is sent to the pMAC.

Reception of the start of the preemptable frame begins with sending PLS_DATA_VALID.indication(DATA_VALID) to the pMAC. Receive processing records the frame count indicated by the SMD and sets the next fragment count to 1 for use in error checking of any subsequent mFrames for the frame. Receive processing sends an SFD to the pMAC in place of the SMD and then begins forwarding subsequent PLS_DATA.indication primitives from the RS to the pMAC.

Receive processing checks the last four octets of the mFrame to see if they match the mCRC. If they do not match, that indicates the end of the frame. The PLS_DATA.indications for the last four octets are sent to the pMAC followed by PLS_DATA_VALID.indication(DATA_NOT_VALID). If they match, that indicates that the frame was preempted and the PLS_DATA.indications for the last four octets are not sent to the pMAC. No further primitives are sent to the pMAC until the next mFrame of the frame is received.

When the SMD contains an SMD-C, that indicates an mFrame that continues the data for a preempted frame.

Receive processing checks that: a) There is a preempted frame in progress, b) The frame number indicated by the SMD matches the frame count of the frame in progress, and c) The frag_count value indicates the next fragment count.

If any of the checks is does not pass, the mFrame is discarded and receive processing shall ensure that the pMAC will detect a FrameCheckError as described above. Then PLS_DATA_VALID.indication(DATA_NOT_VALID) is

~~sent to the pMAC. If all the checks pass, the next fragment count is incremented modulo 4 and the PLS_DATA indications after the frag_count field are sent to the pMAC.~~

~~Receive processing handles the last four octets of the mFrame as described above.~~

~~Receive processing shall be performed as specified in Figure 99-5.~~

~~The PLS_SIGNAL indication primitive is not generated is never produced by the Receive processing-Processing functions since it does not apply to full duplex PHYs.~~