10GBASE-T TX_NORMAL to SEND_SLEEP Transition

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Overview

- Comment #24 submitted against IEEE P802.3az/D2.2 correctly notes that in the Figure 55-16b EEE Transmit State Diagram that the transition to the SEND_SLEEP state should occur on a frame boundary.
- However, the suggested remedy does not handle a corner case in which an LPI client asserts and then immediately deasserts LPI such that the PHY transmits a partial frame of LPI and then there is a transition back to normal idles before the frame boundary is reached.
  - This results in LPI being signaled to the link partner, but the local device remains in the TX_NORMAL state.
  - This would result in a wake failure since the link partner expects ALERT and WAKE signals that are not sent.

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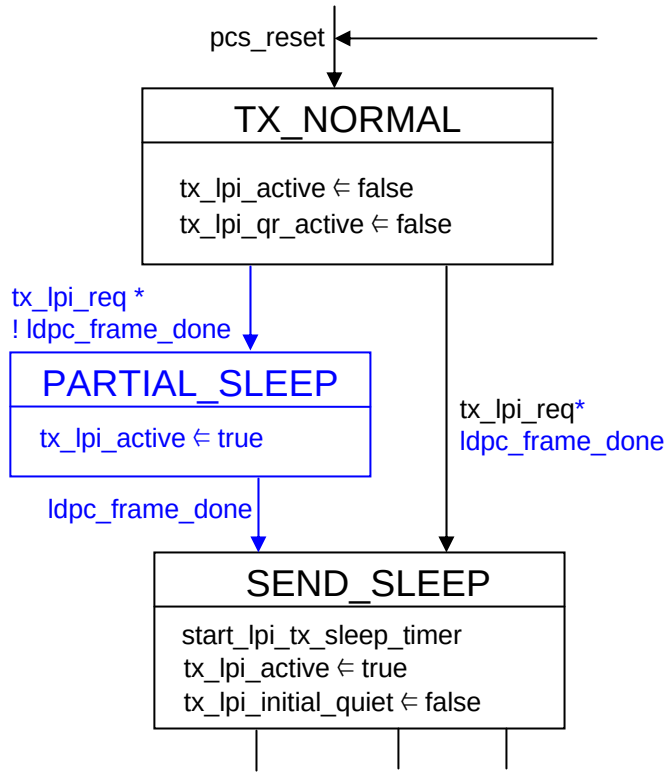
Figure 55-16b – EEE Transmit State Diagram (Changes in Blue)



Sleep Signal Definition 55.3.2.2.21 p 189 line 27

- Clarify that the “sleep signal” may also contain a partial frame of LP_IDLE blocks.
- Change:

  When a complete 64B/65B block of LPI characters is generated by the PCS transmit function, the PHY transmits the sleep signal to indicate to the link partner that it is transitioning to the LPI transmit mode. The sleep signal comprises 9 full LDPC frames composed entirely of LP_IDLE 64B/65B blocks encoded using the 65B-LDPC coding technique. The 9 full frames may be preceded by a frame that is partially composed of LP_IDLE blocks.

- To:

  When a complete 64B/65B block of LPI characters is generated by the PCS transmit function, the PHY transmits a sleep signal to indicate to the link partner that it has transitioned to the LPI transmit mode. If the sleep signal begins on an LDPC frame boundary, then it contains 9 full LDPC frames each composed entirely of 65B LDPC-encoded LP_IDLE blocks. If the sleep signal does not begin on an LDPC frame boundary, this it contains one LDPC frame partially composed of LP_IDLE blocks followed by 9 LDPC frames fully composed of LP_IDLE blocks.

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Make LPI Signaling Text Consistent

- Correct an error related to the sleep signal and tx_lpi_active.

- 55.3.4a LPI Signaling Page 191 Line 9

  Change:

  Following the sleep signal the transmit function asserts tx_lpi_active and the transmit function enters the LPI transmit mode.

  To:

  When the transmit function begins to send the sleep signal, it asserts tx_lpi_active and the transmit function enters the LPI transmit mode.

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Thank you!