Revisit Alert Signaling

Contribution to IEEE 802.3cy

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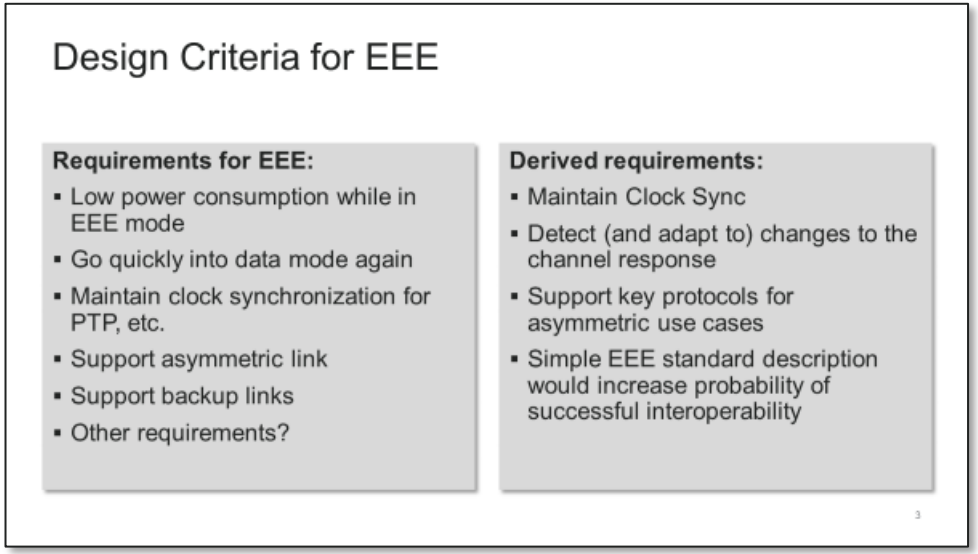
Introduction

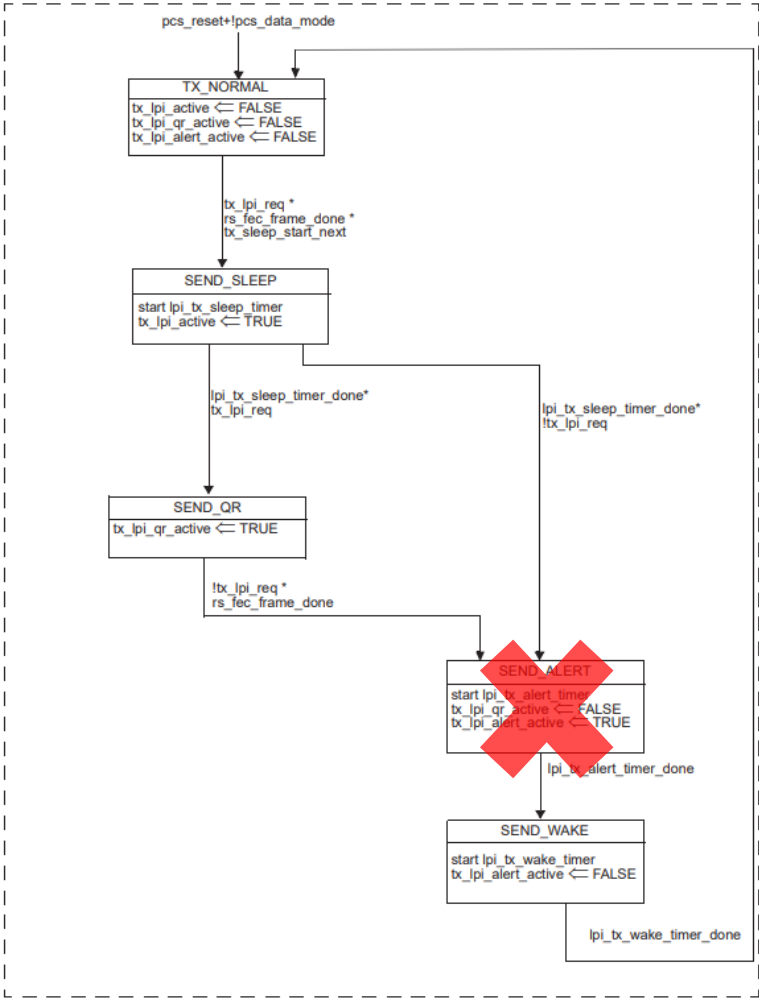
- Our previous contribution jonsson_majomard_3cy_01_04_05_22 discusses some design considerations for EEE, including
  - Go quickly into data mode again
  - Simple EEE standard description would increase probability of successful interoperability
- This presentation examines the need for separate alert signal and the need for transitioning directly from SEND_SLEEP to SEND_ALLERT



From: https://www.ieee802.org/3/cy/public/adhoc/jonsson_majomard_3cy_01_04_05_22.pdf

The Alert Signal

- The purpose of the Alert signal is to “alert” the Rx that it soon needs to switch into data mode
- The alert signal is designed to be easily detectable, ideally with low power consumption
- However, if the Wake signal is constructed correctly, then it can be just as easy to detect as the Alert signal
- Eliminating the Alert signal simplifies the EEE state machine and may give more time for the Wake signal



NOTE—This figure is mandatory for PHYs with the EEE capability.

Figure 149–20—EEE transmit state diagram

Sleep to Alert Transition

- Eliminating this transition would simplify internal state machines and make interoperability more reliable
- Once we enter Low Power Mode, it may take up to 8 RS-FEC frames before then next alert signal can be sent
- Is faster reaction really needed when exiting SEND_SLEEP?

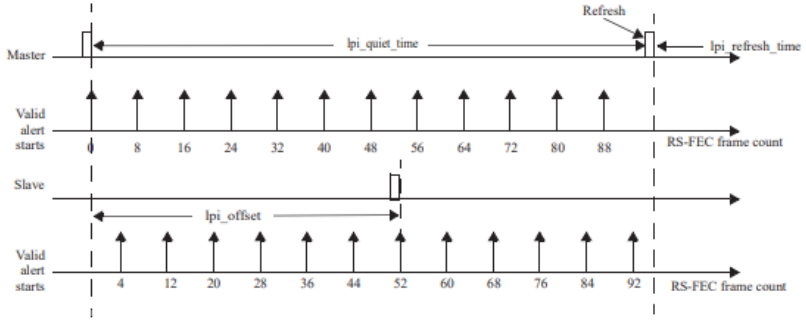
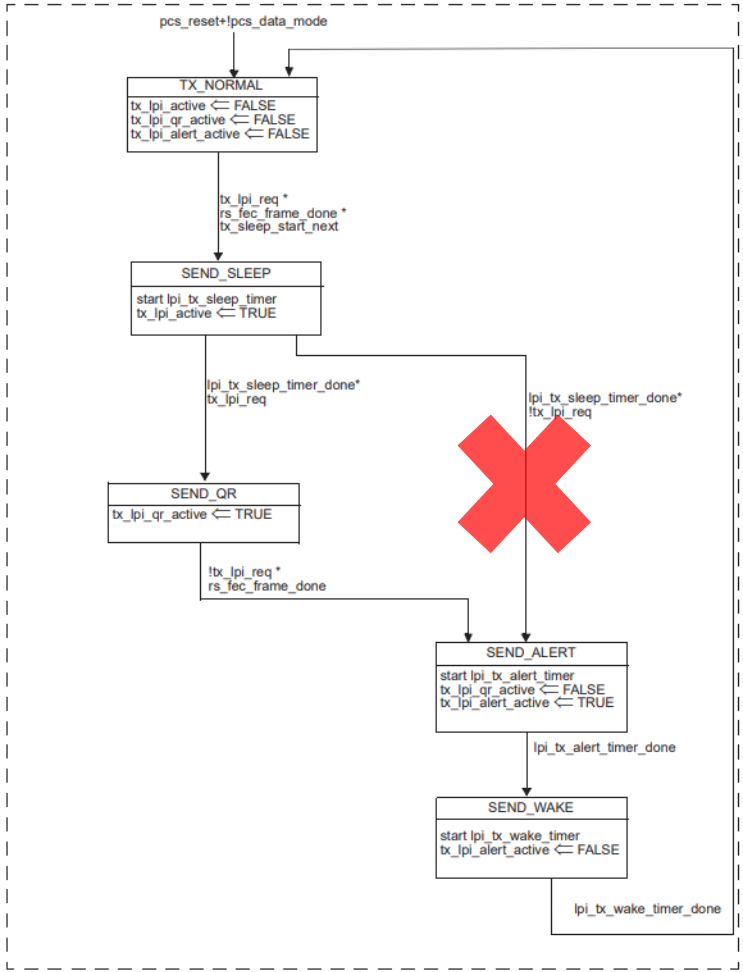


Figure 149–13—Timing periods for LPI signals when Slow Wake not active



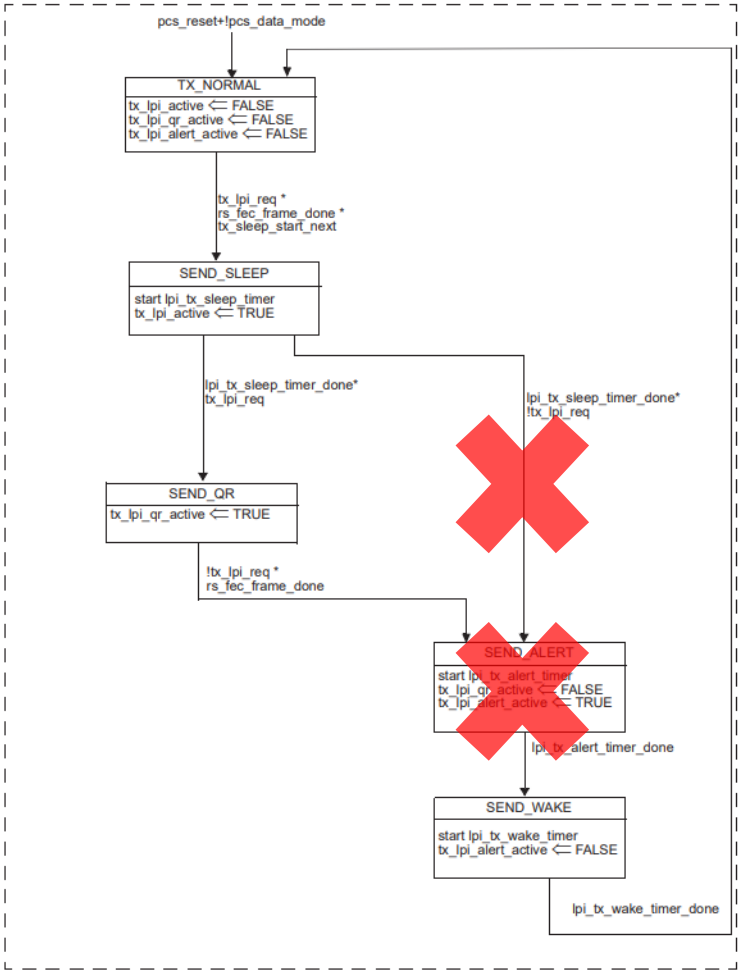
NOTE—This figure is mandatory for PHYs with the EEE capability.

Figure 149–20—EEE transmit state diagram

Possible Updates to the 802.3cy EEE Text

Alert Signal

- The EEE transmit state diagram (Figure 149-20) should be updated
  - to remove the SEND_ALERT state and have the SEND_QR state transition directly into SEND_WAKE
  - To remove the path directly from SEND_SLEEP to SEND_ALLERT/SEND_WAKE
- All reference to separate Alert Signal should be removed
- The Wake Signal may need to be updated and made longer

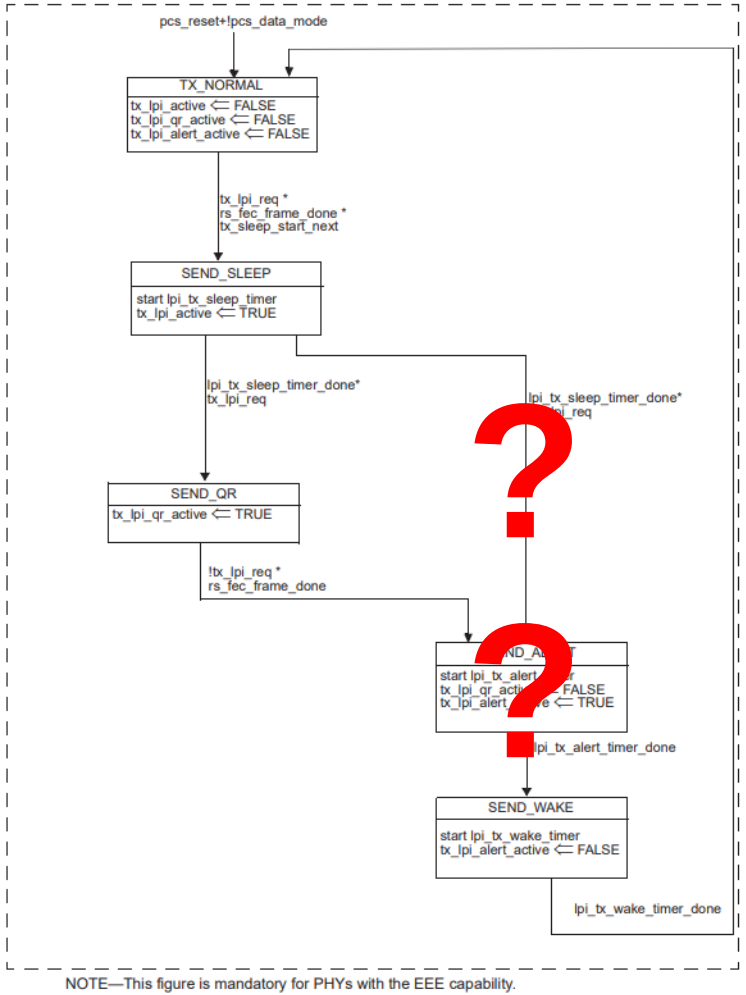


NOTE—This figure is mandatory for PHYs with the EEE capability.

Figure 149–20—EEE transmit state diagram

Questions for Discussion

- Is there any value in having separate Alert Signal?
- Are there any inherent problems with detecting the Wake Signal when in low power mode?
- Are there any updates needed to the Wake Signal if we eliminate the Alert Signal?
- Is there any value in having the direct transition from SEND_SLEEP to SEND_ALLERT/SEND_WAKE?



NOTE—This figure is mandatory for PHYs with the EEE capability.

Figure 149–20—EEE transmit state diagram

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