Outstanding issues in Clause 36, 48 and 49 state diagrams

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Clause 49: LPI Receive state diagram (Fig 49-17)

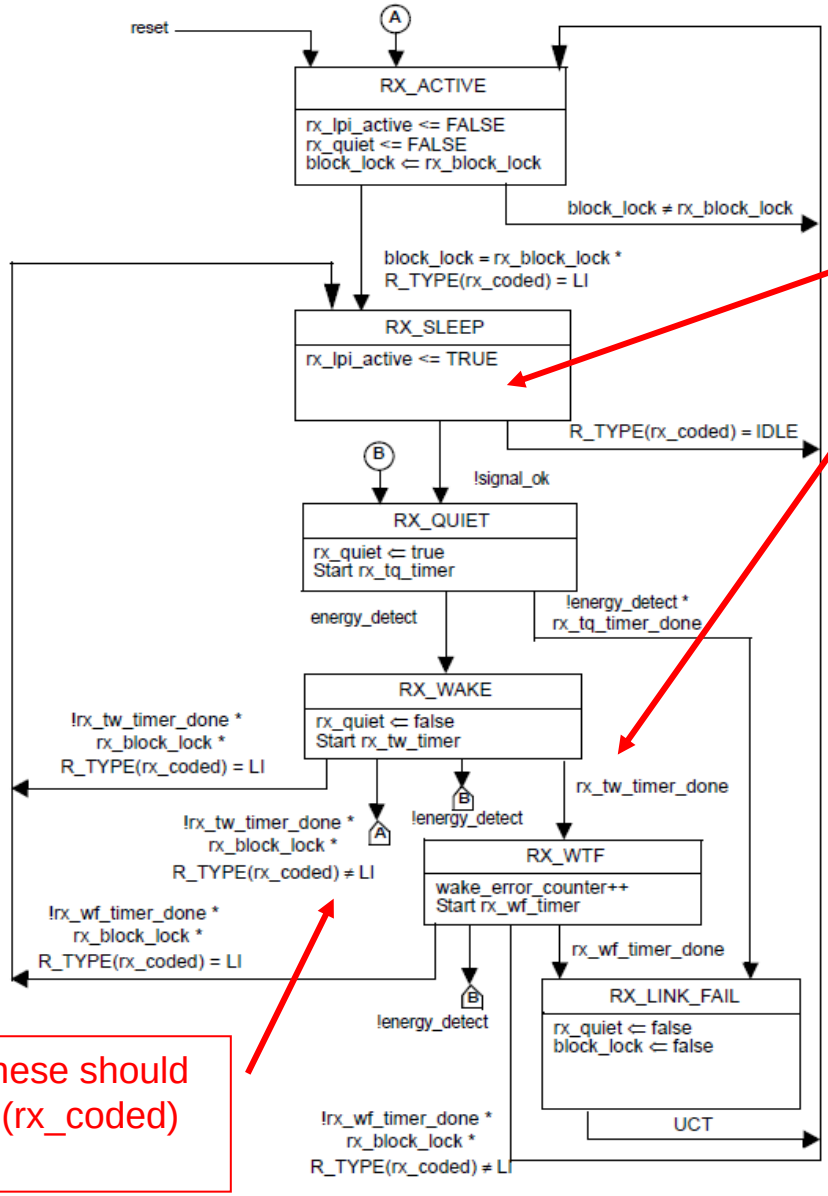


Figure 49–17—LPI Receive state diagram

Issue #1: When the Receiver is in this state, if the LP restarts and starts transmitting DME pages, then the receiver will be stuck in this state.

Issue #2:

rx_tw_timer_done = T_{UL} = 17uSec fails in 3 cases.

The receiver will not achieve rx_block_lock during a refresh cycle when FEC is enabled.

- **If the transmitter starts waking up during a refresh, the above timer will expire and the receiver will enter RX_WTF. Which means the wake_error_counter will be incremented. This is an issue.**
- **Even during a normal refresh cycle the timer expires before the energy detect goes away, which will also cause the receiver to enter RX_WTF and increment the error counter.**

These two cases unnecessarily increments the error counter, which will make the count value inaccurate.

3 If this counter is incremented due to the above two cases, then a receiver compliancy test will be inaccurate.

Issue #3: These should be R_TYPE(rx_coded) = IDLE

Suggested solutions

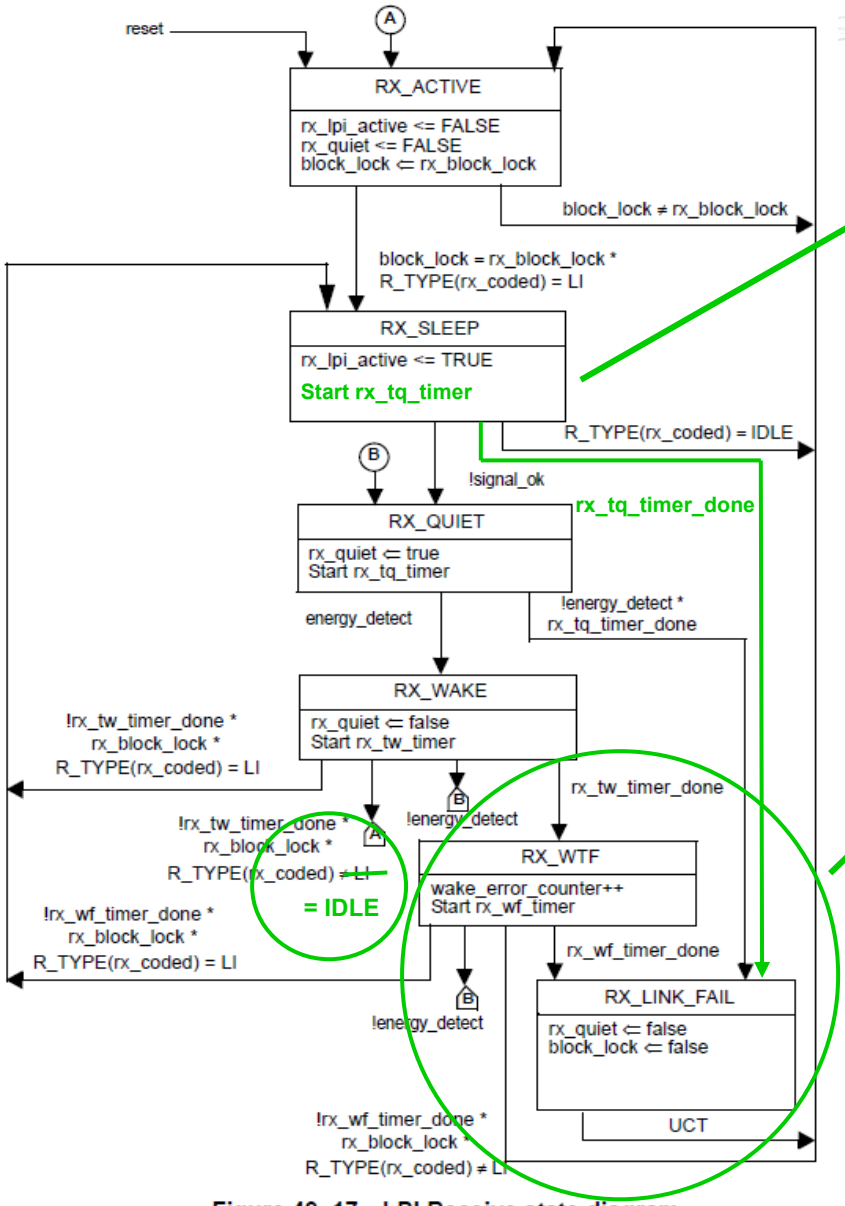
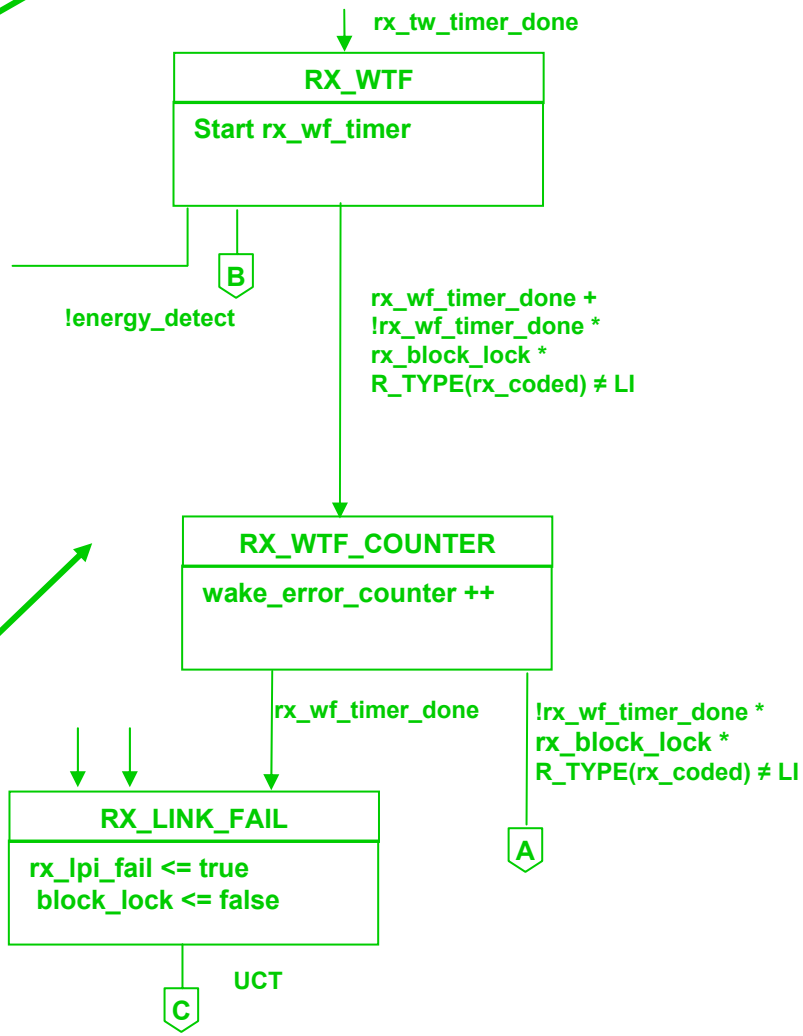


Figure 49–17—LPI Receive state diagram

Clause 48 uses the same timer and transition.



Clause 36: LPI Receive state diagram (Fig 36-9b)

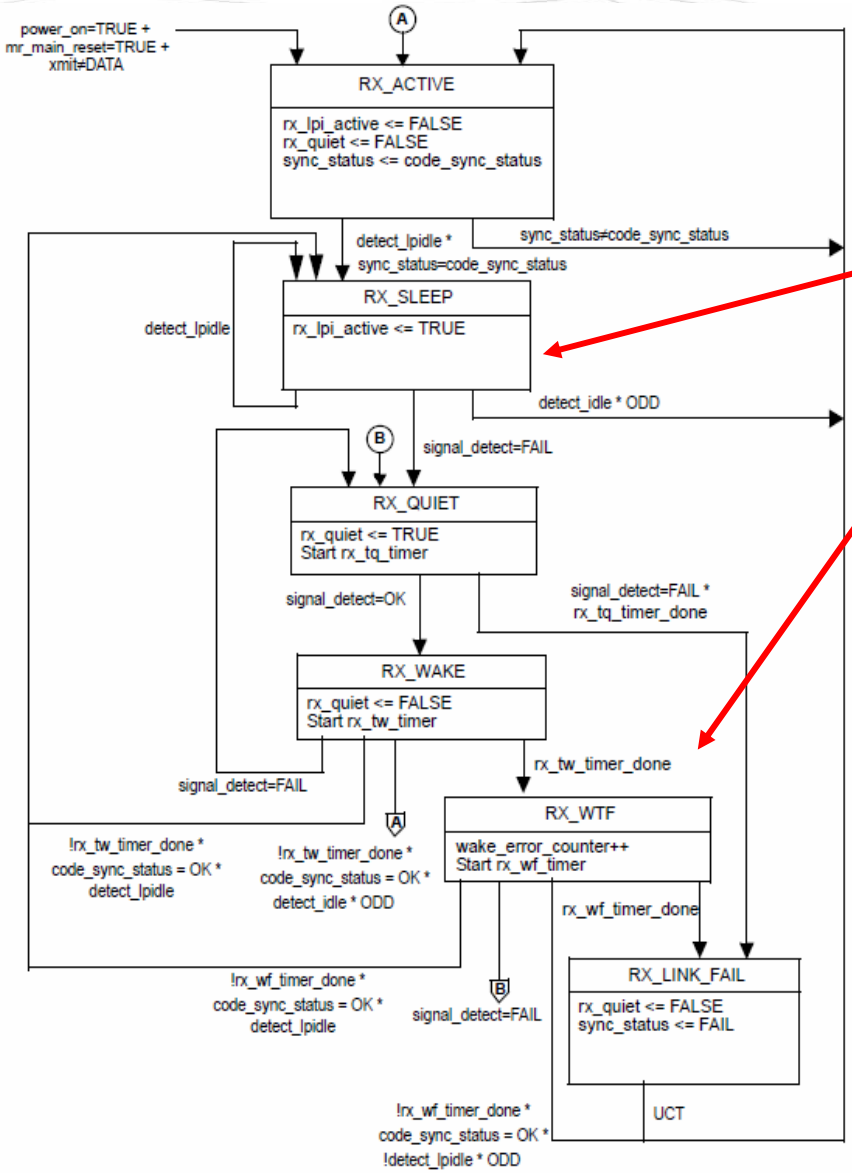


Figure 36–9b—LPI Receive state diagram

Issue #1: When the Receiver is in this state, if the LP restarts and starts transmitting Auto negotiation, then the receiver will be stuck in this state.

Issue #2:

If the transmitter starts waking up during a refresh, the above timer will expire and the receiver will enter RX_WTF. Which means the wake_error_counter will be incremented. This will make the count value inaccurate.

If this counter is incremented due to the above case, then a receiver compliancy test will be inaccurate too.

Suggested solution for #1

Same as Clause 48 and Clause 49 LPI receiver state diagram. Use rx_tq_timer to exit our of RX_SLEEP to RX_LINK_FAIL.

Suggested solution for #2

Same as Clause 48 and Clause 49 LPI receiver state diagram. Insert a new state RX_WTF_COUNTER and move the wake_error_counter increment to this new state.

Clause 48: LPI Receive state diagram (Fig 48-9b)

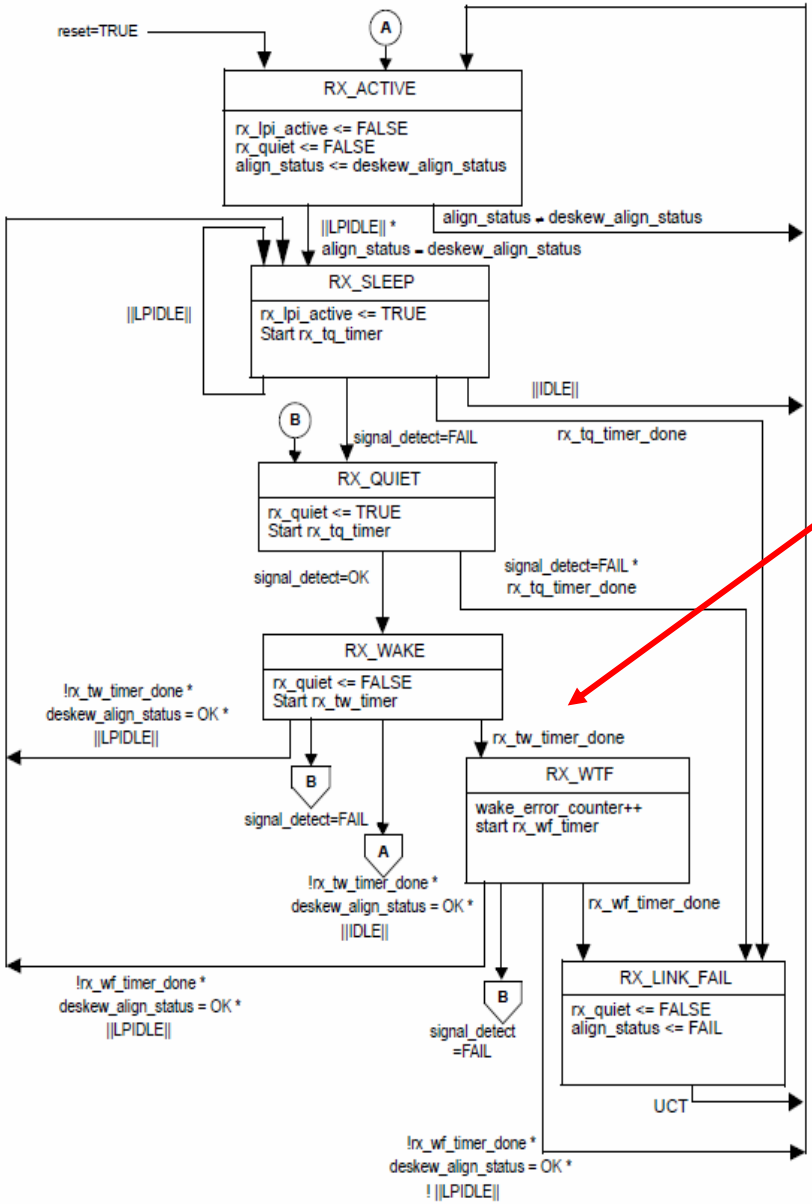


Figure 48–9b—LPI Receive state diagram

Issue #1:

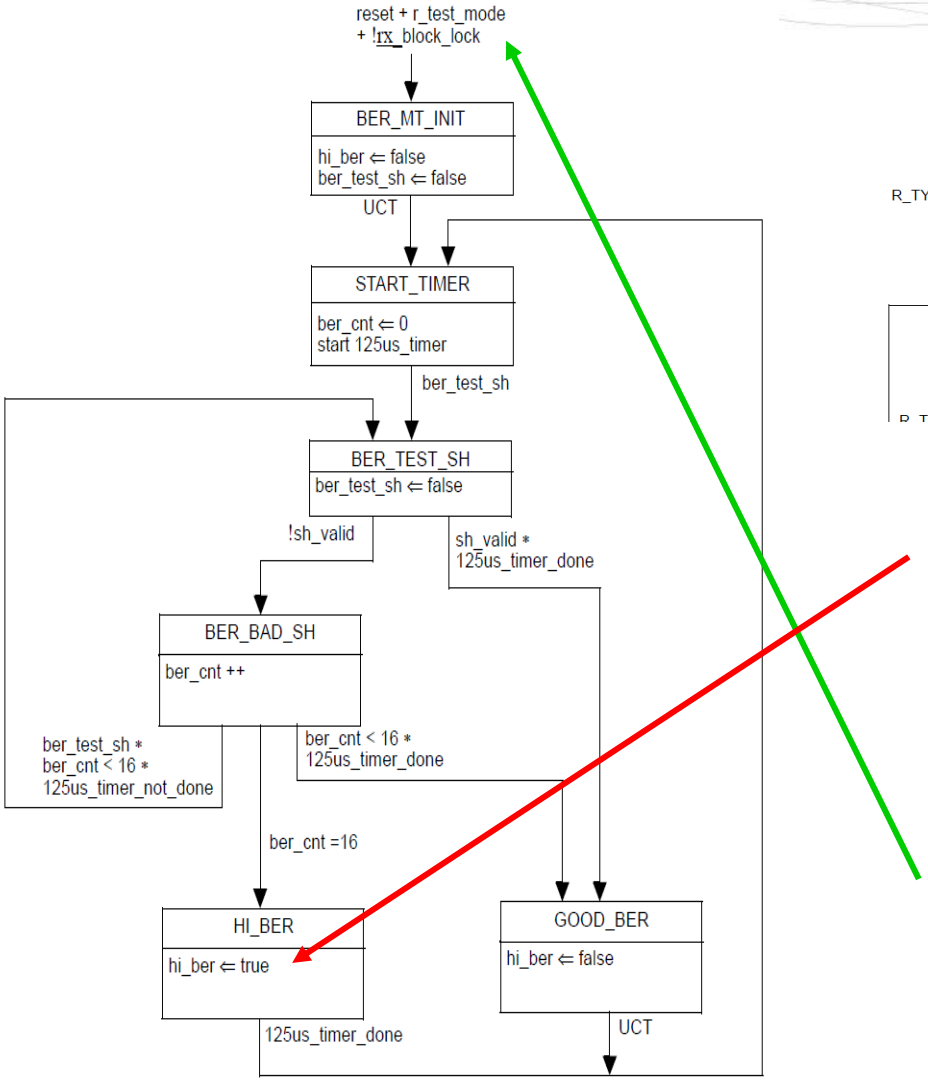
If the transmitter starts waking up during a refresh, the above timer will expire and the receiver will enter RX_WTF. Which means the wake_error_counter will be incremented. This will make the count value inaccurate.

If this counter is incremented due to the above case, then a receiver compliancy test will be inaccurate too.

Suggested solution for #1

Same as Clause 36 and Clause 49 LPI receiver state diagram. Insert a new state RX_WTF_COUNTER and move the wake_error_counter increment to this new state.

Clause 49: BER monitor state diagram (Fig 49-13)



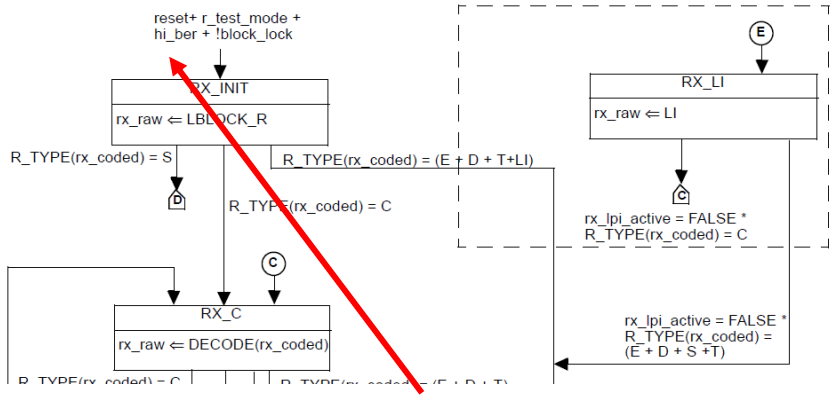


Figure 49–13—BER monitor state diagram

Issue:

When the transmitter goes through activation or deactivation, the receiver will see invalid code words. hi_ber might get set before rx_block_lock becomes false. This will cause the receive SM to transit from RX_LI to RX_INIT.

Suggested solution:

Change this condition to

reset + r_test_mode + rx_lpi_active.

This will make it consistent with Clause 55: fig 55-14 (LFER monitor state diagram.)

Thank You