

# IEEE P802.3az/D1.1 Clause 40 PHY Control State Diagram Corner Case Analysis

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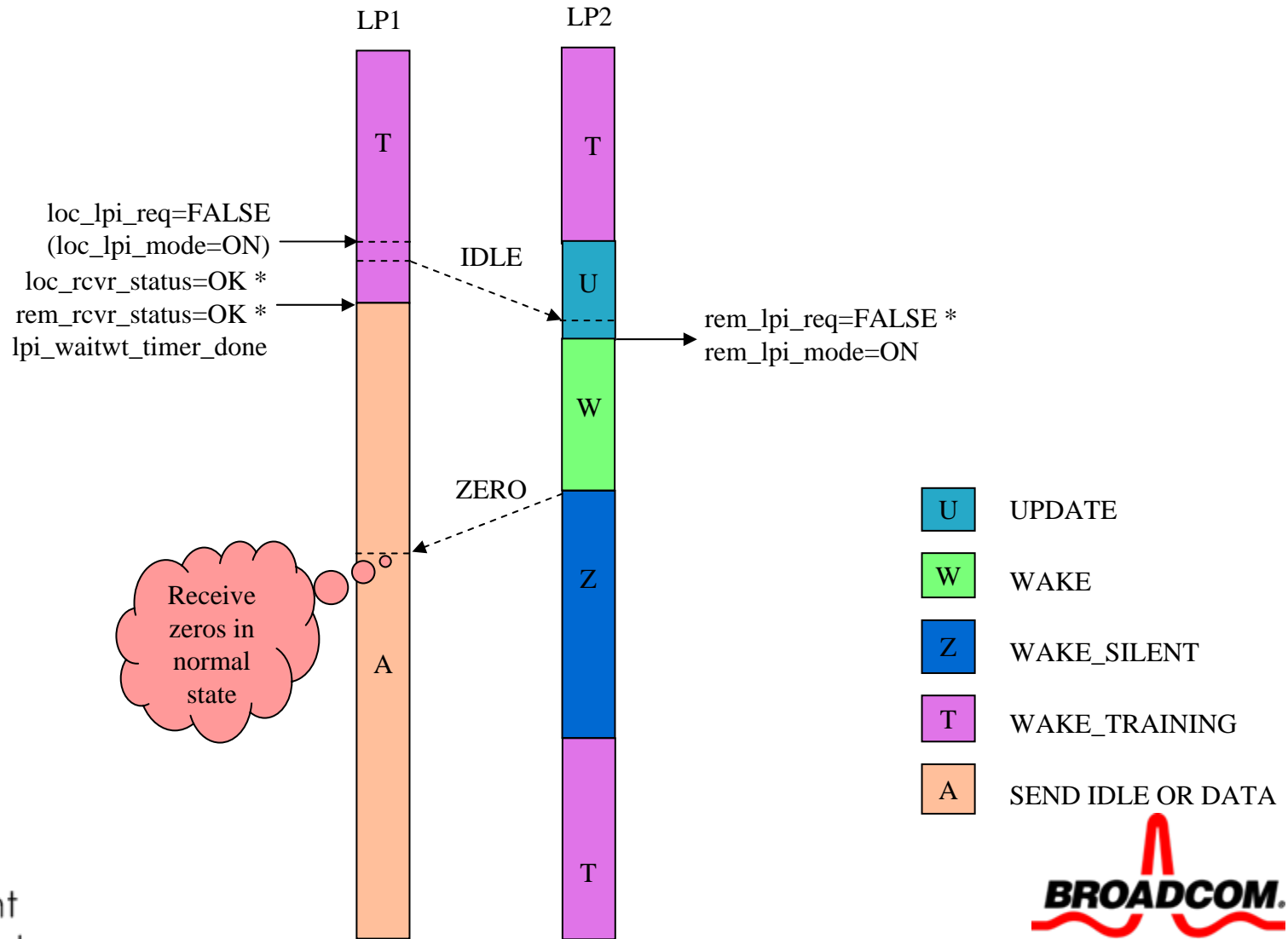


# Overview

- In the PHY Control State Diagram in Figure 40-15b, a corner-case, out-of-sync condition can occur under the following conditions:
  - loc\_lpi\_req changes to FALSE.
  - The local link partner is near the end of its WAKE\_TRAINING state.
  - The remote link partner has transitioned from WAKE\_TRAINING to UPDATE.
- This presentation illustrates this corner case and proposes a change to avoid it.

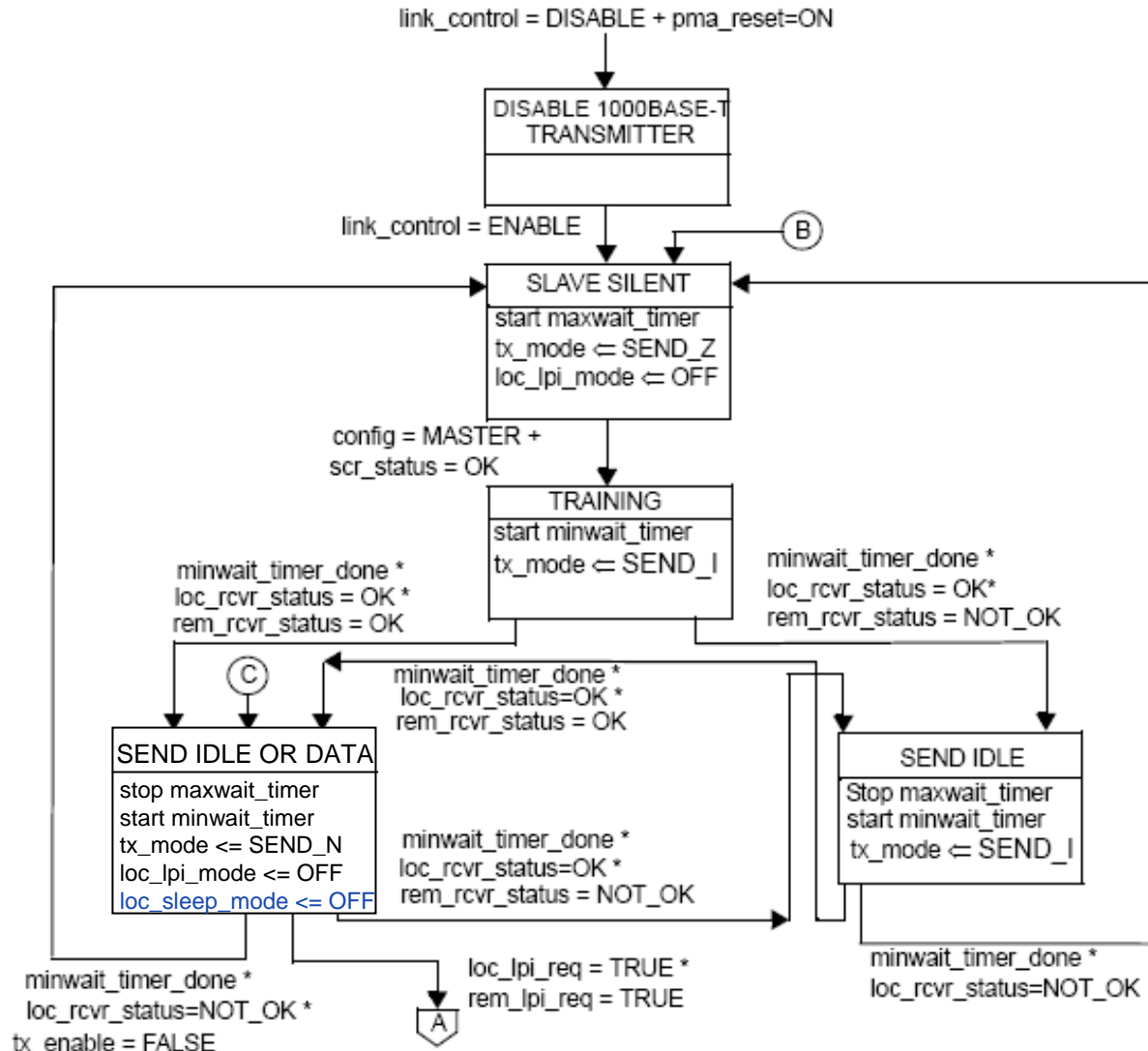


# WAKE\_TRAINING Corner Case Condition



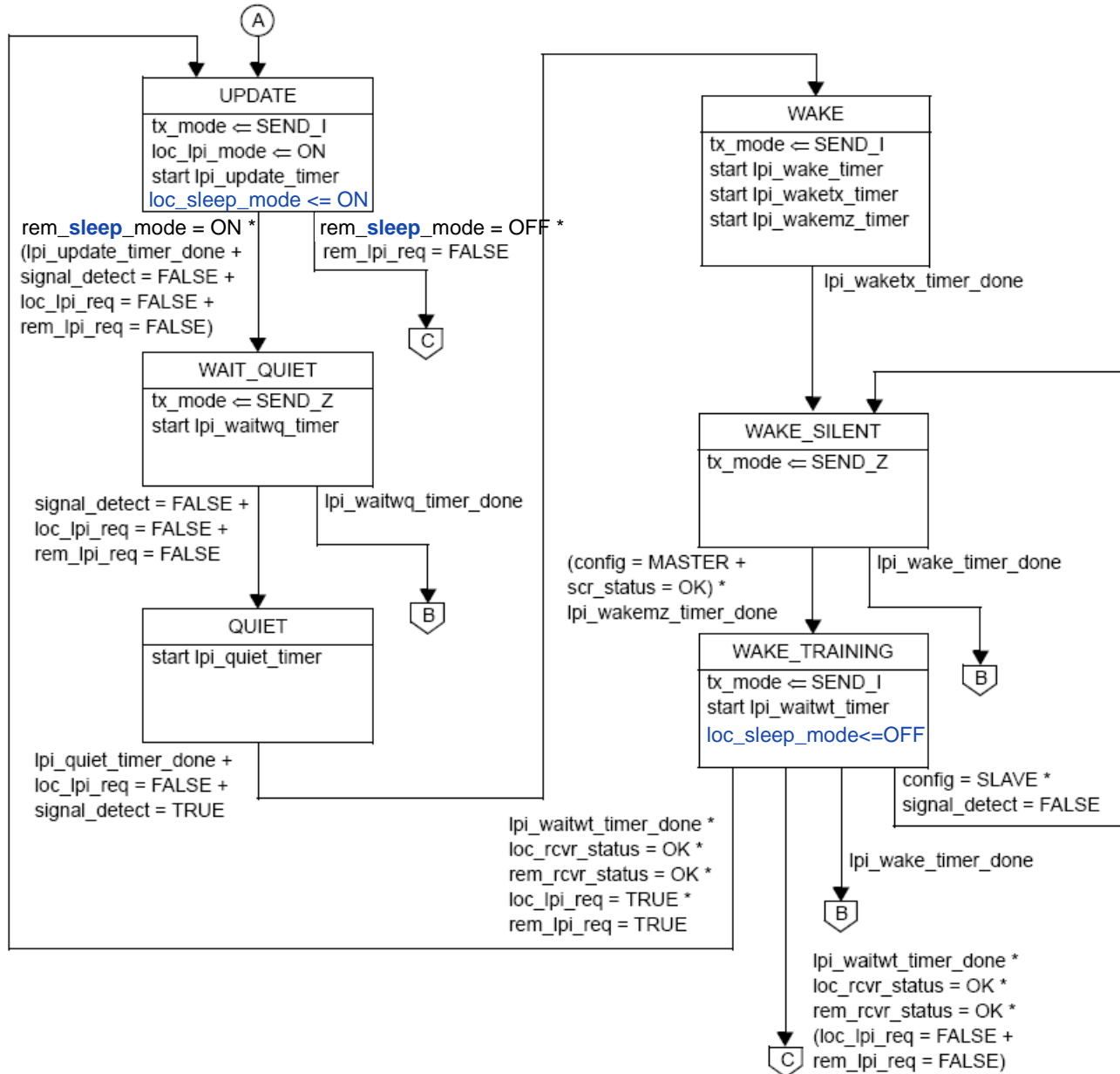
# Clause 40 PHY Control State Diagram A

(Proposed Change in Blue)

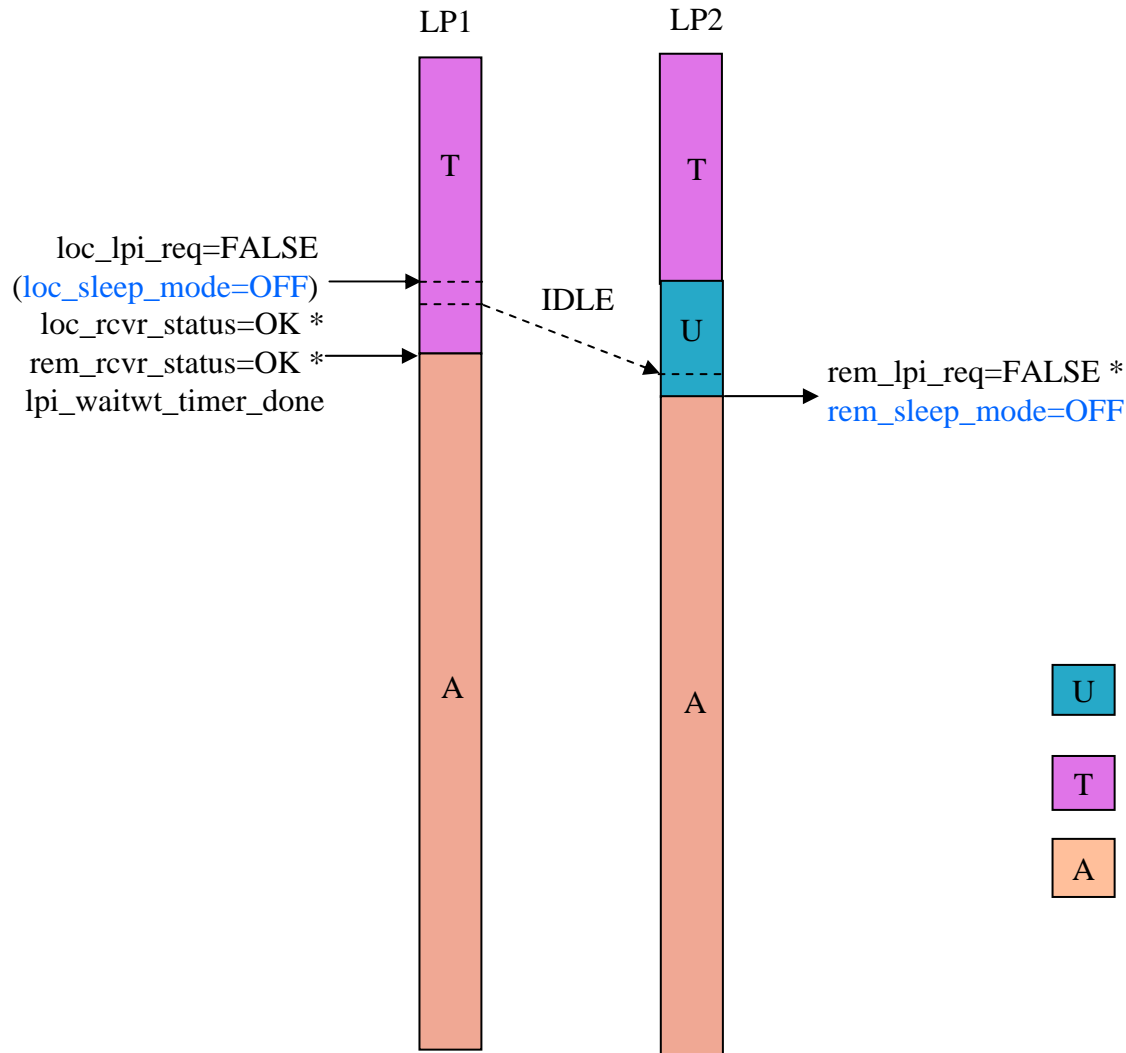


# Clause 40 PHY Control State Diagram B

(Proposed Changes in Blue)



# WAKE\_TRAINING Corner Case (with Proposed State Diagram Change)



# Summary of Proposed Changes

- Introduce new state variables, *loc\_sleep\_mode*, and *rem\_sleep\_mode* and their corresponding PMA service primitives.
- Modify PHY Control State Diagrams using *\*sleep\_mode* instead of *\*lpi\_mode* (as shown in slides 4 and 5)
- Encode *loc\_sleep\_mode* in place of *loc\_lpi\_mode*.
- Make additional editorial changes as necessary.



# Thank you





# Detail of Proposed Changes

- Introduce new state variables, `loc_sleep_mode`, and `rem_sleep_mode`.
  - Add to Figures 40-3, 40-5, and 40-14.
  - Add to 40.3.3.1 (Variables), 40.4.5.1 (State diagram variables), and 46.12.4.1 (PCS Receive PICs)
- Introduce the corresponding PMA service primitives at the beginning of 40.2.2, `PMA_SLEEPMODE.indication(loc_sleep_mode)` and `PMA_REMSLEEPMODE.request(rem_sleep_mode)`
  - Update figure 40-4 adding the corresponding signals.
  - Add descriptions to section 40-2 (similar to previous `lpi_mode` but turned off during `WAKE_TRAINING`).
- Modify PHY Control State Diagrams using `*sleep_mode` instead of `*lpi_mode` (as on slides 4 and 5)
  - In Figure 40-15a, in the SEND IDLE OR DATA state, add "`loc_sleep_mode <= OFF`".
  - In 40-15b, PHY Control State Diagram
    - Change `*_lpi_mode` to `*_sleep_mode`.
    - In `WAKE_TRAINING` state, add "`loc_sleep_mode <= OFF`".
- Encode `loc_sleep_mode` in place of `loc_lpi_mode`
  - In Section 40.3.1.3.4, p. 94 line 49, for the generation of `cext_errn`, replace `loc_lpi_mode` with `loc_sleep_mode`.
  - In 40.3.1.3, p. 94 line 7, change `loc_lpi_mode` to `loc_sleep_mode`.
  - In 40.4.2.4, p 99 line 14, change `rem_lpi_mode` to `rem_sleep_mode`.
  - In 46.12.5, p 108 line 14, change `rem_lpi_mode` to `rem_sleep_mode`.