

# IEEE P802.3bt PSE State Diagram Update

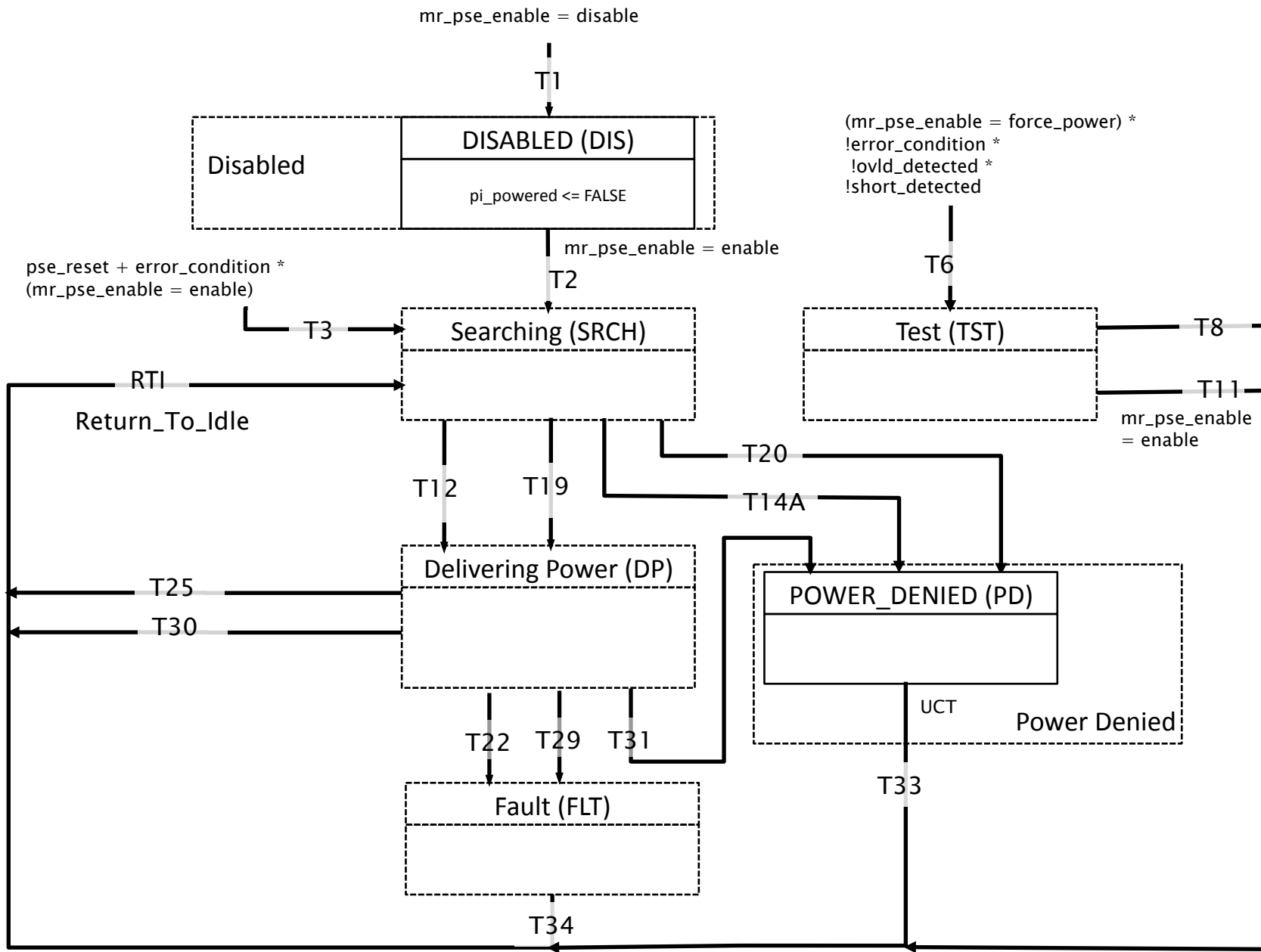
Dan Dove, DNS for LTC

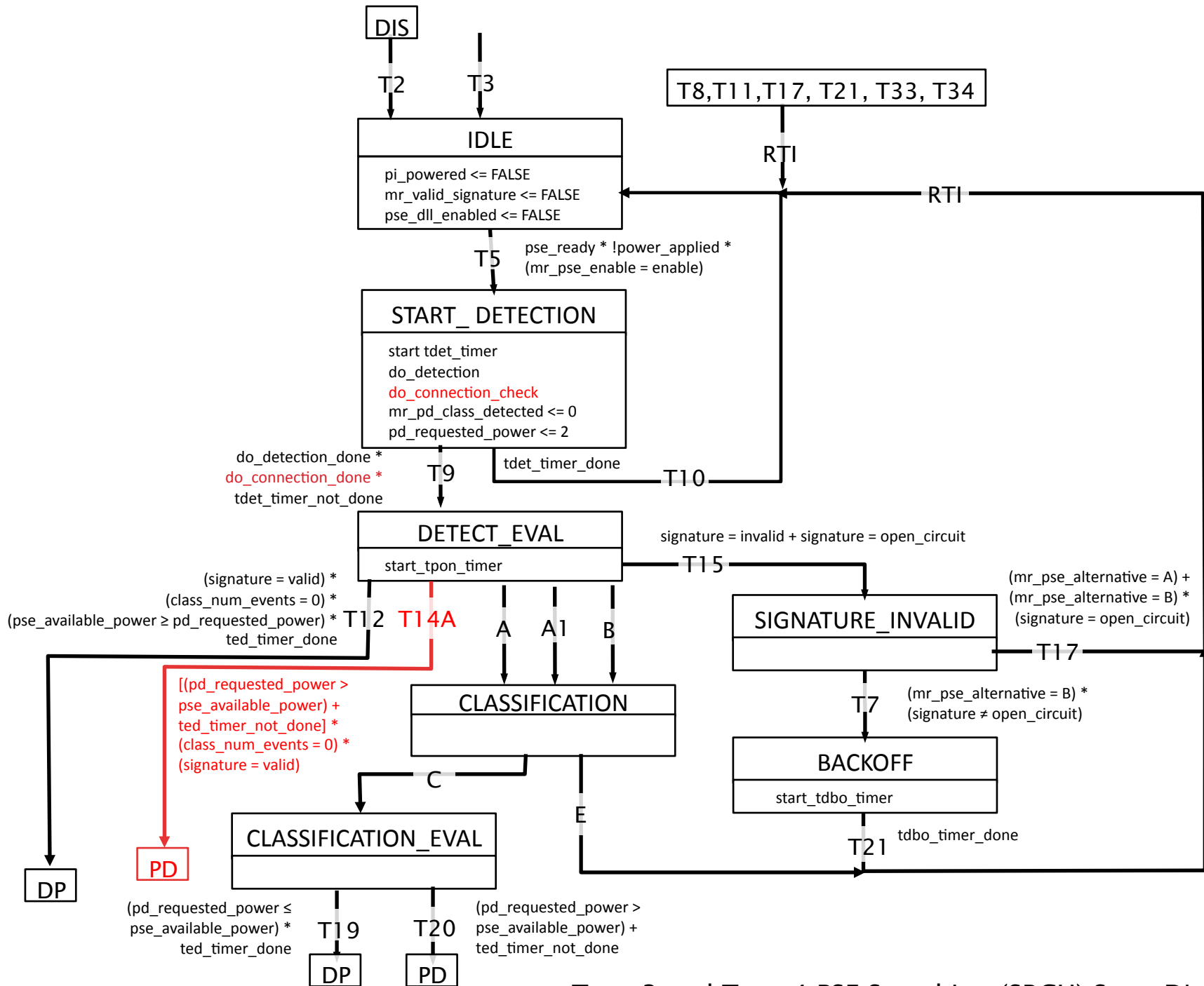
*June 16, 2015*



1. Removed slide formatting and borders to make more direct transfer to FrameMaker for editor.
2. Removed diagonal transitions where appropriate
3. Added do\_connection\_check into Searching Diagram
4. Added T14A transition into Searching Diagram
5. Added do\_connection\_done term into transition T9
  - Is it really the best way to address this functional requirement to have do\_detection AND do\_connection\_check when one can logically have only a connection\_check that presents the same logical outcome? (Explained later)







Type 3 and Type 4 PSE Searching (SRCH) State Diagram

Detection and Connection Check carry a lot of redundancy:

- Both have Invalid and Open Circuit results.
- Both seek to determine whether a valid PD is present
- Neither tells you which ALT the signature is present on.

Proposal – Eliminate Connection Check and Enhance Detection

do\_detection

This function returns the following variables (see 33.2.5):

signature:

This variable indicates the presence or absence of a PD and whether it has a single or dual signature.

Values:

open\_circuit: The PSE has detected an open circuit on all pair sets tested. This value is optionally returned by a PSE performing detection using only Alternative B.

Alt\_A\_valid: The PSE has detected a dual signature PD requesting power on the Alt\_A pair set.

Alt\_B\_valid: The PSE has detected a dual signature PD requesting power on the Alt\_B pair set.

Alt\_AB\_valid: The PSE has detected a dual signature PD requesting power on both pair sets.

valid: The PSE has detected a PD is requesting power or by Type 3 and 4 PSEs performing detection over both pair sets and determining that a single signature PD is present.

invalid: Neither open\_circuit, nor valid PD detection signature has been found on either pair-set.

## Rationale for removing Connection Check, enhancing Detection:

- Both have Invalid and Open Circuit results.
- We only need to clearly articulate the conditions such that correct interpretation of the results can be achieved.
- Both seek to determine whether a valid PD is requesting power.
- One seeks to find if a PD is requesting power, the other seeks to determine if that PD is requesting power on one alternative, or both.

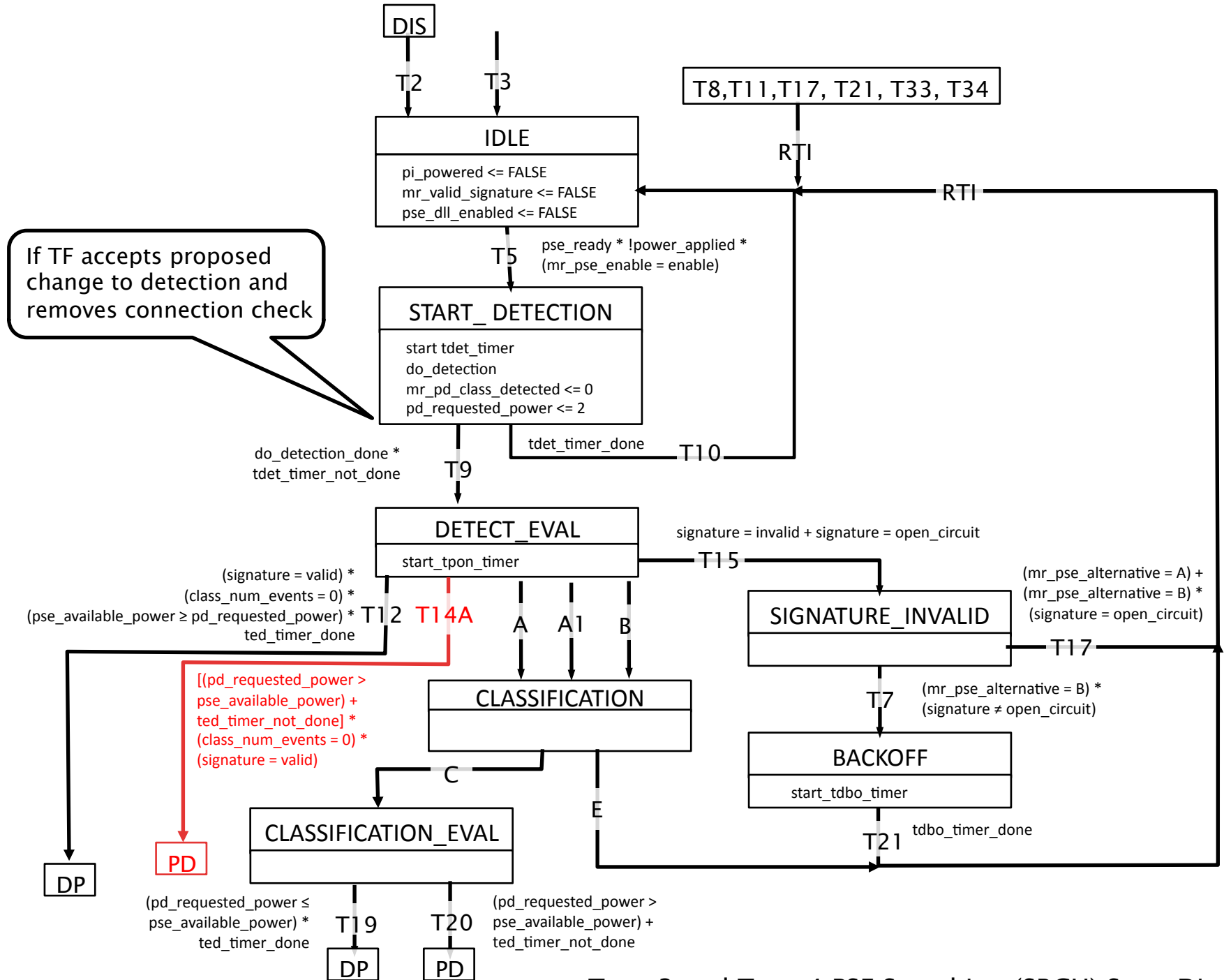
## Proposal provides all necessary information in a single function

AF,AT and single-channel PSEs will receive necessary information to apply power. Type 3 and Type 4 dual-channel PSEs will receive necessary information to apply power to either pair set or both pair sets.

SS Type 1/2/3/4 PD will assert 25K signature across all four pair sets. Type 1/2 will identify by testing one pair set and finding 25K signature. Type 3/4 will test one pair set, then other, then both and conclude SS PD (valid)

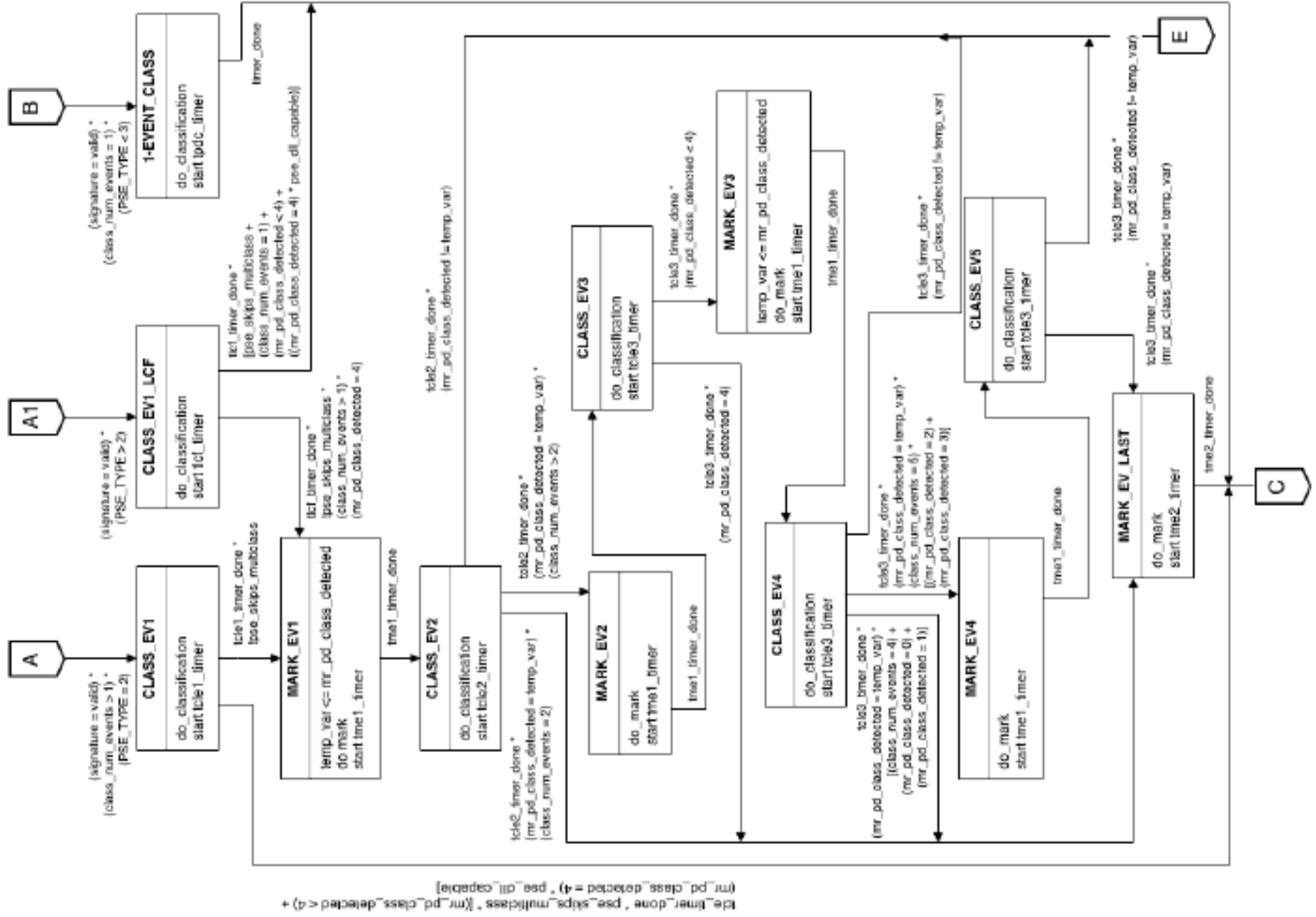
DS Type 3/4 PD will assert 25K signature on each pair set. Type 1/2 PSEs will identify PD on appropriate pair set and apply power. Type 3/4 PSEs will identify two signatures.

- Single-channel PSE will not apply power.
- Dual-channel PSE will apply power to each pair set accordingly.



If TF accepts proposed change to detection and removes connection check

Type 3 and Type 4 PSE Searching (SRCH) State Diagram

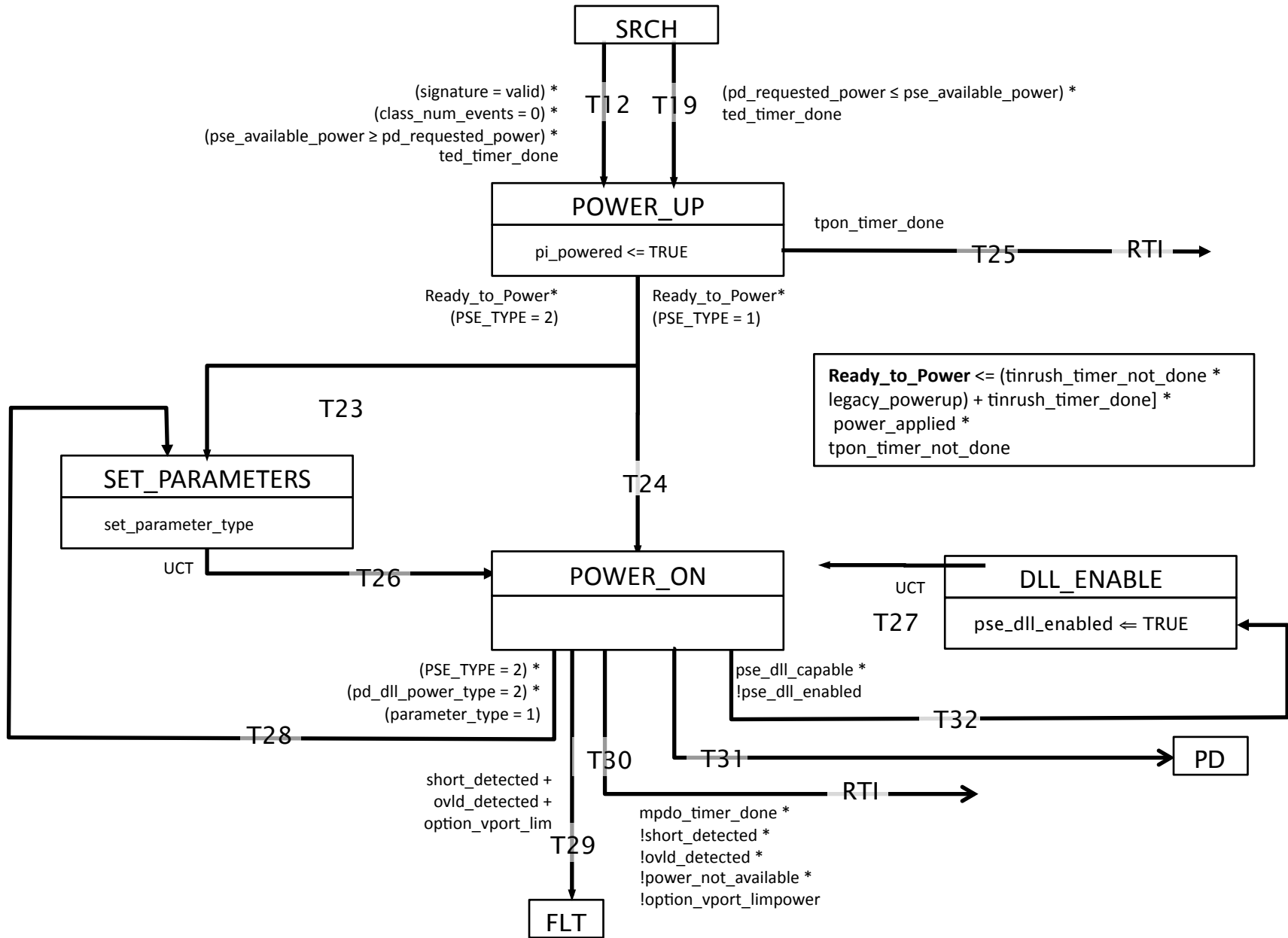


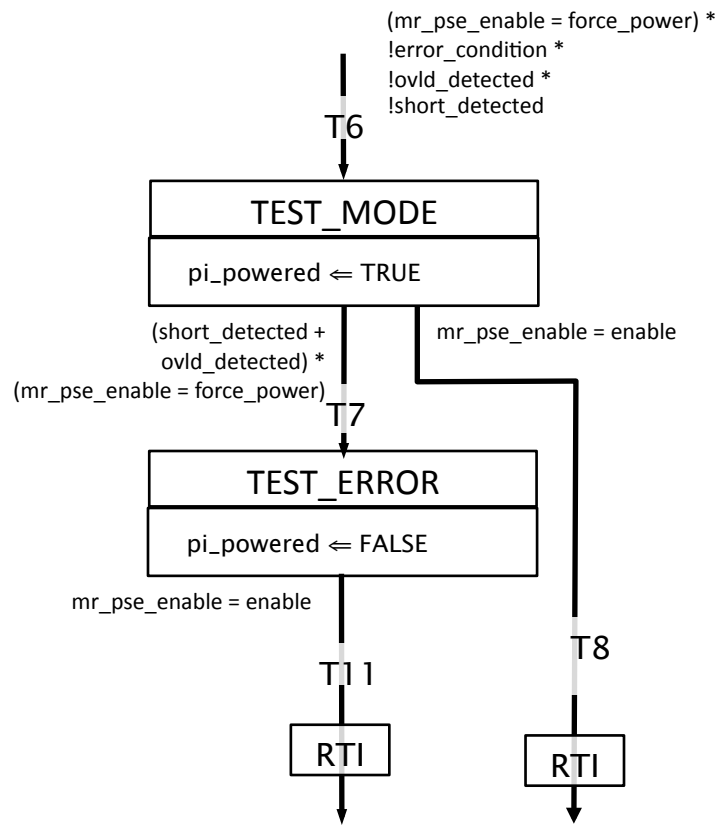
Type 3 and Type 4 PSE Classification State Diagram

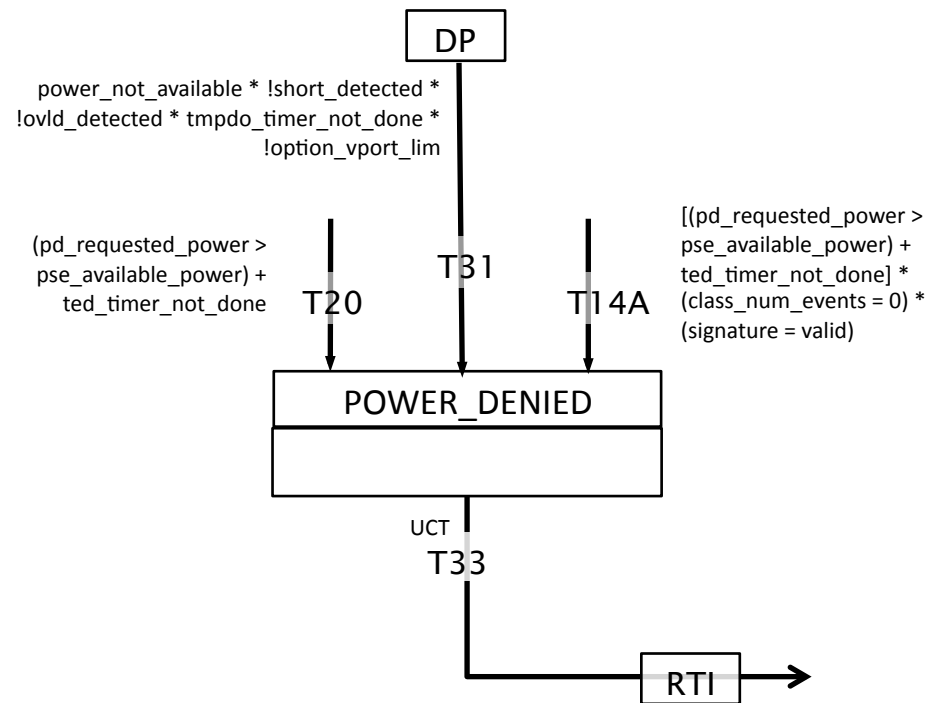


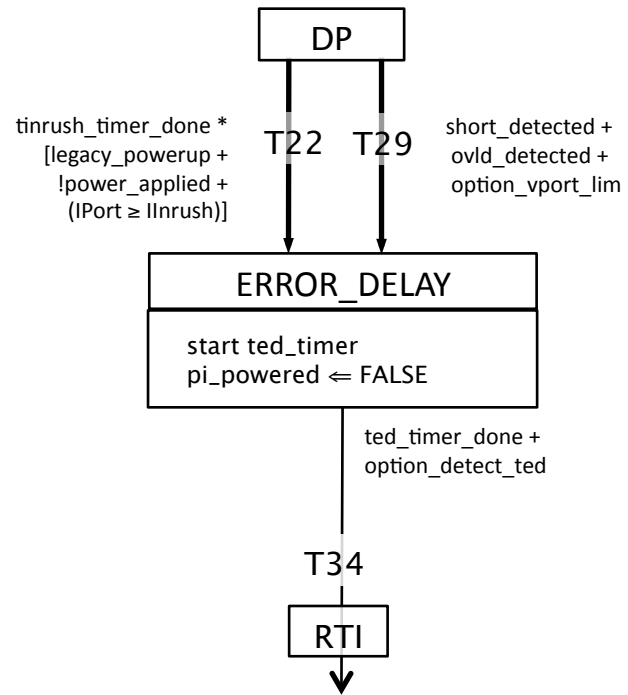
## Issues with the Classification State Diagram:

- Doesn't address how a dual channel PSE classifies each pair set
  1. One entry point into Classification State Diagram
  2. No method shown to classify alt-A versus alt-B
  3. This assumes only one classification per PD, and does not provide guidance on which pair set to perform classification.
    - a. We can assume that classification can be done on either pair-set and only do it once and it will total power required by the PD for cases of dual-channel and single-channel PSEs.
    - b. We can assume that classification for single signature PDs equals total total PD power and that classification for dual signature PDs must equal half of total PD power on each pair set.
  4. OR we must perform classification on both pair sets (for dual-signature PDs) and determine the power for each pair set independently from the other.
- I recommend 3a
- I cannot advise on changes to the PSE and/or Classification State Diagram wrt Classification until these concerns are answered.









# Q&A

