



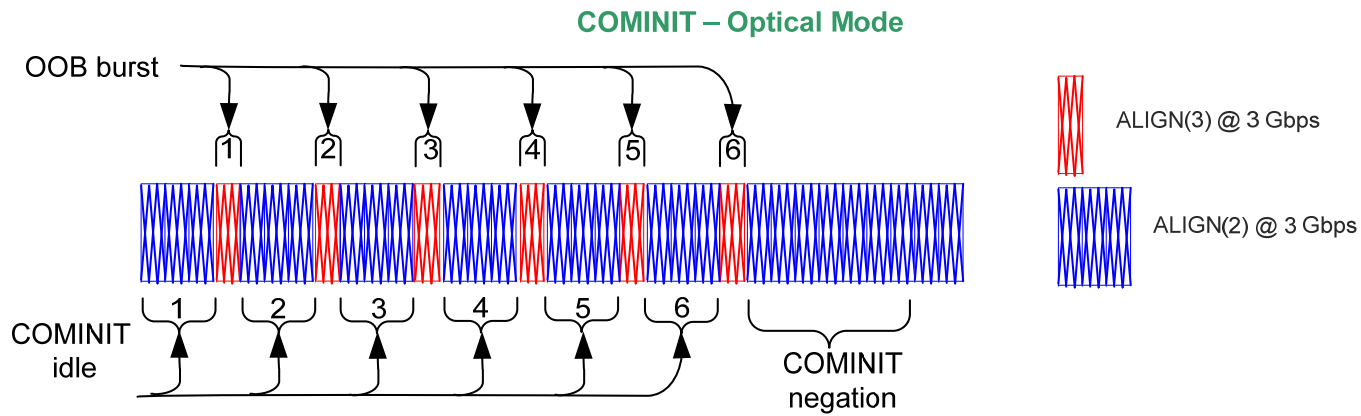
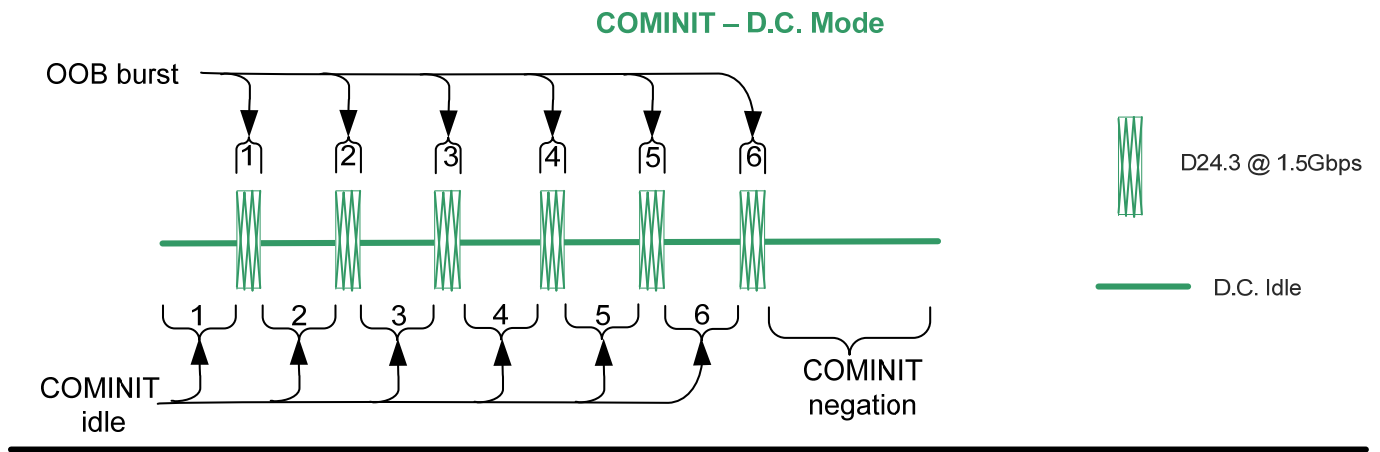
Overview of an OOB method for optical transceivers

08-438 r0
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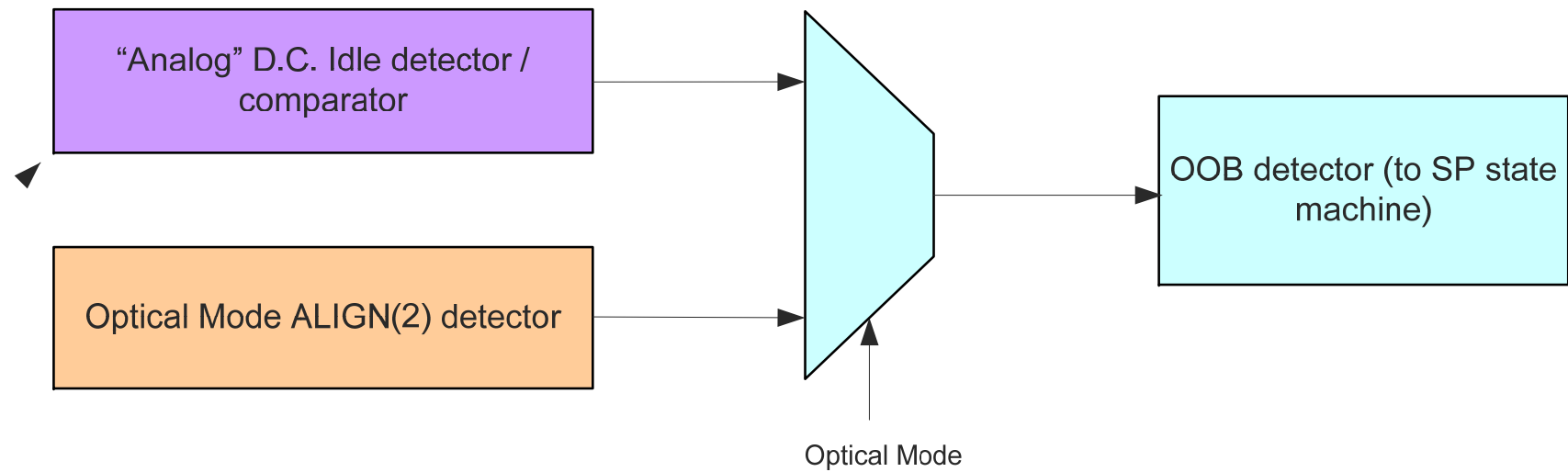
Motivations / Methodology behind an optical SAS proposal

- Significantly increase cable distance using existing, readily-available optical cables / modules
 - Most (all?) optical modules can not meet the power on/off timing requirements for existing SAS OOB signaling
- Provide an OOB method for optical transceivers, without changing the SP state machine flow / transitions
 - No changes being proposed to SP state machine
 - The optical transceiver must remain powered on throughout the OOB and speed negotiation protocol
 - Replace electrical D.C. idle and OOB burst pattern with a defined character sequence that phys can use to detect the OOB idle / burst patterns
 - Instead of detecting D.C. idle, an OOB receiver for optical would detect the specific character sequence
 - Instead of transmitting D.C. idle, an OOB transmitter for optical would transmit a specific character sequence
 - We are suggesting using ALIGN(2) during idle times, and ALIGN(3) for burst times
 - Timing of the burst / idle duration is identical to existing SAS-1 / SAS-2 protocol
 - By not changing general OOB / speed negotiation flow, highly leverage existing verification methodologies, protocol analyzers, etc.

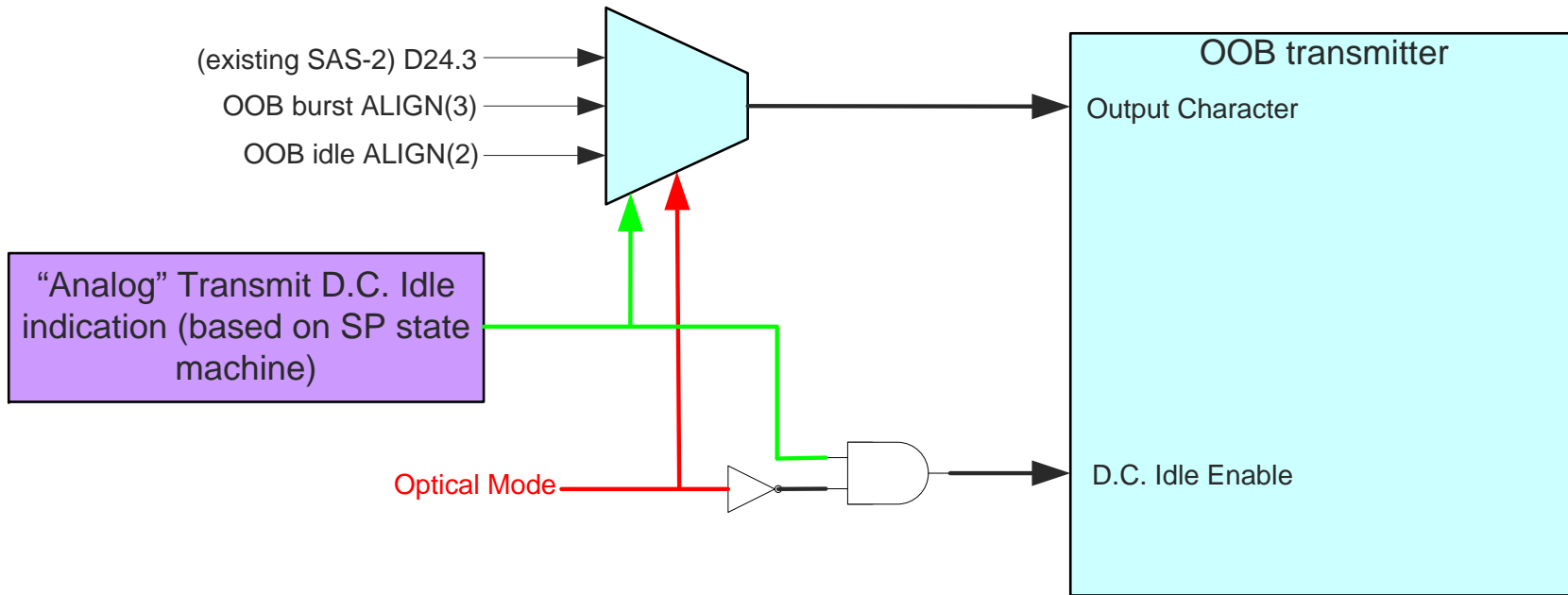
Representation of optical OOB



Conceptual implementation for OOB detection



Conceptual implementation for OOB transmission



Additional Details

- The proposed changes to the spec are included in T10 document 08-439 “SAS-2.1 / SPL An optical OOB method”

LSI

