XGMII RS
Error Checking / Reporting

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Agenda

- **Goals**
- **PCS Assumptions**
- **RS Error Reporting/Handling Mechanisms**
- **RS Reception Scenarios**

XGMII RS Error Checking Goals

- **Keep the rules as simple as possible**
- **Depend on PCS to detect and report most errors**
- **Assume XGMII to be error free**
  - XGMII will soon be an internal bus
  - Errors are not introduced at the XGMII due to signal integrity problems

PCS Assumptions

- **Expected PCS behavior**
  - S character is always aligned to lane 0
  - Minimum IPG = 5
    - T + 4 I
  - Frame related errors encountered in columns following the T character are propagated into the frame envelope
    - e.g. XGXS running disparity error.

- **Increased Delimiter Robustness - TBD**
  - Require ...-I-S-...
  - Require ...-T-I-...

RS Error Reporting/Handling

- **Error reporting mechanisms**
  - MAC frameCheckSequence error
- **Possible actions available to the RS**
  - Force FCS error
  - Ignore frame - i.e. drop frame
- **Layer Management – Clause 30**
  - Define new MAC entity attributes?

RS Reception Scenarios

- **Valid Frame**
  - Valid frame envelope (...-S-D-...-D-T-...)
  - At least 5 octets of IPG
    - T + 4 octets
  - Correct frame envelope alignment
  - Valid Preamble Sequence (SOP + 6 preamble + SFD)

RS Reception Scenarios (2)

- **Erroneous Frame → Force FCS Error**
  - E encountered within a correct frame envelope
    - Excluding E in preamble sequence
    - Does NOT result in DATA_COMPLETE
- **Erroneous Frame → Drop Frame**
  - Invalid Preamble Sequence

RS Reception Scenarios (3)

- **Protocol Error → Force FCS Error & truncate**
  - non-T/non-E control character encountered after a properly aligned S and a valid preamble sequence.
    - Results in DATA_COMPLETE
- **Protocol Error → Drop Frame**
  - Misaligned S
- **Protocol Error → Ignore Event**
  - Control characters within an idle sequence
    - Except for S characters in lane 0