A Starting Point for a Common Electrical Interface for Nx10 Higher-Speed Ethernet

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Overview

- A starting point for a common electrical interface for PMD Sublayer and Baseband Medium (types 40GBASE-CR4/KR4/SR4/LR4: 40GE over copper cable assembly, copper backplane, short-wavelength fiber, long wavelength fiber) is presented.

- Similar considerations apply for a 10x10 100G solution

- Supports functionality and interoperability for passive copper, active copper and optical cables.

- Commonly defined interface will be compatible with optical fiber, copper backplane and copper cable assembly objectives of 802.3ba

- Leverages the technology of 10GBASE-KR, ensures quick time-to-market for 40GE through the use of existing silicon solutions, while retaining compatibility with other industry standard interfaces (e.g. SFI)

Motivation

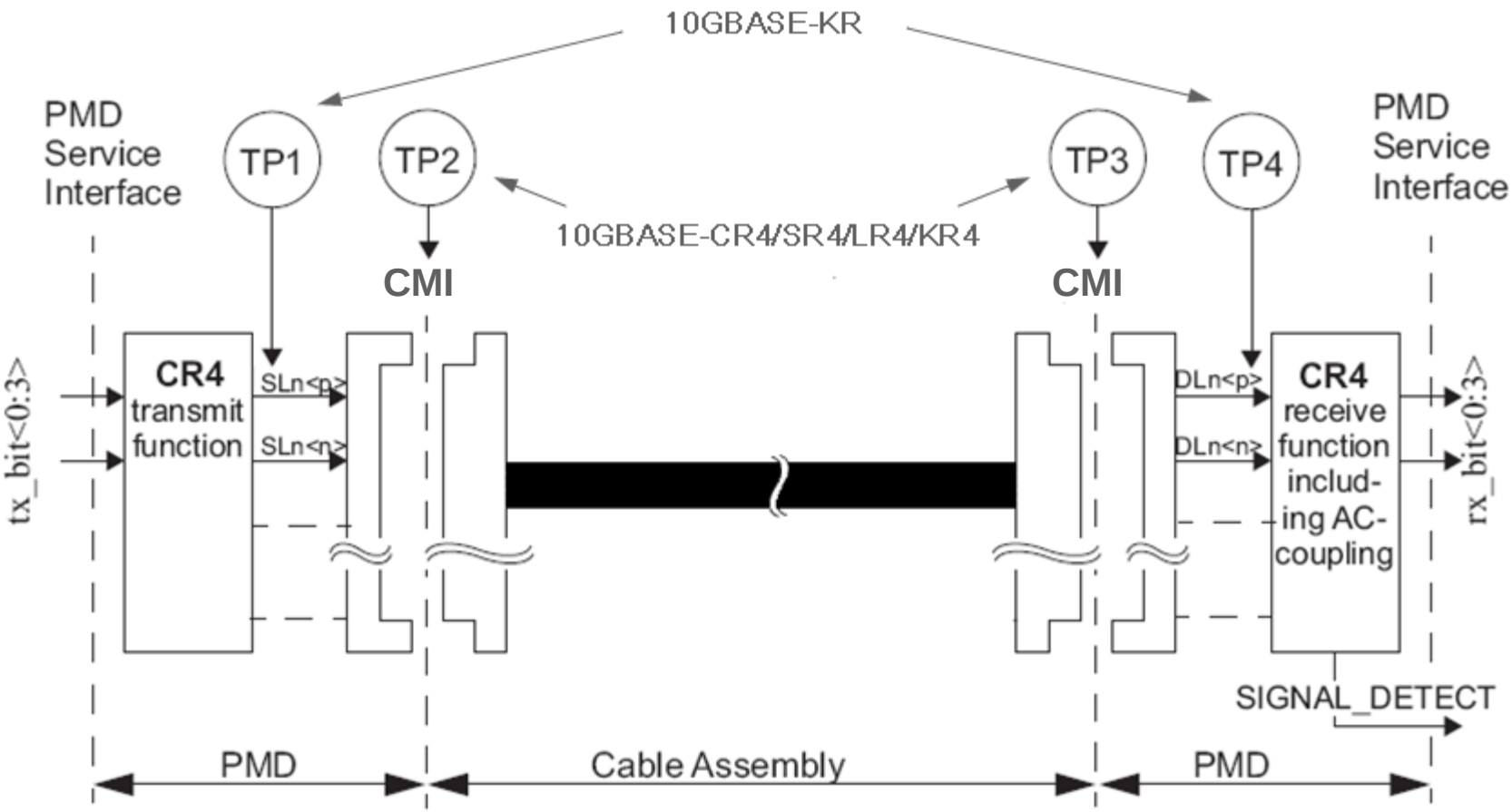
- 10GBASE-KR defines 10Gb/s serial operation over ~ 1m copper backplane.
- The technology can be leveraged to support passive copper cable assemblies (diminico_02_1107), optical fiber (palkert_01_0108), active copper cables (oganessyan_01_1107) and 40G backplane (melitz_01_0907)
- A commonly defined electrical interface will be compatible with all these solutions, while encouraging development and applicability of universal PHY solutions.

4x10G (40GBASE-CR4/SR4/LR4/KR4) Link*

- A 40GBASE-CR4/SR4/LR4/KR4 link is shown in Figure 1.
- For purposes of system conformance, the PMD sublayer is defined at the test points (TPn).
  - TP1 for transmitter compliance and TP4 for receiver compliance (same as 10GBASE-KR)
  - TP2 and TP3: common media interface (CMI) test points at the connector mating interface for channel compliance.
- The introduction of Test Points TP2 and TP3 at the connector mating interface will ensure the interface's commonality for optics and copper.

*Same considerations apply for a 10x10 100GE solution and 100GBASE-CR10 PMD type

4x10G (40GBASE-CR4/SR4/LR4/KR4) Link*



10GBASE-CRN/SRN/LRN/KRN Link Diagram (half link is shown)

*Same considerations apply for a 10x10 100GE solution and 100GBASE-CR10 PMD type

Transmit (at TP1) and Receive (at TP4) Function Requirements

- Transmitter at TP1 and Receiver at TP4 will be assumed to comply with requirements of IEEE 802.3ap Clause 72 (10GBASE-KR).

Other Considerations:

• Test points at TP2 and TP3 (*exposed connector*) are necessary to ensure copper and optical cable interoperability (example: SFI spec)

Summary:

- A starting point for a common electrical interface for a 4x10 40GE (and similarly 10x10 100GE) has been suggested.
- Advantage: universal support for copper and fiber
- Work to be done:
  - Agree to define TP2 and TP3
  - Specify waveforms at TP2 and TP3