Proposed subclause 999.1 for 100G BiDi

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P802.3dk TF January 2024 Interim Meeting

Clauses 140 and 160

- 140.1 includes overview of 100GBASE-DR/FR1/LR1
- 160.1 from 802.3cp is another reference of this specification, which is for 50G BiDi
- It is proposed to reuse these subclauses for 100G BiDi
- Following slides show content reuse and suggested minor changes
  - Black text: reused content from 140/160
  - Blue text: difference between 140 and 160
  - Red text: notes and discussion point

Proposed subclause 999.1 (references: subclauses 140.1 and 160.1)

999.1 Overview

This clause specifies the 100GBASE-BR10, 100GBASE-BR20, and 100GBASE-BR40 PMDs together with one single-mode fiber medium. Within this clause these PMDs are jointly referred to by the term 100GBASE-BRx. The 100GBASE-BRx PHYs are divided into two variants based on the direction of transmission. Optical line terminal (OLT) PMDs transmit in the downstream direction and receive in the upstream direction. Optical network unit (ONU) PMDs transmit in the upstream direction and receive in the downstream direction. The PMD variant is indicated with a suffix of D for OLT PMDs and U for ONU PMDs. The optical signals generated by these three PMD types are modulated using a 4-level pulse amplitude modulation (PAM4) format. When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as shown in Table 999–1, to the medium through the MDI and optionally with the management functions that may be accessible through the management interface defined in Clause 45, or equivalent. (Exact copy of subclause 160.1)

Figure 999–1 shows the relationship of the PMD and MDI (shown shaded) with other sublayers to the ISO/IEC Open System Interconnection (OSI) reference model. 100 Gigabit Ethernet is introduced in Clause 80 and the purpose of each PHY sublayer is summarized in 80.2. (Exact copy of subclauses 140.1 and 160.1)

100GBASE-BRx PHYs with the optional Energy-Efficient Ethernet (EEE) fast wake capability may enter the Low Power Idle (LPI) mode to conserve energy during periods of low link utilization (see Clause 78). The deep sleep mode of EEE is not supported. (Exact copy of subclauses 140.1 and 160.1)

Table 999-1 Physical layer clauses associated with the 100GBASE-BRx PMDs

(Exact copy of Table 140-1 from subclause 140.1)

Associated clause	100GBASE-BR10, 100GBASE-BR20, 100GBASE-BR40
81—RS	Required
81—CGMII	Optional
82—PCS	Required
83—100GBASE-R PMA	Optional
91—RS-FEC	Required
83A—CAUI-10 C2C	Optional
83B—CAUI-10 C2M	Optional
83D—CAUI-4 C2C	Optional
83E—CAUI-4 C2M	Optional
135—100GBASE-P PMA	Required
135D—100GAUI-4 C2C	Optional
135E—100GAUI-4 C2M	Optional
135F—100GAUI-2 C2C	Optional
135G—100GAUI-2 C2M	Optional
78—Energy-Efficient Ethernet	Optional

[a]The CGMII is an optional interface. However, if the CGMII is not implemented, a conforming implementation behaves functionally as though the RS and CGMII were present.

Reference: Table 160-1 from subclause 160.1

Table 160–1—Physical Layer clauses associated with the 50GBASE-BRx PMDs

Associated clause	50GBASE-BR10, 50GBASE-BR20, 50GBASE-BR40
132—RS	Required
132—50GMII[a]	Optional
133—PCS for 50GBASE-R	Required
134—RS-FEC for 50GBASE-R	Required
135—PMA for 50GBASE-R	Required
135B—LAUI-2 C2C	Optional
135C—LAUI-2 C2M	Optional
135D—50GAUI-2 C2C	Optional
135E—50GAUI-2 C2M	Optional
135F—50GAUI-1 C2C	Optional
135G—50GAUI-1 C2M	Optional
78—Energy-Efficient Ethernet	Optional

[a] 50GMII is an optional interface. However, if the appropriate interface is not implemented, a conforming implementation must behave functionally as though the RS and 50GMII were present.

Proposed subclause 999.1 (references: subclause 140.1 and 160.1)

999.1.1 Bit error ratio (Exact copy of subclauses 140.1 and 160.1)

The bit error ratio (BER) when processed by the PMA (Clause 135) shall be less than 2.4×10^{-4} provided that the error statistics are sufficiently random that this results in a frame loss ratio (see 1.4.344) of less than 9.2×10^{-13} for 64-octet frames with minimum interpacket gap when additionally processed by the FEC (Clause 91) and PCS (Clause 82). For a complete Physical Layer, the frame loss ratio may be degraded to 6.2×10^{-10} for 64-octet frames with minimum interpacket gap due to additional errors from the electrical interfaces.

If the error statistics are not sufficiently random to meet this requirement, then the BER shall be less than that required to give a frame loss ratio of less than 9.2×10^{-13} for 64-octet frames with minimum interpacket gap.
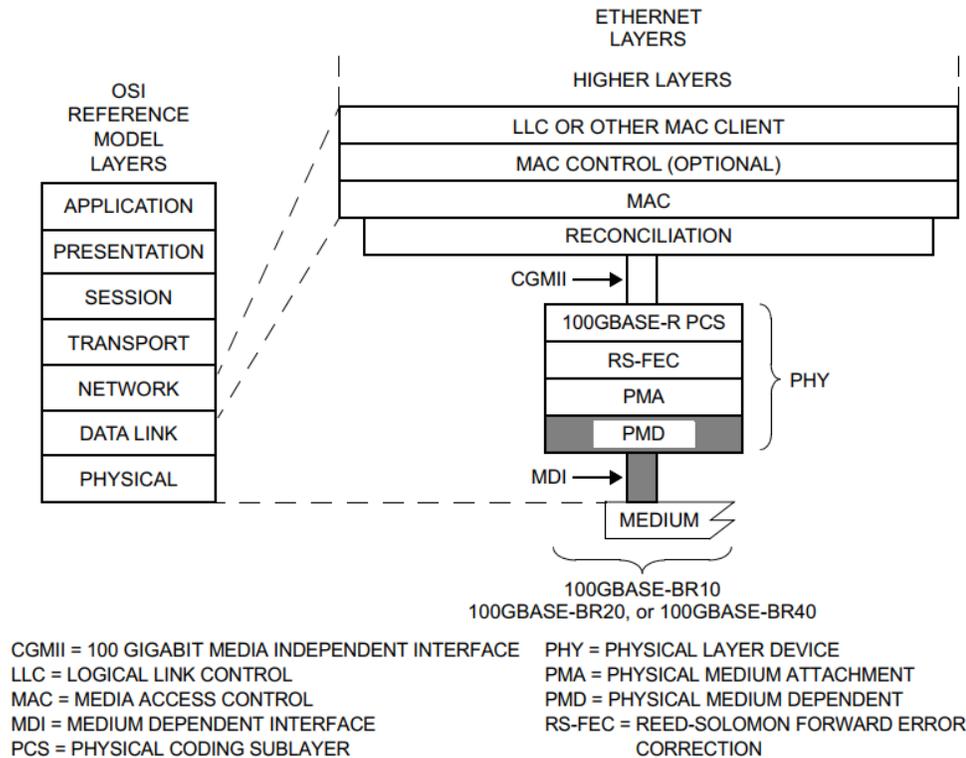
Figure 999–1—100GBASE-BRx PMD relationship to the ISO/IEC Open Systems Interconnection (OSI) reference model and IEEE 802.3 Ethernet model

(Exact copy of Figure 160-1 in subclause 160.1)

Thank you

Any questions?