Changes to Clause 85 due to comment #64

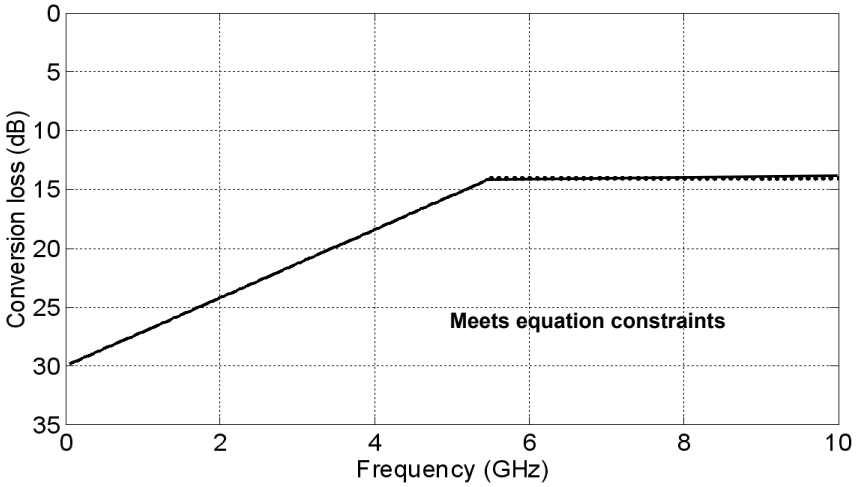

Figure 85–17—Common-mode conversion loss

85.10.9.4 Mated test fixtures integrated crosstalk noise

The mated test fixtures integrated crosstalk RMS noise voltages for the single-disturber near-end crosstalk loss and the single-disturber far-end crosstalk loss are determined using Equation (85–28) through Equation (85–32) by substituting the single disturber near-end for the multiple disturber near-end crosstalk loss and the single disturber far-end crosstalk loss for the multiple disturber far-end crosstalk loss. The values of the mated test fixtures integrated crosstalk RMS noise voltages determined using Equation (85–28) through Equation (85–32) for the single-disturber near-end crosstalk loss, the single-disturber far-end crosstalk loss, the multiple disturber near-end crosstalk loss, and the multiple disturber far-end crosstalk loss shall meet the specifications in Table 85–12.

Table 85–12—Mated test fixtures integrated crosstalk noise

Parameter	~~Value~~ 40GBASE-CR4	100GBASE-CR10	Units
Near-end integrated crosstalk noise voltage (RMS)	0.7	3	mV
Far-end integrated crosstalk noise voltage (RMS)	2.5	4	mV
MDNEXT integrated crosstalk noise voltage (RMS)	1	3	mV
MDFEXT integrated crosstalk noise voltage (RMS)	3.5	5	mV

85.10.10 Shielding

The cable assembly shall provide Class 2 or better shielding in accordance with IEC 61196-1.

86A.4 Electrical specifications for nPPI

The signaling rate for a lane of an XLPPI or CPPI interface shall be as defined in Table 86–2. 86A.4.1 and 86A.4.2 specify the host to module (Tx side) and module to host (Rx side) respectively of the nPPI. Parameters are defined in 86A.5 and 86.8. A recommended PCB ("channel") response for the host (PMA) is provided in 86A.6. Test points are defined in 86A.5.1.

86A.4.1 nPPI host to module electrical specifications

Each output lane and signal of the nPPI host (PMA), if measured at TP1a (see 86A.5.1) with the specified crosstalk signals applied on all input lanes, shall meet the specifications of Table 86A–1 per the definitions in 86A.5. Each lane of the nPPI module (PMD) electrical input, if measured at TP1 and TP1a with all Rx lanes (module output) operating, shall meet the specifications of Table 86A–2 per the definitions in 86A.5. The module electrical input shall be AC coupled, i.e., it shall present a high DC common-mode impedance at TP1. There may be various methods for AC coupling in actual implementations.

Changes to Clause 86A due to comment #63

Table 86A–1—nPPI host electrical output specifications at TP1a

Parameter description	Min	Max	Units	Conditions
Single ended output voltage	–0.3	4	V	Referred to signal common
AC common-mode output voltage	—	15	mV	RMS
Termination mismatch at 1 MHz	—	5	%	
Differential output return loss	See 86A.4.1.1	—	dB	
Output transition time, 20% to 80%	28	—	ps	
J2 Jitter output	—	0.17	UI	
J9 Jitter output	—	0.29	UI	
Data Dependent Pulse Width Shrinkage (DDPWS)	—	0.07	UI	
Q_{sq}	~~45~~40	—	V/V	
	Specification values			
Eye mask coordinates: X1, X2 Y1, Y2	0.11, 0.31 95, 350		UI mV	Hit ratio = 5×10^{-5}
Crosstalk source VMA, each input lane	700		mV	At TP4
Crosstalk source transition times, 20% to 80%	34		ps	At TP4

86A.4.1.1 Differential return losses at TP1 and TP1a

From 10 MHz to 11.1 GHz, the magnitude in decibels of the module differential input return loss at TP1 and the host differential output return loss at TP1a (see 86A.5.1) shall not exceed the limit given in

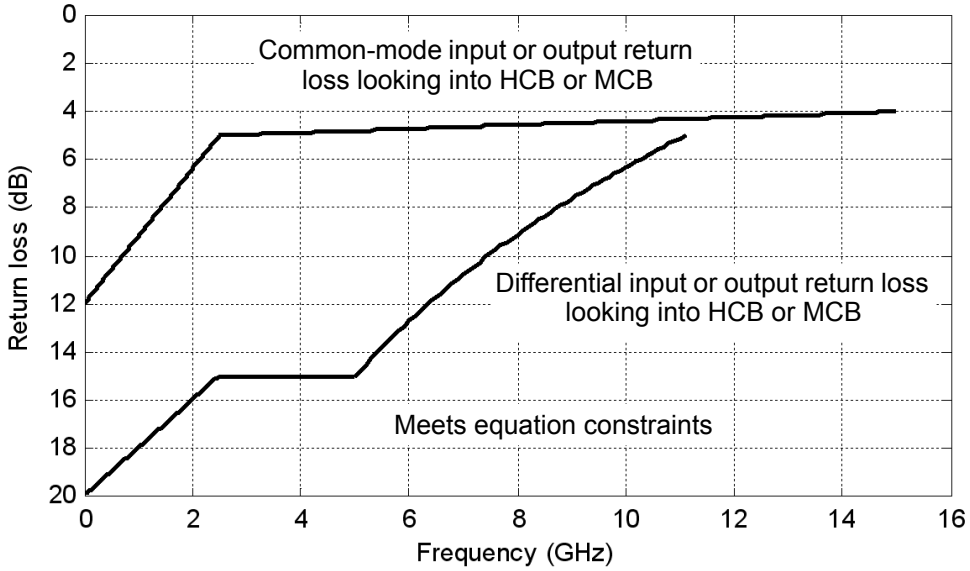

Figure 86A–4—Return loss limits of mated HCB-MCB

where

Return_loss(*f*) is the return loss at frequency *f*
f is the frequency in GHz

The limit on the common-mode return loss in decibels of the mated HCB and MCB is given in Equation (86A–8) and illustrated in Figure 86A–4.

$$\text{Return\_loss}(f) \geq \begin{cases} 12 - 2.8f & 0.01 \leq f < 2.5 \\ 5.2 - 0.08f & 2.5 \leq f \leq 15 \end{cases} \text{ dB} \quad \text{(86A–8)}$$

where

Return_loss(*f*) is the return loss at frequency *f*
f is the frequency in GHz

The limit on the differential to common-mode conversion loss in decibels of the mated HCB and MCB, for input to HCB and output from MCB, or input to MCB and output from HCB, is given in Equation (86A–9) and illustrated in Figure 86A–5.

$$\text{Mode\_conversion\_loss}(f) \geq \begin{cases} 30 - 2.91f & 0.01 \leq f < 5.5 \\ 14 & 5.5 \leq f \leq 15 \end{cases} \text{ dB} \quad \text{(86A–9)}$$

Changes to Clause 86A due to comment #64 without comment #129

where

Mode_conversion_loss(*f*) is the mode conversion loss at frequency *f*
f is the frequency in GHz

The limits on integrated crosstalk noise of the mated HCB and MCB for XLPPI and CPPI are as specified in 85.10.9.4 for 40GBASE-CR4 and 100GBASE-CR10 respectively with the exception that the frequency range is 0.01 GHz to 12 GHz.

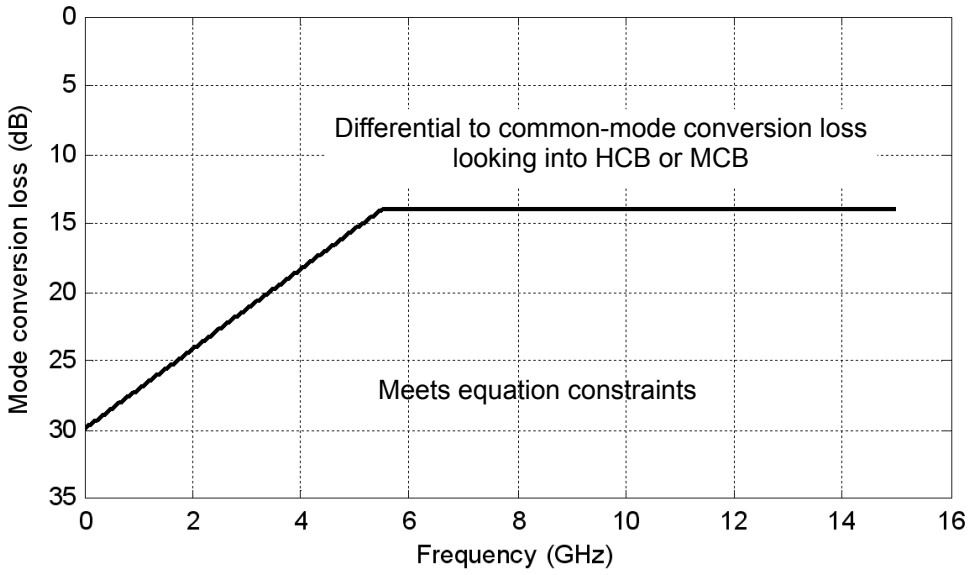

Figure 86A–5—Differential to common-mode conversion loss limit of mated HCB-MCB

Changes to Clause 86A due to comment #129

The limits on integrated crosstalk noise of the mated HCB and MCB are as specified ~~in~~ by Table 86A–6 according to the method of 85.10.9.4 with the exceptions that the 3 dB reference receiver bandwidth (f_r) of Equation (85–28) and Equation (85–29) is 12 GHz, and the frequency range is 0.01 GHz to 12 GHz.

Table 86A–6—Mated test fixtures integrated crosstalk noise

Parameter	XLPPI	CPPI	Units
Near-end integrated crosstalk noise voltage (RMS)	?	?	mV
Far-end integrated crosstalk noise voltage (RMS)	?	?	mV
MDNEXT integrated crosstalk noise voltage (RMS)	?	?	mV
MDFEXT integrated crosstalk noise voltage (RMS)	?	?	mV

86A.5.2 Test patterns and related subclauses

While compliance is to be achieved in normal operation, specific test patterns are defined for measurement consistency and to enable measurement of some parameters. Table 86–11 lists the defined test patterns, and Table 86A–7 gives the test patterns to be used in each measurement, unless otherwise specified, and also lists references to the subclauses in which each parameter is defined. Multi-lane testing considerations are given in 86.8.2.1. As Pattern 3 is more demanding than Pattern 5 (which itself is the same or more demanding than other 40GBASE-R or 100GBASE-R bit streams) an item which is compliant using Pattern 5 is considered compliant even if it does not meet the required limit using Pattern 3.