Cl **1** *SC* **1.4** *P* **200** *L* **14** # R1-5

Ran, Adee
Cisco Systems, Inc.

Comment Type **E** *Comment Status* **X**

The Auto-Negotiation definition (1.4.198) refers to clauses 28, 37, and 73, but does not include clause 98 which also fits this definition.

SuggestedRemedy

Change "and Clause 73" to "Clause 73, and Clause 98".

Proposed Response *Response Status* **O**

Cl **28** *SC* **28.3.4** *P* **970** *L* # R1-3

Ran, Adee
Cisco Systems, Inc.

Comment Type **T** *Comment Status* **X**

The Auto-Negotiation Arbitration state diagrams (Figure 28–18, Figure 73–11, Figure 98–7) control the variable transmit_ack, setting it to true in states ACKNOWLEDGE DETECT and COMPLETE ACKNOWLEDGE, but it is not set to false anywhere.

Correct operation of the ACK handshake requires that transmit_ack is set to false in some states, e.g. in NEXT_PAGE_WAIT and in ABILITY_DETECT.

It turns out that the definition of transmit_ack (e.g. in 28.3.1) specifies false as the default value, and the state diagrams in the auto-negotiation clauses have an addition to the usual conventions (21.5), stating that "Variables in a state diagram with default values evaluate to the variable default in each state where the variable value is not explicitly set". Other than the three AN clauses, this statement appears only in 4 relatively old clauses (36, 37, 48, and 65) so it is likely that readers do not expect it.

There are several other variables which have a default value and is not explicitly assigned in some states of the arbitration state diagrams.

Although strictly speaking the diagrams are correct as written, the unusual convention makes them prone to misunderstanding the required implementation, especially in the quite complicated arbitration state diagrams. Since adding all the "missing" assignments may clutter these diagrams, the proposed change is to add a note at the bottom of each arbitration state diagram instead.

The Receive state diagrams are also affected by this convention: Figure 28–17 assigns the variable flp_receive_idle, and Figure 73-10 and Figure 98–9 assign the variable an_receive_idle, only in some states. Adding a similar note should also be considered for these diagrams.

SuggestedRemedy

In each of Figure 28–18, Figure 73–11, and Figure 98–7:

Add a NOTE at the bottom of the diagram: "NOTE--Any variable which has a default value in its definition is set to that value in each state, unless explicitly set to another value".

Proposed Response *Response Status* **O**

Cl **56** *SC* **56.1.3** *P* **2626** *L* **22** # R1-15

Dawe, Piers J G NVIDIA

Comment Type **E** *Comment Status* **X**

At over three pages long, Table 56-1 is far too long and cumbersome.

SuggestedRemedy

Split it into three tables; copper (including coax), bidi and PON

Proposed Response *Response Status* **O**

Cl **58B** *SC* **58B.2** *P* **6474** *L* **3** # R1-16

Dawe, Piers J G NVIDIA

Comment Type **T** *Comment Status* **X**

Making the context clear because OMA is normative in clauses 59 and 60 which rely on 58.7, and in spite of what 58.7.6 said, OMA is normative in 58.4 as well.
Possible editorial change.

SuggestedRemedy

Delete the sentence "The normative way of measuring transmitter characteristics is extinction ratio and mean power" altogether, because 58.4.1 says "The 100BASE-BX10 transmitters' ..., OMA, eye and TDP shall meet the specifications...".
Change "The following clause" to "This sub-annex"?

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.7.2.2** *P* **3085** *L* **29** # R1-7

Ben-Artsi, Liav Marvell Semiconductor, Inc.

Comment Type **TR** *Comment Status* **X**

It is stated that the receiver shall comply with the requirements of Table 72–9 for any (Specific? - static? one?) signaling speed in the range 10.3125 GBd ± 100 ppm.
There is no reference to a possibility of signaling speed wander or signaling speed which varies over time (which may occur due to clock aging, temperature influence, voltage change, etc.)
We could have avoided such statement if a receiver test was specified to account for such, but there is no such test including the jitter tolerance one which covers ~1 order of magnitude lower peak wander.

SuggestedRemedy

Change the sentence to
A 10GBASE-KR receiver shall comply with the requirements of Table 72–9 for signaling speeds in the range 10.3125 GBd ± 100 ppm including signaling speed wander.
Editorial license permitted
The same change should be done to:
85.8.4.4 on page 3546 line 24
92.8.4.6 on page 3741 lane 41
130.7.2.2 on page 5219 line 28
136.9.4.4 on page 5335 line 10

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.10.4.5** *P* **3092** *L* **49** # R1-20

Dawe, Piers J G NVIDIA

Comment Type **E** *Comment Status* **X**

TC12 and TC13 Value/Comment does not agree with controlling text. As this is defined "with no equalization", the error is small, but it is an unnecessary inconsistency.

SuggestedRemedy

Change "of the peak-to-peak differential value of the waveform" to "of the steady-state voltages of 72.7.1.11", twice. Similarly in 130.10.4.4.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.4** *P* **3385** *L* **15** # R1-8

Brown, Matthew — Huawei Technologies Canada

Comment Type **E** *Comment Status* **X**

In Table 80-1, the order of PHYs with different lane widths is not consistent.

SuggestedRemedy

Reorder as follows where PHY with more lanes is listed first:
100GBASE-CR10, 100GBASE-CR4, 100GBASE-CR2
100GBASE-SR10, 100GBASE-SR4, 100GBASE-SR2
Other ordering schemes are fine as long as it is consistent within this table.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.5** *P* **3388** *L* **45** # R1-9

Brown, Matthew — Huawei Technologies Canada

Comment Type **E** *Comment Status* **X**

In Table 80-6, footnote b is an unnecessary detail in this table. The footnote appears in the PMD summary table in Clause 154 (Table 154-1). This table is a summary of normative specifications in the respective PMD clauses. Pulling in the various detailed footnotes from all of the PMD clauses would clutter these summary tables. Be consistent.

SuggestedRemedy

Remove footnote b from Table 80-6.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **3694** *L* **39** # R1-6

Parsons, Earl — CommScope, Inc.

Comment Type **E** *Comment Status* **X**

Throughout the draft PMDs are ordered by decreasing number of lanes. In this sentence 100GBASE-SR2 comes before 100GBASE-SR4. Their order should be swapped.

SuggestedRemedy

Place 100GBASE-SR4 before 100GBASE-SR2 in this sentence.

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.1** *P* **6709** *L* **17** # R1-17

Dawe, Piers J G — NVIDIA

Comment Type **E** *Comment Status* **X**

It is not convenient that a long list of COM parameters are collected together in a table, but the IC rise time Tr is handled in an ad-hoc way in text.

SuggestedRemedy

Insert a row for "IC rise time 93A.1.4 Tr ps" in Table 93A-1, COM parameters, above "Receiver 3 dB bandwidth".
In the other COM parameter tables, 93-8, 94-17, 83D-6, 110-11, 111-8, 136-18, 137-6, and 120D-8, insert a row for "IC rise time Tr <value> ps". Value is 0 for the earlier clauses and annexes where no value is given, see below for others.
In 93A.1.4 Filters, delete "where Tr is 0 unless defined otherwise for the Physical Layer specification that invokes this method".
In 110.10.7, delete "where Tr is 8 ps for Ht(f) as used in Equation (93A-19)", use value of 8 ps in Table 110-11.
In 111.9, delete "where Tr is 12 ps for Ht(f) as used in Equation (93A-19)", use value of 12 ps in Table 111-8.
In 136.11.7, delete "where Tr is 12 ps for Ht(f) as used in Equation (93A-19)", use value of 12 ps in Table 136-18.
In 137.10, delete "where Tr is 12 ps for Ht(f) as used in Equation (93A-19)", use value of 12 ps in Table 137-6.
In 120D.4.1, delete "where Tr is 13 ps for Ht(f) as used in Equation (93A-19)", use value of 13 ps in Table 120D-8.

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.1.4** *P* **6714** *L* **28** # R1-19

Dawe, Piers J G — NVIDIA

Comment Type **E** *Comment Status* **X**

In the 64B/66B-based PMDs, both electrical and optical, "transition time" is defined consistently as the 20-80% time in a defined observation bandwidth, where 0% and 100% are the settled levels. This depends on the transmitter state of emphasis unless "with no equalization" is specified. See 86A.5.3.3, 83E.3.1.5, 121.8.7, 122.8.7 and many more, and 72.7.1.7, 85A.2, 130.7.1.7 (8B/10B clauses are different, but clear).
However, COM and ERL use parameters Tr which are different: they do not involve an observation bandwidth, nor do they depend on the transmitter state of emphasis. This is like "the 20% to 80% rise and fall times Tnt and Tft" used for ICN calculation.

SuggestedRemedy

Where Tr is a given value used as an input to a calculation, change its name to avoid misunderstanding:
For COM, generally Tr has no name, but in 93A.1.4, change "the transmitter transition time filter Ht(f)" to "the transmitter filter Ht(f)", and use "IC rise time" in COM tables.
For ERL: in 93A.5.1 and Table 136-13, 17, 137-5, 7, change "Transition time associated with a pulse" to "Rise time associated with a pulse".
In 93A.2, change "where Tr is the 20% to 80% transition time (see 86A.5.3.3) of the signal as measured at TP0a" to "where Tr is the 20% to 80% rise time of the test transmitter's signal as if measured at TP0a without an observation filter and with no transmit equalization (see 86A.5.3.3)".
In 93C.2, change "the same 20% to 80% transition time as the transmitter measured at TP0a" to "the same 20% to 80% rise time as the transmitter measured at TP0a".
Make similar clarifications in receiver interference tolerance sections.

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.2** *P* **6719** *L* **35** # R1-14

Ran, Adee — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **X**

"Equation (93A–46) where Tr is the 20% to 80% transition time (see 86A.5.3.3) of the signal as measured at TP0a"

Tr has dimension of time, but the units are not specified in Equation (93A–46). This equation has frequency multiplied by time which result in a pure number. The units should cancel out, e.g. Hz and second. Incorrect choice of units for Tr (e.g. ps where f is in GHz) would lead to wrong results.

In some cases, e.g. in 110.10.7, 136.11.7, and 137.10, values of Tr for this equation are given with specific units of ps, which can mislead the reader (it is unlikely that frequency is given in THz).

A similar issue exists in 92.8.4.4.3.

SuggestedRemedy

In 93A.2, change "Equation (93A–46) where Tr is the 20% to 80% transition time (see 86A.5.3.3) of the signal as measured at TP0a"
to
"Equation (93A–46) where Tr is the 20% to 80% transition time (see 86A.5.3.3) of the signal as measured at TP0a, expressed in reciprocal units of f (e.g., if f is in GHz, Tr is in ns)".

In 92.8.4.4.3, change "Equation (92–22) where Tr is the 20 to 80% transition time (see 86A.5.3.3) of the signal as measured at TP0a"
to
"Equation (92–22) where Tr is the 20% to 80% transition time (see 86A.5.3.3) of the signal as measured at TP0a, expressed in reciprocal units of f (e.g., if f is in GHz, Tr is in ns)".

Proposed Response *Response Status* **O**

Cl **96** *SC* **96.5.4.3** *P* **3924** *L* **2** # R1-13

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **X**

In several equations there are ranges of f expressed with units, such as "0.1 <= f < 0.5 MHz" and "0.5 <= f <= 20 MHz", but the variable definitions below the equation stating that "f is the frequency in MHz".

In these equations, f itself is a pure number (as it is used in the equation), and the MHz units in the range are out of place.

This issue exists in equations 96–4, 96–5, 96–6, 96–7, 96–8, 96–9, 96–10, 96–11, 96–13, 146–12 , 146–17, 146–18, and 149–24.

A similar issue but with GHz units exists in equations 92–3, 92–30, 92–34, 92–35, 92–42, 92–43, 92A–1, 92A–2, 92A–3, 92A–4, 92A–5, 110A–1, 110A–2, 136A–1, 136A–2, and 136B–1.

A related issue exists in equations 85A–1 and 85A–2. In these equations, the range of f is expressed with MHz units while f is defined as "the frequency in Hz".

A related issue exists in equation 130A–2 which includes the term (f/275 MHz), but f is defined as "the frequency in MHz", so is a pure number.

SuggestedRemedy

In equations 96–4, 96–5, 96–6, 96–7, 96–8, 96–9, 96–10, 96–11, 96–13, 146–12 , 146–17, 146–18, and 149–24, delete "MHz" in the range designations of f.

In equations 92–3, 92–30, 92–34, 92–35, 92–42, 92–43, 92A–1, 92A–2, 92A–3, 92A–4, 92A–5, 110A–1, 110A–2, 136A–1, 136A–2, and 136B–1, delete "GHz" in the range designations of f.

In equations 85A–1 and 85A–2, change "10 MHz <= f <= 7500 MHz" to "10^7 <= f <= 7.5*10^9".

In equation 130A-2, change "(f/275 MHz)" to "(f/275)".

Proposed Response *Response Status* **O**

Cl **97** *SC* **97.10.4** *P* **3122** *L* **24** # R1-4

Ran, Adee Cisco Systems, Inc.

Comment Type **E** *Comment Status* **X**

The assignment in state COMPLETE ACKNOWLEDGE has a typo: "mr_lp_adv_abiliy".

SuggestedRemedy

Change it to "mr_lp_adv_ability".

Proposed Response *Response Status* **O**

Cl **120D** *SC* **120D.4.1** *P* **6832** *L* **23** # R1-18

Dawe, Piers J G NVIDIA

Comment Type **E** *Comment Status* **X**

The title of Table 120D-8 does not match the many other COM parameter tables, which makes it harder to find.

SuggestedRemedy

Make them all identical, e.g. change "Channel Operating Margin parameters" to "COM parameter values" here.

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.5.7.2** *P* **5283** *L* **48** # R1-12

Brown, Matthew Huawei Technologies Canada

Comment Type **T** *Comment Status* **X**

A PMA may have physical instantiation on both top (facing the PCS) or bottom (facing the PMD). It is possible that only one side supports precoding. This should be clarified in the wording.

SuggestedRemedy

On page 5283 line 48 and page 5284 line 33...
Change "If the PMA is connected" to "If the PMA input and output lanes are connected".

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.5.7.2** *P* **5284** *L* **34** # R1-11

Brown, Matthew — Huawei Technologies Canada

Comment Type **E** *Comment Status* **X**

The first paragraph in 135.5.7.2 already lists the PMDs and AUIs for which this subclause applies. It is not necessary to repeat any part of this list within this subclause.

SuggestedRemedy

On page 5284 line 34 change
"is part of a 50GAUI-1 C2C or a 100GAUI-2 C2C link" to "is part of a C2C link"
On page 5284 line 36 change
"may be used for 50GBASE-1 C2C or 100GAUI-2 C2C" to "may be used for C2C"

Proposed Response *Response Status* **O**

Cl **135** *SC* **135.5.7.2** *P* **5284** *L* **37** # R1-10

Brown, Matthew — Huawei Technologies Canada

Comment Type **E** *Comment Status* **X**

"50GBASE-1 C2C" should be "50GAUI-1 C2C"

SuggestedRemedy

Change "50GBASE-1 C2C" to "50GAUI-1 C2C".

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.2.4.3** *P* **5512** *L* **1** # R1-2

Kramer, Glen — Broadcom Corporation

Comment Type **E** *Comment Status* **X**

The figure 142-8 is made narrower than the surrounding text. The legibility will improve if the figure is enlarged to occupy the full allowed page width.

SuggestedRemedy

Increase the figure size to match the width of text. Maintain the aspect ratio.

Proposed Response *Response Status* **O**

Cl **142** *SC* **142.3.1** *P* **5523** *L* **1** # R1-1

Kramer, Glen — Broadcom Corporation

Comment Type **E** *Comment Status* **X**

The figure 142-12 lost its aspect ratio. It is too stretched horizontally, compared to how it looked in D3.0

SuggestedRemedy

Restore the aspect ratio

Proposed Response *Response Status* **O**