Cl **163**　　*SC* **163.9.2.8**　　　　*P* **207**　　*L* **18**　　　　# R1-1

Ran, Adee　　　　　　　　　　Cisco Systems, Inc.

Comment Type **TR**　　*Comment Status* **A**　　　　TX V_CMPP/SCMR (CC)

Following ad hoc presentation ran_3ck_01_032322, it is suggested to provide more specific definitions or guidance for Tx parameters that depend on equalization, to enable reasonable test times, both for design (simulations) and qualification (with instruments).

SCMR is currently defined without reference to equalization setting. The numerator of the SCMR ratio is strongly dependent on equalization setting, while the denominator is mostly independent. So measurements with different equalization will yield different results.

The proposal is to define SCMR with respect to the unequalized pulse peak.

If we have a formal definition of v_peak in 162.9.4.1.2 (subject of another comment), SCMR can just refer to that subclause.

SuggestedRemedy

Delete the sentence "The procedure in 162.9.4.1.1 is used to determine the differential-mode linear fit pulse response p(k)." from the first paragraph.

Change the definition of SCMR to be
SCMR=20*log10(v_peak/V_{CMPP-HF})

In the "Where" list:
v_peak is the is the maximum value of the differential-mode linear fit pulse response p(k), determined using the procedure in 162.9.4.1.1 with equalization off.
- or -
v_peak is defined in 162.9.4.1.2.

Response　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

The following related presentation was reviewed at a previous task force meeting:
https://www.ieee802.org/3/ck/public/adhoc/mar23_22/ran_3ck_adhoc_01_032322.pdf

Per straw polls 12 and 13 there is consensus to measure SCMR with tx equalizer set to "no equalization".

Note that adopted comment R1-3 adds an explicit definition of v_peak in 162.9.4.1.2.

Implement the following with editorial license.

Delete the sentence "The procedure in 162.9.4.1.1 is used to determine the differential-mode linear fit pulse response p(k)." from the first paragraph.

Change the definition of SCMR to be
SCMR=20*log10(v_peak/V_{CMPP-HF})

In the "Where" list:
add: "v_peak is defined in 162.9.4.1.2"
delete the definition of p_max

In 163.9.2.7 and text stating that the common-mode voltage is measured with the TX equalization set to "no equalization".

[Editor's note: CC: 162, 163, 120F]

Straw polls #12 (chicago) and #13 (pick one)
I support SCMR specified with transmit equalizer setting as follows:
A: No equalization
B: All 5 defined presets
C: All valid settings
D: Need more information
#12 -- A: 16 B: 5 C: 2 D: 6
#13 -- A: 13 B: 3 C: 2 D: 5

Note: Straw poll #12 and #13 are the same question and answers except #12 is chicago rules (pick any) and #13 is choose one.

Cl **162**　　*SC* **162.8.11**　　　　*P* **164**　　*L* **35**　　　　# R1-2

Ran, Adee　　　　　　　　　　Cisco Systems, Inc.

Comment Type **ER**　　*Comment Status* **A**　　　　training (bucket1)

"The of use_quiet_in_training (see 136.8.11.7.1) is TRUE"

The word "value" is missing.

SuggestedRemedy

Change to "The value of use_quiet_in_training (see 136.8.11.7.1) is TRUE".

Response　　　　　　　*Response Status* **W**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-2**　　　Page 1 of 14
2022-04-13 3:23:54 PM

Cl **162** *SC* **162.9.4.1.2** *P* **169** *L* **37** # R1-3

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A** *TX V_peak (CC)*

"The linear fit pulse peak ratio Rpeak is defined as the ratio between the maximum value of p(k) and the steady-state voltage vf."

vf is defined in the previous paragraph as "measured with transmit equalizer set to preset 1 (no equalization)" but it may be interpreted as if this holds only for vf and not for p(k). Under this interpretation, Rpeak will be dependent on equalization setting (and will be degraded in other settings).

The intent is to follow the previously defined specifications such that R_peak uses the non-equalized signal (e.g. in 93.8.1.5.2, "The peak value of p(k) shall be greater than 0.71 × vf after the transmit equalizer coefficients have been set to the "preset" values").

Also, it would be useful to have an explicit definition of vpeak for other places that use it, such as the SCMR, RES_ISI, and possibly SNDR specifications. There are definitions in 163A.3.2.1 (reference and measured) but not here.

SuggestedRemedy

With editorial license:
Change the three paragraphs of 162.9.4.1.2 to the following:
"The linear fit pulse peak, v_peak, and steady-state voltage, v_f, are defined using the linear fit pulse response, p(1) through p(M×Nv), measured with transmit equalizer set to preset 1 (no equalization). Nv is set equal to 200. The linear fit procedure for obtaining p and the values of M and Np are defined in 162.9.4.1.1.

v_peak is defined as maximum value of p(k). v_f is defined as the sum of the linear fit pulse p(1) through p(M×Nv) divided by M.

The linear fit pulse peak ratio R_peak is defined as the ratio between v_peak and v_f.

The steady-state voltage and the linear fit pulse peak ratio shall meet the requirements specified in Table 162–10.
"

Apply the new team v_peak in other places that refer to the pulse peak (or will refer to it following resolution of other comments) such as 162.9.4.3, 163.9.2.8, and 163.9.2.6.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the following with editorial license:

Change the three paragraphs of 162.9.4.1.2 to the following:
"The linear fit pulse peak, v_peak, and steady-state voltage, v_f, are defined using the linear fit pulse response, p(1) through p(M×Nv), measured with transmit equalizer set to preset 1 (no equalization). Nv is set equal to 200. The linear fit procedure for obtaining p

and the values of M and Np are defined in 162.9.4.1.1.

v_peak is defined as maximum value of p(k).

v_f is defined as the sum of the linear fit pulse p(1) through p(M×Nv) divided by M.

The linear fit pulse peak ratio R_peak is defined by equation 162-xx.

R_peak = v_peak / v_f (162-xx)

The steady-state voltage and the linear fit pulse peak ratio shall meet the requirements specified in Table 162–10.
"

Apply the new term V_peak in other places that refer to the pulse peak measured with "no equalization" such as 162.9.4.3, 163.9.2.8, and 163.9.2.6.

[Editor's note: CC: 162, 163]

Cl **163** *SC* **163.9.2.8** *P* **207** *L* **15** # R1-4

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *TX V_peak (CC)*

The definition of SCMR uses p_max defined as the maximum of p(k), and the text says "The procedure in 162.9.4.1.1 is used to determine the differential-mode linear fit pulse response p(k)."

That procedure is applicable for any equalizer setting and will yield different p(k) vectors (it is actually used to characterize the equalization coefficients), so with this definition, SCMR depends on equalization setting. This is not helpful, and not practical to verify.

SCMR (and the limit applied to it) should be defined strictly with respect to the pulse peak in the "no equalization" setting.

Alternatively, we can get remove the SCMR specification and instead specify VCMPP-LF and VCMPP-HF, as on clause 162 and annex 120G. These are defined independently of equalization setting.

SuggestedRemedy

Change the equation to use v_peak instead of p_max, and refer to 162.9.4.1.2 for the definition of v_peak (subject of another comment).

Delete the sentence "The procedure in 162.9.4.1.1 is used to determine the differential-mode linear fit pulse response p(k)" (it will become redundant).

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-4** Page 2 of 14
2022-04-13 3:23:54 PM

Cl **0** *SC* **0**   *P* **0** *L* **0** # R1-5

Brown, Matthew   Huawei Technologies Canada

Comment Type **E** *Comment Status* **A**

Keep this draft in line with the new revision (802.3dc) and any amendments that precede 802.3ck.

SuggestedRemedy

Align the next draft with the latest versions of the new revision (802.3df) and any preceding amendments.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Align the next draft with the latest versions of the new revision (802.3dc) and any preceding amendments.

Cl **162** *SC* **162.1**   *P* **153** *L* **46** # R1-8

Brown, Matthew   Huawei Technologies Canada

Comment Type **E** *Comment Status* **A**   *style (bucket1)*

Footnote a in Table 162-1, Table 162-2, and Table 162-3 includes the word must, which is deprecated according the SA Standards Style Manual.

SuggestedRemedy

In Table 162-1, Table 162-2, and Table 162-3 ...
Change: "a conforming implementation must behave functionally"
To: "a conforming implementation behaves functionally"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3ck D3.0 and D3.1 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
However, eliminating the use of "must" is necessary in order to bring the draft into conformance with the SA Standards Style Manual.
Implement the suggested remedy.

Cl **163** *SC* **163.1**   *P* **197** *L* **48** # R1-9

Brown, Matthew   Huawei Technologies Canada

Comment Type **E** *Comment Status* **A**   *style (bucket1)*

Footnote a in Table 163-1, Table 163-2, and Table 163-3 includes the word must, which is deprecated according the SA Standards Style Manual.

SuggestedRemedy

In Table 163-1, Table 163-2, and Table 163-3 ...
Change: "a conforming implementation must behave functionally"
To: "a conforming implementation behaves functionally"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3ck D3.0 and D3.1 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
However, eliminating the use of "must" is necessary in order to bring the draft into conformance with the SA Standards Style Manual.
Implement the suggested remedy.

Cl **162** *SC* **162.8.11**   *P* **165** *L* **24** # R1-10

Lusted, Kent   Intel Corporation

Comment Type **E** *Comment Status* **A**   *training (bucket1)*

In Table 162-9, the coefficient select field has the entry values of "1 0 0= Reserved and "0 1 x = Reserved" underlined. The underlining is not necessary.

SuggestedRemedy

Remove the underlining for the entry values of "1 0 0" Reserved and "0 1 x = Reserved".

Response   *Response Status* **C**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-10** Page 3 of 14
2022-04-13 3:23:54 PM

Cl **FM**　　*SC* **FM**　　　　　　*P* **1**　　　*L* **28**　　　# R1-14

Grow, Robert　　　　　　　　RMG Consulting

Comment Type　**E**　　*Comment Status*　**A**　　　*(bucket1)*

This list is not correct. It also lists five previous amendments yet P802.3cx is identified as Amendment 5.

SuggestedRemedy

If new amendment numbers are assigned for the gaggle of amendments currently assumed to be hitting RevCom in September, obviously use that order. If amendment numbers remain unchanged from the last amendment number assignment, delete P802.3de from this list, and sort in amendment number order.

Response　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.
Align this list with the current amendment order as determined by the Working Group Chair.

Cl **FM**　　*SC* **FM**　　　　　　*P* **11**　　　*L* **17**　　　# R1-15

Grow, Robert　　　　　　　　RMG Consulting

Comment Type　**E**　　*Comment Status*　**A**　　　*(bucket1)*

This paragraph is inconsistent with the current front matter as found in P802.3/D3.2.

SuggestedRemedy

Update for consistency with P802.3/D3.2.

Response　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.
Align this paragraph with latest 802.3 FrameMaker template.

Cl **FM**　　*SC* **FM**　　　　　　*P* **12**　　　*L* **39**　　　# R1-16

Grow, Robert　　　　　　　　RMG Consulting

Comment Type　**E**　　*Comment Status*　**A**　　　*(bucket1)*

The description of Section Nine has changed during balloting of P802.3.

SuggestedRemedy

Update to be consistent with P802.3/D3.2.

Response　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.
Align this paragraph with latest 802.3 FrameMaker template.

Cl **120G**　　*SC* **120G.3.4.3.2**　　　　*P* **271**　　　*L* **33**　　　# R1-17

Calvin, John　　　　　　　　Keysight Technologies

Comment Type　**T**　　*Comment Status*　**A**　　　*HO/MI EH*

Consistent with the groups consensus during polling at the 3/23/2022 Ad-Hoc Session and the presentation:
https://www.ieee802.org/3/ck/public/adhoc/mar23_22/calvin_3ck_adhoc_01_032322.pdf
Reducing the EH target by 20% from 10mV to 8mV in sponsor ballot with no supporting material was a mistake. There is an abundance of TP1A focused empirical data on record in the 802.3 project folders that underscores how little margin there was in achieving a valid VEC at 12-12.5dB evaluated at 10mV.   There are multiple published existence proofs for a TP1A solution at 10mV/12dBVEC.   There are no publicly published existence proofs that 8mV/12dB VEC is attainable.

SuggestedRemedy

Revert the Table "120G–10—Module stressed input parameters" EH value from the current value of 8mV to 10mV where it's been settled to date.

Response　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

As noted in the comment, a related straw poll was taken at the 2022/3/23 ad hoc meeting (straw poll #1) as recorded in the minutes here:
https://www.ieee802.org/3/ck/public/adhoc/mar23_22/minutes_032322_3ck_adhoc.pdf

The straw poll noted above indicated that there was consensus that some remedy was required, but a specific remedy was not determined.

Per straw poll #17 (below), there is consensus to revert the EH specification from 8 mV to 10 mV.

Change the specification for host output EH and module stressed input EH to 10 mV.

Straw poll #17 (chicago) and #18 (pick one)
For module stressed input and host output, I support an EH value of:
A: 8 mV (no change)
B: 9 mV
C: 10 mV (revert to D3.0)
#17 -- A: 6 B: 10 C: 21
#18 -- A: 5 B: 3 C: 18

Note: Straw poll #17 and #18 are the same question and answers except #17 is chicago rules (pick any) and #18 is choose one.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-17**　　　Page 4 of 14
2022-04-13 3:23:54 PM

Cl **162**　　*SC* **162.9.4**　　　　　*P* **167**　　*L* **16**　　　# R1-18

Wu, Mau-Lin　　　　　　　　　MediaTek Inc.

Comment Type　**TR**　　*Comment Status*　**A**　　　*TX ISI_RES (CC)*

The ISI_RES spec of CR are quite different from that for KR. Based on that, the calculation method as well as the spec limit of ISI_RES of CR shall be modified. The detailed analysis had be covered in li_3ck_adhoc_01_030922 & wu_3ck_adhoc_033022.

SuggestedRemedy

Change "Residual intersymbol interference, ISI_RES (max)" from -30 dB to -29 dB in Table 162-10.

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

The following related presentations were reviewed by the task force in a previous ad hoc meeting:
https://www.ieee802.org/3/ck/public/adhoc/mar09_22/li_3ck_adhoc_01_030922.pdf
https://www.ieee802.org/3/ck/public/adhoc/mar30_22/wu_3ck_adhoc_01_033022.pdf

Resolve using the response to comment R1-28.

Cl **163**　　*SC* **163.9.2.6**　　　*P* **206**　　*L* **22**　　　# R1-19

Wu, Mau-Lin　　　　　　　　　MediaTek Inc.

Comment Type　**TR**　　*Comment Status*　**A**　　　*TX ISI_RES (CC)*

The ISI_RES spec of CR are quite different from that for KR. Based on that, the calculation method as well as the spec limit of ISI_RES of CR shall be modified. The detailed analysis had be covered in li_3ck_adhoc_01_030922 & wu_3ck_adhoc_033022.

SuggestedRemedy

Add the following paragraph after the 1st sentence of 163.9.2.6,
"ISI_RES is calculated from measurements with a single transmit equalizer setting to compensate for the loss of the transmitter package and host channel. The equalizer setting is chosen to minimize ISI_RES."

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the task force at a previous ad hoc meeting:
https://www.ieee802.org/3/ck/public/adhoc/mar30_22/wu_3ck_adhoc_01a_033022.pdf

Resolve using the response to comment R1-28.

[Editor's note: CC: 162, 163]

Cl **162**　　*SC* **162.9.4**　　　　　*P* **167**　　*L* **16**　　　# R1-20

Rysin, Alexander　　　　　　　NVIDIA

Comment Type　**TR**　　*Comment Status*　**A**　　　*TX ISI_RES (CC)*

Currently proposed ISI_RES limit is too tight – commercial test equipment with a recommended TP0-TP2 channel loss fail the specification. Using TX FIR to optimize ISI_RES does not help enough. Presentation is planned.

SuggestedRemedy

In table 162-10, change the minimum ISI_RES value to -27. Alternatively, revise the measurement methodology. See separate comments proposing different method.

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

The following related presentation was reviewed by the task force at a previous ad hoc meeting:
https://www.ieee802.org/3/ck/public/22_04/rysin_3ck_01_0422.pdf

Resolve using the response to comment R1-28.

Cl **163**　　*SC* **163.9.2.6**　　　*P* **206**　　*L* **27**　　　# R1-21

Rysin, Alexander　　　　　　　NVIDIA

Comment Type　**TR**　　*Comment Status*　**A**　　　*TX ISI_RES (CC)*

ISI_RES is calculated with Np=11. COM reference receiver uses a 12-tap DFE, which corresponds to Np=17. Presentation is planned.

SuggestedRemedy

In 163.9.2.6 change "with the exception that Np = 11." to: "with the exception that Np=12+Dp+1". Same change in Clause 162.

Response　　　　　　*Response Status*　**U**

ACCEPT IN PRINCIPLE.

The following related presentation was reviewed by the task force at a previous ad hoc meeting:
https://www.ieee802.org/3/ck/public/22_04/rysin_3ck_01_0422.pdf

Resolve using the response to comment R1-28.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-21**　　Page 5 of 14
2022-04-13 3:23:54 PM

Cl **163** *SC* **163.9.2.6** *P* **206** *L* **27** # R1-22

Rysin, Alexander NVIDIA

Comment Type **TR** *Comment Status* **A** *TX ISI_RES (CC)*

ISI_RES is affected by the pulse dispersion when measured at TP2. COM reference receiver uses CTLE to mitigate the effect. Measuring ISI effects with CTLE was adopted in 120D.3.1.7. Presentation is planned.

SuggestedRemedy

In 163.9.2.6 change to: The linear fit pulse response p(k) and error e(k) are determined using the linear fit procedure in 162.9.4.1.1, after these have been recalculated with the continuous time filter described in 93A.1.4.3 using the parameters in Table 163-11 applied and optimized for maximum ISI_RES, with the exception that…".

Alternatively, add the exception only to CL162.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the task force:
https://www.ieee802.org/3/ck/public/22_04/rysin_3ck_01_0422.pdf

Resolve using the response to comment R1-28.

[Editor's note: CC: 163, 162]

Cl **162** *SC* **162.9.4** *P* **167** *L* **16** # R1-23

Rysin, Alexander NVIDIA

Comment Type **TR** *Comment Status* **A** *TX ISI_RES (CC)*

ISI_RES is affected by the pulse dispersion when measured at TP2. COM reference receiver uses CTLE to mitigate the effect. Measuring ISI effects with CTLE was adopted in 120D.3.1.7. Presentation is planned

SuggestedRemedy

Add a comment stating the following:

For the ISI_RES measurement the linear fit pulse response p(k) and error e(k) are determined using the linear fit procedure in 162.9.4.1.1, after these have been recalculated with the continuous time filter described in 93A.1.4.3 using the parameters in Table 163-11 applied and optimized for maximum ISI_RES, with the exception that Np=12+Dp+1".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following related presentation was reviewed by the task force at a previous ad hoc meeting:
https://www.ieee802.org/3/ck/public/22_04/rysin_3ck_01_0422.pdf

Resolve using the response to comment R1-28.

Cl **162** *SC* **162.8.11** *P* **164** *L* **35** # R1-24

Lusted, Kent Intel Corporation

Comment Type **T** *Comment Status* **A** *training (bucket1)*

Implementation issue associated with comment i-48 against D3.0 (see https://www.ieee802.org/3/ck/comments/draft3p0/8023ck_D3p0_final_closedcomments_sortedByNumber.pdf). The text as written for item h of 162.8.11 (page 164) is "The of use_quiet_in_training (see 136.8.11.7.1) is TRUE."

SuggestedRemedy

Change to "The value of use_quiet_in_training (see 136.8.11.7.1) is TRUE." to align with the Accepted response to comment i-48 on Draft 3.0.

Response *Response Status* **C**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-24** Page 6 of 14
2022-04-13 3:23:54 PM

Cl **163A** *SC* **163A.3.1.1** *P* **319** *L* **11** # R1-25

Healey, Adam Broadcom Inc.

Comment Type **T** *Comment Status* **R** *SSV/PP reference (bucket1)*

Equation (52-2) is an expression in terms of an intermediate variable y. Equation (52-3) is needed to map f_r to "y".

SuggestedRemedy

Change "Equation (52-2)" to "Equation (52-2) and Equation (52-3)".

Response *Response Status* **C**

REJECT.
Equation 52-3 follows a "where" statement immediately following Equation 52-2; so it is obvious that Equation 52-2 depends on Equation 52-3 without explicit reference elsewhere.

Cl **FM** *SC* **FM** *P* **24** *L* **44** # R1-27

Healey, Adam Broadcom Inc.

Comment Type **E** *Comment Status* **A** *(bucket1)*

In the table of contents, annex headings break across multiple lines.

SuggestedRemedy

Modify the structure of annex headings per the most recent IEEE 802.3 FrameMaker draft template.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.4** *P* **167** *L* **16** # R1-28

Healey, Adam Broadcom Inc.

Comment Type **TR** *Comment Status* **A** *TX ISI_RES (CC)*

ISI_RES includes the linear fit error computed as part of the SNDR metric and this linear fit error is primarily attributed to distortion. The simulations that served as the basis for the Clause 163 and Annex 120F ISI_RES limits (https://www.ieee802.org/3/ck/public/21_07/dudek_3ck_01_0721.pdf) used linear models with noise-dominated SNDR. Transmitters whose SNDR includes some linear fit error may have difficulty meeting the ISI_RES limit even with otherwise acceptable residual ISI. The limit for Clause 162 was set 1 dB higher but without demonstration that this is sufficient margin for the additional ISI introduced by a host channel. In addition, measurement of the transmitted waveform at the output of a dispersive channel will include an ISI "tail" that will be compensated by the reference receiver. Reflections are the primary focus of the ISI_RES specification and the inclusion of a reference equalizer to compensate the ISI tail would improve that focus. Finally, ISI_RES combines all errors independent of phase while ERL accounts for how the reflections align at the sampling phase. The performance penalty resulting from reflections could be more accurately predicted if such alignment was considered. These concerns can be addressed by the SNR_ISI metric defined in 120D.3.1.7.

SuggestedRemedy

Replace ISI_RES with SNR_ISI as defined in 120D.3.1.7 using the continuous time filter parameters in Table 163-11 and a time offset added to t_p whose value is swept from -0.5 UI to 0.5 UI when calculating ISI_cursors. Define SNR_ISI to be the minimum value found across the time offset sweep. For Clause 162, set N_b to 12 and SNR_ISI (min.) to 26 dB. For Clause 163 and Annex 120F, set N_b to 6 and SNR_ISI (min.) to 28 dB.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following related presentation was reviewed by the task force: https://www.ieee802.org/3/ck/public/22_04/healey_3ck_01_0422.pdf

The following presentation was also reviewed by the task force and captures the results of various straw polls relating to ISI_RES: https://www.ieee802.org/3/ck/public/22_04/ran_3ck_01b_0422.pdf

Based on discussion related to ran_3ck_01b_0422 and the related straw polls, there was consensus to adopt the changes that follow.

Implement the following with editorial license.

Delete 163.9.2.6.

Create a new subclause 162.9.4.x "Transmitter output residual ISI", which defines SNR_ISI based on 120D.3.1.7 with the following additions:
-- The linear fit pulse response p(k) is determined using the linear fit procedure in 162.9.4.1.1.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-28** Page 7 of 14
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-- Use the continuous time filter parameters from Table 162–19 (COM parameters).
--For the calculation of SNR_ISI using Equation (120D-8) use a value of 6 for N_b.
-- Use a time offset added to t_p whose value is swept from -0.5 UI to 0.5 UI when calculating ISI_cursors. Define SNR_ISI as the lowest value found across the time offset sweep.

State that SNR_ISI is measured with transmit equalizer setting, within the required settings, that is chosen to give the highest SNR_ISI value.

In Table 162–10, replace ISI_RES (max) with SNR_ISI (min) with reference to 162.9.4.X and a value of 26.7 dB.

In Table 163–5, replace ISI_RES (max) with SNR_ISI (min) with reference to 162.9.4.X and a value of 28 dB.

In Table 120F–1, replace ISI_RES (max) with SNR_ISI (min) with reference to 162.9.4.X and a value of 28 dB. Add exception that continuous time filter settings are in Table 120F-8.

[Editor's note: CC: 120F, 162, 163]

Cl **162**	*SC* **162.9.3**	*P* **166**	*L* **30**	# R1-29

Ran, Adee   Cisco Systems, Inc.

Comment Type **TR**   *Comment Status* **A**   *TX V_CMPP/SCMR (CC)*

(Cross-clause - 162, 163, 120F, 120G)

VCMPP-LF max value of 60 has no justification. In the presentations mellitz_3ck_01_0122 and mellitz_3ck_02_0122 the suggested limits were 30 mVpp and 40 mVpp for low frequency respectively. mellitz_3ck_adhoc_01_011222 slide 3 shows power supply noise distributions that are mostly below 40 mVpp and the best cases are about 25 mVpp. 60 mVpp was chosen as a result of a straw poll with no data or recorded reason.

We previously had a limit of 25 mV RMS without filtering (including the more significant high-frequency noise). Assuming HF and LF components are independent, the RMS should be the RSS of the RMSs of these components. Assuming uniform distribution of LF noise, 60 mVpp means 17 mV RMS for this component, leaving just 18 mV RMS for the HF component – and we struggled to increase the CM RMS to 25-30 mV mainly because of the HF component! The LF component was supposed to be much lower than that.

Assuming LF CM noise results from power supply noises (the only source that was discussed), a 60 mVpp for all but 1e-4 (which excludes rare events like powering other circuits on or off) would be a very sloppy design which would likely result in other impairments such as excessive jitter.

The LF CM component is not filtered out by the channel so we can expect the same levels at the receiver. The effect of LF CM noise on receivers depends on design, but in general, low-frequency effects may cause periods of higher-than-average BER and result in unexpected FEC failures which will be difficult to debug. We should avoid that by limiting the transmitter's CM noise (much easier to verify).

Same reasoning applies to 163.9.2, 120F.3.1, and 120G.3.1. For AUIs the VCMPP is defined at 1e-5 and the allowed range should be somewhat higher. Scaling by the Q value, the limit should be 13% higher, but I assume LF CM is closer to uniform than to Gaussian so the proposal for AUIs is just 7% higher.

SuggestedRemedy

In 162.9.3 and 163.9.2, change the VCMPP maximum from 60 mV to 30 mV.
In 120F.3.1 and 120G.3.1, change the VCMPP maximum from 60 mV to 32 mV.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Note: This comment pertains specifically to V_CMPP-LF.

Per straw polls 8 and 9 there is consensus to change the specification to 30 mV for 162.9.3 and 163.9.2.

Per straw polls 10 and 11 there is consensus to change the specification to 32 mV for 120F.3.1 and 120G.3.1.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

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In 162.9.3 and 163.9.2 change V_CMPP-LF (max) to 30 mV.

In 120F.3.1 and 120G.3.1 change V_CMPP-LF (max) to 32 mV.

Straw Poll #8 (chicago) and #9 (choose 1)
For 162.9.3 and 163.9.2, I support the following value for the V_CMPP-LF (max) value:
A: 30
B: 45
C: 60
#8 -- A: 17 B: 11 C: 5
#9 -- A: 15 B: 5 C: 2

Straw Poll #10 (chicago) and #11 (choose 1)
For 120F.3.1 and 120G.3.1, I support the following value for the V_CMPP-LF (max) value:
A: 32
B: 46
C: 60
#10 -- A: 17 B: 11 C: 4
#11 -- A: 16 B: 6 C: 1

Note: Straw poll #8 and #9 are the same question and answers except #8 is chicago rules (pick any) and #9 is choose one.

Note: Straw poll #10 and #11 are the same question and answers except #10 is chicago rules (pick any) and #11 is choose one.

[Editor's note: CC 120F, 120G, 163]

Cl **162**	*SC* **162.9.4.1.1**	*P* **167**	*L* **6**	# R1-30

Ran, Adee   Cisco Systems, Inc.

Comment Type **TR**   *Comment Status* **A**   *TX RLM (CC)*

(Cross-clause - 162, 163, 120F)

Following ad hoc presentation ran_3ck_01_032322, it is suggested to provide more specific definitions or guidance for Tx parameters that depend on equalization, to enable reasonable test times, both for design (simulations) and qualification (with instruments).

For RLM, the reference is 120D.3.1.2, which does not specify an equalization setting, although RLM can vary between equalization settings. We want high RLM at the setting that is actually used, but for test purposes, the 5 presets should provide sufficient coverage.

SuggestedRemedy

Add a subclause under 162.9.4 with heading "Transmitter linearity" and the following content:
"Transmitter linearity is defined using the method in 120D.3.1.2.
The transmitter linearity shall meet the requirement specified in Table 162–10 when the transmitter equalization is set to any of the initial conditions defined in Table 162-11."

Change the references of RLM in Table 163–5 and Table 120F–1 to point to the new subclause.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ck D3.0 and D3.1 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, the need to account for equalization effects in the transmitter specifications was addressed in the following presentation, which was reviewed by the task force at a previous ad hoc meeting:
https://www.ieee802.org/3/ck/public/adhoc/mar23_22/ran_3ck_adhoc_01_032322.pdf

Implement the suggested remedy with editorial license.

[Editor's note: CC 120F, 162, 163]

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-30**   Page 9 of 14
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Cl **162**　　*SC* **162.9.4.3**　　　*P* **171**　　*L* **8**　　# R1-31

Ran, Adee　　　　　Cisco Systems, Inc.

Comment Type **TR**　　*Comment Status* **A**　　　*TX SNDR*

(Cross-clause - 162, 163, 120F)

Following ad hoc presentation ran_3ck_01_032322, it is suggested to provide more specific definitions or guidance for Tx parameters that depend on equalization, to enable reasonable test times, both for design (simulations) and qualification (with instruments).

SNDR can depend on equalization setting, but the current definition (reference to 120D.3.1.6) and requirements are generic and can be applied to any equalization setting. We want high SNDR at the setting that is actually used, but for test purposes, the 5 presets should provide sufficient coverage. This would also eliminate unrealistic equalization settings in which the current requirement may be impossible to meet.

The proposed change is on 162.9.4.3, and since 163 and 120F refer back to this subclause it would apply there too.

SuggestedRemedy

Add the following paragraph at the end of 162.9.4.3.:

The transmitter SNDR shall meet the requirement specified in Table 162–10 when the transmitter equalization is set to any of the initial conditions defined in Table 162-11.

Response　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment does not apply to the substantive changes between IEEE P802.3ck D3.0 and D3.1 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.

However, the need to account for equalization effects in the transmitter specifications was reviewed in the following presentation, which was reviewed by the task force in a previous ad hoc meeting:
https://www.ieee802.org/3/ck/public/adhoc/mar23_22/ran_3ck_adhoc_01_032322.pdf.

Implement the suggested remedy with editorial license.

[Editor's note: CC 120F, 163]

Cl **163**　　*SC* **163.9.2.6**　　　*P* **206**　　*L* **27**　　# R1-32

Ran, Adee　　　　　Cisco Systems, Inc.

Comment Type **TR**　　*Comment Status* **A**　　　*TX ISI_RES (CC)*

*** Comment submitted with the file image.png attached ***

(Cross-clause - 162, 163, 120F)
(The attached file is a mistake, I can't remove it, should be ignored)

Following ad hoc presentation ran_3ck_01_032322, it is suggested to provide more specific definitions or guidance for Tx parameters that depend on equalization, to enable reasonable test times, both for design (simulations) and qualification (with instruments).

ISI_RES as currently defined is strongly dependent on equalization setting. Meeting the existing limit with equalization off may be impossible for CR devices due to ISI resulting from the dispersive loss between TP0 and TP2. Tx equalization can mitigate that, while emphasizing reflections in the path, which is the intent of this specification.

Excessive equalization will reduce the pulse peak and may degrade ISI_RES, so we should not specify it at any equalization setting, but rather allow equalization optimized to minimize ISI_RES.

SuggestedRemedy

Add the following paragraph after equation 163-1 and its variable list:

ISI_RES is calculated from measurements with a single transmit equalizer setting to compensate for the loss of the transmitter package and test fixture. The equalizer setting is chosen to minimize ISI_RES.

Response　　　　　*Response Status* **W**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the task force at a previous ad hoc meeting: https://www.ieee802.org/3/ck/public/adhoc/mar23_22/ran_3ck_adhoc_01_032322.pdf

Resolve using the response to comment R1-28.

[Editor's note: CC: 162, 163, 120F]

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-32**

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Cl **163**   *SC* **163.9.2.6**   *P* **206**   *L* **20**   # R1-33

Ran, Adee   Cisco Systems, Inc.

Comment Type   **E**   *Comment Status*   **A**   *TX ISI_RES (CC)*

The residual intersymbol interference specification was initially added to clause 163 but subsequently used in 162 and 120F. Its placement in clause 163 is unusual, since most other definitions are placed in 162 and are referred to by the other clauses.

It would be more friendly for readers if all definitions were found in one clause.

SuggestedRemedy

Move subclause 163.9.2.6 to clause 162, and change the references in Table 162–10, Table 163–5, and Table 120F–1 to point to the new subclause.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment R1-28.

[Editor's note: CC: 162, 163, 120F]

Cl **163**   *SC* **163.9.2.7**   *P* **206**   *L* **39**   # R1-34

Ran, Adee   Cisco Systems, Inc.

Comment Type   **E**   *Comment Status*   **A**   *TX V_CMPP/SCMR (CC)*

The placement of the Peak-to-peak AC common-mode voltage specification in clause 163 is unusual, since most of the definitions are placed in 162 and are referred to by the other clauses.

It would be more friendly for readers if all definitions were found in one clause.

Since 163.9.2.8 defines SCMR which is currently not used by clause 162, it should stay in clause 163. But if SCMR is used also in 162 (subject of another comment) then 163.9.2.8 should be moved too.

SuggestedRemedy

Move subclause 163.9.2.7 to clause 162, and change the references in Table 162–10, Table 163–5, and Table 120F–1 to point to the new subclause.

If SCMR is used in 162 (subject of another comment), also move 163.9.2.8 to clause 162.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Comment R1-35 proposes to replace V_CMPP-HF with SCMR in Clause 162 and Annex 120G. However, the resolution was to retain V_CMPP-HF.

Move subclause 163.9.2.7 to clause 162, and change the references in Table 162–10, Table 163–5, and Table 120F–1 to point to the new subclause.

Implement with editorial license.

For task force discussion.

[Editor's note: CC: 162, 163, 120F]

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-34**   Page 11 of 14
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Cl **162**   *SC* **162.9.4**   *P* **166**   *L* **31**   # R1-35

Ran, Adee   Cisco Systems, Inc.

Comment Type **TR**   *Comment Status* **R**   TX V_CMPP/SCMR (CC)

(cross-clause - 162 and 120G)
Clause 162 has a specification for V_CMPP-HF directly and not as a ratio of the pulse peak, while clause 163 and annex 120F have the SCMR specification instead.

Since the TP0-TP2 channel can attenuate the both high-frequency common mode noise and the differential signal, the reasoning for using a ratio here is as strong as it is in TP0v. It would be easier for readers to have consistent specification methods.

The SCMR limit for TP2 is suggested based on the limit in Table 163–5, with a relaxation of 1 dB due to possible mode conversion in the longer TP0-TP2 channel.

Applies similarly for clause 120G (at both TP1a and TP4).

SuggestedRemedy

In 162, replace the V_CMPP_HF (max) specification to SCMR (min), pointing to the definition in 163.9.2.8, with a value of 14 dB.

In 120G, apply a similar change, but use 120F.3.1.2 as a reference, and change the reference of VCMPP-LF to 120F.3.1.1 (which have the same 1e-5 probability).

Delete the new content about VCMPP in 120G.5.1.

Response   *Response Status* **U**

REJECT.

Per straw polls 14 and 15, there is no consensus to make the proposed changes.

Straw poll #14
For Clause 162, I support replacing V_CMPP-HF with SCMR:
Yes: 3
No: 20

Straw poll #15
For Annex 120G, I support replacing V_CMPP-HF with SCMR:
Yes: 3
No: 19

Cl **120**   *SC* **120.5.11.2.a**   *P* **110**   *L* **30**   # R1-37

Ran, Adee   Cisco Systems, Inc.

Comment Type **ER**   *Comment Status* **A**   (bucket1)

Some separation between the text and the sequence would be nice.

SuggestedRemedy

Add an empty paragraph before the sequence.

Consider moving the sequence and the text referring to it after equation 120-1.

Response   *Response Status* **W**

ACCEPT IN PRINCIPLE.
This comment does not apply to the substantive changes between IEEE P802.3ck D3.0 and D3.1 or the unsatisfied negative comments from previous drafts. Hence it is not within the scope of the recirculation ballot.
However, adding a vertical space prior to the sequence would be helpful. The sequence is part of the paragraph, so it should not be moved to be after the equation. There is no obvious formatting mechanism to reference text in this form.
Add a vertical space between the sequence and the rest of the paragraph above.
This is a not a substantive change to the draft.

Cl **120G**   *SC* **120G.4.1**   *P* **273**   *L* **18**   # R1-38

Ran, Adee   Cisco Systems, Inc.

Comment Type **E**   *Comment Status* **A**   (bucket1)

120G.4 has only a single subclause 120G.4.1 and no other content. The extra hierarchy level is unnecessary.

SuggestedRemedy

Delete the 120G.4 paragraph and promote 120G.4.1 to second-level.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
The IEEE SA Standards Style Manual subclause 13.1 states: "Clauses and subclauses should be divided into further subclauses only when there is more than one subclause. For example, Clause 1 should not have a 1.1 unless there is also a 1.2." This further supports this comment.
Delete subclause heading "120G.4 Channel characteristics"
Change subclause heading "120G.4.1 Channel insertion loss (recommended)" to "120G.4 Channel insertion loss (recommended)"
Implement with editorial license.
This is not a substantive change to the draft.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-38**

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Cl **162A**   *SC* **162A.4**   *P* **285**   *L* **1**   # R1-41

Dawe, Piers J G   NVIDIA

Comment Type **T**   *Comment Status* **R**   *channel equations*

The equation for the channel from TP0 to TP2 or from TP3 to TP5 including the test fixture should be checked for consistency with the equations for the PCB, the mated test fixtures, and the cable test fixture traces, although there won't be a perfect match because of the allowances for ball grid array (BGA) footprint and host connector footprints, as well as the difference between product connector and test fixture connector.

SuggestedRemedy

Response   *Response Status* **C**

REJECT.

The following related presentation providing further evidence and a proposal was reviewed by the task force:
https://www.ieee802.org/3/ck/public/22_04/dawe_3ck_02b_0422.pdf

Per straw poll #19 there is no consensus to make the proposed changes.

Strawpoll #19 (decision)
I support changing the TP0-to-TP2 and TP3-to-TP5 ILdd_hostMAX as proposed in slides 6 and 7 of dawe_3ck_02b_0422.
Yes: 7
No: 10

Cl **162**   *SC* **162.9.4**   *P* **166**   *L* **30**   # R1-42

Dawe, Piers J G   NVIDIA

Comment Type **T**   *Comment Status* **A**   *TX V_CMPP/SCMR (CC)*

Now the host has two opportunities to create AC CM and ifg it takes both, it can create much more than in the previous draft. This applies to C2M also.

SuggestedRemedy

Keep the new specs, but reinstate the all-frequencies RMS limit. Also in Table 120G-1.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The resolution to comment R1-29 changed the maximum value of V_CMPP-LF to 30 mV for Annex 120F and Clause 163 and to 32 mV for Annex 120G and
Clause 162. This change sufficiently bounds the combination of low-frequency and high-frequency common-mode voltage.

No additional changes are required.

Cl **162**   *SC* **162.9.4.1.2**   *P* **169**   *L* **37**   # R1-44

Dawe, Piers J G   NVIDIA

Comment Type **T**   *Comment Status* **A**   *TX V_peak (CC)*

"ratio between" is ambiguous: the reader doesn't know which way round the fraction is calculated.

SuggestedRemedy

Change "the ratio between the maximum value of p(k) and the steady-state voltage vf" to "the maximum value of p(k) divided by the steady-state voltage vf"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #3.

Cl **163**   *SC* **163.9.2.7**   *P* **207**   *L* **4**   # R1-53

Dawe, Piers J G   NVIDIA

Comment Type **T**   *Comment Status* **R**   *TX V_CMPP/SCMR (CC)*

The 4th order filter of 93A-20 would work, but it seems a bit fussy, and probably not what noise meters use.

SuggestedRemedy

Use a first order filter or whatever commercial test equipment uses.

Response   *Response Status* **C**

REJECT.

Per discussion, the currently defined filter is supportable in common test equipment. There is no need to make changes to the filter definition.

[Editor's note: CC: 163, 162, 120F, 120G]

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-53**   Page 13 of 14
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Cl **120G**   *SC* **120G.5.2**   *P* **275**   *L* **50**   *#* R1-55

Dawe, Piers J G   NVIDIA

Comment Type **TR**   *Comment Status* **R**   *EH/VEC test method*

As noted, this weighting function skews the spec to passing signals with relatively bad eye width, whether from jitter or other cause, which endanger the link BER, while failing signals with usable VEC and eye height and better eye width.

SuggestedRemedy

Pick one of the proposed solutions and fix the problem. Notice that the apparent VEC and EH numbers are likely to change in step.

Response   *Response Status* **U**

REJECT.

This comment is a restatement of D3.0 comments i-211 and i-212 recorded in the following comment report:
https://www.ieee802.org/3/ck/comments/draft3p0/8023ck_D3p0_final_closedcomments_sortedByNumber.pdf

No further evidence nor any alternate remedies are provided.

Straw poll #11 (recorded in the response to comment i-211) indicated consensus to make no changes to the measurement method.

Cl **162A**   *SC* **162A**   *P* **283**   *L* **15**   *#* R1-56

Dawe, Piers J G   NVIDIA

Comment Type **E**   *Comment Status* **A**   *style (bucket1)*

"TP0 and TP5 that might not be testable": see style guide and D3.0 comment 214 (accepted for here)

SuggestedRemedy

TP0 and TP5, which might not be testable. Also in 162.8.1

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
The IEEE Standards Style Manual subclause 10.2 states "The words that and which are commonly misused; they are not interchangeable. That is best reserved in essential (or restrictive) clauses, which is appropriate in nonessential (or nonrestrictive) parenthetical clauses. Simply stated, if a comma can be inserted before the word that or which, the word should be which. If a comma would not be used, the word to use is that."
The sentence should therefore be changed as proposed in the suggested remedy.
In 162A.1 (page 283 line 15) and 162.8.1 (page 161 line 37)...
Change: "TP0 and TP5 that might not be testable"
To: "TP0 and TP5, which might not be testable"
[Editor's note: Changed page number from 284 to 283.]
[Editor's note: CC: 162, 162A]

Cl **120F**   *SC* **120F.3.1.2**   *P* **241**   *L* **4**   *#* R1-59

Ran, Adee   Cisco Systems, Inc.

Comment Type **E**   *Comment Status* **A**   *(bucket1)*

"with the exception the high-frequency peak-to-peak AC common-mode voltage is defined in 120F.3.1.1"

Missing "that".

SuggestedRemedy

Change to "with the exception that the high-frequency peak-to-peak AC common-mode voltage is defined in 120F.3.1.1".

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.
There is another grammar error in this sentence: "are" should be "is".
Change: "Signal to AC common-mode noise ratio are defined by the method specified in 163.9.2.8 with the exception the high-frequency peak-to-peak AC common-mode voltage is defined in 120F.3.1.1."
To: "Signal to AC common-mode noise ratio is defined by the method specified in 163.9.2.8 with the exception that the high-frequency peak-to-peak AC common-mode voltage is defined in 120F.3.1.1."
This is not a substantive change to the draft.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Comment ID

Comment ID **R1-59**   Page 14 of 14
2022-04-13 3:23:55 PM