

CI **69B** SC **69B.4** P **211-218** L **204** # **10**
 DiMinico, Chris MC Communications

Comment Type **TR** Comment Status **R**

Page: 211-218
 Line: 204

To ensure interoperability channel parameters are typically normatively specified and included in the performance implementation conformance statement (PICS). The channel parameters are identified, in part, to enable appropriate tests against by which to assess the claim for conformance of the implementation. The PICS for Clause 45 (802.3ap-200x) does not include channel parameters and/or appropriate specifications/tests to ensure interoperability.

Annex 69B provides informative interconnect characteristics for differential, controlled impedance traces up to 1 m, including two connectors, on printed circuit boards residing in a backplane environment. Although Annex 69B states that the interconnect characteristics can be applied to a specific implementation of the full path (including transmitter and receiver packaging and supporting interaction of these components, the interconnect characteristics are not normatively specified and more importantly are not directly tied to appropriate tests (PICS) to ensure interoperability.

Recognizing that a backplane interconnect is highly dependent on implementation and the need to enable system trade-offs for the designer, a subset of draft 2.4 channel parameters may be sufficient to ensure interoperability.

Suggested Remedy

Clause: 69B
 Page 204
 Line: 3
 Change informative to normative.

Add shall statements to the channel parameters necessary to enable appropriate tests by which to assess the claim for conformance of the implementation. Include those channel parameters in the Clause 45 (802.3ap-200x) PICS and/or appropriate specifications/tests to ensure interoperability.

Subclause: 69B.4.6.4
 Page 213: Line 16.
 Replace: It is recommended that ICRfit, offset by PILD and PSYS, be greater than or equal to ICRmin as defined in Equation (69Bû26).

With: ICRfit, offset by PILD and PSYS, shall be greater than or equal to ICRmin as defined in Equation (69Bû26).

Subclause: 69B.4.5.
 Page 210: Line 28:
 Replace: It is recommended that the channel return loss, RL, measured in dB at TP1 and TP4, be greater than or equal to RLminà.
 With: The channel return loss, RL, measured in dB at TP1 and TP4, shall be greater than

or equal to RLminà.

Subclause: 69B.4.4.
 Page 209: Line 34

Replace: It is recommended that ILD be within the high confidence region defined by Equation (69Bû10) and Equation (69Bû11):
 With: The ILD shall be within the high confidence region defined by Equation (69Bû10) and Equation (69Bû11):

Response **Response Status W**
 REJECT.

This comment was received after close of ballot and is not considered a binding comment. The Task Force is not obligated to consider this comment.

The question of normative vs. informative channel parameters was asked at the at the initial working group ballot and revisited at the 1st and 2nd working group recirculations. In each case, the Task Force has consistently adopted the position currently reflected in the current draft, as confirmed via Task Force motions. The question has been answered and met the requirements for recirculation.

For additional detail regarding rationale, refer to the responses to Draft 2.0 comment #318 and Draft 2.1 comment #57

Strawpoll #1:
 Accept the response as it is written

Yes: 14
 No: 4
 Abstain: 14

CI 69B SC 69B.4.1 P 206 L 11 # 6
DiMinico, Chris MC Communications

Comment Type T Comment Status R

The range of frequencies over which the insertion loss parameters are specified (channel bandwidth) for each port type should be related to the port type signaling speed (signal bandwidth) or a rationale (technical justification) to characterize the channel bandwidth beyond the signal bandwidth should be provided. Why does fmax=15 GHz apply to all port types, e.g., KX,KX4 and KR. Why is the KR channel characterized to fmax=15 GHz?

In addition, it would be helpful to have a single range of frequencies for the insertion loss parameter specifications for each port type or provide the rationale (technical basis) for the three different frequency ranges. Draft 2.4 includes channel parameters specified over three different frequency ranges (fmin to fmax), (f1 to f2), and (fa to fb).

Summary Draft 2.4

1. IL(f) and the A(f) ILD allowance are specified from fmin to fmax
2. Amax(f) frequency range is not explicitly specified.
3. ICR(f) \hat{u} is specified from fa to fb
4. A(f) is specified from f1 to f2.
5. ILD(f) is specified from f1 to f2. For frequencies from f2 to fmax the ILD is bounded by ILmax(f).

SuggestedRemedy

1. Delete fmin parameter: Table 69B-1
2. Delete fmax parameter: Table 69B-1
3. Select either (f1 to f2) or (fa to fb) to reconcile ambiguity in frequency ranges for the insertion loss parameters (including Amax).
4. Limit the channel frequency specification range (f1 to f2 or fa to fb) to the required signal bandwidth for each port type.

Response Response Status C

REJECT.

This comment was received after close of ballot and is not considered a binding comment. The Task Force is not obligated to consider this comment.

In addition, this comment is out of the scope of the recirculation ballot as it does not apply to changed text.

While it may be possible to simplify the set of frequency ranges over which channel parameters are evaluated, the ranges and parameter limits have been demonstrated, via presentations to the Task Force, to effectively screen channels that will interoperate with compliant transmitters and receivers from those that do not.

Any proposal that modifies the frequency ranges or parameters must demonstrate equivalent or superior screening capabilities to be considered. The proposed modifications have not yet been demonstrated to meet this criteria.

Strawpoll #2

Accept the response as it is currently written

Yes: 18
No: 4
Abstain: 11

CI 69B SC 69B.4.3 P 208 L 3-50 # 8
DiMinico, Chris MC Communications

Comment Type T Comment Status R

Page: 208-209
Line: 3-50 and 2-24
Please clarify high confidence region. Is it bounded by ILmax or Amax?
I/Em assuming ILmax.

SuggestedRemedy

Either remove text "high confidence region" or remove Amax in Figure 69B-2, 69B-3, and 69B-4

Response Response Status C

REJECT.

This comment was received after close of ballot and is not considered a binding comment. The Task Force is not obligated to consider this comment.

In addition, this comment is out of the scope of the recirculation ballot as it does not apply to changed text.

The figure combines two curves to conserve space. There are two "high confidence" regions illustrated in the figures. The first applies to the fitted attenuation and is above and to the right of the line labeled Amax. The second is above and to the right of the line labeled ILmax and applies to the insertion loss parameter. The text and equations that are illustrated by the referenced figures clearly delineates the respective high confidence regions.

Strawpoll #3

Accept the response as it is currently written

Yes: 14
No: 2
Abstain:8

Cl 69B SC 69B.4.3 P 208-209 L 3-50 # 7
DiMinico, Chris MC Communications

Comment Type T Comment Status R

Page: 208-209

Line: 3-50 and 2-24

The range of frequencies over which the insertion loss parameters are specified (channel bandwidth) for each port type should be related to the port type signaling speed (signal bandwidth) or the rationale (technical justification) to characterize the channel bandwidth beyond the signal bandwidth should be explicitly provided.

SuggestedRemedy

Limit the channel frequency specification (channel bandwidth) ranges plotted in Figure 69B-2, 69B-3, and 69B-4 to the required signal bandwidth for each port type (f1 to f2 or fa to fb).

Response Response Status C

REJECT.

This comment was received after close of ballot and is not considered a binding comment. The Task Force is not obligated to consider this comment.

In addition, this comment is out of the scope of the recirculation ballot as it does not apply to changed text.

Refer to comment #6.

Strawpoll #4

Accept the response as it is currently written

Yes:15

No:2

Abstain:12

Cl 69B SC 69B.4.6.4 P 212 L # 9
DiMinico, Chris MC Communications

Comment Type T Comment Status R

1. In equation (69B-24) the PILD calculation results in a -0.8 penalty when $ILD=0$ and $A(fb) = Amax(fb)$?

2. The IL deviations in 802.3ap is defined as the difference between the $IL(f)$ and the least mean squares fit $A(f)$. $ILD(f)$ exhibits an oscillatory behavior over frequency. The PILD results in a level offset penalty and may not appropriately account for the oscillatory ILD channel self-interference.

3. The source of the channel self-interference impairments generally associated with the oscillatory behavior is the re-reflected propagating waves (forward echo) often considered directly as a noise penalty.

SuggestedRemedy

Consider ILD as defined in 802.3ap directly as a noise penalty and include explicitly as a requirement for the test channel specified in 69A.2.2 test channel.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

This comment was received after close of ballot and is not considered a binding comment. The Task Force is not obligated to consider this comment.

It is acknowledged that the PILD calculation yields a negative penalty when there is no insertion loss deviation in the channel and the fitted attenuation, A, of the channel at frequency fb is equal to Amax at that same frequency. This indicates the ICR limit, as defined, assumes a minimum 0.8 dB penalty related to these parameters.

While the PILD calculation may be modified per the suggested remedy (which, however, does not clearly define a substitute noise penalty formulation), the current equation has been demonstrated, via presentations to the Task Force, to effectively screen channels that will interoperate with compliant transmitters and receivers from those that do not.

Any proposal that modifies this equation must demonstrate equivalent or superior screening capabilities to be considered. The proposed modifications have not yet been demonstrated to meet this criteria.