

## IEEE P802.3cr D3.1 Maintenance #14: Isolation 1st Sponsor recirculation ballot comments

CI J SC J.1 P120 L25 # R1-1  
 Zimmerman, George CME Consulting, Analog&nbsp;Devices,&nbsp;Cisco,  
 Comment Type E Comment Status D  
 ", or one produced by..." - the way this reads, it appears to give two choices for the waveform shape; however, I believe what is meant is that the K.44 reference is giving an example of the 1.2/50 waveform shape.  
 SuggestedRemedy  
 change ", or one produced by" to ", such as one produced by"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI J SC J.1 P120 L34 # R1-2  
 Zimmerman, George CME Consulting, Analog&nbsp;Devices,&nbsp;Cisco,  
 Comment Type E Comment Status D  
 Notes should be in "Note" style.  
 SuggestedRemedy  
 Change style of paragraph, lines 34-38, to Note, make Note "NOTE"  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI J SC J.3 P121 L1 # R1-3  
 Zimmerman, George CME Consulting, Analog&nbsp;Devices,&nbsp;Cisco,  
 Comment Type E Comment Status D  
 In the title, it appears "J.3" and the title text beginning with "for " is a smaller font size (11pt) than "Protocol implementation... Proforma".  
 SuggestedRemedy  
 correct font in title of J.3. Whichever it should be....  
 Proposed Response Response Status W  
 PROPOSED ACCEPT.

CI 0 SC 0 P L # R1-4  
 Maytum, Michael Retired, Retired/Unemployed  
 Comment Type GR Comment Status D  
 In many places the term isolation has been added to replace or used in parallel with existing words. A particular case is isolation and insulation. These two terms have different technical meanings. The addition or change the to document terms, alters the technical intent of the original text. These changes could invalidate the compliance of existing equipment and restricts a designers circuit options.  
 SuggestedRemedy  
 revert insertions and overwrites  
 Proposed Response Response Status W  
 PROPOSED ACCEPT IN PRINCIPLE.  
 TFTD  
 Consider text as shown in  
[https://www.ieee802.org/3/cr/public/091020/AnnexJ\\_Consensus\\_Text\\_091020.pdf](https://www.ieee802.org/3/cr/public/091020/AnnexJ_Consensus_Text_091020.pdf)

## IEEE P802.3cr D3.1 Maintenance #14: Isolation 1st Sponsor recirculation ballot comments

CI 0 SC 0 P40 L17 # R1-5

Maytum, Michael Retired,Retired/Unemployed

Comment Type TR Comment Status D

The following has been deleted  
 "c) An impulse test consisting of a 1500 V, 10/700 µs waveform, applied 10 times, with a 60 s interval between pulses. The shape of the impulses shall be 10/700 µs (10 µs virtual front time, 700 µs virtual time of half value), as defined in IEC 60950-1:2001 Annex N."  
 and replaced by  
 "This electrical isolation shall meet the isolation requirements as specified in J.1."  
 However, electrical strength test c) in J.1 is 2.4 kV, 1.2/50, not 1.5 kV, 10/700 making a change to the original technical requirement.

#### SuggestedRemedy

Revert to the original 1.5 kV, 10/700 test while still referencing J.1. Suggested correction is

"This electrical isolation shall meet the isolation requirements as specified in J.1. with electrical strength test c) details being replaced by "An impulse test consisting of a 1500 V, 10/700 waveform, applied 10 times, with a 60 s interval between pulses. The shape of the impulses is 10/700 (10 µs virtual front time, 700 µs virtual time to half value), as defined in ITU-T Recommendation K.44."

Proposers note: Annex N states "The impulse test circuit for the 10/700 µs (10 µs virtual front time, 700 µs virtual time to half value) impulse is that specified in ITU-T Recommendation K.17". K.17 has been withdrawn, but its 10/700 content has been incorporated into ITU-T Recommendation K.44.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

CI 0 SC 0 P112 L26 # R1-6

Maytum, Michael Retired,Retired/Unemployed

Comment Type TR Comment Status D

The following has been deleted  
 "c) An impulse test consisting of a 1500 V, 10/700 µs waveform, applied 10 times, with a 60 s interval between pulses. The shape of the impulses shall be 10/700 µs (10 µs virtual front time, 700 µs virtual time of half value), as defined in IEC 60950-1:2001 Annex N."  
 and replaced by  
 "This electrical isolation shall meet the isolation requirements as specified in J.1."  
 However, electrical strength test c) in J.1 is 2.4 kV, 1.2/50, not 1.5 kV, 10/700 making a change to the original technical requirement.

#### SuggestedRemedy

Revert to the original 1.5 kV, 10/700 test while still referencing J.1. Suggested correction is

"This electrical isolation shall meet the isolation requirements as specified in J.1. with electrical strength test c) details being replaced by "An impulse test consisting of a 1500 V, 10/700 waveform, applied 10 times, with a 60 s interval between pulses. The shape of the impulses is 10/700 (10 µs virtual front time, 700 µs virtual time to half value), as defined in ITU-T Recommendation K.44."

Proposers note: Annex N states "The impulse test circuit for the 10/700 µs (10 µs virtual front time, 700 µs virtual time to half value) impulse is that specified in ITU-T Recommendation K.17". K.17 has been withdrawn, but its 10/700 content has been incorporated into ITU-T Recommendation K.44.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

## IEEE P802.3cr D3.1 Maintenance #14: Isolation 1st Sponsor recirculation ballot comments

CI 0 SC 0 P L # R1-7

Maytum, Michael Retired,Retired/Unemployed

Comment Type G Comment Status D

There are a large number of clauses dealing with electrical isolation that are not consistent in title

8.3.2.1 Electrical isolation

9.9.3.1 Electrical isolation

12.10.1 Isolation

14.3.1.1 Isolation requirement

15.3.4 Electrical isolation

23.5.1.1 Isolation requirement

25.4.6 Replacement of 8.4.1, "UTP isolation requirements"

32.6.1.1 Isolation requirement

33.4.1 Isolation

40.6.1.1 Isolation requirement

55.5.1 Isolation requirement

113.5.1 Isolation requirement

126.5.1 Isolation requirement

145.4.1 Isolation

J.1 Electrical isolation

J.3.4.1 Electrical isolation

SuggestedRemedy

Re-title the following to "Electrical isolation"

12.10.1 Isolation

14.3.1.1 Isolation requirement

23.5.1.1 Isolation requirement

32.6.1.1 Isolation requirement

40.6.1.1 Isolation requirement

55.5.1 Isolation requirement

113.5.1 Isolation requirement

126.5.1 Isolation requirement

33.4.1 Isolation

145.4.1 Isolation

change

25.4.6 Replacement of 8.4.1, "UTP isolation requirements"

to

25.4.6 Replacement of 8.4.1, "UTP electrical isolation"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

CI 0 SC 0 P120 L19 # R1-8

Maytum, Michael Retired,Retired/Unemployed

Comment Type TR Comment Status D

following electrical <strength> isolation tests:

SuggestedRemedy

re-instate original text

following electrical strength tests:

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

CI 0 SC 0 P120 L31 # R1-9

Maytum, Michael Retired,Retired/Unemployed

Comment Type TR Comment Status D

Incorrect

Recommendation ITU-<1:2018>T K.44.

SuggestedRemedy

Correct to

ITU-T Recommendation K.44

Proposed Response Response Status W

PROPOSED ACCEPT.

## IEEE P802.3cr D3.1 Maintenance #14: Isolation 1st Sponsor recirculation ballot comments

CI 0 SC 0 P120 L37 # R1-10

Maytum, Michael Retired,Retired/Unemployed

Comment Type TR Comment Status D

This text mixes isolation and insulation, which are technically not the same thing.

There shall be no failure of the isolation barrier or insulation breakdown during the test. Failure of the isolation barrier or insulation breakdown is considered to have occurred when the current that flows as a result of the application of the test voltage, rapidly increases in an uncontrolled manner; that is, the isolation barrier or insulation does not restrict the flow of the current.

*SuggestedRemedy*

re-instate original text, which refers to insulation.

There shall be no insulation breakdown during the test. Insulation breakdown is considered to have occurred when the current that flows as a result of the application of the test voltage, rapidly increases in an uncontrolled manner; that is, the insulation does not restrict the flow of the current.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD

Consider text as shown in  
[https://www.ieee802.org/3/cr/public/091020/AnnexJ\\_Consensus\\_Text\\_091020.pdf](https://www.ieee802.org/3/cr/public/091020/AnnexJ_Consensus_Text_091020.pdf)

CI 0 SC 0 P40 L17 # R1-11

Maytum, Michael Retired,Retired/Unemployed

Comment Type TR Comment Status D

The following has been deleted

"c) An impulse test consisting of a 1500 V, 10/700  $\mu$ s waveform, applied 10 times, with a 60 s interval between pulses. The shape of the impulses shall be 10/700  $\mu$ s (10  $\mu$ s virtual front time, 700  $\mu$ s virtual time of half value), as defined in IEC 60950-1:2001 Annex N."

and replaced by

"This electrical isolation shall meet the isolation requirements as specified in J.1."

However, electrical strength test c) in J.1 is 2.4 kV, 1.2/50, not 1.5 kV, 10/700 making a change to the original technical requirement.

*SuggestedRemedy*

Revert to the original 1.5 kV, 10/700 test while still referencing J.1. Suggested correction is

"This electrical isolation shall meet the isolation requirements as specified in J.1. with electrical strength test c) details being replaced by "An impulse test consisting of a 1500 V, 10/700 waveform, applied 10 times, with a 60 s interval between pulses. The shape of the impulses is 10/700 (10  $\mu$ s virtual front time, 700  $\mu$ s virtual time to half value), as defined in ITU-T Recommendation K.44."

Proposers note: Annex N states "The impulse test circuit for the 10/700  $\mu$ s (10  $\mu$ s virtual front time, 700  $\mu$ s virtual time to half value) impulse is that specified in ITU-T Recommendation K.17". K.17 has been withdrawn, but its 10/700 content has been incorporated into ITU-T Recommendation K.44.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of R1-5

## IEEE P802.3cr D3.1 Maintenance #14: Isolation 1st Sponsor recirculation ballot comments

CI 0 SC 0 P112 L26 # R1-12

Maytum, Michael Retired,Retired/Unemployed

Comment Type TR Comment Status D

The following has been deleted  
 "c) An impulse test consisting of a 1500 V, 10/700  $\mu$ s waveform, applied 10 times, with a 60 s interval between pulses. The shape of the impulses shall be 10/700  $\mu$ s (10  $\mu$ s virtual front time, 700  $\mu$ s virtual time of half value), as defined in IEC 60950-1:2001 Annex N."  
 and replaced by  
 "This electrical isolation shall meet the isolation requirements as specified in J.1."  
 However, electrical strength test c) in J.1 is 2.4 kV, 1.2/50, not 1.5 kV, 10/700 making a change to the original technical requirement.

#### SuggestedRemedy

Revert to the original 1.5 kV, 10/700 test while still referencing J.1. Suggested correction is

"This electrical isolation shall meet the isolation requirements as specified in J.1. with electrical strength test c) details being replaced by "An impulse test consisting of a 1500 V, 10/700 waveform, applied 10 times, with a 60 s interval between pulses. The shape of the impulses is 10/700 (10  $\mu$ s virtual front time, 700  $\mu$ s virtual time to half value), as defined in ITU-T Recommendation K.44."

Proposers note: Annex N states "The impulse test circuit for the 10/700  $\mu$ s (10  $\mu$ s virtual front time, 700  $\mu$ s virtual time to half value) impulse is that specified in ITU-T Recommendation K.17". K.17 has been withdrawn, but its 10/700 content has been incorporated into ITU-T Recommendation K.44.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of R1-6

CI 0 SC 0 P L # R1-13

Maytum, Michael Retired,Retired/Unemployed

Comment Type G Comment Status D

There are a large number of clauses dealing with electrical isolation that are not consistent in title  
 8.3.2.1 Electrical isolation  
 9.9.3.1 Electrical isolation  
 12.10.1 Isolation  
 14.3.1.1 Isolation requirement  
 15.3.4 Electrical isolation  
 23.5.1.1 Isolation requirement  
 25.4.6 Replacement of 8.4.1, "UTP isolation requirements"  
 32.6.1.1 Isolation requirement  
 33.4.1 Isolation  
 40.6.1.1 Isolation requirement  
 55.5.1 Isolation requirement  
 113.5.1 Isolation requirement  
 126.5.1 Isolation requirement  
 145.4.1 Isolation  
 J.1 Electrical isolation  
 J.3.4.1 Electrical isolation

#### SuggestedRemedy

Re-title the following to "Electrical isolation"

12.10.1 Isolation  
 14.3.1.1 Isolation requirement  
 23.5.1.1 Isolation requirement  
 32.6.1.1 Isolation requirement  
 40.6.1.1 Isolation requirement  
 55.5.1 Isolation requirement  
 113.5.1 Isolation requirement  
 126.5.1 Isolation requirement  
 33.4.1 Isolation  
 145.4.1 Isolation  
 change  
 25.4.6 Replacement of 8.4.1, "UTP isolation requirements"  
 to  
 25.4.6 Replacement of 8.4.1, "UTP electrical isolation"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of R1-7

## IEEE P802.3cr D3.1 Maintenance #14: Isolation 1st Sponsor recirculation ballot comments

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CI	0	SC	0	P120	L19	#	R1-14
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Maytum, Michael Retired,Retired/Unemployed

*Comment Type* **TR** *Comment Status* **D**

following electrical strength isolation tests:

*SuggestedRemedy*

re-instate original text

following electrical strength tests:

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of R1-8

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CI	0	SC	0	P120	L31	#	R1-15
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Maytum, Michael Retired,Retired/Unemployed

*Comment Type* **TR** *Comment Status* **D**

Incorrect

Recommendation ITU-1:2018T K.44.

*SuggestedRemedy*

Correct to

ITU-T Recommendation K.44

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of R1-9

The Response for comment R1-9 is:  
"ACCEPT"

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CI	0	SC	0	P120	L37	#	R1-16
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Maytum, Michael Retired,Retired/Unemployed

*Comment Type* **TR** *Comment Status* **D**

This text mixes isolation and insulation, which are technically not the same thing.

There shall be no failure of the isolation barrier or insulation breakdown during the test. Failure of the isolation barrier or insulation breakdown is considered to have occurred when the current that flows as a result of the application of the test voltage, rapidly increases in an uncontrolled manner; that is, the isolation barrier or insulation does not restrict the flow of the current.

*SuggestedRemedy*

re-instate original text, which refers to insulation.

There shall be no insulation breakdown during the test. Insulation breakdown is considered to have occurred when the current that flows as a result of the application of the test voltage, rapidly increases in an uncontrolled manner; that is, the insulation does not restrict the flow of the current.

*Proposed Response* *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of R1-10

## IEEE P802.3cr D3.1 Maintenance #14: Isolation 1st Sponsor recirculation ballot comments

CI 0	SC 0	P63	L11	# R1-17
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Ran, Adeo	Intel Corporation
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Comment Type	TR	Comment Status	D
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This comment applies to 70.9.1, 71.9.1, 72.9.1, 84.10.1, 93.10.1, 94.5.1, 130.9.1, 83A.6.1, and 83B.3, which specify backplane PHYs and chip-to-chip AUIs.

The change introduced in D3.1 states that equipment "shall conform to the applicable requirements of Annex J". It is not stated which requirements are applicable and which aren't. The possible interpretation that all requirements are applicable including J.1, would mean that equipment "shall withstand" electrical isolation tests such as 1500 V rms or 2250 V dc for 60 seconds.

These isolation tests are designed for devices with magnetic AC coupling, mainly BASE-T PHYs, and are unsuitable for backplane PHYs; Backplane PHYs can have DC coupled connections at least on their transmitter connection (AC coupling is either in the Rx connection or in the channel). With a 100 Ohm differential termination, such a test means the termination dissipates tens of kW, which is unthinkable. In addition, the requirement that "the resistance after the test shall be at least 2 MΩ, measured at 500 V dc" cannot be met even before the test, since the resistance in these interfaces is 100 Ohms. Even AC coupled interfaces (where they exist) are not designed to withstand these high voltages.

From the above I conclude that isolation requirements in J.1 are definitely inapplicable for these PHYs, which leaves only the safety requirements in J.2. The text in Draft 3.0 described this accurately and should not have been changed.

It is unclear to me what the phrase "(including isolation requirements)" in these clauses of the base document refers to, since the IEC 60950-1 is not publicly available. If it implied something like the content of J.1, then it is a mistake that should be corrected in this project.

Note that the copper cable PHYs (Clauses 54, 84, 92, 110, 136) all point to 14.7, which only includes the safety requirements in J.2, as appropriate. Also, the related Clause 128

**Suggested Remedy**

Revert the text in 70.9.1, 71.9.1, 72.9.1, 84.10.1, 93.10.1, 94.5.1, 130.9.1, 83A.6.1, and 83B.3, to what Draft 2.0 has in these places:

"shall conform to the general safety requirements as specified in J.2".

Proposed Response	Response Status	W
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PROPOSED ACCEPT IN PRINCIPLE.

TFTD