Cl **0** *SC* **0** *P* *L* # R1-4

Maytum, Michael Retired,Retired/Unemployed

Comment Type **GR** *Comment Status* **A**

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

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Page 120:
Line 17: Change “isolation” to “strength”
Line 28: Remove “failure of the isolation barrier of”
Line 29: Remove “Failure of the isolation barrier or” Capatilize the “I” in Insulation
Line 31: Remove “isolation barrier or”

Cl **0** *SC* **0** *P* *L* # R1-13

Maytum, Michael Retired,Retired/Unemployed

Comment Type **G** *Comment Status* **A**

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”

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment is a duplicate of R1-7.

The resolution of Commet R1-7 is:
"ACCEPT IN PRINCIPLE.

Re-title the following subclauses to "Electrical isolation"

(10BASE-T) 14.3.1.1 Isolation requirement
(1000BASE-T) 40.6.1.1 Isolation requirement
(10GBASE-T) 55.5.1 Isolation requirement
(25G/40GBASE-T) 113.5.1 Isolation requirement
(2.5G/5GBASE-T) 126.5.1 Isolation requirement
(POE) 33.4.1 Isolation
(POE) 145.4.1 Isolation"

Cl **0** *SC* **0** *P* *L* # R1-7

Maytum, Michael Retired,Retired/Unemployed

Comment Type **G** *Comment Status* **A**

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”

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Re-title the following subclauses to "Electrical isolation"

(10BASE-T) 14.3.1.1 Isolation requirement
(1000BASE-T) 40.6.1.1 Isolation requirement
(10GBASE-T) 55.5.1 Isolation requirement
(25G/40GBASE-T) 113.5.1 Isolation requirement

(2.5G/5GBASE-T) 126.5.1 Isolation requirement
(POE) 33.4.1 Isolation
(POE) 145.4.1 Isolation

Cl **0** *SC* **0** *P* **40** *L* **17** # R1-5

Maytum, Michael Retired,Retired/Unemployed

Comment Type **TR** *Comment Status* **A**

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.

Response *Response Status* **C**

ACCEPT.

Cl **0** *SC* **0** *P* **40** *L* **17** # R1-11

Maytum, Michael Retired,Retired/Unemployed

Comment Type **TR** *Comment Status* **A**

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.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Duplicate of Comment R1-5
The resolution of Comment R1-5 is
"ACCEPT. "

Cl **0** *SC* **0** *P* **63** *L* **11** # R1-17

Ran, Adee — Intel Corporation

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

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

SuggestedRemedy

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".

Response *Response Status* **W**

REJECT.

The CRG disagrees with the commenter. The deleted text includes a parathetical expression "including isolation requirements" which includes all sections of Annex J.

Cl **0** *SC* **0** *P* **112** *L* **26** # R1-12

Maytum, Michael — Retired,Retired/Unemployed

Comment Type **TR** *Comment Status* **A**

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.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Duplicate of comment R1-6
The resolution of comment R1-6 is
"ACCEPT."

Cl **0** *SC* **0** *P* **112** *L* **26** # R1-6

Maytum, Michael Retired,Retired/Unemployed

Comment Type **TR** *Comment Status* **A**

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.

Response *Response Status* **C**

ACCEPT.

Cl **0** *SC* **0** *P* **120** *L* **19** # 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* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **0** *SC* **0** *P* **120** *L* **19** # R1-14

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* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **J** *SC* **J.1** *P* **120** *L* **25** # R1-1

Zimmerman, George CME Consulting,Analog Devices, Cisco,

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

", 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"

Response *Response Status* **C**

ACCEPT.

Cl **0** *SC* **0** *P* **120** *L* **31** # R1-9

Maytum, Michael Retired,Retired/Unemployed

Comment Type **TR** *Comment Status* **A**

Incorrect

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

SuggestedRemedy

Correct to

ITU-T Recommendation K.44

Response *Response Status* **C**

ACCEPT.

Cl **0** *SC* **0** *P* **120** *L* **31** # R1-15

Maytum, Michael Retired,Retired/Unemployed

Comment Type **TR** *Comment Status* **A**

Incorrect

Recommendation ITU-1:2018T K.44.

SuggestedRemedy

Correct to

ITU-T Recommendation K.44

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Duplicate of R1-9

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

Cl **J** *SC* **J.1** *P* **120** *L* **34** # R1-2

Zimmerman, George CME Consulting,Analog Devices, Cisco,

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

Notes should be in "Note" style.

SuggestedRemedy

Change style of paragraph, lines 34-38, to Note, make Note "NOTE"

Response *Response Status* **C**

ACCEPT.

Cl **0** *SC* **0** *P* **120** *L* **37** # R1-16

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* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **0** *SC* **0** *P* **120** *L* **37** # 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* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **J** *SC* **J.3** *P* **121** *L* **1** # R1-3

Zimmerman, George CME Consulting,Analog Devices, Cisco,

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

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....

Response *Response Status* **C**

ACCEPT.