MPI figures and text on current flow: Comments 6, 48, 49, and 67

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Comments 6, 48, 49, and 67

- Comments deal with text and figures describing how currents at MP1 and MP2 relate to MPSE and MPD MPI current

CI 169   SC 169.5.2   P111   L20   # 6
Jones, Chad   Cisco Systems, Inc.
Comment Type   E   Comment Status D   EZ
Figure 169-5, V(A,B) has a greater sign after it. Not sure if it is a typo or if it suppose to indicate V(A,B) > V(C,D). In either case, something needs done to the drawing. Either we delete the > symbol, or we move V(C,D) closer to make it obvious what we are trying to say. I'd lean towards it being a typo as we don't discuss that V(A,B) has to be greater than V(C,D) [even though logically it should be].

SuggestedRemedy
delete the ">" from the drawing.

Proposed Response   Response Status W
PROPOSED ACCEPT.

CI 169   SC 169.5.2   P111   L13   # 67
Zimmerman, George   CME Consulting/ADI,APLGp,CSCO,MRVL,ONSmi,So
Comment Type   T   Comment Status D   Editorial
"Current shall be measured" - is a requirement on the user of the standard, and therefore inappropriate for a shall.

SuggestedRemedy
Change "shall be measured" to "is measured" at line 13

Proposed Response   Response Status W
PROPOSED ACCEPT.

CI 169   SC 169.4.3   P100   L31   # 48
Jones, Peter   Cisco
Comment Type   E   Comment Status D   EZ
Redundant text in the following:
"compliance to voltage specifications is met at MP1 and MP2, and both MPs shall meet the specification."

SuggestedRemedy
remove ", and both MPs shall meet the specification"

Proposed Response   Response Status W
PROPOSED ACCEPT.

CI 169   SC 169.4.3   P100   L33   # 49
Jones, Peter   Cisco
Comment Type   E   Comment Status D   EZ
Language:
"That is, if the specification calls for the voltage to exceed a value, then the minimum of the voltages at MP1 and MP2 exceeds the threshold, whereas if the specification calls for the voltage to be below a value, then the maximum of the two MP voltages is below the value"

SuggestedRemedy
Change to:
"If the specification calls for the voltage to be above a value, or below a value, both MP1 and MP2 must meet the criteria."

Proposed Response   Response Status W
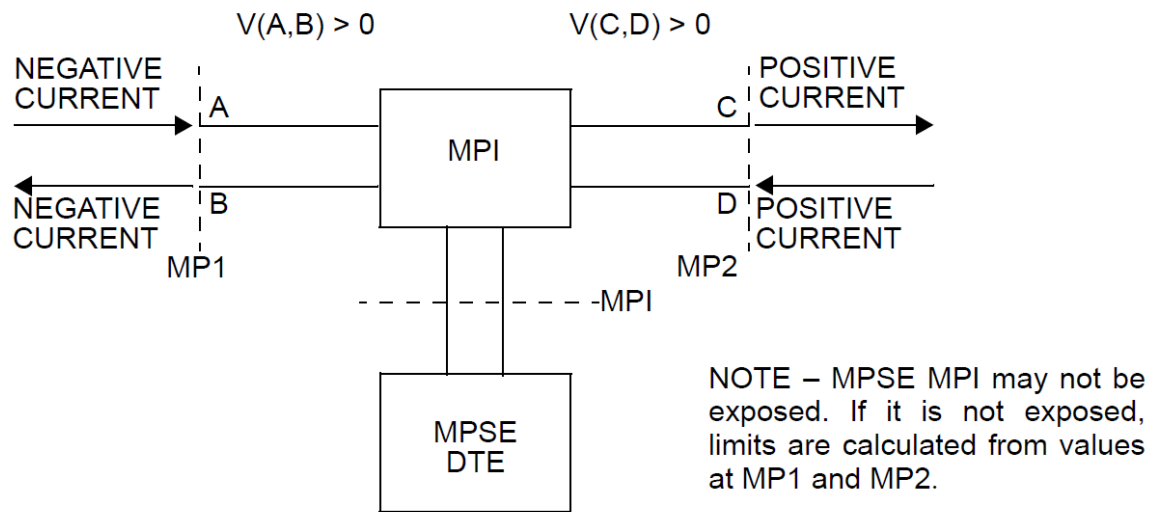PROPOSED ACCEPT.

Figures 169-2 and 169-5
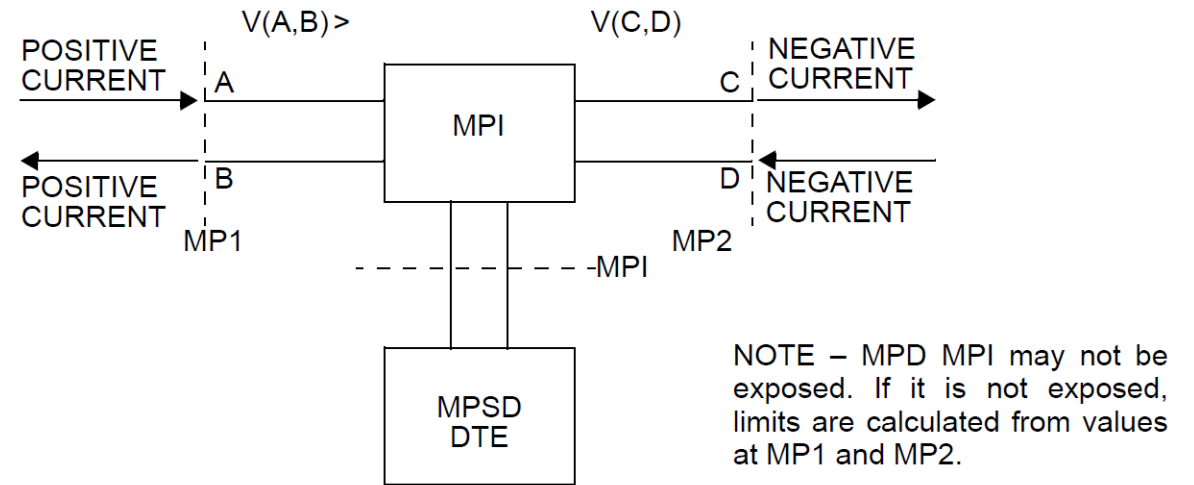

Figure 169–2—Current at the MPSE MPI

Figure 169–5—Current at an MPD MPI

Figures are identical except for:
Polarity of current (positive vs. negative relative to the voltage), labels of MPSE and MPD, and errors ("MPSD", and text box on V(A,B) > 0 and V(C,D) > 0 on Fig 169-5)

Text of 169.5.2

169.4.3 MPSE MPI

MPSEs supply power to the mixing segment through the MPI. See Figure 169–2. This standard assumes one MPSE per mixing segment. More than one MPSE per mixing segment is beyond the scope of this standard.

Current at an MPSE MPI is defined as positive when current flows out of the higher voltage pin of the MP1 or MP2 connection and flows into the lower voltage pin of the same MP1 or MP2 connection, respectively.

Current at an MPSE MPI is defined as negative when current flows into the higher voltage pin of the MP1 or MP2 connection and flows out of the lower voltage pin of the same MP1 or MP2 connection, respectively.

For compliance, MPSE current is measured as the sum of MPI currents, MP1+MP2. Current shall be measured as the sum of both higher voltage pins on MP1 and MP2 or both lower voltage pins on MP1 and MP2.

For compliance, voltage specifications shall be met at both MP1 and MP2 independently. When the MPI is not accessible, compliance to voltage specifications is met at MP1 and MP2, and both MPs shall meet the specification. That is, if the specification calls for the voltage to exceed a value, then the minimum of the voltages at MP1 and MP2 exceeds the threshold, whereas if the specification calls for the voltage to be below a value, then the maximum of the two MP voltages is below the value. Current shall be measured as the sum of both higher voltage pins on MP1 and MP2 or both lower voltage pins on MP1 and MP2.

Identical parallel text is blue
Opposite parallel text is yellow or green
Extra text is unshaded.

169.5.2 MPD MPI

An MPD may receive power in two polarities, Polarity A and Polarity B. MPDs are insensitive to the polarity of the power supply and shall be able to operate per the Polarity A column and the Polarity B column in Table 169–6.

MPDs are current sinks. See Figure 169–5.

Current at an MPD MPI is defined as positive when current flows into the higher voltage pin of the MP1 or MP2 connection and flows out of the lower voltage pin of the same MP1 or MP2 connection, respectively.

Table 169–6—MPD pinout

Conductor	Polarity A	Polarity B
1	Positive V_{MPD}	Negative V_{MPD}
2	Negative V_{MPD}	Positive V_{MPD}

Current at an MPD MPI is defined as negative when current flows out of the higher voltage pin of the MP1 or MP2 connection and flows into the lower voltage pin of the same MP1 or MP2 connection, respectively.

For compliance, MPD current is measured as the sum of MPI currents, MP1+MP2. Current shall be measured as the sum of both higher voltage pins on MP1 and MP2, or both lower voltage pins on MP1 and MP2.

NOTE - One of the currents on MP1 or MP2 will be positive and the other will be negative; making this "sum" a difference. The current used by the MPD lowers the current supplied to the output MP feeding the rest of the MPDs that follow in the mixing segment.

Important functions of this text

1. Because I've collapsed text from both the MPSE and MPD into one statement, I need to say this applies to both MPSE and MPD MPI's (1st sentence of 2nd paragraph)
2. The directionality of the current determines how they sum to get the MPI current for an MPSE and MPD differently
3. We have voltage specifications at the MPI (for example the V_MPSE) and voltage specifications at MP1 or MP2 (169.5.5.1). When the MPI point is not accessible then we need to look at MP1 or MP2. That is why the second sentence says "when the MPI is not accessible"… Now, does it need to say "or when specified at MP1 or MP2"?   As far as I can tell, all but one of the voltage specs are at the MPI, and the one that is (169.5.5.1) is clear and unambiguous how you treat MP1 and MP2 (169.5.5.1). We might delete that part of the second sentence – let me know if you think that works better… for reference, 169.5.5.1 says: After Tinrush_backoff time has elapsed, if the minimum of the voltages at MP1 and MP2 is in a range that is compatible with the MPD type, the MPD may begin drawing full operating power corresponding with the MPD system type.)
4. We treat current specifications differently than voltage. They are mostly intended to be checked at MP1 and MP2, hence the third sentence. This principle is repeated in a separate place in the MPI text. We might consider cleaning it out of there as well – (169.4.3, 4th paragraph, and 169.5.2 5th paragraph).

Possible Consolidation to consider

ACCEPT IN PRINCIPLE

Consolidate figures 169-2 and 169-5 into a single figure, and bring repetitive text in the MPSE and MPD MPI sections regarding how to treat voltage and current specifications into a general section describing conventions in this clause. Note - Comment 18 would create a new clause "169.1.3 Conventions in this clause"

Add the following sentence to the end of the paragraph in 169.1.3. Additionally, this clause contains a number of voltage and current specifications that use the conventions in 169.1.3.4.

Add 169.1.3.4 MPI currents and voltages

These conventions apply both to MPSE and MPD MPIs. For compliance, when the MPI is not accessible, voltage specifications shall be met at both MP1 and MP2. When the MPI is not accessible, current is measured as the sum of current on both higher voltage pins on MP1 and MP2 or both lower voltage pins on MP1 and MP2, using the conventions shown in Figure 169-2.

NOTE – For MPDs, one of the currents on MP1 or MP2 will be positive and the other will be negative; making this "sum" a difference. The current used by the MPD lowers the current supplied to the output MP feeding the rest of the MPDs that follow in the mixing segment. For MPSEs, an MPSE provides current resulting in current flow in the reverse directions from that shown on ports "A" and "B" in Figure 169-2. This means MP1 will have a negative "NEGATIVE CURRENT", and that both MP1 and MP2 currents will be positive values.

Move figure 169-2 from 169.4.3 to 169.1.3.4, (following the inserted text above) deleting "MPSE" in both the DTE box and the NOTE.

Delete Figure 169-5 from 169.5.2. (P111)

From 169.4.3, delete the 4th and 5th paragraphs (P100 L26 to 36, starting "For compliance, MPSE current", and "For compliance, voltage specifications").

Add the following new 4th paragraph to 169.4.3: "Specifications are met at both MP1 and MP2 independently. If the MPI is not exposed, values may be calculated from those at MP1 and MP2. See 169.1.3.4 for conventions and further detail."

From 169.5.2

Change "See Figure 169-5" in the 2nd paragraph of 169.5.2 (P110 L49) to "See Figure 169-2".

Delete the 5th paragraph and the subsequent NOTE in 169.5.2 (P111 L12-19, starting "For compliance, MPD current…").

Add the following text at the end of 169.5.2, where the 5th paragraph used to be:

"Specifications are met at both MP1 and MP2 independently. If the MPI is not exposed, values may be calculated from those at MP1 and MP2. See 169.1.3.4 for conventions and further detail."

Question and Confession

- Should we consolidate both of these figures and this text into a single 'conventions of the MPI' section?
  - PRO: could make it all clearer and get the work done sooner
  - CON: could introduce errors at this phase and delay WG ballot

- Confession: I've been back and forth on this a few times, talking with editorial team and contributors.

Recommendation

- Look to consolidate, or at least parallelize this treatment in working group ballot
- Fix errors now
- Don't spend time wordsmithing at this time.

Thank You!