802.3dj D1.4
Comment Resolution
Electrical Track

Adee Ran (Cisco), 802.3dj Electrical Lead Editor
Matt Brown (Alphawave), 802.3dj Chief Editor
Howard Heck (TE connectivity)

Functional specification

Comment 268, 73

Functional specification Comment 268, 73

Cl 176C *SC* 176C.2.1 *P* 702 *L* 13 *#* 73

Bruckman, Leon Nvidia

Comment Type TR *Comment Status* D *Functional specification*

In Annex 176D the similar section (176D.3) includes text describing the ILT support

SuggestedRemedy

After the third paragraph in the section add adjusted text from the third and fourth paragraphs in 176D.3

Proposed Response *Response Status* W

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #268.

Cl 176C *SC* 176C.2.1 *P* 702 *L* 18 *#* 268

Ran, Adee Cisco

Comment Type TR *Comment Status* D *Functional specification*

There is no mention in the functional specifications that a C2C component should support the ILT function.
Also, the coefficients and presets supported by a C2C transmitter are not listed.

The suggested remedy is based on the corresponding text in 176D.3, and refers to the C2M presets in Table 176D-9, which are the same as those of C2C.

SuggestedRemedy

Change the 3rd paragraph and insert a paragraph after it, as follows:

"An n-lane C2C component is functionally equivalent to a corresponding n-lane PMD specified in Clause 178 (see 178.8) using PAM4 signaling at a nominal signaling rate of 106.25 GBd on each lane. The service interfaces are defined in 176C.3. Specifically, a C2C component shall provide the inter-sublayer link training (ILT) function for a Type E1 interface, specified in Annex 178B. When the variable mr_training_enable is true, the ILT function is used to request changes to the C2C peer transmitter state (modulation, training pattern, and precoder state), control the transmitter output on each lane, indicate the receiver state, and coordinate transition to DATA mode.

A C2C component transmitter supports the coefficient indexes k_list = {–3, –2 –1, 0, 1} and the initial conditions preset 1 through preset 6 and initialize (see Table 176D–9)."

Proposed Response *Response Status* W

PROPOSED ACCEPT.

Editor's recommendation: implement the suggested remedy for C#268.

176C.2.1 Functional specification

A 200 Gb/s per lane AUI-C2C is a bidirectional data path. Each direction of a 200GAUI-1 C2C, 400GAUI-2 C2C, 800GAUI-4 C2C or 1.6TAUI-8 C2C data path contains one, two, four, or eight lanes, respectively

The 200 Gb/s per lane AUI-C2C bidirectional link is described in terms of two C2C components that are connected by a C2C channel.

An *n*-lane C2C component is functionally equivalent to a corresponding *n*-lane PMD specified in Clause 178 (see 178.8) using PAM4 signaling at a nominal signaling rate of 106.25 GBd on each lane. The service interfaces are defined in 176C.3.

Each lane consists of one differential transmission line in each direction between the two C2C components. The transmission lines are AC-coupled within the C2C channel and have a common ground reference. The C2C channel is specified in 176C.6.

The electrical characteristics of the C2C components are specified in 176C.5.3 and 176C.5.4.

176D.3 Functional specification

A 200 Gb/s per lane AUI-C2M is a bidirectional data path. Each direction of a 200GAUI-1 C2M, 400GAUI-2 C2M, 800GAUI-4 C2M or 1.6TAUI-8 C2M data path contains one, two, four, or eight lanes, respectively.

A 200 Gb/s per lane AUI-C2M is specified in terms of a host and a module. The host and the module both contain components that implement the interface, referred to as C2M components.

An *n*-lane C2M component is functionally equivalent to a corresponding *n*-lane PMD specified in Clause 179 (see 179.8) using PAM4 signaling at a nominal signaling rate of 106.25 GBd on each lane. The service interfaces are defined in 176D.4. Specifically, a C2M component shall provide the inter-sublayer link training (ILT) function for a Type E1 interface, specified in Annex 178B. When the variable mr_training_enable is true, the ILT function is used to request changes to the C2M peer transmitter state (modulation, training pattern, and precoder state), control the transmitter output on each lane, indicate the receiver state, and coordinate transition to DATA mode.

A C2M component transmitter supports the coefficient indexes k_list = {–3, –2 –1, 0, 1} and the initial conditions preset 1 through preset 6 and initialize (see Table 176D–9).

Each lane consists of one differential transmission line in each direction between the host C2M component and the module C2M component. The transmission lines are AC-coupled within the module and have a common ground reference.

The electrical characteristics of the host are specified in 176D.6.3 and 176D.6.5. The electrical characteristics of the module are specified in 176D.6.4 and 176D.6.6.

TX Steady State Voltage

Comments 270, 258, 259, 260, 126

TX steady-state voltage
Comments 270, 258

Cl 176C *SC* 176C.5.3 *P* 705 *L* 47 # 270

Ran, Adee Cisco

Comment Type TR *Comment Status* D *Steady-state voltage*

In Table 176C-2, the transmitter steady-state voltage is only defined in terms of a minimum dv_f of 0 V. This corresponds to a minimum v_f spec (0.4 V with A_v=0.385 V) but there is no maximum.
With the current specs v_f can be above 0.5 V. This would contradict the COM assumption about NEXT (A_ne=0.481 V).
Compare to C2M specifications in Table 176D-2 where the v_f specification is a range.

SuggestedRemedy

Change the dv_f specification from min to range, from 0 to 0.1 V, corresponding to v_f between 0.4 and 0.5 V.

Proposed Response *Response Status* W

PROPOSED ACCEPT IN PRINCIPLE.

The comment addresses a gap in the specification. The proposed change addresses the gap and is consistent with the adopted transmitter specification.

Pending CRG discussion, implement the suggested remedy with editorial license.

Cl 178 *SC* 178.9.2 *P* 348 *L* 22 # 258

Ran, Adee Cisco

Comment Type TR *Comment Status* D *Steady-state voltage*

In Table 178-6, the transmitter steady-state voltage is only defined in terms of a minimum dv_f of 0 V. This corresponds to a minimum v_f spec (0.4 V with A_v=0.385 V) but there is no maximum.
With the current specs v_f can be anywhere above 0.4 V (and above 0.5 0V, which would contradict the COM assumption about NEXT; A_ne=0.481 V).
Compare to CR specifications in Table 179-7 where the v_f specification is a range.

SuggestedRemedy

Change the dv_f specification from min to range, from 0 to 0.1 V, corresponding to v_f between 0.4 and 0.5 V.
Implement with editorial license, considering responses to other comments (which may change the v_f range).

Proposed Response *Response Status* W

PROPOSED ACCEPT IN PRINCIPLE.

The comment addresses a gap in the specification. The proposed change addresses the gap and is consistent with the adopted transmitter specification.

Pending CRG discussion, implement the suggested remedy with editorial license.

176C

Table 176C–2—Transmitter electrical characteristics at TP0v

Parameter	Reference	Value	Units
Signaling rate (range)		106.25 ± 50 ppm	GBd
…	…	…	
Difference steady-state voltage, dv_f (min)	178.9.2.4	0	V

Table 176D–2—Summary of host output specifications at TP1a

Parameter	Reference	Value	Units
…	…	…	
Transmitter steady-state voltage, v_f (range)	176D.8.4	0.4 to 0.5	V

178

Table 178–6—Summary of transmitter specifications at TP0v

Parameter	Reference	Value	Units
…	…	…	
Difference steady-state voltage, dv_f (min)	178.9.2.4	0	V

Table 179–7—Summary of transmitter specifications at TP2

Parameter	Subclause reference	Value	Units
…	…	…	
Transmitter steady-state voltage, v_f (range)	179.9.4.1.2	0.4 to 0.5	V

Editor’s recommendation: implement the suggested remedy in C#258 & C#270.

Tx Steady-state voltage
Comment 260, 259

Cl 178 *SC* 178.9.3 *P* 351 *L* 38 # 260

Ran, Adee Cisco

Comment Type ER *Comment Status* D *Steady-state voltage*

Footnote a of Table 178-9 says "Specified as the steady-state voltage (as defined in 178.9.2.4) measured at the test transmitter's output"
But 178.9.2.4 currently defines only the difference steady-state voltage, not the measured steady-state voltage, which is needed here.

Table 176C-4 has the same issue, since it also refers to 178.9.2.4.

SuggestedRemedy

In 178.9.2.4, change from
"The difference steady-state voltage of the transmitter at TP0v is computed using the procedure in 163A.3.2.1"
to
The measured steady-state voltage v_f^(meas) of the transmitter at TP0v and the difference steady-state voltage dv_f are computed using the procedure in 163A.3.2.1".

In Table 178-9 and Table 176C-4, change the footnote text to
"Specified as the measured steady-state voltage v_f^(meas) (as defined in 178.9.2.4) at the test transmitter's output".

Proposed Response *Response Status* W

PROPOSED ACCEPT IN PRINCIPLE.

The comment addresses a technical gap in the draft.

Implement the suggested remedy with editorial license.
[CC 176C, 178]

Cl 178 *SC* 178.9.2.4 *P* 350 *L* 33 # 259

Ran, Adee Cisco

Comment Type ER *Comment Status* D *Steady-state voltage*

The procedure in 163A.3.2.1 refers to 163A.3.1.1 for calculation of the reference voltage.
This calculation depends on parameters that should be provided by the invoking clause.
The texts refers to Table 178-12 but some required parameters (T_r, f_r, A_v, f_b) are in Table 178-13.
Also, the parameters M and D_p are not defined anywhere in this clause.

SuggestedRemedy

Change from
"with Nv = 400 and other parameter values specified in Table 178–12"
to
"with Nv = 400, M=32, D_p=4, and other parameter values specified in Table 178–12 and Table 178-13".

Proposed Response *Response Status* W

PROPOSED ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Summary: Both comments propose non-conflicting changes to 178.9.2.4 that provide specifics needed for measuring Vf_meas and dv_f. The changes are shown on the slide that follows.

Tx Steady-state voltage
Comment 260, 259

178.9.2.4 Difference steady-state voltage

~~The difference steady-state voltage of the transmitter at TP0v is computed using the procedure in 163A.3.2.1 with $N_v = 400$ and other parameter values specified in Table 178–12. The reference value, $v_f^{(ref)}$, is calculated based on the receiver package class to which the device adheres.~~

~~The difference steady-state voltage at TP0v shall meet the specification dv_f(min) in Table 178–6.~~

The measured steady stage voltage $v_f^{(meas)}$ of the transmitter at TP0v and the difference steady-state voltage dv_f are computed using the procedure in 163A.3.2.1 using Nv = 400, M = 32, Dp = 4, and other parameter values specified in Table 178-12 and Table 178-13. The reference value, $v_f^{(ref)}$, is calculated based on the receiver package class to which the device adheres.

C#259

C#260 → v_f^{meas}

Table 178–9—Summary of receiver specifications at TP5v

Parameter	Reference	Value	Units
Signaling rate (range)	178.9.3.2	106.25 ± 50 ppm	GBd
Amplitude tolerance[a]	178.9.3.3	0.5	V
Interference tolerance	178.9.3.4	Table 178–10	—
Jitter tolerance	178.9.3.5	Table 179–17	—
Difference effective return loss, *dERL* (min)	178.9.3.6	–3	dB
Differential-mode to common-mode return loss, *RLcd*	178.9.3.7	Equation (178–4)	dB

[a] Specified as the steady-state voltage (as defined in 178.9.2.4) measured at the test transmitter's output.

Editor's recommendation: implement the suggested remedy in C#259 & C#260.

TX Steady-state voltage
Comment 126

Cl 176C *SC* 176C.5.4 *P* 708 *L* 48 # 126

Dudek, Mike Marvell

Comment Type TR *Comment Status* D *Steady-state voltage*

The max initiliazation voltage for ILT is 0.5 * (0.75+0.025) = 0.3875. Only if the receiver asks for a higher voltage than this during training will it ever exceed this and the receiver should be able to choose not to do this.

SuggestedRemedy

Change Amplitude tolerance from 0.5V to 0.39V. Add to the end of the footnote "in the Initialize condition". Make the same change in Tables 176D-4 and 176D-5.

Proposed Response *Response Status* W

PROPOSED ACCEPT IN PRINCIPLE.

Amplitude tolerance is defined in terms of steady-state voltage which is defined at preset 1 , so the existing value is correct.

However, an informative note would be helpful to clarify the requirement.

Add the folowing note after Table 176C-4:
"NOTE -Steady-state voltage is defined with preset 1. It is not initially generated by a transmitter, due to the initialize setting in Table 176D–9. The receiver is not required to tolerate preset 1 unless it specifically requests it."
Add similar notes after Table 176D–4 and Table 176D–5.

In 176C.5.4.2 change
"When a PMD receiver is connected to a compliant transmitter that has the maximum allowed steady-state voltage (see Table 178–9)"
to
"When a PMD receiver is connected to a compliant transmitter that has a steady-state voltage (as defined in 179.9.4.1.2) equal to the Amplitude tolerance listed in Table 176C-4"

Implement with editorial license.

[CC: 176C, 176D]

Table 176C–4—Receiver characteristics at TP5v

Parameter	Reference	Value	Units
Signaling rate (range)	176C.5.4.1	106.25 ± 50 ppm	GBd
Amplitude tolerance[a]	176C.5.4.2	0.5	V
Difference effective return loss, *dERL* (min)	176C.5.4.3	–3	dB
Differential-mode to common-mode return loss, *RLcd*	176C.5.4.4	Equation (176C–1)	dB
Interference tolerance	176C.5.4.5	Table 176C–5	—
Jitter tolerance	176C.5.4.6	Table 179–12	—

[a] Specified as the steady-state voltage (as defined in 178.9.2.4) measured at the test transmitter's output.

NOTE–The steady-state voltage is defined with preset 1. It is not initially generated by a transmitter, due to the initialize setting in Table 176D-9. The receiver is not require to tolerate preset 1 unless it specifically requests it.

176C.5.4.2 Receiver amplitude tolerance

When a PMD receiver is connected to a compliant transmitter that has ~~the maximum allowed steady-state voltage (see Table 178–9)~~, using a channel with the minimum insertion loss specified in 178.9.3.4, the PMD receiver operation shall enable a block error ratio as specified in 178.2.

a steady-state voltage (as defined in 179.8.4.1.2) equal to the Amplitude tolerance listed in Table 176C-4,

Editor's recommendation: implement the proposed response discussed on this slide in 176C and 176D.

AN differential swing

Comments 219, 254, 261

AN differential swing
Comments 219, 254, 261

Cl **73** *SC* **73.5.1** *P* **122** *L* **38** # 219

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **D** *AN differential swing*

The ancient "DME electrical characteristics" table needs updating. Compare the default preset to start training: 800 to 1000 mV (but see another comment) for CR and KR, 800 to 1000 *0.75 +/-0.025 which is 580 to 775 mV for C2C and C2M, 900 mV for the traditional C2M max, and 850 mV XLPPI max. Traditional C2M and XLPPI can't defend themselves because they don't do AN.
Just as for the transition to 50 ppm, we should move carefully towards where we should be, while paying attention to backward compatibility.

SuggestedRemedy

Bring Table 73-1, DME electrical characteristics, into the draft. It contains:
Transmit differential peak-to-peak output voltage 600 to 1200 mV
Receive differential peak-to-peak input voltage 200 to 1200 mV.
Implement at least slide 7 of simms_3dj_adhoc_01_250220.pdf:

Parameter	Min	Max 0	Max 1	Units
Transmit differential peak-to-peak output voltage	600	1200	1000	mV
Receive differential peak-to-peak input voltage	200	1200	1200	mV

0 When not indicating a technology in the Extended Technology Ability Field (i.e. no 200G/lane)
1 When indicating one or more technologies in the Extended Technology Ability Field (i.e. some 200G/lane)
This is only a long overdue first step. Consider making more progress by implementing slide 10 or 11.
See another comment with a proposal to report "too loud" with the RF bit.

Comment #220, PROPOSED REJECT, beyond the scope of this project

Cl **178** *SC* **178.1** *P* **340** *L* **29** # 254

Ran, Adee Cisco

Comment Type **T** *Comment Status* **D** *AN differential swing*

As indicated in Table 178-1, A 200GBASE-KR1 PHY is required to support Clause 73 AN. In normal operation this PHY has a maximum peak-to-peak specification that is lower than what is allowed in AN signaling. The same requirement should apply when the PHY generates the AN signal.

Similarly in Tables 178-2 through 178-4.

SuggestedRemedy

Add the following footnote to the "73-AN" row:
"For a device that advertises 200GBASE-KR1 ability, the DME transmission (See 73.5) has a maximum Transmit differential peak-to-peak output voltage of 1000 mV".

Add similar footnotes to the same item in Tables 178-2 through 178-4 with the corresponding abilities.

Implement with editorial license.

Comment #261 is similar, for Clause 179.

AN differential swing
Comment 219

Comment 219 refers to ad hoc presentation simms_3dj_adhoc_01_250220 and suggests implementing slide 7, and considering slides 10 or 11.

A contribution to this meeting, simms_3dj_01_2503, includes two options, A (slide 6) and B (slide 7). Both options suggest changes to Table 73-1: transmit output voltage and (in option B) receive input voltage, defining 2 or 3 technology ability groups.

73.5.1 DME electrical specifications

Transmitter characteristics shall meet the specifications in Table 73–1 at TP1 while transmitting DME pages. Receiver characteristics shall meet the specifications in Table 73–1 at TP4 while receiving DME pages.

Table 73–1—DME electrical characteristics

Parameter	Value	Units
Transmit differential peak-to-peak output voltage	600 to 1200	mV
Receive differential peak-to-peak input voltage	200 to 1200	mV

For any multi-lane PHY, DME pages shall be transmitted only on lane 0. The transmitters on other lanes should be disabled as specified in 71.6.7, 84.7.7, 85.7.7, 92.7.7, 93.7.7, 94.3.6.7, 136.8.7, or 137.8.7.

A

Parameter	Min Value	Technology Ability Group		Units
		0	1	
		Max Value	Max Value	
Transmit differential peak-to-peak output voltage	600	1200	1000	mV
Receive differential peak-to-peak input voltage	200	1200	1200	mV

B

Parameter	Min Value	Technology Ability Group			Units
		0	1	2	
		Max Value	Max Value	Max Value	
Transmit differential peak-to-peak output voltage	600	1200	1000	1000	mV
Receive differential peak-to-peak input voltage	200	1200	1200	1000	mV

AN differential swing
Comments 254, 261

Comments #254 and #261 suggest an alternative approach to that of comment #219: in the two new clauses that use AN, add table footnotes that limit the AN transmit voltage range. This is similar to the existing footnote c, which limits the signaling rate range.

Table 178–1—Physical Layer clauses associated with the 200GBASE-KR1 PMD

Associated clause	200GBASE-KR1
73—AN [a]	Required
90—Time Synchronization	Optional
117—200 Gb/s RS	Required
117—200GMII[a]	Optional
118—200GMII Extender	Optional
119—200GBASE-R PCS	Required
120—200GBASE-R BM-PMA	Conditional[b]
120B—200GAUI-8 C2C[c]	Optional[d]
120D—200GAUI-4 C2C[c]	Optional[d]
120F—200GAUI-2 C2C[c]	Optional[d]
176—200GBASE-R SM-PMA	Required[b]
176C—200GAUI-1 C2C	Optional[d]
178B—ILT	Required

[a] The 200GMII is an optional interface. However, if the 200GMII is not implemented, a conforming implementation behaves functionally as though the RS and 200GMII were present.
[b] If a 200GAUI-n is implemented in a PHY, additional 200GBASE-R BM-PMA or SM-PMA sublayers are required according to the guidelines in 176B.4.1.
[c] When implemented in a 200GBASE-KR1 PHY, the signaling rate range is constrained as specified in 120.1.4.

Add footnote a (renumbering existing footnotes):

[a] For a device that advertises 200GBASE-KR1 ability, the DME transmission (See 73.5) has a maximum Transmit differential peak-to-peak output voltage of 1000 mV.

and similar footnotes in all other “Physical Layer clauses” tables in 178 and 179.

Note that this approach is technically identical to option A in simms_01. Editorially, the location of the requirements is different.

Editor’s recommendation: For CRG discussion, choose between
1. Change Table 73-1 per Simms_01 option A
2. Change Table 73-1 per Simms_01 option B
3. Add footnotes per comments 254 and 261

Test fixture ILdd limits (TBDs)

Comments 139, 1

Test fixture ILdd limits
Comments 139, 1

Cl **179B** *SC* **179B.4.1** *P* **808** *L* **15** # 139

Sekel, Steve — Wilder Technologies

Comment Type **T** *Comment Status* **D** *Test fixtures ILdd*

MTF ILdd max and min limit lines are TBD

SuggestedRemedy

Insert upper and lower MTF ILdd limit lines in figure 197B-2 and equations 179B-3 & 179B.4 using values presented in contribuion given in March plenary

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The comment and the suggested remedy are reasonable, but consensus is not obvious.
Pending review and CRG discussion of the following contribution:
<URL>/sekel_3dj_01_2503

Cl **179B** *SC* **179B.4.1** *P* **808** *L* **9** # 1

Lusted, Kent — Synopsys

Comment Type **TR** *Comment Status* **D** *Test fixtures ILdd*

The mated test fixture insertion loss is TBD

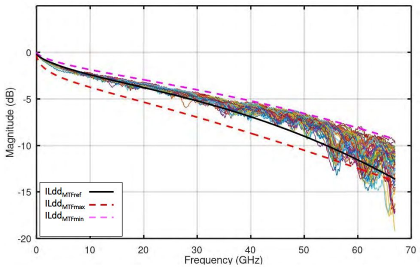
SuggestedRemedy

Adopt the proposal in
https://www.ieee802.org/3/dj/public/adhoc/optics/0225_OPTX/kocsis_3dj_adhoc_01_250206.pdf

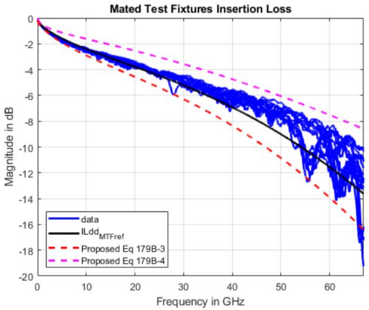
Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using response to comment #139.

Proposal in sekel_3dj_01_2503



Prior proposal in kocsis_3dj_adhoc_01_250206



Editor’s recommendation: adopt the more recent proposal sekel_01, referenced in #139.

C2M interference tolerance

Comments 134, 153

C2M interference tolerance
Comments 134, 153

176D.8.12 Interference tolerance

Interference tolerance is defined by the procedure described in 176D.8.12.1 through 176D.8.12.4. Interference tolerance test requirements are specified in Table 176D–10.

Table 176D–10—Interference tolerance test parameters

Parameter	Host test	Module test 1 (low loss)[a]		Module test 2 (high loss)		Units
		Min	Max	Min	Max	
Test channel insertion loss at 53.125 GHz	N/A	9.25	10.25	31.5	32.5	dB
Host channel parameters	Table 176D–6	N/A		N/A		
Test pattern	PRBS31Q					
Block error ratio[b]	$< 1.45 \times 10^{-11}$					
COM[c]	3	3		3		dB

[a] The low loss test channel consists of mated MCB and HCB with no frequency dependent attenuator.
[b] Block error ratio (see 174A.7) is measured with BER_{added} specified in 176D.2.
[c] The COM value is the target value for the SNR_{TX} calibration defined in 176D.8.12.3 item f). The SNR_{TX} value measured at the Tx test reference should be as close as practical to the value needed to produce the target COM. If lower SNR_{TX} values are used, this would demonstrate margin to the specification but this is not required for compliance.

Comment #139

Cl **176D** *SC* **176D.8.12** *P* **738** *L* **12** # 153

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Interferecne tolerance test parameters in table only applicable at TP1 module input and not for host input

Table is for both

SuggestedRemedy

The current test in tbale should be labled TP1 Module Input Interference Tolerance. Add 2nd row Interferecne Tolerance at TP4 host input test channel insertion loss will be zero.

Proposed Response *Response Status* **W**

Host test channel IL is not zero - it is a MTF just like Module test 1.

PROPOSED ACCEPT IN PRINCIPLE.
The existing table has separate columns for host test (1 case) and for module tests (2 cases).
The suggested remedy is to use separate rows instead, but this is an editorial change that would not improve the draft.

The suggested remedy also includes setting the host input test channel IL to 0. This IL is currently marked as N/A, but as shown in Figure 176D-7b, the test channel for the host test comprises mated test fixtures, so it is identical to the channel in module test 1 (Figure 176D-8b without frequency dependent attenuator). The range of the IL of these mated test fixtures should be similar to that of module test 1.

Change the Host test channel IL from "N/A" to min and max, with same values as Module test 1 (which is addressed by comment #134).

Cl **176D** *SC* **176D.8.12** *P* **738** *L* **13** # 134

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **D** *ITOL*

For the module test 1 the footnote a says that this is with the mated MCB and HCB with no frequency dependent attenuator which should be the correct set up, approximately equivalent to the minimum loss the host will see. However the values for min and max attenuation have only 1dB variation which is less than is being considered for the specification for the mated compliance boards.

SuggestedRemedy

Update the min and max values to match the adopted values for the mated test fixture (expected to be adopted at the March meeting).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Pending resolution of comments regarding MTF IL tolerance.
Change the minimum and maximum for test 1 to match the MTF specification.

C2M interference tolerance
Comments 134, 153

The proposal for comment #139 is (slide 8 of sekel_3dj_01_2503):

179B.4.1 Mated test fixtures insertion loss

The insertion loss of the mated test fixtures shall meet Equation (179B–3) and Equation (179B–4).

$$ILdd(f) \le ILdd_{MTFmax}(f) = \begin{cases} TBD & 0.01 \le f < TBD \\ TBD & TBD \le f \le 67 \end{cases} \quad (179B–3)$$

$$ILdd(f) \ge ILdd_{MTFmin}(f) = TBD \quad (179B–4)$$

for $0.01 \le f \le 67$

where

$$0.03 + 1.6562\sqrt{f} - 0.286f + 0.0469f^{1.5} - 0.0014f^2$$

$$-0.0413 + 0.436\sqrt{f} + 0.0813f - 0.0153f^{1.5} + 0.00195f^2$$

For f = 53.125, this yields min=7.04 and max=11.17; or, approximately, 9.1 ± 2 dB for the mated test fixtures.

For the high-loss module test, we want to keep a target of 32 dB and a range of ± 0.5 dB.

C2M interference tolerance
Comments 134, 153

It is suggested to update the IL ranges in the table per comment #139, add the IL of the host test channel, and clean it somewhat, to clarify the intent.

Table 176D–10—Interference tolerance test parameters

Parameter	Host test	Module test 1 (low loss)[a]		Module test 2 (high loss)		Units
		Min	Max	Min	Max	
Test channel insertion loss at 53.125 GHz	N/A	9.25	10.25	31.5	32.5	dB
Host channel parameters	Table 176D–6	N/A		N/A		
Test pattern	PRBS31Q					
Block error ratio[b]	$< 1.45 \times 10^{-11}$					
COM[c]	3	3		3		dB

Table 176D–10—Interference tolerance test parameters

Parameter	Host test	Module test 1 (low loss)[a]	Module test 2 (high loss)	Units
Test channel insertion loss at 53.125 GHz	9.1 ± 2	9.1 ± 2	32 ± 0.5	dB
Host channel parameters	Table 176D–6	N/A	N/A	
Test pattern	PRBS31Q			
Block error ratio[b]	$< 1.45 \times 10^{-11}$			
COM[c]	3			dB

Editor's recommendation: Change the table as shown above, changing the ranges if necessary based on the resolution of comment #139.