Updated proposal Electrical Parameters of DME (Comment 547)

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NVIDIA

January 2025 802.3dj Interim meeting

References

- Proposed update Electrical Parameters of DME
  - Shared Jan 9th 802.3dj Optics Joint with Electrical and Logic ad hoc
  - https://www.ieee802.org/3/dj/public/adhoc/optics/0125_OPTX/simms_3dj_optx_02a_250109.pdf

Review of Comment 547

Cl **73** *SC* **73.5.1** *P* **118** *L* **38** # 547

Dawe, Piers Nvidia

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

The ancient "DME electrical characteristics" table needs updating. Compare the proposed default preset to start training: 800 to 1000 *0.75 +/-0.025 which is 580 to 775 mV, the traditional C2M max, 900 mV, and the XLPPI max, 850 mV.

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.
Add two more rows, for anything capable of 200G/lane:
Transmit differential peak-to-peak output voltage 600 to 900 mV
Receive differential peak-to-peak input voltage 200 to 1000 mV.
Recommend that new product should comply to the newer limits, except product that only does 1000BASE-KX and/or 10GBASE-KX4 whose output should be 600 to 1000 mV (so they don't have to change voltage swing when going from AN to regular mode - their min is 800 mV). If the recommendation has to go through maintenance, add an editor's note "It has been proposed that" to gather feedback and build consensus.

Review of DME discussion on Jan 20th

- Draft 1.3 reduced Vf from 0.6V to 0.5V for 200G/Lane devices
- Suggestion to reduce DME differential peak-to-peak output voltage from 1200mV to 1000mV to align
  - Out of scope due to backward compatibility (requires Maintenance to update)
  - Suggestion to reduce only for 200G/Lane devices
  - Make new limit forward looking: for 200G/Lane and higher rates
  - Discussion to reduce for TX only (This proposal still has both reduced for now)
  - AUIs do not use transmit AN but CR and C2M share the same connector styles so interconnection between them is likely
- Current table shown

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

Updated proposed change to Table 73-1

To address DME during AN

- Propose change to 73-1 to decrease max value from 1200 to 1000mV for 200G/lane links and higher

Table 73-1 DME electrical characteristics

Parameter	Min Value	Max Value PHY ≥200Gbps per Lane	Max Value PHY ≤100Gbps per Lane	Units
Transmit differential peak-to-peak output voltage	600	1000	1200	mV
Receive differential peak-to-peak output voltage	200	1000	1200	mV

Updated proposed change to Table 73-1

The Extended Technology Ability Field in Table 73A–1a is for 200G/lane CR and KR

Table 73-1 DME electrical characteristics

- Black existing: Blue proposal

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

0	When indicating one or more technologies in the Technology Ability Field and not indicating a technology in the Extended Technology Ability Field
1	When indicating one or more technologies in the Technology Ability Field and one or more technologies in the Extended Technology Ability Field
2	When indicating one or more technologies in the Extended Technology Ability Field and not indicating a technology in the Technology Ability Field

Alternate Proposal: Proposed change to Table 73-1

The Extended Technology Ability Field in Table 73A–1a is for 200G/lane CR and KR

- Addresses the details of the comment
- Black Existing: Blue Proposal : Purple: May involve Maintenance

Parameter	Technology Ability Group					Units
	All	0	1	2	3	
	Min Value	Max Value	Max Value	Max Value	Max Value	
Transmit differential peak-to-peak output voltage	600	1200	1000	900	900	mV
Receive differential peak-to-peak output voltage	200	1200	1200	1200	1000	mV

0	When indicating one or more technologies in the Technology Ability Field and not indicating a technology in the Extended Technology Ability Field
1	When indicating one or more technologies in the Technology Ability Field and one or more technologies in the Extended Technology Ability Field
2	When indicating one or more technologies in the Extended Technology Ability Field
3	When indicating one or more technologies in the Extended Technology Ability Field and not indicating a technology in the Technology Ability Field
It is recommended that new implementations that indicate 1000BASE-KX and/or 10GBASE-KX4 ability but no technology in the Extended Technology Ability Field, follow the limits of Technology Ability Group 1 It is recommended that new implementations that do not indicate 1000BASE-KX or 10GBASE-KX4 ability or any technology in the Extended Technology Ability Field follow the limits of Technology Ability Group 2	

Thank You

Backup

Alternate 1: Black: existing Blue: proposed (different table layout)

The Extended Technology Ability Field in Table 73A–1a is for 200G/lane CR and KR

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

0	When indicating one or more technologies in the Technology Ability Field and not indicating a technology in the Extended Technology Ability Field
1	When indicating one or more technologies in the Technology Ability Field and one or more technologies in the Extended Technology Ability Field
2	When indicating one or more technologies in the Extended Technology Ability Field and not indicating a technology in the Technology Ability Field

Alternate 3: Black: existing Blue: alt. proposal, alt. layout Purple: may involve maintenance

The Extended Technology Ability Field in Table 73A–1a is for 200G/lane CR and KR

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
	Technology Ability Group								
	0		1		2		3		
	Min	Max	Min	Max	Min	Max	Min	Max	
Transmit differential peak-to-peak output voltage	600	1200	600	1000	600	900	600	900	mV
Receive differential peak-to-peak input voltage	200	1200	200	1200	200	1200	200	1000	mV

0	When indicating one or more technologies in the Technology Ability Field and not indicating a technology in the Extended Technology Ability Field
1	When indicating one or more technologies in the Technology Ability Field and one or more technologies in the Extended Technology Ability Field
2	When indicating one or more technologies in the Extended Technology Ability Field
3	When indicating one or more technologies in the Extended Technology Ability Field and not indicating a technology in the Technology Ability Field

It is recommended that new implementations that indicate 1000BASE-KX and/or 10GBASE-KX4 ability but no technology in the Extended Technology Ability Field, follow the limits of Technology Ability Group 1

It is recommended that new implementations that do not indicate 1000BASE-KX or 10GBASE-KX4 ability or any technology in the Extended Technology Ability Field follow the limits of Technology Ability Group 2