

P802.3dm D2.1 Asymmetrical Electrical Automotive Ethernet 1st Working Group recirculation ballot comn

CI 191 SC 191.14 P 165 L 43 # 77

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Comment Type TR Comment Status A delay

The delay constraints are defined here as end-to-end and have a normative requirement ("shall not exceed the limits shown in Table 191–24").
As already discussed, end-to-end delays result from combinations of components that are usually not provided by the same vendor. As a result, no single vendor can declare compliance - the normative requirement is from a combination of transmitter and receiver in two devices.
Having a normative requirement that cannot be committed to (and thus cannot be verified) means this requirement is moot and will likely be interpreted in different ways by vendors, which might lead to systems failing the combined requirements.

Note that the reason for having delay constraints is stated explicitly as "predictable operation of the MAC Control PAUSE operation". This actually means the roundtrip delay needs to be capped, rather than the 1-way delay (which may be different in each direction)

In other clauses, the delay constraints are usually stated as the sum of transmit and receive delays in one implementation. This kind of requirement makes sense because it can be verified by each vendor, and if it is met on both sides, then the roundtrip delay (which is what this is all about) is capped at twice the limit.
I realize that for an asymmetric PHY it is less natural to define the sum of transmit and receive delay, and it may seem difficult to measure. But having a normative requirement does not mean it needs to be measured - this can be declared by a vendor as "complies by design". Also, the requirement can be verified by a partner with known delays (e.g. a special test equipment).

Annex 191A describes delay allocation between transmit and receive path in each speed, but is labeled as "Informative". But this is practically a recommendation, not "provided for information only", so "informative" is an incorrect label. A recommendation can and should be included in the normative clause.

SuggestedRemedy

Change the normative requirement to be the sum of transmit and receive delays in the same PHY. The requirement _shall_ be met regardless of whether the PHY has HS in the transmit or receive direction.
For the limit value, use half of the 100M delay (currently 5120 ns) plus half of the HS delay (rate dependent). Define the value only in ns because the bit time is different in each direction.

Annex 191A should be replaced by examples of allocation of the delay in ns between the transmit and receive path of _one device_. This can be done separately for a device with HS on the receive and on the transmit path. The delays in each direction can be given in terms of bit times.

Alternatively, if the reason for delay constraints is not the roundtrip delay required for PAUSE operation, delete the first sentence of the paragraph and include the actual reason for delay allocation instead. It might be that delay allocation has no effect on interoperability - in that

case, make it a recommendation for each direction, not a normative requirement on the sum. Annex 191A can then be deleted.

Alternatively, remove both 191.14 and annex 191A, if the reason for having delay constraints can't be described.

Response Response Status U

ACCEPT IN PRINCIPLE.

Clause 191:
Make no change: There is not a well defined method to measure delay from the xMII to the MDI.

Clause 192:

Replace text and table on page 292 with:

The combined transmit and receive data delay for an implementation of the PHY in a given mode shall not exceed the limits shown in Table 192–27. Transmit data delay is estimated from the input of a specified unit of data at the XGMII to the presentation of the same unit of data by the PHY to the MDI. Receive data delay is estimated from the input of a specified unit of data at the MDI to the presentation of the same unit of data by the PHY to the XGMII. Following the recommendations of 90A.7 for repeating delay variation patterns, the maximum intrinsic delay value is allocated to the transmit PHY and the minimum intrinsic delay value is allocated to the received PHY. For this purpose, the specified unit of data is the byte of data on the XGMII interface that corresponds to the first byte of data at the start of a TDD burst payload.

NOTE—The physical medium interconnecting two PHYs introduces additional delay in a link.

Table 192–27—Combined PHY Delay constraints

Operating mode	Maximum delay (ns)
PHY_S	5 120
PHY_D	11 776

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Comment Type

TR

Comment Status

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delay

Annex 191A is defined as informative, but it contains recommendations, which are practically requirements, because if they are not met then delay constraints for PAUSE cannot be guaranteed.
Recommendations are not informative - they are normative (though not required).
This annex does not provide any information other than the recommended allocations (and even these are referred back to the normative clause 191) Therefore, its designation as informative is incorrect.

SuggestedRemedy

As suggested in another comment the normative requirement (or recommendation) should be the sum of Tx and Rx paths of the same PHY. If that is done, the annex can provide an example of how the sum can be divided between the Tx and Rx, with specific bit times and pause_quanta value for each path.

Response

Response Status

U

REJECT.

There is not a well defined method to measure delay from the xMII to the MDI that is economically feasible; therefore, no good way to introduce a normative per PHY delay as the commenter requests.

Annex 191-A provides guidelines for design, but these are not testable.