

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

CI 98B SC 98B.3 P318 L21 # 152

Muma, Scott

Microchip

Comment Type T Comment Status D AN

The abilities here are defined as -T1/V1, but in Table 45–178 -T1 PHY ability is distinct from -V1 PHY ability. It doesn't seem like it is intended for -T1 PHYs to autonegotiate and interoperate with -V1 PHYs. Clause 98 does not allow different media types to autonegotiate.

SuggestedRemedy

Provide separate -V1 and -T1 technology ability field bits and modify/split Table 98B-2 accordingly into -T1 and -V1 priority resolution with editorial license.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Table 98B-1 doesn't have enough bits to separate -T1 and -V1. There is no reason to as these are mutually exclusive. Maybe we just add notes to Table 98B-1 and Table 98B-2.

CI 98B SC 98B.4 P318 L38 # 150

Muma, Scott

Microchip

Comment Type T Comment Status D EZ - pull

I suspect there are 2 colliding updates here since the first 4 lines (L38-41) modify the first paragraph while the following 5 lines (L44-48) seem to then replace the same paragraph. As well the new paragraph on L44-48 seems to be redefining priority resolution which is now covered/updated in 98.2.4.2 so should not be redone here in case of disagreement. 98B.4 should only provide the compatible abilities in priority order.

SuggestedRemedy

Replace P318L38-48 with:

[Editing instruction: Replace the first paragraph of 98B.4 with the following paragraph]

Since a local device and a link partner may have multiple compatible abilities, a prioritization scheme exists to ensure that the highest common denominator ability is chosen. Table 98B–2 specifies the relative priorities of the technologies supported by the IEEE 802.3 Selector Field value, the priorities are listed from highest to lowest.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change the Editing instruction to: Replace the content of 98B.4 with the following:

Replace the existing text in 98B.4 in D2.1 with the following: Since a local device and a link partner may have multiple abilities in common, a prioritization scheme exists to choose the highest common denominator (i.e., highest priority) ability. Table 98B–2 indicates the relative priorities of the technologies supported by the IEEE 802.3 Selector Field value. The technology with the lowest priority number (i.e., highest priority) is the resolved ability. When the Leader PHY and Follower PHY both indicate the Technology Ability present in a given row of Table 98B–2, that is considered a common ability. Table 98B–2 specifies the relative priorities of the technologies supported by the IEEE 802.3 Selector Field value.

Keep table 98B-2 the same as it is in D2.1.

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CI 191 SC 191.1 P65 L15 # 106

Jonsson, Ragnar Infineon

Comment Type E Comment Status D nomenclature

It is implied that the term "MultiG+100MBASE" only applies to the PCS, but it can be used with -V1 or -T1 and then it applies to the whole PHY. Same comment applies to "100M+MultiGBASE" in the following line.

SuggestedRemedy

Add lines for "MultiG+100MBASE-T1/V1" and "100M+MultiGBASE-T1/V1", showing them as PHY_S and PHY_D, respectively.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

191.1.1 has the definitions for PHY_D and PHY_S as a complete device. TFTD if this should be moved. It should not be repeated.

CI 191 SC 191.2.2.3.1 P81 L16 # 65

Pandey, Sujan Velinktech

Comment Type E Comment Status D EZ - pull

The term "normal operation" is defined multiple places in the draft with no clear meaning. So replace it with data mode (SEND_N).

SuggestedRemedy

data mode (SEND_N)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: normal operation
To: data mode
on P69L51, P81L16, P81L17, P81L25, P140L34, P140L37, P146L8, P147L47, P150L20, P150L24, P153L12, P164L47, P182L20, P182L39, P184L46, P185L11, P188L16, P290L31, P311L37

CI 191 SC 191.2.2.3.1 P81 L17 # 66

Pandey, Sujan Velinktech

Comment Type E Comment Status D EZ - pull

The term "normal operation" is defined multiple places in the draft with no clear meaning. So replace it with data mode (SEND_N).

SuggestedRemedy

data mode (SEND_N)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: normal operation
To: data mode
on P69L51, P81L16, P81L17, P81L25, P140L34, P140L37, P146L8, P147L47, P150L20, P150L24, P153L12, P164L47, P182L20, P182L39, P184L46, P185L11, P188L16, P290L31, P311L37

CI 191 SC 191.2.2.3.1 P81 L25 # 67

Pandey, Sujan Velinktech

Comment Type E Comment Status D EZ - pull

The term "normal operation" is defined multiple places in the draft with no clear meaning. So replace it with data mode (SEND_N).

SuggestedRemedy

data mode (SEND_N)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: normal operation
To: data mode
on P69L51, P81L16, P81L17, P81L25, P140L34, P140L37, P146L8, P147L47, P150L20, P150L24, P153L12, P164L47, P182L20, P182L39, P184L46, P185L11, P188L16, P290L31, P311L37

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CI 191 SC 191.5.2.2 P121 L36 # 99

Zimmerman, George CME Consulting/ADI,Cisco,Eliyan,Infineon,OnSemi,

Comment Type E Comment Status D EZ - pull

The listing of functions of the transmitter gets complicated, possibly leading to confusion that both PHY_D and PHY_S only do DME in link synchronization (unless you carefully track the commas). It also isn't clear that the 'not in SEND_Z' applies to PHY_S in link sync. (which it does, but the PICS entry PMAT14 gets this wrong) Rewording can avoid confusion. Additionally, DME is already defined and used, no need to re-spell it out, and the discussion would be clearer if we stated that PAM is used for normal transmission for PHY_S here.

SuggestedRemedy

At P121 L35, change "When tx_mode is not SEND_Z, the PHY_D PMA Transmit function, and the PHY_S PMA Transmit function in link synchronization, shall encode binary values using Differential Manchester Encoding (DME)

according to the rules in 191.5.2.2.1." to "

When tx_mode is not in SEND_Z, a PHY_D PMA shall encode binary values using DME, and during link synchronization for a PHY_S PMA. When tx_mode is not SEND_Z, and link synchronization is not active, the PHY_S PMA Transmit function encodes binary values as PAM2 or PAM4 signals, as described above for the HS_TX PMA Transmit function."

At P178 L17 (191.15.4.3.2, PICS PMAT14) Change Value/Comment from "Encoding per 191.5.2.2.1 when not in SEND_Z, used by PHY_D. Used by PHY_S in link synchronization." to "When not in SEND_Z, encoding per 191.5.2.2.1. Used by PHY_D for all but SEND_Z. Used by PHY_S in link synchronization when not n SEND_Z."

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 191 SC 191.5.2.6.1 P130 L51 # 42

Wienckowski, Natalie IVN Solutions LLC; Ethernovia, Bosch

Comment Type E Comment Status D EZ - pull

Comment #154 on D2.0 did not have a proper resolution so no change was made to this text. It referred to another comment that didn't impact this text.

SuggestedRemedy

Add the following to the training_failure definition:

TRUE: Training has not been successfully completed.

FALSE: Training has been successfully completed.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD - The proposal below was provided by another CRG member.

Add the following to the training_failure definition:

This variable is set TRUE when the training sequence is completed and did not successfully link up. Otherwise it is set FALSE.

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CI 191 SC 191.5.2.8 P133 L33 # 301

Razavi, Alireza

Eliyan

Comment Type T Comment Status D late - Link Sync

191.5.2.8 scopes Figure 191-38 to the case where Auto-Negotiation is disabled or not implemented, yet (a) the state diagram's global entry into SYNC_DISABLE and its power-up behavior depend on power_on, mr_main_reset, and mr_autoneg_enable, all defined by cross-reference to 98.5.1 (Clause 98 Auto-Negotiation). When AN is not implemented, Clause 98 is absent and these variables have no defined source, leaving the power-up entry undefined for a PHY that does not implement AN. (b) The diagram also handles the AN-enabled case (entry to SYNC_DISABLE on mr_autoneg_enable), which the scoping sentence assigns to Clause 98 - making it ambiguous whether this diagram or the Clause 98 state machine governs the PHY when AN is enabled.

SuggestedRemedy

Define power_on and mr_main_reset (and any reset/enable conditions the Link Synchronization machine requires) independently of 98.5.1 for the AN-not-implemented case, or state that they are instantiated regardless of whether Clause 98 is implemented. Clarify the handoff between Figure 191-38 and the Clause 98 state machine when mr_autoneg_enable is asserted, so the AN-enabled behavior is defined in exactly one place.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

P134L33

Update variable definitions in 191.5.2.8.1

mr_main_reset

When Auto-Negotiation is implemented, this variable is as defined in 98.5.1.
When Auto-Negotiation is not defined or not implemented, mr_main_reset controls the resetting of the link synchronization state diagram.

Values:

false: do not reset the link synchronization state diagram
true: reset the link synchronization state diagram

power_on

When Auto-Negotiation is implemented, this variable is as defined in 98.5.1.
When Auto-Negotiation is not defined or not implemented, power_on is a condition that is true until such time as the power supply for the device has reached the operating region.

Values:

false: the device is completely powered (default)
true: the device has not been completely powered

mr_autoneg_enable

When Auto-Negotiation is implemented, this variable is as defined in 98.5.1.
When Auto-Negotiation is not defined or not implemented, mr_autoneg_enable is set to false.

CI 191 SC 191.5.2.8 P135 L21 # 16

Wienckowski, Natalie

IVN Solutions LLC; Ethernova, Bosch

Comment Type E Comment Status D EZ - pull
awkward wording

SuggestedRemedy

Change: The polarity of the DME symbols can be of either polarity and can vary between SEND_S pulses.

To: The DME symbols can be of either polarity and can vary between SEND_S pulses.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Note from GZ - TFTD - proposed new wording is more unclear - does the polarity shift pulse-to-pulse, or even within a SEND_S? DME detection is polarity insensitive anyways. Maybe this should be a requirement on the receiver.

CI 191 SC 191.5.2.8.1 P136 L4 # 129

Muma, Scott

Microchip

Comment Type T Comment Status D variables

Could not find a statement of how force_config gets a value. Presumably it comes from register 1.2100.14 but there is no linkage in the text and not obvious since the register bit is not named the same as the variable.

SuggestedRemedy

Link registers and variables similar to Table 97-11 or change the text first sentence of the description with editorial license to read: This variable is set based on the value of bit 1.2100.14 (see 45.2.1.214) and indicates whether the PHY operates as the Leader or Follower.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Create section 191.5.2.6.a PHY control registers

The PHY control registers are shown in Table 191-10a (new table after Table 191-10)

See comment_129_a.jpg for table details.

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CI 191 SC 191.12.3 P164 L49 # 51

Zherebtsov, Aleksei

Infineon

Comment Type T Comment Status D fault tolerance

The -V1 MDI fault tolerance subclause states "The single conductor of the MDI should withstand, without damage, high-voltage transient noises and ESD per application requirements". The statement is not normative, and "per application requirements" names neither a stress level nor a test method, so nothing can be verified and nothing can be claimed in a PICS. The corresponding -T1 subclause, 191.11.3 on page 163 line 29, defers normatively to 96.8.3.

SuggestedRemedy

Either delete the sentence, or replace it with a normative and testable requirement, for example "The single conductor of the MDI shall withstand, without damage, the transient and ESD stresses specified in 96.8.3."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD - There was some discussion on D2.0. We elected not to remove the reference to 96.8.3 which has a "shall" for -T1. Should we add a "shall" for -V1?

CI 191 SC 191.14 P165 L43 # 77

Ran, Adeo

Cisco Systems

Comment Type TR Comment Status D 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 rountrip 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 alloaction 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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general

COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

SORT ORDER: Clause, Subclause, page, line

CI 191

SC 191.14

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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.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Clause 191:
TFTD there has been significant discussion on this with no agreement to make a change during D2.0 comment resolution.

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

<i>Cl</i> 191	<i>SC</i> 191.14	<i>P</i> 165	<i>L</i> 43	<i>#</i> 304
Razavi, Alireza		Eliyan		
<i>Comment Type</i>	T	<i>Comment Status</i>	D	<i>late - delay</i>

191.14 places a normative limit (Table 191-24) only on the end-to-end HS_PATH and LS_PATH delays, each of which is defined across two PHYs (e.g., HS_PATH is measured from the PHY_S XGMII to the PHY_D XGMII). There is no normative limit on the individual transmit-portion (XGMII-to-MDI) or receive-portion (MDI-to-XGMII) delay of a single PHY; the allocation between TX and RX is provided only as informative guidance in Annex 191A. Two consequences follow: (1) an individual PHY cannot be tested for delay conformance in isolation, because the only normative limit spans a second, independently-designed PHY; and (2) two PHYs that each assume a different TX/RX allocation can, when paired, exceed the Table 191-24 total even though each PHY individually claims conformance. This undermines multi-vendor interoperability, which is the purpose of the standard. Optional delay reporting detects such a mismatch but does not prevent it, since two conforming-on-paper PHYs can still fail to interoperate.

SuggestedRemedy

Introduce a normative per-PHY delay allocation so that interoperability holds by construction. In Clause 191 (e.g., 191.14 / Table 191-24), specify normative maximum values for the individual transmit-portion and receive-portion delay of each PHY, for both HS_PATH and LS_PATH, chosen such that the sum of the TX and RX sub-limits does not exceed the corresponding Table 191-24 total. This guarantees that any conforming TX paired with any conforming RX meets the end-to-end limit. Retain Annex 191A as informative, illustrating the allocation and the TX_Delay/RX_Delay measurement method (Figure 191A-1). The specific split values should be agreed within the Task Force; the normative requirement is that per-PHY TX and RX sub-limits exist and sum to no more than the Table 191-24 total. Alternatively, add two columns to Table 191-24 (maximum TX delay and maximum RX delay per path) rather than prose sub-limits.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

TFTD

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Cl 191A SC 191A P320 L31 # 78

Ran, Adeo Cisco Systems

Comment Type TR Comment Status D 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.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

TFTD if there is a desire to make a change.

Cl 192 SC 192 P190 L17 # 1

Lu, Chao BMW Group

Comment Type T Comment Status D 1G

Add a 1Gb/s LS PHY option for use with Clause 192

SuggestedRemedy

The draft limits the low-speed (LS) direction to 100 Mb/s, while production automotive camera applications already exceed this limit in the LS direction. With editorial license, incorporate the changes proposed in chini_3dm_02a_D2d0_1G-comments-preview.pdf (June 2, 2026 ad hoc folder, <https://ieee802.org/3/dm/public/adhoc/060226>), i.e. add a 1 Gb/s LS PHY option for use with Clause 192, and adapt all affected clauses/subclauses as shown in that markup file.

Proposed Response Response Status W

PROPOSED REJECT.

TFTD. There was no consensus in the CRG to make this change. See P802.3dm d2p0 Comment #358 for Motion details.

Cl 192 SC 192.1 P189 L10 # 103

Zimmerman, George CME Consulting/ADI,Cisco,Eliyan,Infineon,OnSemi,

Comment Type TR Comment Status D default config

While each PHY may support multiple data rates, a single common set (a least-common denominator) must be required in order to have interoperability as a single PHY type. The objectives and the design suggest that this is 2.5G+100M with reversibility, as startup requires transmission and reception of SEND_TS which is 3GBd/PAM2 common to 100M low data rate and 2.5Gb/s high data rate modes (similarly, the 100Mbps low rate mode is a common factor, but startup requires both link partners to support transmission and reception). All other speeds and directionality can then be options selected during startup training.

SuggestedRemedy

Replace the first 2 sentences of 192.1 ("MultiGBASE-AT1 and MultiGBASE-AV1 PHYs use ... through... may support multiple data rates." with
"MultiGBASE-AT1 and MultiGBASE-AV1 PHYs provide asymmetric transmission of multiple data rates, determined during startup. All MultiGBASE-AT1 and MultiGBASE-AV1 PHYs support at least 2.5Gb/s throughput in one direction and 100 Mb/s throughput in the opposite direction, with the ability to reverse directions at these data rates. Each PHY may support other optional data rates, and the ability to support reversing direction of rate asymmetry at rates other than 2.5 Gb/s and 100 Mb/s is optional. MultiGBASE-AT1 and MultiGBASE-AV1 PHYs use a time-division duplex (TDD) transmission structure between two active PHYs, in which one link partner transmits a burst while the other is silent."

At P190 L13 (Table 192-1), add a column to the right of the existing columns, labeled: "Optional/Mandatory", populating the rows with 100 Mb/s 2.5Gb/s (and 2.5Gb/s and 100 Mb/s) as Mandatory and all other rows with Optional. (editorial license to use M or O and add a footnote similar to Table 131-2 in IEEE Std 802.3-2022 if needed.)

At P202L32 (192.3.2 new 2nd paragraph), insert "The PCS shall support transmission and reception of 2.5 Gb/s and 100 Mb/s, and may support any combination of 5 Gb/s, 7.5 Gb/s, or 10 Gb/s in the high speed direction."

Add PICS - "PCS1", Feature "Rate support" Subclause 192.3.2 Value/Comment "Supports 2.5Gb/s and 100 Mb/s in both directions" Status M Support Yes[]
(editorial license - suggest new section before PCS Transmit for PCS - note, these might be major capabilities/options, but I couldn't see where they individually applied and PCS seemed more appropriate)
PCS2 5 Gb/s HS_TX Support 192.3.2 Value/Comment 5Gb/s HS Transmit Status O Support Yes[] No[]
PCS3 5 Gb/s HS_RS Support 192.3.2 Value/Comment 5Gb/s HS Receive Status O Support Yes[] No[]
PCS4 7.5 Gb/s HS_TX Support 192.3.2 Value/Comment 7.5Gb/s HS Transmit Status O Support Yes[] No[]
PCS5 7.5 Gb/s HS_RS Support 192.3.2 Value/Comment 7.5Gb/s HS Receive Status O Support Yes[] No[]
PCS6 10 Gb/s HS_TX Support 192.3.2 Value/Comment 10Gb/s HS Transmit Status O Support Yes[] No[]

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general

COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

SORT ORDER: Clause, Subclause, page, line

Cl 192

SC 192.1

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PCS7 10 Gb/s HS_RS Support 192.3.2 Value/Comment 10Gb/s HS Receive Status O
Support Yes[] No[]

operation is not assured if the rates supported by the XGMII implementation do not match those of the PHY.

At P257L4 (192.4.2.4.5) Add new final sentence to paragraph after "...the negotiated rates.": "While speed and direction are negotiated during startup, the requirements on the PCS, startup signaling, and the PMA make support of 2.5 Gb/s and 100 Mb/s with reversibility a lowest common denominator for interoperable physical layer links."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace the first 2 sentences of 192.1 ("MultiGBASE-AT1 and MultiGBASE-AV1 PHYs use ... through... may support multiple data rates." with,
"MultiGBASE-AT1 and MultiGBASE-AV1 PHYs provide asymmetric transmission of multiple data rates, which are determined during startup. All MultiGBASE-AT1 and MultiGBASE-AV1 PHYs support 2.5Gb/s transmit with 100 Mb/s receive and 2.5Gb/s receive with 100 Mb/s transmit. Each PHY may support other optional data rate combinations, and may support reversing direction of rate asymmetry at these other data rate combinations. MultiGBASE-AT1 and MultiGBASE-AV1 PHYs use a time-division duplex (TDD) transmission structure between two active PHYs, wherein one link partner transmits a burst while the other is silent."

At P190 L13 (Table 192-1):

Add a Support Required column to the right of table, noting all rows with 2.5 Gb/s as Mandatory and all other rows as Optional.

At P202L32 (192.3.2 new 2nd paragraph):

Insert, "The PCS shall support asymmetric operation using 2.5 Gb/s transmission with 100 Mb/s reception and 100 Mb/s transmission with 2.5 Gb/s reception. The PCS may optionally support 5 Gb/s, 7.5 Gb/s, or 10 Gb/s data rates in the high-speed direction."

Grant Editorial license to update PICS to reflect that both {2.5 Gb/s transmit and 100 Mb/s receive, 2.5 Gb/s receive and 100 Mb/s transmit} modes are mandatory, and all other rate/direction combinations are optional.

(Editor's note: Work with TDD champion to develop the PICS. It's anticipated that two of the rate combinations will be M and the rest O.)

At P257L4 (192.4.2.4.5):

Add new final sentence to paragraph after "...the negotiated rates",
"Although rate and direction are negotiated during startup, the two rate combinations operating at 2.5 Gb/s in one direction and 100 Mb/s in the opposite direction shall be supported as the minimum baseline rate combination for link interoperability."

Add new second paragraph to 46.1.3, updating Editor's instructions as appropriate.

For proper operation, the XGMII implementation's supported rate combinations should match the rates of the connected PHY type in both directions. For Auto-Negotiated rates, PHYs with multiple rates, or where the direction of asymmetry may be reversed, proper