**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | D02 Miscellaneous Comment Resolutions IV | |
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| Source | Billy Verso (Qorvo), | Billy dot Verso at qorvo.com |
| Re: | IEEE P802.15.4ab | |
| Abstract | Comment Resolutions for selected comments on the LB213 / P802.15.4ab D02. | |
| Purpose | This document provides text changes intended to be part of the final IEEE Std 802.15.4ab (amendment to IEEE Std 802.15.4), as part of resolving selected comments from the consolidated spreadsheet (DCN 15-25-0174) that have been assigned to the author to resolve. | |
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**Introduction**

This submission addresses comments relating to the distinction between MAC functionality and Next Higher Layer functionality.

The commenter looked at places where the word “shall” was used in the 4ab D02 draft and considered whether this usage was mandating MAC layer functionality, which is fine, or Higher Layer functionality, which 802.15.4 should not do, except perhaps in cases where the MAC could have a role in verifying and enforcing the function being so specified.

The set of comments covered here are ones with a simple resolution proposed that should be straightforward to accept outright or with slight modifications for a simple revised resolution.

**The comments addressed here are:**

[1 Comment Index # 397 3](#_Toc200728084)

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[3 Comment Index #s 402 and 403 4](#_Toc200728086)

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# Comment Index # 397

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 397 (Billy) | 66 | 10.39.3.2 | 18 | I reckon it is the NHL that decides to turn on the RX to receive the response. | change "shall" to "should" |

**Discussion:** This relates to the lines shown below:

A close-up of a text

AI-generated content may be incorrect.

This action is taken by the next higher layer. After invoking MCPS-DATA.request to send the Advertising Poll, the next higher layer issues the MLME-RX-ENABLE.request to await the response. This is shown in the extract below from the message sequence chart of Figure 29.

A diagram of a data flow

AI-generated content may be incorrect.

Since the next higher layer is responsible for the activity, we should not use “shall” here.

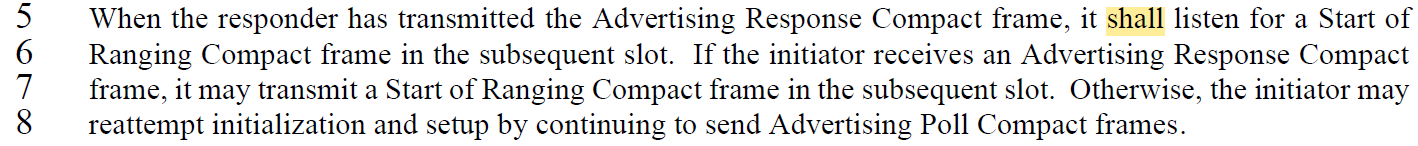
**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

# Comment Index # 401

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 401 (Billy) | 67 | 10.39.3.2 | 5 | I reckon it is the NHL that decides to turn on the RX to receive the Start of Ranging. | change "shall" to "should" |

**Discussion:**

This relates to the lines shown below:



This again is next higher layer activity. For evidence of this we can look at the message sequence charts of Figures 29 and 30, where we can see the MLME-RX-ENABLE.request primitive being invoked by next higher layer to turn on the receiver to listen for the start of ranging frame. So, we should not use “shall” here either.

**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

# Comment Index #s 402 and 403

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 402 (Billy) | 67 | 10.39.3.2 | 11 | I reckon it is the NHL that decides to take the action specified here. | change "shall" to "should" |
| 403 (Billy) | 67 | 10.39.3.2 | 14 | I reckon it is the NHL that decides to take the action specified here. | change "shall" to "should" |

**Discussion:**

Both these comments relate to the same paragraph:

A close-up of a text

AI-generated content may be incorrect.

Both these activities are in the realm of the next higher layer…

The next higher layer is taking the decision to move to the active ranging state and progress to the control phase, configuring the PHY channel/mode for the control phase and invoking MCPS-DATA.request and MLME-RX-ENABLE.request primitives to send/receive the control phase poll/response frames, (as described in subclause 10.39.10.2 and shown in Figure 55).

The next higher layer is clearly the entity knowing the protocol status and needs and is invoking (or not) the MCPS-DATA.request to send the Advertising Poll Compact frames (or not), depending on whether it wishes to continue with ranging initialization or discontinue.

For both these comments then the resolution proposed is:

**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

# Comment Index #s 415 and 416

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 415 (Billy) | 71 | 10.39.3.5 | 22 | I reckon it is the NHL that doing this, so propose to rewrite to say the same thing without the "shall". | Change 1st & 2nd sentence of paragraph to "In addition to the common ranging configuration fields, the initiator provides synchronization information in the Start of Ranging Compact frame. If the Starting Block Index field is present in the Start of Ranging Compact frame, the value of the Time Offset field indicates to the time difference between ...". |
| 416 (Billy) | 71 | 10.39.3.5 | 29 | I reckon it is the NHL that is acting here, so let’s say the same thing without the "shall" that are on both lines 29 and 30. | Change "shall set" to "sets", and on the next line change "shall apply" to "applies", and I think these two sentences would read better if they were combined using "and the" to replace ". The" |

**Discussion:**

Both these comments relate to the same paragraph:

A close-up of a text

AI-generated content may be incorrect.

These activities are in the realm of the next higher layer. It is the next higher layer in the initiator that is sending the Start of Ranging frame and deciding when the ranging is beginning and providing that synchronization information by setting the Time Offset field value and the NB Channel Seed field value in the Start of Ranging frame.

In this case, rather than changing the “shall” to a “should”, the commenter is suggesting a change in language to describe the expected activity without used of either “shall” or “should”.

The changes proposed are shown below, in the proposed resolution, which is a “Revised” rather than a simple “Accepted”, because the first proposed change contains a typo (a “to” that should have been removed), and the second proposed change includes an optional combining of the sentences, which the proposed resolution below includes, and some other editorial changes.

**Proposed Disposition:** Revised.

**Disposition Detail:** Change the paragraph as shown below:

In addition to the common ranging configuration fields, the initiator ~~shall provide~~ provides synchronization information in the Start of Ranging Compact frame. If the Starting Block Index field is present in the Start of Ranging Compact frame, ~~the initiator shall set the value of~~ the Time Offset field ~~to~~ indicates the time difference between the start of the Start of Ranging Compact frame and the start of the ranging block with index indicated by the Starting Block Index field in the Start of Ranging Compact frame. If the Starting Block Index field is not present in the Start of Ranging Compact frame, the ~~value of the~~ Time Offset field indicates the time difference between the start of the Start of Ranging Compact frame and the start of ~~the~~ ranging block index zero. To enable synchronized switching of ~~the~~ narrowband channels the initiator ~~shall set~~ sets the value of the NB Channel Seed field~~. The~~ and the responder ~~shall apply~~ applies the provided value to calculate the narrowband channel index used during the first and all following ranging blocks as defined in 10.39.8.4.

# Comment Index # 419

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 419 (Billy) | 71 | 10.39.3.6 | 41 | I reckon it is the NHL that decides to turn on the RX to receive the response, so propose to rewrite to say the same thing without the "shall". | change "shall listen" to "listens" |

**Discussion:**

This relates to the lines shown below:

A close up of a text

AI-generated content may be incorrect.

As for earlier comments addressed in this submission, this is next higher layer activity, deciding to invoke MLME-RX-ENABLE.request primitive to do this listening, so “shall” is not correct. The commenter is proposing changing "shall listen" to "listens", which is an acceptable resolution.

**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

# Comment Index #s 420 and 421

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 420 (Billy) | 71 | 10.39.3.6 | 44 | Since the NHL invokes the MCPS-DATA.request to send the response, it is probably the NHL that is providing the randomness, could change shall to should but maybe we can just omit the "shall" | change "the initiator shall randomly select" to "the initiator randomly selects" and change "transmit" to "transmits" |
| 421 (Billy) | 71 | 10.39.3.6 | 47 | I reckon it is the NHL that doing this, so propose to rewrite to say the same thing without the "shall". | change "shall listen" to "listens" |

**Discussion:**

Both these comments relate to the same paragraph, at the bottom of p.71:

A text on a page

AI-generated content may be incorrect.

It is the next higher layer in the responder that is sending the Advertising Response frame by invoking the MCPS-DATA.request, it is therefore the responder NHL that is choosing when to send, i.e., next higher layer is randomly selecting which slot to respond in. The commenter’s proposed change to "the initiator randomly selects” is a good approach but is not correct since it is the responder transmitting and selecting the slot. A revised sentence is proposed below to make that clearer and to also include the editorial point the commenter makes, i.e., to change "transmit" to "transmits".

The second comment (#421) is like earlier comments addressed in this submission. It is the next higher layer deciding to invoke MLME-RX-ENABLE.request primitive to do this listening. The proposal to change "shall listen" to "listens" is an acceptable resolution.

**Proposed Disposition:** Revised.

**Disposition Detail:** Change the paragraph as shown below:

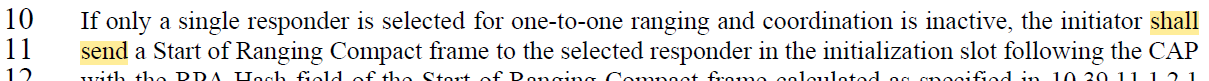
Upon the reception of the Advertising Poll Compact frame from the initiator any intended responder with the intention to ~~start a~~ join the ranging session ~~with the initiator shall~~ randomly ~~select~~ selects one of the initialization slots in the CAP and ~~transmit~~ transmits an Advertising Response Compact frame at the beginning of the selected ~~initialization~~ slot. The responder may request a specific ranging mode by including the MMS Ranging Mode field in the Advertising Response Compact frame. Each responder that has transmitted an Advertising Response Compact frame ~~shall listen~~ listens for an Advertising Confirmation Compact frame or a Start of Ranging Compact frame in the initialization slot at the end of the CAP.

1. **Comment Index # 423**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 423 (Billy) | 72 | 10.39.3.6 | 10 | I reckon it is the NHL that doing this, so propose to rewrite to say the same thing without the "shall". | change "shall send" to "sends" |

**Discussion:**

This relates to the lines shown below:



Like earlier comments, it is next higher layer that invokes the MCPS-DATA.request to send the Start of Ranging frame. The proposal to change "shall send" to "sends" is an acceptable resolution.

**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

# Comment Index # 426

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 426 (Billy) | 73 | 10.39.3.6 | 16 | I reckon it is the NHL that doing this, so propose to rewrite to say the same thing without the "shall". | change "shall send" to "sends" |

**Discussion:**

This relates to the lines shown below:

A close up of text

AI-generated content may be incorrect.

Like earlier comments, it is next higher layer in the initiator that selects which responders it wants to talk to and invokes the MCPS-DATA.request to send the Advertising Confirmation frame indicating the selected responders.

The proposal to change "shall send" to "sends" is an acceptable resolution.

**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

1. **Comment Index # 431**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **Pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 431 (Billy) | 74 | 10.39.3.6 | 25 | I reckon it is the NHL that doing this, so propose to rewrite to say the same thing without the "shall". | change "shall listen" to "listens" |

**Discussion:**

This relates to the lines shown below:

A close-up of a computer screen

AI-generated content may be incorrect.

As for earlier comments addressed in this submission, this is next higher layer activity, deciding to invoke MLME-RX-ENABLE.request primitive to do this listening, so “shall” is not correct. The commenter is proposing changing "shall listen" to "listens", which is an acceptable resolution.

**Proposed Disposition:** Accepted.

**Disposition Detail:** <blank>

# Comment Index #s 432 and 433

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **Pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 432 (Billy) | 75 | 10.39.3.7.1 | 4 | I reckon it is the NHL that doing this, so propose to rewrite to say the same thing without the "shall". | change "shall transmit" to "transmits" |
| 433 (Billy) | 75 | 10.39.3.7.1 | 13 | I reckon it is the NHL that doing this, so propose to rewrite to say the same thing without the "shall". | change "shall discontinue" to "discontinues" and change "cease" to "ceases". |

**Discussion:**

These two comments relate to the paragraph shown below:

A text in a document

AI-generated content may be incorrect.

As for earlier comments, these are next higher layer activities, the paragraph is changed as per the disposition below, to include some additional editorials.

**Proposed Disposition:** Revised.

**Disposition Detail:** Change the paragraph as shown below:

After transmitting the Start of Ranging Compact frame, the initiator enters the control phase at the time specified by the Time Offset field in the Start of Ranging Compact frame. If the initiator had accepted the responder’s request for a specific one-to-many ranging mode during the initialization and setup phase, as explained in 10.39.3.5, the initiator ~~shall transmit the~~ transmits a One-to-many Poll Compact frame with the Message Control field value (within the Message ID field) that matches the requested one-to-many ranging mode. After receiving the Start of Ranging Compact frame, if the RPA Hash field value calculated by the responder matches the RPA Hash field value of the Start of Ranging Compact frame, the responder enters the control phase at the time specified by the Time Offset field in the Start of Ranging Compact frame. If the RPA Hash field value calculated by the responder does not match the RPA Hash field value of the Start of Ranging Compact frame, the responder may reattempt the initialization and set up by listening for another Advertising Poll Compact frame. After the initiator has confirmed receipt of the response Compact frame(s) from the responder(s) during the control phase, and unless initialization of further devices is required, the initiator ~~shall discontinue~~ discontinues ranging initialization and ~~cease the~~ ceases transmission of Advertising Poll Compact ~~frame~~ frames.

# Comment Index # 456

|  |  |  |  |  |  |
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| **Ind** | **Pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 456 (Billy) | 79 | 10.39.4.1 | 18 | To avoid the distinction of NHL or MAC and whether "shall" is appropriate we should change the language used here: | On line 18 change "shall continue" to "continues" and change "enter" to "enters" on line 19. Then on line 19 change "shall also continue" to "also continues" and change "enter" to "enters" on line 20. |

**Discussion:**

This relates to the lines shown below:

A close up of a text

AI-generated content may be incorrect.

As for earlier comments the activities described here are next higher layer activities. The commenter’s proposed changes are an acceptable resolution.

**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

1. **Comment Index # 457**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **Pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 457 (Billy) | 79 | 10.39.4.1 | 28 | To avoid the distinction of NHL or MAC and whether "shall" is appropriate we should change the language used here: | In this paragraph change three occurrences of "shall update" to "updates", and two occurrences of "shall use" to "use" |

**Discussion:**

This relates to the paragraph shown below:

A close up of a text

AI-generated content may be incorrect.

Arguably, the MCPS-DATA.indication delivers the Compact frame, and it is the layer above that decodes the proposed operating parameter changes and, understanding its own needs and capabilities, decides whether to adopt the proposed operating parameter changes (or not).

Since the intention of the protocol definition is for these actions to be taken, the commenter’s proposed changes are an acceptable resolution to describe the necessary activities without formally mandating next higher layer action… with some minor editorial changes as follows:

**Proposed Disposition:** Revised.

**Disposition Detail:** Change the paragraph as shown below:

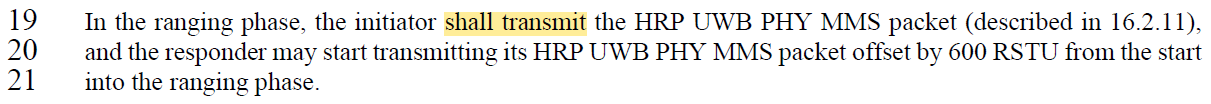
Upon receiving the poll Compact frame including short-term operating parameters, (with Long-term Parameters Update field in the Poll Control field set to zero), the responder ~~shall update the~~ updates its short-term operating parameters accordingly. The updated short-term operating parameters take effect at the end of the poll Compact frame and are only applicable to the current ranging round. All subsequent transmissions in the current ranging round ~~shall~~ use the updated operating parameters. All parameters revert to the long-term operating ~~parameter~~ parameters in the next ranging round. Upon receiving a poll Compact frame with the Long-term Parameters Update field set to one and including long-term operating parameters, if the responder agrees with the suggested parameters, it should include the Response Status field set to LTP\_ACK in its response frame. All transmissions in the current ranging round ~~shall~~ continue to use the existing operating parameters. If the responder included the Response Status field set to LTP\_ACK in its response frame, the responder ~~shall update~~ updates its long-term operating parameters prior to the start of the next ranging round. If the initiator receives the Response Status field set to LTP\_ACK in the response frame, the initiator ~~shall update~~ updates its long-term operating parameters prior to the start of the next ranging round allocated to the responder.

# Comment Index # 458

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Ind** | **Pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 458 (Billy) | 80 | 10.39.5 | 19 | To avoid the distinction of NHL or MAC and whether "shall" is appropriate we should change the language used here: | Change "initiator shall transmit" to "initiator transmits", and change responder text part of the sentence to "and for one-to-one interleaved MMS UWB ranging, the responder starts transmitting its …" |

**Discussion:**

This relates to the paragraph shown below:



Two issues are dealt with here. Firstly, the “shall transmit”, needs changing since the act of transmitting is controlled by the next higher layer invoking the MCPS-DATA.request to send the packet. Secondly, is a proposed addition of text to remove the slightly confusing “may” and instead clarify the context, i.e., that for the one-to-one interleaved case the responder “starts” responding at the specified offset.

The commenter’s proposed changes are an acceptable resolution to describe the necessary activities without mandating next higher layer action, however, some minor additional errors need correction, so a revised the resolution is proposed as follows:

**Proposed Disposition:** Revised.

**Disposition Detail:** Change the paragraph as shown below:

In the ranging phase, the initiator ~~shall transmit~~ transmits the HRP UWB PHY MMS packet (described in 16.2.11), and, for one-to-one interleaved MMS UWB ranging, the responder ~~may start~~ starts transmitting its HRP UWB PHY MMS packet ~~offset by~~ 600 RSTU ~~from the start into~~ after the start of the ranging phase.

1. **Comment Index #s 463, 464, 465**

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| **Ind** | **Pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 463 (Billy) | 81 | 10.39.6 | 12 | To avoid the distinction of NHL or MAC and whether "shall" is appropriate we should change the language used here: | Change "the responder shall transmit a report packet" to "the responder transmits its report packet", and on line 13 change two occurrences of "shall transmit" to "transmits" |
| 464 (Billy) | 81 | 10.39.6 | 19 | To avoid the distinction of NHL or MAC and whether "shall" is appropriate we should change the language used here: | Change "shall be" to "is", and "shall transmit" to "transmits". |
| 465 (Billy) | 81 | 10.39.6 | 21 | To avoid the distinction of NHL or MAC and whether "shall" is appropriate we should change the language used here: | Change "shall be" to "are" |

**Discussion:**

These relate to different paragraphs on page 81. They are like previous comments with the same premise, and the proposed changes are shown below in context:

Firstly, the proposed changes for comment Index #463, to the paragraph on p.81 line 9:

With one initiator and one responder the report phase consists of one or two periods for transmission of reports. The durations of the two reporting periods are specified by the *macMms1stReportNSlots* and *macMms2ndReportNSlots* attributes. If the report phase has only a single transmission, either the initiator, or the responder ~~shall transmit~~ transmits a report packet in the first reporting period. If the report phase has two transmissions, the responder ~~shall transmit~~ transmits its report packet in the first reporting period, and the initiator ~~shall transmit~~ transmits its report packet in the second reporting period. Figure 42 shows the possible report packet positions in the report phase.

Secondly, the proposed changes for comment Index #464, to the paragraph on p.81 line 18:

For the bi-directional reporting, where both the initiator and the responder send report packets, the transmission of the reports ~~shall be~~ is performed independently, i.e., the initiator ~~shall transmit~~ transmits its report in the second period, regardless of whether it received the responder’s report in the first period.

Finally, the proposed change for comment Index #465, to the sentence on p.81 line 21:

A report primarily serves to provide ranging results obtained during the ranging phase. The values for the reply time and round-trip time ~~shall be~~ are reported as measured by its sender's local clock without clock frequency offset compensation to the receiver's side. …

Since the changes are acceptable resolutions for the comments, a simple accept is proposed.

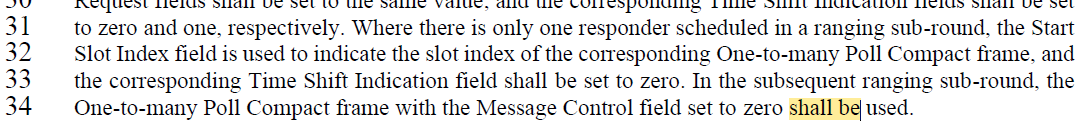
**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

# Comment Index # 483

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| **Ind** | **Pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 483 (Billy) | 86 | 10.39.9.3 | 34 | To avoid the distinction of NHL or MAC and whether "shall" is appropriate we should change the language used here: | Change "shall be" to "is". |

**Discussion:**

This relates to the lines shown below:



As for earlier comments addressed in this submission, this is next higher layer activity since it is invoking the MCPS-DATA.request to send the frame and determining the message control field value. The proposed change of "shall be" to "is" is an acceptable resolution. So…

**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

1. **Comment Index # 487**

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| **Ind** | **Pg** | **clause** | **line** | **Comment** | **Proposed Change** |
| 487 (Billy) | 87 | 10.39.9.3 | 19 | To avoid the distinction of NHL or MAC and whether "shall" is appropriate we should change the language used here: | Change "shall transmit" to "transmits", here and for the five additional occurrences in the paragraph as it continues into p.88 |

**Discussion:**

This relates to the lines shown below, that begins on p.87 and continues into p.88:

A close-up of a text

AI-generated content may be incorrect.A close-up of a text

AI-generated content may be incorrect.

As for earlier comments addressed in this submission, it is the next higher layer invoking the MCPS-DATA.request to send the appropriate frames at the appropriate times. The proposed changing of "shall transmit" to "transmits" is an acceptable resolution. So…

**Proposed Disposition:** Accepted. **Disposition Detail:** <blank>

*<END>*