IEEE P802.11
Wireless LANs

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| Proposed Draft Text for Short Frame in Blindness Issue |
| Date: 2021-03-27 |
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Abstract

This submission proposes draft text for Short Frame in Blindness Issue

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Make the TBD duration a fixed value in the SPEC which is 44us
* Rev 2: Shorten the TBD duration to be 32us to further reduce the risk according to the feedback received during the meeting and offline

This submission is to solve the highlighted TBD in the following motion for the short frame case in 35.3.13.7 Medium synchronization recovery procedure.

In R1, if during a transmission of a STA (STA-1) of a non-STR non-AP MLD, another STA (STA-2) of the same MLD cannot detect its medium state when required (due to STA-1’s UL transmission interference), STA-2 shall start a MediumSyncDelay timer at the end of STA-1’s transmission, unless the STA-2 ended a transmission at the same time.

* The MediumSyncDelay timer expires after a duration value that is either assigned by AP or a default value in the specification or if at least either of the following events happens:
	+ any received PPDU with a valid MPDU,
	+ a received PPDU whose corresponding RXVECTOR parameter TXOP\_DURATION is not UNSPECIFIED,

whichever happens first.

* STA-2 shall perform CCA until the MediumSyncDelay timer expires. Additional TBD exceptions may be considered.

NOTE – It is TBD whether STA-2 is required to start the MediumSyncDelay timer if the transmission of STA-1 is shorter than TBD duration.

[Motion 150, #SP373, [92] and [273]]

**Discussion 1**:

When the transmission of a STA (STA-1) of a non-STR non-AP MLD is a short frame (e.g., RTS, CTS, ACK, BA, QoS Null, NDP feedback, etc.), the blindness duration of another STA (STA-2) is also short, and the impact of this short blindness duration is minor. Please refer to DCN 21/0266r0 for more details. Hence, we propose that the STA-2 is **NOT** required to start the MediumSyncDelay timer if the transmission of STA-1 is shorter than TBD duration.

**Discussion 2**: How to determine the TBD duration.

Option 1: using a fixed value.

The TBD duration can be a fixed value defined in the spec.

Option 2: A default value + a configuration by the AP MLD

The TBD duration has a default value defined in the spec. The AP MLD can configure the TBD duration based on the traffic load in its BSS. The configuration process is similar as that of the MediumSyncDelay timer duration value.

We see that Option 1 is simpler for implementation, hence the following spec text is based on option 1.

**Discussion 3**: What’s the fixed value of the TBD duration.

The major use case is the control response frames. PPDU length of typical control response frames are listed in this table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Frame** | **# of Octets** | **PPDU type** | **Preamble Length** | **Data Rate** | **Data Length** | **PPDU Length** |
| CTS | 14 | Non-HT / Non-HT Dup | 20us | 24Mbps | 8us | 28us |
| ACK | 14 | Non-HT / Non-HT Dup | 20us | 24Mbps | 8us | 28us |
| BA (bitmap length=64) | 32 | Non-HT / Non-HT Dup | 20us | 24Mbps | 12us | 32us |

We can see that 32us is enough for most control response frames. Hence we propose that the fixed value of the TBD duration is 32us.

***Editing instructions formatted like this are intended to be copied into the TGbe Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGbe Editor: Editing instructions preceded by “TGbe Editor” are instructions to the TGbe editor to modify existing material in the TGbe draft. As a result of adopting the changes, the TGbe editor will execute the instructions rather than copy them to the TGbe Draft.***

***TGbe Editor: Modify Clause 35 as follows:***

35. Extremely High Throughput (EHT) MAC specification

35.3 Multi-link operation

 35.3.13 Multi-link channel access

35.3.13.7 Medium synchronization recovery procedure

A STA affilitated with a non-AP MLD that belongs to a NSTR link pair, is considered to have lost medium synchronization (due to UL interference) when the other STA, that is affiliated with the same MLD and belongs to that link pair, transmits a PPDU, except under the following condition:

- Both STAs ended a transmission at the same time.

A STA that has lost medium synchronization due to transmission by another STA affiliated with the same MLD shall start a MediumSyncDelay timer at the end of that transmission event if that transmission event is longer than aMediumSyncThreshold. The STA may not start the MediumSyncDelay timer if the transmission event is shorter than or equal to aMediumSyncThreshold.

Editor Note: The value of aMediumSyncThreshold needs to be specified.

The MediumSyncDelay timer is a single timer, shared by all EDCAFs within a non-AP STA, that is initialized with a default TBD value. The STA shall update the timer duration value with the one contained in the TBD field of the TBD element in the most recent frame received from its associated AP. In addition, the timer resets to zero when any of the following events occur:

- The STA receives a PPDU with a valid MPDU.

- The STA receives a PPDU whose corresponding RXVECTOR parameter TXOP\_DURATION is not UNSPECIFIED.

While the MediumSyncDelay timer is running at a STA, it shall perform CCA and shall not transmit a frame that initiates a TXOP except under TBD conditions.

**Straw Poll 1: Do you support incorporating the proposed draft text in this document 11-21/0267r3 to the next revision of TGbe Draft 0.4?**

**Result: Yes/No/Abstain**