IEEE P802.11
Wireless LANs

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| **CC40 CR for clasue 11.21.18.6** |
| **Date:** 2022-08-19 |
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Abstract

This submission proposes the resolutions for following 20 CIDs:

* 538, 96, 494,539, 785, 888, 158, 289, 757, 347, 758, 497, 542, 597, 889, 122, 157, 759, 883, and 822

This amendment is based on the 11bf D0.2

Revisions:

* Rev 0: Initial version of the document.

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGbf D0.2 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbf D0.2 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

#### *CID 538*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 538 | 11.21.18.6 | 68.16 | As similar to 11az, to process the TB sensing measurement efficiently, the polling phase shall be done first in the TB sensing measurement.so, to clarify it, the text of P68L16 should be modified. | Modify the text of P68L16 based on the comment. | Rejected.I agree with the commenter in principle. Since the polling phase is used to check whether STAs assigned by the AP within the sensing measurement setup phase can participate in the TB sensing measurement, it performs in the TB sensing measurement instance as described in 11.21.18.6.1. However, since this clause describe the general concept of TB measurement instance and details for Polling is also described in another subclause, we don’t need to modify this sentence.  |

Discussion: none

P68L16 in 11bf D0.1



P85L29 in 11bf D0.2



#### *CID 96, 494, 539, 785*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 96 | 11.21.18.6 | 68.19 | This Editor's Note leaves the door open for the definition of new features. Thus, it should be in the SFD (features) and not in the spec draft. Content of the note is out of scope for the draft. | Delete the Editor's Note. | Revised I agree with the commenter in principle. Since legacy STA does not support the Trigger frame, it does not need to be included in this clause. However, since we don’t have any decision for supporting of legacy STA or sensing measurement procedure considering the legacy STA, this can be moved the other clause and then further discussed. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22- 1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 494 | 11.21.18.6 | 68.19 | Since the TB sensing measurement instance can be used only for HE/EHT STAs, is this Editor's Note really needed here? (Even this is for the instruction or guide for future action, it's not clear why it should be in this subclause) | Remove the Note (for D1.0) until there is a related proposal to clarify this. | Revised I agree with the commenter in principle. Since legacy STA does not support the Trigger frame, it does not need to be included in this clause. However, since we don’t have any decision for supporting of legacy STA or sensing measurement procedure considering the legacy STA, this can be moved the other clause and then further discussed. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 539 | 11.21.18.6 | 68.19 | The legacy STA ddes not support the Trigger frame. Delete the Editor's Note. | Delete the Editor's Note. | Revised I agree with the commenter in principle. Since legacy STA does not support the Trigger frame, it does not need to be included in this clause. However, since we don’t have any decision for supporting of legacy STA or sensing measurement procedure considering the legacy STA, this can be moved the other clause and then further discussed. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 785 | 11.21.18.6 | 68.19 | The fundamental essence of TB sensing is about aggregating multiple STAs in the same sequence. There is no simple way to do it for pre-HE STAs since they don't support TF and TB PPDUs. | Delete the note" Methods to support other STAs are TBD". | Revised I agree with the commenter in principle. Since legacy STA does not support the Trigger frame, it does not need to be included in this clause. However, since we don’t have any decision for supporting of legacy STA or sensing measurement procedure considering the legacy STA, this can be moved the other clause and then further discussed. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |

P68L19 in 11bf D0.1

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***TGbf Editor: please delete the Editor’s note at P83L65 of 11bf D0.2***

***TGbf Editor: please add the following text after the last text of the 11.21.18.5 Sensing measurement instance: General in 11bf D0.2.***

“Note : The sensing measurement instance to support STA except for HE and/or EHT STAs is TBD. “ (#96, 494, 539, 785)

#### *CID 888,*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 888 | 11.21.18.6 | 68.25 | Five examples of TB sensing measurement sequences are described in Figure 11-41c. Not clear if all modes are mandatory or optional, and the corresponding application scenarios. Please specify. | as in the comment. | Revised. The responders performing the TB sensing measurement instance support one or more of the following phase: Polling phase, TB sounding phase, NDPA sounding phase, and reporting phase. And, according to the sensing scenario or sensing measurement setup, the TB sensing measurement instance as described in figure 11-41c can consist of a combination of the above phases. Therefore, it does not mean that all procedures shown in examples should be always supported always in TB sensing measurement. To clarify it, we can add some text before figure 11-41c.  Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |

***TGbf Editor: please add the text at P83L64 of 11bf D0.2 as follows***

The TB sensing measurement instance may consist of several limited phase combination as illustrated in Figure 11-41c (888)

#### *CID 158, 289, 757*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 158 | 11.21.18.6 | 68.32 | It is not clear if Example 5 in Figure 11-41c is showing one or two TB sensing measurement instances. It is mentioned in the text that "Example 5 shows two TB sensing measurement instances.", however, according to the definition of TB measurement instance, this example could be also one TB measurement instance with multiple polling phases. | Rephrase the text and edit Figure 11-41c to clarify the case where this example would constitute only one TB sensing measurement instance | Revised. I agree with the commenter in principle. As in the comment, this clause generally describes how to configure one TB sensing measurement instance. And according to the description, each TB sensing measurement instance can be configured by using the following phases: Polling phase, NDPA sounding phase, Trigger frame (TF) sounding phase, and reporting phase. Also, each TB sensing measurement instance can be configured by including the different phases in that and can start with Polling phase as described in clause 11.21.18.6.1 Polling phase.Thus, to clarify it and to prevent ambiguity, the text and figure related to example 5 are deleted. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 289 | 11.21.18.6 | 68.49 | Suggest adding some descriptions on when the polling phase can be used in Example 5. It is not clear whether the polling phase can be added everywhere. For example, is the following procedure supported: Polling phase + NDPA phase + Polling phase + TF phase + Polling phase + Reporting phase? | As in the comment. | Revised I agree with the commenter in principle. As in the comment, this clause generally describes how to configure one TB sensing measurement instance. And according to the description, each TB sensing measurement instance can be configured by using the following phases: Polling phase, NDPA sounding phase, Trigger frame (TF) sounding phase, and reporting phase. Also, each TB sensing measurement instance can be configured by including the different phases in that and can start with Polling phase as described in clause 11.21.18.6.1 Polling phase.Thus, to clarify it and to prevent ambiguity, the text and figure related to example 5 are deleted. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 757 | 11.21.18.6 | 68.32 | Consider either deleting 'an only polling phase measurement instant' in example 5 of the figure 11-41c as measurement instant should be accomponied with sounding phase. Or add a sounding phase to it. | As per comment | Revised I agree with the commenter in principle. As in the comment, this clause generally describes how to configure one TB sensing measurement instance. And according to the description, each TB sensing measurement instance can be configured by using the following phases: Polling phase, NDPA sounding phase, Trigger frame (TF) sounding phase, and reporting phase. Also, each TB sensing measurement instance can be configured by including the different phases in that and can start with Polling phase as described in clause 11.21.18.6.1 Polling phase.Thus, to clarify it and to prevent ambiguity, the text and figure related to example 5 are deleted. . Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |

P68P13 of 11bf D0.1



P68P32 of 11bf D0.1



Figure 11-41c of 11bf D0.1



***TGbf Editor: please modify the following paragraph at P84 of 11bf D0.2 as follows***

Figure 11-41c (Examples(#812) of TB sensing measurement instances) shows ~~five~~ four examples of TB sensing measurement instances. Example 1 shows a TB sensing measurement instance(#860) consisting of a polling phase, an NDPA sounding phase, and a reporting phase. Example 2 shows a TB sensing measurement instance consisting of a polling phase and a TF sounding phase. Example 3 and example 4 show two TB sensing measurement instances consisting of a polling phase, an NDPA sounding phase, a TF sounding phase, and a reporting phase. ~~Example 5 shows two TB sensing measurement instances.~~ ~~The first one consists of a polling phase, an NDPA sounding phase, and a TF sounding phase. The second one consists of a polling phase and a reporting phase~~. (#158, 289, 757)

***TGbf Editor: please modify the Editor’s note at P84L15 of 11bf D0.2 as follows***

Editor’s Note: The order of TF sounding and NDPA sounding as shown in example 3, and example 4~~, and example 5~~ is TBD. The reporting phase in example 4 may be separated from the sounding phases (TBD). ~~The polling in the reporting phase in example 5 could be addressed to sensing responders other than those involved in the sounding (TBD).~~ LTF security update shown in all examples is TBD. (#158, 289, 757)

***TGbf Editor: please delete example 5 in figure 11-41c of 11bf D0.2***

#### *CID 347,758,497, 542, 579, 889*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 347 | 11.21.18.6 | 68.45 | Figure 11-41c--Example of TB sensing measurement instancesNo evidence is provided to justify using the LTF security for sensing purposes. Propose to remove the LTF security from the figure. | Remove the words "LTF security update" in examples 1, 3, 4, and 5. Remove the container of the LTF security update in example 2. | **Revised** I agree with commenter in principle. We didn’t have any decision of LTF security so for. So. It is better to remove it from the current 11bf draft and if the thing related to this will be decided and then we will add it. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 758 | 11.21.18.6 | 68.45 | Remove all references of the Secure LTF from amendment until the requirement is well understood | Modify Figure 11-41c to remove 'LTF-Sec update reference' text | **Revised** I agree with commenter in principle. We didn’t have any decision of LTF security so for. So. It is better to remove it from the current 11bf draft and if the thing related to this will be decided and then we will add it. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 497 | 11.21.18.6 | 68.48 | No agreement or related description is on LTF security update in the Figure 11-41c. To avoid confusing, it'd be better to delete it in the figure, otherwise specify it with any reference or related technical description. | As in comment. | **Revised** I agree with commenter in principle. We didn’t have any decision of LTF security so for. So. It is better to remove it from the current 11bf draft and if the thing related to this will be decided and then we will add it. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 542 | 11.21.18.6 | 68.50 | What is the LTF security update? If it means the secure LTF, it is not decided yet.So, It is better to notify after we have an agreement for secure LTF in 11bf.Delete the "LTF sec. update" in figure 11-41c and the following text "LTF security update shown in all examples is TBD. " in Editor's note. | As in comment. | **Revised** I agree with commenter in principle. We didn’t have any decision of LTF security so for. So. It is better to remove it from the current 11bf draft and if the thing related to this will be decided and then we will add it. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 579 | 11.21.18.6 | 68.68 | Figure 11-41c, the "LTF sec. update" is not clear. Please add definition in the text. | as in the comment. | **Revised.** We didn’t have any decision of LTF security so for. So. It is better to remove it from the current 11bf draft and if the thing related to this will be decided and then we will add it.Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 889 | 11.21.18.6 | 68.50 | Figure 11-41c, the "LTF sec. update" is not clear. Please add definition in the text. | as in the comment. | **Revised.** We didn’t have any decision of LTF security so for. So. It is better to remove it from the current 11bf draft and if the thing related to this will be decided and then we will add it.Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |

P68L36



***TGbf Editor: please delete the following text “LTF security update shown in all examples is TBD” in Editor’s Note at P84L15 of 11bf D0.2.***

***TGbf Editor: please delete “ LTF sec. update” in the figure11-41c of 11bf D0.2***

#### *CID 122, 157, 759*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 122 | 11.21.18.6 | 68.64 | "AP sends a Sensing NDP Announcement frame followed by I2R NDP to STA3 and STA 4.". NDP does not have address. What does it mean to send a NDP to STA3 and STA 4? | Replace with e.g. "AP sends a Sensing NDP Announcement frame to STA3 and STA 4 followed by I2R NDP." | **Accepted**  |
| 157 | 11.21.18.6 | 68.64 | The naming of I2R NDP and R2I NDP would be confusing and will not cover all the scenarios allowed by the current specs. | Change the naming to two letters for the transmitter of the NDP and two letters for receiver of the NDP. One example would be RT2IR where RT stands for Responder Transmitter and IR stands for Initiator Receiver. Other examples would include:1- IT2RR (NDPA sounding phase)2- RT2IR (TF sounding phase)3- RT2RR (Responder to Responder NDP)4- IT2RR (non-TB)5- IR2RT (non-TB)6- RT2IR (non-TB)7- RR2IT (non-TB) | **Rejected.**We used the terminologies (i.e., I2R NDP and R2I NDP) defined in 11az to describe the sensing operation in 11bf. And we don’t need to indicate the role of STA as in transmitter or receiver in this terminology because those terms already include the meaning of transmitter or responder in the word. For example, I2R NDP means NDP transmitted by the sensing initiator to the sensing responder, and here, since NDP is transmitted by ISTA, ISTA has the role of transmitter and, RSTA has the role of receiver. |
| 759 | 11.21.18.6 | 68.65 | Add a statement to claify that STA 5 does not need to send CTS2S if it doesn't want to participate in the measurement instant | The STA 5 does not need to respond with CTS-to-Self frame if it doesn't intend to participate in the measurement instant as it might not be ready with measurement report in case requested by the AP. This approach alliviates AP tracking report availability and puts the burden on client to manage it- less complex. | **Revised.** We can consider the following case the STA assigned to be polled by AP may not respond to the receiving polling trigger frame not to participate in a corresponding TB sensing measurement instance according to the STA’s Status. To clarify it, we can add text related to it. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |

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***TGbf Editor: please add the following text after last text in P83L44 of 11bf D0.2***

***…..*** measurement instance. A responder assigned to be polled may not respond to AP within the Polling phase to skip the corresponding TB sensing measurement instance.

***TGbf Editor: please add the following text in P84L42 of 11bf D0.2***

Figure 11-41d (Example of TB sensing measurement instance) shows an example of a TB sensing measurement instance consisting of a polling phase, an NDPA sounding phase, and a TF sounding phase. In the polling phase, the AP polls five STAs, where STA 1 and STA 2 are sensing transmitters and STA 3, STA 4, and STA 5 are sensing receivers. STA 1-STA 4 respond to the AP with CTS-to-self, so both TF sounding phase and NDPA sounding phase are present. STA5 that does not respond to the AP with CTS-to-self skips the corresponding TB sensing measurement instance. In the TF sounding phase, the AP sends a Sensing Sounding Trigger frame to STA1 and STA 2 to solicit R2I NDP transmissions. In the NDPA sounding phase, the AP sends a Sensing NDP Announcement frame followed by I2R NDP to STA3 and STA 4.

#### *CID 883*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 883 | 11.21.18.6 | 69.27 | Figure 11-41d shows both STA1 and STA2 transmit R2I NDP. How they are transmitted is not clearly specified. | Specify how R2I NDP should be transmitted. | **Revised.** I agree with the comment in principle. R2I NDPs solicited by trigger frame are transmitted by multiplexing in the spatial stream domain. So to clarify it, we can add some text.Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-00-00bf-CC40-CR-for-clause 11.21.18.6.docx. |

***TGbf Editor: please modify the text of P84L41 in 11bf D0.2 as follow***

***P84L41***

In the TF sounding phase, the AP sends a Sensing Sounding Trigger frame to STA1 and STA 2 to solicit SR2SI NDP transmissions, where SR2SI NDPs from STA1 and STA2 are multiplexed in the spatial stream domain covering the full bandwidth.(883) In the NDPA sounding phase, the AP sends a Sensing NDP Announcement frame followed by I2R NDP to STA3 and STA 4

#### *CID 822*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 882 | 11.21.18.7 | 71.55 | There is no clear definitions for Initiator-to-Responder (I2R) NDP and Responder-to-Initiator (R2I) NDP. If it is possible that these NDPs are used for transmissions between responders which could be either sensing transmitter or sensing receiver, these terms create confusion. | If there is differences between two types of NDP, suggest change I2R NDP to Feed Forward (FF) NDP and change R2I NDP to Feed Back (FB) NDP. | **Rejected.** The terminology for ‘I2R NDP and R2I NDP’ is defined in the 11az Spec and we had a consensus to use this term in the 11bf draft in the previous discussion. And we don't have a matter when we inherit this term for the non-TB sensing measurement. In addition, we don't need to define the new terminology by considering the R2R because we don't have an agreement for R2R in the non-TB sensing measurement. |

P71L55

