IEEE P802.11
Wireless LANs

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| **CC40 CR for clause 11.21.18.6** |
| **Date:** 2022-10-24 |
| **Author(s):** |

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Abstract

This submission proposes the resolutions for following 22 CIDs:

* 538, 96, 494,539, 785, 888, 158, 289, 757, 347, 758, 497, 542, 597, 889, 122, 157, 759, 883, and 822, 540, 908

This amendment is based on the 11bf D0.2

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: updated based on the received comments in the previous CC and added two CIDs ( 540 and 908)

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. | Accepted  |
| 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. | Accepted  |
| 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. | Accepted  |
| 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. Editor’s note is deleted by the resolution for CID 96, please refer to the resolution for CID 96. Instruction to 11bf Editor : No further change needs |

P68L19 in 11bf D0.1

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#### *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. | Rejected This figure shows examples of TB sensing measurement sequences. And, since in the above description, it was clearly noted as examples, we don't need to clarify if it is mandatory or not.  |

P84L5 in 11bf D0.2



#### *CID 158, 289, 757, 540, 908*

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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. The general description for the configuration of TB sensing measurement was included in the first paragraph in 11.21.18.6.1 General. And each TB sensing measurement instance can be started with the Polling phase as described in clause 11.21.18.6. Polling phase. So, to prevent ambiguity due to examples in figure 11-41c, it is better to delete example 5 and related text. In addition, since Figure 11-41C just indicates the example of a TB sensing measurement instance, it can be simplified with one representative example for the TB sensing measuremnent instance. And for the consistent description for figure 11-41C, we also modified figure 11-41d and related descriptions. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-01-00bf-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 The general description for the configuration of TB sensing measurement was included in the first paragraph in 11.21.18.6.1 General. And each TB sensing measurement instance can be started with the Polling phase as described in clause 11.21.18.6. Polling phase. So, to prevent ambiguity due to examples in figure 11-41c, it is better to delete example 5 and related text. In addition, since Figure 11-41C just indicates the example of a TB sensing measurement instance, it can be simplified with one representative example for the TB sensing measuremnent instance. And for the consistent description for figure 11-41C, we also modified figure 11-41d and related descriptions. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-01-00bf-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 The general description for the configuration of TB sensing measurement was included in the first paragraph in 11.21.18.6.1 General. And each TB sensing measurement instance can be started with the Polling phase as described in clause 11.21.18.6. Polling phase. So, to prevent ambiguity due to examples in figure 11-41c, it is better to delete example 5 and related text. In addition, since Figure 11-41C just indicates the example of a TB sensing measurement instance, it can be simplified with one representative example for the TB sensing measuremnent instance. And for the consistent description for figure 11-41C, we also modified figure 11-41d and related descriptions.. Instruction to TGbf Editor: incorporate the changes in https://mentor.ieee.org/802.11/dcn/22/ 11-22-1330-01-00bf-CC40-CR-for-clause 11.21.18.6.docx. |
| 540 | 11.21.18.6 | 68.32 | The polling phase is used to check the STA that is possible to participate in the sensing measurement. So, It is not clear why the polling phase needs before the reporting phase in example 5. Thus, if the polling phase is used to request feedback from the responders. since we can use the trigger frame in the report phase, it seems does not need it. | Delete the text for Example 5 and delete the example 5 in figure 11-41c | Revised I agree with the commenter in principle. Figure 11-41c is modified by the resolution for CID 158. So, no further change needs. Please refer to the resolution of CID 158. Note to Editor: No further change needs. |
| 908 | 11.21.18.6 | 68.39 | It is not clear that what the purpose of the polling in the reporting phase. If it is for collecting the results, why the polling could be addressed to sensing responders other than other involved in the sounding? What does TBD refers to? | Need to clarify the purpose of polling the responders which are not involved in the sounding. Remove TBD | Revised I agree with the commenter in principle. Figure 11-41c and related text are modified by the resolution for CID 158. So no further change needs.Please refer to the resolution of CID 158. Note to Editor: No further change needs.  |

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 P84L5 of 11bf D0.2 as follows***

Figure 11-41c (Example(#812) of TB sensing measurement instances) shows an example of TB sensing measurement instances, which consists of a Polling, an NDPA sounding, a TF sounding and a Reporting phase. The STA that is assigned to be polled in the TB sensing measurement may participate in or skip the corresponding TB sensing measurement instance. During the TB sensing measurement instance, any STA addressed by a User info field in a Sensing Trigger frame or Sensing NDPA frame, if present, shall participate in the TF sounding, NDPA sounding, or Reporting phase. See example in figure 11-41d (Example of TB sensing measurement instance with six sensing responders) (#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 figure 11-41c is TBD.

***TGbf Editor: please replace figure 11-41c of 11bf D0.2 with following.***



***TGbf Editor: please modify the text at P84L36 of 11bf D0.2 as follows***

Figure 11-41d (Example of TB sensing measurement instance with six sensing responders) shows an example of a TB sensing measurement instance consisting of a polling phase, an NDPA sounding phase, a TF sounding phase, and a Reporting phase. In the polling phase, the AP polls five STAs (i.e. STA1 to STA5) that are assigned to be polled, where STA 1, STA2, and STA 3 are sensing transmitters and STA 4 and STA 5 are sensing receivers. Except for STA3, four STAs (i.e. STA1, STA2, STA4, and STA5) respond to the AP with CTS-to-self, so both TF sounding phase and NDPA sounding phase are present. STA3 that does not respond to the AP with CTS-to-self skips the corresponding TB sensing measurement instance. In the NDPA sounding phase, the AP sends a Sensing NDP Announcement frame followed by SI2SR NDP to STA4, STA5, and STA 6, where STA6 is a sensing receiver that is not assigned to be polled. In the TF sounding phase, the AP sends a Sensing Sounding Trigger frame to STA1 and STA 2 to solicit SR2SI NDP transmissions. In Reporting phase, STA4 to STA6 send the sensing measurement results obtained in a TB sensing measurement instance to AP.

***TGbf Editor: please replace figure 11-41d of 11bf D0.2 with following.***



#### *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/ 11-22-1330-01-00bf-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/ 11-22-1330-01-00bf-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/ 11-22-1330-01-00bf-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/ 11-22-1330-01-00bf-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/ 11-22-1330-01-00bf-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/ 11-22-1330-01-00bf-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.***

#### *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. And this behaviour is applied by the resolution for CID 158. Please refer the resolution for CID 158. Instruction to TGbf Editor: No further change needs. |

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#### *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/ 11-22-1330-01-00bf-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. | **Revised** The terminology for ‘I2R NDP and R2I NDP’is replaced with “SI2SR NDP and SR2SI NDP” by the resolution for CID 170 and 171 in DCN 22/1254r5. Since this terminology is changed to clarify it clearly, we don’t need further change. Note to Editor: No further change needs. |

P71L55

