IEEE P802.11
Wireless LANs

|  |
| --- |
| Resolution for CIDs in subclause 37.9.1 (TGbn D0.1 cc) |
| Date: May 11, 2025 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Liwen Chu |  |  |  | Liwen.chu@nxp.com |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

 Abstract

This submission proposes resolutions for following CIDs received for TGbn D0.1 CC:

1377, 3147, 3149, 3150, 1776, 3740, 3741, 3742, 1827, 540, 902, 3649, 3894, 259, 2120, 2416, 260, 2417, 3387,

2418, 3800, 96, 266, 1051, 1316, 2474, 3651, 3679, 265,

620, 1826, 3743, 782, 784, 3803, 98, 541, 1443, 1833, 1834, 3023, 767, 1400, 2713, 3024, 3146, 3681, 3682, 3406, 3683,

3804, 2420, 2453, 3141, 1547, 619, 1401, 2125, 2421, 2475, 3565, 3620, 3653, 3654, 3805, 3684¸ 3687, 2476, 1549, 2129, 2132, 2134, 3261, 2410

**Revisions:**

* Rev 0: Initial version of the document.

***TGbn editor: Baseline for 11-25/669R13 is 11bn D0.1 and REVme D7.0***

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 TGbn Draft. This introduction is not part of the adopted material.

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **line** | **Comment** | **Proposed Change** | **Resolution** |
| 1377 | 37.9 | 76 | 45 | The operation of DPS and TWT when two power saving technologies coexist should be defined | In TWT SP, DPS STA is in HC mode, and DPS Assisting STA does not need to send ICF frame at the start of TXOP | RejectedDiscussion: a DPS STA in TWT SP will still be in LC mode. The DPS assisting AP may perform the frame exchanges with the other STAs. The OBSS STAs may perform the frame exchanges within the TWT SP.  |
| 3147 | 37.9 | 76 | 46 | When an mobile AP initiates TXS procedure, the mobile AP can perform the DPS operation during the TXS procedure to save more power. Define the mechanism for mobile AP to save the power during TXS procedure | as per comment | RejectedDiscussion: there is no additional requirement for a mobile AP to initiate the TXS procedure for power save. As the TXOP holder, if the TXOP responder is DPS STA, the DPS rules are followed by the mobile AP, i.e. sending the ICF to trigger the peer STA’s switch to HC mode etc.  |
| 3149 | 37.9 | 76 | 46 | During the TXS procedure, the TXS scheduled STA can enter the low capability mode/doze state after it returns the remaining TXOP to AP when the scheduled STA wants to save more power. Describe the DPS operation of TXS scheduled STA. | as per comment | RejectedDiscussion: When the peer STA detects the frame/PPDUs not addressed to it, the peer STA switch back to LC mode.  |
| 3150 | 37.9 | 76 | 46 | When a STA receives an MU-RTS TXS Trigger frame, if the STA is not scheduled by the Trigger frame, the STA can enter the doze state during the allocated time period. Describe the power save operation of TXS unscheduled STA during TXS procedure. | as per comment | RejectedDiscussion: When the peer STA detects the frame/PPDUs not addressed to it, the peer STA switch back to LC mode.  |
| 1776 | 37.9 | 76 | 48 | It would be an optional way to inform a DPS STA serveral frame exchanges earlier than it switches to HC mode, to minimize the padding overhead, whenever possible. | Define a procedure to inform a DPS STA serveral frame exchanges earlier than it switches to HC mode | RejectedDiscussion: the method proposed by the commenter make the implementation of peer STA complicated especially for an mobile DPS AP when some DPS assisting STAs support such feature while the other DPS STAs don’t support such feature. |
| 3740 | 37.9.1 | 3740 | 3740 | When a beamformer that is a DPS assisting AP and the beamforee that is a DPS non-AP STA operation operates in the lower capability mode, using ICF/ICR frame exchange before the non-TB sounding sequence or the TB sounding sequence result in the DPS non-AP STA receiving the NPDA in high capability mode which is power inefficiency since NDPA can be carried in an non-HT PPDU. | Define a mechanism for non-TB sounding and TB sounding while the beamforee that is DPS non-AP STA operation operates in the lower capability mode. | RejectedDiscussion: the NDPA being used as ICF make the implementation complicated since the padding, intermediate FCS need to be defined for a new control frame. Compared to the long sounding feedback, the ICF/ICR frame exchange before NDPA is minimal. Another observation is that the DPS sounding follows the way of sounding in eMLSR/eMLMR. |
| 3741 | 37.9.1 | 3741 | 3741 | When a beamformer that is a DPS assisting AP and the beamforee that is a DPS non-AP STA operation operates in the lower capability mode, using ICF/ICR frame exchange before the TB sounding sequence result in the DPS non-AP STA operates in high capability mode after receiving sounding NDP before sending CSI feedback. This operation is power inefficiency since the beamformer may solicit the CSI feedback from the DPS non-AP STA after soliciting CSI feedback from one or more other non-AP STAs that is beamformee(s). | Define a mechanism for TB sounding for the beamforee that is DPS non-AP STA to let the DPS non-AP STA operate in the lower capability mode to after receiving the sounding NDP and before sending the CSI feedback. | RejectedDiscussion: the NDPA being used as ICF make the implementation complicated since the padding, intermediate FCS need to be defined for a new control frame. Compared to the long sounding feedback, the ICF/ICR frame exchange before NDPA is minimal. Another observation is that the DPS sounding follows the way of sounding in eMLSR/eMLMR. |
| 3742 | 37.9.1 | 76-77 | 48 | When a beamformer that is a DPS assisting AP and the beamforee that is a DPS non-AP STA operation operates in the lower capability mode, using ICF/ICR frame exchange after the DPS non-AP STA sends CSI feedback and before DSP non-AP STA can receive the beamformed PPDU from DPS assisting AP, results in the overhead. | Define a mechanism for non-TB sounding or TB sounding while the beamforee that is DPS non-AP STA to let the DPS non-AP STA operate in the lower capability mode after sending the CSI feedback and before receiving a PPDU transmitted by the DPS assisting AP. | RejectedDiscussion: the NDPA being used as ICF make the implementation complicated since the padding, intermediate FCS need to be defined for a new control frame. Compared to the long sounding feedback, the ICF/ICR frame exchange before NDPA is minimal. Another observation is that the DPS sounding follows the way of sounding in eMLSR/eMLMR. |
| 1827 | 37.9.1 | 76 | 49 | The interaction of DPS operation with other IEEE 802.11 operations, such as EMLSR, Triggered TXS, NPCA, R-TWT, and MLO, is not defined. DPS operation should be specified in consideration of these other mechanisms. | As in comment. | RejectedDiscussion: DPS and eMLSR: there is no special requirement. A STA is DPS mode and eMLSR mode need to follow both eMLSR and DSO rules.NPCA and DPS: there is no special requirement. A DPS STA switch to NPCA primary channel and switch back to primary channel per NPCA rules. The DPS STA performs the frame exchanges in NPCA primary channel per the DPS rules. DPS and R-TWT: the DPS STA will follow the R-TWT rules (ending its TXOP no later than the R-TWT SP start time, as the member of R-TWT SP, transmitting the frames of R-TWT TIDs etc.) and DPS rules.DPS and MLO: DPS is link level feature. A DPS STA in a link follows the MLO rules if the rules are applied, e.g. STR rules, NSTR rules, TID-to-link mapping rules.DPS and Triggered TXS: there is no additional requirement for a mobile AP to initiate the TXS procedure for power save. As the TXOP holder, if the TXOP responder is DPS STA, the DPS rules are followed by the mobile AP, i.e. sending the ICF to trigger the peer STA’s switch to HC mode etc. When the peer STA detects the frame/PPDUs not addressed to it, the peer STA switch back to LC mode. |
| 540 | 37.9 | 76 | 50 | what's the difference between the DSP STA and DPS assisting STA. If the DPS assisting STA means the support of transmission of ICF, it should be specified at the begin of the suclause inseand of in the last paragraph | as the comments | RevisedDiscussion: generally agree with the commenter. TGbn editor: please make the changes with #540 tag in 11-25/669R13 |
| 902 | 37.9.1 | 76 | 50 | Section shall be first introduced by what is expected by DPS operation. | Add an introduction text such as:"The DPS operation allows a DPS STA to operate in lower capability (LC) mode and to transition later to higher capability (HC) mode, and vice versa". | RevisedDiscussion: generally agree with the commenter. A paragraph is added at the beginning of the subclause 37.9.1.TGbn editor: please make the change with #902 tag in 11-25/669R13. |
| 3649 | 37.9.1 | 76 | 50 | DPS on the AP side will have several rules that are different from the non-AP side. It would be good to have a separation in subclauses that contain these separate rules. | As in comment. | RevisedDiscussion: generally agree with the commenter. The DPS emabling/disabling LC mode operation, and HC mode operation etc. are move to two subclauses (37.9.1.1 (non-AP STA’s DPS operation) and 37.9.1.2 (Mobile AP’s DPS operation)).TGbn editor: please make the change with #3649 tag in 11-25/669R13. |
| 3894 | 37.9.1 | 76 | 50 | Add MIB variable to Annex C. Same for dot11UHRDPSSupported. | As in comment | RevisedDiscussion: generally agree with the commenter.TGbn editor: please make the change with #3894 tag in 11-25/669R13. |
| 259 | 37.9.1 | 76 | 56 | The name of 'DPS assisting support field' and 'DPS assisting support subfield' needs to be consistent | As in comment. | RevisedDiscussion: generally agree with the commenter.TGbn editor: please make the change with #259 tag in 11-25/669R13. |
| 2120 | 37.9.1 | 76 | 57 | The text on when DPS Supported field is set to 1 is missing. Please add that "A UHR STA that has dot11UHRDPSSupported equal to 1 shall set the DPS Support subfield to 1 in the UHR Capabilities element in Management frames that it transmits." | As in comment. | RevisedDiscussion: generally agree with the commenter.TGbn editor: please make the change with #2120 tag in 11-25/669R13. |
| 2416 | 37.9.1 | 76 | 57 | Modify "subfield" to "field" to maintain uniformity in the text and align to new guidelines. | Otherwise the UHR AP or non-AP STA shall set the DPS Assisting Support "field" to 0. | RevisedDiscussion: generally agree with the commenter.TGbn editor: please make the change with #2416 tag in 11-25/669R13. |
| 260 | 37.9.1 | 76 | 59 | Considering that 'DPS support' and 'DPS assisting support' are both part of UHR MAC capability information, the definition of DPS non-AP STA only requires constraints through dot11UHRDPSSupported. | Change 'A UHR non-AP STA that has dot11UHRDPSSupported equal to 1 and that has enabled its DPS mode iscalled a DPS non-AP STA' to 'A UHR non-AP STA that has dot11UHRDPSSupported equal to 1 is called a DPS non-AP STA'. | RejectedDiscussion: the DPS STA is defined for the description of the STA that is acting as the recipient of ICF for switching from LC mode to HC mode. Such STA needs to enable its DPS mode. |
| 2417 | 37.9.1 | 76 | 59 | DPS Support set to 1 or 0 in UHR Capabilities element is missing for a DPS non-AP STA | "A UHR non-AP STA that has dot11UHRDPSSupported equal to 1 shall set the DPS Support field to 1 in the UHR Capabilities element in Management frames that it transmits and that has enabled its DPS mode is called a DPS non-AP STA. Otherwise it shall set the DPS Support field to 0." | RevisedDiscussion: generally agree with the commenter.TGbn editor: please make the change with #2417 tag in 11-25/669R13. |
| 3387 | 37.9.1 | 76 | 59 | In 37.10 (NPCA) and 37.11.2 (DUO), a STA that supports NPCA/DUO is called NPCA/DUO STA, no matter whether the mode is enabled or not. In comparison, a DPS STA not only supports DPS but also needs to enable its DPS mode. The definitions are inconsistent and may cause confusion. | Suggest to make the definitions consistent, for example, "a UHR non-AP STA that has dot11UHRDPSSupported equal to 1 is called a DPS non-AP STA", or update the definitions of NPCA STA and DUO STA in 37.10 and 37.11.2 with an additional requirement that NPCA/DUO mode is enabled. | RejectedDiscussion: This (DPS STA) follows the style of eMLSR/eMLMR. |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 2418 |  | 77 | 15 | DPS Support set to 1 or 0 in UHR Capabilities element is missing for a DPS AP | "A UHR AP that has dot11UHRDPSSupported equal to 1 shall set the DPS Support field to 1 in the UHR Capabilities element in Management frames that it transmits and that has enabled its DPS mode is called a DPS AP. Otherwise it shall set the DPS Support field to 0." | RevisedDiscussion: Generally agree with the commenter.TGbn editor: please make the change with #2418 tag in 11-25/669R13. |
| 3800 |  | 77 | 18 | "An AP may enable its DPS mode only under TBD conditions."Please specify the TBD conditions to enable the DUO mode.The AP should enable its DPS mode only if all associated STAs are DPS-Assisting STAs. | Please specify the TBD conditions to enable the DUO mode. | RevisedDiscussion: Agree with the commenter. TGbn editor: please make the change with #3800 tag in 11-25/669R13. |
| 96 |  | 77 | 19 | currently we only have motion for mobile AP to work with DPS mode | change "AP" to "mobile AP" | RevisedDiscussion: Agree with the commenter. Mobile AP is added.TGbn editor: please make the change with #96 tag in 11-25/669R13. |
| 266 |  | 77 | 19 | Considering that an AP should enable the DPS mode based on certain conditions, it should conduct inquiries or negotiations with STAs before enabling the DPS mode to ensure the selection of an appropriate time for enabling the DPS mode. | Before the AP enables the DPS mode, it should consider inquiring with STAs. The STA can provide feedback with relevant information to assist the AP in deciding whether or when to enable the DPS mode, such as BSR information, STA unavailability-related information, the STA's anticipated future traffic, or directly reserving certain transmission opportunities with the AP. | RejectedDiscussion: an mobile AP can figures out whether it can enables its DPS mode based on the associated STAs capabilities that are already known during the association procedure |
| 1051 |  | 77 | 19 | There's a TBD here. | Provide normative behavioral text to replace the TBD. | RevisedDiscussion: Agree with the commenter. TGbn editor: please make the change with #1051 tag in 11-25/669R13. |
| 1316 |  | 77 | 19 | How does a UHR AP in DPS mode work when all of associated non-AP STAs do not support nor enable the DPS mode? | Please clarify the setting of the DPS mode of a UHR AP with no non-AP STAs in the DPS mode. | RevisedDiscussion: Agree with the commenter. TGbn editor: please make the change with #1316 tag in 11-25/669R13. |
| 2474 |  | 77 | 19 | DPS mode on the Mobile AP side can only be enabled depends on the different DPS modes. For instance, if the DPS mode needs iFCS and padding in the ICF frame, then there shall be not associated STAs that are legacy devices and no UHR STAs that don't support DPS Assisting role. | Define clearly the different modes for DPS and define the conditions for enabling DPS on the AP side. | RevisedDiscussion: Agree with the commenter. TGbn editor: please make the change with #2474 tag in 11-25/669R13. |
| 3651 |  | 77 | 19 | Please call out the conditions. Also make sure that these are aligned with passed motions and also preserve backward compatibility. | As in comment. | RevisedDiscussion: Agree with the commenter. TGbn editor: please make the change with #3651 tag in 11-25/669R13. |
| 3679 |  | 77 | 19 | Suggested conditions:All non-AP STAs (associated and unassociated) can exchange frames with the AP in LC mode. | Explained in the comment | RevisedDiscussion: Agree with the commenter. TGbn editor: please make the change with #3679 tag in 11-25/669R13. |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 265 |  | 77 | 23 | Considering that after the AP enables the DPS mode, it may frequently receive ICFs sent by DPS assisting STAs requesting mode switching, the frequent transmission of ICFs, padding, and mode switching could lead to a certain degree of channel resource wastage and latency, and could also affect the power saving efficiency of DPS AP. | When the AP performs DPS operation, a certain protection time could be set for LC or HC, and no mode switching should be performed during the protection time. | RejectedDiscussion: it is difficult to predict the medium usage after a TXOP. The OBSS STAs may get the medium after the TXOP where the DPS AP is the TXOP responder by using AP’s HC mode. Another observation is that such additional rules the protocol complicated. Additionally, this may degrade the DPS PS gains. |
| 620 |  | 77 | 23 | Since the mobile AP has an associated STA, it seems that various conditions and additional functions are required to operate in DPS. | Specify the mechanism for a mobile AP to operate in DPS mode while having associated UHR and legacy STAs | RevisedDiscussion: Agree with the commenter. Please refer to the discussion of 3800 for the information.TGbn editor: please make the change with #620 tag in 11-25/669R13. |
| 1826 |  | 77 | 23 | Operation for cases where both a Mobile AP and non-AP STA perform DPS operations needs to be defined. For example, if two DPS assisting STAs are both DPS STAs, the ICF and ICR must include padding to guarantee the mutual transition time of all STAs. | As in comment. | RejectedDiscussion: the ICF transmitted by the TXOP needs to use the full BW of the TXOP. This means that the TXOP holder is already in HC mode. DPS operation at two different STAs is independent. |
| 3743 |  | 77 | 23-30 | A DPS mobile AP (or DPS AP) cannot enable DPS mode once a STA that does not support DPS mode or a legacy STA associate with it. | Define a mechanism for leveraging another AP to allow the DPS (mobile) AP associate with the STA that does not support DPS mode and to allow the DPS (mobile) AP enable DPS mode and transition from lower capability mode to higher capability mode to receive PPDUs other than non-HT PPDU from the STA not supporting DPS mode. | RejectedDiscussion: this make the protocol complicated. Another observation is that it is difficult to predict the cross-link information exchange of the control frame. Instead, a condition of having all associated non-AP STA being DPS Assisting STAs is added or being capable of doing frame exchanges with the mobile AP while operating in LCM. |
| 782 |  | 77 | 24 | DPS AP is already defined in the above, so that the sentence, "It is TBD whether an AP that is not a Mobile AP may be a DPS AP or not.," is not necessary. Need to be removed. | As in comment. | RevisedDiscussion: generally agree with the commenter.TGbn editor: please make the change with #782 tag in 11-25/669R13. |
| 784 |  | 77 | 24 | DPS Assisting STA is used without specifically described, so that we need a definition of "DPS Assisting STA", for example, "A DPS Assisting STA is either DPS Assisting AP or DPS Assisting non-AP STA." (Note: Both DPS Assisting AP and DPS Asissting non-AP STA are defined in the first paragraph.) | As in comment. | RejectedDiscussion: a STA in 802.11 means either a non-AP STA or an AP. Accordingly a DPS STA means either a DPS non-AP STA or a DPS AP.  |
| 3803 |  | 77 | 24 | "It is TBD whether an AP that is not a Mobile AP may be a DPS AP or not."Please clarify whether a regular AP can function as a DPS AP. | Please clarify whether a regular AP can function as a DPS AP. | RevisedDiscussion: the sentence is not necessay.TGbn editor: please make the change with #3803 tag in 11-25/669R13. |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 98 |  | 77 | 27 | Add definition of HC mode and LC mode to subclause 3.2 | as the comment | RevisedDiscussion: generally agree with the commenter.TGbn editor: please make the change with #98 tag in 11-25/669R13. |
| 541 |  | 77 | 27 | DPS assisting non-AP STA and DPS assisting AP have been defined, but the DPS assisting STA has not been defined | please define DPS assisting STA before reference | RejectedDiscussion: A STA is either a non-AP STA or an AP. Accordingly a DPS assisting STA is either a DPS assisting non-AP STA or a DPS assisting AP. |
| 1443 |  | 77 | 27 | Not only non-AP STAs that support DPS mode but also non-AP STAs that do not support DPS or legacy STAs should be able to change DPS AP's state from LC to HC. | It should be accepted that not only a UHR ICF but also a typical RTS frame that does not include intermediate FCS could be an ICF for the DPS. The commenter will contribute a presentation(s) about this issue. | RevisedDiscussion: A legacy RTS frame can be used only in the case when the DPS STA does not require any padding in the ICF.TGbn editor: please make changes with #1443 tag in 11-25/669R13. |
| 1833 |  | 77 | 27 | The current text allows a DPS STA to transition to HCM upon receiving an ICF. Depending on the DPS STA's implementation (e.g., requiring stronger power-saving) or situation (e.g., battery power level is very low), it should also be possible for the DPS STA to choose not to transition to HCM. To support this behavior, the ICR responding to an ICF should indicate whether the DPS STA will operate in HCM or stay in LCM. | Please add the following text:(Current draft)The DPS operation allows a DPS STA to operate in lower capability (LC) mode and to transition to higher capability (HC) mode upon reception of an ICF [TBD] transmitted by its associated DPS assisting STA. The DPS STA in higher capability (HC) mode transitions back to the LC mode under TBD conditions.\*\*The DPS STA in lower capability(LC) mode may not transition to higher capability (HC) mode upon reception of the ICF. The DPS STA shall transmit its indication, which informs the desired operation mode(LC mode or HC mode) of the DPS STA during the TXOP, in an ICR as a response frame of the ICF.\*\* | RejectedDiscussion: the parameterized ICR that indicates the DPS STA’s BW and Nss after the ICF/ICR makes the protocol complicated. |
| 1834 |  | 77 | 27 | The current text only considers a method where a DPS assisting STA sends an ICF to a peer DPS STA in LC mode to transition it to HC mode. The possibility of a DPS STA voluntarily transitioning to HC mode to transmit a frame should also be considered. | Please add the following text:A DPS STA in LC mode may initiate its TXOP without receiving an ICF from DPS assisting STA either in LC mode or in HC mode. The DPS STA shall switch its operating mode to HC mode prior to its TXOP initiation. | RejectedDiscussion: These DPS-related consideration are only relevant in Rx. When a DPS STA is in Tx mode then it has control over the capabilities it will operate with. |
| 3023 |  | 77 | 27 | "The DPS operation allows a DPS STA to operate" -- spurious "The" | As it says in the comment | RevisedDiscussion: generally agree with the commenter.TGbn editor: please make changes with #3023 tag in 11-25/669R13. |
| 767 | 37.9.1 | 77 | 28 | How and when a DPS STA responds to the ICF is not clear. | More details should be added to clarify how and when a DPS STA responds to the ICF. | RejectedDiscussion: the general frame exchange rule is applied for ICF/ICR frame exchange under DPS operation, i.e. SIFS after receiving ICF, the addressed STA responds with the ICR. |
| 1400 | 37.9.1 | 77 | 28 | ICF and the correspondinig ICR for DPS should be defined | ICF can be BSRP, MU-RTS (only for mobile AP), and RTS (when no DPS padding required) | RevisedDiscussion: generally agree with the commenter. As agreed by motion 287, the RTS without padding requirement, BSRP GI3 with the padding requirement can be used when the addressed AP is in LC mode. The RTS, MU-RTS, BSRP can be ICF when the addressed non-AP STA is in LC mode.TGbn editor: please make changes with #1400 tag in 11-25/669R13. |
| 2713 | 37.9.1 | 77 | 28 | When a DPS assisting STA intends the DPS STA to transition from LC to HC mode by transmitting an ICF frame, it might be beneficial to signal maximum rates (e.g, BW, Nss, MCS) to be assigned by DPS assisting STA to the DPS STA within the TXOP | Please define rate metrics that can be signaled in ICF for data PPDU assigned to the DPS STA in the current TXOP | RejectedDiscussion: the parameterized ICF that indicates the DPS STA’s BW and Nss after the ICF/ICR makes the protocol complicated. |
| 3024 | 37.9.1 | 77 | 28 | "The DPS" should be "A DPS" | As it says in the comment | Accepted.  |
| 3146 | 37.9.1 | 77 | 28 | During DPS, DPS STA can transition from LC mode to HC mode after receiving ICF on LC mode. As discussed in the TGbn group, the BAR frame can be one of initial control frame (ICF) to solicit BA as ICR for a single STA TXOP initiation operation case. Please check if BAR frame can be used as ICF and define the detailed operation of ICF/ICR procedure using BAR frame if yes. | as per comment | RevisedDiscussion: The BAR is not ICF since normally a TXOP is not initiated by BAR. As agreed by motion 287, the RTS without padding requirement, BSRP GI3 with the padding requirement can be used when the addressed AP is in LC mode. The RTS, MU-RTS, BSRP can be ICF when the addressed non-AP STA is in LC mode.TGbn editor: please make changes with #3146 tag in 11-25/669R13. |
| 3681 | 37.9.1 | 77 | 28 | I propose to edit this as "...upon reception of a RTS or BSRP GI3 Trigger (final name is TBD) frames transmitted by its...". See Motion 287. | Explained in the comment | RevisedDiscussion: generally agree with the commenter. As agreed by motion 287, the RTS without padding requirement, BSRP GI3 with the padding requirement can be used when the addressed AP is in LC mode. The RTS, MU-RTS, BSRP can be ICF when the addressed non-AP STA is in LC mode.TGbn editor: please make changes with #3681 tag in 11-25/669R13. |
| 3682 | 37.9.1 | 77 | 28 | Propose to add the following:"RTS can be used only if the padding delay required by the DPS STA is 0. When the DPS STA has non-zero padding delay requirement, the BSRP GI3 Trigger frame shall be used and it shall include sufficient padding to satisfy the DPS STA required padding delay. | Explained in the comment | RevisedDiscussion: generally agree with the commenter. As agreed by motion 287, the RTS without padding requirement, BSRP GI3 with the padding requirement can be used when the addressed AP is in LC mode. The RTS, MU-RTS, BSRP can be ICF when the addressed non-AP STA is in LC mode.TGbn editor: please make changes with #3682 tag in 11-25/669R13. |
| 3406 | 37.9.1 | 77 | 29 | HC is already defined on Line 28. | As in comment. | RevisedDiscussion: generally agree with the commenter. TGbn editor: please make changes with #3406 tag in 11-25/669R13. |
| 3683 | 37.9.1 | 77 | 29 | Rules need to be defined so we can remove this TBD conditions. | Explained in the comment | RevisedDiscussion: generally agree with the commenter. As agreed by motion 287, the RTS without padding requirement, BSRP GI3 with the padding requirement can be used when the addressed AP is in LC mode. The RTS, MU-RTS, BSRP can be ICF when the addressed non-AP STA is in LC mode.TGbn editor: please make changes with #3683 tag in 11-25/669R13. |
| 3804 | 37.9.1 | 77 | 29 | "The DPS STA in higher capability (HC) mode transitions back to the LC mode under TBD conditions."Please specify the TBD conditions to transition from HC mode to LC mode. | Please specify the TBD conditions to transition from HC mode to LC mode. | RevisedDiscussion: generally agree with the commenter. The eMLSR’s rules of switching back to listening mode is applied for DPS non-AP STA’s switching back to LC mode.TGbn editor: please make changes with #3804 tag in 11-25/669R13. |
| 2420 | 37.9.1 | 77 | 30 | Uniformity to HC mode usage as abbrevation is already expanded in previous line | The DPS STA in "HC mode" transitions back to the LC mode under TBD conditions. | RevisedDiscussion: generally agree with the commenter. TGbn editor: please make changes with #2420 tag in 11-25/669R13 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 2453 | 37.9.1 | 77 | 29 | The low capability mode only includes reception of non-HT PPDU up to a rate of 24Mb/s and a TBD for higher rates, different PPDU. The LC mode should include higher rates to better enable the exchange of small data packets in LC mode. | Define more LC modes that better support small data packet exchange. | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MCS restriction.TGbn editor: please make changes with #2453 tag in 11-25/669R13  |
| 3141 | 37.9.1 | 77 | 29 | We have to define how DPS STA transitions from HC mode to LC mode, which is currently TBD in D0.1. Need to design it that DPS STA can transition as soon as possbile for more power efficiency. | Define the procedure about how DPS STA transitions to LC mode to HC mode. | RevisedDiscussion: generally agree with the commenter. The eMLSR’s rules of switching back to listening mode is applied for DPS non-AP STA’s switching back to LC mode.TGbn editor: please make changes with #3141 tag in 11-25/669R13  |
| 1547 | 37.9.1 | 77 | 30 | In the current text, it is not clear what the low capability mode and high capability mode are. It is best to clarify the two modes, such as the operating parameters in each mode. | Please add normative text or a note to clarify these two modes. | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #1547 tag in 11-25/669R13  |
| 619 | 37.9.1 | 77 | 32 | By the time 11bn is commercialized, devices with different capabilities for each of the various use cases will be used in the market. Determining LC/HC in the standard document now can damage the performance gains that DPS will bring in the future. | It should be modified to support multiple LCM/HCM. Mandatory LCM/HCM can be specified in the standard, but some LCM/HCMs must be able to be determined by the vendors. Define signaling about multiple LCM/HCM. | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #619 tag in 11-25/669R13 |
| 1401 | 37.9.1 | 77 | 32 | We need to describe what LC and HC mode means exactly | LC mode should be based on a fixed TX parameters while HC mode should be based on the most recently indicated STA's TX capabilites | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #1401 tag in 11-25/669R13 |
| 2125 | 37.9.1 | 77 | 32 | The spec needs to define mechanisms for the a mobile AP operating in DPS mode to indicate its low power state and high power state capabilities to associated STAs. | The commentor will bring a contribution to resolve the issue. | RevisedDiscussion: generally agree with the commenter. TGbn editor: please make changes with #2453 tag in 11-25/669R13 |
| 2421 | 37.9.1 | 77 | 32 | Entire LC Mode definition is still TBD and does not include only PPDU as a TBD parameter. | Further discussion is needed to define the LC mode and hence propose to keep following text untill the group agrees on the definition. " A DPS STA that is in LC mode shall be capable of receiving with TBD parameters (eg including BW, NSS, MCS, non-HT dup PPDU format using TBD rate) | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #2421 tag in 11-25/669R13 |
| 2475 | 37.9.1 | 77 | 32 | Transition from High Capability mode to Low Capability mode should be the same as the conditions used in eMLSR. | as in comment | RevisedDiscussion: generally agree with the commenter. The eMLSR’s rules of switching back to listening mode is applied for DPS non-AP STA’s switching back to LC mode.TGbn editor: please make changes with #2475 tag in 11-25/669R13. |
| 3565 | 37.9.1 | 77 | 32 | It is unclear if a DPS STA is required to transmit a response frame for every received ICF. Transmitting a response frame may be unnecessary for DPS STAs if it is only receiving a DL frame from the AP. Transmitting uses a lot of battery power. | Define a mechanism to allow a DPS STA to transition from LC to HC without the need of transmitting a response for every ICF. | RejectedDiscussion: what the commenter asked make the protocol complicated. |
| 3620 | 37.9.1 | 77 | 32 | Although there are TBDs in this description of LC and HC, and much details are yet to be provided, it seems implied that there shall only be 2 levels of capabilities. | Define more than two modes in DPS. | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #3620 tag in 11-25/669R13 |
| 3653 | 37.9.1 | 77 | 32 | Call out the PPDU formats that are supported in LC mode and HC mode (in addition to the usual parameters, BW, NSS, MCS). And also what rules the PPDU formats of ICF/ICR apply in this case. And last but not lease explicitly call out which are the ICFs that can be used, and when, and subsequently what ICRs are used in return. | As in comment. | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #3653 tag in 11-25/669R13 |
| 3654 | 37.9.1 | 77 | 32 | Clarify what this statement means "It is TBD whether a DPS assisting STA shall initiate any frame exchange with a DPS STA by sending an ICF or only some frame exchanges" and to what STAs it applies and in what conditions. | As in comment. | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #3654 tag in 11-25/669R13 |
| 3805 | 37.9.1 | 77 | 32 | "A DPS STA that is in LC mode shall be capable of receiving TBD PPDUs (e.g., with non-HT (duplicate) format using a rate of 6 Mb/s, 12 Mb/s, 24Mb/s[TBD])."Please specify the TBD PPDUs. A DPS STA may have different capabilities for LC mode. Therefore, the DPS STA's LC mode should be limited to the minimum requirement, such as non-HT PPDU. | Please specify the TBD PPDUs. | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #3805 tag in 11-25/669R13 |
| 3684 | 37.9.1 | 77 | 32-33 | I propose the following edits:"Based on the mode of operation, a DPS STA that is in LC mode shall be capable of receiving PPDUs of:- Default mode: 20-MHz bandwidth, 1 spatial stream, and non-HT (dup) PPDU format using a rate of 6 Mb/s, 12 Mb/s, or 24Mb/s.- Parameterized mode: up to the maximum supported bandwidth, number of spatial streams, MCS, and up to UHR PPDUs.The operation mode and parameters for the LC mode should be indicated in the DPS mode enablement or update procedures." | Explained in the comment | RevisedDiscussion: generally agree with the commenter. The reception of non-HT duplicate PPDU with the data rate of 6, 12, 24Mbps is the mandatory requirement of LC mode. Additionally, a mobile AP, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth and Nss restriction, and a non-AP STA, when enabling its DPS mode,, can announce the capability of up to UHR PPDU reception with the bandwidth, Nss and MCS restriction. The reason for disallowing the mobile DPS AP’s MCS parameter announcement is that an associated STA that is not a DPS assisting STA doesn’t understand the MCS restriction other than the AP’s new MC restriction.TGbn editor: please make changes with #3684 tag in 11-25/669R13 |

**3. Definitions, acronyms, and abbreviations**

**3.1 Definitions**

***TGbn editor: please add the following definitions in subclause 3.1: (#98)***

high capability (HC) mode: A mode in which a station (STA) uses a bandwidth that is not larger than its operating bandwidth and a number of spatial streams that is not larger than its Rx NSS to perform frame exchanges with its peer STA within a TXOP after the STA receives the initial control frame from the peer STA in the TXOP.

low capability (LC) mode: A mode in which a station (STA) uses a bandwidth, number of spatial streams, PPDU formats, and possibly MCS, that are supported by its LC mode.

**9.3.1.22.12 MU-RTS Trigger frame format**

***TGbn editor: please add the following figure in 9.3.1.22.12:***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | B0 B11 | B2 B19 | B20 | B21 B38 | B39 |
|  | AID12 | RU Allocation | Remain In LC Mode  | Reserved | PS160 |
| Bits: | 12 | 8 | 1 | 18 | 1 |

**Figure 9-98xx—UHR variant User Info field format in the MU-RTS Trigger frame**

***TGbn editor: please add the following paragraph ad the end of 9.3.1.22.12:***

The Remain In LC Mode field indicates whether the receiving non-AP STA can stay in LC mode after receiving the MU-RTS frame. The field is set to 1 to indicate that the frame exchange that is initiated by this frame is using parameters that are compliant with the LC mode of the non-AP STA and is set to 0 otherwise.

**9.4.1.85 DPS Operation Parameters field**

***TGbn editor: please change figure 9-207b in 9.4.1.85 as following: (#***2453, 1547, 619, 2125, 1401, 2421, 3620, 3653, 3805, 3684, 3654, 2410***)***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| B0 B7 | B8 B15  |  B16  |  B17  | B18 B20 | B21 B24 |  B25 B28 | B29 | B30 B31 |
| DPS Padding Delay | DPS Transition Delay | ICF Required  | Parameterized Flag | LC Mode Bandwidth | LC Mode Nss  | LC Mode MCS | Mobile AP DPS Static HCM | Reserved |
| 8 | 8 | 1 | 1 | 3 | 4 | 4 | 1 | 2 |

***TGbn editor: please add the following paragraphs at the end of 9.4.1.85 as following: (#***2453, 1547, 619, 2125, 1401, 2421, 3620, 3653, 3805, 3684, 3654, 2410***)***

The ICF Required field indicates when the DPS assisting STA needs to transmit an ICF frame to the peer DPS STA before performing the frame exchanges with the peer DPS STA in a TXOP. The ICF Required field equal to 1 indicates that the transmission of the ICF frame to the peer DPS STA prior to any frame exchange is needed. Otherwise the ICF transmission before the frame exchanges with the peer DPS STA is only needed if the frame exchange is performed in the HC mode.

The Parameterized Flag field is set to 0 to indicate that only 20 MHz, 1 SS, non-HT PPDU format with the data rate of 6, 12, and 24 Mb/s as the default mode are supported by the DPS STA in the LC mode. The Parameterized Mode field is set to 1 to indicate that a bandwidth up to the bandwidth indicated in the LC Mode Bandwidth field, a number of spatial streams up to the NSS indicated in the LC Mode Nss field, and an MCS up to the MCS indicated in the LC Mode MCS fields are supported by the DPS STA in the LC mode as the parameterized mode. If the DPS STA sets the Parameterized Mode to 1 then all PPDU formats up to UHR PPDU are supported by the DPS STA in LC mode.

If the ICF Required field is equal to 0, then the Parameterized Flag field is either equal to 0 or equal to 1; otherwise the Parameterize Flag field is set to 0.

The LC Mode Bandwidth field indicates the maximum bandwidth supported by the STA in the LC mode.

The LC Mode Nss field indicates the maximum number of the spatial streams supported by the STA in the LC mode.

The LC Mode MCS field indicates the highest MCS supported by the STA in the LC mode.

The Mobile AP DPS Static HCM field is set to 1 by an AP operating in DPS mode to indicate that it will remain in the DPS high capability mode until the next TBTT on that link, and is set to 0 otherwise. The field is reserved if the DPS Enabled field is set to 0 or if the AP does not support operating in high capability mode until the next TBTT.

**9.4.2.aa2.2 UHR MAC Capabilities Information field**

The format of the UHR MAC Capabilities Information field is defined in Figure 9-aa5 (UHR MAC Capabilities Information field format).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 | B5 | B6 | B7 |
|  | DPS Support | DPS Assisting Support | DPS AP Static HCM Support | Multi-Link Power Management | NPCA Supported | Enhanced BSR Support | Additional Mapped TID Support | EOTSP Support |
| Bits: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|  | B8 | B9 | B10 |  | ... | ... | ... | B10 Bz |
|  | DSO Support | P-EDCA Support | DBE Support |  | ... | ... | ... | Reserved |
| Bits: | 1 | 1 | 1 |  | ... | ... | ... | x |

The subfields of the UHR MAC Capabilities Information field are defined in Table 9-349c (Subfields of the UHR MAC Capabilities Information field).

|  |
| --- |
| * Subfields of the UHR MAC Capabilities Information field (continued)
 |
| Subfield | Definition | Encoding |
| DPS Support | Indicates whether or not DPS is supported | Set to 1 if dot11DynamicPowerSaveSupport is true (see 37.15.1 (Dynamic power save (DPS) operation)).Set to 0 otherwise. |
| DPS Assisting Support | Indicates whether or not the transmission of an ICF for DPS is supported | Set to 1 if dot11DynamicPowerSaveAssistingSupport is true (see 37.15.1 (Dynamic power save (DPS) operation)).Set to 0 otherwise. |
| DPS Static HCM Support (#2131) | Indicates whether or not maintaining the DPS HC mode from one Beacon frame till next TBTT is supported. | For a mobile APSet to 1 if the mobile AP, while operating in DPS mode, is capable of operating in DPS HC mode from one Beacon frame till the next TBTT (see 37.15.1.2 (Mobile AP’s DPS operation)).Set to 0 otherwise.Reserved for a non-AP STA. |
| Multi-Link Power Management Support | Indicates whether or not the multi-link power management is supported | For an AP MLD Set to 1 if the AP MLD supports the reception of frames with the multi-link power management signal. Set to 0 otherwise.For a non-AP MLD Set to 1 if the non-AP MLD supports the transmission of frame with multi-link power management signal. Set to 0 otherwise. |
| NPCA Supported | Indicates whether NPCA operation is supported | Set to 1 to indicate that NPCA operation is supported.Set to 0 to indicate that NPCA operation is not supported. |
| Enhanced BSR Support | For an AP, indicates support for receiving a frame with an EBSR Control field. For a non-AP STA, indicates support for transmitting a frame with an EBSR Control field. | If the +HTC-HE Support subfield is 1:Set to 1 if supported.Set to 0 otherwise.Reserved if the +HTC-HE Support subfield is 0 |
| Additional Mapped TID Support | Indicates whether the STA supports the mapping of up to one additional TID from AC\_BE and up to one additional TID from AC\_BK to AC\_VO and AC\_VI access categories for an SCS stream.  | For a UHR STA that has set the SCS Traffic Description Support subfield in the EHT Capabilities element to 1:Set to 1 to indicate that the STA supports mapping of up to one additional TID from AC\_BE and up to one additional TID from AC\_BK to AC\_VO and AC\_VI access categories for an SCS stream (see 37.18 (UHR SCS procedure)). Set to 0 otherwise.  |
| EOTSP Support | Indicates whether EOTSP indication is supported. | Set to 1 to indicate EOTSP indication during TWT SP is supported.Set to 0 to indicate EOTSP indication during TWT SP is not supported. |
| DSO Support | Indicates whether or not the DSO operation is supported. | Set to 1 if dot11DSOOptionActivated is equal to true (see 37.24 (Dynamic Subband Operation)).Set to 0 otherwise. |
| P-EDCA Support | Indicates whether or not P-EDCA is supported. | Set to 1 if dot11PEDCAOptionActivated is true (see 37.5 (Prioritized EDCA)).Set to 0 otherwise. |
| DBE Support | Indicates whether the DBE operation is supported. | Set to 1 if dot11DBEOptionActivated is true (see 37.26 (Dynamic bandwidth expansion (DBE))).Set to 0 otherwise. |

***TGbn editor: please change 37.9.1 as follows:***

37.9.1 Dynamic power save (DPS) operation

(#902, 540). The DPS operation allows a DPS STA, i.e. a STA enabling its DPS mode, to operate with lower capabilities to reduce power consumption when listening on the link. The set of the capabilities reduced by DPS operation include the bandwidth, NSS, MCS, and the PPDU formats. The DPS STA transitions to its HC mode upon receiving an appropriate ICF (see below) from a DPS assisting STA.

A UHR non-AP STA that has dot11UHRDPSAssistingImplemented equal to 1 is called a DPS assisting non-AP STA and shall set the DPS Assisting Support field to 1 in the UHR Capabilities element in Management frames that it transmits. A UHR AP that has dot11UHRDPSAssistingImplemented equal to 1 is called a DPS Assisting AP and shall set the DPS Assisting Support field to 1 in the UHR Capabilities element in Management frames that it transmits. Otherwise the UHR AP or non-AP STA shall set the DPS Assisting Support field (#259, 2416) to 0.

A DPS STA is either a DPS non-AP STA or a DPS mobile AP.

An AP that is not a UHR mobile AP shall have dot11UHRDPSImplemented equal to 0.

(#3649)37.9.1.1 DPS operation for Non-AP STAs

(#2120, 2417, 2418) A UHR non-AP STA that has dot11UHRDPSImplemented equal to 1 shall set the DPS Support field to 1 in the UHR Capabilities element in Management frames that it transmits. Otherwise the non-AP STA shall set the DPS Support field to 0. A UHR non-AP STA that has dot11UHRDPSImplemented equal to 1 and that has enabled its DPS mode is called a DPS non-AP STA.

[TBD] A UHR non-AP STA may enable the DPS mode only if its associated AP is a DPS Assisting AP. When a UHR non-AP STA intends to enable the DPS mode, then:

* The non-AP STA shall transmit an TBD Request frame with the DPS Mode field of the UHR Control field set to 1 to the AP, and include a DPS Operation Parameters field in the TBD Request frame.
* The AP shall respond with a TBD Response frame to the non-AP STA, after the AP is ready to serve the non-AP STA in the DPS mode.

[TBD] When a DPS non-AP STA intends to disable the DPS mode, then:

* The non-AP STA shall transmit an TBD request frame with the DPS Mode field of the frame set to 0 to its associated AP.
* The associated AP shall transmit an TBD response frame to the non-AP STA, after the AP is no longer serving the non-AP STA in the DPS mode.

 (#782, 3803, 96)

(#3023) DPS operation allows a DPS STA to operate in LC (#98) mode and to transition to HC (#98, 3406) mode upon reception of an ICF transmitted by its associated AP.

(#1400, 3146, 3681, 3682, 3683, 1443) If at least one of the non-AP STA(s) addressed by a DPS assisting AP’s ICF has indicated the non-zero padding delay to transition from LC mode to the HC mode:

* If none of the addressed non-AP STA(s) are operating with the DUO mode enabled, then the DPS assisting AP shall use an MU-RTS Trigger frame or a BSRP Trigger frame as the ICF to solicit the STA’s transition from the LC mode to the HC mode,
* if one of the addressed non-AP STA is operating with the DUO mode enabled, then the DPS assisting AP shall use a BSRP Trigger frame or an individually addressed BSRP NTB Trigger frame as the ICF to solicit the STA’s transition from the LC mode to the HC mode.

Otherwise, if none of the non-AP STA(s) addressed by a DPS assisting AP’s ICF has indicated the non-zero padding delay to transition from LC mode to the HC mode:

* If none of the addressed non-AP STA(s) are operating with the DUO mode enabled, then the DPS assisting AP shall use one of the RTS (under the condition of single TXOP responder), the MU-RTS Trigger frame or the BSRP Trigger frame as the ICF to solicit the non-AP STA’s transition from the LC mode to the HC mode,
* if one of the addressed non-AP STA is operating with the DUO mode enabled, then the DPS assisting AP shall use a BSRP Trigger frame or an individually addressed BSRP NTB Trigger frame as the ICF to solicit the STA’s transition from the LC mode to the HC mode.

(#3804, 2129, 3141, 2475) A(#3024) DPS non-AP STA in the HC(#98, 3406, 2420) mode shall follow the EMLSR rule of switching back to listening mode to transition back to the LC mode.

(#2453, 1547, 619, 1401, 2421, 3620, 3653, 3805, 3684, 3654)A DPS STA that is in LC mode shall be capable of exchanging frames under one of the following modes indicated by the Parameterized Mode field in DPS Operation Parameters field in UHR Mode Change element:

* Default mode if the Parameterized Mode field is equal to 0: 20 MHz, 1 SS, non-HT PPDU format with the data rate of 6, 12, and 24 Mb/s.
* Parameterized mode if the Parameterized Mode field is equal to 1: PPDU formats up to UHR PPDU using the bandwidth, NSS, and MCS announced by the non-AP STA in its DPS Operation Parameters field when enabling its DPS mode.

(#3025, 3183, 3685, 262, 783, 2126)A DPS non-AP STA that is in the HC mode shall be capable of receiving and transmitting the same PPDUs as if the non-AP STA has not enabled DPS mode.

 (#1767, 2127, 263, 1548, 3686, 2422, 2476, 3687) If a DPS non-AP STA has enabled DPS with the ICF Required field set to 0, then the DPS Assisting AP shall initiate frame exchanges with the DPS non-AP STA by sending an ICF if it intends to transmit to the DPS STA in HC mode (i.e. the DPS Assisting AP may exchange frames with the DPS non-AP STA without being required to send an ICF as long as the frames use parameters consistent with the DPS non-AP STAs’ LC mode. A DPS non-AP STA shall not enable DPS with the ICF Required field set to 0 if the DPS STA is operating on an eMLSR link.

(#1767, 2127, 263, 1548, 3686, 2422, 2476, 3687) If a DPS non-AP STA has enabled DPS with the ICF Required field set to 1, then the DPS Assisting AP shall initiate any frame exchange with a DPS STA by sending an ICF (i.e., the DPS Assisting STA can not exchange any frames with the DPS STA unless they are preceded with an ICF).

The ICF (#224) frame addressed to the DPS STA(s) (#420, 3028) shall include an I-FCS (#225) if at least one of the recipient DPS STA(s) (#420, 3028) has indicated a (#502)nonzero DPS padding delay and shall include sufficient padding to ensure that the padding requirement(s) of the DPS STA(s) that are addressed by that ICF are satisfied as defined in 37.14 (Padding for an Initial Control Frame).

If a DPS assisting AP sends an ICF that is an MU-RTS Trigger frame to a DPS non-AP STA that can receive frame other than ICF in the LC mode, then the DPS assisting AP may set the Remain In LC Mode field to 1 in the User Info field of the MU-RTS Trigger frame addressed to the DPS non-AP STA. Otherwise, the DPS assisting AP shall set the Remain In LC Mode field the MU-RTS Trigger frame to 0.

If the Remain In LC Mode field of the MU-RTS Trigger frame is equal to 1, then the DPS assisting AP:

* shall ensure that all SU PPDUs transmitted to the DPS non-AP STA and RUs allocated to the DPS non-AP STA within MU PPDUs and TB PPDUs, that is initiated by the transmission of this frame, do not exceed the values of the LC mode parameters in the DPS operation parameters of the DPS non-AP STA in parameterized mode or the default mode parameters of the DPS non-AP STA in default mode.
* shall follow the procedure in this subclause and include the iFCS and padding in the MU-RTS Trigger frame if the DPS non-AP STA has enabled DPS with a nonzero DPS padding delay.

A DPS non-AP STA that receives an ICF that is an MU-RTS Trigger frame with the Remain In LC Mode equal to 1 from its associated DPS assisting AP may not switch to the HC mode after receiving the ICF. The DPS non-AP STA that receives an ICF that is an MU-RTS Trigger frame with the Remain In LC Mode equal to 0 from its associated DPS assisting AP shall switch to the HC mode after receiving the ICF.

**Annex C**

(normative)

**ASN.1 encoding of the MAC and PHY MIB**

**C.3 MIB Detail**

***TGbn editor: please change C.3 as following:(#3894)***

……

Dot11UHRStationConfigEntry ::=

 SEQUENCE {

 dot11CoRTWTOptionImplemented TruthValue,

 dot11NPCAOptionImplemented TruthValue,

 dot11DUOOptionImplemented TruthValue,

 dot11UHRBSROptionImplemented TruthValue,

 dot11UHRDPSAssistingImplemented TruthValue,

 dot11UHRDPSImplemented TruthValue,

 dot11UHRDPSStaticHCMImplemented TruthValue (#2131)

}

……

dot11UHRDPSAssistingImplemented OBJECT-TYPE

 SYNTAX TruthValue

 MAX-ACCESS read-only

 STATUS current

 DESCRIPTION

 "This is a capability variable.

 Its value is determined by device capabilities.

 This attribute, when true, indicates that the STA implementation is capable of acting as a DPS assisting STA."

 ::= { dot11UHRStationConfigEntry 5 }

dot11UHRDPSImplemented OBJECT-TYPE

 SYNTAX TruthValue

 MAX-ACCESS read-only

 STATUS current

 DESCRIPTION

 "This is a capability variable.

 Its value is determined by device capabilities.

 This attribute, when true, indicates that the STA implementation is capable of acting as a DPS STA."

 ::= { dot11UHRStationConfigEntry 6 }

(#2131)dot11UHRDPSStaticHCMImplemented OBJECT-TYPE

 SYNTAX TruthValue

 MAX-ACCESS read-only

 STATUS current

 DESCRIPTION

 "This is a capability variable.

 Its value is determined by device capabilities.

 This attribute, when true, indicates that the STA implementation is capable of maintaining the HC mode from one Beacon frame till the next TBTT."

 ::= { dot11UHRStationConfigEntry 7 }

}

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

-- \* End of dot11UHRStationConfig TABLE

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*