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, 3960, 3740, 3741, 3742, 1827, 540, 902, 3649, 3894, 259, 2120, 2416, 260, 2417, 3387,

2121, 2471, 2472, 500, ~~1442,~~ 1545, 2419, 2648, 3650, 3798, 3952, 3678, 223, 721, 2651, 1546, 2122, 3799, 3022, 501,

~~2711,~~ ~~2712,~~ ~~2123,~~ 2418, 3800, 96, 266, 1051, 1316, ~~2124,~~ 2474, 3651, 3679, ~~3801, 3405, 3680, 2473, 3652, 3802,~~ 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¸ 3025, 3183, 3685, 262,

783, 2126, 3569, 3029, 97, 264, 1444, 1767, 2127, 224, 263, 1548, 3027, 3686, 225, 420, 3028, 3388, 502, 1402, 2128,

2422

3687, 2476, 1549, 2129, 2130, 2131, 2132, 2133, 2134, 3261, 2410

**Revisions:**

* Rev 0: Initial version of the document.

***TGbn editor: Baseline for this document 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 | Rejected  Discussion: 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 | Rejected  Discussion: 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 | Rejected  Discussion: 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 | Rejected  Discussion: 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 | Rejected  Discussion: 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. |
| 3960 | 37.9 | 76 | 48 | The detailed parameters for the signaling of enabling or disabling Dynamic Power SaveDPS mode need to be specified. | As in comment |  |
| 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. | Rejected  Discussion: 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. | Rejected  Discussion: 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. | Rejected  Discussion: 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. | Rejected  Discussion:  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 | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make the changes with #540 tag in THIS DOCUMENT |
| 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". | Revised  Discussion: 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 this document. |
| 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. | Revised  Discussion: 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 this document. |
| 3894 | 37.9.1 | 76 | 50 | Add MIB variable to Annex C. Same for dot11UHRDPSSupported. | As in comment | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make the change with #3894 tag in this document. |
| 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. | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make the change with #259 tag in this document. |
| 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. | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make the change with #2120 tag in this document. |
| 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. | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make the change with #2416 tag in this document. |
| 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 is called a DPS non-AP STA' to 'A UHR non-AP STA that has dot11UHRDPSSupported equal to 1 is called a DPS non-AP STA'. | Rejected  Discussion: 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." | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make the change with #2417 tag in this document. |
| 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. | Rejected  Discussion: This (DPS STA) follows the style of eMLSR/eMLMR. |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| ~~2121~~ | ~~37.9.1~~ | ~~76~~ | ~~62~~ | ~~The spec needs to define the mechanism for a non-AP to enable/disable DPS operation or update its DPS parameters.~~ | ~~As in comment.~~ |  |
| ~~2471~~ | ~~37.9.1~~ | ~~76~~ | ~~62~~ | ~~Enablement procedure has to be defined. Should be a generic enablement method for DUO, DPS, DSO and NPCA and should be kept as simple as possible following the example of eMLSR enablement in 11be.~~ | ~~Define a new UHR Operating Mode Notification frame for a STA to notify that it enables or disables the feature and to include the parameters needed for the feature. The same frame can be used to acknowledge the change from the AP side. The enablement/disablement is per STA if the STA belongs to an MLD.~~ |  |
| ~~2472~~ | ~~37.9.1~~ | ~~76~~ | ~~62~~ | ~~An AP shall always accept a Request to enable DPS, DSO, NPCA, DUO.~~ | ~~Clarify that the AP shall accept a Request for DPS, DUO, DSO, NPCA. The Response frame therefore doesn't need to include a Status field, similarly to eMLSR enablement frame.~~ |  |
| ~~500~~ |  | ~~77~~ | ~~1~~ | ~~a TBD Request frame' instead of 'an TBD Request frame'~~ | ~~As in comment~~ |  |
| ~~1442~~ |  | ~~77~~ | ~~1~~ | ~~It is hard to understand by this sentence that not UHR AP but non-AP STA will be in DPS mode when the UHR non-AP STA requests to enable the DPS function because the DPS is designed mainly for Mobile AP.~~ | ~~Please consider to clarify.~~ | ~~Rejected~~  ~~Discussion: DPS is one of the major PS mechanisms introduced in 11bn for both Mobile APs and non-AP STAs. Hence, it has to be defined this way.~~ |
| ~~1545~~ |  | ~~77~~ | ~~1~~ | ~~The UHR Control field should be defined in advance.~~ | ~~As in comment.~~ |  |
| ~~2419~~ |  | ~~77~~ | ~~1~~ | ~~UHR Control Field is not defined and the Request frame to enable DPS is still TBD. Hence reference to UHR Control Field can be removed. Additionally reference to AP can be a DPS Assisting AP for more clarity.~~ | ~~"The non-AP STA shall transmit a TBD Request frame with a DPS Mode field of the frame set to 1 to it's associated DPS Assisting AP"~~ |  |
| ~~2648~~ |  | ~~77~~ | ~~1~~ | ~~The enablement mechanism involves a TBD request frame - resolve the specific frame exchange sequence and signaling for enablement mechanism in the following text - "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."~~ | ~~Resolve the specific request frame format (e.g., UHR Mode Enablement Notification frame) for DPS enablement mechanism~~ |  |
| ~~3650~~ |  | ~~77~~ | ~~1~~ | ~~Several TBD Requests and TBD Responses throughout the draft. Suggest to have a harmonized protocol that allows enablement/disablement/update of modes. Better if the protocol inherits from 11be MLD in terms of providing this functionalitiy cross link and even better if for multi link (of course while preserving the per-link properties of certain modes of operation).~~ | ~~As in comment.~~ |  |
| ~~3798~~ |  | ~~77~~ | ~~1~~ | ~~"--The non-AP STA shall transmit an TBD Request frame with the DPS Mode field of the UHR Con- trol 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." Please define the DPS Operating Mode Notification frame used to enable DPS mode.~~ | ~~Please define the DPS Operating Mode Notification frame used to enable DPS mode.~~ |  |
| ~~3952~~ |  | ~~77~~ | ~~1~~ | ~~DPS is one of the operating mode defined in 11bn. There are other client operating modes defined in 11bn including NPCA, DUO + DSO operating mode is being discussed in the TGbn group. Each of these operating modes would need a way to enable/disable the OM mode and update the operating parameters. It is better to define a common UHR operating mode notification mechanism that can be used across multiple OM modes. it is also desirable that a STA can enable/disable OM modes or update operating parameters cross-link to reduce UHR OMN overhead.~~ | ~~Define a common UHR operating mode notification (OMN) framework that can be used across multiple OM modes for enable/disable of one or more link specific OM modes and update of operation parameters. Define a new Multi-Link Operating Mode Notification (ML OMN) frame, that allows STA to update OM modes for multiple links and for multiple feature/OM modes.~~ |  |
| ~~3678~~ |  | ~~77~~ | ~~1,2,3,9,12~~ | ~~Proposal to reuse the Link Reconfiguration signaling framework for Request and Response frames. It is good to take leverage of signaling frameworks that are already in the spec. Additionally, using the ML Reconfiguration signaling framework for DPS enablement /disablement allows us to to do so for multiple STAs that are affiliated with the same MLD in the same frame exchange since DPS is defined per STA and not per MLD. Please consider this comment for other similar instances.~~ | ~~Explained in the comment~~ |  |
| ~~223~~ | ~~37.9.1~~ | ~~77~~ | ~~4~~ | ~~What's the 'xIFS' between TBD Request frame and TBD Response frame? What if the AP is not ready to serve the non-AP STA in the DPS mode?~~ | ~~Add the behavior when the AP is not ready to serve the non-AP STA in the DPS mode.~~ |  |
| ~~721~~ | ~~37.9.1~~ | ~~77~~ | ~~4~~ | ~~The non-AP STA's DPS behavior between the Request frame and the Response frame is not clear.~~ | ~~Add a rule that "The non-AP STA shall not enable the DPS mode until it has successfully received the TBD Response frame from the AP."~~ |  |
| ~~2651~~ | ~~37.9.1~~ | ~~77~~ | ~~4~~ | ~~The enablement mechanism involves a TBD response frame -in the following text - "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."~~ | ~~Resolve the specific response frame format (e.g., UHR Mode Enablement Notification frame) for the DPS enablement mechanism~~ |  |
| ~~1546~~ | ~~37.9.1~~ | ~~77~~ | ~~5~~ | ~~If the AP is not ready to serve the non-AP STAs in DPS mode, the AP may not respond with a TBD Response frame or reject the request. And in this case, the non-AP may not able to enter the DPS mode. Therefore, we should add normative text for AP's behavior as well as non-AP STA's behavior to this scenario.~~ | ~~As in comment.~~ |  |
| 2122 | ~~37.9.1~~ | ~~77~~ | ~~5~~ | ~~It has to be clarified if the AP needs to send the TBD Response within a time limit of receiving the TBD Request frame.~~ | ~~As in comment.~~ |  |
| ~~3799~~ | ~~37.9.1~~ | ~~77~~ | ~~7~~ | ~~"-- 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 lon- ger serving the non-AP STA in the DPS mode." Please define the DPS Operating Mode Notification frame used to disable DPS mode.~~ | ~~Please define the DPS Operating Mode Notification frame used to disable DPS mode.~~ |  |
| ~~3022~~ | ~~37.9.1~~ | ~~77~~ | ~~8~~ | ~~"-- 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 lon- ger serving the non-AP STA in the DPS mode." -- the "associated"s are superfluous (see two bullets above)~~ | ~~As it says in the comment~~ |  |
| ~~501~~ | ~~37.9.1~~ | ~~77~~ | ~~9~~ | ~~a TBD Request frame' instead of 'an TBD Request frame'~~ | ~~As in comment~~ |  |
| ~~2711~~ | ~~37.9.1~~ | ~~77~~ | ~~9~~ | ~~The disablement mechanism involves a TBD request frame - resolve the specific frame exchange sequence and signaling for enablement mechanism in the following text - "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."~~ | ~~Resolve the specific request frame format for DPS disablement mechanism~~ |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| ~~2712~~ |  | ~~77~~ | ~~11~~ | ~~The disablement mechanism involves a TBD response frame - resolve the specific frame exchange sequence and signaling for enablement mechanism in the following text - 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.~~ | ~~Resolve the specific response frame format for DPS disablement mechanism~~ |  |
| ~~2123~~ |  | ~~77~~ | ~~13~~ | ~~It has to be clarified if the AP needs to send the TBD Response within a time limit of receiving the TBD Request frame.~~ | ~~As in comment.~~ |  |
| 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." | Revised  Discussion: Generally agree with the commenter.  TGbn editor: please make the change with #2418 tag in this document. |
| 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. | Revised  Discussion: Agree with the commenter.  TGbn editor: please make the change with #3800 tag in this document. |
| 96 |  | 77 | 19 | currently we only have motion for mobile AP to work with DPS mode | change "AP" to "mobile AP" | Revised  Discussion: Agree with the commenter. Mobile AP is added.  TGbn editor: please make the change with #96 tag in this document. |
| 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. | Rejected  Discussion: 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. | Revised  Discussion: Agree with the commenter.  TGbn editor: please make the change with #1051 tag in this document. |
| 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. | Revised  Discussion: Agree with the commenter.  TGbn editor: please make the change with #1316 tag in this document. |
| ~~2124~~ |  | ~~77~~ | ~~19~~ | ~~The spec needs to define the mechanism for a mobile AP to enable/disable DPS operation or update its DPS parameters.~~ | ~~The commentor will bring a contribution to resolve the issue.~~ |  |
| 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. | Revised  Discussion: Agree with the commenter.  TGbn editor: please make the change with #2474 tag in this document. |
| 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. | Revised  Discussion: Agree with the commenter.  TGbn editor: please make the change with #3651 tag in this document. |
| 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 | Revised  Discussion: Agree with the commenter.  TGbn editor: please make the change with #3679 tag in this document. |
| ~~3801~~ |  | ~~77~~ | ~~19~~ | ~~"A DPS AP shall have value 1 in its transmitted DPS Enabled field to announce that it has enabled DPS and 0 otherwise." If DPS is enabled, the DPS AP should also announce the DPS Operation Parameters. Please define the DPS Operation Parameters announcemnt mechanism.~~ | ~~Please define the DPS Operation Parameters announcemnt mechanism.~~ |  |
| ~~3405~~ |  | ~~77~~ | ~~20~~ | ~~Define a procedure for the DPS AP to enable/disable the DPS mode. When the AP transitions from the DPS disabled to the DPS enabled mode, the non-AP STA must start preceding all frames to the AP with an ICF. Similarly, when the AP transitions from the DPS disabled to the DPS enabled mode, the non-AP STA need not precede frames with an ICF. The UHR AP must provide sufficient time to the non-AP STA to react to necessary changes so that it can operate efficiently~~ | ~~As in comment.~~ |  |
| ~~3680~~ |  | ~~77~~ | ~~20-21~~ | ~~I propose the following:  "Define a mechanism ensuring that this enablement/disablement are part of the critical updates of the AP and possibly include other DPS-related parameters that might change in this category."~~ | ~~Explained in the comment~~ |  |
| ~~2473~~ |  | ~~77~~ | ~~21~~ | ~~Define a generic way for an AP to enable DPS and other features for the BSS that impact the STAs, with sufficient time for the STA to prepare for the changes, applying something similar to the critical udpate.~~ | ~~as in comment~~ |  |
| ~~3652~~ |  | ~~77~~ | ~~21~~ | ~~Define enablement/disablement procedure at the AP side in line with existing protocols (via beacons, and categorized as critical updates) so that STAs are aware of these changes at AP side.~~ | ~~As in comment.~~ |  |
| ~~3802~~ |  | ~~77~~ | ~~21~~ | ~~"The mechanism for enablement/disablement of DPS by an AP is TBD." Please describe the DPS enablement/disablement mechanism of the AP. The AP should indicate the enablement start time in advance and notify it.~~ | ~~Please describe the DPS enablement/disablement mechanism of the AP.~~ |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 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. | Rejected  Discussion: 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 | Revised  Discussion: Agree with the commenter. Please refer to the discussion of 3800 for the information.  TGbn editor: please make the change with #620 tag in this document. |
| 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. | Rejected  Discussion: 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. | Rejected  Discussion: 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. | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make the change with #782 tag in this document. |
| 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. | Rejected  Discussion: 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. | Revised  Discussion: the sentence is not necessay.  TGbn editor: please make the change with #3803 tag in this document. |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 98 |  | 77 | 27 | Add definition of HC mode and LC mode to subclause 3.2 | as the comment | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make the change with #98 tag in this document. |
| 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 | Rejected  Discussion: 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. | Revised  Discussion: 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 this document. |
| 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.\*\* | Rejected  Discussion: 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. | Rejected  Discussion: 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 | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make changes with #3023 tag in THIS DOCUMENT. |
| 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. | Rejected  Discussion: 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) | Revised  Discussion: 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 THIS DOCUMENT. |
| 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 | Rejected  Discussion: 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 | Revised  Discussion: 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 THIS DOCUMENT. |
| 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 | Revised  Discussion: 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 THIS DOCUMENT. |
| 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 | Revised  Discussion: 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 THIS DOCUMENT. |
| 3406 | 37.9.1 | 77 | 29 | HC is already defined on Line 28. | As in comment. | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make changes with #3406 tag in THIS DOCUMENT. |
| 3683 | 37.9.1 | 77 | 29 | Rules need to be defined so we can remove this TBD conditions. | Explained in the comment | Revised  Discussion: 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 THIS DOCUMENT. |
| 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. | Revised  Discussion: 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 THIS DOCUMENT. |
| 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. | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make changes with #2420 tag in THIS DOCUMENT |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 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. | Revised  Discussion: 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 THIS DOCUMENT |
| 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. | Revised  Discussion: 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 THIS DOCUMENT |
| 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. | Revised  Discussion: 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 THIS DOCUMENT |
| 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. | Revised  Discussion: 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 THIS DOCUMENT |
| 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 | Revised  Discussion: 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 THIS DOCUMENT |
| 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. |  |
| 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) | Revised  Discussion: 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 THIS DOCUMENT |
| 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 | Revised  Discussion: 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 THIS DOCUMENT. |
| 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. | Rejected  Discussion: 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. | Revised  Discussion: 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 THIS DOCUMENT |
| 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. | Revised  Discussion: 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 THIS DOCUMENT |
| 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. | Revised  Discussion: 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 THIS DOCUMENT |
| 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. | Revised  Discussion: 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 THIS DOCUMENT |
| 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 | Revised  Discussion: 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 THIS DOCUMENT |
| 3025 | 37.9.1 | 77 | 33 | "(e.g., operating BW, NSS and MCSs)" -- not clear what this means | Delete the cited text | Revised  Discussion: a STA in HC mode can receive a PPDU as if the STA that doesn’t enable its DPS mode.  TGbn editor: please make changes with #3025 tag in THIS DOCUMENT. |
| 3183 | 37.9.1 | 77 | 33 | "e.g.,operating BW, NSS and MCSs" doesn't provide any information, may consider to remove it. | as in comment. | Revised  Discussion: a STA in HC mode can receive a PPDU as if the STA that doesn’t enable its DPS mode.  TGbn editor: please make changes with #3183 tag in THIS DOCUMENT. |
| 3685 | 37.9.1 | 77 | 33-34 | Explicitly call out where these parameters are reported. | Explained in the comment | Revised  Discussion: a STA in HC mode can receive a PPDU as if the STA that doesn’t enable its DPS mode.  TGbn editor: please make changes with #3685 tag in THIS DOCUMENT. |
| 262 | 37.9.1 | 77 | 34 | The operational parameters for the HC (High Capability) mode are not clearly described. | Add relevant description for the operation parameters of HC mode, such as one or more operation parameters in HC mode being greater than the corresponding operation parameters in LC mode. | Revised  Discussion: a STA in HC mode can receive a PPDU as if the STA that doesn’t enable its DPS mode.  TGbn editor: please make changes with #262 tag in THIS DOCUMENT. |
| 783 | 37.9.1 | 77 | 34 | We need to clarify whether non-DPS mode of operation is the same with the HC mode, that is, whether HC mode has the same capability as the active state with DPS disabled mode or not. In this regard, a sentence, "A DPS STA that is in HC mode (e.g., operating BW, NSS and MCSs) shall be capable of receiving all supported PPDU formats corresponding to the HC mode.", should be rewritten as above or removed. | As in comment. | Revised  Discussion: a STA in HC mode can receive a PPDU as if the STA that doesn’t enable its DPS mode.  TGbn editor: please make changes with #783 tag in THIS DOCUMENT. |
| 2126 | 37.9.1 | 77 | 34 | The last sentence of the paragraph essentially reads: "STA in HC mode supports all formats corresponding to HC mode." This doesn't convey any meaning. Further clarification is needed on what all supported PPDU formats here means. | As in comment. | Revised  Discussion: a STA in HC mode can receive a PPDU as if the STA that doesn’t enable its DPS mode.  TGbn editor: please make changes with #2126 tag in THIS DOCUMENT. |
| 3569 | 37.9.1 | 77 | 34 | It is not clear whether a DPS STA is allowed to choose whether to transition to the HC mode or not (e.g. to extend its battery life). If the DPS STA is allowed to stay in LC mode, it would help if the DPS ICF contain PPDU parameters (e.g. PSDU length, BW, #streams) that the DSP AP is transmitting in the HC mode. The DPS STA may then transition to the HC mode depending on the PPDU parameters. | As in comment | Rejected  Discussion: what the commenter proposed makes the protocol complicated. |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 3029 | 37.9.1 | 77 | 36 | "transition of the peer DPS STA to HC mode" -- "peer DPS STA" is not defined | Change to "transition of an associated DPS STA to HC mode" | Rejected  Discussion: peer STA is widely used in 802.11me draft specification. Another observation is that the peer STA can be an unassociated STA. |
| 97 | 37.9.1 | 77 | 37 | add "from LC mode" for transition to HC mode | as the comment |  |
| 264 | 37.9.1 | 77 | 37 | 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. | Two aspects should be considered: 1. Allow the DPS STA to decide whether to immediately perform a mode switch upon receiving an ICF. The DPS AP can indicate in the ICR frame whether it accepts the STA's request, delays the mode switch, or schedules the STA at a later time. 2. When requesting the DPS STA to perform a mode switch, the DPS assisting STA can further include its traffic-related information, such as QoS information, in the ICF to assist the DPS STA in making a decision. | Rejected  Discussion: what the commenter proposed makes the protocol complicated. |
| 1444 | 37.9.1 Dynamic power save (DPS) operation | 77 | 37 | Regarding the sentence, "A DPS assisting STA shall solicit the transition of the peer DPS STA to HC mode by sending an initial control frame," if this is only the way to transit LC to HC in DPS mode, the AP cannot utilize DPS when non-AP STA(s) that do(es) not support DPS or legacy STA(s) associate(s) to the AP. | 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. | Revised  Discussion: generally agree with the commenter. A DPS mobile AP announcing parameterized LC mode can allow the STAs that are not DPS assisting STAs to associate with it if the AP announces its operating BW and Nss the same as the AP’s LC mode capability. The DPS AP also announces its operating BW and operating Nss same as the LC mode capabilities. A non-DPS assisting non-AP STA uses the DPS mobile AP operating BW, Nss to perform the frame exchanges with the AP.  TGbn editor: please make change with #1444 tag in THIS DOCUMENT. |
| 1767 | 37.9.1 | 77 | 37 | Should DPS assisting STA always solicit the transition of the peer DPS STA to HC mode whenever the DPS assisting STA intents to do frame exchange? Probably No. Sometimes there're less data, they could finish the transmission in LC mode. | Change to: A DPS assisting STA intends to solicit the transition of the peer DPS STA to HC mode shall send an initial control frame | Revised  Discussion: generally agree with the commenter. When a STA enables its DPS mode, the STA can announce whether it supports the frame exchanges without switching from the LC mode to the HC mode. A DPS assisting STA may not send ICF for the frame exchanges with a DPS Speer STA with ICF required equal to 0. The PPDU(s) being sent to the peer DPS STA in LC mode needs to satisfy the BW, Nss, MCS of the DPS STA in LC mode.  TGbn editor: please make changes with #1767 in THIS DOCUMENT |
| 2127 | 37.9.1 | 77 | 37 | The DPS ICF should carry an indication that it is soliciting the receiving STA to transition from the low-power mode to the high power mode. | The commentor will bring a contribution to resolve the issue. | Revised  Discussion: generally agree with the commenter. When a STA enables its DPS mode, the STA can announce whether it supports the frame exchanges without switching from the LC mode to the HC mode. A DPS assisting STA may not send ICF for the frame exchanges with a DPS Speer STA with ICF required equal to 0. The PPDU(s) being sent to the peer DPS STA in LC mode needs to satisfy the BW, Nss, MCS of the DPS STA in LC mode. However once the ISF is received by the DPS STA, the DPS STA will switch from LC mode to HC mode.  TGbn editor: please make changes with #2127 in THIS DOCUMENT |
| 224 | 37.9.1 | 77 | 38 | In the previous paragraphs, initial control frame is abbreviated as ICF. Please make them consistent. | As in comment. | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make changes with #224 in THIS DOCUMENT |
| 263 | 37.9.1 | 77 | 38 | Considering that the DPS STA will indicate the activation of its LC mode and the related operation parameters, the DPS assisting STA should follow the operation parameters indicated by the DPS STA when transmitting ICF. | change 'which is transmitted in non-HT (duplicate) PPDU using a rate of 6 Mb/s, 12 Mb/s, or 24 Mb/ s' to 'which is transmitted in non-HT (duplicate) PPDU using the operation parameters of the LC mode indicated by DPS STA'. | Revised  Discussion: generally agree with the commenter. When a STA enables its DPS mode, the STA can announce whether it supports the frame exchanges without switching from the LC mode to the HC mode. A DPS assisting STA may not send ICF for the frame exchanges with a DPS Speer STA with ICF required equal to 0. The PPDU(s) being sent to the peer DPS STA in LC mode needs to satisfy the BW, Nss, MCS of the DPS STA in LC mode.  TGbn editor: please make changes with #263 in THIS DOCUMENT |
| 1548 | 37.9.1 | 77 | 38 | It should be "TBD PPDU"instead of "non-HT (duplicate) PPDU" to be consistent with the description above, such as L32P77. | As in comment. | Revised  Discussion: generally agree with the commenter. When a STA enables its DPS mode, the STA can announce whether it supports the frame exchanges without switching from the LC mode to the HC mode. A DPS assisting STA may not send ICF for the frame exchanges with a DPS Speer STA with ICF required equal to 0. The PPDU(s) being sent to the peer DPS STA in LC mode needs to satisfy the BW, Nss, MCS of the DPS STA in LC mode.  TGbn editor: please make changes with #1548 in THIS DOCUMENT |
| 3027 | 37.9.1 | 77 | 38 | "in non-HT (duplicate) PPDU" missing article | As it says in the comment | Revised  Discussion: generally agree with the commenter.  TGbn editor: please make change with #3027 tag in THIS DOCUMENT. |
| 3686 | 37.9.1 | 77 | 38-39 | Are these the only formats allowed? If so, then remove the TBD. Otherwise, explicitly call out the supported formats (I assume it to follow LC mode parameters). | Explained in the comment | Revised  Discussion: generally agree with the commenter. When a STA enables its DPS mode, the STA can announce whether it supports the frame exchanges without switching from the LC mode to the HC mode. A DPS assisting STA may not send ICF for the frame exchanges with a DPS Speer STA with ICF required equal to 0. The PPDU(s) being sent to the peer DPS STA in LC mode needs to satisfy the BW, Nss, MCS of the DPS STA in LC mode.  TGbn editor: please make changes with #3686 in THIS DOCUMENT |
| 225 | 37.9.1 | 77 | 39 | Suggest to add reference to 'intermediate FCS field'. | As in comment. | Revised  Discussion: there is no need to add the reference to every field. However the corrected field name “Intermediate FCS” should be used.  TGbn editor: please make changes with #225 in THIS DOCUMENT |
| 420 | 37.9.1 | 77 | 39 | The ICF may addressed to one or More DPS STAs, so it would be more appropriate to replace ' DPS STA' with ' DPS STA(s)' in line 39-40 | as in comment | Revised  Discussion: generally agree with the commenter. The “DPS STA” is changed to “DPS STA(s)”. The”if the DPS STA” is changed to “at least one DPS STA”.  TGbn editor: please make changes with #420 in THIS DOCUMENT |
| 3028 | 37.9.1 | 77 | 39 | "The initial control frame addressed to the DPS STA shall include an intermediate FCS field if the DPS STA has indicated a non zero 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)." -- first sentence suggests the ICF is addressed to just the DPS STA, while second sentence suggests it might be addressed to other STAs too -- which is it? If the latter, who else might it be addressed to? | As it says in the comment | Revised  Discussion: generally agree with the commenter. The “DPS STA” is changed to “DPS STA(s)”. The”if the DPS STA” is changed to “at least one DPS STA”.  TGbn editor: please make changes with #3028 in THIS DOCUMENT |
| 3388 | 37.9.1 | 77 | 39 | On NPCA primary channel or when non-AP STA enables DUO mode, AP shall always begin frame exchanges with non-AP STA with an ICF, but the DPS assisting STA may only want to exchange frames with a DPS STA in LC mode. In such cases, an intermediate FCS field may not be needed or padding requirement of the DPS STA may not need to be satisfied. | Add "if DPS STA is expected to transition to HC mode for frame exchanges" as a condition for including an intermediate FCS field and including sufficient padding for DPS. | Rejected  Discussion: once ICF is addressed to a DPS STA, the DPS STA will switch from LC mode to HC mode. The protocol will become complicated if each DPS STA’s switch to HC mode is explicitly indicated in ICF. |
| 502 | 37.9.1 | 77 | 40 | non-zero or nonzero instead of non zero | As in comment | Revised  Discussion: generally with the commenter. Nonzero will be used.  TGbn editor: please make changes with #502 in THIS DOCUMENT |
| 1402 | 37.9.1 | 77 | 40 | When no padding is required, a condition to include I-FCS is needed with ICF type | As in the comment | Rejected  Discussion: when no padding is required, the FCS of the frame is enough. |
| 2128 | 37.9.1 | 77 | 41 | The sentence reads: "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". The padding is not only for DPS STA(s) but also for other STAs, e.g., EMLSR STAs. So suggest to remmove the word DPS in the sentence above. | As in comment. | Rejected  Discussion: the padding for the other features will be addressed by the related rules of the other features. |
| 2422 | 37.9.1 | 77 | 43 | Any frame exchange is misleading if the intention is to include "ALL or EVERY" frame exchange | It is TBD whether a DPS Assisting STA shall initiate "all" frame exchange with a DPS STA by sending an ICF or only some frame exchanges. | Revised  Discussion: generally agree with the commenter. When a STA enables its DPS mode, the STA can announce whether it supports the frame exchanges without switching from the LC mode to the HC mode. A DPS assisting STA may not send ICF for the frame exchanges with a DPS Speer STA with ICF required equal to 0. The PPDU(s) being sent to the peer DPS STA in LC mode needs to satisfy the BW, Nss, MCS of the DPS STA in LC mode.  TGbn editor: please make changes with #2422 in THIS DOCUMENT |
| 2476 | 37.9.1 | 77 | 43 | For non-AP STAs, would be good to define 2 modes for regulating transmission of ICF to the DPS STA. One mode should be like eMLSR and require that every frame exchange is preceeded by an ICF, and another mode would be to require ICF only when the frame exchange would need to use HC mode. The non-AP STA can choose which mode it wants to use in the enablement frame and the AP shall support both modes. | as in comment | Revised  Discussion: generally agree with the commenter. When a STA enables its DPS mode, the STA can announce whether it supports the frame exchanges without switching from the LC mode to the HC mode. A DPS assisting STA may not send ICF for the frame exchanges with a DPS Speer STA with ICF required equal to 0. The PPDU(s) being sent to the peer DPS STA in LC mode needs to satisfy the BW, Nss, MCS of the DPS STA in LC mode.  TGbn editor: please make changes with #2476 in THIS DOCUMENT |
| 3687 | 37.9.1 | 77 | 43-44 | This makes sense to be allowed for a non-AP STA only as it will create issues on the AP side because STAs will not be aware that the AP cannot serve them in that mode. Add a bit to differentiate this mode from the default mode that allows frame exchanges using LC mode parameters without having an ICF. | Explained in the comment | Revised  Discussion: generally agree with the commenter. When a STA enables its DPS mode, the STA can announce whether it supports the frame exchanges without switching from the LC mode to the HC mode. A DPS assisting STA may not send ICF for the frame exchanges with a DPS Speer STA with ICF required equal to 0. The PPDU(s) being sent to the peer DPS STA in LC mode needs to satisfy the BW, Nss, MCS of the DPS STA in LC mode.  TGbn editor: please make changes with #3687 in THIS DOCUMENT |
| 1549 | 37.9.1 | 77 | 45 | When a DPS STA and the peer DPS assisting STA have established TWT/R-TWT schedules, it is necessary to add normative text for the DPS STA or the peer DPS assisting STA' behavior at the beginning of the target wake time. | As in comment. | Rejected  Discussion: it is difficult for a DPS assisting STA to know its peer DPS STA’s R-TWT/TWT agreements. The DPS STA doesn’t need to know the peer DPS assisting STA’s R-TWT/TWT agreements since the TXOP is controlled by the DPS assisting STA. |
| 2129 | 37.9.1 | 77 | 45 | The spec needs to define the mechanism for the end of transmission to a DPS STA in the high capability mode, and the applicable medium synchronization conditions if any. | The commenter will bring a contribution to resolve the issue. | Revised  Discussion: generally agree with the commenter. The eMLSR’s rules of switching back to listening mode that include the related medium synchronization is applied for DPS STA’s switching back to LC mode.  TGbn editor: please make changes with #2129 tag in THIS DOCUMENT |
| 2130 | 37.9.1 | 77 | 45 | The spec needs to define how a DPS mobile AP can operate with legacy pre-UHR STAs and with UHR STAs that do not support DPS operation at the AP. | The commenter will bring a contribution to resolve the issue. | Revised  Discussion: generally agree with the commenter. A DPS mobile AP announcing parameterized LC mode can allow the STAs that are not DPS assisting STAs to associate with it if the AP announces its operating BW and Nss the same as the AP’s LC mode capability. The DPS AP also announces its operating BW and operating Nss same as the LC mode capabilities. A non-DPS assisting non-AP STA uses the DPS mobile AP operating BW, Nss to perform the frame exchanges with the AP.  TGbn editor: please make change with #2130 tag in THIS DOCUMENT. |
| 2131 | 37.9.1 | 77 | 45 | DPS enable/disable operation at mobile AP is expected to be slow. So the spec needs to provide a mechanism for a mobile AP operating in DPS mode to operate in the high power mode for an extended duration without disabling DPS mode. | The commentor will bring a contribution to resolve the issue. | Revised  Discussion: Generally agree with the comment.  TGbn editor: please make change with #2131 tag in THIS DOCUMENT. |
| 2132 | 37.9.1 | 77 | 45 | The spec needs to provide a mechanism for a mobile AP to perform unsolicited DPS state transitions, i.e., transitions which are not triggered by another TXOP owner by sending an DPS ICF, without loss of medium synchornization. | The commentor will bring a contribution to resolve the issue. | Rejected  Discussion: what the comment asked makes the protocol complicated. |
| ~~2133~~ | ~~37.9.1~~ | ~~77~~ | ~~45~~ | ~~The spec needs to provide a mechanism for a non-AP STA to request a DPS AP to disable or update its DPS mode.~~ | ~~The commentor will bring a contribution to resolve the issue.~~ |  |
| 2134 | 37.9.1 | 77 | 45 | The DPS ICF sent to a DPS STA should carry an indiction of the bandwidth and the NSS that the transmitter intends to use for the duration of the TXOP. | As in comment. | Rejected  Discussion: what the commenter proposed makes the protocol complicated. |
| 3261 | 37.9.1 | 77 |  | Resolve the TBDs in this section | As in the comment |  |
|  |  |  |  |  |  |  |
| 2410 | 9.4.1.85 | 57 | 54 | DPS Operation parameter field figure (Figure 9-207p) contains only DPS Padding Delay and Transition Delay. It can contain more parameters to indicate DPS operating mode preferences | Bits B16 to TBD are to be marked as reserved in the Figure 9-207p to indicate other operating parameters of DPS that are in discussion. | Revised  Discussion: Generally agree with the commenter.  TGbn editor: please make change with #2410 tag in THIS DOCUMENT |

**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, 1401, 2421, 3620, 3653, 3805, 3684, 3654, 2410, 2131***)***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 (#2131) | Reserved |
| 8 | 8 | 1 | 1 | 3 | 4 | 4 | 1 | 2 |

**Figure 9-207p—DPS Operation Parameters field format**

***TGbn editor: please add the following paragraphs at the end of 9.4.1.85 as following: (#***2453, 1547, 619, 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 Parameterized Mode field is equal to 0, then the ICF Required field is either equal to 0 or equal to 1; otherwise the ICF Required field is equal 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 non-AP STA in the LC mode. For a mobile AP, the LC Mode MCS field is reserved.

(#2131)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 AP  Set 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 the frame exchange(s) that is initiated by the transmission of this frame is using parameters that are compliant with the non-AP STA’s LC mode capabilities.
* 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.

(#3649)37.9.1.2 DPS operation for mobile APs

DPS operation allows a DPS mobile AP to operate in the LC mode and to transition to the HC mode upon the reception of an ICF transmitted by its associated DPS assisting STA.

(#2120, 2417) A UHR mobile AP 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 UHR mobile AP shall set the DPS Support field to 0. A UHR mobile AP that has dot11UHRDPSImplemented equal to 1 and that has enabled its DPS mode is called a DPS mobile AP.A UHR mobile AP that has dot11UHRDPSImplemented equal to 1 is called a DPS mobile AP. All the UHR APs in a multiple BSSID mobile AP set or a co-hosted mobile AP set shall have the same value in their DPS Support fields.

NOTE: all the APs in a multiple BSSID mobile AP set or a co-hosted mobile AP set are mobile APs.

(#3800, 266, 1051, 1316, 2474, 3651, 3679, 620, 1444, 2130) If all associated non-AP STAs are either DPS assisting non-AP STAs or non-AP STAs that are configured to perform frame exchanges with the mobile AP in LC mode, then the mobile AP may enable DPS with a non-zero value in its DPS Padding Delay field.

* a DPS assisting non-AP STA shall use a BSRP NTB Trigger to solicit Multi-STA Block Ack instead of RTS to solicit CTS when a RTS/CTS exchange is required to initiate a TXOP according to 26.2.1 (TXOP duration-based RTS/CTS)
* a mobile AP shall use the Operating Mode Notification frame or the OM Control field to update its operating bandwidth and Nss to be same as the bandwidth and Nss in its LC Mode Bandwidth field and LC Mode Nss field before enabling the DPS mode.

(#3800, 266, 1051, 1316, 2474, 3651, 3679, 620, 1444, 2130) If all the associated non-AP STAs of a mobile AP are HE STAs or are configured to perform frame exchanges with the mobile AP in LC mode, then the mobile AP may enable DPS with only if all of the following conditions are true:

* the DPS Padding Delay field shall be set to 0,
* the AP shall have its TXOP Duration RTS Threshold field set to 1 before enabling the DPS mode.

In such a case, a STA that is not a DPS assisting STA will transmit RTS to solicit CTS in order to perform the frame exchanges with the DPS mobile AP.

(#1767, 2127, 263, 1548, 3686, 2422, 2476, 3687) A DPS assisting non-AP STA that intends to perform frame exchanges in HC mode with its DPS mobile AP shall transmit an ICF frame in a non-HT (duplicate) PPDU to solicit the DPS mobile AP’s transition from the LC mode to the HC mode. The ICF (#224) frame addressed to the DPS mobile AP (#420, 3028) shall include an I-FCS (#225) if the DPS mobile AP (#420, 3028) has indicated a (#502)nonzero DPS padding delay and shall include sufficient padding to ensure that the padding requirement of the DPS mobile AP addressed by that ICF are satisfied as defined in 37.14 (Padding for an Initial Control Frame).

(#1400, 3146, 3681, 3682, 3683, 1443) If a DPS mobile AP has indicated the non-zero padding delay to transition from the LC mode to the HC mode, its associated STA shall use the BSRP NTB frame as the ICF to solicit the AP’s transition from the LC mode to the HC mode. Otherwise, when the DPS padding delay is 0, then its associated STA shall use either a BSRP NTB frame or an RTS frame as the ICF to solicit the AP’s transition from the LC mode to the HC mode.

(#3804, 2129, 3141, 2475) A(#3024) DPS mobile AP in the HC mode shall follow the EMLSR rule of switching back to listening operation to transition back to the LC mode. A DPS assisting non-AP STA should guarantee that the value in the Duration field in its frame addressed to the DPS mobile AP in the HC mode minus aSIFSTime, the time of the AP’s PPDU carrying the responding frame, and aSIFSTime + aSlotTime + aRxPHYStartDelay is more than the DPS mobile AP’s DPS Transition Delay.

(#2453, 1547, 619, 1401, 2421, 3620, 3653, 3805, 3684, 3654)A DPS mobile AP that is in the LC mode shall be capable of receiving PPDUs 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 with the bandwidth and NSS announced by a mobile AP in its DPS Operation Parameters field when enabling its DPS mode.

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

(#2131)A UHR mobile AP that has dot11UHRDPSStaticHCMImplemented equal to 1 shall set the DPS Static HCM Support field to 1 in the UHR Capabilities element in Management frames that it transmits. Otherwise the UHR mobile AP shall set the DPS Static HCM Support field to 0.

(#2131)A DPS Mobile AP with dot11UHRDPSStaticHCMImplemented equal to 1 may set the Mobile AP DPS Static HCM field of the UHR Operation Parameters field of the UHR Operation element (see 9.4.2.aa1 (UHR Operation Element)) in a Beacon frame it transmits to 1, to indicate that it shall remain in the DPS HC mode till the next TBTT, and shall set it to 0 otherwise.

(#2131)A DPS assisting non-AP STA that receives a UHR Operation element from a DPS AP with the Mobile AP DPS Static HCM field of the UHR Operation Parameters field set to 1, may initiate a transmission to the AP in HC mode without transmitting an ICF, till the next TBTT.

**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

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