IEEE P802.11  
Wireless LANs

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| PDT CR MAC NPCA CC50 | | | | |
| Date: 2025-05-13 | | | | |
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Abstract

This document contains suggested changes to Draft IEEE P802.11bn\_D0.2 for the Non Primary Channel Access (NPCA) feature.

# Revision information

The following is a summary of the important changes that occurred within each revision of this document:

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| **Revision** | **Major changes** |
| 0 | Initial revision |
| 1 | Editorial:   * Fix the meeting month indication in the upper left corner of the document header * Assign resolutions to numerous additional CIDs based on changes that were made for other CIDs in revision 0, i.e. many CIDs highlight similar issues and initial changes were initially typically referenced to only a single CID – revision 1 attempts to resolve comments that appear to have been addressed by the changes proposed in revision 0, i.e. many CIDs that did not have resolutions in revision 0 now have a resolution in revision 1, but no new changes to the draft text are created by the addition of those new CID resolutions * Deleted CIDs 997 – 1019 – these CIDs had an incorrect clause number which made them appear to belong to NPCA, but they are actually DPS comments   Technical:   * Add rule that Beacons shall not be transmitted on the NPCA channel, 171, 1855, 836, 837 * Remove resolution of CID 1881, it was incorrect * Various additional CID resolutions are added, each affecting some technical language by creating some modification from revision 0, but not creating any significant functional or behavioural changes, e.g. these changes are largely providing clarifying details to existing technical language |
| 2 | Technical changes:   * Modified the time window for arrival of the third PPDU to account for the non (MU)RTS case. (MU)RTS case uses NAVTimeout, non-(MU)RTS needs to use the DUR field value from the first PPDU control frame. * Modified the bandwidth determination language to account for cases when the BW is only determined at the time of the receipt of the third PPDU * When determining NPCA\_TIMER value, use the largest, not smallest value of the several candidate variables * When determining NPCA\_TIMER value, subtract “the largest of the switch back delays of the STA and its peers” * Add two reset conditions for NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR to avoid using a leftover value from a previous reception * Adjust the value of NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR to account for the possible ICR and the PHY-RXSTART.indication delay of the third PPDU * Added co-hosted BSS language (requiring same NPCA primary channel for all BSS in the set) * Removed CFP language from ICF/ICR requirement for NPCA TXOPs   Editorial changes:   * Added “PPDU-based” and “TXOP-based” in the phrase that immediately precedes the description of the conditions that must be true in order to perform NPCA, so as to clarify the meaning of these terms which are already used elsewhere in the text * Added a few subclause headings to break up the NPCA section * NPCA BW restrictions – made the language more PPDU specific * Changed capitalization on one instance of control frame |
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# Introduction

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 TGbe Draft. The abstract, revision information, introduction, explanation of the proposed changes, discussion and references sections are not part of the adopted material.

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

## Explanation of the proposed changes:

The proposed changes to the 802.11 TGbn draft 0.2 within this document are based on CIDs obtained through CC50.

## DISCUSSION:

## Open Issues:

## CID LIST:

NOTES:

1. Some CIDs are shaded gray, this typically means that someone else has volunteered to provide a resolution for the CID, these will eventually be deleted from this docment

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| **CID** | **Commenter name** | **Subclause. page** | **Page.**  **line** | **Comment** | **Proposed change** | **Proposed resolution** |
| 171 | Jay Yang | 37.10 | 78.17 | The group addressed frame and Beacon frame delivery in NPCA is missing, please clarify it. e.g."The beacon frame and group addressed frame should not be delivered on NPCA channel, and the group addressed frame should be buffered and delivered after DTIM Beacon" | as the comments | Revised – TGbn editor to make changes marked with CID 171 found in 11-25-0936r1 which add a prohibition against sending the Beacon on the NPCA channel. |
| 172 | Jay Yang | 37.10 | 79.42 | add some condition for NPCA STA may not switch to NPCA channel, e.g. a NPCA STA IDC time is overlapping with OBSS and report its IDC to AP before, the AP may assume the NPCA STA doesn't switch to NPCA channel. | as the comments |  |
| 176 | Ke Zhong | 37.10 | 79.45 | The description "based on an meeting condition" is not correct and does not align with the description "based on meeting condition" in the following paragraph. | Replace "an meeting condition" with "meeting condition" to align the description in the following paragraph. That is, delete "an" in "an meeting condition". Or, we can align the description in the two paragraphs as "based on the meeting condition 1)" and "based on the meeting condition 2)". | Revised – TGbn editor to make changes marked with CID 176 found in 11-25-0936r1 which follow the first of the commenter’s recommendations. |
| 246 | Yuxin LU | 37.10 | 78.22 | It is not clear in which container a non-AP NPCA STA announce its NPCA enablement/disablement and further, parameters with update | Suggest to describe the container, such as via Action frame to dynamically enable and disable NPCA, or update parameters |  |
| 249 | Yuxin LU | 37.10 | 79.55 | There lacks a full name for the term "NHT" in "NPCA NHT switch time" | Suggest to add the full name |  |
| 250 | Yuxin LU | 37.10 | 78.15 | How to end a NPCA procedure is not describe | The AP should be able to end a NPCA procedure by indicate an ending time in ICF so that non-APs can switch back near synchronously |  |
| 251 | Yuxin LU | 37.10 | 78.15 | There lacks description for the "switch back" condition | Suggest to add the "switch back" condition |  |
| 252 | Yuxin LU | 37.10 | 78.21 | The non-AP STA may disable NPCA mode from the enabling mode, there lacks a description | Suggest to change the last sentence to "It is TBD how the non-AP STA enables or disables NPCA mode" |  |
| 253 | Yuxin LU | 37.10 | 78.35 | When switching to NPCA primary channel, the supported BW of a non-AP NPCA STA may change considering that the channel conditions may change | Suggest to add "NPCA Supported BW" field to describe such potential change for a non-AP NPCA STA |  |
| 254 | Yuxin LU | 37.10 | 78.45 | How an NPCA AP enables this "mode of operation" is not mentioned | Suggest to add a sentence "How an NPCA AP enables or disables this mode of operation is TBD" |  |
| 421 | Shuang Fan | 37.10 | 79.08 | It's not clear about the definition of 'channel allocations in the corresponding band'. | Clarify the definition of 'channel allocations' | Revised – TGbn editor to make changes marked with CID 421 found in 11-25-0936r1 which address the issue of clarifying the meaning of channel allocations related to NPCA operation. |
| 422 | Shuang Fan | 37.10 | 79.32 | In case of MU-RTS/CTS control frame exchange sequence, the bandwidth singaling TA is not used, and there will be no valid CH\_BANDWIDTH\_IN\_NON\_HT in the scrambling sequence and RXVECTOR, please add a new bullet or note to clarify how to determin the bandwidth of Mu-RTS/CTS | A simple way to determine the bandwidth of MU-RTS/CTS frame is by using status of per 20 MHz CCA of the received MU-RTS/CTS frame. | Reject – the suggested method is simple, but it is unreliable. The group feels that it is unacceptable to base a channel reuse operation on such an unreliable mechanism. |
| 423 | Shuang Fan | 37.10 | 79.32 | In case of (MU-)RTS/CTS, NPCA STA can only determine the bandwidth of OBSS after successful detect the bandwidth of CTS frame, because the bandwidth of responding CTS may less than or equal to the (MU-)RTS | Please add a bullet or note to clarify the case mentioned in the comment. |  |
| 424 | Shuang Fan | 37.10 | 79.55 | 'NHT' is not definedit is recommended to use 'non-HT' replacement. | as in comment |  |
| 435 | Shuang Fan | 37.10 | 78.17 | It's not clear about the definition of NPCA AP.The current text in line 23 mentions 'An NPCA AP that has an operating bandwidth less than TBD (but either 80 or 160 MHz) shall not enable NPCA operation', this imply an AP with bandwidth less than TBD shall not support NPCA opeation and shall not set NPCA Supported field of the UHR MAC Capabilities Information field of the UHR Capabilities element to 1 | Change the sentence 'An AP that supports NPCA operation is called an NPCA AP' to 'An AP with bandwidth larger than TBD (either 80 or 160 MHz) that supports NPCA operation is called an NPCA AP, and an NPCA AP shall set the NPCA Supported field of the UHR MAC Capabilities Information field of the UHR Capabilities element to 1' |  |
| 453 | Mahmoud Kamel | 37.10 | 79.46 | NPCA HE switch time parameter is not defined and the abbreviation HE is not spelled out making the term ambiguous. | Define the term NPCA HE switch time and spell out the HE abbreviation. | Revised – TGbn editor to make changes marked with CID 453 found in 11-25-0936r1 which define NPCA HE switch time. Also see CID 3593. |
| 454 | Mahmoud Kamel | 37.10 | 79.55 | NPCA NHT switch time parameter is not defined and the abbreviation NHT is not spelled out making the term ambiguous. | Define the term NPCA NHT switch time and spell out the NHT abbreviation. | Revised – TGbn editor to make changes marked with CID 454 found in 11-25-0936r1 which define NPCA NHT switch time. Also see CID 3593. |
| 455 | Mahmoud Kamel | 37.10 | 78.54 | In NPCA operation, condition 1 only applies to HE/EHT/UHR PPDUs. What about the scenario where the OBSS AP is HT or VHT. A transmission of such AP may take place on the BSS PCH of the NPCA AP and provides a good opportunity to exploit NPCA in such scenario. | Include a condition for the scenario when the OBSS AP is HT or VHT. | Reject – the opportunity is not so good. The mechanism requires that the OBSS PPDU be identifiable as an OBSS PPDU, but the HT format and VHT format do not provide very definitive information within the PHY header to determine this, whereas HE, etc formats provide an explicit BSS COLOR value in the PHY header. |
| 457 | Mahmoud Kamel | 37.10 | 78.46 | The naming of the NPCA HE switch time is confusing. It seems this time applies to HE/EHT/UHR PPDUs while the name refers only to HE. | Change "NPCA HE switch time" to "NPCA C1 switch time" or "NPCA PPDU switch time". C1 refers to Condition 1 |  |
| 459 | Mahmoud Kamel | 37.10 | 79.56 | The naming of the NPCA NHT switch time is confusing. This time applies to a PPDU containing a control frame or an initial response frame to a control frame. The name is not intuitive and does not refer to the exact use of this variable. | Change "NPCA NHT switch time" to "NPCA C2 switch time" or "NPCA CF switch time". C2 refers to Condition 2 and CF refers to Control Frame. |  |

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| **CID** | **Commenter name** | **Subclause. page** | **Page.**  **line** | **Comment** | **Proposed change** | **Proposed resolution** |
| 749 | Junbin Chen | 37.10 | 78.40 | In the sentence "Whether the mode is for all associated non-APs or per non-AP is TBD.", the "non-APs" shall be "non-AP STAs" | change "non-APs" to "non-AP STAs", and "per non-AP" to "per non-AP STA" |  |
| 750 | Junbin Chen | 37.10 | 78.40 | It is "NPCA non-AP STAs" sometimes (P78L40) and "non-AP NPCA STAs" for others (P78L44) in the draft. Please unify them. | as commented |  |
| 751 | Junbin Chen | 37.10 | 0.00 | Please check all periods and/or commas at the end of each bullets from P78L50 to P80L51. | as commented |  |
| 785 | Seongho Byeon | 37.10 | 78.17 | We need to define NPCA AP's capability setting. For example, we can change the first parapraph as below (note that NPCA STA can be either NPCA AP or NPCA non-AP STA as it means): "A STA that supports NPCA operation is called an NPCA STA. An NPCA STA shall set the NPCA Supported field of the UHR MAC Capabilities Information field of the UHR Capabilities element to 1. An AP that supports NPCA operation is called an NPCA AP. A non-AP NPCA STA may enable the NPCA mode only if it is associated with an NPCA AP. It is TBD how the non-AP STA enables NPCA mode." | As in comment. |  |
| 786 | Seongho Byeon | 37.10 | 78.41 | The use of the MU EDCA parameter is TBD, but a detailed description of how to use or apply it to the non-AP NPCA STA(s) is required. | Need to describe how to use MU EDCA parameter, not to allow untriggered UL transmission of NPCA non-AP STA(s). | Revised – TGbn editor to make changes marked with CID 786 found in 11-25-0936r1 which define MU EDCA operation for preventing non triggered UL during NPCA. |
| 787 | Seongho Byeon | 37.10 | 80.22 | [Bullet 5)] It is required to describe the case where an NPCA AP transmits ICF soliciting ICRs from multiple NPCA STAs. For example: When an NPCA AP transmits an ICF soliciting ICRs from multiple non-AP STAs (e.g., a Trigger frame including multiple non-overlapping User Info fields), the AP can transmit the ICF after the longest delay has expired among the non-AP STAs receiving the User Info field. | As in comment. |  |
| 788 | Seongho Byeon | 37.10 | 80.22 | [Bullet 5)] An NPCA STA with a large switching delay may not receive the preamble of the frame(s) transmitted earlier in the same BSS by the NPCA STAs which have smaller switching delays (e.g., an NPCA AP and a high-end non-AP STA). In the end, the STA may transmit ICF even though there exists an on-going transmission sent by the NPCA STA in the same BSS. We need a mechanism to protect the on-going transmission. | The commentor will bring a contribution to resolve the issue. |  |
| 789 | Seongho Byeon | 37.10 | 80.27 | [Bullet 6)] It is necessary to explicitly specify ICF/ICR exchange is required to initiate a TXOP, verifying the NPCA operation of both the NPCA AP and NPCA STAs on the NPCA Primary channel simultaneously. Moreover, it needs to indicate clearly whether medium synchronization in the NPCA primary channel is applied or not. Note that, if the medium synchronization timer has a value greater than 0 in 11be, a STA can only transmit RTS up to dot11MSDTXOPMax times. Therefore, we may need to limit the number of ICFs transmitted to start the TXOP. | As in comment. |  |
| 790 | Seongho Byeon | 37.10 | 80.27 | [Bullet 6)] When a STA performing NPCA receives an ICF that is not explicitly indicated to be on the NPCA primary channel but sent by its associated AP, it is necessary to describe what action to take. For example, "When an NPCA STA receives an ICF sent by the AP, not including explicit indication that it is being transmitted on the NPCA primary channel, it shall terminate NPCA operation." | As in comment. | Revised – TGbn editor to make changes marked with CID 790 found in 11-25-0936r1 which address the issue of an explicit indication of a frame being transmitted on the NPCA primary channel. See also CID 3643 |
| 791 | Seongho Byeon | 37.10 | 80.52 | A placed holder and subsections that specify the conditions for the NPCA STA to terminate the NPCA are required. | As in comment. |  |
| 792 | Seongho Byeon | 37.10 | 80.52 | When NPCA operation is performed based on the meeting condition 2), it should be explicitly stated that it is possible for the inter-BSS activity to be terminated earlier than NAV timer (e.g., after sending CF-End, etc.), which may result in losing synchronization on the BSS primary channel. | The commentor will bring a contribution to resolve the issue. |  |
| 804 | Seongho Byeon | 37.10 | 78.15 | A minimum safeguard is needed to provide better coordination between NPCA AP and NPCA STAs due to issues that may arise from other views of Hidden or Inter-OBSS activity, leading to medium synch lost even in the BSS primary channel. An operation should be defined where AP and STAs synchronize by sharing NPCA duration with each other. | The commentor will bring a contribution to resolve the issue. |  |
| 805 | Seongho Byeon | 37.10 | 80.52 | The draft needs to state the below conditions for switching back or NPCA termination: During NPCA operation, multiple STAs participating in NPCA can initiate multiple TXOPs. However, the (last) TXOP shall not exceed the NPCA duration (i.e. remaining NPCA operation time), at least considering switching back delay. | As in comment. |  |
| 833 | Oren Kedem | 37.10. | 78.17 | Upon reception of OBSS PPDU on P20, NPCA STA switches to NP20 and start performing backoff procedure.  While in backoff, NPCA STA may receive PPDUs on NP20 and should maintain NAV accordingly.  PPDU received on NP20 may classified as Inter (other OBSS) or Intra (other NPCA STA from same BSS) as in P20.  NAV setting rules on NP20 should be the same as on P20 with the exception that NP20 Inter/Intra NAV Timer is reset also upon switch from P20 to NP20 | Text should include below normative:  NPCA STA shall maintain two NAVs on NPCA Primary Channel: an intra-BSS NAV and a basic NAV. The intra and Basic NAV shall be reset upon switch to NPCA Primary Channel and be updated as defined in 26.2.4 (Updating two NAVs). | Revised – TGbn editor to make changes marked with CID 833 found in 11-25-0936r1 which address the issue of the state of the intra-BSS NAV when determining whether to switch to NPCA operation. |
| 834 | Oren Kedem | 37.10. | 78.17 | STA should keep its Slot Boundary for the Backoff Procedure, how it is kept with different Switching delays of all NPCA STA ? | Please provide rule to mandate keeping Slot Boundery |  |
| 835 | Oren Kedem | 37.10. | 78.17 | Does AP must wait for the slowest NPCA Switching STA ? | AP may not wait for the slowest STA to join the non-Primary, AP needs means to advertise the maximum Switching Dealy it will accommodate |  |
| 836 | Oren Kedem | 37.10. | 78.17 | STA should not forword Group Addressed frame when on NPCAnon-primary ? | Please provide rule to exclude group frames when on NPCA | Revised – TGbn editor to make changes marked with CID 836 found in 11-25-0936r1 which add a prohibition against sending the Beacon on the NPCA channel. See also CID 171. |
| 837 | Oren Kedem | 37.10. | 78.17 | AP should not transmit Group Addressed frame when on NPCAnon-primary ? | Please provide rule to exclude group frames when on NPCA | Revised – TGbn editor to make changes marked with CID 836 found in 11-25-0936r1 which add a prohibition against sending the Beacon on the NPCA channel. See also CID 171. |
| 838 | Oren Kedem | 37.10. | 78.17 | Does switching take place in case OBSS PPDU BW = BSS Operating channel with puncturing on the NPCA non-Primary ? | Please clarify |  |
| 839 | Oren Kedem | 37.10. | 79.20 | When the NPCA should switch back to Primary channel in case on TXOP was obtained for long time consuming most of the NPCA TXOP Duration opportunity ? | Text should include below normative:  The NPCA Dwelling Timeout indicates the maximum time the NPCA AP intend to contend the NPCA Primary Channel before it switch back to its Primary Channel in case no TXOP was obtained and is calculated as follow:  NPCA-Dwelling-Timeout = NPCA-NAV-Duration - (NPCA-Switch-Delay+ NPCA-Switch-Back-Delay + NPCA-Minimum-TXOP-Duration) |  |
| 840 | Oren Kedem | 37.10. | 80.05 | Assuming all NPCA STA decode OBSS PPDU at the same time, the NP20 backoff procedure can starts only after NPCA-Switch-Delay per each STA.  Longer NPCA-Switch-Delay reduces the NPCA STA chances to win the Backoff against other NPCA STAs which cause an inherent non-fairness. | The NPCA Start Backoff field indicates the time from the switch to NPCA Primary channel until the time which Backoff procedure should starts by NPCA STA. |  |
| 913 | Mikael Lorgeoux | 9.4.2.1 | 59.18 | The enablement/disablement of NPCA mode and the presence of the NPCA Operation Information field are 2 different things. It seems tricky to manage both using the single bit "NPCA Operation Information Present" bit. As example, an AP may send its NPCA Operation Information field during association and may wish to enable the NPCA mode later during operation. | Suggest to manage only the presence of the NPCA Operation Information field with the "NPCA Operation Information Present" bit.  Suggest to have a dedicated "NPCA mode" bit in the "UHR Operation Parameter field" and/or in a (TBD) OM Notification frame |  |
| 914 | Mikael Lorgeoux | 37.10 | 78.21 | The procedure and signaling to enable/disable the NPCA mode between a NPCA AP and a non-AP NPCA STA is not defined | Specify the NPCA enablement and disablement procedure and signaling. |  |
| 915 | Mikael Lorgeoux | 37.10 | 78.15 | It is not specified whether a 20MHz-only STA is allowed to perform NPCA operation. More generally, it is not specified whether a non-AP STA is allowed to perform NPCA operation in a NPCA primary channel that is outside its operating bandwidth. | Add a text or a note to indicate if a non-AP STA is allowed to perform NPCA operation outside its operating bandwidth. Clarify whether it is allowed/disallowed or if it is non-AP STA implementation dependent. |  |
| 1052 | Matthew Fischer | 37.10. | 78.23 | NPCA operation should be allowed for BSS BW down to 80 MHz. | Change "operating bandwidth less than TBD (but either 80 or 160 MHz) shall not enable NPCA operation." to "operating bandwidth less than 80 MHz shall not enable NPCA operation." | Revised – TGbn editor to make changes marked with CID 1052 found in 11-25-0936r1 which address the issue of minimum BSS BW for NPCA operation. |
| 1053 | Matthew Fischer | 37.10. | 78.32 | Reduce overhead of the pseudo static indication of NPCA mode. | Change "and NPCA Switch Back Delay field of the TBD frames." to "and NPCA Switch Back Delay field of Association Response frames." Also, add a new bit to the UHR Capabilities element called NPCA\_Supported. This bit should appear in Beacons and Probe responses. Add language here to indicate that an NPCA AP sets this bit. An AP would normally just indicate the support in the Beacon and keep the NPCA parameters out of the beacon, only sending them in the Association Response and in the Beacon only if they are going to change - but they shouldn't ever change. | Revised – TGbn editor to make changes marked with CID 1053 found in 11-25-0936r1 which address the issue of signaling of NPCA operation parameters. |
| 1054 | Matthew Fischer | 37.10. | 78.37 | Non-AP NPCA STA only needs to include its NPCA parameters in the ASS REQ frame | Change "and NPCA Switch Back Delay fields of the TBD frames." to "and NPCA Switch Back Delay fields of Association Request frames." |  |
| 1055 | Matthew Fischer | 37.10. | 78.41 | NPCA untriggered prohibited mode should be all or none for non-AP STAs. | Change "Whether the mode is for all associated non-APs or per non-AP is TBD." to "The AP may enable this mode for all associated non-AP NPCA STAs or for individually identified non-AP NPCA STAs." Delete the line "Whether MU EDCA parameters mechanism is used for this or not is TBD." | Revised – TGbn editor to make changes marked with CID 1055 found in 11-25-0936r1 which address the issue of setting a restriction on the use of NPCA untriggered mode and MU EDCA parameters to determine the mode. |
| 1056 | Matthew Fischer | 37.10. | 78.59 | Specify the determination of the remainder of the PPDU duration | Change "the duration of the PPDU, (determined by the MAC in a manner TBD, but necessarily involving some of the parameters of the RXVECTOR associated with the received PPDU) or the duration of the PPDU" to "1) The value of the MAC variable NPCA\_TXOP\_REM\_DUR is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to the BSS of which it is a member, where NPCA\_TXOP\_REM\_DUR is equal to: a) The value in usec, of the remaining duration of the PPDU, determined by the MAC at the time of the receipt of the PHY-RXSTART.indication associated with the received PPDU, by subtracting the time elapsed between the reception of the PHY-CCA.indication(BUSY) and PHY-RXSTART.indication primitives associated with the received PPDU from the value of RXTIME of the received PPDU and adding the value of the TXOP\_DURATION parameter of the RXVECTOR of the PPDU, if not UNSPECIFIED" and delete the following text: "whether the RXVECTOR parameter TXOP\_DURATION of the PPDU is considered for this comparison and whether it is indicated by the AP is TBD" | Revised – TGbn editor to make changes marked with CID 1056 found in 11-25-0936r1 which address the issue of determining the endpoint of the NPCA operation based on PPDU reception. |
| 1057 | Matthew Fischer | 37.10. | 79.20 | Specify the determination of the TXOP | Replace "the TXOP duration, determined from the Duration field of the received frame(s), is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to its BSS" with "The value of the MAC variable NPCA\_TXOP\_REM\_DUR is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to its BSS, where NPCA\_TXOP\_REM\_DUR is equal to: a) the value in usec, from the Duration field of the received frame(s), or, if no Duration field is correctly received, and a value other than UNSPECIFIED is present in the TXOP\_DURATION parameter of the RXVECTOR of any of the received frames, the remaining duration of the PPDU containing the initial response frame, determined by the MAC at the time of the receipt of the PHY-RXSTART.indication of that PPDU by subtracting the time elapsed between the reception of the PHY-CCA.indication(BUSY) and PHY-RXSTART.indication primitives associated with the received PPDU from the value of RXTIME associated with the received PPDU, plus the value of the TXOP\_DURATION parameter of the RXVECTOR of the associated PPDU, otherwise, 0" and delete the sentence: "Whether the RXVECTOR parameter TXOP\_DURATION of the received PPDU(s) are considered for this comparison is TBD" | Revised – TGbn editor to make changes marked with CID 1057 found in 11-25-0936r1 which address the issue of determining the endpoint of the NPCA operation based on TXOP information reception. |
| 1058 | Matthew Fischer | 37.10. | 79.53 | Define NPCA HE switch time | Change "TBD" to "NPCA HE switch time is the point in time that is 24 usec after the receipt of the PHY-RXSTART.indication associated with the received PPDU from condition 1) above" | Revised – TGbn editor to make changes marked with CID 1058 found in 11-25-0936r1 which address the issue of NPCA switch time. See also CID 1554. |
| 1059 | Matthew Fischer | 37.10. | 79.62 | Define NPCA NHT switch time | Change "TBD" to "NPCA NHT switch time is the point in time that is 4 usec after the PHY-RXEND.indication associated with the initial response frame from condition 2) above"  Delete item 5) because with this change, it is no longer relevant. | Revised – TGbn editor to make changes marked with CID 1059 found in 11-25-0936r1 which address the issue of NPCA switch time. See also CID 1741. |
| 1060 | Matthew Fischer | 37.10. | 80.05 | There is a TBD that needs to be replaced with a technical specification of behavior. | Replace item 4), including all subbullets with: "2) The NPCA STA performs the backoff procedure on the NPCA primary channel following the rules defined in 10.23.2.2 (EDCA backoff procedure), except that: a) The STA shall maintain QSCR[AC] and CW[AC] MAC variables for the NPCA primary channel that are distinct from and unrelated to the QSRC[AC] and CW[AC] MAC variables used by the EDCA backoff procedure on the primary channel of the BSS b) An NPCA STA may initiate a TXOP on the NPCA primary channel after the NPCA\_HE or NPCA\_NHT switch time, as appropriate, provided that the backoff procedure has completed 3) At each NPCA HE switch time or NPCA NHT switch time, as appropriate, the STA shall initiate countdown of the MAC variable NPCA\_TXOP\_REM\_DUR in units of 1 usec" | Revised – TGbn editor to make changes marked with CID 1060 found in 11-25-0936r1 which address the issue of the differentation of the backoff operations on NPCA primary channel vs the backoff on the normal channel of the BSS. |
| 1061 | Matthew Fischer | 37.10. | 80.19 | The NOTE actually contains normative behavior. | Delete the cited NOTE and add a new item at the end of the list as follows (it will be 8) as 5) should be deleted:  The STA switches back to the BSS primary channel, and invokes the backoff procedure when: a. the STA receives the PHY-RXEND.indication of the last frame of a frame exchange on the NPCA primary channel that does not include an OBSS frame and the NPCA\_TXOP\_REM\_DUR counter reached 0 during the exchange b. the NPCA\_TXOP\_REM\_DUR counter reaches 0 and a frame exchange is occurringon the NPCA primary channel that contains an OBSS frame c. the NPCA\_TXOP\_REM\_DUR counter reaches 0 and no frame exchange is occurring on the NPCA primary channel |  |
| 1063 | Matthew Fischer | 37.10. | 80.31 | Fix the TBD | Replace the item 6) "a) Details on the NPCA ICF are TBD", with two new items at the level of 6) to read as follows: 7) For TXOPs initiated by an AP, the initial Control frame shall be a non-HT BSRP or MU-RTS except when the target non-AP STA(s) are operating in the DUO mode, in which case, the ICF shall conform to the rules found in 37.11.2 (Dynamic Unavailability Operation (DUO) mode) 8) For TXOPs initiated by a non-AP STA, the initial Control frame may be a non-HT BSRP or a BSRP that conforms to the rules for ICF found in 37.11.2 (Dynamic Unavailability Operation (DUO) mode) | Revised – TGbn editor to make changes marked with CID 1063 found in 11-25-0936r1 which address the issue of the initial control frame requirement for TXOPs within NPCA operation. |

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| 1209 | Morteza Mehrnoush | 37. 10 | 78.21 | Similar to other feature the STA should be able to enable/disable the NPCA. | Resolve TBD for enablement/disablement by defining the frame exchange and signaling. |  |
| 1210 | Morteza Mehrnoush | 37. 10 | 78.23 | Resolve the TBD by fixing this to BW less than 80MHz shall not enable NPCA operation | As in comment | Revised – TGbn editor to make changes marked with CID 1210 found in 11-25-0936r1 which address the issue of minimum BSS BW for NPCA operation. See also CID 1052. |
| 1211 | Morteza Mehrnoush | 37. 10 | 78.32 | NPCA Switching and switch back delay of the AP should be carried in the UHR Operation element; management frames which carries these needs to be defined, e.g. beacon and probe response and association response. | Define the signaling for indicating the NPCA Switching and switch back delay of the AP |  |
| 1212 | Morteza Mehrnoush | 37. 10 | 78.30 | It's not defined how the AP would indicate the NPCA primary channel | Define the procedure how the AP would indicate the NPCA primary channel |  |
| 1213 | Morteza Mehrnoush | 37. 10 | 78.30 | It's not defined how the AP would indicate the NPCA Minimum Duration Threshold | Define the procedure how the AP would indicate the NPCA Minimum Duration Threshold |  |
| 1214 | Morteza Mehrnoush | 37. 10 | 78.41 | Regarding "Whether the mode is for all associated non-Aps or per non-AP is TBD". TBD needs to be resolved. To be fair to all the STAs, this mode must be enabled/disabled for all non-AP STAs. Also applying same mode to all STAs simplifies the signaling. | Address the TBD based on the comment | Revised – TGbn editor to make changes marked with CID 1214 found in 11-25-0936r1 which address the issue of triggered UL only NPCA operation. See also CID 786. |
| 1215 | Morteza Mehrnoush | 37. 10 | 78.36 | For non-AP STA, management frame (UHR OMN frame) for enablement/disablement should be used to carry the NPCA switching and switch back delay | Address the TBD based on the comment |  |
| 1216 | Morteza Mehrnoush | 37. 10 | 78.59 | To resolve TBD in 1b: TBD is for PPDU duration itself so duration value should be derived from the L-SIG length field. | Address the TBD as in comment | Revised – TGbn editor to make changes marked with CID 1216 found in 11-25-0936r1 which address the issue of the determination of NPCA TXOP duration. See also CID 1056. |
| 1217 | Morteza Mehrnoush | 37. 10 | 79.04 | To resolve TBD in 1b.i: resolve the TBD by allowing the TXOP\_DURATION in addition to PPDU duration value | Address the TBD as in comment | Revised – TGbn editor to make changes marked with CID 1217 found in 11-25-0936r1 which address the issue of the determination of NPCA TXOP duration based on TXOP based NPCA invocation. |
| 1218 | Morteza Mehrnoush | 37. 10 | 79.24 | To resolve TBD in 2b.i: Duration field in control frames are sufficient to derive the usable duration for NPCA. So remove this TBD/bullet | Address the TBD as in comment | Revised – TGbn editor to make changes marked with CID 1218 found in 11-25-0936r1 which address the issue of the determination of NPCA TXOP duration based on TXOP based NPCA invocation. |
| 1219 | Morteza Mehrnoush | 37. 10 | 79.40 | Remove the TBD conditions on 2d to simplify the protocol | Address the TBD as in comment | Revised – TGbn editor to make changes marked with CID 1219 found in 11-25-0936r1 which removes a TBD. |
| 1220 | Morteza Mehrnoush | 37. 10 | 79.53 | The NPCA HE switch time needs to be defined. For this case, the switch time should be after the BSS color, TXOP\_DURATION, and BW information is determined | Address the TBD as in comment | Revised – TGbn editor to make changes marked with CID 1220 found in 11-25-0936r1. |
| 1221 | Morteza Mehrnoush | 37. 10 | 79.62 | The NPCA HHT switch time needs to be defined. For this case, the switch time should be after the NPCA STA determines the inter-BSS classification, TXOP\_DURATION, and BW information from the ICF/ICR, and made sure the TXOP is not terminated. | Address the TBD as in comment | Revised – TGbn editor to make changes marked with CID 1221 found in 11-25-0936r1. |
| 1222 | Morteza Mehrnoush | 37. 10 | 80.10 | It is expected that the exponential BO to be used on NPCA primary channel similar to BSS primary channel with the same value. We don't need the exceptions for the NPCA primary channel a and b. Lets say several STAs switched to NPCA primary channel and start accessing the channel by sending the ICF (additionally there could be OBSS on NPCA primary channel), then this results in a lot of collision without exponential BO to help resolve this excessive ICF failures. | Remove the exceptions a and b so that NPCA | Revised – TGbn editor to make changes marked with CID 1222 found in 11-25-0936r1. |
| 1223 | Morteza Mehrnoush | 37. 10 | 80.11 | Is CW\_NPCA[AC] value the same as CW\_min[AC] to be used on NPCA primary channel? If yes, does the exponential backoff will be used on the NPCA channel? | Please clarify what is CW\_NPCA and BO\_NPCA. Also define the exponential BO on NPCA primary channel similar to BSS primary channel; in that regard QSRC\_NPCA needs to be re-thought and clarify the behavior for it. | Revised – TGbn editor to make changes marked with CID 1223 found in 11-25-0936r1 which address the issue of the differentation of the backoff operations on NPCA primary channel vs the backoff on the normal channel of the BSS. |
| 1224 | Morteza Mehrnoush | 37. 10 | 80.18 | What happens to the CW and BO on the BSS primary channel, after the STA returns to the BSS primary channel? Does it resume from the values prior to switching to NPCA primary channel? | Please clarify CW and BO on BSS primary channel as in comment | Revised – TGbn editor to make changes marked with CID 1224 found in 11-25-0936r1 which address the issue of NPCA switch time. See also CID 1061. |
| 1225 | Morteza Mehrnoush | 37. 10 | 80.31 | Resolve the TBD by listing the ICF/ICRs to be used in NPCA. Also the interaction of NPCA with other features like DPS, DUO, etc which may require a different ICF/ICRs needs to be defined. | As in comment | Revised – TGbn editor to make changes marked with CID 1225 found in 11-25-0936r1 regarding the ICF for NPCA. |
| 1226 | Morteza Mehrnoush | 37. 10 | 80.36 | If the AP allocates the RU with respect to the BSS primary channel always, then there is no need for the STA to have this indication that the trigger frame is being transmitted on NPCA. So please clarify why this explicit indication and RU allocation with respect to the NPCA primary channel is needed. | As in comment |  |
| 1227 | Morteza Mehrnoush | 37. 10 | 80.49 | Remove this TBD. Dynamic puncturing in general is not adopted yet so prefer to remove the requirement for NPCA | As in comment | Revised – TGbn editor to make changes marked with CID 1227 found in 11-25-0936r1 regarding puncturing in NPCA. |
| 1228 | Morteza Mehrnoush | 37. 10 | 79.33 | BW signaling TA is not tested and in the real field a lot of devices are not setting it correctly, so relying on BW signaling TA is risky. Please clarify how the NPCA STA can rely on the OBSS BW determination from the BW signaling TA in RTS. | As in comment |  |
| 1229 | Morteza Mehrnoush | 37. 10 | 79.37 | If MU-RTS is used as the ICF of OBSS TXOP and used for OBSS BW determination, UL BW subfield in the MU-RTS should be used for OBSS BW determination | Define the procedure where the NPCA STA if it uses MU-RTS as ICF for OBSS BW determination for NPCA operation, it should use the UL BW subfield in MU-RTS to derive the BW of OBSS |  |
| 1235 | Morteza Mehrnoush | 37. 10 | 78.34 | Define the required MIB variables for NPCA feature | As in comment |  |
| 1236 | Morteza Mehrnoush | 37. 10 | 79.08 | "the channel allocations in the corresponding band" is not clear. Does it mean that NPCA STA know the OBSS channel allocation? If yes, how? | Please clarify the statement mentioned in the comment, and define the procedure how the NPCA STA can get such a information | Revised – TGbn editor to make changes marked with CID 1236 found in 11-25-0936r1 regarding determining channel allocation in NPCA. |
| 1237 | Morteza Mehrnoush | 37. 10 | 79.08 | What if the AP changes its operating BW? How the AP updates the NPCA primary channel? Also if the BW is smaller than the BW allowed for NPCA operation, does NPCA disable? | Please clarify the points raised in the comment |  |
| 1238 | Morteza Mehrnoush | 37. 10 | 79.08 | If STA changes it's operating BW, does it affect the NPCA operation and switching time? There should be a way for the STA to indicate it's new NPCA operation parameters. | Please clarify the points raised in the comment |  |

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| 1315 | Mitsuyoshi Yukawa | 37.10 | 79.42 | If an NPCA STA is operating on the specific freqency band (ex. 2.4 GHz band), swithing to the non-primary channel may degrade the communication performance. It should be described that an AP shall set the capability of the NPCA operation to false in such an operating band. | As in the comment. |  |
| 1445 | Akira Kishida | 37.10 Non-primary channel access (NPCA) | 78.25 | There is no precise definition for "NPCA primary channel." | The definition of "NPCA primary channel" should be clarified. |  |
| 1446 | Akira Kishida | 37.10 Non-primary channel access (NPCA) | 80.10 | If the primary channel is changed to the NPCA primary channel, the CW is to CW\_NPCA[AC], and the backoff counter is to BO\_NPCA[AC], fairness between the NPCA STAs and the non-NPCA STA will be damaged. | Please consider specifying the rule for the decision of the CW\_NPCA[AC]. |  |
| 1472 | Akira Kishida | a NPCA\_PRIMARY\_CHANNEL | 92.55 | "a NPCA\_PRIMARY\_CHANNEL" -> "an NPCA\_PRIMARY\_CHANNEL" | As in the comment. |  |

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| 1482 | Akira Kishida | 37.10 | 78.23 | There might be a case where the channel condition of the NPCA primary channel is worse than that of the original BSS primary channel. | It should be clarified that NPCA transition to the NPCA primary channel is not necessary in such cases. |  |
| 1505 | Dongju Cha | 37.10 | 78.15 | Suggest to divide 37.10 into subclauses (e.g., General, NPCA Parameter Update mechanism, NPCA Triggering Condition, EDCA on NPCA primary channel, Medium Sync mechansim, Switch Back Condition, NPCA ICF/ICR, etc.) | As in comment |  |
| 1506 | Dongju Cha | 37.10 | 78.18 | To make alignment with other features that is defined in UHR MAC Capabilities Information field, it is better to change to "NPCA Support" field | As in comment |  |
| 1507 | Dongju Cha | 37.10 | 78.20 | How to enable/disable the NPCA operation need to be defined on non-AP STA side | 1. Which frame to use  - E.g., non-AP NPCA STA can its NPCA mode in request/notification frame along w/ NPCA related parameters (NPCA Switching Delay, NPCA Switching Back Delay, etc) 2. Condition of non-AP NPCA STA to enable its operation of NPCA need to be defined  - E.g., non-AP NPCA STA can enable only if NPCA AP enables NPCA mode |  |
| 1508 | Dongju Cha | 37.10 | 78.34 | change "non-AP STA that supports NPCA operation" to "non-AP NPCA STA" | As in comment |  |
| 1509 | Dongju Cha | 37.10 | 78.34 | change "announce" to "indicate" | As in comment | Accept |
| 1510 | Dongju Cha | 37.10 | 78.30 | change "respectively" to " , respectively" | As in comment | Revised – TGbn editor to make changes marked with CID 1510 found in 11-25-0936r1 due to resolution of other CIDs the text is deleted. |
| 1511 | Dongju Cha | 37.10 | 78.40 | change "non-APs or per non-AP" to "non-AP NPCA STAs or per non-AP NPCA STA" | As in comment | Revised – TGbn editor to make changes marked with CID 1511 found in 11-25-0936r1 due to resolution of other CIDs the text is deleted. |
| 1512 | Dongju Cha | 37.10 | 78.41 | How to enable/disable the untriggered UL transmission on the NPCA primary channel need to be defined. | We can define some mechanisms as follows. 1. Non-AP NPCA STA can indicate whether it prefers the Triggered-based UL transmission on NPCA primary channel when it enables the operation of NPCA 2. When NPCA AP enables Triggered-based UL transmission, it applies the rule (Triggered-based UL TX) to non-AP NPCA STAs that indicated it requires the Triggered-based UL transmission | Revised – TGbn editor to make changes marked with CID 1512 found in 11-25-0936r1 which define MU EDCA operation for preventing non triggered UL during NPCA. See also CID 786. |
| 1513 | Dongju Cha | 37.10 | 79.13 | Regarding NPCA triggering condition: other than "Received Control frame and initial response frame of Control frame exchange (e.g., received RTS + CTS) on the BSS primary channel", "Received Control frame and frame followed by initial response frame of Control frame but do not receive the initial response frame of Control frame (e.g., received RTS + Data, but do not received CTS)" also need to be defined as triggering condition. | As in comment | Revised – TGbn editor to make changes marked with CID 1513 found in 11-25-0936r1 which address the issue of determining when to switch to NPCA operation based on control frame reception. |
| 1514 | Dongju Cha | 37.10 | 80.08 | Remove M126 | As in comment | Accept |
| 1515 | Dongju Cha | 37.10 | 80.31 | TBD should be resolved | Considering the fact that NPCA STAs can be triggered due to different OBSS activity which leads to having different NPCA Duration, NPCA Duration of AP needs to be included in NPCA ICF and NPCA ICR, respectively in case of DL tx and UL tx | Revised – TGbn editor to make changes marked with CID 1515 found in 11-25-0936r1 which address the issue of NPCA ICF. |
| 1516 | Dongju Cha | 37.10 | 80.31 | Some rules on when NPCA STA should switch back to the BSS primary channel need to be defined | There could be some rules as follows 1. NPCA AP on the NPCA primary channel shall be switched back to the BSS primary channel before the duration of OBSS activity that makes the BSS primary channel busy ends 2. NPCA non-AP STA(s) on the NPCA primary channel shall be switched back to the BSS primary channel before the NPCA Duration of AP indicated in NPCA ICF or NPCA ICR transmitted by AP ends |  |
| 1550 | yajun CHENG | 37.10 | 78.19 | Based on the definition of the NPCA Supported field in Table 9-130a, the NPCA Supported field is applicable to non-AP STA and AP. Hence, the sentence ''A non-AP NPCA STA shall set the NPCA Supported field ... to 1." should be changed to "A NPCA STA shall set the NPCA Supported field ... to 1." | Please delete the "non-AP" in this sentence. |  |
| 1551 | yajun CHENG | 37.10 | 78.27 | The description of how the AP announces the NPCA Primary Channel is missing from the current text. | Please add normative text for NPCA Primary Channel signaling. For example, An NPCA AP that has enabled NPCA operation shall include the NPCA Operation Information field in its UHR Operation element and indicate the NPCA Primary Channel in TBD frames. |  |
| 1552 | yajun CHENG | 37.10 | 78.27 | The rules for determining the NPCA Primary Channel should be specified. | As in comment. |  |
| 1553 | yajun CHENG | 37.10 | 78.29 | According to the description in the above two paragraphs, the fact that an AP that supports NPCA operation does not mean the AP has NPCA mode enabled. Therefore, we should add normative text to describe how an NPCA AP enables NPCA mode. | Please add normative text to describe how an NPCA AP enables NPCA mode. |  |
| 1554 | yajun CHENG | 37.10 | 80.52 | In order to guarantee reliable transmission on the BSS primary channel, especially when non-AP STAs and AP have different switching capabilities (different switch back delays), it is necessary to standardize how and when STAs initial the switching from the NPCA Primary channel to the BSS Primary channel. | Specify the start time for STAs to switch from the NPCA Primary channel back to the BSS Primary channel. | Revised – TGbn editor to make changes marked with CID 1554 found in 11-25-0936r1 which address the issue of NPCA switch time. |
| 1593 | Yuchen Guo | 37.10.1 | 78.15 | If a non-AP NPCA STA disables NPCA mode, it can perform opportunistic power save after detecting NPCA events since the AP will switch to the NPCA primary channel | Please add power save rules for the non-AP STA in this case |  |
| 1595 | Yuchen Guo | 37.10.1 | 78.15 | The AP and the non-AP may not be able to detect the same OBSS PPDU that triggers NPCA. However, the channel switching desicion should be based on the AP's detection. The AP should tell the non-AP STAs which BSS's PPDU can trigger NPCA operation | as in the comment |  |
| 1722 | Gaius Wee | 37.10 | 78.34 | The meaning of "announce ... in the ...fields" may be unclear | Replace "announce" with "indicate". Or "announce by indicating" | Revised – TGbn editor to make changes marked with CID 1722 found in 11-25-0936r1. |
| 1723 | Gaius Wee | 37.10 | 78.39 | "untriggered" can be replaced by "non-triggered", which may be clearer and has been used in the baseline specification | Replace "untriggered" with "non-triggered" throughput |  |
| 1724 | Gaius Wee | 37.10 | 78.45 | It could be clearer to separate the NPCA AP behaviour and non-AP NPCA STA behaviour into a separate paragraphs | Move the second sentence beginning with "An NPCA AP..." into a new paragraph |  |
| 1741 | Kosuke Aio | 37.10 | 79.56 | No definition of "NPCA NHT switch" | Please add the definition. | Revised – TGbn editor to make changes marked with CID 1741 found in 11-25-0936r1 that define NPCA NHT switch time. |
| 1742 | Kosuke Aio | 37.10 | 80.28 | Considering that legacy STAs exist in the NPCA primary channel, ICF/RCF exchange alone is insufficient to get all STAs to set NAV. | Please consider a pssobility to use RTS/CTS for legacy STAs, instead of NPCA ICF/RCF. |  |
| 1777 | Chaoming Luo | 37.10 | 78.01 | If the AP knows that all the member STAs corresponding to a group adress are on the NPCA P-channel, it could send the group addressed frame. | As in comment. |  |
| 1779 | Chaoming Luo | 37.10 | 78.01 | UHR STA could use P-EDCA mechanism when it operates on NPCA P-channel and use MU-EDCA mechanism to keep balance. | As in comment. |  |

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| 1794 | Junichi Iwatani | 37.10 | 78.23 | When an AP selects an NPCA primary channel, the quality of the channel may not be better than that of the BSS primary channel. Some policies should be described to ensure the quality. | As in comment. |  |
| 1795 | Junichi Iwatani | 37.10 | 78.50 | Procedures for an NPCA STA to return from an NPCA primary channel to the BSS primary channel should be clarified. | As in comment. | Revised – TGbn editor to make changes marked with CID 1058 found in 11-25-0936r1 which address the issue of NPCA switch time. See also CID 1554. |
| 1807 | Patrice Nezou | 37.10 | 78.39 | An NPCA AP may enable a mode of operation in which untriggered UL transmissions on the NPCA primary channel by NPCA non-AP STAs is not permitted. How to perform this action ? | Please add a bit in the NPCA Operation information field to do this. |  |
| 1808 | Patrice Nezou | 37.10 | 80.01 | Please solve TBD in the section related to the EDCA parameters to ensure fairness between NPCA and non-NPCA capable STAs for the contention window management | Please precise the CW management when switching from primary to NPCA channel, when switching back to the primary channel and during the NPCA period. | Revised – TGbn editor to make changes marked with CID 1808 found in 11-25-0936r1 that provide behavior rules for backoff procedure related to NPCA. See also CID 1224. |
| 1809 | Patrice Nezou | 37.10 | 80.01 | There is no requirement for the management of the MU EDCA parameetrs during the NPCA procedure. Please clarify to ensure fairness among all STAs associated to the BSS. | Please precise the management of the MU EDCA parameters (especially MU EDCA timer) when switching from primary to NPCA channel, when switching back to the primary channel and during the NPCA period. | Revised – TGbn editor to make changes marked with CID 1809 found in 11-25-0936r1 which address the issue of MU EDCA parameters during NPCA operation. |
| 1817 | Juseong Moon | 37.10 | 80.22 | When an AP uses MU operation(both UL and DL) in NPCA primary channel, the AP of the BSS shall consider the longest switching delay time among the allocated STAs by the AP. Therefore, a rule for the MU operation shall be added. | Please add the following text:  In case where the STA transmits a DL MU PPDU or a Trigger frame that triggers UL MU PPDU(s) after switching to the NPCA primary channel, the STA shall not initiate a transmission on the NPCA primary channel to another STA(s) until the longest NPCA switching delay time among the other STA(s) has elapsed, either from the NPCA HE switch time for switching due to condition 1) above, or from the NPCA NHT switch time for switching due to condition 2) above. |  |
| 1818 | Juseong Moon | 37.10 | 79.36 | The bandwidth of the CTS frame may be narrower than that of the RTS. A rule modification is required to account for this situation. | As in comment |  |
| 1819 | Juseong Moon | 37.10 | 80.52 | When an NPCA STA receives a frame from another OBSS in the NPCA Primary channel and can determine the OBSS's transmission duration (e.g., NAV), there is no defined operation for transitioning back to the Primary channel based on the remaining NAV duration. | Please add the following text:  The NPCA STA shall switch back to the primary channel, if remaining time is smaller than the NPCA Minimum Duration Threshold, where the remaining time is defined as the following:  a. When the NPCA STA receives an inter-BSS PPDU on its NPCA Primary channel, the remaining time is between the transmission end time of the received inter-BSS PPDU and the known transmission end time of its Primary channel.   b. When the NPCA STA detects the medium as busy, the remaining time is between the time, which the medium is detected as idle, and the known transmission end time of its Primary channel. |  |
| 1820 | Juseong Moon | 37.10 | 80.03 | The use of the MU EDCA timer during NPCA operation is not defined. The operation of the MU EDCA timer during NPCA operation needs to be specified. | Please add the following text: (Current)The STA shall use the same EDCA parameter set, MU EDCA parameter set, and EPCS EDCA parameter set values for operation on the NPCA primary channel as it uses on the BSS primary channel.  (Added)\*\*The STA shall use a common MU EDCA Timer per its EDCAFs for the Primary channel and the NPCA Primary channel\*\* | Revised – TGbn editor to make changes marked with CID 1820 found in 11-25-0936r1 which address the issue of determining the status of MU EDCA parameters during NPCA operation. |
| 1821 | Juseong Moon | 37.10 | 79.42 | The operational procedure of EMLSR after switching to the NPCA Primary channel is not defined. | Please clarify it. |  |
| 1822 | Juseong Moon | 37.10 | 79.42 | Considerations for cases where an NPCA STA is operating on the NPCA Primary channel while an R-TWT SP is ongoing are insufficient. | Please define a rule to address the comment. |  |
| 1823 | Juseong Moon | 37.10 | 79.44 | The method for NAV management in the NPCA Primary channel is missing. Since Basic NAV is set based on control frame exchange in the Primary channel, if this NAV is used as is, transmission in the NPCA Primary channel is not possible. | The rule should be modified to ensure that the Basic NAV of the Primary channel does not affect transmissions in the NPCA Primary channel. For example, when a STA switches to the NPCA Primary channel, the STA shall reset the Basic NAV. |  |
| 1824 | Juseong Moon | 37.10 | 78.52 | An NPCA STA of BSS may only hear an OBSS's TF but fail to receive the TB PPDU due to a hidden node situation. In this case, even though the STA sets the Basic NAV, but NPCA operation is not possible per the current D0.1. Allowing NPCA operation in this case can improve performance. | Please define a rule to address the comment. |  |
| 1825 | Juseong Moon | 37.10 | 79.20 | Because the duration field value in the ICR frame during the ICF-ICR frame exchange may be shorter than the threshold, the TXOP duration used for comparison with the NPCA Minimum Duration Threshold when switching to the NPCA Primary channel should be determined by the Initial Response Frame. | Please modify the text as the following:  the TXOP duration, determined from the Duration field of the \*\*initial response frame\*\*, is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to its BSS | Revised – TGbn editor to make changes marked with CID 1825 found in 11-25-0936r1 which address the issue of determining when to switch to NPCA operation based on control frame reception. |
| 1830 | Gwangho Lee | 37.10 | 79.63 | The relationship among EMLSR delay (EMLSR padding delay, EMLSR transition delay), DPS padding delay and NPCA delay (NPCA switching delay, NPCA switching back delay) needs to be clarified. | Please clarify relationship between EMLSR delay(EMLSR padding delay, EMLSR transition delay) and NPCA delay (NPCA switching delay, NPCA switching back delay). |  |
| 1831 | Gwangho Lee | 37.10 | 79.36 | The bandwidth of the CTS frame may be narrower than that of the RTS. If the RTS's TA is a BW TA, the CTS frame bandwidth information is included in the CTS frame. If the CTS does not occupy the NPCA PCH, the NPCA STA can perform NPCA operations. A rule modification is required to account for this situation. | Please change ii) and add iii) as the following:  ii) If the Control frame is an RTS frame, then identification of the channel occupied by a received CTS frame in a non-HT (duplicate) PPDU is determined by examining the CTS frame (e.g., RXVECTOR)  iii) If the Control frame is an MU-RTS frame, then identification of the channel occupied by a received CTS frame in a non-HT (duplicate) PPDU is determined by examining the MU-RTS frame |  |
| 1849 | Yusuke Tanaka | 37.10 | 78.15 | The secondary channel uses signal detection with ED threshold that is higher than the PD threshold in primary channel. Therefore, when transmitting on the secondary channel, if the transmission power is not high enough, the OBSS does not detect and communication collisions by hidden nodes occur more than usual. | Please define a solution for the commented problem. Define measures such as defining a threshold as same as primary channel for secondary channel, or increasing the transmission power for secondary channel transmission. |  |
| 1850 | Yusuke Tanaka | 37.10 | 78.18 | Definition of NPCA "non-AP" is required as well here. | As commented |  |
| 1851 | Yusuke Tanaka | 37.10 | 78.24 | The spectrum efficiency of the NPCA primary channel should be improved by using a channel that is used less frequently, so it is better to decide the NPCA primary channel by considering the statistics of channel utilization by the OBSS. | Please describe the mechanism by which the AP determines the NPCA primary channel based on existing or new reports of OBSS channel utilization information from Non-APs. |  |
| 1852 | Yusuke Tanaka | 37.10 | 78.24 | The NPCA primary cannot be used if the NPCA primary channel is decided without considering the channel utilization by OBSS, so it can be used more efficiently by determining multiple NPCA primary channel candidates and their priorities. | Please determine a protocol that decides multiple NPCA primary candidates and their priorities and makes agreement between the AP and non-APs. |  |
| 1853 | Yusuke Tanaka | 37.10 | 78.49 | It is necessary to confirm that the third BSS is not using the NPCA primary channel. The specification defines several conditions to confirm whether another BSS occupies the NPCA primary channel when the other BSS is using the primary channel. However, if the terminal of the third BSS is specifically receiving in the NPCA primary, the NPCA operator may cause interference. | When switching to the NPCA primary channel, please add conditions for switching after confirming that the NPCA primary channel is not being occupied,in addition to the determination based on received PPDUs, by using MLO to collect media information and NAV information from surrounding BSSs. |  |
| 1854 | Yusuke Tanaka | 37.10 | 79.42 | If the duration of the NPCA operation is long, the primary channel may be occupied by OBSS again, and the NPCA operation may continue semi-permanently. | Define the duration of the NPCA operation that takes into account the estimated occupancy time of the primary channel by OBSS. Alternatively, define the maximum number of times that NPCA will not be used for multiple periods. |  |
| 1855 | Yusuke Tanaka | 37.10 | 79.42 | The frames transmitted by the NPCA operation seem to be mainly Data frames and Control frames, but if there are no restrictions, inappropriate frames (such as Beacon frames) may be transmitted. | Specify the conditions for frames that can be transmitted in the NPCA operation. | Revised – TGbn editor to make changes marked with CID 1855 found in 11-25-0936r1 which add a prohibition against sending the Beacon on the NPCA channel. See also CID 171. |
| 1856 | Yusuke Tanaka | 37.10 | 80.27 | No definition of "all", what frame exchanges are included? | Please elaborate on "all frame exchange" |  |
| 1870 | Sanghyun Kim | 37.10 | 78.15 | Different(asymetric) view problems(P20 Idle/busy, length of the detected OBSS activities) are had been heavily discussed in the TGbn. Solutions for resolving/mitigating the problems should be provided. | Please defines mechanism(s) to resolve/mitigate the different view problems. |  |
| 1871 | Sanghyun Kim | 37.10 | 78.50 | It is unclear whether an NPCA STA switches to the NPCA primary channel even when the P20 subchannel is occupied by an OBSS with which its BSS has established Co-TDMA coordination. It should be determined whether the established Co-TDMA coordination should be considered as one of the conditions for switching to the NPCA primary channel. | As in comment |  |
| 1872 | Sanghyun Kim | 37.10 | 79.43 | An NPCA AP may receive a frame transmitted by a STA(e.g., legacy STA) that is operating on the BSS primary channel. It makes no sense if the NPCA AP respond with a response frame to the received frame on the NPCA primary channel. This is because the STA operating on the BSS primary channel cannot receive the response frame. | Please add responding rules for the NPCA AP. Adding an indication to the NPCA ICF (transmitted by both an NPCA AP and a non-AP NPCA STA) could be considered for letting the AP can make decision for responding based on the indication. |  |
| 1873 | Sanghyun Kim | 37.10 | 80.33 | The method for setting the BW and RU Allocation subfields in the DL PPDUs transmitted by an NPCA AP on the NPCA primary channel is missing. It should be determined whether the non-AP STAs receiving a DL PPDU on the NPCA primary channel should interpret the RU Allocation subfield in the same way as DL PPDUs transmitted on the BSS primary channel or based on the NPCA operating channel. | If the RU Allocation subfields in DL PPDUs transmitted on the NPCA primary channel should be interpreted based on the NPCA operating channel, the PHY preamble of the PPDU should include an indication allowing the non-AP STA's PHY to determine whether the NPCA operating channel or the BSS operating channel should be used as the reference for interpretation.  If the RU Allocation subfields in DL PPDUs transmitted on the NPCA primary channel are to be interpreted based on the BSS operating channel, the Bandwidth field in these DL PPDUs should indicate a bandwidth that includes the primary 20 MHz subchannel, and the Punctured Channel Information field should indicate that the bandwidth occupied by the OBSS is punctured. |  |
| 1874 | Sanghyun Kim | 37.10 | 78.21 | Mechanisms for enabling/disabling NPCA mode should be specified.  Moreover, there might be more conditions should be met for enabling NPCA mode regarding operating BW and conditions that autometically disable NPCA mode regarding channel switch operation of the BSS | As in comment |  |
| 1875 | Sanghyun Kim | 37.10 | 78.29 | It is unclear why the NPCA AP requires large switching delays, even though the NPCA primary channel is always located within its operating bandwidth. Please verify whether these delay fields are necessary for the AP | As in comment |  |
| 1876 | Sanghyun Kim | 37.10 | 78.60 | A new RXVECTOR parameter indicating remaining length of the PPDU should be defined for the HE/EHT/UHR PPDUs | As in comment |  |
| 1877 | Sanghyun Kim | 37.10 | 78.60 | The NPCA operation has been agreed to be performed during the time when the primary channel is known to be busy (Motion 11). Therefore, the NPCA STA should performs NPCA operation based on the remaining OBSS TXOP from the moment it detects OBSS activity.  In other words, the value compared to the NPCA minimum duration threshold should be the sum of the remaining inter-BSS PPDU length and the remaining OBSS TXOP duration after the PPDU ends. | Please change the condition 1) b. as follows and delete i) in that condition.  the duration of the (remaining) PPDU plus the value of the RXVECTOR parameter TXOP\_DURATION of the PPDU, is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to the BSS of which it is a member | Revised – TGbn editor to make changes marked with CID 1877 found in 11-25-0936r1 which address the issue of determining the endpoint of the NPCA operation based on OBSS TXOP duration information. |
| 1878 | Sanghyun Kim | 37.10 | 78.15 | It is unclear how an NPCA STA set its basic NAV timer for the BSS primary channel. NPCA STA shall set the basic NAV before initiating a switch to the NPCA primary channel. | Please provide NAV setting rules for the NPCA STA | Reject – the baseline provides the rules for setting NAV. The NPCA operation subclause does not propose to change these rules. |
| 1879 | Sanghyun Kim | 37.10 | 80.22 | It is unclear how a STA that has completed backoff procedure defer its Tx initiation considering the NPCA switching delay of a recipient STA. | Please provide a channel access mechanism for a NPCA STAs to defer Tx initiation considering the NPCA switching delay. | Reject – the requested rules exist already in D0.1 at P80L22. |
| 1880 | Sanghyun Kim | 37.10 | 80.22 | When an AP intends to transmit an MU PPDU, it must defer its transmission start time until the non-AP STA with the longest switching delay among the intended recipient STAs has completed switching. If a non-AP STA initiates UL PPDU transmission while the AP is still deferring its transmission start, the non-AP STA may acquire the TXOP despite the AP having already completed its backoff procedure. | Please define a mechanism to ensure that the non-AP NPCA STAs do not initiate UL PPDU transmission while the NPCA AP is deferring its transmission start. |  |
| 1881 | Sanghyun Kim | 37.10 | 79.42 | To prevent unassociated STAs on the NPCA primary channel from attempting to associate with the NPCA AP, some frames should be restricted from transmission on the NPCA primary channel. | A NPCA AP shall not transmit Beacon or Probe Response frames on the NPCA primary channel and shall not allocate RA-RUs to the unassociated STAs in the trigger frames. |  |
| 1882 | Sanghyun Kim | 37.10 | 78.54 | If the BSS color of a received inter-BSS PPDU is the same as the STA's BSS color (i.e., in the case of a BSS collision), the STA identifies the PPDU as an inter-BSS PPDU after decoding the frame included in the PPDU. In this situation, it is unclear whether the STA should switch to the NPCA primary channel. | Either restrict NPCA operation to cases where an inter-BSS PPDU is identified using the BSS color or provide a mechanism for switching after decoding the frame included in the HE/EHT/UHR PPDU. | Reject – rules for avoiding switching to NPCA based on MyBSS PPDU exist already in D0.1 P78L56 and P79L17 |
| 1890 | Sanghyun Kim | 37.10 | 79.47 | It is unclear what time point 'NPCA HE switch time' refers to. | Please provide additional details to clarify the time point indicated by 'NPCA HE switch time' | Revised – TGbn editor to make changes marked with CID 1890 found in 11-25-0936r1 that provide behavior rules for backoff procedure related to NPCA. See also CID 3593. |
| 1891 | Sanghyun Kim | 37.10 | 79.55 | It is unclear what time point 'NPCA NHT switch time' refers to. | Please provide additional details to clarify the time point indicated by 'NPCA NHT switch time' | Revised – TGbn editor to make changes marked with CID 1891 found in 11-25-0936r1 that provide behavior rules for backoff procedure related to NPCA. See also CID 3593. |
| 1937 | Okan Mutgan | 37. 10 | 78.15 | It seems like NPCA is not consistent with multi-AP features (CBF, CSR, CTDMA, CRTWT), because whenever AP1 sends a frame to AP2 for coordination, AP2 (as well as its STAs) thinks its inter-BSS PPDU and switch to NPCA channel. | Modify switching to NPCA channel conditions or introduce a mechanism so that NPCA works consistent with multi-AP features. |  |
| 1970 | Michael Grigat | 37.10 | 79.55 | is the abbreviation "NHT" commonly used? | replace "NHT" with "non-HT" |  |
| 2076 | Liangxiao Xin | 37.10 | 80.23 | Does the "STA" mean "the STA" or "another STA"? | please clarify | Reject – the third instance of STA includes the qualifier “that” which in common usage is an explicit indication that the 3rd instance of STA refers to the immediately preceding instance of STA. |
| 2077 | Liangxiao Xin | 37.10 | 78.15 | The efficiency of the NPCA operation will be affected by the occurrence of the different view problem | need a mechanism to solve different view problem |  |
| 2138 | Vishnu Ratnam | 37.10 | 78.21 | The current text reads: "only if it is associated with an NPCA AP.". Suggest to replace with "only if it is associated with an NPCA AP that has enabled NPCA operation." | As in comment. | Revised – TGbn editor to make changes marked with CID 2138 found in 11-25-0936r1 that provide behavior rules for backoff procedure related to NPCA. |
| 2139 | Vishnu Ratnam | 37.10 | 78.21 | The spec needs to define the mechanism for a non-AP STA to enable/disable NPCA operation or update its NPCA parameters. | The commentor will bring a contribution to resolve the issue. |  |
| 2140 | Vishnu Ratnam | 37.10 | 78.27 | The spec needs to define the mechanism for an AP to enable/disable NPCA operation or update its NPCA parameters. | The commentor will bring a contribution to resolve the issue. |  |
| 2141 | Vishnu Ratnam | 37.10 | 78.32 | The mechanism for indication of the NPCA parameters by an AP has to be defined. | The commenter will bring a contribution to resolve the issue. |  |
| 2142 | Vishnu Ratnam | 37.10 | 78.32 | The spec should allow an NPCA AP to indicate the maximum NPCA Switch Delay it will entertain for participating in NPCA operation in its BSS. | As in comment. |  |
| 2143 | Vishnu Ratnam | 37.10 | 78.41 | The spec should clarify the channel access mechanism on the NPCA primary channel given different STAs may have different NPCA Switch Delays. | As in comment. |  |
| 2144 | Vishnu Ratnam | 37.10 | 78.47 | Suggest to change the name of "NPCA Operation Information Present" field to "NPCA Enabled" field. This is also consistent with the other fields in the UHR Capabilities element. | As in comment. |  |
| 2145 | Vishnu Ratnam | 37.10 | 78.63 | The spec should clarify how the value in the NPCA Minimum Duration Threshold field is applied to the case of HE+ PPDUs. | For HE+ PPDUs since the switch is performed after receiving the PHY header, the TXOP\_DURATION-PHY\_HEADER\_DURATION should be larger than NPCA Minimum Duration Threshold. | Revised – TGbn editor to make changes marked with CID 2145 found in 11-25-0936r1 which address the issue of determining the value of the NPCA operation minimum duration. |
| 2146 | Vishnu Ratnam | 37.10 | 79.11 | The spec should clarify the additional conditions to be met to perform the NPCA switch. | As in comment. | Revised – TGbn editor to make changes marked with CID 2146 found in 11-25-0936r1 which address the issue of determining the start of the NPCA operation. |
| 2147 | Vishnu Ratnam | 37.10 | 79.20 | For sub-bullet b of bullet 2, we have the text "the TXOP duration, determined from the Duration field of the received frame(s), is greater than the ...". Suggest to replace with "the TXOP duration, determined from the Duration field of the received initial response frame, is greater than the ..." | As in comment. | Revised – TGbn editor to make changes marked with CID 2146 found in 11-25-0936r1 which address the issue of determining the duration of the NPCA operation. |
| 2148 | Vishnu Ratnam | 37.10 | 79.40 | The spec should clarify the additional conditions to be met to perform the NPCA switch. | As in comment. | Revised – TGbn editor to make changes marked with CID 2148 found in 11-25-0936r1 which clarifies the additional conditions for initiation of NPCA operation. |
| 2149 | Vishnu Ratnam | 37.10 | 79.45 | For bullet 1, we have the text: " NPCA primary channel based on an meeting condition 1) above,". Delete "an". | As in comment. | Accept |
| 2150 | Vishnu Ratnam | 37.10 | 80.52 | The spec needs to clarify the interoperability between NPCA operation and Spatial reuse mechanisms. | The commenter will bring a contribution to resolve the issue. |  |
| 2151 | Vishnu Ratnam | 37.10 | 80.52 | The spec should provide a mechanism for neighboring APs to coordinate their choice of NPCA primary channel. Note that all neighboring BSSs whose primary channels are blocked by the OBSS transmission may perform NPCA switch simultaneously. Correspondingly, there is a high chance of collision if their NPCA primary channels are the same. | As in comment. |  |
| 2152 | Vishnu Ratnam | 37.10 | 80.52 | The spec should clarify the NPCA operation for an EMLSR and DPS non-AP STA. | As in comment. |  |
| 2153 | Vishnu Ratnam | 37.10 | 80.52 | The spec should clarify the NPCA operation for a mobile AP that has enabled DPS operation. | As in comment. |  |
| 2154 | Vishnu Ratnam | 37.10 | 80.52 | The spec should allow an NPCA AP to indicate service periods during which it is unavailable for NPCA operation. This can be, for example, for multi-AP coordination. | The commentor will bring a contribution to resolve the issue. |  |
| 2155 | Vishnu Ratnam | 37.10 | 80.52 | The spec should allow an NPCA AP to use dynamic unavailability operation mechanism to indicate its dynamic unavailability for NPCA operation. This can be, for example, for multi-AP coordination or Co-ex reasons. | The commentor will bring a contribution to resolve the issue. |  |
| 2358 | Ahmadreza Hedayat | 37.10. | 78.23 | Resolve the TBD in "an opertaing bandwidth less than TBD". | As in comment | Revised – TGbn editor to make changes marked with CID 2358 found in 11-25-0936r1 which clarifies the minimum BSS BW for initiation of NPCA operation. See also CID 1210. |
| 2359 | Ahmadreza Hedayat | 37.10. | 78.32 | Resolve the TBD frames that carry the NPCA Switching (Back) Delay fields for an AP. | As in comment | Revised – TGbn editor to make changes marked with CID 2359 found in 11-25-0936r1 which clarifies the frames used to carry NPCA parameters. |
| 2360 | Ahmadreza Hedayat | 37.10. | 78.36 | Resolve the TBD frames that carry the NPCA Switching (Back) Delay fields for a non-AP STA. | As in comment |  |
| 2361 | Ahmadreza Hedayat | 37.10. | 78.41 | Resolve the TBD in "Whether the mode is for all associated non-APs or per non-AP is TBD." | As in comment | Revised – TGbn editor to make changes marked with CID 2361 found in 11-25-0936r1 which clarifies the scope of the UL triggered limitation of NPCA operation. |
| 2362 | Ahmadreza Hedayat | 37.10. | 78.41 | Resolve the TBD in "Whether MU EDCA parameters mechanism is used for this or not is TBD." | As in comment | Revised – TGbn editor to make changes marked with CID 2362 found in 11-25-0936r1 which address the issue of the use of MU EDCA parameters during NPCA operation. |
| 2363 | Ahmadreza Hedayat | 37.10. | 78.59 | Not clear why there is a TBD for obtaining the PPDU duration field. Resolve the TBD. | As in comment | Revised – TGbn editor to make changes marked with CID 2363 found in 11-25-0936r1 which address the issue of the use of determination of the duration of STA dwell time on NPCA primary channel. |
| 2364 | Ahmadreza Hedayat | 37.10. | 79.05 | It's unclear what "whether it is indicated by the AP is TBD" refers to. The "TXOP\_DURATION of the PPDU" should be used in the calculation. | As in comment | Revised – TGbn editor to make changes marked with CID 2364 found in 11-25-0936r1 which address the issue of the use of determination of the duration of STA dwell time on NPCA primary channel. |
| 2365 | Ahmadreza Hedayat | 37.10. | 79.11 | Resolve or remove the "TBD conditions" |  | Revised – TGbn editor to make changes marked with CID 2365 found in 11-25-0936r1 which address the issue of some NPCA operation TBD language. |
| 2366 | Ahmadreza Hedayat | 37.10. | 79.24 | The "TXOP\_DURATION of the PPDU" should be used in the calculation. Resolve the TBD. | As in comment | Revised – TGbn editor to make changes marked with CID 2366 found in 11-25-0936r1 which address the determination of the duration of the NPCA operation. |
| 2367 | Ahmadreza Hedayat | 37.10. | 79.40 | Resolve or remove the "TBD conditions" | As in comment | Revised – TGbn editor to make changes marked with CID 2367 found in 11-25-0936r1 which address the issue of TBD values in the NPCA operation description. |
| 2368 | Ahmadreza Hedayat | 37.10. | 79.46 | based on an meeting condition 1) -> based on meeting condition 1) | As in comment | Accept |
| 2369 | Ahmadreza Hedayat | 37.10. | 79.53 | Define "NPCA HE switch time" and "NPCA NHT switch time". Resolve the TBDs. | As in comment | Revised – TGbn editor to make changes marked with CID 2369 found in 11-25-0936r1. |
| 2370 | Ahmadreza Hedayat | 37.10. | 80.10 | For 10.23.2.2, min/max values for the NPCA CWs need to be specified. | As in comment | Revised – TGbn editor to make changes marked with CID 2370 found in 11-25-0936r1. |
| 2371 | Ahmadreza Hedayat | 37.10. | 80.31 | Resolve the TBD for the ICF transmitted on the NPCA primary channel | As in comment | Revised – TGbn editor to make changes marked with CID 2371 found in 11-25-0936r1. See also CID 1063. |
| 2372 | Ahmadreza Hedayat | 37.10. | 80.49 | It's not clear why additional puncturing is discussed here: "It is TBD whether a frame that solicits a response other than TB PPDUs can puncture 20 MHz subchannels not indicated as punctured in the Disabled Subchannel Bitmap field of the EHT Operation element.". Suggest to resolve the TBD here by removing this bullet. | As in comment | Revised – TGbn editor to make changes marked with CID 2372 found in 11-25-0936r1 which address the issue of punctured subchannels in NPCA. |
| 2397 | Yuki Fujimori | 37.10 | 78.15 | There is no introduction to explain what NPCA operation is. | Please add an introduction or a general subclause to explain what NPCA operation is. |  |
| 2398 | Yuki Fujimori | 37.10 | 78.34 | NPCA Switching Delay field and NPCA Switch Back field are only included in the NPCA Operation Information field which is only included in the UHR Operation element. Operation element is usually not included in the frames sent from non-AP STA. | Please clarify how a non-AP STA can send NPCA Switching Delay field and the NPCA Switch Back field. |  |
| 2399 | Yuki Fujimori | 37.10 | 79.36 | If a NPCA STA only receives inter-BSS CTS and not the corresponding RTS or MU-RTS, it cannot identify the bandwidth of inter-BSS traffic. It's not clear whether the NPCA STA is allowed to switch or not in this case. | Please clarify the expected behavior in such a case. |  |
| 2400 | Yuki Fujimori | 37.10 | 79.41 | Add another condition 3) which uses the Intra-BSS Control frame as a switching condition. | Commentor will bring a contribution to introduce this. |  |
| 2401 | Yuki Fujimori | 37.10 | 80.07 | Remove the motion number "M126". | As in the comment. | Accept |
| 2431 | Thomas Handte | 37.10 | 78.40 | typo: in which untriggered UL transmissions on the NPCA primary channel by NPCA non-AP STAs IS not permitted | in which untriggered UL transmissions on the NPCA primary channel by NPCA non-AP STAs ARE not permitted | Revised – TGbn editor to make changes marked with CID 2431 found in 11-25-0936r1. |
| 2432 | Thomas Handte | 37.10 | 78.41 | "non-APs" should be "non-AP STAs" | Change to "non-AP STAs" (twice) | Revised – TGbn editor to make changes marked with CID 2432 found in 11-25-0936r1. |
| 2433 | Thomas Handte | 37.10 | 78.54 | Condition 1) includes two cases: STA received a PPDU and STA received a PHY-RXSTART.indication of a HE/EHT/UHR PPDU. For the first case, it is not clear, at which point in time this case applies. For example, is it the CCA indication, EARLYSIG indication, the RXSTART indication or RXEND indication? | Clarify at which point in time the "received a PPDU" case applies. Otherwise, it causes a huge uncertainty about when a STA switches to NPCA primary channel. | Revised – TGbn editor to make changes marked with CID 2433 found in 11-25-0936r1. See also CID 1056, 1057. |
| 2434 | Thomas Handte | 37.10 | 78.54 | Condition 1) includes the case that STA received a PPDU. We should exclude HE/EHT/UHR PPDU, because it is already covered by the second case of condition 1). Also seeing condition 2) we may need to say that condition 2) is not applicable. Also, Condition 1) is applicable to an RTS for example. However at least a CTS response should be awaited for being sure about a TXOP being truly initiated on primary channel (that's why there is condition 2). | Change first case to "the STA received a non-HE, non-EHT, non-UHR PPDU, a PPDU for which condition 2) is not fulfilled, or a PPDU that is not an RTS" | Revised – TGbn editor to make changes marked with CID 2434 found in 11-25-0936r1. See also CID 1056, 1057. |
| 2435 | Thomas Handte | 37.10 | 80.22 | Two STAs may switch to the NPCA primary channel because different switching conditions are fulfilled which needs to be reflected in the switching times. | A submission proposing a solution will be provided |  |
| 2520 | Inaki Val | 37.10. | 78.50 | Under a possible scenario where the BSS and OBSS have hidden nodes, it may happen that some of the BSS STAs (AP and non-AP STAs) do not receive the OBSS initial frame exchange, and as a consequence, they will not change to the NPCA primary channel. To avoid unnecessary channel changes, there should be some conditions that would allow the STAs to change to the NPCA primary channel. For instance, the AP may not change the channel, while the STAs do, being impossible the data exchange. | Consider to add a mechanism that builds an interference map, shared between BSS members, and used to define the conditions to change the channel during NPCA procedure |  |
| 2621 | Ying Wang | 37.10 | 78.35 | Grammar error in "A non-AP STA that supports NPCA operation shall announce its NPCA switching delay and NPCA switch back delay respectively in the NPCA Switching Delay field and NPCA Switch Back Delay fields of the TBD frames." | Change "NPCA Switch Back Delay fields" to "NPCA Switch Back Delay field". |  |
| 2649 | Ying Wang | 37.10 | 79.13 | It is not clear whether "a Control frame" and the later "a Control frame exchange" are referring to the same thing or not in "the STA received a PPDU containing a Control frame and a PPDU containing an initial response frame of a Control frame exchange on the BSS primary channel and..." If not, it doesn't make sense to use "and" to connect the two PPDUs. | Change to "the STA received a PPDU containing a Control frame and a PPDU containing an initial response frame to the Control frame on the BSS primary channel..."? | Revised – TGbn editor to make changes marked with CID 2649 found in 11-25-0936r1. |
| 2676 | Xiaofei Wang | 37.10. | 37.28 | inconsistence in definition for DPS AP and NCPA AP. A DPS AP needs to have DPS enabled to be called a DPS AP, however, an NPCA AP only needs to support NPCA capabilities, and do not need to have NPCA enabled. It is better to be consistent in definitions. | as in comment |  |
| 2677 | Xiaofei Wang | 37.10. | 79.13 | It is not clear why the response frame needs to be an "initial response frame" in this case. | change "initial response frame" into "response frame" |  |
| 2678 | Xiaofei Wang | 37.10. | 79.14 | Is the response frame not the response frame of the received control frame? If so, the text needs to make it clear to avoid confusion | change "a Control frame" to "the control frame" | Revised – TGbn editor to make changes marked with CID 2678 found in 11-25-0936r1. |
| 2679 | Xiaofei Wang | 37.10. | 79.17 | Since it is assumed that two PPDUs are received in line 13, the PPDU(s) should be changed to PPDUs. | as in comment | Revised – TGbn editor to make changes marked with CID 2679 found in 11-25-0936r1. |
| 2680 | Xiaofei Wang | 37.10. | 79.45 | "an" is not correct and should be removed | as in comment | Accept |
| 2688 | Ying Wang | 37.10 | 80.09 | Unnecessary motion number showing up before item a. of "4) Once the STA ..." | Remove "M126" | Accept |
| 2690 | Salvatore Talarico | 37. 10 | 78.50 | Procedure to switch to NPCA primary channel should be complemented with optional capability to allow joint detection of both primary and NPCA primary channel | Optional capability to jointly detection of both primary and NPCA primary channel is needed and switching procedure should be updated accordingly. |  |
| 2691 | Salvatore Talarico | 37. 10 | 80.53 | Procedure to switch back from NPCA primary channel is missing | Procedure to define the behaviour of an NPCA capable STA on when and based on what information to switch back from NPCA primary channel to the primary channel shall be defined. |  |
| 2710 | Ying Wang | 37.10 | 80.27 | "6) The STA shall begin all frame exchanges on the NPCA primary channel with an NPCA initial Control frame ..." may not be applicable to some scenarios. For example, in the mode where untriggered UL transmissions on the NPCA primary channel by NPCA non-AP STAs is not permitted, non-AP STAs cannot begin with this ICF. Also, after the AP sends an ICF and indicates that the AP has already switched to and is ready on the NPCA primary channel, does a non-AP STA still need to send an ICF to the AP? |  |  |
| 2820 | Serhat Erkucuk | 37.10 | 78.50 | NPCA STA switching conditions depend on the STA receiving an OBSS PPDU. However, a STA not receiving the OBSS PPDU may not switch to the NPCA primary channel. For an efficient communication on the NPCA primary channel, there may be a mechanism needed for announcing to the NPCA non-AP STAs about NPCA AP's switching to the NPCA primary channel. | Define a mechanism for an NPCA AP to inform its associated NPCA non-AP STAs to switch from the PCH to the NPCA PCH after determining that a PPDU received via the PCH is an inter-BSS PPDU. |  |
| 2821 | Serhat Erkucuk | 37.10 | 79.43 | If an OBSS AP terminates the communication before the end of the NAV duration, a UHR STA being on the NPCA primary channel may not switch to the BSS primary channel before the end of the NAV duration (since it does not know about the TXOP truncation) and may not contend for the BSS primary channel. When the UHR AP switches back to the BSS primary channel by the end of the NAV duration and contends for the channel, it may not obtain the primary channel access. Another related problem may occur if an associated STA of the UHR AP, which has not switched to the NPCA primary channel, may obtain the primary channel access (after TXOP truncation), transmit a frame to the UHR AP and may not receive a response from the UHR AP that is operating on the NPCA primary channel. These two problems may occur due to TXOP truncation on the BSS primary channel when NPCA operation is enabled. | Define a mechanism for an NPCA AP to negotiate with an OBSS AP (UHR AP) for the OBSS AP either not to truncate TXOP on the BSS primary channel, or a mechanism for an OBSS AP (a UHR AP) to inform the NPCA AP of TXOP truncation on the BSS primary channel, if the NPCA AP has enabled NPCA operation. |  |
| 2822 | Serhat Erkucuk | 37.10 | 78.39 | The draft spec defines an NPCA AP enabling a mode of operation in which untriggered UL transmissions on the NPCA primary channel by NPCA non-AP STAs is not permitted. This mode of operation is mainly for the NPCA AP to win the NPCA primary channel access. In this mode of operation, if an NPCA non-AP STA is not triggered by the NPCA AP (and if the NPCA primary channel is available), the NPCA non-AP STA should be able to perform untriggered UL transmissions on the NPCA primary channel after a time period. | Define a mechanism where an NPCA non-AP STA may perform untriggered UL transmissions on the NPCA primary channel after a time period, if not triggered by the NPCA AP and the NPCA primary channel is available. |  |
| 2823 | Serhat Erkucuk | 37.10 | 79.42 | The draft spec defines some rules when an NPCA STA switches to the NPCA primary channel for NPCA operation. The draft spec currently does not define conditions for switching back from NPCA primary channel to BSS primary channel. While it may be expected that an NPCA STA switches back to the BSS primary channel before the end of NAV duration on the BSS primary channel, NPCA AP should be able to extend its switch back duration beyond the NAV duration on the BSS primary channel in case NPCA AP has buffered low latency data, for example. | Define conditions where NPCA AP may switch back to the BSS primary channel after the OBSS NAV duration on the BSS primary channel. |  |
| 3035 | Mark RISON | 37.10 | 78.17 | "A STA that supports NPCA operation is called an NPCA STA. An AP that supports NPCA operation is called an NPCA AP. A non-AP NPCA STA shall" -- the term "non-AP NPCA STA" has not been defined, only NPCA STA and NPCA AP | As it says in the comment |  |
| 3037 | Mark RISON | 37.10 | 78.19 | "A non-AP NPCA STA may enable the NPCA mode only if it is associated with an NPCA AP." ambiguous | Change to "A non-AP NPCA STA shall not enable the NPCA mode unless it is associated with an NPCA AP." | Revised – TGbn editor to make changes marked with CID 3037 found in 11-25-0936r1. |
| 3038 | Mark RISON | 37.10 | 78.24 | "which" should be "that". Also next line | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3038 found in 11-25-0936r1. |
| 3039 | Mark RISON | 37.10 | 78.30 | " and indicate its NPCA switching delay and NPCA switch back delay respectively in the NPCA Switching Delay field and NPCA Switch Back Delay field of the TBD frames" duplicates Clause 9. Similarly in para at line 34 | Delete the cited text | Revised – TGbn editor to make changes marked with CID 3039 found in 11-25-0936r1. |
| 3040 | Mark RISON | 37.10 | 78.34 | "A non-AP STA that supports NPCA operation" -- isn't this "An NPCA non-AP STA"? | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3040 found in 11-25-0936r1. |
| 3041 | Mark RISON | 37.10 | 78.39 | "untriggered UL transmissions" should be "EDCA transmissions". Also at 80.15 | As it says in the comment |  |
| 3043 | Mark RISON | 37.10 | 78.59 | "the duration of the PPDU, (determined by the MAC in a manner TBD, but necessarily involving some of the parameters of the RXVECTOR associated with the received PPDU) or the duration of the PPDU plus the value of the RXVECTOR parameter TXOP\_DURATION of the PPDU, is greater than" -- the RXVECTOR param TXOP\_DURATION will never be negative so the first condition is covered by the second | Delete "the duration of the PPDU, (determined by the MAC in a manner TBD, but necessarily involving some of the parameters of the RXVECTOR associated with the received PPDU) or" and the comma before "is greater" | Revised – TGbn editor to make changes marked with CID 3043 found in 11-25-0936r1. |
| 3044 | Mark RISON | 37.10 | 79.06 | ", based on the Bandwidth field" -- not all PPDU formats have a Bandwidth field | As it says in the comment | Reject – in the case when a PPDU format does not include a Bandwidth field, the outcome of the item should resolve to a logical value of FALSE, thereby not meeting the earlier condition that all of the items in the list must be TRUE. |
| 3045 | Mark RISON | 37.10 | 79.06 | " the 20/40/80/160 MHz channel occupied by the PPDU is" -- what if the PPDU occupies some other width, e.g. 320 MHz? Also line 26 | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3045 found in 11-25-0936r1. |
| 3046 | Mark RISON | 37.10 | 79.06 | " the 20/40/80/160 MHz channel occupied by the PPDU is identified by the STA, based on the Bandwidth field in the PHY preamble of the PPDU and the channel allocations in the corresponding band" unclear -- identified as what? | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3046 found in 11-25-0936r1. |
| 3047 | Mark RISON | 37.10 | 79.13 | "an initial response frame of a Control frame exchange" not clear. What is a Control frame exchange, and what constitutes a response within it? | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3047 found in 11-25-0936r1. |
| 3048 | Mark RISON | 37.10 | 79.13 | "the STA received a PPDU containing a Control frame and a PPDU containing an initial response frame of a Control frame exchange" -- so it has to receive two PPDUs? What if anything can be between these two PPDUs? | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3048 found in 11-25-0936r1. |
| 3049 | Mark RISON | 37.10 | 79.13 | "the received PPDU(s)" -- but the text above seems to require exactly two PPDUs | Delete all the "(s)"s in 2) | Revised – TGbn editor to make changes marked with CID 3049 found in 11-25-0936r1. |
| 3050 | Mark RISON | 37.10 | 79.32 | It is not clear what i) and ii) are. Are they additional conditions? Do they both have to be met? Actually, first one looks like an additional condition but second one looks like a NOTE | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3050 found in 11-25-0936r1. |
| 3051 | Mark RISON | 37.10 | 79.45 | "on an meeting condition 1) " spurious "an " | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3051 found in 11-25-0936r1. |
| 3052 | Mark RISON | 37.10 | 0.00 | I see no point in defining separate "NPCA HE switch time" and "NPCA NHT switch time". Just define a single "NPCA switch time", and explain how it is set for 1) and for 2) | As it says in the comment | Reject – the switch time is different because for the HE case, only the PPDU PHY header is received before the switch occurs, while for the NHT case, the entire PPDU is received before the switch occurs. These are necessarily very distinct switching times. |
| 3053 | Mark RISON | 37.10 | 80.08 | Spurious "M126" | Delete the cited text | Accept |
| 3054 | Mark RISON | 37.10 | 80.11 | "CW\_NPCA[AC]" etc. are not defined | As it says in the comment | Revised – TGbn editor to make changes marked with CID 3054 found in 11-25-0936r1. |
| 3055 | Mark RISON | 37.10 | 80.22 | "The STA shall not initiate a transmission on the NPCA primary channel to another STA" -- you can't transmit to anything but another STA | Change "to another STA until that STA's NPCA" to "until the peer STA's NPCA" | Revised – TGbn editor to make changes marked with CID 3055 found in 11-25-0936r1. |
| 3056 | Mark RISON | 37.10 | 80.27 | "NPCA initial Control frame" -- no such frame | Delete "NPCA" | Revised – TGbn editor to make changes marked with CID 3056 found in 11-25-0936r1. |
| 3057 | Mark RISON | 37.10 | 80.28 | "non-HT PPDU or non-HT duplicate PPDU format" is normally just "non-HT (duplicate) PPDU format", no? | As it says in the comment |  |
| 3058 | Mark RISON | 37.10 | 80.33 | "the reference primary channel" -- this concept is not defined | As it says in the comment |  |
| 3135 | Jeongki Kim | 37.10 | 78.52 | Adavantage of NPCA is to increase more transmission opportunities when the primary channel is busy. It will reduce the transmission delay, especially for the low latency traffic. NPCA STA can switch to NPCA PCH based on the inter-BSS frame/PPDU. However, the situation of P2P transmission looks like inter-BSS transmission. During P2P transmission, AP/STA cannot communicate each other. To increase more NPCA opportunities, STA should be able to decide whether STA switches to NPCA primarcy channel during P2P PPDU reception. TGbn need to define a mechanism for NPCA STA to switch to NPCA primary channel based on the P2P transmssion. | Define a mechanism for NPCA STA to switch to NPCA primary channel based on the P2P transmssion. AP/non-AP STA can switch to NPCA primary channel when they receive Intra-BSS P2P PPDU. |  |
| 3136 | Jeongki Kim | 37.10 | 78.21 | During NPCA operation, AP and non-AP STA may have different view on the primary channel. For example, non-AP STA detects OBSS PPDU on PCH while AP does not detect OBSS PPDU. In that case, although NPCA non-AP switches to NPCA primary channel, AP will not switch to NPCA primary channel. Unnecessary switching operation may occur in non-AP STA. Non-AP STA should be able to enable or disable the NPCA operation by STA's decision. We need to define the detailed signaling of enabling/disabling the NPCA operation by non-AP STA. | Define the detailed signaling of enabling/disabling the NPCA operation by NPCA non-AP STA. |  |
| 3137 | Jeongki Kim | 37.10 | 78.45 | During NPCA operation, AP and non-AP STA may have different view on the primary channel. For example, AP detects OBSS PPDU on PCH while non-AP STA does not detect OBSS PPDU. In that case, although AP switches to NPCA primary channel, non-AP STA will not switch to NPCA primary channel. And, while AP remains on NPCA primary channel without communication, the legacy STA or non-NPCA STA may transmit a frame to AP on primary channel if channel is idle. AP should not switch to NPCA primary channel if AP know that NPCA non-AP STA will not switch to NPCA Primary channel. For example, AP should not switch to NPCA Primary channel when there is no non-AP STA that supports the NPCA mode in its BSS or when there is no non-AP STA that enables the NPCA mode in its BSS. | Change (add) the corresponding spec text to the following text: An NPCA AP shall not switch to the NPCA primary channel for NPCA operation if one of the following conditions was met. - if the value of its most recently transmitted NPCA Operation Information Present field is equal to 0 - if there is no NPCA non-AP STA in the BSS of the NPCA AP - If there is no NPCA non-AP STA that enables the NPCA mode. |  |
| 3138 | Jeongki Kim | 37.10 | 78.21 | In TGbn D0.1, we have DPS non-AP STA, DUO non-AP STA, and PUO non-AP STA. We can use NPCA non-AP STA instead of non-AP NPCA STA. | Change the non-AP NPCA STA to NPCA non-AP STA in the whole subclauses. |  |
| 3139 | Jeongki Kim | 37.10 | 78.55 | Need to clarify the NPCA STA's operation based on receiving Inter-BSS ELR PPDU | Define the procedure of NPCA STA that switches to NPCA primary channel after receiving inter-BSS ELR PPDU. | Revised – TGbn editor to make changes marked with CID 3139 found in 11-25-0936r1 which address the issue of the use of ELR frames during NPCA operation. |
| 3142 | Jeongki Kim | 37.10 | 78.53 | In "the STA received a PPDU and/or received a PHY-RXSTART.indication primitive for an HE/ EHT/UHR PPDU on the BSS primary channel", "and/or" implies "STA may not receive "a PHY-RXSTART.indication for HE/EHT/UHR PPDU". Does this mean STA can switch to NPCA primary channel on receiving other types PPDUs (HT/VHT PPDU)? Then, please define the detailed switching operation of NPCA STA for HT/VHT PPDU. | Describe the detailed NPCA switching operation of NPCA STA that receives Inter-BSS HT/VHT PPDU. | Reject – the cases are already accounted for. The commenter has misread the cited text. The line begins with “the STA received a PPDU” – this means that any PPDU format could have been received, including the HT/VHT formats mentioned by the commenter. Later conditions already include rules that account for this possibility. |
| 3188 | Yunbo Li | 37.10 | 79.01 | a STA may perform PPDU based NPCA or TXOP based NPCA, we need two separate NPCA Minimum Duration Thresholds to capature them. | as in comment. | Reject – there is no discernible technical need for two minimum duration thresholds. |
| 3189 | Yunbo Li | 37.10 | 79.36 | The channel occupied by a received CTS is not determined by the soliciting RTS frame when dynamic bandwidth negotiation is used. | clarify that the channel occupied by CTS will determined by the bandwidth signaling in CTS under dynamic bandwidth negotiation. |  |
| 3199 | Javier Perez | 37.10 | 78.15 | NPCA operation in dense AP deployments may cause multiple APs to contend for access to the NPCA primary channel (if OBSS interference is present in the PCH). Coordination between NPCA enabled APs may be necessary to improve their operations. | Include text describing multi-AP coordination for NPCA operation. The commenter will provide contribution. |  |

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| **CID** | **Commenter name** | **Subclause. page** | **Page.**  **line** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3262 | GEORGE CHERIAN | 37.10 | 0.00 | Define a signaling tor the AP to be able to indicate whether NPCA is turned on or not | As in the comment |  |
| 3263 | GEORGE CHERIAN | 37.10 | 0.00 | Resolve the TBDs in this section | As in the comment |  |
| 3264 | GEORGE CHERIAN | 37.10 | 0.00 | AP and client may see different OBSS conditions. Resolve this case of asymmetry | As in the comment |  |
| 3265 | GEORGE CHERIAN | 37.10 | 0.00 | How does NPCA handle the case of multiple co-located Multi-BSS case, where the transmission on the primary is another virtual AP of the collocated AP set | As in the comment |  |
| 3266 | GEORGE CHERIAN | 37.10 | 0.00 | Limit the number of NPCA channels to 1 | As in the comment |  |
| 3389 | Zhenpeng Shi | 37.10 | 78.52 | The related motion (motion 144) has a note saying other conditions TBD, but TBD conditions are not mentioned here. Other conditions have been discussed in many proposals, for example, pre-HE PPDU, OBSS SP, etc. | Add "3) TBD conditions" for an NPCA STA to switch to the NPCA primary channel for NPCA operation. | Revised – TGbn editor to make changes marked with CID 3389 found in 11-25-0936r1 which address the issue of some TBD language in the NPCA operation description. |
| 3390 | Zhenpeng Shi | 37.10 | 79.05 | It is not clear what does "it" mean in "whether it is indicated by the AP is TBD". It seems that "it" means whether TXOP\_DURATION should be considered or not, but it can also be interpreted as other meanings as a part of condition 1b, e.g.,"it" means that the duration of PPDU is greater than the NPCA Minimum Duration Threshold. | Clarify the meaning of "it" in "whether it is indicated by the AP is TBD". | Revised – TGbn editor to make changes marked with CID 3390 found in 11-25-0936r1. |
| 3407 | Gaurang Naik | 37.10 | 78.18 | "A non-AP NPCA STA shall set the NPCA Supported field of the UHR MAC Capabilities Information field of the UHR Capabilities element to 1." This statement should also apply to the AP. | As in comment. |  |
| 3408 | Gaurang Naik | 37.10 | 78.20 | Define a procedure for the NPCA AP to enable/disable the NPCA mode. When the AP transitions from the NPCA disabled to the NPCA enabled mode, the non-AP STA can start switching the NPCA primary channel to perform NPCA operations. Similarly, when the AP transitions from the NPCA disabled to the NPCA enabled mode, the non-AP STA must not switch to the NPCA primary channel. 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. |  |
| 3409 | Gaurang Naik | 37.10 | 78.30 | The AP must also provide the values of the NPCA primary channel and the NPCA minimum duration threshold. To keep it clean, suggest to say "shall include \*and indicate its NPCA parameters in\* the NPCA Operation Information field and remove references to specific parameters. | As in comment. | Revised – TGbn editor to make changes marked with CID 3409 found in 11-25-0936r1. |
| 3410 | Gaurang Naik | 37.10 | 78.37 | Address the TBD; identify the frame that will carry this information | As in comment. |  |
| 3411 | Gaurang Naik | 37.10 | 78.15 | Motion #11 specifies that "A BSS shall only have a single Non-Primary Channel Access (NPCA) primary channel". This hasn't been called out in the spec. Add this statement in the spec. | Add "A BSS shall only have a single Non-Primary Channel Access (NPCA) primary channel" in 37.10. | Reject – the NPCA Operation Information field format already contains a single field to specify NPCA primary channel, making it impossible to advertise more than one such channel, therefore, an explicit prohibition against multiple NPCA primary channels is unnecessary. |
| 3412 | Gaurang Naik | 37.10 | 78.44 | Rather than coupling the AP and STA behaviors to values of a field, better to say that the behavior relies on whether the AP has enabled the mode or not. | Say "A non-AP NPCA STA shall not switch to the NPCA primary channel for NPCA operation if \*associated AP has disabled the NPCA mode\*. An NPCA AP shall not switch to the NPCA primary channel for NPCA operation if \*it has disabled the NPCA mode\*. | Reject – if the behavior is dependent on the AP enabling the mode, then there must be text that specifies how the non-AP STA determines whether the AP has enabled the mode or not. That is what the existing text does. |
| 3413 | Gaurang Naik | 37.10 | 78.50 | Rather than coupling the STA's behavior to a value of a field, better to say that the behavior relies on whether the AP has enabled the mode or not. | Say "An NPCA STA may switch to the NPCA primary channel for NPCA operation if the \*AP\* corresponding to the BSS of which \*the STA\* is a member \*has enabled the NPCA mode\* and either condition 1) or 2) is met:" | Reject – if the behavior is dependent on the AP enabling the mode, then there must be text that specifies how the non-AP STA determines whether the AP has enabled the mode or not. That is what the existing text does. |
| 3414 | Gaurang Naik | 37.10 | 79.02 | Clarify that \*it\* is the \*NPCA STA\* | As in comment. | Revised – TGbn editor to make changes marked with CID 3414 found in 11-25-0936r1. |
| 3415 | Gaurang Naik | 37.10 | 79.24 | In the Control frame based switch, Duration of the TXOP is obtained from the duration field of the soliciting Control frame. TXOP\_DURATION in the initial Response frame points to the same duration. So, this statement seems unnecessary. | Delete the statement. | Revised – TGbn editor to make changes marked with CID 3415 found in 11-25-0936r1. |
| 3416 | Gaurang Naik | 37.10 | 79.36 | Clarify that in such cases (i.e., when CTS is received without receiving the eliciting RTS or MU-RTS Trigger frame) the NPCA STA doesn't switch to the NPCA primary channel. | As in comment. | Revised – TGbn editor to make changes marked with CID 3416 found in 11-25-0936r1. |
| 3417 | Gaurang Naik | 37.10 | 80.36 | Address this TBD. Clarify where in the Trigger frame this indication is carried. | As in comment. | Revised – TGbn editor to make changes marked with CID 3417 found in 11-25-0936r1. |

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| **CID** | **Cmtr name** | **Subc. page** | **Page.**  **line** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3421 | Qing Xia | 37.10 Non-primary channel access (NPCA) | 80.08 | Suggest to delete "M126" | same as comment | Accept |
| 3432 | Yue Zhao | 37.10. | 80.52 | Both TXOP-level NPCA and PPDU-level NPCA has a problem of frequent switching back and forth, which is not friendly to STAs with large switching delay and degrades NPCA gain. | Introduce non-primary channel access for longer period such as service period. |  |
| 3433 | Yue Zhao | 37.10. | 80.52 | Currently, NPCA rules allow switching even when there is an ongoing OBSS TXOP which is detected previously and covers NPCA primary channel. Such switching should be disallowed to avoid inteference to an existing traffic. | Having two NAV sets one of which is for primary channel and the other for NPCA primary channel will solve the problem. Then the definition of switching start time could be as it is and the channel access rule on NPCA primary channel is follows the same logic of that on primary channel. |  |
| 3434 | Yue Zhao | 37.10. | 80.52 | NPCA STA has no idea of whether to enable/disable NPCA | Introduce a mechanism to help non-AP measuring/predicting whether enabling NPCA provides benefits. The main factor would be hidden node, so AP should announce OBSS/NPCA event to let non-AP know the impact of hidden node on the non-Ap side. |  |
| 3564 | Leonardo Lanante | 37.10` | 77.43 | After switching to the NPCA PCH, a STA may receive a frame (e.g. RTS) in the NPCA PCH with a duration field that extends past the TXOP duration in the PCH. In this case, the STA should switch immediately back to the PCH or stay in the NPCA PCH. After returning to the PCH, does the STA consider the longer NAV in the NPCA PCH or just the TXOP duration. | Clarify the behavior mentioned in the comment. I believe the behavior should be that the STA can ignore the longer NPCA PCH NAV just like non-NPCA STAs currently in the PCH. |  |

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| **CID** | **Cmtr name** | **Sclse. page** | **Page.**  **line** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3592 | kaiying Lu | 37.10. | 78.15 | AP and associated non-AP STAs may have different views of busy/idle status on primary 20MHz channel. Mechanisms that mitigate the different view issue should be provided. | Commenter will propose mechanisms as in comment. |  |
| 3593 | kaiying Lu | 37.10. | 78.23 | In some scenarios, some BSS frequently uses the strategy to reserve long TXOP duration (e.g.TXOP limit) and then truncate the TXOP, or to extend the TXOP by frame exchanges. If NPCA operation is based on TXOP duration of the detected OBSS activity on the primary channel under those scenarios mentioned above, blindness issues on the primary channel due to NPCA operation will become worse. OBSS PPDU length based NPCA operation should be able to enabled by an NPCA AP. | Commenter will propose OBSS-PPDU length based NPCA parameters to solve the issue. | Revised – TGbn editor to make changes marked with CID 3593 found in 11-25-0936r1 which address the issue of the use of PPDU length information in determining when to use NPCA operation. |
| 3594 | kaiying Lu | 37.10. | 78.40 | Clarify whether it is for all associated non-APs or per non-APs that the mode of operation in which untriggered UL transmissions on the NPCA is not permitted | as in comment. | Revised – TGbn editor to make changes marked with CID 3594 found in 11-25-0936r1. |
| 3595 | kaiying Lu | 37.10. | 78.59 | An NPCA STA may switch to the NPCA primary channel when either condition 1) or 2 is met. However, under some scenarios, it is more beneficial to perform NPCA operation within the duration of the detected OBSS PPDU on the primary channel. Therefore, under either condition 1) or 2), in addition, an OBSS PPDU shall be received and the duration of the PPDU shall be greater than the value of NPCA Minimum Duration Threshold. An NPCA STA that swtiched to the NPCA primary channel shall switch back before the end of the detected OBSS PPDU. | Clarify the rules as in comment. |  |
| 3596 | kaiying Lu | 37.10. | 80.16 | The STA shall be allowed to use MU EDCA parameters mechanism when an NPCA AP enables a mode to disallow untriggered UL transmission on the NPCA primary channel for that STA. | Clarify the rules as in comment. | Revised – TGbn editor to make changes marked with CID 3596 found in 11-25-0936r1 which address the issue of the use of MU EDCA parameters during NPCA operation. |
| 3597 | kaiying Lu | 37.10 | 80.24 | Clarify what "that STA" refers to. If it refers to "another STA", clarify how a STA know whether the "another STA" is switching due to condition 1) or 2)? | as in comment. | Revised – TGbn editor to make changes marked with CID 3597 found in 11-25-0936r1. |

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| **CID** | **Commenter name** | **Sbclse. page** | **Page.**  **line** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3712 | Li-Hsiang Sun | 37.10 | 78.54 | " the STA received a PPDU and/or received a PHY-RXSTART.indication primitive for an HE/ EHT/UHR PPDU on the BSS primary channel ..." Should also cover future generation PPDU with a U-SIG | as in comment | Reject – authors of future amendments will revise this text if and when that revision is needed. |
| 3713 | Li-Hsiang Sun | 37.10 | 79.26 | "the 20/40/80/160 MHz channel occupied by the received PPDU(s), identified by the STA based on the channel allocations in the corresponding band and the PPDU bandwidth that is signaled in the received PPDU(s) or obtained from the RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT of the received PPDU(s), does not overlap with the NPCA primary channel" | should be the smaller of the 20/40/80/160 channel of PPDU bandwidth occupied by the PPDU carrying control frame and response frame |  |
| 3714 | Li-Hsiang Sun | 37.10 | 79.20 | If DUO, remaining TXOP duration for control frame and non-HT responding frame may be different | if the remaining TXOP duration after responding frame is different for control and initial response frame, use the smaller one to compare with NPCA Minimum Duration Threshold | Revised – TGbn editor to make changes marked with CID 3714 found in 11-25-0936r1. |
| 3715 | Li-Hsiang Sun | 37.10 | 79.53 | If STA x uses 2) on L54 to determine peer's switch start time but its peer uses 1) on L45 to initiate switch, STA x may send send frame while its peer in the middle of switching | suggest NPCA HE switch time and NPCA NHT switch time both correspond to the end of preamble of the PPDU after ICF/ICR |  |
| 3762 | Liuming Lu | 37.10 Non-primary channel access (NPCA) | 78.15 | Power consumption issue for STAs supporting NPCA needs to be considerred. A mechanism needs to be specified for the operation of the availability and unavailability of NPCA operation for STAs supporting NPCA | As in the comment. |  |
| 3763 | Liuming Lu | 37.10 Non-primary channel access (NPCA) | 78.15 | a mechanism to address the blindness issue for STAs that switch to its NPCA primary channel needs to be considered. | As in the comment. |  |

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| 3897 | Abhishek Patil | 37.10 | 78.43 | Clarify that if a 6 GHz AP, that has dot11UnsolicitedProbeResponseOptionActivated equal to true, happens to be on the N-primary at the time it was expected to transmit a broadcast Probe Response frame or a FILS Discovery frame, then it must not transmit the frame on the N-primary. | As in comment |  |

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| **CID** | **Commenter name** | **Subclause. page** | **Page.**  **line** | **Comment** | **Proposed change** | **Proposed resolution** |
| 3956 | kaiying Lu | 37.10 | 78.17 | The rules for switching back from NPCA primary channel to primary channel need to be clarified | As in comment. |  |
| 3959 | kaiying Lu | 37.10 | 78.17 | NAV set and reset rules on NPCA primary channel need to be clarified. | as in comments |  |
| 3962 | kaiying Lu | 37.10 | 78.17 | an NPCA AP may send a sync PPDU on the primary channel to help non-AP STAs for medium sync on the primary channel before switching to NPCA primary channel again. | Clarify the rules. |  |

# Text to be adopted begins here:

***TGbn editor: Please make the following changes to 802.11bn draft D0.1:***

**9.4.2.aa1 UHR Operation Element**

***TGbn editor: Modify Figure 9-aa3 – NPCA Operation Information field format, by adding a new field called “NPCA Disabled Subchannel Bitmap” to the figure with a width of 8 bits.* (#2372)**

***TGbn editor: Modify Figure 9-aa3 – NPCA Operation Information field format, by adding a new field called “Initial NPCA QSRC” to the figure with a width of 2 bits.* (#1060) (#1223)**

***TGbn editor: Modify Figure 9-aa3 – NPCA Operation Information field format, by adding a new field called “TXOP-based NPCA” to the figure with a width of 1 bit.* (#3593)**

***TGbn editor: Modify the text as shown:***

The NPCA Switch Back Delay field indicates the time needed by an NPCA STA to switch from the NPCA primary channel to the BSS primary channel in units of 4 μs.

The NPCA Disabled Subchannel Bitmap subfield is a 16-bit bitmap where the lowest numbered bit corresponds to the 20 MHz subchannel that lies within the BSS bandwidth and is the lowest in frequency of the set of all 20 MHz subchannels within the BSS bandwidth. Each successive bit in the bitmap corresponds to the next higher frequency 20 MHz subchannel. A bit in the bitmap and that lies within the BSS bandwidth is set to 1 to indicate that the corresponding 20 MHz subchannel is punctured and is set to 0 to indicate that the corresponding 20 MHz subchannel is not punctured. A bit in the bitmap that falls outside of the BSS bandwidth is reserved. **(#2372)**

The TXOP-based NPCA field indicates which conditions can be used to initiate an NPCA Operation. A value of 1 in this field indicates that both PPDU-based NPCA operation and TXOP-based NPCA operation are permitted in the BSS. A value of 0 in this field indicates that only PPDU-based NPCA operation is allowed in the BSS. **(#3593)**

***TGbn editor: Insert a new subclause into 802.11bn draft D0.1:***

**10.22.3.2.2 EDCA backoff procedure**

***Modify the text as follows:***

k) If explicitly indicated, such as in 37.10 (Non-primary channel access (NPCA)). **(#1060) (#1223)**

If the backoff procedure is invoked for reason k) above, CW[AC] and QSRC[AC] shall be set according to the descriptions found in 37.10 (Non-primary channel access (NPCA)). **(#1060) (#1223)**

* Non-primary channel access (NPCA)

A STA that supports NPCA operation is called an NPCA STA. An AP that supports NPCA operation is called an NPCA AP. A non-AP NPCA STA shall set the NPCA Supported field of the UHR MAC Capabilities Information field of the UHR Capabilities element to 1. A non-AP NPCA STA shall not **(#3037)** enable the NPCA mode unless **(#3037)** it is associated with an NPCA AP that has enabled NPCA operation. It is TBD how the non-AP STA enables NPCA mode. **(#2138)**

An NPCA AP that has an operating bandwidth less than 80 MHz shall not enable NPCA operation. An AP of a multiple BSSID set that **(#3038)** enables NPCA operation shall indicate the same NPCA primary channel as all of the other APs of the same multiple BSSID set that**(#3038)** have enabled NPCA operation.An AP of a co-hosted BSS that enables NPCA operation shall indicate the same NPCA primary channel as all of the other APs of the same co-hosted BSSs that have enabled NPCA operation. **(#1052) (#1210) (#2358)**

An NPCA AP that has enabled NPCA operation shall include the NPCA Operation Information field in its UHR Operation element of (Re)Association Response and Probe Response frames that it transmits: **(#1053) (#1510) (#2359) (#3039) (#3409)**

* and indicate its NPCA switching delay and NPCA switch back delay and Init\_QSRC\_NPCA respectively in the NPCA Switching Delay field, NPCA Switch Back Delay field and Initial NPCA QSRC field. **(#1060) (#1223)**
* and enable PPDU-based only NPCA operation by setting the TXOP-based NPCA field to 0 or enable both PPDU-based and TXOP-based NPCA operation by setting the TXOP-based NPCA field to 1. **(#3593)**

An NPCA AP may advertise an NPCA Disabled Subchannel Bitmap in the NPCA Operation Information field that indicates the subchannels that are punctured when an NPCA STA operates on the NPCA Primary channel: (#2372)

* The NPCA Disabled subchannel Bitmap shall satisfy the following requirements:
  + The puncturing pattern indicated by the NPCA Disabled Subchannel Bitmap is a valid non-OFDMA puncturing pattern as defined in 36.3.12.11.3 (Preamble puncturing for EHT MU PPDUs in a non-OFDMA transmission) (#2372)
  + A 20 MHz subchannel indicated as punctured in the Disabled Subchannel Bitmap of the EHT Operation element (if any) is also indicated as punctured in the NPCA Disabled Subchannel Bitmap. (#2372)

A non-AP NPCA (#3040)STA that supports NPCA operation shall indicate (#**1509**) (#**1722**) its NPCA switching delay and NPCA switch back delay respectively in the NPCA Switching Delay field and NPCA Switch Back Delay fields of the TBD frames.

**37.10.1 MU EDCA interaction with NPCA**

If an NPCA AP that has enabled NPCA operation advertises MU EDCA parameters in the Beacon frames that it transmits, the MU EDCA protocol (see 26.2.7 (EDCA operation using MU EDCA parameters)) shall apply jointly on both BSS primary channel and NPCA primary channel for a non-AP NPCA STA. An NPCA STA follows the MU EDCA procedure in 26.2.7 (EDCA operation using MU EDCA parameters). In addition, an NPCA STA shall: (#786) (#1055) (#1809) (#1820) (#2362) (#3596) (#1214) (#1511) (#1512) (#2361) (#2431) (#2432) (#3594)

* Maintain a single MU EDCA timer that is shared across the BSS primary channel and the NPCA primary channel, and
* Transition from using EDCA parameters to using MU EDCA parameters (and vice-versa) at the same time on both the BSS primary channel and the NPCA primary channel based on conditions described in 26.2.7 (EDCA operation using MU EDCA parameters) that occur on either the BSS primary channel or the NPCA primary channel, and (#786) (#1809) (#1820)
* Use the same MU EDCA parameters on the NPCA primary channel (dot11NPCAMUEDCATable) as are used on the BSS primary channel (dot11MUEDCATable) except that AIFSN[AC] shall be set to 0 for all ACs whenever the STA is operating on the NPCA primary channel, regardless of the parameter values in dot11NPCAMUEDCATable. (#786) (#1809) (#1820)

**37.10.2 NPCA mode starting conditions**

A non-AP NPCA STA shall not switch to the NPCA primary channel for NPCA operation if the value of the most recently received NPCA Operation Information Present field from its associated AP is equal to 0. An NPCA AP shall not switch to the NPCA primary channel for NPCA operation if the value of its most recently transmitted NPCA Operation Information Present field is equal to 0.

An NPCA STA may switch to the NPCA primary channel for NPCA operation if the value of the most recently received or transmitted NPCA Operation Information Present field corresponding to the BSS of which it is a member is equal to 1 and either the PPDU-based condition 1) or the TXOP-based condition 2) is met:

1. the STA received a PPDU and/or received a PHY-RXSTART.indication primitive for an HE/EHT/UHR PPDU on the BSS primary channel and all of the following conditions are true:
   1. The PPDU is classified by the STA as in inter-BSS PPDU following the procedure defined in 26.2.2 (Intra-BSS and inter-BSS PPDU classification).
   2. At least one of the following conditions is true:
      1. If the NPCA AP corresponding to the BSS of which the STA is a member has enabled PPDU-based NPCA only and the value of the MAC variable NPCA\_PPDU\_REM\_DUR of the received PPDU **(#1056) (#2146) (#3593)** is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to the BSS of which the STA is a member or  **(#1056) (#2146) (#1216) (#2363) (#2364) (#2433) (#2434) (#3043) (#3414)**
      2. If the NPCA AP corresponding to the BSS of which the STA is a member has enabled TXOP-based NPCA in addition to PPDU-based NPCA and the value of the MAC variable NPCA\_TXOP\_REM\_DUR of the received PPDU and/or the value of the MAC variable NPCA\_PPDU\_REM\_DUR of the received PPDU is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to the BSS of which the STA is a member **(#1057) (#1217) (#1825) (#1877) (#2146) (#3593) (#2433) (#2434) (#3414)**
   3. **(#1057) (#1217) (#2146) (#3390) (#3415)**the bandwidth of the PPDU is determined by the STA to be 20, 40, 80 or 160 MHz, **(#3045) (#3046)**based on the Bandwidth field in the PHY preamble of the PPDU and the channel allocations in the corresponding band indicated in the RXVECTOR parameter RU\_ALLOCATION of the PHY-RXSTART.indication associated with the PPDU **(#421)**, and the channel occupied by the PPDU does not overlap with the NPCA primary channel **(#1236)**
   4. the STA’s intra-BSS NAV is zero **(#2365)**
2. the STA received on the BSS primary channel all or part of a sequence of PPDUs separated by SIFS comprising of a first PPDU containing an initial Control frame of a control frame exchange, a second PPDU containing the initial response frame of the Control frame exchange, which might not be received by the STA, and a third PPDU following the control frame exchange and all of the following conditions apply: **(#1513) (#2649) (#2678) (#2679) (#3047) (#3048) (#3416)**
   1. An indication that a valid TXOP was obtained on the BSS primary channel, as verified by the receipt of A PHY-RXEARLYSIG.indication or PHYRXSTART.indication primitive corresponding to the third PPDU that occurs during a time window that has a duration that is equal to NAVTimeout if the first PPDU contained an (MU)RTS and equal to the DUR field value obtained from the first PPDU if the first PPDU did not contain an (MU)RTS and that begins when the MAC receives a PHY-RXEND.indication primitive corresponding to the detection of the first PPDU  **(#2146) (#2433) (#2649)**
   2. At least one of the received PPDUs in the sequence of PPDUs is classified by the STA as an inter-BSS PPDU following the procedure defined in 26.2.2 (Intra-BSS and inter-BSS PPDU classification) **(#1056) (#2146) (#3593) (#3049)**
   3. At least one of the following conditions is true:
      1. ither: NPCA STA is not operating on the NPCA pS PPDU following the procedure defined in 26.2.2 (Intra-BSS and inter-BSS PPDU cThe NPCA AP has enabled PPDU-based NPCA only and the value of the MAC variable NPCA\_PPDU\_REM\_DUR of the received third PPDU of the sequence of PPDUs is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to its BSS or **(#1056) (#2146) (#3593) (#3050)**
      2. If the NPCA AP has enabled TXOP-based NPCA in addition to PPDU-based NPCA and the value of the MAC variable NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR of the received first PPDU (containing the initial Control frame of the control frame exchange) of the sequence of PPDUs is greater than the value indicated in the most recently received or transmitted NPCA Minimum Duration Threshold field corresponding to its BSS **(#1056) (#2146) (#3593)**
   4. **(#1057) (#1217) (#1218) (#2146)**the largest bandwidth of the three PPDU(s) is determined by the STA to be less than or equal to one half of the BSS operating bandwith as determined based on the channel allocations in the corresponding band and the PPDU bandwidth that is signaled in the received PPDU(s) or obtained from the RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT of the received PPDU(s), and the channels occupied by the PPDU(s) do not overlap with the NPCA primary channel **(#3045) (#3046) (#3016)**
      1. if the Control frame is an RTS frame in a non-HT (duplicate) PPDU, then it includes a bandwidth signaling TA and the signaled PPDU bandwidth is 20 MHz, 40 MHz, 80 MHz, or 160 MHz
      2. identification of the channel occupied by a received CTS frame in a non-HT (duplicate) PPDU is determined by examining the RTS frame or the MU-RTS frame that elicited the CTS response
   5. the STA’s intra-BSS NAV is zero **(#833) (#2148)**

**(#1219) (#2365) (#3389) (#2148)**

When a PHY-CCA.indication(BUSY) corresponding to the start of the reception of a PPDU is indicated at an NPCA STA while operating on the BSS primary channel, the values of the MAC variables NPCA\_PPDU\_REM\_DUR, NPCA\_TXOP\_REM\_DUR and NPCA\_TIMER are all set to 0. When a PHY-CCA.indication(BUSY) corresponding to the start of the reception of a PPDU containing an initial Control frame is indicated at an NPCA STA while operating on the BSS primary channel, the value of the MAC variable NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR is set to 0. **(#1057) (#1217) (#1218) (#2147)**

The MAC variable NPCA\_PPDU\_REM\_DUR of a received PPDU is equal to the value in usec, of the remaining duration of the received PPDU, determined by the MAC at the time of the receipt of the PHY-RXSTART.indication associated with the received PPDU, by subtracting the time elapsed between the reception of the PHY-CCA.indication(BUSY) and PHY-RXSTART.indication primitives associated with the received PPDU from the value of RXTIME of the received PPDU. **(#1056)**

The MAC variable NPCA\_TXOP\_REM\_DUR of a received PPDU is equal to:

* 0, if the TXOP\_DURATION parameter is UNSPECIFIED, otherwise, it is equal to:
* the value in usec, of the remaining duration of the PPDU, determined by the MAC at the time of the receipt of the PHY-RXSTART.indication associated with the received PPDU, by subtracting the time elapsed between the reception of the PHY-CCA.indication(BUSY) and PHY-RXSTART.indication primitives associated with the received PPDU from the value of RXTIME of the received PPDU, **(#1057) (#1217) (#2145)** plus the value of the TXOP\_DURATION parameter of the RXVECTOR of the PPDU. **(#1057) (#1217) (#2366) (#2433)**

The MAC variable NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR of a received PPDU is equal to the value in the Duration/ID field of the Control frame in the received PPDU. The value of NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR is reduced by the amount of time elapsed between the PHY-RXEND.indication of the Control frame from which the value of NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR was determined and the PHY-RXSTART.indication of the third PPDU of the frame exchange sequence identified in condition 2) above at the time of the receipt of the PHY-RXSTART.indication of the third PPDU. **(#1057) (#1217) (#1218) (#2147) (#2433)**

**37.10.3 NPCA transmission rules**

When an NPCA STA switches to the NPCA primary channel for NPCA operation, then the following rules apply:

1. If the STA switches from the BSS primary channel to the NPCA primary channel based on meeting **(#3593) (#2149) (#2368) (#2680) (#3051)**condition 1) above, the STA shall initiate the switch at the NPCA HE switch time and it shall be ready to transmit and receive frames (subject to its capabilities and operating mode) on the NPCA primary channel no later than the value of its most recently indicated NPCA switching delay after the NPCA HE switch time. The NPCA HE switch time is equal to:the point in time immediately after the reception of the HE-SIG-A/U-SIG field of the received PPDU from condition 1) above. **(#3593) (#453) (#1220) (#1554) (#1058) (#1890) (#2369)**
2. If the STA switches from the BSS primary channel to the NPCA primary channel based on meeting condition 2) above, the STA shall initiate the switch at the NPCA NHT switch time and it shall be ready to transmit and receive frames addressed to it (subject to its capabilities and operating mode) on the NPCA primary channel no later than the value of its most recently indicated NPCA switching delay after the NPCA NHT switch time. The NPCA NHT switch time is equal to:the point in time that is 3 OFDM Symbols after the reception of the L-SIG of the third inter-BSS PPDU of the received sequence of PPDUs from condition 2) above **(#3593) (#454) (#1221) (#1741) (#1059) (#1891) (#2369)**
3. The STA shall use the same EDCA parameter set and EPCS EDCA parameter set values for operation on the NPCA primary channel as it uses on the BSS primary channel. See above for MU EDCA parameters. (#**786**)
4. At each NPCA HE switch time or NPCA NHT switch time, as appropriate, if the STA is an AP or if the STA is a non-AP STA and its use of untriggered UL transmissions is not disabled by the MU EDCA protocol , the STA may initiate a TXOP on the NPCA primary channel by following the rules defined in 10.23.2.2 (EDCA backoff procedure) and 10.23.2.4 (Obtaining an EDCA TXOP) with the following exceptions: (#**786**) **(#1514) (#1808) (#2401) (#3053)**
   1. **(#3054)**Each time that the STA switches to the NPCA Primary channel, the STA shall **(#1060) (#1223) (#1222)**
      1. If condition 1) from 37.10.2 (NPCA mode starting conditions) is met, then set NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR to 0.
      2. Set NPCA\_TIMER to the largest non-zero value of the variables NPCA\_PPDU\_REM\_DUR, NPCA\_TXOP\_REM\_DUR and NPCA\_TXOP\_CONTROL\_FRAME\_REM\_DUR, minus the largest of the switch back delays of the STA and its peers. **(#1060) (#1223) (#1057) (#1217) (#1218) (#2147) (#3714)**
      3. store the existing values of the variables QSRC[AC], CW[AC] and the backoff counter for each EDCAF **(#1060) (#1223)**
      4. set QSRC[AC] to Init\_QSRC\_NPCA that is advertised by the NPCA AP in the Initial NPCA QSRC field in the NPCA parameters that the NPCA AP transmits. Init\_QSRC\_NPCA is the same for all ACs and its default value is equal to 0 and set CW[AC] to CWmin[AC] **(#1060) (#1223)** (#**786**) (#**2370**) **(#3054)**
      5. initialize variables CW[AC] to 2^Init\_QSRC\_NPCA × (CWmin[AC] + 1) – 1 **(#1060) (#1223)** (#**786**) (#**1808**) **(#3054)**
      6. invoke the backoff procedure even if the medium for the NPCA primary channel is not busy. **(#1060) (#1223)** (#**786**) (#**1808**)
      7. initiate countdown of the MAC variable NPCA\_TIMER in units of 1 usec (#**786**)

(#**786**)

1. A first STA shall not initiate a transmission on the NPCA primary channel to a second (#**3055**)STA until that the second STA's NPCA switching delay time has elapsed since the NPCA HE switch time at the first STA if the first STA is switching due to condition 1) above or since the NPCA NHT switch time at the first STA if the first STA is switching due to condition 2) above (#**3597**)
2. The STA shall begin all frame exchanges on the NPCA primary channel with an (#**3056**)initial Control frame (ICF) using non-HT PPDU or non-HT duplicate PPDU format using a rate of 6 Mb/s, 12 Mb/s, or 24 Mb/s.
   1. For TXOPs initiated by an AP, the initial Control frame (ICF) shall be a BSRP Trigger frame or an MU-RTS except when at least one of the target non-AP STA(s) is operating in the DUO mode, in which case, the ICF may be a BSRP Trigger frame or a BSRP NTB Trigger frame. In addition: **(#1063) (#1225) (#1515) (#2371)**
      1. The ICF shall conform to the rules found in 37.11.2 (Dynamic Unavailability Operation (DUO) mode) if at least one of the target non-AP STA(s) is operating in the DUO mode. **(#1063) (#2371)**
      2. The ICF shall conform to the rules found in 37.13 (Enhanced multi-link single-radio (EMLSR) operation for a UHR non-AP MLD) if at least one of the target non-AP STA(s) is contained in a non-AP MLD that is operating in the EMLSR mode. **(#1063) (#2371)**
      3. The ICF shall conform to the rules found in 37.9.1 (Dynamic power save (DPS) operation) if at least one of the target non-AP STA(s) is operating in the DPS mode. **(#1063) (#2371)**
   2. For TXOPs initiated by a non-AP STA, the initial Control frame may be a BSRP NTB Trigger frame. In addition: **(#1063) (#2371)**
      1. The ICF shall conform to the rules for ICF found in 37.11.2 (Dynamic Unavailability Operation (DUO) mode) if the non-AP STA is operating in the DUO mode. **(#1063) (#2371)**
      2. The ICF shall conform to the rules found in 37.9.1 (Dynamic power save (DPS) operation) if the AP is a Mobile AP and is operating in the DPS mode. **(#1063) (#2371)**
3. An NPCA AP that transmits a Trigger frame on the NPCA primary channel shall indicate RU index values that use the NPCA primary channel as the reference primary channel. **(#790)** **(#3417)**
4. An NPCA STA that transmits a Trigger frame on the NPCA primary channel shall set the NPCA Primary Indication field to 1 in the Special User info field. **(#790)** **(#3417)**
5. The 20 MHz channels occupied by PPDUs transmitted by the STA shall meet all of the following conditions:
   1. include at least the NPCA primary channel
   2. all be within the BSS bandwidth
   3. not include any of the channels occupied by either the PPDU of condition 1) of 37.10.2 (NPCA mode starting conditions) or by the third PPDU of condition 2) of 37.10.2 (NPCA mode starting conditions) , whichever caused the STA to switch from the BSS primary channel to the NPCA primary channel
   4. not include channels that are indicated as punctured in the Disabled Subchannel Bitmap field in the EHT Operation element or in the NPCA Disabled Subchannel Bitmap field in the UHR Operation element with the following rules: **(#2372)**
      1. (#**1227**)if the associated NPCA AP advertises an NPCA Disabled Subchannel Bitmap, the STA shall follow the same rules as 35.15.2 (Preamble puncturing operation) except that instead of Disabled Subchannel Bitmap it shall use the most recently exchanged NPCA Disabled Subchannel Bitmap. (#2372)
      2. If the AP does not advertise an NPCA Disabled Subchannel Bitmap, a UHR NPCA STA shall follow the rules defined in 35.15.2 (Preamble puncturing operation). (#2372)
6. UHR ELR PPDUs, HE ER SU PPDUs, EHT MCS14/15 shall not be transmitted on the NPCA primary channel (#**3139**)
7. Dynamic Subband Operation (see 37.19 (Dynamic Subband Operation)) shall not be used on the NPCA primary channel. (#**3139**)
8. If TBTT for the BSS occurs while an NPCA AP is operating on the NPCA primary channel, the scheduling of the transmission of the Beacon frame and following groupcast frames shall be deferred until immediately after the AP switches back to the BSS primary channel (#**171**) (#**1855**) (#**836**) (#**837**)
   1. NOTE – the AP is not required to switch back to the BSS primary channel at TBTT (#**171**)

**37.10.3 NPCA mode exit**

1. When the STA switches back to the BSS primary channel, it shall: **(#1060) (#1223) (#1061) (#1224)** (#**1808**)
   1. replace the current values of the variables QSRC[AC], CW[AC] and the backoff counter for each EDCAF with the values that it stored when it switched to the NPCA primary channel **(#1060) (#1223) (#1061)** (#**1808**)
   2. resume the backoff procedure **(#1060) (#1223) (#1061)** (#**1808**)

NOTE – exponential backoff applies on the NPCA primary channel when there are failed transmissions. **(#1060) (#1223)**

# Text to be adopted ends here.

**References:**

1. xxxx