IEEE P802.11  
Wireless LANs

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| CC36-CR for 35.3.15.7 | | | | |
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Abstract

This document proposes resolution to the following CC36 CIDs in 35.2.1.3 (changes relative to draft 1.1):

4235, 4837, 5266, 4836, 8208, 4754, 5450, 6319, 6775, 4414, 6774, 4415, 5104, 5105, 5168, 5169, 8250, 7781, 4416, 4236, 4727, 4417, 7574, 8350, 4728, 7779, 8210, 6321, 5106, 8351, 7783, 7780

Rev0: initial version

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| **CID** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 4235 | 280 | 6 | 35.3.14.7.1 | All non-AP STAs support to obtain a TXOP. Replace " that supports to obtain" with "intends to obtain". Also simply say "shall transmit an RTS frame as the initial frame of the TXOP" | As in comment. | **Revised.**  Agreed in principle. Modified the corresponding text changes.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 4837 | 279 | 22 | 35.3.14.7.1 | With the current rules the following sequence of events is possible: 1. STA starts a medium sync timer on link 1 following end of a tx event on link 2. 2. while timer is running it transmits an RTS but does not obtain txop. Also, assume the STA is allowed to txmit only 1 RTS while the timer is running, 3. STA on link 2 starts a transmission event while the timer is running, 4. At the end of the transmission event, STA on link 1 starts a new timer and is allowed again to txmit another RTS even the old timer duration has still not been exceeded. This obviously creates a unfairness problem | Add a rule that if an old medium sync delay timer has not expired when the new timer starts, the existing counter of # of RTS transmission attempts is retained. | **Revised.**  Agreed in principle. Modified the corresponding text changes to clarify when the timer starts and when it is continued.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 5266 | 279 | 39 | 35.3.14.7.1 | Current NSTR recovery procedure does not a case which can happen within TXOP. For example, for multiple frame transmisssion of a STA during the TXOP, another STA can experience the same thing during BA reception from the AP within TXOP. Please consider the case. | As in the comment, we need to the case, e.g., applying to the same rule related to EDCA as the subcluase and how to handle when BC = 0 during the interval | **Reject**  The current rules are independent of whether the STA loses medium sync due to one frame transmission in a TXOP or more. |
| 4836 | 279 | 41 | 35.3.14.7.1 | An NSTR soft-AP has similar medium sync access recovery issue as a NSTR non-AP STA. 11be should define a mechanism to protect any on-going transmission due to operation of such an AP. | Extend the medium access rules defined for NSTR link pairs affiliated to non-AP MLD to also for the case of NSTR soft-AP MLD. | **Revised.**  Agreed in principle. Added text to clarify the NSTR soft AP shall also follow the same rules.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 8208 | 279 | 42 | 35.3.14.7.1 | the description of "UL interference" is not very clear. From which STA to which STA? how about other transmission that is not UL? | rewrite this sentence to make it more clear | **Revised.**  Agreed in principle. Removed the text and referred directly to the definition of NSTR link pair.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 4754 | 279 | 44 | 35.3.14.7.1 | Unless there are more conditions added, there is no need to start a new line to state one condition. Consider using one pararaph and continued line. | If no more condition is added, change "except under the following condition: (new line) -- Both STAs ended a transmission at the same time." to "except when both STAs end a transmission at the same time." | **Revised.**  Agreed in principle. Removed the bullet.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 5450 | 279 | 49 | 35.3.14.7.1 | Define what is transmission event | as in comment | **Revised.**  Agreed in principle. Removed the word “event”.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 6319 | 279 | 57 | 35.3.14.7.1 | The initialized value is not correct given there is immediate response. Please change it to "aPPDUMaxTime + SIFS + Block Ack transmission time" | as in the comment | **Reject**  aPPDUMaxTime is already a large value compared to SIFS+BA transmission time. As such the added value for protection is minimal. |
| 6775 | 279 | 57 | 35.3.14.7.1 | Please change STA to non-AP STA | as in comment | **Revised.**  Changed to non-AP STA.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 4414 | 279 | 58 | 35.3.14.7.1 | Erroneous reference to the field in the MLE for setting the MediumSyncDelay timer in the following sentence " The STA shall update its MediumSyncDelay timer with the one contained in the Medium Synchronization field, if present, of the Basic variant Multi-Link element in the most recent frame received from its associated AP MLD." | Revise the sentence as follows:"The STA shall update its MediumSyncDelay timer with the \*value\* contained in the \*Medium Synchronization Duration subfield included in the Medium Synchronization Delay Information field\*, if present, of the Basic variant Multi-Link element in the most recent frame received from its associated AP MLD" | **Revised.**  Made corresponding text changes.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 6774 | 279 | 58 | 35.3.14.7.1 | Please change Medium Synchronization field by Medium Synchronization Duration subfield of the Medium Synchronization Delay Information subfield | as in comment | **Revised.**  Made corresponding text changes.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 4415 | 279 | 59 | 35.3.14.7 | Need to specify how the STA affiliated with non-AP MLD that has lost medium synchronization knows that the Medium Synchronization field is present in the MLE | Rephrase the sentence with the following: "The STA shall update its MediumSyncDelay timer with the one contained in the Medium Synchronization field, if \*Medium Synchronization Delay Information Present subfield equals to 1\*, of the Basic variant Multi-Link element in the most recent frame received from its associated AP MLD" | **Reject.**  The revised sentence does not repeat Clause 9 information that describes the signaling details for that field. |
| 5104 | 279 | 59 | 35.3.14.7.1 | It is required to align the field name with the subclause 9.4.2.295b.2 | Align the field name. | **Revised.**  Made corresponding text changes.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 5105 | 279 | 62 | 35.3.14.7.1 | Multiple STAs can have a nonzero MediumSyncDelay timer. For example, when an AP can solicit TB PPDUs from multiple MLDs operating on NSTR link pair, the solicited STAs sets its MediumSyncDelay timer.  In this case, if one of the multiple STAs transmits an RTS frame as the first frame, all other STAs can reset its timer based on the RTS frame, even though there is no response to the RTS frame. | The timer should not be reset when the received frame is an RTS frame. | **Revised.**  Agree in principle. Added the exception.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 5168 | 279 | 63 | 35.3.14.7.1 | STA is allowed to reset mediumSyncDelay if "The STA receives a PPDU with a valid MPDU".  It's not clear from text if (1) this PPDU belong to same BSS. (2) If PPDU is received on secondary band which exlude the primary channel of said STA | Please add clarity to description | **Revised.**  Agree in principle. Clarified that it is for PPDUs received on the a channel that includes the primary channel.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 5169 | 279 | 63 | 35.3.14.7.1 | STA is allowed to reset mediumSyncDelay if "The STA receives a PPDU with a valid MPDU".  Can STA reset mediumSyncDelay timer on reception of valid beacon | Please add clarity to description | **Reject.**  Unless explicitly stated the text allows all frames including Beacons.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 8250 | 280 | 4 | 35.3.14.7.1 | Missing article. Change "A non-AP STA affiliated with non-AP MLD", to "A non-AP STA affiliated with a non-AP MLD" | As in comment | **Revised**  Made corresponding text change.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 7781 | 280 | 5 | 35.3.14.7.1 | The current requirements of STA during nonzero MSD timer only limit to the case that a STA attempts to obtain a TxOP. But what about the case that a STA tries to send mangement frame? Will those three requirements be applied for mgmt frame? | Please clarfiy it, and recommends the transmission of mgmt frame also uses the adjusted ED threshold.  The recommanded change is to make the rule of using adjusted ED threshold as a common rule during the nonzero MSD timer. For example, "A non-AP STA affiliated with non-AP MLD that has a nonzero MediumSyncDelay timer shall use CCA\_ED threshold that is equal to dot11MSDOFDMEDthresholdthat, and if the STA supports to obtain a TXOP during a nonzero MSD timer:  -- Shall transmit an RTS frame as the first frame of any attempt to obtain a TXOP.  -- Shall not attempt to initiate more than MSD\_TXOP\_MAX TXOPs." | **Revised**  Made corresponding text change.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 4416 | 280 | 9 | 35.3.14.7.1 | The RTS shall be transmitted when the non-AP STA has won the TXOP rather than during the attempt to obtain a TXOP (i.e. backoff procedure) | Please correct the sentence as follows: " Shall initiate for transmission an RTS frame as the first frame once it has obtained the TXOP" | **Revised**  Made corresponding text change.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 4236 | 280 | 9 | 35.3.14.7.1 | this can't be forever. Add until the MediumSyncDelay reaches 0". Same for third bullet. | As in comment. | **Reject.**  The main sentence already clarifies that this condition lasts while the timer is non-zero. The timer resets to zero whenever it receives a frame that’s not RTS. |
| 4727 | 280 | 6 | 35.3.14.7 | Please rephrase the sentence by replacing the word "supports" with "contends:"  "A non-AP STA affiliated with non-AP MLD that has a nonzero MediumSyncDelay timer that supports to obtain a TXOP:" with  "A non-AP STA affiliated with non-AP MLD that has a nonzero MediumSyncDelay timer that contends to obtain a TXOP:" | As in comment | **Revised**  Agree in principle. Revised the word to “intends”.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 4417 | 280 | 9 | 35.3.14.7.1 | It is not clear why there is more than a single attempt to obtain the TXOP: If the medium is not idle during the backoff procedure - the backoff procedure is stopped and is re-inititated when the medium is back to idle (i.e therfore - it is the same attempt to obtain a TXOP). If the medium is idle once the backoff procedure has been complted - the TXOP has already been obtained.... | Please clarify the sentence or remove it (and in that case, Medium Synchronization Maximum Number Of TXOPs subfield is redundant). | **Revised**  Modified the text to clarify the meaning of “attempts to initiate”.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 7574 | 280 | 10 | 35.3.14.7.1 | dot11MSDOFDMEDthreshold is not defined in Annex C. | Define dot11MSDOFMEDthreshold in C.3. | **Revised**  Added entry in Annex C.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 8350 | 280 | 21 | 35.3.14.7.1 | It's better to have a dot11 parameter to store MSD\_TXOP\_MAX . | Please clarify it | **Revised**  Added entry in Annex C.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 4728 | 280 | 21 | 35.3.14.7 | Do we need to define a set of default values for MSD\_TXOP\_MAX and dot11MSDOFDMEDthreshold in case a STA does not receive the Basic variant ML element recently (e.g., after wake up from PS) with the following text?  A non-AP STA shall initialize dot11MSDOFDMEDthreshold to -72 dBm and MSD\_TXOP\_MAX to 1, respectively. The non-AP STA affiliated with the non-AP MLD shall set MSD\_TXOP\_MAX and dot11MSDOFDMEDthreshold to the most recent values in the Medium Synchronization Maximum Number Of TXOPs and Medium Synchronization OFDM ED Threshold subfields, respectively, if they are present in a Basic variant Multi-Link element received from its associated AP MLD. | As in comment | **Reject.**  The text already provides the default values. |
| 7779 | 280 | 21 | 35.3.14.7.1 | During the MediumSyncDelay timer, the ED threshold ([-72,-62]) could be lower than the Spatial Reuse OBSS PD level, which may cause unexpected cases for the OBSS PD SR which may may happen during the MSD timer. For example, in 11ax 27.3.20.6.4, some CCA threshold is set to be max(-72，OBSS\_PD leve). | The most simplest change is to disallow OBSS PD SR if MSD timer is not equal 0. | **Revised.**  Agree in principle. Clarified that OBSS PD SR is not used when the timer is non-zero.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 8210 | 280 | 21 | 35.3.14.7.1 | Move the sentence "A non-AP STA shall initialize dot11MSDOFDMEDthreshold to -72 dBm and MSD\_TXOP\_MAX to 1, respectively" to the end of this paragraph, and add "Otherwise" at the beginning of this sentence. | as in comment | **Reject**  The text in the current paragraph follows the natural sequence of operation: a variable is initialized with default values which is overrided by a value received over the air. |
| 6321 | 280 | 26 | 35.3.14.7.1 | It should be "its associated AP" | as in the comment | **Revised.**  Made corresponding text change.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 5106 | 280 | 28 | 35.3.14.7.1 | The inter-BSS NAV should be changed to the basic NAV according to 11ax spec. | Change the inter-BSS NAV to the basic NAV. | **Revised.**  Made corresponding text change.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 8351 | 280 | 35 | 35.3.14.7.1 | This paragraph describes how to do CCA detection in primary channel, but that how to do CCA detection in secondary channel is unspecified. In this case , the CCA detecion in secondary channel obeys the rules defined in 10.23.2.5 or other rules? | Please clarify it | **Reject**  The condition is triggered only for the primary channel. Otherwise baseline rules will take over. |
| 7783 | 280 | 37 | 35.3.14.7.1 | The current description about the EIFS usage during the MSD timer is "... and no start of a PPDU is detected". What's is the exact definition of the "start of a PPDU"? In baseline spec, there is already rule about how to use EIFS in 10.3.2.3.7, "A DCF shall use EIFS before transmission, when it determines that the medium is idle immediately following  reception of a frame for which the PHY-RXEND.indication primitive contained an error or a frame  for which the FCS value was not correct" | Use the same description in 10.3.2.3.7 about when to use EIFS, or give an exact definition of "start of a PPDU", or change the sentence to be "... and no valid NAV inforamtion can be got from the PPDU" | **Revised.**  Clarified definition of “start of PPDU”.  **TGbe editor:** make the changes identified below in https://mentor.ieee.org/802.11/dcn/21/11-21-1339-00-00be-CR-CC36-cids-in-35.3.15.7.docx. |
| 7780 | 280 | 37 | 35.3.14.7.1 | The current method to reset MSD timer implicitly means a valid Duration shall be got to update NAV. But what about a PS-Poll is received, which is also a valid MPDU but withou Duration information. Will the MSD timer be reset for a PS-Poll? | Please clarfiy it, and recommends not to reest MSD timer for reception of a PS-Poll | **Reject.**  The Duration field does not really matter when the packet is correctly decoded. |

***TGbe editor: Modify the text in 35.3.15.7.1 of 11be draft 1.1 as follows:***

35.3.15.7 Medium access recovery procedure

35.3.15.7.1 General

A STA affiliated with an MLD (#4836) that belongs to a NSTR link pair is considered to have lost medium  
synchronization (see definition in 3.2 (#8208)) when the other STA, which is affiliated with the same MLD and  
belongs to that link pair, transmits a PPDU, except when both STAs ended a transmission at the same time (#4754).

A STA that has lost medium synchronization due to transmission by another STA affiliated with the same  
MLD shall start a MediumSyncDelay timer at the end of that transmission if that transmission (#5450) is  
longer than aMediumSyncThreshold unless its previous MediumSyncDelay timer has not expired(#4837). The STA may not start the MediumSyncDelay timer if the  
transmission event is shorter than or equal to aMediumSyncThreshold.

The MediumSyncDelay timer is a single timer, shared by all EDCAFs within a STA (#4836), which is  
initialized to aPPDUMaxTime defined in Table 36-69 (EHT PHY characteristics). A non-AP STA (#6775) shall update its  
MediumSyncDelay timer with the value contained in the Medium Synchronization Information field, if present, of the  
Basic variant Multi-Link element in the most recent frame received from its associated AP (#4414, 6774, 5104, 6321). In  
addition, the timer resets to zero when any of the following events occur:  
— The STA receives a PPDU with a valid MPDU on a channel that includes its primary channel (#5168) and that does not contain an RTS frame (#5105).  
— The STA receives a PPDU whose corresponding RXVECTOR parameter TXOP\_DURATION is not  
UNSPECIFIED.

If a STA has lost medium synchronization due to transmission by another STA affiliated with the same  
MLD and its previous MediumSyncDelay timer has not expired, then at the end of that transmission it shall continue the previous MediumSyncDelay timer by updating the timer value as described above (#4837).

A non-AP STA affiliated with a non-AP MLD (#8250) or a STA affiliated with an NSTR soft AP MLD (#4836) that has a nonzero MediumSyncDelay timer shall use CCA\_ED threshold that is equal to dot11MSDOFDMEDthreshold and if it (#7781) intends (#4727) to  
obtain a TXOP:  
— Shall transmit an RTS frame as the initial frame of an obtained TXOP(#4325, 4416).  
— Shall not attempt to initiate more than MSD\_TXOP\_MAX TXOPs by transmitting an RTS frame since the start of the timer (#4417).  
—.

A non-AP STA affiliated with a non-AP MLD (#8250) or a STA affiliated with an NSTR soft AP MLD (#4836) that has a nonzero MediumSyncDelay timer shall not transmit any PPDU using OBSS PD-based spatial reuse operation (#7779).

An AP affiliated with an AP MLD may include the Medium Synchronization Delay Information field in a  
Basic variant Multi-Link element carried in an Association Response, Beacon, or Probe Response frame. An  
AP affiliated with an AP MLD shall not include the Medium Synchronization Delay Information field in a  
Basic variant Multi-Link element carried in an Authentication frame. A STA affiliated with a non-AP MLD  
shall not include the Medium Synchronization Delay Information field in any Basic variant Multi-Link  
element it transmits.

A STA shall initialize dot11MSDOFDMEDthreshold to –72 dBm and MSD\_TXOP\_MAX to 1,  
respectively. A non-AP STA affiliated with a non-AP MLD shall set MSD\_TXOP\_MAX and  
dot11MSDOFDMEDthreshold to the most recent values in the Medium Synchronization Maximum Number  
Of TXOPs and Medium Synchronization OFDM ED Threshold subfields, respectively, if they are present in  
a Basic variant Multi-Link element received from its associated AP (#6321).

NOTE—If either the intra-BSS NAV or the Basic (#5106) NAV is nonzero in the non-AP STA affiliated with the non-AP  
MLD when it starts the MediumSyncDelay timer, the non-AP STA does not initiate any TXOP and follow the same  
rules as an HE STA to respond to any RTS or MU-RTS frame until both NAVs expire.

During the aCCAtime (see 36.3.20.6.3 (CCA sensitivity for occupying the primary 20 MHz channel))  
immediately following the end of the transmission event that caused loss of medium synchronization and  
subsequent initiation of the MediumSyncDelay timer at the non-AP STA, if the received signal strength  
exceeds the CCA-ED threshold as given by dot11OFDMEDThreshold for the primary 20 MHz channel and the MAC has not received a PHY-RXSTART.indication primitive (#7783) , the non-AP STA should defer for EIFS beginning when the received signal  
strength falls below the CCA-ED threshold.

***TGbe editor: Add the following entry to*** ***Dot11PhyEHTEntry in C.3 P646 of 11be draft 1.1 as follows:***

dot11MSDOFDMEDthreshold Unsigned32 (#7574, 8350),

***TGbe editor: Add the following entry to*** ***Dot11PhyEHTEntry in C.3 P652L27 of 11be draft 1.1 as follows:***

dot11MSDOFDMEDthreshold OBJECT-TYPE  
SYNTAX Unsigned32 (0..255)  
MAX-ACCESS read-write  
STATUS current  
DESCRIPTION  
"This is a control variable.  
It is written the SME when the device is initialized for operation in a  
band defined by an Operating Class, or by the MAC of a non-AP  
EHT STA upon receiving a Basic variant Multi-Link element containing a Medium Synchronization OFDM ED Threshold from the EHT AP with which it  
is associated.  
.  
Changes take effect as soon as practical in the implementation.  
This attribute indicates the Energy Detect Threshold being used by the OFDM PHY when the MediumSyncDelay timer of the MAC has non-zero value  
::= { dot11PhyEHTEntry ANA } (#7574, 8350),