IEEE P802.11
Wireless LANs

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| 802.11 TGac WG Letter Ballot LB187Proposed resolutions to comments on Clause 10.38.4 |
| Date: 2012-05-14 |
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Abstract

This submission contains proposed comment resolutions to comments received during WG letter ballot 187.

The comments assigned to the author in Clause 10.38.4 are: 4465 and 4677

# Comments

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| --- | --- | --- | --- | --- | --- | --- |
| 4465 | Brain Hart | 10.38.4 | 143.34 | "may discard without setting NAV ... does not include the primary channel" Need to define where this discarding happens. Since the PHY-SAP does not allow for off-channel packets being sent to the MAC, therefore I assume the discarding happens at the PHY layer. Then this should be turned into a note | Convert to a note: "Note: the PHY may discard PPDUs that do not overlap the primary 20, and so the MAC does not update its NAV ... " | **Revised.**Make changes as shown in 11-12/0413r4 |

**Discussion:**

The 802.11ac D2.0 text states:

 “A STA may discard without setting its NAV a 20/40/80 MHz PPDU received on any channel that is not or does not include the primary channel.”

The cited statement covers frames that lie completely within the operating sub-band of the PHY, so they are not “off-channel” but, for example, not on the primary channel. E.g. a 20 MHz reception that lies at say, the 2nd 20 MHz sub band within an 80 MHz operating sub-band.

It might be useful to get some indication of the arrival of such frames at the MAC, for the purpose of, for example, determining the relative level of occupancy of a secondary channel to assist in making a decision to change channels or reduce operating bandwidth.

Note that the existing language also leaves as a possible, optional mode of behaviour, the choice for the MAC to actually use DUR field information received from such a frame. Not certain if that is a good idea, but it is there and the suggested change would eliminate that choice and that has to be considered before eliminating it.

Now we have the situation that the PHY can receive an on-primary packet where NAV has to be set, and an off-primary packet where NAV does not have to be set, and the PHY has no way to tell the MAC which is which – so the MAC can’t do its job. That’s broken.

Two choices: a) PHY doesn’t send up off-primary packets; b) we add a new RXVECTOR parameter indicating on/off-primary-ness, and use this to refine when NAV is set/not set.

Based on discussion in March meeting, commenter’s suggested that:

•Insert note in PHY that expectation is that PHY will only receive packets that overlap primary 20 MHz channel.

•Delete cited language from MAC

**TCac editor: Remove the text on page 143 line 34 of D2.0 :**

**~~A STA may discard without setting its NAV a 20/40/80 MHz PPDU received on any channel that is not or does not include the primary channel.~~**

**Insert the following text on page 263 line 24 of D2.0:**

**The PHY shall not issue a PHY-RXSTART.indication primitive in response to a PPDU that does not overlap the primary 20MHz channel.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 4677 | Kaiying Lv | 10.38.4 | 143.39 | This paragraph states that STA may discard a frame without setting its NAV, but not defines the STA's action after discarding the frame. When the medium is indicated as idle following the end of reception of the discarded frame, the STA whose NAV has not been updated shall use EIFS or EIFS+AIFS[AC]-DIFS to provide enough time for another STA to acknowledge the frame discarded by this STA,before this STA commences transmission. | add a note here such as"Note--if a STA discards without setting its NAV a frame carried in a) or b) as described above, it shall use EIFS or EIFS+AIFS[AC]-DIFS before transmission,when it determines that the medium is idle following the end of reception of the frame that has been discarded." | **Revised** |

**Discussion:**

The 802.11ac D2.0 text states:

“A STA may discard without setting its NAV a frame carried in a) an SU VHT PPDU with Group ID and Partial AID fields that indicate that the STA cannot be a recipient of the frame according to 9.17a (Group ID and Partial AID in VHT PPDUs) or b) an MU VHT PPDU containing a Group ID field for which either the STA is not a member or the STA is a member but the number of space time streams assigned to the user position of the STA for that group is zero.”

Since the STA without setting or updating its NAV may commence transmission whenever its NAV value count down to zero, it may not provide enough time for the intended recipient to acknowledge the frame which is discarded by this STA. So it is necessary to define the STA's action after discarding the frame.

Further discussions:

Subclause “9.3.2.3.7 EIFS” already defines the conditions for EIFS clearly: “A DCF shall use EIFS before transmission, when it determines that the medium is idle following reception of a frame for which the PHY-RXEND.indication primitive contained an error or a frame for which the MAC FCS value was not correct. Similarly, a STA’s EDCA mechanism under HCF shall use the EIFS-DIFS+ AIFS[AC] interval. ”

It seems not necessary to add any further clarification on EIFS for the GID/PAID filtering case.

It is only necessary to make sure that, for the GID/PAID filtering case, the PHY-RXEND.indication primitive contained an error or an indication. So we add a sentence in the PLCP receiving procedure to make sure of that, if supporting the GID/PAID filtering case.

**Proposed resolution:**

TGac Editor：Please modify the text in D2.0 on page 263 line 6 as below:

This receive procedure and state machine do not describe the operation of optional features, such as LDPC~~,~~or STBC ~~or Partial AID~~.

TGac Editor ：Please modify the text in D2.0 on page 263 line 52 as below:

…

If Group ID in VHT-SIG-A has a value indicating an MU PPDU (see 9.17a (Group ID and Partial AID inVHT PPDUs)), the PHY shall decode VHT-SIG-B. If the VHT-SIG-B indicates an unsupported mode, the PHYshall issue the error condition PHY-RXEND.indication(UnsupportedRate) .

If VHT-SIG-B was decoded the PHY may check the VHT-SIG-B CRC in the SERVICE field. If the VHTSIG-B CRC in the SERVICE field is not checked a PHY-RXSTART.indication(RXVECTOR) shall be issued. The RXVECTOR associated with this primitive includes the parameters specified in Table 22-1 (TXVECTOR and RXVECTOR parameters).

The PLCP may filter out the PPDU if:

-- The Group ID indicates an SU PPDU and the Partial AID is not equal to 0 and does not match its partial AID, or

-- MembershipStatusInGroupID[GroupID] is equal to 0 , or

-- MembershipStatusInGroupID[GroupID] is equal to 1 and the MU[UserPositionInGroupID[Group ID]] NSTS field in VHT-SIG-A1 is zero.

If the PPDU is filtered out, the PLCP shall issue a PHY-RXEND.indication(Filtered) primitive unless the TXOP\_PS\_NOT\_ALLOWED field in VHT-SIG-A1 is equal to 0, in which case, the PLCP shall issue a PHY-RXEND.indication(TXOP\_PS\_Filtered) primitive.

**Sp1: Do you support to add the above text in PLCP receive procedure?**

**Y:**

**N:**

**A:**

TGac Editor ：Please modify the text in D2.0 on page 114 line 30 as below:

The specific slot boundaries at which exactly one of these operations shall be performed are defined as follows, for each EDCAF:

a) Following AIFSN[AC] × aSlotTime – aRxTxTurnaroundTime of idle medium after SIFS (not necessarily idle medium during the SIFS duration) as determined using the same antenna as was used during the reception of a frame with a correct FCS and occurring immediately after the last end of the busy medium indication which on the antenna that was the result of a that reception of a frame with a correct FCS.

b) Following EIFS – DIFS + AIFSN[AC] × aSlotTime + aSIFSTime – aRxTxTurnaroundTime of idle medium after the last indicated busy medium as determined by the physical CS mechanism that was the result of a frame reception that has resulted in FCS error, or PHY-RXEND.indication (RXERROR) primitive where the value of RXERROR is not NoError or optionally, after the last busy medium on the antenna that follows a PHY-RXEND.indication(RXERROR) where the value of RXERROR is either Filtered or TXOP\_PS\_Filtered if slot boundary e) was not generated following this event.

…

e) Following AIFSN[AC] × aSlotTime + aSIFSTime – aRxTxTurnaroundTime of idle medium after the last indicated idle medium as indicated by the CS mechanism that is not covered by a) to d) including after the receipt of a PHY-RXEND.indication(RXERROR) where the value of RXERROR is either Filtered or TXOP\_PS\_Filtered and b) was not performed.

**Sp2: Do you support to add the above optional condition?**

**Y:**

**N:**

**A:**

TGac Editor ：Please insert the subclause “9.3.2.3.7 EIFS ” in D2.0 on page 92 line 34 as below:

9.3.2.3.7 EIFS

A DCF shall use EIFS before transmission, when it determines that the medium is idle following reception of a frame for which the PHY-RXEND.indication primitive contained an error that is not Filtered or TXOP\_PS\_Filtered or a frame for which the MAC FCS value was not correct. A DCF may use EIFS before transmission, when it determines that the medium is idle following reception of a frame for which the PHY-RXEND.indication primitive contained an error that is Filtered or TXOP\_PS\_Filtered.

**Sp3: Do you support to modify the text as above?**

**Y:**

**N:**

**A:**

TGac Editor ：Please modify the text in subclause “9.17a Group ID and Partial AID in VHT PPDUs” in D2.0 on page 109 line 51 as below:

The partial AID is a non-unique identifier of a STA based on its AID and the BSSID of the BSS to which the STA is associated. The partial AID is carried in a VHT SU PPDU. The partial AID can be used for power saving.

A non-AP VHT STA may enter the Doze state upon receipt of PHY-RXEND.indication(Filtered) or PHY-RXEND.indication(TXOP\_PS\_Filtered) and for a duration of the remainder of the PPDU corresponding to the PHY-RXEND.indication(Filtered) or PHY-RXEND.indication(TXOP\_PS\_Filtered).

**Sp4: Do you support to modify the text as above?**

**Y:**

**N:**

**A:**

TGac Editor ：Please insert the subclause “10.2.1.2 Power Management modes ” in D2.0 on page 134 line 8 as below:

**10.2.1.2 STA Power Management modes**

A STA that is changing from Doze to Awake in order to transmit shall perform CCA until a frame sequence is detected by which it can correctly set its NAV, or until a period of time equal to the ProbeDelay has transpired, unless the STA is a VHT STA that is in TXOP power save mode and entered Doze state during a TXOP in which case the rules in 10.2.1.4a Power management during VHT transmissions apply, or if the STA has entered Doze state for the duration of a PPDU as allowed in “9.17a Group ID and Partial AID in VHT PPDUs”, in which case the STA, upon transition to the Awake state shall either perform EIFS (see 9.3.2.3.7 EIFS) or resume the normal medium access procedure.

**Sp5: Do you support to modify the text as above?**

**Y:**

**N:**

**A:**

TGac Editor ：Please modify the text in subclause “10.2.1.4a Power management during VHT transmissions ” in D2.0 on page 134 line 34 as below:

If the AP allows VHT non-AP STAs to enter Doze state during a TXOP, then a VHT non-AP STA that is in VHT TXOP power save mode may enter the Doze state till the end of that TXOP when one of the following conditions exists:

~~— The STA finds that it is not a member of group RXVECTOR parameter GROUP\_ID~~.

~~— The STA finds that the PARTIAL\_AID in the RXVECTOR does not equal to 0 and does not match~~

~~its partial AID.~~

— The STA finds that the PARTIAL\_AID in the RXVECTOR matches its partial AID but the RA in

the MAC header of the corresponding frame that is received co rrectly does not match the MAC

address of the STA.

~~— The STA receives a frame with an RXVECTOR parameter NUM\_STS equal to 0, if it is a member~~

~~of group indicated by RXVECTOR GROUP\_ID.~~

— The STA finds that the Partial AID in the RXVECTOR is 0 and the AID in the STA Info field in the

received NDPA frame does not match with its AID.

— The STA sends an acknowledgement in response to a frame received with More Data field equal to

0.

— The STA receives PHY-RXEND.indication(TXOP\_PS\_Filtered) primitive.

**Sp6: Do you support to modify the text as above?**

**Y:**

**N:**

**A:**