IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Comment resolution for sensing session | | | | |
| Date: 2023-04-06 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Chaoming Luo | OPPO |  |  | luochaoming@oppo.com |
| Narengerile | Huawei |  |  | narengerile@huawei.com |
|  |  |  |  |  |

Abstract

This submission resolves comments related to the concept of ‘sensing session’. The following 31 CIDs are resolved: 1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Incorporate changes made under ‘11.55.1.3 Sensing session setup’ in 23/0476r3
* Rev 2:
  + Add normative text in SBP procedure clause asking the AP to poll the unassociated STA that is an SBP initiator but not participate in the corresponding TB mesurement instance.
  + Add note to explain an unassociated non-AP STA can cache the AP’s sensing capabilities.

# Discussion

We’ve been debating a lot on sensing session concept and procedure. The outcome is the current ‘cumbersome’ D1.0 text not describing what’re the frame exchanges for sensing session and a bunch of comments seeking for it.

After reanalyze the concept, I’d propose to remove ‘sensing session’ (including session setup and session termination). The **reasons** are as follows:

The current ‘sensing session’ is only an exchange for sensing capabilities, plus USID assignment for unassociated STA (denoted as U-STA) in TB measurement case.

1. Associated STA (denoted as A-STA) does not need any extra exchange apart from association request/response, remove sensing session has no impact on A-STA.
2. Sensing capabilities exchange for U-STA is indeed done by measurement setup (denoted as MS) procedure. It could be repeated in each MS. It could be done only once if the sensing capabilities keep no change, anyway the U-STA has its prerogative to reject the MS request if it does not match its sensing capability.
3. AP could send the same USID to the U-STA in each MS request. That’s also the current procedure in D1.0. No need to have a separate procedure to describe this hehaviour.
4. The current sensing session does not cover the case the U-STA is an SBP initiator, which needs an USID in order to be triggered (in polling phase, even only for SBP reporting, if not as sensing responder) in TB measurement instances. If we keep sensing session, then we need a standalone frame exchange to solve this issue. Whilst if we remove sensing session, AP could also send USID to the U-STA in SBP response, which simply solves the issue.

**Conlusion**:

1. Sensing session, including session setup and session termination, are removed.
2. AP assign USID to the U-STA in the first MS request/SBP response, whichever comes first, and send the same value in every subsequent MS request/SBP response.
3. if unassociated STA as an SBP initiator want to participate in TB, it should send MS Query to solicit MS Request (same as any other unassociated STA).
4. This modification applies to sub7GHz, DMG is TBD.

# CIDs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 1330 | Tomoko Adachi | 167.20 | "In the sensing session setup, a sensing session, which is an agreement between an AP and a non-AP STA to ..." Is the sensing in 11bf all limited between an AP and an non-AP STA and does not cover the case between non-AP STAs? From the Abstract and the Introduction, I didn't read there is such restriction. Or is the sentence just for the sensing session and the sensing itself is not limited to such case? But even if it is only applied for the sesnsing session, it means that the sensing can be done only under under an AP (it may be not proper to say under an infrastructure BSS, because I see unassociated non-AP STA participating in the sensing). Is it correct? Need some clarification. | As in comment. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1330.* |
| 1976 | Robert Stacey | 170.36 | This subclause talks about the sensing session setup but does not describe the frame exchange that takes place. Is it a simple request/response or something more complicated? Also, it seems to allude session setup being part of the associaton process without actually describing how that takes place. | Describe the frame exchange that comprises sensing session setup. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1976.* |
| 2295 | Benedikt Schweizer | 170.36 | The paragraph about sensing session setup provides not enough details on the procedure for associated STAs. The sentence 'the sensing session setup procedure is the association procedure' is not correct since association includes much more than sensing session setup. | Change the sentence mentioned in the comment to 'The sensing session setup procedure is part of the association procedure'. Structuring the section in order to make it more clear which parts deal with unassociated STAs and associated STAs might support the reader. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 2295.* |
| 1668 | Chaoming Luo | 170.37 | session setup should be a standalone frame exchange (independent with measurement setup) so that it can be used for both SBP and WLS in fact for the case where the SBP initiator is a U-STA which is also a sensing responder. Currently there is neither signaling for this U-STA to exchange sensing capabilities with the AP nor USID assignment. | Define a standalone session setup procedure by using a sensing session setup request and response frame exchange. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1668.* |
| 1058 | Claudio da Silva | 170.38 | The writing of this paragraph may lead to the incorrect interpretation that two things happen in a sensing session setup: (1) sensing session is established and (2) sensing capabilities are exchanged. In reality, both things are one and the same. | Replace the paragraph with: "In the sensing session setup of a WLAN sensing procedure, a sensing session is established with the exchange of sensing capabilities (see 9.4.2.26 (Extended Capabilities element) and 9.4.2.320 (Sensing element)) between an AP and a non-AP STA. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1058.* |
| 1346 | Osama Aboulmagd | 170.38 | "Sensing session is established" | How? Provide the details by which the sensing session is established | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1346.* |
| 1445 | Sheetal Pandey | 170.38 | Sensing setup procedure should be described properly. If possible by showing some diagrams. Sensing setup is identified by the MAC address and AID. But for unassociated STA USID has not got exchanged yet. This needs to be cleared too. |  | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1445.* |
| 1007 | John Wullert | 170.54 | The sentence indicates that the sensing session is established when a non-AP STA (re)associates with an AP. This is overly broad - such a session would not be established any time a non-AP STA intends to associate with an AP. | Please clarify the conditions under which the sensing session would be established during (re)association. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1007.* |
| 1447 | Sheetal Pandey | 170.54 | What does this statement mean? Below statement is very confusing. Unassociated STAs can also participate in session setup. Then why is below statement written? "If a non-AP STA intends to associate with an AP, the sensing session is established when the (re)association completes, i.e., the sensing session setup procedure is the association procedure" |  | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1447.* |
| 1861 | Hassan Omar | 170.54 | The sensing session setup procedure should be performed only with STAs that support WLAN sensing | Change: "If a non-AP STA intends to ..." to become "If a non-AP STA that supports WLAN sensing intends ..." | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1861.* |
| 2232 | Zinan Lin | 170.54 | The statement of "the sensing session setup procedure is the association procedure" is only appliable to the non-AP STA with sensing capabilities. | If a non-AP STA with dot11WLANSensingImplemented equal to true intends to associate with an AP, the sensing session is established when the (re)association completes, i.e., the sensing session setup procedure is the association procedure. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 2232.* |
| 1799 | Fumihide Goto | 170.55 | What does "If a non-AP STA intends to associate with an AP, the sensing session is established when the (re)association completes, i.e., the sensing session setup procedure is the association procedure." mean? Does the WLAN sensing procedure incorporate with the association procedure? | delete this sentence or define sensing association procedure. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1799.* |
| 1975 | Robert Stacey | 170.57 | This is a non-sensical statement. We previously state that the session is establised with setup. So prior to this the session is not inactive, it does not exist. | Delete "Initially a sensing session..." | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    In the newly added state machine for measurement setup, the terms MS Established and MS Terminated are used.  *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1975.* |
| 2233 | Zinan Lin | 170.57 | The sensing session setup between unassociated non-AP STA and AP may be different from the setup between associated non-AP STA and AP. It may be applicable to TB and non-TB sensing measurement setup. Therefore, it would be more clear to put the sensing session setup, sensing measurement setup related unassociated non-AP STA in a separate subclause | Create a separate subclause to highlight the difference in sensing session setup, sensing measurement setup due to the fact that the sensing initiator or sensing initiator or SBP responder may be unassociated non-AP STA | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 2233.* |
| 1035 | Lei Wang | 170.58 | In Section "11.55.1.3 Sensing session setup", there is no specification about how a sensing session between an unassociated non-AP STA and an AP is setup, where there is text about how such a sensing session becomes active, and there is text about how a sensing session between an assoicated non-AP STA and the AP. | Please explicitely specify how a sensing session between an unassociated non-AP STA and an AP is setup, in Section "11.55.1.3 Sensing session setup" | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1035.* |
| 1029 | Massinissa Lalam | 170.64 | It seems that the "Unassociated STA Sensing Session Timeout" value is fixed and set up to 100s. I think more flexibility should be allowed and the value negociated during the sensing measurement setup phase (like a BA size for instance, the initiator gives its value, the responder gives its value, aned the min shall be applied) | As in comment | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1029.* |
| 2234 | Zinan Lin | 171.01 | "The unassociated non-AP STA participates in a sensing measurement instance (see 11.55.1.6 (Sensing measurement setup termination))." | The unassociated non-AP STA or AP terminates the sensing measurement setup between AP and unassociated non-AP STA (see 11.55.1.6 (Sensing measurement setup termination)). | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    In the newly added text for resetting MS timer, dedicated frame exchanges are specified.  *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 2234.* |
| 1914 | Leif Wilhelmsson | 171.02 | "in any of the following conditions" sounds strange | Replace "in any of the following conditions" with "if any of the following conditions holds" | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    In the newly added text for resetting MS timer, the proposed change is applied.  *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1914.* |
| 1862 | Hassan Omar | 171.06 | The sensing mesurement instance that is referred to in the sentence should be further specified, i.e., it should correspond to a sensing measurement setup established between the AP and the non-AP STA (it cannot be a sensing measurement instance between the non-AP STA and another AP) | Change: " ... participates in a sensing measurement instance" to become " ... participates in a sensing measurement instance corresponding to a sensing measurement setup established between the AP and the non-AP STA" | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    In the newly added text for resetting MS timer, the proposed change is applied.  *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1862.* |
| 1708 | Alireza Raissinia | 171.08 | Change the text "(see 11.55.1.6 (Sensing measurement setup termination))" to | "(see 11.55.1.5 Sensing measurement instance))"  as it intends to retrigger the timer every time a sensing measurement instance completes | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    In the newly added text for resetting MS timer, the proposed change is applied.  *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1708.* |
| 2236 | Zinan Lin | 171.10 | The sentence on line 10 does not match FIG 11-74b well. In Fig 11-74b the sensing active state becomes sensing inactive state when T2 expires or stops. However, the description on line 10 only shows T2 expires | May need to update the sentence as "An active sensing session becomes inactive following an unassociated STA sensing session timeout detected at the unassociated non-AP STA or the AP of the sensing session when the corresponding unassociated STA activity timer expires or stops" | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 2236.* |
| 1008 | John Wullert | 171.19 | Figure 11-74b includes references to T3, but the time has no effect on any state or transition shown in the figure. | Remove T3 from the figure or modify transitions to illustrate some impact of T3 expiration. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1008.* |
| 1774 | Christian Berger | 171.20 | Figure 11-74b - what is the implication of the active vs. passive state? | There are mentions that the STA enters/transistions between active and passive state, but how does it matter? Is there any behavior associated to passive/active state (except running timers)? Please clarify or replace with "start timer X" | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1774.* |
| 2238 | Zinan Lin | 171.20 | why past tense is used in "T2 expired or stopped" | Change to " T2 expires or stops" | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    In the newly added figure for MS, the proposed change is applied.  *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 2238.* |
| 1527 | Mahmoud Kamel | 171.22 | The description of the state transition in the Sensing Inactive State is confusing! It is stated as "TB measurement setup fails and T3 may be running, and non-TB measurement setup fails." which may be wrong as any of the conditions is enough to transition and stay in the Sensing Inactive State. | Change the condition of the transition to "TB measurement setup fails and T3 may be running, or non-TB measurement setup fails. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1527.* |
| 2235 | Zinan Lin | 171.24 | Will be T3 running if non-TB measurement setup fails? | If answer is yes to the question, then suggest to change "TB measurement setup fails and T3 may be running, and non-TB measurement setup fails. " to "when TB measurement setup fails or non-TB measurement setup fails, T3 may start to run" | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 2235.* |
| 2237 | Zinan Lin | 171.25 | why T3 may be running when unassociated non-AP STA is in Sensing Active State? | Change to "T3 may not be running"? | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 2237.* |
| 1847 | Michael Montemurro | 171.34 | T2 and T3 are used in figure 11-74b and look to be timers, not "intra-burst intervals" defined for DMG sensing. Furthermore, these timers are not described in the text body anywhere. Is there a requirement to maintain these timers at least with T2 | Make the description more consistent by creating acronyms for the timers and use them both in the text body and the figure.  Unassoc STA Activity timer = USAT STA Unassc STA comback timer = USCT | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1847.* |
| 1848 | Michael Montemurro | 171.34 | The unassociated non-AP STA sensing state machine could be used both for unassociated STAs or associated STAs. There is no need to align the sensing state with the association state machine. Its true that the requirement for a sensing state machine may be stronger in the unassociated case, but there is value in making the state machine applicable for both. | Update the text and figure to make the non-AP STA sensing state machine applicable for both the unassociate and associated states. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    A new figure is added for MS after discuss with the commenter.  *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1848.* |
| 1086 | Claudio da Silva | 171.47 | The paragraphs 171.47-50 and 171.52-56 should be combined into 1. | As suggested. | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1086.* |
| 1036 | Lei Wang | 171.53 | The text "to fulfill the requirements of a WLAN sensing procedure" is problematic. First, it indicates the action of "maintain multiple concurrent sensing sessions" is actually needed, then "may" is a wrong word to use. On the other hand, there is no info about which requirement(s) is to fulfill. | Suggest removing the text "to fulfill the requirements of a WLAN sensing procedure". | ***Revised****:*  The group has discussed the issue, and agrees: remove ‘sensing session’ (including session setup and session termination). Hence the issue of the comment does not exist anymore.    *TGbf editor to make the changes shown in Https://mentor.ieee.org/802.11/dcn/23/11-23-0477-02-00bf-lb272-sensing-session.docx under all headings that include CID 1036.* |

# Resolution

**9.4.2.319 Sensing Measurement Parameters element**

*TGbf Editor: Please modify P112L15 as follows:*

The AID/USID field contains an identifier for the sensing responder for the duration of the sensing ~~session~~ measurement setup. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

**9.6.7.49 (Protected) Sensing Measurement Setup Request frame format**

*TGbf Editor: Please modify P145L64 as follows:*

The Unassociated STA Comeback After Exponent subfield contains an unsigned integer. It is encoded according to the conventions in 9.2.2 (Conventions). The Unassociated STA Comeback After value is equal to ms (giving it a value from 16 ms to 2048 ms). It is a time after which the unassociated non-AP STA is expected to transmit a Sensing Measurement Setup Query frame to the AP (see ~~11.55.1.3 (Sensing session setup)~~ 11.55.1.4 (Sensing measurement setup)) *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*. The Unassociated STA Comeback After Exponent subfield is reserved if the Comeback subfield is set to 0.

The Unassociated STA Comeback Before Exponent subfield contains an unsigned integer. It is encoded according to the conventions in 9.2.2 (Conventions). The Unassociated STA Comeback Before value is equal to  ms (giving it a value from 4096 ms to 65536 ms). It is a time before which the unassociated non-AP STA is expected to transmit a Sensing Measurement Setup Query frame to the AP (see ~~11.55.1.3 (Sensing session setup)~~ 11.55.1.4 (Sensing measurement setup)) *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*. The Unassociated STA Comeback Before Exponent subfield is reserved if the Comeback subfield is set to 0.

**9.6.7.52 (Protected) Sensing Measurement Setup Termination frame format**

*TGbf Editor: Please modify P148L1 as follows:*

The Measurement Setup ID field combined with the Measurement Setup Termination Control field indicates the identifier(s) of the sensing measurement setup(s) to be terminated. The Measurement Setup ID field is defined in Figure 9-1139c (Measurement Setup ID field format). The format of the Measurement Setup Termination Control field is shown in Figure 9-1139g (Measurement Setup Termination Control field format)(Motion 100, #11, #46, #77, #80, #492).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Terminate All TB Measurement Setups | Terminate All non-TB Measurement Setups | TB/non-TB Measurement Setup Type | ~~Terminate Unassociated STA Sensing Session~~ | Reserved |
| Bits: | 1 | 1 | 1 | ~~1~~ | ~~4~~  5 |
| * Measurement Setup Termination Control field format(Motion 100, #11, #46, #77, #80, #492, #299, #308, #316, #481).*(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)* | | | | | |

*TGbf Editor: Please modify P148L42 as follows:*

~~The Terminate Unassociated STA Sensing Session subfield is set to 1 to indicate that the AP or unassociated STA requests to terminate the sensing session established between the AP and the unassociated STA. Otherwise the Terminate Unassociated STA Sensing Session subfield is reserved. If the Terminate Unassociated STA Sensing Session subfield is set to 1, the Terminate All TB Measurement Setups subfield, Terminate All non-TB Measurement Setups subfield and TB/non-TB Measurement Setup Type subfield are reserved(#299, #308, #316, #481).~~*(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

**9.6.7.55 (Protected) SBP Response frame format**

*TGbf Editor: Please modify P149L49 as follows:*

The (Protected) SBP Response frame is transmitted by an AP STA to accept or reject a request for an SBP procedure (11.55.2 (SBP procedure))(#709, #710, #843, #844). The format of the (Protected) SBP Response frame Action field is defined in Figure 9-1139j ((Protected) SBP Response frame Action field format).

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Category | | Public Action/ Protected Dual of Public Action | Dialog Token | Status Code | Measurement Setup ID | AID/USID | SBP Parameters element | Sensing Measurement Parameters element | RSTA Availability Window element |
| Octets: | 1 | | 1 | 1 | 2 | 1 | 2 | 0 or variable | 0 or variable | 0 or variable |
|  | | * (Protected) SBP Response frame Action field format(#75, #260, #378, #515, #76, #261, #518, #78, #266, #526, #596, #597) | | | | | | | | |

The Category field is defined in 9.4.1.11 (Action field).

The Public Action/Protected Dual of Public Action field is defined in 9.6.7.1 (Public Action frames) and in 9.6.10 (Protected Dual of Public Action frames).

The Dialog Token field is set to the same value as the Dialog Token field of the corresponding SBP Request frame.

The Status Code field is defined in 9.4.1.9 (Status Code field). If the AP STA accepts the request, the Status Code field is set to SUCCESS (see 9.4.1.9 (Status Code field)). Otherwise,(#711) if the AP STA rejects the request, the Status Code field is set to either REQUEST\_DECLINED(#177) or REJECTED\_WITH\_SUGGESTED\_CHANGES (see 9.4.1.9 (Status Code field))(#47, #204, #276, #459, #493, #525, #573, #576, #595, #743, #81, #277, #82, #528).

If the Status Code field is equal to SUCCESS, the Measurement Setup ID field is defined in Figure 9-1139c (Measurement Setup ID field format)(#78, #266, #526) and is set to the Measurement Setup ID value corresponding to the sensing measurement setup(#861) initiated by the AP that accepts the corresponding SBP request. If the Status Code field is not equal to SUCCESS, the Measurement Setup ID is reserved.

The AID/USID field is defined in 9.4.1.8 (AID field). If the Status Code field is equal to SUCCESS, and if the requesting non-AP STA is associated with the AP STA, the AID/USID field is set to the requesting non-AP STA’s AID, or if the requesting non-AP STA is not associated with the AP STA, the AID/USID field is set to the requesting non-AP STA’s USID. If the Status Code field is not equal to SUCCESS, the AID/USID field is reserved. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

**11.55 Sensing**

**11.55.1 WLAN sensing procedure**

**11.55.1.1 Overview**

*TGbf Editor: Please modify P167L12 as follows:*

A WLAN sensing procedure allows a non-DMG(#89) STA to perform WLAN sensing.

A WLAN sensing procedure is first composed of ~~setup frame exchanges, which are sensing session setup an~~d sensing measurement setup, followed by zero or more sensing measurement instance(s)(#604, #804), and terminated either implicitly or explicitly with ~~termination frame exchanges:~~ Sensing measurement setup termination ~~and sensing session termination~~(#532, #846).*(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

~~In the sensing session setup, a sensing session, which is an agreement between an AP and a non-AP STA to participate in a WLAN sensing procedure(#399), is established~~. In the sensing measurement setup, operational parameters associated with sensing measurement instance(s) are set(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841). A sensing measurement instance is a frame exchange sequence resulting in obtaining and/or reporting sensing measurements(#776, #814, #847, #875). Two variants(#605) of sensing measurement instance are specified: Trigger-based (TB) sensing measurement instance (see 11.55.1.5.2 (TB sensing measurement instance))(#186) and non-TB sensing measurement instance (see 11.55.1.5.3 (Non-TB sensing measurement instance))(#186). A sensing measurement setup(#138) is active until either explicitly terminated in a sensing measurement setup termination, or implicitly terminated (see 11.55.1.6 (Sensing measurement setup termination))(#777). ~~In the sensing session termination, a sensing session is terminated, and all related active sensing measurement setups shall be terminated automatically~~(#139). *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

A STA acting as a sensing initiator may participate in a sensing measurement instance as a sensing transmitter, a sensing receiver, both a sensing transmitter and a sensing receiver, or neither a sensing transmitter nor a sensing receiver. A STA acting as a sensing responder may participate in a sensing measurement instance as a sensing transmitter, a sensing receiver, or both a sensing transmitter and a sensing receiver.

NOTE—A sensing initiator may choose not(#473, #876) to participate in a sensing measurement instance as a sensing transmitter nor sensing receiver, but may still initiate the WLAN sensing procedure and optionally obtain sensing measurement reports.

As defined in 11.55.1.4 (Sensing measurement setup)(#188, #231, #342, #745), operational parameters associated with sensing measurement instance(s) of a given Measurement Setup ID are set in the sensing measurement setup(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841, #185). Multiple sensing measurement setups may be established between a sensing initiator and a sensing responder, which are assigned different Measurement Setup IDs(#17).

During a WLAN sensing procedure, an associated non-AP STA is identified by its AID and an unassociated non-AP STA is identified by its USID. ~~The USIDs are assigned to unassociated STAs during the sensing measurement setup exchange.~~ The USID is assigned to an unassociated non-AP STA by the AP during the sensing measurement setup exchange and/or SBP setup exchange, whichever comes first. The AID and USID assignment shall be non-conflicting and shall have the same size and valid range (as defined in 9.4.1.8 (AID field)). The USID usage shall follow the same rules as that of AIDs(#781). If the unassociated non-AP STA participates in multiple concurrent sensing measurement setups initiated by the AP and/or initiates multiple concurrent SBP procedures with the AP, the AP shall assign the same USID value to the unassociated non-AP STA. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

*TGbf Editor: Please modify P167L56 as follows:*

During a WLAN sensing procedure, the timeouts as described in Table 11-29a (Sensing timeout values) may be used(#93, #141, #145, #430, #611, #774).

|  |  |  |
| --- | --- | --- |
| * Sensing timeout values *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)* | | |
| Name | Value | Description |
| Sensing Frame Exchange Timeout value | 20 ms | Sensing frame exchange timeout is detected within a STA’s MAC if the corresponding response frame is not received or not sent within this time. |
| ~~Unassociated STA Sensing Session Timeout value~~ | ~~100 s~~ | ~~The sensing session between an unassociated STA and an AP shall be terminated if the corresponding sensing session expiry timer has expired (see 11.55.1.3 (Sensing session setup)).~~ |
| Unassociated STA Comeback After value | As indicated in the Sensing Measurement Setup Request | Upon reception of a Sensing Measurement Setup Request frame with Comeback subfield of the Sensing Comeback Info field set to 1, the unassociated non-AP STA should transmit a Sensing Measurement Setup Query frame to the AP after this time (see ~~11.55.1.3 (Sensing session setup)~~ 11.55.1.4 (Sensing measurement setup)). |
| Unassociated STA Comeback Before value | As indicated in the Sensing Measurement Setup Request | Upon reception of a Sensing Measurement Setup Request frame with Comeback subfield of the Sensing Comeback Info field set to 1, the unassociated non-AP STA should transmit a Sensing Measurement Setup Query frame to the AP before this time (see ~~11.55.1.3 (Sensing session setup)~~ 11.55.1.4 (Sensing measurement setup)). |
| Measurement Setup Expiry value | As indicated in the Sensing Measurement Setup Request | Upon expiry of the corresponding measurement setup expiry timer, the sensing initiator and sensing responder shall terminate the sensing measurement setup (see 11.55.1.6 (Sensing measurement setup termination)). |

*TGbf Editor: Please modify Figure 11-74a—Example of a WLAN sensing procedure by removing ‘session setup’ and ‘session setup termination’ as follows:*



**Figure 11-74a—Example of a WLAN sensing procedure**

*TGbf Editor: Please modify P169L31 as follows:*

The example starts(#671, #343, #543, #855) with a ~~sensing session setup procedure performed between the AP and STA A that establishes a sensing session identified by the AID of STA A (AID 1). A first~~ sensing measurement setup procedure ~~is then performed~~ performed between the AP and STA A (AID 1) *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*, which defines operational parameters that are assigned a Measurement Setup ID equal to 1(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841, #229). The concept of Measurement Setup ID is defined in 11.55.1.4 (Sensing measurement setup)(#608, #189, #533, #233, #461, #344, #269). After the sensing measurement setup, sensing measurement instances are performed based on the defined operational parameters (Measurement Setup ID equal to 1)(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841). Each measurement instance is assigned(#851) a Measurement Instance ID (see 11.55.1.5 (Sensing measurement instance)(#190, #234, #462, #609)). After some time, a second sensing measurement setup procedure is performed between the AP and STA A that defines a second set of operational parameters that is assigned a Measurement Setup ID of 2(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841, #229). After the second sensing measurement setup, any subsequent sensing measurement instances may be performed based on either the first (Measurement Setup ID equal to 1) or second (Measurement Setup ID equal to 2) set of operational parameters(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841). A sensing measurement setup may be terminated by performing a sensing measurement setup termination procedure; for example, Measurement Setup ID equal to 1 is terminated ~~for the sensing session~~ between the AP and STA A(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841).

Also in Figure 11-74a (Example of a WLAN sensing procedure), ~~while the AP and STA A still have the first sensing session active, a new sensing session setup procedure is performed between the AP and STA B that establishes a sensing session identified by the USID(#228, #729) of STA B (USID(#228, #729) 2). In this case,~~ a ~~first~~ sensing measurement setup procedure between the AP and STA B (USID 2) *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)* defines a set of operational parameters that is identical to the one corresponding to Measurement Setup ID equal to 2 established between the AP and STA A and, therefore, is also assigned a Measurement Setup ID equal to 2(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841, #229). Subsequent measurement instances associated with Measurement Setup ID equal to 2 may thus be associated with STA A, STA B, or both STA A and STA B. Each measurement instance may have one-to-many (including one-to-one) announcement and/or triggering, and may have either one-to-many or many-to-one (including one-to-one) sounding.After a sensing measurement setup(#861) is terminated, the Measurement Setup ID becomes available for re-use when a new sensing measurement setup(#861, #229) is performed, potentially with a different set of operational parameters(#429, #665, #848, #852, #853, #854, #856, #858, #859, #841).

*TGbf Editor: Please modify P170L36 as follows****:***

**11.55.1.3 ~~Sensing session setup~~ Sensing capabilities exchange**

~~In the sensing session setup of a WLAN sensing procedure, a sensing session is established, and the sensing capabilities (see 9.4.2.26 (Extended Capabilities element) and 9.4.2.320 (Sensing element)) of an AP and a non-AP STA are exchanged(#463, #815, #877, #93, #141, #145, #430, #611, #774).~~ *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

A non-AP STA may receive an AP’s sensing capabilities (see 9.4.2.26 (Extended Capabilities element) and 9.4.2.320 (Sensing element)) in the active or passive scanning procedure (see 11.1.4 (Acquiring synchronization, scanning)). *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

To accelerate the sensing ~~capability discovery~~ capabilities exchange *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)* between APs and STAs, an AP transmits a Beacon or Probe Response frame carrying one or more of its neighboring APs’ sensing capabilities shall include in the frame a Neighbor Report element. Neighboring AP’s sensing capability is indicated in the BSSID Information field (see Figure 9-398 (BSSID Information field format)) in the Neighbor Report element(#49).

*TGbf Editor: (changes made under ‘11.55.1.3 Sensing session setup’ in 23/0476r3)Please modify P170L49 as follows:*

An AP may set the Responder Needed ~~subfield~~ field in the Sensing element within a Probe Response frame to 1 to indicate the need for new sensing responders, and may set to 0 to indicate new sensing responders are not needed. The Responder Needed field in the Sensing element within Association Request, Association Response, Reassociation Request, Reassociation Response, and Sensing Measurement Setup Query frames shall be set to the reserved value. *(1083, 1526, 1556)*

*Note – Upon receiving a Probe Response frame with Responder Needed field set to 1, an unassociated non-AP STA, that intends to participate in a WLAN sensing procedure, is expected to send a Sensing Measurement Setup Query frame to the AP to solicit a sensing measurement setup request. An associated non-AP STA ignores this Responder Needed field in a Probe Response frame. (1082)*

*TGbf Editor: Please modify P170L54 as follows****:***

~~If a non-AP STA intends to associate with an AP, the sensing session is established when the (re)association completes, i.e., the sensing session setup procedure is the association procedure(#93, #141, #145, #430, #611, #774).~~ If a non-AP STA intends to associate with an AP, the sensing capabilities shall be exchanged in (re)association procedure (see 11.3.5 (Association, reassociation, and disassociation)). *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

If a non-AP STA is not associated with an AP and intends to participate in sensing measurement setup(s) initiated by the AP, it shall transmit a Sensing Measurement Setup Query frame carrying its sensing capabilities to the AP. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

*NOTE – An unassociated non-AP STA that is only a sensing responder can store an AP’s sensing capabilities if at least one sensing measurement setup initiated by the AP is not terminated. Based on the AP’s sensing capabilities, the unassociated non-AP STA can initiate a sensing measurement setup with the AP to perform non-TB sensing measurement instance(s).*  *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

*TGbf Editor: Please* ***delete all the text and figures between P170L57 ~ P171L57***

*TGbf Editor: the following text starting from P170L58 remains in 11.55.1.3 Sensing capabilities exchange*

If a Sensing element is included in a frame, the transmitting STA shall indicate the following parameters in the Sensing field:

* Maximum supported bandwidth in the BW subfield.
* Maximum number of HE-LTF repetitions it is capable of receiving in an SI2SR, SR2SI, or SR2SR NDP that is an HE Ranging NDP or an HE TB Ranging NDP in the Max RX HE-LTF Repetition subfield.
* Maximum number of HE-LTF repetitions it is capable of transmitting in an SI2SR, SR2SI, or SR2SR NDP that is an HE Ranging NDP or an HE TB Ranging NDP in the Max TX HE-LTF Repetition subfield.
* Maximum number of space-time streams it is capable of receiving in an SI2SR, SR2SI, or SR2SR NDP for bandwidths less than or equal to 80 MHz in the Max RX STS ≤ 80 MHz subfield.
* Maximum number of space-time streams it is capable of receiving in an SI2SR, SR2SI, or SR2SR NDP for bandwidth equal to 160 MHz in the Max RX STS = 160 MHz subfield.
* Maximum number of space-time streams it is capable of receiving in an SI2SR NDP for bandwidth equal to 320 MHz in the Max RX STS = 320 MHz subfield.
* Maximum number of space-time streams it is capable of transmitting in an SI2SR, SR2SI, or SR2SR NDP for bandwidths less than or equal to 80 MHz in the Max TX STS ≤ 80 MHz subfield.
* Maximum number of space-time streams it is capable of transmitting in an SI2SR, SR2SI, or SR2SR NDP for bandwidth equal to 160 MHz in the Max TX STS = 160 MHz subfield.
* Maximum number of space-time streams it is capable of transmitting in an SI2SR NDP for bandwidth equal to 320 MHz in the Max TX STS = 320 MHz subfield.
* Maximum number of HE-LTFs it is capable of receiving in total, including all repetitions, in an SI2SR, SR2SI, or SR2SR NDP that is either a HE Ranging NDP or a HE TB Ranging NDP in the Max RX HE-LTF Total subfield.
* Maximum number of EHT-LTFs in total it is capable of receiving, including all repetitions, in an SI2SR NDP that is a EHT sounding NDP in the Max RX EHT-LTF Total subfield.
* Maximum number of HE-LTFs in total it is capable of transmitting, including all repetitions, in an SI2SR, SR2SI, or SR2SR that is a HE Ranging NDP in the Max TX HE-LTF Total subfield.
* Maximum number of antennas it is capable of using in reception of an SI2SR, SR2SI, or SR2SR NDP in the Maximum Number of Rx Antennas subfield.

An unassociated non-AP STA shall set the Poll Required subfield in the Sensing element to 1 in any Measurement Setup Query frame that it transmits.

A non-AP STA shall include one ISTA Availability Window element in any Measurement Setup Query frame indicating its availability for TB sensing as well as a preferred periodicity. The periodicity of the availability windows preferred by the STA is expressed in units of 10 TUs in the Count subfield in the ISTA Availability Information field of the ISTA Availability Window element. The value of the Count subfield in the ISTA Availability Information field of the ISTA Availability Window element shall be a multiple of the Beacon Interval of the recipient AP in units of 10 TUs.

**11.55.1.4 Sensing measurement setup**

Sensing measurement setup allows for a sensing initiator and a sensing responder to exchange and agree on operational parameters associated with sensing measurement instance(s) of a given Measurement Setup ID.

…

If the negotiation is successful, for either TB sensing measurement instance(s) or non-TB sensing measurement instance(s), the corresponding Sensing Measurement Setup Response frame from the sensing responder shall not include a Sensing Parameters element.

*TGbf Editor: Add the following at P175L61, which is the end of 11.55.1.4 Sensing measurement setup*

Following a successful sensing measurement setup request/response exchange between an AP and a non-AP STA, a sensing measurement setup between the two is established, and both sides shall start a sensing measurement setup expiry timer for the sensing measurement setup. The sensing measurement setup expiry timer shall be set to the Measurement Setup Expiry value (see Table 11-29a (Sensing timeout values)). *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

After a sensing measurement setup between an AP and a non-AP STA is established, both sides shall reset the sensing measurement setup expiry timer for the sensing measurement setup if participating in the corresponding TB and/or non-TB sensing measurement instance. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

A sensing measurement setup established between an AP and a non-AP STA shall be terminated explicitly or implicitly if the corresponding sensing measurement setup expiry timer expires at either side. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

A typical state machine implementation of sensing measurement setup between an AP and a non-AP STA is provided in Figure 11-74b (sensing measurement setup state machine diagram). *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*



**Figure 11-74b (sensing measurement setup state machine diagram)** *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

*TGbf Editor: Please* ***delete the whole clause*** *of* ***11.55.1.7 Sensing session termination***

**~~11.55.1.7 Sensing session termination~~** *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

~~In the sensing session termination, an AP and a non-AP STA terminate the sensing session established between them. When the sensing session between an AP and a non-AP STA is terminated, all active sensing measurement setups established between the AP and the non-AP STA shall be terminated automatically(#21, #570, #912).~~

~~The sensing session between an AP and an associated non-AP STA shall be terminated when the non-AP STA disassociates with the AP, i.e., the sensing session termination procedure is the disassociation procedure(#21, #570, #912).~~

~~The sensing session between an AP and an unassociated non-AP STA shall be terminated when the unassociated non-AP STA transitions from sensing active state to sensing inactive state, see 11.55.1.3 (Sensing session setup)(#21, #570, #912).~~

~~The sensing session between an AP and an unassociated non-AP STA may be terminated explicitly by either the AP or the unassociated non-AP STA by transmitting an individually addressed Sensing Measurement Setup Termination frame with the Terminate Unassociated STA Sensing Session subfield set to 1(#21, #570, #912).~~

**6.3.137.4 MLME-SBP.response**

**6.3.137.4.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-SBP.response(

PeerSTAAddress,

DialogToken,

StatusCode,

MeasurementSetupID,

AID/USID,

SensingMeasurementParameter,

SBPParameters,

SensingResponderAdresses,

SensingResponderIDs

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress | MAC address | Any valid individual MAC address | Specifies the address of the SBP initiator with which the SBP procedure is to be performed. |
| DialogToken | Integer | 0-255 | Identifies the SBP Setup transaction. |
| StatusCode | Enumerated value | As defined in the Status Code filed | Indicates the status of the SBP Request. |
| MeasurementSetupID | Integer | As defined in Figure 9-1139c (Measurement Setup ID field format) | Specifies the Measurement Setup ID assigned for the SBP setup. This parameter is only present if the StatusCode is equal to SUCCESS. |
| AID/USID | AID/unassociated STA identifier (USID) | Any valid AID/USID | The parameter is present if the StatusCode parameter is SUCCESS. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)* |
| SensingMeasurementParameter | Sensing Measurement Parameter element | As defined in 9.4.2.319 (Sensing Measurement Parameters element) | The parameter is present if the StatusCode parameter is REJECTED\_WITH\_SUGGESTED\_CHANGES; otherwise, it is not present. Specifies parameters within the SBP Parameters element to be included in an SBP Response frame, as described in 11.55.2 (SBP procedure). |
| SBPParameters | SBP Parameters element | As defined in 9.4.2.321 (SBP Parameters element) | The parameter is present if the StatusCode parameter is REJECTED\_WITH\_SUGGESTED\_CHANGES. The parameter can be present if the StatusCode parameter is SUCCESS. The parameter is not present if the StatusCode is REQUEST\_DECLINED.  Specifies parameters within the SBP Parameters element to be included in an SBP Response frame, as described in 11.55.2 (SBP procedure). |
| SensingResponderAdresses | MAC address | Any valid individual MAC address | The parameter can be present if the StatusCode parameter is SUCCESS. Zero or more MAC addresses that correspond to the set of sensing responders in the WLAN sensing procedure used to satisfy the SBP request. |
| SensingResponderIDs | AID/unassociated STA identifier (USID) | Any valid AID/USID | The parameter can be present if the StatusCode parameter is SUCCESS. Zero or more AID/USIDs that correspond to the set of sensing responders in the WLAN sensing procedure used to satisfy the SBP request. |

**6.3.137.5 MLME-SBP.confirm**

**6.3.137.5.2 Semantics of the service primitive**

The primitive parameters are as follows:

MLME-SBP.confirm(

PeerSTAAddress,

DialogToken,

StatusCode,

MeasurementSetupID,

AID/USID,

SensingMeasurementParameter,

SBPParameters,

SensingResponderAdresses,

SensingResponderIDs

)

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Valid range | Description |
| PeerSTAAddress | MAC address | Any valid individual MAC address | Specifies the address of the SBP responder with which the SBP was requested. This value matches the PeerSTAAddress parameter specified in the corresponding MLME-SBP.request primitive. |
| DialogToken | Integer | 0-255 | Identifies the SBP Setup transaction. |
| StatusCode | Enumerated value | As defined in the Status Code filed | Indicates the status of the SBP Request. |
| MeasurementSetupID | Integer | As defined in Figure 9-1139c (Measurement Setup ID field format) | Specifies the Measurement Setup ID assigned for the SBP setup. This parameter is only present if the StatusCode is equal to SUCCESS. |
| AID/USID | AID/unassociated STA identifier (USID) | Any valid AID/USID | The parameter is present if the StatusCode parameter is SUCCESS. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)* |
| SensingMeasurementParameter | Sensing Measurement Parameter element | As defined in 9.4.2.319 (Sensing Measurement Parameters element) | The parameter is present if the StatusCode parameter is REJECTED\_WITH\_SUGGESTED\_CHANGES; otherwise, it is not present.  Specifies parameters within the Sensing Measurement Parameter element of the received SBP Response frame, as described in 11.55.2 (SBP procedure). |
| SBPParameters | SBP Parameters element | As defined in 9.4.2.321 (SBP Parameters element) | The parameter is present if the StatusCode parameter is REJECTED\_WITH\_SUGGESTED\_CHANGES. The parameter can be present if the StatusCode parameter is SUCCESS. The parameter is not present if the StatusCode is REQUEST\_DECLINED.  Specifies parameters within the SBP Parameters element of the received SBP Response frame,  as described in 11.55.2 (SBP procedure). |
| SensingResponderAdresses | MAC address | Any valid individual MAC address | The parameter can be present if the StatusCode parameter is SUCCESS. Zero or more MAC addresses that correspond to the set of sensing responders in the WLAN sensing procedure used to satisfy the SBP request. |
| SensingResponderIDs | AID/USID | Any valid AID/USID | The parameter can be present if the StatusCode parameter is SUCCESS. Zero or more AID/USIDs that correspond to the set of sensing responders in the WLAN sensing procedure used to satisfy the SBP request. |

**9.4.2.321 SBP Parameters element**

…

If the SBP Request subfield is set to 0:

…

*TGbf Editor: Please modify P117L17 as follows****:***

— The value of the Number of Preferred Responders subfield indicates the number of MAC addresses

within the Sensing Responder Addresses field and the number of AID/USIDs within the Sensing

Responder IDs field if the Preferred Responder List subfield is set to 1. It is reserved if the Preferred

Responder List subfield is set to 0.

• If the Sensing Responder subfield and the Preferred Responder List subfields are both set to 1,

the MAC address of the SBP initiator is included in the Sensing Responder Addresses field

within the SBP Parameters element and correspondingly the AID/USID of the SBP Initiator

within the Sensing Responder ID field. The value of the AID/USID of the SBP Initiator is the same with the AID/USID field within the SBP Response frame. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

**11.55.2** **SBP procedure**

**11.55.2.2 Setup**

*TGbf Editor: Please modify P191L39 as follows****:***

If the StatusCode parameter within the MLME-SBP.response primitive is set to SUCCESS, the MLME-SBP.response primitive shall include a MeasurementSetupID parameter that specifies the Measurement Setup ID assigned for the SBP setup. In this case, the MLME-SBP.response primitive may also include an SBPParameters parameter.

If the StatusCode parameter within the MLME-SBP.response primitive is set to SUCCESS, the MLME-SBP.response primitive shall include an AID/USID parameter that specifies the AID/USID assigned for the SBP initiator. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

*TGbf Editor: Please modify P192L12 as follows****:***

If the Sensing Responder subfield within the SBPParameters parameter of the corresponding MLMESBP.

indication primitive is set to 0, the SBP responder shall not use a WLAN sensing procedure initiated

with the issue of an MLME-SENSMSMTSETUP.request primitive with PeerSTAAddress parameter equal to the SBP initiator’s MAC address to satisfy the SBP request. Otherwise, if the Sensing Responder subfield is set to 1, the SBP responder shall use a WLAN sensing procedure initiated with the issue of an MLMESENSMSMTSETUP.request primitive with PeerSTAAddress parameter equal to the SBP initiator’s MAC address to satisfy the SBP request.

NOTE—If an SBP initiator is also a sensing responder and a sensing receiver in the WLAN sensing procedure initiated by the SBP responder, the AP assigns the Sensing Measurement Report Requested subfield to 0 in the Sensing Measurement Setup Request frame transmitted to the SBP initiator.

If an SBP initiator is a non-AP STA that is unassociated with the SBP responder, the SBP responder shall poll the SBP initiator in the polling phase of a TB sensing measurement instance of the corresponding WLAN sensing procedure initiated by the SBP responder. *(1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036)*

# SP

Do you support the resolution to the following 31 CIDs and incorporate the changes into the latest TGbf draft: 1330, 1976, 2295, 1668, 1058, 1346, 1445, 1007, 1447, 1861, 2232, 1799, 1975, 2233, 1035, 1029, 2234, 1914, 1862, 1708, 2236, 1008, 1774, 2238, 1527, 2235, 2237, 1847, 1848, 1086, 1036, in 11-23/0477r2.

Y/N/A