IEEE P802.11
Wireless LANs

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| LB276 Reporting CID Resolutions |
| Date: 2023-11-06 |
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Abstract

This submission addresses the following 15 LB276 CIDs: 3297 3296 3062 3334 3063 3207 3320 3322 3537 3299 3302 3304 3343 3010 3354.

Revision history:

R0 – initial version

R1 – Modifications as per meeting discussion

| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 3296 | 11.55.1.5.2.4 | 150.16 | Shall User Info field of 2008 be always included in a SR2SI Sounding TF? If yes, we should add text to say it; if not, text also needed to clarify the conditions of including and excluding it. | As in comment | RevisedIncorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |
| 3297 | 11.55.1.5.2.3 | 148.53 | What if there is no preceding Sensing Polling TF? How should the Partial TSF field be set in such a case? Note that according to 11.55.1.5.1 (General), a TB measurement exchange could be started w/o Sensing Polling TF. Same issue occurs at P150L16 and P152L3. | Specifiy how the Partial TSF field and Token field be set if there is no preceding Sensing Polling TF. | RevisedIncorporate changes specified in 23/1869r1 ([https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276\_reporting\_cid\_resolution.docx](https://mentor.ieee.org/802.11/dcn/23/11-23-1869-00-00bf-LB276_reporting_cid_resolution.docx)). |

**Discussion:**

* The User Info field for the SR2SI/SR2SR Sounding Trigger frame with the AID12/USID12 field set to 2008 is used to carry the Partial TSF field. An equivalent STA Info field is defined for the Sensing NDP Announcement frame with the AID11 set to 2044.
* The Partial TSF is necessary for unassociated STAs to maintain synchronization to the APs clock, since an unassociated STA will likely not receive the periodic beacon.
* Two options discussed.
* Option A:
	+ User Info field with AID12/USID12=2008 is ALWAYS present in SR2SI TF / SR2SR TF
	+ STA Info field with AID11=2044 is ALWAYS present in NDAP frames
	+ When there is no Polling Phase present, the Partial TSF and Token fields are reserved
* Option B:
	+ User Info field with AID12/USID12=2008 is ONLY present in SR2SI TF / SR2SR TF if measurement exchange began with Polling Phase
	+ STA Info field with AID11=2044 is ONLY present in NDPA frames if measurement exchange began with Polling Phase

SP:

When including the User Info field with AID12/USID12=2008 in the SR2SI/SR2SR TF, and the STA Info Field with AID11=2044 in the Sensing NDP Announcement, what option do you prefer?

[Option A, Option B, Abstain]

Based on discussion, option A was selected without needing to run above SP.

***TGbf Editor: Modify*** ***P149.15-25 in D2.1 as follows:***

A STA Info field with the AID11 field set to 2044 shall be present in all transmitted Sensing NDP Announcement frames as part of a TB sensing measurement exchange. When transmitting a Sensing NDP Announcement frame as part of a TB sensing measurement exchange beginning with a polling phase, the STA Info field with AID11 equal to 2044 shall be set as follows:

* The Partial TSF field is set to the AP’s TSF[21:6] at the time of transmission of the preceding Sensing Polling Trigger frame. Specifically, the time of transmission is defined as when the first data symbol of the PSDU of the frame was transmitted to the PHY plus the AP’s delays through its local PHY from the MAC-PHY interface to its interface with the WM.
* The Token field is set to the same trigger poll counter value as the Token field in the Trigger Dependant Common Info field of the Sensing Polling Trigger frame.

When transmitting a Sensing NDP Announcement frame as part of a TB sensing measurement exchange not beginning with a polling phase, the Partial TSF and Token fields of the STA Info field with AID11 equal to 2044 shall be reserved(#3296,#3297).

***TGbf Editor: Modify*** ***P150.55-65 in D2.1 as follows:***

A User Info field with the AID12/USID12 field set to 2008 shall be present in all transmitted SR2SI Sounding Trigger frames as part of a TB sensing measurement exchange. When transmitting an SR2SI Sounding Trigger frame as part of a TB sensing measurement exchange beginning with a polling phase, the User Info field with AID12/USID12 equal to 2008 shall be set as follows:

* The Partial TSF field is set to the AP’s TSF[21:6] at the time of transmission of the preceding Sensing Polling Trigger frame in that sensing measurement exchange. Specifically, the time of transmission is defined as when the first data symbol of the PSDU of the frame was transmitted to the PHY plus the AP’s delays through its local PHY from the MAC-PHY interface to its interface with the WM.
* The Token field is set to the same trigger poll counter value as the Token field in the Trigger Dependant Common Info field of the Sensing Polling Trigger frame.

When transmitting a SR2SI Sounding Trigger frame as part of a TB sensing measurement exchange not beginning with a polling phase, the Partial TSF and Token fields of the User Info field with AID12/USID12 equal to 2008 shall be reserved(#3296,#3297).

***TGbf Editor: Modify*** ***P152.55-65 in D2.1 as follows:***

A User Info field with the AID12/USID12 field set to 2008 shall be present in all transmitted SR2SI Sounding Trigger frames as part of a TB sensing measurement exchange. When transmitting an SR2SR Sounding Trigger frame as part of the TB sensing measurement exchange beginning with a polling phase, the User Info field with AID12/USID12 equal to 2008 shall be set as follows:

* The Partial TSF field is set to the AP’s TSF[21:6] at the time of transmission of the preceding Sensing Polling Trigger frame in that sensing measurement exchange. Specifically, the time of transmission is defined as when the first data symbol of the PSDU of said frame was transmitted to the PHY plus the AP’s delays through its local PHY from the MAC-PHY interface to its interface with the WM.
* The Token field is set to the same trigger poll counter value as the Token field in the Trigger Dependant Common Info field of the Sensing Polling Trigger frame.

When transmitting a SR2SI Sounding Trigger frame as part of a TB sensing measurement exchange not beginning with a polling phase, the Partial TSF and Token fields of the User Info field with AID12/USID12 equal to 2008 shall be reserved(#3296,#3297).

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| 3062 | 11.55.1.5.2.6.1 | 152.18 | The shall here is inappropriate since it does not identify the responsible implementation. | Replace with "If present, the basic reporting phase is the last phase of the TB sensing measurement and consists of ..." If necessary, add further requirements on the entity implemented, e.g., "A sensing initator shall not send ... following the basic reporting phase." | RevisedAgree in principle. In addition to the suggested change, the text was also moved to section 11.55.1.5.2.6, since it applies to both the basic and threshold-based reporting phases.Incorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |

**Discussion:**

* Currently, the text referenced to by the commenter is under section 11.55.1.5.2.6.1.
* However, I do not believe it belongs specifically to the basic reporting phase, but to the Reporting phase in general.
* The Reporting phase contains a basic reporting phase, and a threshold-based reporting phase.
* I believe the text applies equally to both, and hence should be moved to be added under section 11.55.1.5.2.6.



***TGbf Editor: Insert the following text under section 11.55.1.5.2.6 text in D2.1:***

If present, the reporting phase is the last phase of the TB sensing measurement exchange. The reporting phase may consist of the basic reporting phase (see 11.55.1.5.2.6.1 (Basic reporting phase)), or the threshold-based reporting phase (see 11.55.1.5.2.6.2 (Threshold-based reporting phase))(#3062).

***TGbf Editor: Remove the text from section 11.55.1.5.2.6.1 in D2.1 as follows:***

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| 3334 | 11.55.1.5.2.6.1 | 152.21 | "reporting phase" should be "basic reporting phase". | As in comment | Accept |

**Discussion:**

**For reference, after applying the proposed change, the resulting text will be as follows:**

For a sensing responder which is a sensing receiver, the basic reporting phase shall be present in a TB sensing

measurement exchange if the Sensing Measurement Report Requested field within the Sensing Measurement

Request frame is set to 1.

| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
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| 3063 | 11.55.1.5.2.6.1 | 152.37 | The shall here is inappropriate. The requirement is on how the request is made (using MLME-SENSREPORTRQ.request primitive), and not around any behavior. Such a statement should be descriptive. Also, the description here does not clearly identify how the MLME primitive is related to the Trigger frame and the frame sent in response to the Trigger frame. There also seem to be a whole bunch of corner cases that aren't adequately described. What happens if a Trigger frame is received for which there is no coresponding MLME-SENSREPROTREQ? or measurement exchange ID? Is the STA required to respond and if so, with what? Remember that these sessions can disappear due to timeout and this protocol seems very fragile to me. | Replace with "To request that the sensing receiver transmit a Sensing Measurement Report frame, the SME of the sensing receiver uses the MLME-SENSREPORTRQ.request primitive. The sensing receiver will then transmit a Sensing Measurement Report frame carrying information supplied in the MLME-SENSREPORTRQ.request primitive in response to the next Sensing Reporting Trigger frame that allocates resources for the sensing receiver and that identifies the sensing measurement sesson corresponding to the MLM-SENSREPORTRQ.request primitive." | RevisedAgree with commenter. This change has been combined with other CIDs.Incorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |
| 3207 | 11.55.1.5.2.6.1 | 152.44 | Change "Session" instead of "Exchange" | as in comment | RevisedAgree with commenter. This change has been combined with other CIDs. Incorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |
| 3320 | 11.55.1.5.2.6.1 | 152.43 | "consistently throughout all TB sensing measurement exchanges with the same Measurement Exchange ID." needs correction. The text was "corresponding to the same measurement setup" in D1.0. | Change to: consistently throughout all TB sensing measurement exchanges associated with the same sensing measurement session. | RevisedAgree with commenter. This change has been combined with other CIDs.Incorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |

**Discussion:**

* Agree with comment in 3063. Suggested text indeed improves robustness, however we need to maintain assurance of consistent behaviour of the report corresponding to the either the current or previous measurement exchange.

***TGbf Editor: Modify P153.25-32 in D2.1 as follows:***

To request that the sensing receiver transmits a Sensing Measurement Report frame, the SME of the sensing receiver uses the MLME-SENSREPORTRQ.request primitive. The sensing receiver shall transmit a Sensing Measurement Report frame carrying information supplied in the MLME-SENSREPORTRQ.request primitive in response to the next Sensing Reporting Trigger frame that allocates resources for the sensing receiver and that identifies the sensing measurement session correspoinding to the MLME-SENSREPORTRQ.request primitive. The SME of the sensing receiver shall provide a SensingMeasurementReportContainer parameter to the MLME-SENSREPORTRQ.request primitive that corresponds to either the current sensing measurement exchange or the previous sensing measurement exchange consistently throughout all TB sensing measurement exchanges with the same Measurement Session(#3063,#3207,#3320) ID.

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| 3322 | 11.55.1.5.2.6.1 | 152.47 | Add text to clarify multiple Sensing Reporting TFs may be transmitted. | Add the following:Due to UL resource limitation, an AP may transmit multiple Sensing Reporting Trigger frames, each soliciting Sensing Measurement Report frame(s) from a different set of sensing receivers during the TF sounding phase. | RevisedAdded text to clearify that a Sensing Measurement Exchange only allows a single Sensing Reporting Trigger frame.Incorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |

**Discussion:**

***TGbf Editor: Modify P153.13-17 in D2.1 as follows:***

In the basic reporting phase, the sensing initiator shall send a single Sensing Reporting Trigger frame allocating UL resources to one or more sensing receivers in order to obtain Sensing Measurement Report frame(s) containing sensing measurement results.

| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
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| 3537 | 11.55.1.5.2.6.2 | 152.61 | Any reason why the term "sub-phase" for CSI wasn't defined. It's a new term to 802.11. | If it's referring to one of the 3 phases "polling phase, TF sounding phase and reporting phase" In Figure 11-75g pg 151 then either add NOTE as part of Figure 11-75g or a sentence defining sub-phase on page 152 line 61. | RevisedIncorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |

**Discussion:**

* In IEEE P802.11REVme D4.1, the term “subphase” is used in section 10.41 DMG beamforming.
* In IEEE P802.11bf D2.1, the term “subphase” is used in Figure 11-75h.
* As the commenter has identified, the term “sub-phase” is used 5 times within section 11.55.1.5.2.6.2.
* Replace occurrences of “sub-phase” with “subphase”

***TGbf Editor: Modify P153.59-53 in D2.1 as follows:***

Threshold-based reporting phase shall include a CSI variation reporting subphase(#3537) and may additionally include a measurement reporting subphase(#3537). Only the sensing responders that report their CSI variation value greater than or equal to the CSI variation threshold assigned to them participate in the measurement reporting subphase(#3537).

***TGbf Editor: Modify P154.25-34 in D2.1 as follows:***

If the CSI Variation Threshold field in the Sensing Measurement Request frame sent by the sensing initiator is set to a value between 0 and 10, and the Status Code field in the corresponding Sensing Measurement Response frame sent by the sensing responder is set to SUCCESS, the sensing initiator shall send a Sensing Threshold-based Reporting Trigger frame in the CSI variation reporting subphase(#3537) to the sensing responder(s) that supports threshold-based reporting to obtain a CSI variation feedback value(s). The sensing responder that supports threshold-based reporting shall send a Sensing CSI Variation Feedback frame containing the CSI variation feedback value a SIFS after receiving Sensing Threshold-based Reporting Trigger frame in the assigned RU.

***TGbf Editor: Modify P154.36-41 in D2.1 as follows:***

In the measurement reporting subphase(#3537), for all sensing responders for which the reported CSI variation

feedback value was greater than or equal to the CSI variation threshold, the sensing initiator should transmit

a Sensing Reporting Trigger frame assigning RUs to the corresponding sensing responders a SIFS after the

reception of the Sensing Measurement Report frame that included the CSI variation feedback; otherwise, the

sensing initiator shall not send a Sensing Reporting Trigger frame to the corresponding sensing responders.

| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
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| 3299 | 9.4.1.73.3 | 55.50 | "The Reference Timestamp field contains ..." is redundant. This field has already been described in Table 9-127h. | Remove the commented sentence. | Accept |

**Discussion:**

As indicated by the comment, this information is also present in Table 9-127h.



**For reference, after applying the proposed change, the resulting text will be as follows:**

The Timestamp Present field indicates the presence of the Reference Timestamp within the Sensing Measurement

Report Control field. The Timestamp Present field is set to 1 if the Reference Timestamp is present.

Otherwise, it is set to 0. (#3299)

| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
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| 3302 | 9.4.1.73.4 | 58.26 | There is no such a 'Sensing Measurement field' defined. | Change it to 'measured CSI information' | RevisedAgree with commenter. Following resolution to CID 3301 in <https://mentor.ieee.org/802.11/dcn/23/11-23-1662-00-00bf-crs-for-11bf-d2-0-sensing-measurement-report-container-field-cids.docx>, “measured CSI” was selected.Incorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |

**Discussion:**

* Similar resolution to CID 3301 presented in contribution 11/1662, which resulted in the change of “Sensing Measurement Report Information” to “Measured CSI”.
* The current structure of the Sensing Measurement Report Container is as follows:



* The contents of the Sensing Measurement Report field is described in Table 9-127k.



* The reference identified by the commenter appears to be a typo, and may be updated to either:
	+ “Sensing Measurement Report field”
	+ “Measured CSI”
* Given context and location, preference is to follow commenter’s suggestion and select “Measured CSI”.
* This change does not create any conflict with other changes presented in contribution 11/1662.

***TGbf Editor: Modify P54.36-41 in D2.1 as follows:***

Since the scaling and quantization is performed for each RX/TX antenna pair, the scaled and quantized CSI values are ordered by RX/TX antenna pair. The measured CSI(#3302) begins with the set of scaling factors for each RX/TX antenna pair. For each RX/TX antenna pair there is a 12-bit positive scaling factor. If there is an odd number of scaling factors, then the set of scaling factors is followed by a 4-bit padding field.

| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
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| 3304 | 9.4.2.320 | 75.41 | There are 5 of 7 occurrences of 'Sensing Measurement Session Request'. They should be 'Sensing Measurement Request'. P75L41, P113L13, P113L19, P113L23, P140L50, | Change to Sensing Measurement Request | RevisedAgree with commenter regarding proposed change for P75L41 and P140L50. Because context is different for the remaining instances, a slightly different resolution is needed. Incorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |
| 3343 | 9.4.2.320 | 75.41 | "Sensing Measurement Session Request frame" is undefined, and should be "Sensing Measurement Request frame". | As in comment | RevisedAgree with commenter. Change has been combined with another CID.Incorporate changes specified in 23/1869r1 (<https://mentor.ieee.org/802.11/dcn/23/11-23-1869-01-00bf-LB276_reporting_cid_resolution.docx>). |

**Discussion:**

* When referring to the frame, there is no defined “Sensing Measurement Session Request” frame. The correct frame reference should be “Sensing Measurement Request” frame.
* When referring to the act or outcome, we should refer to the “sensing measurement session is established” or the “sensing measurement session is not established”. This is the terminology used in the statemachine figure (Figure 11-75a).

***TGbf Editor: Modify P75.39-42 in D2.1 as follows:***

The SBP Initiator AID12/USID12 field indicates the 12LSBs of either the AID or the USID for the SBP initiator that triggers the AP to transmit the associated Sensing Measurement Request frame to satisfy the SBP request from the SBP initiator(#3304,#3343).

***TGbf Editor: Modify P113.12-14 in D2.1 as follows:***

The Status Code is set to 0 (SUCCESS) to indicate that the sensing measurement session is established(#3304).

***TGbf Editor: Modify P113.16-19 in D2.1 as follows:***

The Status Code is set to 37 (REQUEST\_DECLINED) to indicate the request has been declined and do not send a new Sensing Measurement Request frame for Decline Duration seconds. The sensing measurement session is not established(#3304).

***TGbf Editor: Modify P113.21-24 in D2.1 as follows:***

The Status Code is set to 39 (REJECTED\_WITH\_SUGGESTED\_CHANGES) to indicate the request has been rejected and suggested parameters are provided. The sensing measurement session is not established(#3304).

***TGbf Editor: Modify P140.61-P141.3 in D2.1 as follows:***

If the sensing initiator is a non-AP STA, it shall include a non-TB Sensing Specific subelement as part of the Sensing Measurement Parameters element in a Sensing Measurement Request frame and shall assign a value in the Min Time Between Measurements field which is not lower than the value of the Min Time Between Measurements field within the Sensing field in the last Sensing Capabilities element or in the non-TB Sensing Specific subelement in the last Sensing Measurement Parameters element received from the sensing responder(#3304).

| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
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| 3010 | 27.2.2 | 197.25 | CSI\_ESTIMATE is not mandatory for HE PHY.Same comment for clause 36.2.2. | Change to Y to O.Otherwise, add a condition. | RejectedThe TG considered the comment, but believes CSI\_ESTIMATE should be identified as mandatory (Y) because as per the PICS (section B.4.4.1, item PC48), the role of sensing responder is mandatory for a sensing STA to support. |

**Discussion:**

* The presence of this field is only used when dot11SensingImplemented is true.
* When dot11SensingImplemented is true, it is expected these fields are mandatory, since the role of sensing responder is mandatory for a sensing STA.

| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
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| 3354 |  | 0.00 | Disapprove because currently STA can only tell AP to wait for up to 7s prior to retrying obtaining a sensing report. | Recommend extending the timeout field to longer than 7 seconds | RejectedThis comment fails to locate and identify the issue. The proposed change fails to identify sufficient detail so that the specific wording of the changes can be determined. |

**Discussion:**

* From the comment and proposed change, unable to determine the specific scenario or technical issue.

**SP:**

Do you support the resolution to CIDs 3297 3296 3062 3334 3063 3207 3320 3322 3537 3299 3302 3304 3343 3010 3354 from 11-23/1869r1 and to incorporate the changes into the latest TGbf draft?

Y/N/A