IEEE P802.11  
Wireless LANs

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| SA1 Reporting CID Resolutions | | | | |
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Abstract

This submission addresses the following SA1 CIDs: 6058 6061 6178 6198.

Revision history:

R0 – Initial version

R1 – Included offline feedback on text modifications for CIDs 6058 and 6061.

– Include modifications to text moved from section 9 to 11 to make normative.

R2 – Updated resolution to CID 6178 as per discussion.

– Updated resolutions links and references.

– Included offline feedback on text modifications for CIDs 6058 and 6061.

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| 6058 | 11.55.1.5.4 | 163.44 | Since how to assign indices to RF chains or  antenna elements is implementation dependent, the Q matrix doesn't have to be an identity matrix. 802.11az had a similar statement about the Q matrix, which was carried into REVme drafts including REVme D5.0. During the SA ballot for REVme D5.0, "an identify matrix" has been changed to "a permutation matrix". Please refer to 11-24/0033r9, 11-21/0727r34 and 11-24/0698r4 (Or REVme\_D6.0 when it becomes available). | "Change this paragraph to ""When transmitting HE/EHT-STFs and HE/EHT-LTFs in SI2SR, SR2SI, or SR2SR NDP, if N\_STS = T\_TX, the spatial mapping matrix, Q matrix, shall be a permutation matrix with N\_TX rows and N\_TX columns. If N\_STS < T\_TX, Q shall be P D where P is a permutation matrix with N\_TX rows and N\_TX columns and D is a matrix with N\_TX rows and N\_STS columns where the first N\_STS rows make up an identity matrix and the remaining rows make up a zero matrix.""  With the description above, NOTE 3 should also be properly stated or simply be deleted." | Revised  Incorporate changes specified in 24/1111r2 (<https://mentor.ieee.org/802.11/dcn/24/11-24-1111-02-00bf-SA1_reporting_cid_resolution.docx>). |
| 6061 | 11.55.1.5.4 | 163.44 | Since assigning spatial stream indices to RF chains/antenna elements is implementation dependent, the Q matrix does not have to be an Identity matrix. Requiring the Q matrix to be a permutation matrix of size N\_TX x N\_TX (elements restricted to 0 or 1) should be sufficient. On the other hand, neither "RF chain/antenna element selection matrix" nor "RF chain/antenna element swapping" is defined anywhere in the 11bf draft or in the baseline spec. | Revise this paragraph and Note 3 to replace identity matrix with permutation matrix. A contribution is to be submitted by the commenter to provide proposed text changes. Note that a revision based a similar concept was adopted recently for the relevant 11az text in REVme D5.0. | Revised  Incorporate changes specified in 24/1111r2 (<https://mentor.ieee.org/802.11/dcn/24/11-24-1111-02-00bf-SA1_reporting_cid_resolution.docx>). |

**Notes:**

* The P802.11bf text cited by CID 6058 and 6061 was originally taken from the latest P802.11az draft.

**Summary of cited references:**

[11-21-0727r34](https://mentor.ieee.org/802.11/dcn/21/11-21-0727-34-000m-revme-phy-comments.xls) (https://mentor.ieee.org/802.11/dcn/21/11-21-0727-34-000m-revme-phy-comments.xls):

* Document contains P802.11 REVme PHY comments.
* Relevant are: 7016, 7017, 7018, and 7020, with resolution described in document 11-24-0698r4.
* Motion to approve relevant resolutions run as “PHY Motion 6”.

[11-24-0033r9](https://mentor.ieee.org/802.11/dcn/24/11-24-0033-09-000m-revme-motions.pptx) (https://mentor.ieee.org/802.11/dcn/24/11-24-0033-09-000m-revme-motions.pptx):

* Document contains motion deck for P802.11REVme comment resolutions.
* Motion 157 covers “PHY Motion 6” which was approved by unanimous consent (2024-05-16).

[11-24-0698r4](https://mentor.ieee.org/802.11/dcn/24/11-24-0698-04-000m-spatial-mapping-for-he-ranging.docx) (https://mentor.ieee.org/802.11/dcn/24/11-24-0698-04-000m-spatial-mapping-for-he-ranging.docx):

* Relevant text changes are as follows:

For the HE-STF and HE-LTF fields, if *NSTS* = *NTX*, the spatial mapping matrix *Q* shall be a permutation matrix with *NTX* rows and *NTX* columns; if *NSTS* < *NTX*, *Q* shall be *P* × *D* where *P* is a permutation matrix with *NTX* rows and *NTX* columns and *D* is a matrix with *NTX* rows and *NSTS* columns where the first *NSTS* rows make up an identity matrix and the remaining rows make up a zero matrix.

No beamforming is applied. If *NSTS* = *NTX*, the spatial mapping matrix *Q* is a permutation matrix with *NTX* rows and *NTX* columns. If *NSTS* < *NTX*, *Q* is *P* × *D* where *P* is a permutation matrix with *NTX* rows and *NTX* columns and *D* is a matrix with *NTX* rows and *NSTS* columns where the first *NSTS* rows make up an identity matrix and the remaining rows make up a zero matrix.

. If *NSTS* = *NTX*, the spatial mapping matrix *Q* is a permutation matrix with *NTX* rows and *NTX* columns. If *NSTS* < *NTX*, *Q* is *P* × *D* where *P* is a permutation matrix with *NTX* rows and *NTX* columns and *D* is a matrix with *NTX* rows and *NSTS* columns where the first *NSTS* rows make up an identity matrix and the remaining rows make up a zero matrix.

* Final text taken from P802.11REVme D6.0 (P4397.1-6)

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Description automatically generated

***TGbf Editor: Modify P163.44 to P165.34 in D4.0 as follows:***

The spatial mapping matrix Q for the HE-STF, HE-LTF, EHT-STF and EHT-LTF in an SI2SR, SR2SI, or SR2SR NDP shall be:

* If NSTS = NTX, a permutation matrix with NTX rows and NTX columns.
* If NSTS < NTX, a matrix with NTX rows and NSTS columns, in which NSTS rows make up a permutation matrix and the remaining rows make up a zero matrix..

In both NSTS = NTX and NSTS < NTX cases, the spatial stream to physical antenna port mapping in a STA shall be the same for all SI2SR, SR2SI, and SR2SR NDP transmissions within a sensing measurement session.

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| 6178 | 9.4.1.78.2 | 52.42 | Subclause 9.4.1.78.2 (CSI encoding and decoding) does not describe the frame format, but the procedures for encoding and decoding CSI. | As 9.4.1.78.2 describes procedures for ecoding and decoding CSI, the subclause should be moved to a subclause of 11.55.1.5.4 (Common rules). | Revised  Incorporate changes specified in 24/1111r2 (<https://mentor.ieee.org/802.11/dcn/24/11-24-1111-02-00bf-SA1_reporting_cid_resolution.docx>). |

**Notes:**

* Agree in principle with commentor as section 9 typically describes frame formats and not procedures.
* The CSI Report field (9.4.1.25), Noncompressed Beamforming Report field (9.4.1.26), and Compressed Beamforming Report field (9.4.1.27) descriptions in IEEE P802.11REVme D6.0 refer to appropriate sections in the PHY subclauses for similar encoding rules.
  + The CSI Report field refers to section 19.3.12.3.2 (CSI matrices feedback)
  + The Noncompressed Beamforming Report field refers to section 19.3.12.3.5 (V matrix coding (noncompressed beamforming))
  + The Compressed Beamforming report field refers to section 19.3.12.3.6 (Compressed beamforming feedback matrix)
* The difference between generating the beamform report vs the sensing report is the RX vector provides the already formatted outputs (see CHAN\_MAT and CHAN\_MAT\_TYPE) to build the beamform report, but an additional conversion from the CSI\_ESTIMATE RX vector is required to build the sensing report.
* After discussion, group decision was to leave subclause 9.4.1.78.2 (CSI encoding and decoding) as is, however, add normative text under section 11.55 to reference subclause 9.4.1.78.2.
* Further, the rules for generating segmented sensing measurement reports (11.55.1.5.3.4) appears incorrectly placed as a subclause of the Non-TB sensing measurement exchange (11.55.1.5.3).
  + Section 11.55.1.5.3.4 should also be placed as a subclause under 11.55.1.5.4 (Common rules).

***TGbf Editor:***

***Move subclause 11.55.1.5.3.4 (Rules for generating segmented sensing measurement reports)***

***To a subclause under 11.55.1.5.4.***

***TGbf Editor: Modify*** ***P146.59-62 (section 11.55.1.5.1 General) in D4.0 as follows:***

On receipt of an SI2SR NDP, SR2SI NDP, or SR2SR NDP, the sensing receiver’s MAC shall issue an

MLME-SENSREPORT.indication primitive that includes sensing measurements obtained with the corresponding NDP, where the scaled and quantized CSI values within the Sensing Measurement Report field (9.4.1.78.4 (Sensing Measurement Report field)) shall be generated from the CSI\_ESTIMATE RXVECTOR using the procedure described in section 9.4.1.78.2.2 (CSI encoding procedure).

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| 6198 | 11.55.1.5.3.3 | 162.32 | Adding the text to descript how the last report of the last the sensing measurement exchange is transmitted if there has a invalid report after the first sensing measurement exchange. | as in comment | Revised  Incorporate changes specified in 24/1111r2 (<https://mentor.ieee.org/802.11/dcn/24/11-24-1111-02-00bf-SA1_reporting_cid_resolution.docx>). |

**Notes:**

* Existing protocol does not support delivery of final delayed measurement report after the Sensing measurement session has been terminated.
  + The current protocol does not support a flow where a Sensing Measurement Report frame is transmitted in response to a Sensing Measurement Termination frame.
* As a result, current description implies:
  + No further Sensing Measurement Report frames will be transmitted corresponding to a session that has been explicitally or implicitally terminated.
  + A sensing initiator should not initiate an explicit termination with a responder until all desired valid sensing measurement reports have been received.
* Since this behaviour is implied, adding a note can clarify the above two points.
  + Since this is common for both the basic reporting phase of the TB exchange and the reporting phase of the non-TB exchange, the note can be added to the General subclause (11.55.1.5.1) under the Sensing measurement exchange.

***TGbf Editor: Insert the following note in subclause 11.55.1.5.1 (General):***

NOTE – No further Sensing Measurement Report frame is transmitted corresponding to a sensing measurement session that has either been explicitaly or implicitialy terminated. In the case where the Sensing Measurement Report frame corresponds to the previous TB or non-TB sensing measurement exchange, the sensing initiator does not transmit a Sensing Measurement Termination frame until all desired valid sensing measurement report(s) have been received.

**SP:**

Do you support the resolution to CIDs 6058, 6061, 6178, and 6198 from 11-24/1111r2 and incorporating the changes into the latest TGbf draft?