IEEE P802.11
Wireless LANs

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| Comment Resolution SA1 – Various Part 5 |
| Date: 2022-02-16 |
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Abstract

This submission proposes the comment resolution of CIDs 7082, 7083; as part of SA1, changes are relative to Draft 4.1.

Revisions:

1. Add resolution box, remove last change

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGaz Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGaz Editor: Editing instructions preceded by “TGaz Editor” are instructions to the TGaz editor to modify existing material in the TGaz draft. As a result of adopting the changes, the TGaz editor will execute the instructions rather than copy them to the TGaz Draft.***

**The text preceded by “Discussion” is not part of the adopted changes.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| **7082** | 48.05 | 9.3.1.22.1 | For 2xHE-LTF + 1.6 us GI, there are two types of MU-MIMO HE-LTF modes allowed in general - the HE single stream pilot HE-LTF mode and the HE masked HE-LTF sequence mode. There is no need for the HE Ranging TB NDP to support both modes. | Add a phrase indicating that when the Trigger frame has Trigger Type equal to Ranging, then the MU-MIMO HE-LTF Mode field in the Common Info field is set to the HE single stream pilot HE-LTF mode. | **Revised**Agree in principle.TGaz editor, make changes depicted in<https://mentor.ieee.org/802.11/dcn/22/11-22-0357-00-00az-comment-resolution-sa1-various-part-5.docx> |
| **7083** | 239.24 | 27.3.18a.2 | For 2xHE-LTF + 1.6 us GI, there are two types of MU-MIMO HE-LTF modes allowed in general - the HE single stream pilot HE-LTF mode and the HE masked HE-LTF sequence mode. There is no need for the HE Ranging TB NDP to support both modes. | State that only the HE single stream pilot HE-LTF mode is allowed. | **Revised**Agree in principle.TGaz editor, make changes depicted in<https://mentor.ieee.org/802.11/dcn/22/11-22-0357-00-00az-comment-resolution-sa1-various-part-5.docx> |
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9.3.1.22.10.2 Sounding subvariant

TGaz Editor: Change text on page 51 starting at line 32 as follows

The format of the User Info field in the Sounding Ranging Trigger frame is defined in Figure [9-64ld](#F09o64ld) (User Info field format for Sounding subvariant).

The Trigger Dependent User Info subfield is not present in the Sounding Ranging Trigger frame.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B11  | B12 B20 | B21 B23 | B24 B25 | B26 B31 | B32 B38 | B39 |
|  | AID12/RSID12 | Reserved | I2R Rep | Reserved | SS Allocation / RA-RUInformation | UL Target ReceivePower | Reserved |
| Bits | 12 | 9 | 3 | 2 | 6 | 7 | 1 |

1. Figure 9-64ld—User Info field format for Sounding subvariant

The AID12/RSID12 subfield is identical to the corresponding subfield in the Poll Ranging Trigger frame.

The I2R Rep subfield indicates the number of HE-LTF repetitions in the corresponding HE TB Ranging NDP from the STA indicated in the AID12/RSID12 subfield; the I2R Rep subfield is set to the number of HE-LTF repetitions minus 1. The value of the I2R Rep subfield is the same in all User Info fields in the Trigger frame.

The SS Allocation/RA-RU Information and UL Target Receive Power subfields are identical to the corresponding subfields in the Basic Trigger frame; see [9.3.1.22](#H09o3o1o22) (Trigger Frame format).

In the Common Info field, the UL STBC, LDPC Extra Symbol Segment, Pre-FEC Padding Factor, and PE Disambiguity subfields are reserved.

The GI And HE-LTF Type subfield in the Common Info field is set to 1 (2x HE-LTF + 1.6 μs GI). The MU-MIMO HE-LTF Mode subfield in the Common Info field is set to 0 (HE single stream pilot HE-LTF mode).

The Doppler subfield in the Common Info field is set to 0.

NOTE – The UL Length subfield of a Trigger frame is computed using Equation (27-11) (see 26.5.2.2.4), which is based on the TXTIME computed in 27.4.3. In case of Sounding Ranging Trigger frame, the resulting UL Length value is equivalent to 13+6‧*NLTF\_REPNHE-LTF*, where *NLTF-REP* is the number of HE-LTF repetitions (given by the I2R Rep subfield value plus 1) and *NHE-LTF* is the number of HE-LTF sumbols (given by the Number Of HE-LTF Symbols And Midamble Periodicity subfield).

9.3.1.22.10.3 Secured Sounding subvariant

TGaz Editor: Change text on page 52 starting at line 15 as follows

The format of the User Info field in the Secure Sounding Ranging Trigger is defined in Figure [9-64le](#F09o64le) (User Info field for Secured Sounding subvariant).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B11 | B12 B20 | B21 B23 | B24 B25 | B26 B31 | B32 B38 | B39 | B40 B55 |
|  | AID12/RSID12 | Reserved | I2R Rep | Reserved | SS Allocation /RA-RUInformation | UL Target Receive Power | Reserved | Trigger Dependent User Info (SAC) |
| Bits: | 12 | 9 | 3 | 2 | 6 | 7 | 1 | 16 |

1. Figure 9-64le—User Info field for Secured Sounding subvariant (#1391, #1947, #5377)

The AID12/RSID12 subfield is identical to the corresponding subfield in the Poll Ranging Trigger frame.

The I2R Rep subfield is identical to the corresponding subfield in the Sounding Ranging Trigger frame.

The SS Allocation/RA-RU Information and UL Target Receive Power subfields are identical to the corresponding subfields in the Basic Trigger frame; see [9.3.1.22](#H09o3o1o22) (Trigger Frame format).

The Trigger Dependent User Info subfield is present in the Secure Sounding Ranging Trigger frame. The Trigger Dependent User Info subfield carries the Security Authentication Code (SAC) field. The SAC field provides the authentication information for the LTF Sequence Generation information used for the I2R sounding associated with the measurement instance; see [11.21.6.4.6](#H11o21o6o4o5) (Transmission of a ranging NDP). The length of this subfield is 16 bits.

NOTE—For secure ranging, the I2R Rep is set to the RSTA Assigned I2R Rep; see [11.21.6.3](#H11o21o6o3) (Fine timing measurement procedure negotiation).

In the Common Info field, the MU-MIMO HE-LTF Mode, UL STBC, LDPC Extra Symbol Segment, Pre-FEC Padding Factor, and PE Disambiguity subfields are reserved. The GI And HE-LTF Type and Doppler subfields in the Common Info field are set as in the Sounding Ranging Trigger frame.

TGaz Editor: Change text on page 239 starting at line 30 as follows

The HE TB Ranging NDP has the following properties:

* Uses the HE TB PPDU format but without the Data field.
* No beamforming steering matrix is applied to the waveform.
* HE-STF in HE TB Ranging NDP is the same as the HE-STF in a HE TB PPDU (#**5090**)
* Uses HE-LTFs or Secure HE-LTFs when the TXVECTOR parameter SECURE\_LTF\_FLAG is set to 0 or 1 respectively.
* Secure HE-LTFs use randomized LTF sequences, pseudorandom and deterministic per stream phase rotation and when the TXVECTOR parameter TX\_WINDOW\_FLAG is set to 1, a frequency domain flat top window, instead of the frequency domain rectangular window; see [27.3.18d](file:///C%3A%5CUsers%5Cnxf57284%5CDocuments%5CIEEE%5CDraft%20P802.11az_D4.0_FOR_CB.docx#H27o3o18d) (Construction of Secure HE-LTF). (#3215, #3354, #3911, #3920, #4018, #5216)
* Uses HE-LTF repetitions, if indicated in the TXVECTOR parameter LTF\_REP by values larger than one.
* Has a Packet Extension (PE) field that is 4 µs in duration. No energy is transmitted during the first 1.6 µs of the PE field if the HE-LTF field is using the secure HE-LTF, similar to no energy being transmitted during the GI of HE-LTF symbols. (#**5465**)
* For transmission of HE-LTFs, if NSTS = NTx, the Q matrix shall be an Identity matrix, and if NSTS < NTx, the Q matrix shall be an antenna selection matrix with no antenna swapping. The Q matrix becomes an Identity matrix when all 0 rows are removed. (#**3128**)

The only supported mode is the 2x HE-LTF with 1.6 µs GI, with HE single stream pilot HE-LTF mode. The other combinations of HE-LTF modes and GI duration are disallowed.