IEEE P802.11
Wireless LANs

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| HE-LTF –26.3.10.3 |
| Date: 2016-04-17 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D0.4 with the following CIDs (**18 CIDs**):

* 1865 323 481 517 537 920 319 1059 2559 2551 2552 2553 2554 2555 2556 2557 2558 923

Revisions:

* Rev2: Initial version of the document.
* Rev3: update based on TGax D0.4.

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 TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 319 | Bin | 122.43 | Add a new optional combiniation 2x LTF+ 3.2usCP to support outdoor channel. Since 2x LTF is the only mode suppoted in sounding NDP, this new 2x LTF+3.2up CP is useful for outdoor channel sounding | as in comment | RejectedThe reason is that 2x LTF+ 1.6usCP already can support ourdoor channel |
| 2552 | Youhan | 122.33 | Make (1xHE-LTF, TGI2,Data) and (1xHE-LTF, TGI4,Data) mandatory for non-OFDMA, MU-MIMO HE\_TRIG PPDU. | Make (1xHE-LTF, TGI2,Data) and (1xHE-LTF, TGI4,Data) mandatory for non-OFDMA, MU-MIMO HE\_TRIG PPDU. | RejectedThe reason is that the commenter failed to provide sufficient reason  |

CID 481

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 481 | Daewon | 132.02 | when beam change is set to 0, the spatial mapping between pre-HE modulated symbols and HE-LTF1 must be same. However, the pre-HE modulated symbols are multiplied with gamma, while HE-STF, HE-LTF, and HE-Data are not, therefore, spatial mapping is not strictly identical for all 20Mhz segments of the transmission. | clarify the beam change description to state that pre-HE and HE-LTF 1 has the idential spatial mapping with the exception of the gamma factor or include the gamma factor to HE portions of the PPDU when beam change is set to 0. | RevisedThe description for beam change bit between table 25-16 and table 26-1 do not match.Instruction to editor:Please modify the text according to the changes indicated under CID 481 in IEEE 802.11-16/1202r3 |

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 920):***

##### 26.3.10.7.2 Content

Table ‑ - Fields in the HE-SIG-A for an HE SU PPDU and HE extended range SU PPDU

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Two Parts of HE-SIG-A** | **Bit** | **Field** | **Number of bits** | **Description** |
| HE-SIG-A 1 |  |  |  |  |
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| b1 | Beam Change | 1 | Set to 1 indicates that the pre-HE-STF portion of the SU PPDU or HE\_EXT\_SU PPDU is spatially mapped differently from HE-LTF1.Set to 0 indicates that the pre-HE-STF portion of the SU PPDU or HE\_EXT\_SU PPDU is spatially mapped the same way as HE-LTF1 on each tone. (#481) |
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### 26.2.2 TXVECTOR and RXVECTOR parameters

Table ‑ - TXVECTOR and RXVECTOR parameters

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| --- | --- | --- | --- | --- |
| Parameter | Condition | Value | TXVECTOR | RXVECTOR |
|  |  |  |  |  |
|  |  |  |  |  |
| BEAM\_CHANGE | FORMAT is HE\_SU or HE\_EXT\_SU | Set to 1 indicates that the pre-HE-STF portion of the SU PPDU or HE\_EXT\_SU PPDU is spatially mapped differently from HE-LTF1.Set to 0 indicates that the pre-HE-STF portion of the SU PPDU or HE\_EXT\_SU PPDU is spatially mapped the same way as HE-LTF1 on each tone. (#481) |  |  |
| Otherwise  | Not present |  |  |
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CID 517

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 517 | Dong | 122.14 | <reference> does not defined.It would need to be clarified the function of number of HE-LTF symbol by considering the total number of space time stream | define the number of HE-LTF symbol for different number of space time like as 11ac | RevisedIt is resolved in TGax D0.4 |

CID 920

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 920 | JUNG | 122.18 | Insert the text for more accurate description | Change to the following; N\_HE-LTF is selected to be no smaller than the maximum value of the functions for each N\_STS,r,total, so HE-LTF symbols shall be aligned across the entire band. | RevisedThe PHY Motion #159 already resolved this issue and is resolved in TGax D0.4 |

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 920):***

CID 2551

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2551 | Youhan | 122.29 | TGI,Data2 and TGI,Data4 are not defined. Also, TGI,Data seems to be used in error. | Change TGI,Data to TGI1,Data, TGI,Data2 to TGI2,Data, and TGI,Data4 to TGI4,Data. | AcceptedIt is resolved in TGax D0.4 |

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 2551):***

CID 2553

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2553 | Youhan | 123.03 | What does "-122,122" mean in "HELTF\_{-122,122}"? Similar comment on other equations on the HE-LTF and HE-STF sequences. | Clarify what "-122,122" means. | RevisedA clarification has been provided.Instruction to editor:Please modify the text according to the changes indicated under CID 2553 in IEEE 802.11-16/1202r3 |

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 2553):***

In a 20 MHz transmission, the 1x HE-LTF sequence transmitted and located on subcarrier [-122:122] (#2553)is given by Equation **(26‑39)**.

|  |  |
| --- | --- |
| *HELTF-122,122* = {0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0} | **(26‑39)** |

In a 20 MHz transmission, the 2x HE-LTF sequence transmitted and located on subcarrier [-122:122] (#2553) is given by Equation (26‑40).

|  |  |
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| *HELTF-122,122* = {-1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, 0, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1} | (-40) |

In a 20 MHz transmission, the 4x HE-LTF sequence transmitted and located on subcarrier [-122:122] (#2553) is given by Equation (26‑41).

|  |  |
| --- | --- |
| *HELTF-122, 122* = {-1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, +1, +1, -1,  +1, -1, +1, +1, +1, +1, -1, +1, -1, -1, +1, +1, -1, +1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, +1,  -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, -1, -1, -1, +1, -1, +1, -1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1,  -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, +1, -1, +1, +1,  +1, 0, 0, 0, -1, +1, -1, +1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, +1,  +1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, -1, +1, -1, +1, -1, -1, -1, -1, +1, -1, +1, +1, -1, -1,  +1, -1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1,  -1, -1, -1, +1, -1, +1, -1, -1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, +1, -1, +1, -1, +1, +1} | (‑) |

In a 40 MHz transmission, the 1x HE-LTF sequence transmitted and located on subcarrier [-244:244] (#2553) is given by Equation **(26‑42)**.

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| --- | --- |
| *HELTF-244,244* = { +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1} | **(26‑42)** |

In a 40 MHz transmission, the 2x HE-LTF sequence transmitted and located on subcarrier [-244:244] (#2553) is given by Equation (26‑43).

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| *HELTF-244,244* = {+1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, 0, 0, 0, 0, 0, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1} | (‑) |

In a 40 MHz transmission, the 4x HE-LTF sequence transmitted and located on subcarrier [-244:244] (#2553) is given by Equation (26‑44).

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| *HELTF−244,244* ={+1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, -1, -1, -1, -1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, +1, -1, -1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, -1, -1, -1, -1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, -1, -1, -1, -1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, -1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, +1, 0, 0, 0, 0, 0, -1, +1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, +1, -1, -1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, -1, -1, -1, -1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, -1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, -1} | (‑) |

In an 80 MHz transmission, the 1x HE-LTF sequence transmitted and located on subcarrier [-500:500] (#2553) is given by Equation Equation (26‑45).

|  |  |
| --- | --- |
| *HELTF-500,500* = { -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1} | (‑) |

In an 80 MHz transmission, the 2x HE-LTF sequence transmitted and located on subcarrier [-500:500] (#2553) is given by Equation (26‑46).

|  |  |
| --- | --- |
| *HELTF-500,500* = {+1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, 0, 0, 0, 0, 0, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1} | (‑) |

In an 80 MHz transmission, the 4x HE-LTF sequence transmitted and located on subcarrier [-500:500] (#2553) is given by Equation (26‑47).

|  |  |
| --- | --- |
| *HELTF-500,500* = {+1, +1, -1, +1, -1, +1, -1, -1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, -1, -1, -1, +1, +1, +1, +1, +1, +1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, +1, +1, +1, +1, +1, +1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, +1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, -1, -1, -1, -1, -1, -1, +1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, -1, -1, +1, -1, -1, +1, -1, +1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, +1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, -1, +1, -1, -1, -1, -1, +1, +1, +1, -1, -1, +1, 0, 0, 0, 0, 0, +1, -1, -1, -1, -1, -1, -1, +1, -1, +1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, -1, +1, +1, +1, +1, +1, +1, +1, -1, +1, -1, -1, +1, -1, -1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, -1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, -1, -1, +1, -1, -1, +1, -1, +1, +1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, +1, -1, +1, -1, +1, +1, +1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, -1, -1, +1, -1, -1, +1, -1, +1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, +1} | (‑) |

CID 2555

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2555 | Youhan | 128.62 | What is "zeros(1,23)"? | Clarify what "zeros(1,23)" means (what we are writing is not Matlab code). | RevisedAgree in principle with the comment. The proposed resolution is inline with the suggested change. TGax editor to make the changes shown in 11-16/1202r3 under all headings that include CID 2555 |
| 1865 | Sameer | 129.38 | Clarify the mapping of channels, is 80MHz\_primary sequence mapped to primary channel even it is the "higher" frequency? | as in comment | Revised-Agree in principle with the comment. The proposed resolution is inline with the suggested change. TGax editor to make the changes shown in 11-16/1202r3 under all headings that include CID 1865 |
| 2554 | Youhan | 128.62 | Is the LTF\_{80MHz\_primary} always used in the lower 80 MHz regardless of whether the Primary80 is located in HE160? If so, change the name "LTF\_{80MHz\_primary}" as it can be misleading to mean that the lower 80 MHz is the Primary80. | Change the name "LTF\_{80MHz\_primary}" and "LTF\_{80MHz\_secondar}" as it can be misleading to mean that the lower 80 MHz is the Primary80. |  RevisedAgree in principle with the comment. Proposed resolution fixes the issue **and is the same as that of CID 1865** .TGax editor to make the changes shown in 11-16/1202r3 under all headings that include CID 2554. |
| 2558 | Youhan | 129.32 | If an 80+80 MHz BSS has the Primary80 segment at higher frequency than the Secondary80 segment, would the "LTF\_{80MHz\_primary}" be used in the Primary80 segment, or the segment which is lower in frequency? | Clarify if "LTF\_{80MHz\_primary}" would be used in the Primary80 segment, or the segment which is lower in frequency. | RevisedAgree in principle with the comment. Proposed resolution fixes the issue **and is the same as that of CID 1865** .TGax editor to make the changes shown in 11-16/1202r3 under all headings that include CID 2558. |
| 323 | Bin | 129.33 | Eqns (26-54)(26-55)(26-56) for 80+80MHz using same expression as for 160MHz seems inappropriate, as center 23 zeros do not make sense for non-contiguous 80+80 | suggest to change to " LTF for 80+80 is two 80MHz LTFs (1024 tones each including nulls) are combined together, for example, 1x HE-LTF80+80MHz= [1x LTF80MHz\_primary , 1x LTF80MHz\_secondary]" | AcceptedTGax editor to make the changes shown in 11-16/1202r3 under all headings that include CID 323 |
| 2557 | Youhan | 129.32 | 80+80 transmissions can have large frequency gap in between the two 80 MHz segments. So, putting 23 zeros in between the two 80 MHz segments is incorrect. | Sequences for 80+80 should be defined per 80 MHz, not over 160 MHz. | RevisedAgree in principle with the comment. Proposed resolution fixes the issue **and is the same as that of CID 323** .TGax editor to make the changes shown in 11-16/1202r3 under all headings that include CID 2557. |
| 2556 | Youhan | 129.12 | What are "{n-th 242-RU}" and "{central 26-RU}"? | Add missing sequence definition. | Revised Agree in principle with the comment. The proposed resolution is inline with the suggested change. TGax editor to make the changes shown in 11-16/1202r3 under all headings that include CID 2556 |

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 2555, 1865, 2554, 2558, 323, 257):***

**26.3.10.10 HE-LTF**

In a 160 MHz transmission, the 1x HE-LTF sequence transmitted is given by Equation (26‑48).

|  |  |  |
| --- | --- | --- |
| *HELTF-1012,1012* = { 1x LTF80MHz\_primary, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,1x LTF80MHz\_secondary } (#2555) |  | (‑) |

where 1x LTF80MHz\_primary = { LTF80MHz\_1x,left, 0, LTF80MHz\_1x, right} and shall be used in the primary 80 MHz frequency segment, 1x LTF80MHz\_ secondary = { LTF80MHz\_1x. left, 0, (-1)\* LTF80MHz\_1x, right} and shall be used in the secondary 80 MHz frequency segment. (#2558, 2554, 1865)

LTF80MHz\_1x,left = { -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0}

LTF80MHz\_1x, right = {0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, -1, 0, 0, 0, +1, 0, 0, 0, +1}

In a 160 MHz transmission, the 2x HE-LTF sequence transmitted is given by Equation (26‑49).

|  |  |  |
| --- | --- | --- |
| *HELTF-1012,1012* = { 2x LTF80MHz\_primary, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 2x LTF80MHz\_secondary }(#2555) |  | (‑) |

where

|  |  |  |  |
| --- | --- | --- | --- |
| 2x LTF80MHz\_primary = { LTF80MHz\_2x, part1, LTF80MHz\_2x, part2, LTF80MHz\_2x, part3, LTF80MHz\_2x, part4, LTF80MHz\_2x, part5 } (#2556) |  |  | (‑50) |
| 2x LTF80MHz\_secondary = { LTF80MHz\_2x, part1, (-1)\* LTF80MHz\_2x, part2, LTF80MHz\_2x, part3, LTF80MHz\_2x, part3, (-1)\* LTF80MHz\_2x, part5 } (#2556) |  |  | (‑) |

LTF80MHz\_2x, part1 = {+1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0} (#2556)

LTF80MHz\_2x, part2 = {+1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0} (#2556)

LTF80MHz\_2x, part3 = {+1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, 0, 0, 0, 0, 0, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1} (#2556)

LTF80MHz\_2x, part4 = {0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1} (#2556)

LTF80MHz\_2x, part5 = {0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, -1, 0, -1, 0, +1, 0, -1, 0, -1, 0, -1, 0, +1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1, 0, +1, 0, -1, 0, +1, 0, +1} (#2556)

In a 160 MHz transmission, the 4x HE-LTF sequence transmitted is given by Equation (26‑52).

|  |  |  |
| --- | --- | --- |
| *HELTF-1012,1012* = { 4x LTF80MHz\_primary, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 4x LTF80MHz\_secondary }(#2555) |  | (‑) |

where

|  |  |  |
| --- | --- | --- |
| 4x LTF80MHz\_primary = { LTF80MHz\_4x, left, 0, LTF80MHz\_4x, right}  |  | (‑) |
| 4x LTF80MHz\_ secondary = { LTF80MHz\_4x, left, 0, (-1)\* LTF80MHz\_4x, right}  |  | (‑) |

LTF80MHz\_4x, left = {+1, +1, -1, +1, -1, +1, -1, -1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, -1, -1, -1, +1, +1, +1, +1, +1, +1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, +1, +1, +1, +1, +1, +1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, +1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, -1, -1, -1, -1, -1, -1, +1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, -1, -1, +1, -1, -1, +1, -1, +1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, +1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, -1, +1, -1, -1, -1, -1, +1, +1, +1, -1, -1, +1, 0, 0}

LTF80MHz\_4x, right = {0, 0, +1, -1, -1, -1, -1, -1, -1, +1, -1, +1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, -1, +1, +1, +1, +1, +1, +1, +1, -1, +1, -1, -1, +1, -1, -1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, +1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, -1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, -1, -1, +1, -1, -1, +1, -1, +1, +1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, +1, +1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, -1, +1, -1, +1, -1, +1, +1, +1, +1, +1, -1, -1, -1, +1, +1, +1, +1, -1, +1, +1, -1, -1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, -1, +1, +1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, -1, -1, +1, -1, -1, +1, -1, +1, -1, +1, -1, +1, -1, -1, +1, +1, -1, +1, -1, +1, +1, +1, -1, -1, +1, -1, -1, -1, +1, -1, -1, -1, -1, -1, -1, -1, +1, -1, +1, +1, -1, +1, +1, -1, +1, -1, -1, -1, +1, +1, -1, +1, +1, +1, -1, -1, +1, +1, +1, +1, +1, -1, +1, -1, -1, -1, -1, +1, +1, -1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, +1, -1, +1, -1, +1, -1, -1, -1, -1, -1, +1, +1, +1, -1, -1, -1, -1, +1, -1, -1, +1, +1, +1, -1, +1, +1, -1, -1, +1, -1, +1, -1, +1}

For a noncontiguous 80+80 MHz transmission, the 1x HE-LTF sequence is given by Equation (26‑55).

|  |  |  |
| --- | --- | --- |
| *HELTF80+80MHz* = { 1x LTF80MHz\_primary, 1x LTF80MHz\_secondary } (#2557, 323) |   | (‑) |

For a noncontiguous 80+80 MHz transmission, the 2x HE-LTF sequence is given by Equation (26‑56).

|  |  |  |
| --- | --- | --- |
| *HELTF80+80MHz* = { 2x LTF80MHz\_primary, 2x LTF80MHz\_secondary } (#2557, 323) |  | (‑) |

For a noncontiguous 80+80 MHz transmission, the 4x HE-LTF sequence is given by Equation (26‑57).

|  |  |  |
| --- | --- | --- |
| *HELTF80+80MHz* = { 4x LTF80MHz\_primary, 4x LTF80MHz\_secondary } (#2557, 323) |  | (‑) |

CID 923

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 923 | JUNG | 122.49 | Insert the text for clarification | "the transmission of the PPDU." can be changed to "the transmission of the PPDU for the UL transmission." | RejectedThe reason is thatIn the original sentence, it already mentions “HE trigger-based PPDU”  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 1059 | KE | 131.28 | for the equation (26-57), it has been agreed that HE-LTF for UL MU-MIMO has 2 different schemes, one is SSC which is depicted here but the other one is not mentioned | add the content of " the masking the LTF sequence of each spatial stream by a distinct orthogonal code" in this subclause. | RevisedA technical solution has been provided.Instruction to editor:Please modify the text according to the changes indicated under CID 1059 in IEEE 802.11-16/1202r3 |
| 537 | Eunsung | 130.01 | We agreed that the HE-LTF sequence for UL MU MIMO is masked repeatedly using an orthogonal matrix but no corresponding text is in the draft. | Add the HE-LTF sequence generation using an orthogonal matrix for UL MU MIMO as in PHY motion 56 [11-15/0987r6]. | RevisedThe same text change as in CID 1059 in IEEE 802.11-16/1202r3 |
| 2559 | Youhan | 131.53 | What is the waveform equation for HE\_TRIG PPDU not using the single stream pilot? | What is the waveform equation for HE\_TRIG PPDU not using the single stream pilot? | RevisedThe same text change as in CID 1059 in IEEE 802.11-16/1202r3 |

**Discussion: *…***

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 1059):***

**Note to editor – change the following paragraphs in 26.3.9.10 HE-LTF**

In the UL MUMIMO transmission not using single stream pilots, the generation of the HE-LTF sequence per frequency segment is to mask the non-zero elements in the common HE-LTF sequence repeatedly by a distinct orthogonal code as defined by equation 26-xx.

 (26-xx)

Where is the *k*-th element of the common HE-LTF sequence generated by the one of the equations from (26-39) to (26-57) depends on the bandwidth and the HE-LTF mode. For user *u* of any UL MU-MIMO frequency allocation, the orthogonal code  is defined by (26-yy).

 (26-yy)

Where is the *i*-th repetition of the *u*-th row of the P8which is defined in Equation (22-46).  is the number of non-zero elements in the common HE-LTF. is the first *M* elements of the *u*-th row of the P8. If  is not a multiple of 8, the remaining *M* non-zero elements of the common HE-LTF sequence are masked by the first *M* elements of the orthogonal code.

The generation of the time domain HE-LTF symbols per frequency segment in an HE SU PPDU, HE MU PPDU, HE extended range SU PPDU, HE trigger-based PPDU is shown in where  (#6556) is given by Equation .



Figure ‑26– Generation of HE-LTF symbols per frequency segment in an HE SU PPDU, HE MU PPDU, HE extended range SU PPDU, and HE trigger-based PPDU

(Here omit the description for the generation of time domain symbol of 1x HE-LTF and 2x HE-LTF in TGax D 0.4)

is given by Equation (26‑58).

|  |  |
| --- | --- |
| $$A\_{HELTF}^{k}=\left\{\begin{matrix}R\_{HELTF},if k\in K\_{Pilot} \\P\_{HELTF}, otherwise\end{matrix}\right.$$ | (‑58) |

where *K*Pilot is the set of subcarrier indices for the pilot tones as defined in 26.3.7.3 (Pilot tones).

 is a  matrix whose elements are defined in Equation (26-59).(#6556)

|  |  |
| --- | --- |
|  | (‑59) |

 is defined in (26-60).

|  |  |
| --- | --- |
|  | (‑60) |

where P4is defined in Equation (19-17), P6is defined in Equation 21-45), and P8is defined in Equation (22-46).

In an HE SU PPDU, HE MU PPDU, HE extended range SU PPDU and HE trigger-based PPDU, the time domain representation of the waveform transmitted on frequency segment *iSeg* of transmit chain *iTX* shall be as described by Equation (26‑61).

 (26-61)



Where

if single stream pilot is used and if single stream pilot is not used.

 (Here omit the description for other parameters in TGax D 0.4)