IEEE P802.11
Wireless LANs

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| [The Comment resolution for 32.3.8.2.2] |
| Date: 2020-01-11 |
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Abstract

This submission proposes resolutions for following 10 CIDs: 1080, 1113, 1114, 1115, 1538, 1578, 1774, 1776, 1083, and 1817

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Resolution and document link updated
* Rev 2: Modify the resolution for CID 1774
* Rev 3: Reflect the comments

## CID 1080, 1113, 1114, 1115, 1538, 1578, 1774, 1776, 1083, and 1817

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1080 | 63.35 | 32.3.8.2.2 | Eq 32-6 only covers 10MHz case. Need to cover 20Mhz too | as in comment | Revised.The commenter is right. NGV supports both the 10MHz transmission and 20MHz transmission. And, the L-STF field of 10MHz transmission is duplicated per 10MHz in 20MHz transmission. So, Eq32-6 should be modified to cover the 20MHz transmission. TGbd Editor: Incoroporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-0022-04-00bd-the-comment-resolution-for-32-3-8-2-2.docx. |
| 1113 | 63.34 | 32.3.8.2.2 | in Eq 32.6, S\_k is not defined | correct equation | Revised. The commenter is right.The definition of S\_k is missing. The definitioan of S\_k should be added in 11bd specTGbd Editor: Incoroporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-0022-04-00bd-the-comment-resolution-for-32-3-8-2-2.docx. |
| 1538 | 63.26 | 32.3.8.2.2 | change "The L-STF field for a 10 MHz or 20 MHz transmission is defined by Equation (19-8) and Equation (19-9) ..." to "The frequency domain sequence of L-STF field for 10 MHz and 20 MHz transmission are defined by Equation (19-8) and Equation (19-9) ..." | As in the comment. | Revised. The commenter is right. The proposed change is made with editorial modification. TGbd Editor: Incoroporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-0022-04-00bd-the-comment-resolution-for-32-3-8-2-2.docx. |
| 1578 | 63.34 | 32.3.8.2.2 | Eqs. (32-6) & (32-7) are applied to both 10 MHz and 20 MHz. Change the constant 26 to NR. | As in the comment. | Revised. The commenter is right. NGV supports both the 10MHz transmission and 20MHz transmission. And, the L-STF field of 10MHz transmission is duplicated per 10MHz in 20MHz transmission. So, Eq32-6 should be modified to cover the 20MHz transmission. Note to editor :Same resolution for CID 1080 |
| 1774 | 63.34 | 32.3.8.2.2 | In Equation (32-6), &#951;\_L-STF is included while it is not included in the general subfield equation (32-3). &#951;\_field should be included in equation (32-3) to be consistent | See comment | Revised. The commenter is right. The parameter of power boosting for L-STF and L-LTF should be included in equation 32-3. TGbd Editor: Incoroporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-0022-04-00bd-the-comment-resolution-for-32-3-8-2-2.docx. |
| 1776 | 63.34 | 32.3.8.2.2 | In Equation (32-6), k range from -26 to 26, which only covers 10MHz L-STF definition. | Please change k range to -NSR to NSR which includes both 10MHz and 20MHz NGV PPDU. | Revised The commenter is right. NGV supports both the 10MHz transmission and 20MHz transmission. So, Eq32-6 should be modified to cover the 20MHz transmission. Note to editor :Same resolution for CID 1080 |
| 1083 | 63.43 | 32.3.8.2.2 | Why applies 3dB power boosting to L-STF and L-LTF for MCS0? | as in comment | Rejected.For the improvement of decoding performance, we decided that 3dB power boosting is applied to L-STF and L-LTF when BPSK modulation is used. Please refer to the 11-19/1824r1.  |
| 1817 | 63.44 | 32.3.8.2.2 | power boost for L-STF and L-LTF applied when BPSK, 10MHz and one spatial stream. | in addition to MCS0 or MCS10, other condition such as BW and Nss should be added | Revised. The commenter is right.Power boosting for L-STF and L-LTF is only applied to limited condition such as BPSK, NSS=1, 10MHzTGbd Editor: Incoroporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-0022-04-00bd-the-comment-resolution-for-32-3-8-2-2.docx. |
| 1114 | 63.34 | 32.3.8.2.3 | in Eq 32.6, \Delta\_f,NGV is not defined in the timely related parameters, but only \Delta\_f | correct equation | Revised The commenter is right.Change the Delta\_f,NGV to Delta\_f throughout in 11bd D1.0. TGbd Editor: Incoroporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-0022-04-00bd-the-comment-resolution-for-32-3-8-2-2.docx. |
| 1115 | 63.40 | 32.3.8.2.4 | the definition of \eta\_L-LTF is done per subcarrier but in the equation there is no dependency between the two | make the definition clear | RevisedThe commenter is right.Remove subcarrier index from $η\_{Field}$ in the 11bdD1.0 since it is a constant over 20MHz channel. TGbd Editor: Incoroporate the changes in https://mentor.ieee.org/802.11/dcn/21/11-21-0022-04-00bd-the-comment-resolution-for-32-3-8-2-2.docx. |

**Propose :**

***TGbd editor: please modify the clause 32.3.8.2.2 L-STF definition as follows***

The frequency domain sequence of the L-STF field for a 10 MHz or 20 MHz transmission is defined by Equation (19-8) and Equation (19-9), respectively, in 19.3.9.3.3 (L-STF definition). (#1538)

The time domain representation of the signal on transmit chain $i\_{TX}$ shall be as specified in Equation (32-6).

$r\_{L-STF}^{\left(i\_{TX}\right)}\left(t\right)=\frac{1}{\sqrt{N\_{TX}N\_{L-STF}^{Tone}}}w\_{T\_{L-STF}}(t)η\_{L-STF}\sum\_{i\_{BW=0}}^{N\_{10MHz}-1}\sum\_{k=-26}^{26}\left(γ\_{k,BW}γ\_{k-K\_{shift}(i\_{BW}),BW}S\_{k,10}exp⁡(j2πk∆\_{F,NGV}\left(t-T\_{cs}^{i\_{TX}}\right))\right)$ (32-6) (#1080, #1578, #1776, and #1114)

where

 $η\_{L-STF}$ is a modulation dependent power scaling factor for the L-STF field ~~on subcarrier index~~ $k $with the following value (#1115)

$η\_{L-STF}=\left\{\begin{matrix}\sqrt{2}, when MCS0 or MCS1015 and one spatial stream is used on Data field for 10MHz transmission \\1, otherwise \end{matrix}\right.$(#1817)

$$N\_{10MHz}= \left\{\begin{matrix}1, if dot11CurrentChannelWidth indicates 10MHz\\2, if dot11CurrentChannelWidth indicates 20MHz\end{matrix}\right.$$

$$K\_{shift}\left(i\right)=(N\_{10MHz}-1-2i)∙32$$

$T\_{cs}^{i\_{TX}}$ represents the cyclic shift for transmit chain $i\_{TX}$ with a value given in Clause 32.3.8.2.1 (Cyclic shift for pre-NGV modulated fields)

$γ\_{k,BW}$ is defined in Equation (32-4) and Equation (32-5)

$N\_{L-STF}^{Tone}$ has the value given in Table 33-x1 (Tone scaling factor and guard interval duration values for PHY fields)

$S\_{k,10}$ is defined as $S\_{-26,26} $in equations (19-8). (#1113)

***TGbd editor: please modify the equation 32-3 as follows***

$$r\_{Subfield}^{i\_{TX}}\left(t\right)=\frac{1}{\sqrt{N\_{Field}^{Tone}∙N\_{Norm}}}w\_{T\_{Subfield}}\left(t\right)η\_{Field}\sum\_{k=-N\_{SR}}^{N\_{SR}}\sum\_{m=1}^{N\_{SS}}\left[Q\_{k}\right]\_{i\_{TX},m}γ\_{k,BW}X\_{k}^{m}exp\left(j2πk∆\_{F}\left(t-T\_{GI,Field}-T\_{CS,NGV}(m)\right)\right)$$

(# 1774)

***TGbd editor: please add the following text to below P63 L30***

$η\_{Field}$ is the power scale factor of a given field within an OFDM symbol for NGV PPDU. For the L-STF and L-LTF field, $η\_{Field}$ is $\sqrt{2}$ when MCS0 or MCS15 and one spatial stream is used for data field in 10MHz NGV PPDU. Otherwise it is 1. For other fields of NGV PPDU, $η\_{Field}=1$. (# 1774)

**References:**

**[1] 802.11bd\_D1.0**