IEEE P802.11
Wireless LANs

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| Resolutions to 32.3.8.3 NGV portion of NGV format preamble |
| Date: 2021-08-13 |
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Abstract

This submission shows

* Comments from TGbd draft 2.0.
* Resolutions applied to TGbd draft 2.0.
* 6 CIDs: ~~2032, 2033, 2098, 2034~~, 2190, 2037, 2038, 2191, 2039, 2040, and ~~2104~~

Revisions:

* Rev 0: Initial version of the document.
* Rev 1:
	+ Move 4 CIDs 2032, 2033, 2098 and 2034 to DCN1344.
	+ $∆\_{F,NGV}$ is replaced with $∆\_{F}$ in some equations where $∆\_{F,NGV}$ is not defined.
	+ Mathematical notations removed from the resolution box because math symbols not copied to excel sheet.
	+ CID2104 deleted

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| **~~CID~~** | **~~P.L~~** | **~~Comment~~** | **~~Proposed Change~~** | **~~Resolution~~** |
| ~~2032~~ | ~~89.46~~ | ~~two RL SIG definition such as 32.3.8.2.5 (RL-SIG definition) and 32.3.8.3.3 (RL-SIG definition). Delete one of those.~~ | ~~as in comment~~ | ~~Revised~~~~It is resolved under CID 2029 in 11-21-1344-00-00bd-Resolutions to 32.3.8.2 Non\_NGV portion of NGV format preamble. Redundant 32.3.8.3.3 (RL-SIG definition) is deleted.~~~~TGbd Editor: No more modification is required.~~ |
| ~~2033~~ | ~~90.07~~ | ~~In Equation (32-13) and its notion, Eta\_L-RSIG has not been discussed before. Delete unnecessary symbol.~~ | ~~as in comment~~ | ~~Revised~~~~Agreed in principle. However, the Equation (32-13) is not existed by deleting the 32.3.8.3.3 (RL-SIG definition).~~~~Same resolution applied for CIDs 2033, 2098 and 2034.~~~~TGbd Editor: No more modification is required.~~ |
| ~~2098~~ | ~~90.07~~ | ~~Typos L-SIG and L-RSIG in 32.3.8.3.3 RL-SIG section.~~ | ~~Revise accordingly throughout the whole subclause.~~ | ~~Revised~~~~Agreed in principle. However, 32.3.8.3.3 (RL-SIG definition) is deleted.~~~~Same resolution applied for CIDs 2033, 2098 and 2034.~~~~TGbd Editor: No more modification is required.~~ |
| ~~2034~~ | ~~90.21~~ | ~~In Equation (32-13) and its notion, Eta\_L-RSIG has not been discussed before. Delete unnecessary symbol.~~ | ~~as in comment~~ | ~~Revised~~~~Agreed in principle. However, the Equation (32-13) is not existed by deleting the 32.3.8.3.3 (RL-SIG definition).~~~~Same resolution applied for CIDs 2033, 2098 and 2034.~~~~TGbd Editor: No more modification is required.~~ |

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2190 | 90.62 | Add "NDP" after "NGV ranging" for consistency with next line, where "NGV Ranging NDP" is mentioned. | as in comment | RevisedThe modification is applied in Table 32-10 (Fields in the NGV-SIG field) TGbd Editor: Incorporate the changes in 11-21-1345-01-00bd-Resolutions to 32.3.8.3 NGV portion of NGV format preamble |

***Discussion***

No discussion

***To TGbd Editor:*** ***P90L62*** *update the description in Table 32-10 as below.*

***------------- Begin Text Changes ---------------***

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| B12 | LTF Repetition | 1 | Set to 0 for NGV PPDU with Data field and NGVranging NDP without NGV-LTF repetition. Set to 1 forNGV Ranging NDP with NGV-LTF repetition. |

***------------- End Text Changes ------------------***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2037 | 91.33 | In Equation (32-14), D\_k,20 and D\_k,10 mixed in use with the same definition. Make it consistent. | as in comment | RevisedMathematical notation updated based on the comment. Same resolution applied for CIDs 2037, 2038, 2191and 2039.TGbd Editor: Incorporate the changes in 11-21-1345-01-00bd-Resolutions to 32.3.8.3 NGV portion of NGV format preamble |
| 2038 | 91.47 | D\_k,20 and D\_k,10 mixed in use with the same definition. Make it consistent. | as in comment | RevisedMathematical notation updated based on the comment. Same resolution applied for CIDs 2037, 2038, 2191and 2039.TGbd Editor: Incorporate the changes in 11-21-1345-01-00bd-Resolutions to 32.3.8.3 NGV portion of NGV format preamble |
| 2191 | 91.48 | Equation (32-10) defines M^{r}\_{10}(k), but on line 48 and line 51 it is "M^{r}\_{20}(k)". Please replace "20" by "10" as in (32-10). | as in comment | RevisedMathematical notation updated based on the comment. Same resolution applied for CIDs 2037, 2038, 2191and 2039.TGbd Editor: Incorporate the changes in 11-21-1345-01-00bd-Resolutions to 32.3.8.3 NGV portion of NGV format preamble |
| 2039 | 91.51 | D\_k,20 and D\_k,10 mixed in use with the same definition. Make it consistent. Equation (32-20) indicates M\_10(k) not 20. | as in comment | RevisedMathematical notation updated based on the comment. Same resolution applied for CIDs 2037, 2038, 2191and 2039.TGbd Editor: Incorporate the changes in 11-21-1345-01-00bd-Resolutions to 32.3.8.3 NGV portion of NGV format preamble |

***Discussion***

No discussion

***To TGbd Editor:*** ***P91L33*** *update the description as below.*

***------------- Begin Text Changes ---------------***

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$$r\_{NGV-SIG}^{\left(i\_{TX}\right)}\left(t\right)=$$

$ \frac{1}{\sqrt{N\_{TX}N\_{NGV-SIG}^{Tone}}}w\_{T\_{NGV-SIG}}(t)\sum\_{i\_{BW}=0}^{N\_{10MHz}-1}\sum\_{k=-26}^{26}\left(\begin{matrix}γ\_{\left(k-K\_{shift}\left(i\_{BW}\right)\right),BW}(D\_{k,10}+p\_{2}P\_{k})\\ ∙exp⁡\left(j2π\left(k-K\_{shift}\left(i\_{BW}\right)\right)∆\_{F}(t-T\_{GI}-T\_{cs}^{i\_{TX}})\right)\end{matrix}\right)$ (32-14)

where

$N\_{10MHz}$ and $K\_{shift}\left(i\right)$ are defined in 32.3.8.2.4 (L-SIG definition)

$$D\_{k,20}=\left\{\begin{matrix}0, k=0,\pm 7,\pm 21\\d\_{M\_{20}^{r}(k)}, otherwise\end{matrix}\right.$$

$$D\_{k,10}=\left\{\begin{matrix}0, k=0,\pm 7,\pm 21\\d\_{M\_{10}^{r}(k)}, otherwise\end{matrix}\right.$$

 $M\_{10}^{r}\left(k\right)M\_{20}^{r}\left(k\right)$is defined in Equation (32-10)

***------------- End Text Changes ------------------***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2040 | 92.14 | D\_k,20 and D\_k,10 mixed in use with the same definition. Make it consistent. | as in comment | RevisedMathematical notation updated based on the comment. TGbd Editor: Incorporate the changes in 11-21-1345-01-00bd-Resolutions to 32.3.8.3 NGV portion of NGV format preamble |

***Discussion***

No discussion

***To TGbd Editor:*** ***P92L14*** *update the description as below. 32.3.8.3.1 (Introduction) and 32.3.8.3.3 (RL-SIG definition) needs to be deleted.*

***------------- Begin Text Changes ---------------***

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$$r\_{RNGV-SIG}^{\left(i\_{TX}\right)}\left(t\right)=$$

$ \frac{1}{\sqrt{N\_{TX}N\_{RNGV-SIG}^{Tone}}}w\_{T\_{RNGV-SIG}}(t)\sum\_{i\_{BW}=0}^{N\_{10MHz}-1}\sum\_{k=-26}^{26}\left(\begin{matrix}γ\_{\left(k-K\_{shift}\left(i\_{BW}\right)\right),BW}(D\_{k,10}+p\_{3}P\_{k})\\ ∙exp⁡\left(j2π\left(k-K\_{shift}\left(i\_{BW}\right)\right)∆\_{F}(t-T\_{GI}-T\_{cs}^{i\_{TX}})\right)\end{matrix}\right)$ (32-15)

***------------- End Text Changes ------------------***

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| **~~CID~~** | **~~P.L~~** | **~~Comment~~** | **~~Proposed Change~~** | **~~Resolution~~** |
| ~~2104~~ | ~~97.02~~ | ~~Change the typo w\_T\_NGV-STF to w\_T\_NGV-LTF. N\_NGV-LTF needs to be revised to reflect the new parameter LTF\_REP, perhaps done in Table 32-11.~~ | ~~As in comment.~~ | ~~Revised~~~~Mathematical notation in Equation (32-29) updated based on the comment.~~ ~~Since the description of NGV Ranging NDP is included in 32.3.15 (NGV Ranging NDP), a new equation which reflects the comment is defined in the same subclause. The number of NGV-LTF in Equation is~~ $(LTF\\_REP+1) ×N\_{NGV-LTF}$~~TGbd Editor: Incorporate the changes in 11-21-1345-01-00bd-Resolutions to 32.3.8.3 NGV portion of NGV format preamble~~ |

***~~Discussion~~***

~~No discussion~~

***~~To TGbd Editor:~~*** ***~~P97L02~~*** *~~update the description as below.~~*

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***~~~~***

$$r\_{NGV-LTF}^{\left(i\_{TX}\right)}\left(t\right)=$$

$$ \frac{1}{\sqrt{N\_{SS}N\_{NGV-LTF}^{Tone}}}\sum\_{n=0}^{N\_{NGV-LTF}-1}w\_{T\_{NGV-LTF}}\left(t-nT\_{NGV-LTF}\right)$$

$\sum\_{k=-N\_{SR}}^{N\_{SR}}\sum\_{m=1}^{N\_{SS}}\left(\begin{matrix}\left[Q\_{k}\right]\_{i\_{TX},m}γ\_{k,BW}[A\_{NGV-LTF}^{k}]\_{m,\left(n+1\right)}NGV-LTF\_{k}\\ ∙exp⁡\left(j2πk∆\_{F}(t-nT\_{NGV-LTF}-T\_{GI}-T\_{CS,NGV}(m))\right)\end{matrix}\right)$ ~~(32-29)~~

***~~------------- End Text Changes ------------------~~***

***~~To TGbd Editor:~~*** ***~~P93L27~~*** *~~update the description as below.~~*

***~~------------- Begin Text Changes ---------------~~***

~~The number of NGV-LTF symbols,~~ $N\_{NGV-LTF}$~~, is a function of the number of spatial streams,~~ $N\_{SS}$~~, as shown in Table 32-11 (Number of NGV-LTFs required for different numbers of spatial streams) and LTF\_REP as shown in 32.3.15 (NGV Ranging NDP). As a result the NGV-LTF field consists of one or two symbols.~~

**~~Table 32-11—Number of NGV-LTFs required for different numbers of spatial streams~~**

|  |  |
| --- | --- |
| $$N\_{SS}$$ | $$N\_{NGV-LTF}$$ |
| ~~1~~ | ~~1×(LTF\_REP+1)~~ |
| ~~2~~ | ~~2×(LTF\_REP+1)~~ |

***~~------------- End Text Changes ------------------~~***

***~~To TGbd Editor:~~*** ***~~P117L06~~*** *~~update the description as below.~~*

***~~------------- Begin Text Changes ---------------~~***

~~The construction of the NGV-LTFs in an NGV Ranging NDP is done by performing the steps in 32.3.4.7 (Construction of NGV-LTF) LTF\_REP plus 1 time. An example of NGV\_LTF with 2 spatial streams and 1 LTF repetition is shown in Figure 32-19 (Example of NGV-LTF with N\_SS=2 and LTF\_REP=1).~~

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~~The time domain representation of the waveform transmitted on transmit chain~~ $i\_{TX} $~~in NGV Ranging NDP shall be as described by Equation (32-x1).~~

$$r\_{NGV-LTF}^{\left(i\_{TX}\right)}\left(t\right)=$$

$$ \frac{1}{\sqrt{N\_{SS}N\_{NGV-LTF}^{Tone}}}\sum\_{n=0}^{\left(LTF\\_REP+1\right)×N\_{NGV-LTF}-1}w\_{T\_{NGV-LTF}}\left(t-nT\_{NGV-LTF}\right)$$

$\sum\_{k=-N\_{SR}}^{N\_{SR}}\sum\_{m=1}^{N\_{SS}}\left(\begin{matrix}\left[Q\_{k}\right]\_{i\_{TX},m}γ\_{k,BW}[A\_{NGV-LTF}^{k}]\_{m,\left(n+1\right)}NGV-LTF\_{k}\\ ∙exp⁡\left(j2πk∆\_{F}(t-nT\_{NGV-LTF}-T\_{GI}-T\_{CS,NGV}(m))\right)\end{matrix}\right)$ ~~(32-x1)~~

***~~------------- End Text Changes ------------------~~***