IEEE P802.11
Wireless LANs

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| Changes to D1.0 Clause 28.3.6 |
| Date: 2017-05-05 |
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Abstract

This submission proposes resolutions for comments of TGax Draft 1.0 with the following CIDs:

CID 5101, 5102, 5103, 5297, 5298, 5299, ~~6114~~, ~~7512~~, 7513, 8848, 8849, 8850, 8851, 8852, 8853, 8854, 8855, 8856, 8857, 8858, 8985, 9158, 9159, 9160, 9166, 9167, 10114, 10395

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: updated resolution.
* Rev 2: Transfer resolutions of CID 6114 to Dongguk and CID 7512 to Yujin
* Rev 3: updated resolution for CID 7513 and CID 10395
* Rev 4: updated resolution for CID 10395 based on the offline discussions.

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** | **Clause** | **P.L.** | **Comment** | **Proposed Change** | **Resolution** |
| 5101 | Dong Guk Lim | 28.3.6.10.1 | 254.24 | We have agreed that the phase rotation is not applied on HE-STF and beyond. Please rerfer the PHY Motion 82, November 2015. So, the phase rotation is not needed. | Chage the sentence of cluase b) with '' Phase rotation: Apply 1 for all subcarrier irrespective bandwidth as described in 28.3.9(Mathematical description of signals) .'' | Revised – Same comment resolved in CID 5297.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5297. |
| 5102 | Dong Guk Lim | 28.3.6.10.2 | 255.12 | We have agreed that the phase rotation is not applied on HE-STF and beyond. Please rerfer the PHY Motion 82, November 2015. So, the phase rotation is not needed. | Chage the sentence of cluase b) with '' Phase rotation: Apply 1 for all subcarrier irrespective bandwidth as described in 28.3.9(Mathematical description of signals) .'' | Revised – Same comment resolved in CID 5298.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5298. |
| 5103 | Dong Guk Lim | 28.3.6.11.4 | 255.55 | Accroding to PHY motion 82, phase rotaion is not applied at data field of HE-PPDU, so it is not needed. | chage the sentence of cluase b) with '' Phase rotation: Apply 1 for all subcarrier irrespective bandwidth as described in 28.3.9(Mathematical description of signals) .'' | Revised – Same comment resolved in CID 5299.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5299. |
| 5297 | Eunsung Park | 28.3.6.10.1 | 254.24 | For the data field, the phase rotation value is always 1, and thus the clause 21.3.7.5 does not need to be referred. | Delete "and 21.3.7.5 (Definition of tone rotation)" in the relevant sentence. | Revised – Remove phase rotation.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5297. |
| 5298 | Eunsung Park | 28.3.6.10.2 | 255.13 | For the data field, the phase rotation value is always 1, and thus the clause 21.3.7.5 does not need to be referred. | Delete "and 21.3.7.5 (Definition of tone rotation)" in the relevant sentence. | Revised – Remove phase rotation.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5298. |
| 5299 | Eunsung Park | 28.3.6.11.4 | 255.55 | For the data field, the phase rotation value is always 1, and thus the clause 21.3.7.5 does not need to be referred. | Delete "and 21.3.7.5 (Definition of tone rotation)" in the relevant sentence. | Revised – Remove phase rotation.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5299. |
| 6114 | Jian Yu | 28.3.6 | 249.40 | Power boosting should be reflected in the encoding process | As in comment | Transfer to Dongguk |
| 7512 | Lei Huang | 28.3.6.7 | 252.34 | Throughout 28.3.6.7, "Common Block field" should be changed to "Common field" | As per comment | Transfer to Yujin |
| 7513 | Lei Huang | 28.3.6.7 | 252.49 | The construction procedure of HE-SIG-B is not correct. Notice that there are two HE-SIG-B content channels. The HE-SIG-B symbols from the first HE-SIG-B content channel are duplicated over every odd numbered 20 MHz of the channel bandwidth while the HE-SIG-B symbols from the second HE-SIG-B content channel are duplicated over every even numbered 20 MHz of the channel bandwidth. | Please fix it. | Revised –TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 7513. |
| 8848 | Sigurd Schelstraete | 28.3.6.10.1 | 253.59 | Bullet (a) needs to be rewritten to describe a step in the construction of the data field. | Change to e.g. "Construct the SERVICE field as described in 28.3.11.3 and append the PSDU to the SERVICE field" | Revised –As proposed change.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 8848. |
| 8849 | Sigurd Schelstraete | 28.3.6.10.1 | 254.09 | The description of Segment parser is incomplete and inconsistent with e.g. 28.3.6.10.2 | Use definition from 28.3.6.10.2 ("Segment parser (if needed): In a 160 MHz or 80+80 MHz transmission with a 2+∙996-tone RU, divide the output of each stream parser into two frequency subblocks as described in 28.3.11.6 (Stream parser). This block is bypassed for 20 MHz, 40 MHz, and 80 MHz transmissions.") | Rejected -BCC doesn’t support 2x996-tone RU. No segment parser is needed. |
| 8850 | Sigurd Schelstraete | 28.3.6.10.1 | 254.15 | The description of Segment deparser is incomplete and inconsistent with e.g. 28.3.6.10.2 | Use definition from 28.3.6.10.2 ("Segment deparser (if needed): In 160 MHz transmission, merge the two frequency subblocks into one frequency segment as described in 28.3.11.12 (Segment deparser). This block is bypassed for 20 MHz, 40 MHz, 80 MHz, and 80+80 MHz transmissions.") | Rejected -BCC doesn’t support 2x996-tone RU. No segment parser is needed. |
| 8851 | Sigurd Schelstraete | 28.3.6.10.1 | 254.24 | There is no per-20 MHz phase rotation for data (see page 267, line 4, "In HE modulated fields, gamma\_k,BW = 1 in all the subcarriers") | Remove bullet o) | Revised – Same comment resolved in CID 5297.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5297. |
| 8852 | Sigurd Schelstraete | 28.3.6.10.1 | 254.29 | Change "prepend a GI " to "Prepend a GI determined by the TXVECTOR parameter GI\_TYPE" as in 28.3.6.11.4 | See comment | Revised –As proposed change.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 8852. |
| 8853 | Sigurd Schelstraete | 28.3.6.10.2 | 254.42 | Bullet (a) needs to be rewritten to describe a step in the construction of the data field. | Change to e.g. "Construct the SERVICE field as described in 28.3.11.3 and append the PSDU to the SERVICE field" | Revised –As proposed change.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 8853. |
| 8854 | Sigurd Schelstraete | 28.3.6.10.2 | 254.49 | "LDPC encode with APEP\_LENGTH in the TXVECTOR" is not clear | Replace bullet with: "d) LDPC encoder: LDPC encode as described in28.3.11.5.2 (LDPC coding)." | Revised –As proposed change.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 8854. |
| 8855 | Sigurd Schelstraete | 28.3.6.10.2 | 255.12 | There is no per-20 MHz phase rotation for data (see page 267, line 4, "In HE modulated fields, gamma\_k,BW = 1 in all the subcarriers") | Remove bullet o) | Revised – Same comment resolved in CID 5298.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5298. |
| 8856 | Sigurd Schelstraete | 28.3.6.10.2 | 255.18 | Change "prepend a GI " to "Prepend a GI determined by the TXVECTOR parameter GI\_TYPE" as in 28.3.6.11.4 | See comment | Revised –As proposed change.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 8856. |
| 8857 | Sigurd Schelstraete | 28.3.6.11.4 | 255.52 | It may be better to re-number the bullet list to run from n) to r). This makes it consistent with 28.3.6.10.1 and 28.3.6.10.2 | re-number the bullet list to run from n) to r) instead of from a) to e).. | Rejected – A to E is natrual |
| 8858 | Sigurd Schelstraete | 28.3.6.11.4 | 255.54 | There is no per-20 MHz phase rotation for data (see page 267, line 4, "In HE modulated fields, gamma\_k,BW = 1 in all the subcarriers") | Remove bullet b) | Revised – Same comment resolved in CID 5299.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 5299. |
| 8985 | Sigurd Schelstraete | 28.3.10.10 | 311.11 | The masking described in (28-53) would benefit from a little more explanation. Currently the text is not very clear. | Clarify | Revised –TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 8985. |
| 9158 | SUNGEUN LEE | 28.3.6.6 | 251.32 | HE-SIG-A1/A2 is used to represent either data bits in field or symbol itself in a mixed way. HE-SIG-A1 and HE-SIG-A2 are described as two parts of HE-SIG-A field over the specification and in HE-SIG-A field tables, and two OFDM symbols are created based on data bits of HE-SIG-A1 and HE-SIG-A2. Therefore, clarification is required. | Unify the definition of HE-SIG-A1/A2/A3/A4 over the specification, e.g.,replace 'consists of two symbols' to 'consists of two parts', and change 'and is constructed' to ', and the HE-SIG-A symbols are constructed' | Revised –As proposed change.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 9158. |
| 9159 | SUNGEUN LEE | 28.3.6.6 | 251.47 | Require to keep consistency for the definition of HE-SIG-A1 and HE-SIG-A2 whether those are fields or symbols. | Unify the definition of HE-SIG-A1/A2 over the specification, e.g., change 'Duplicate HE-SIG-A1 and HE-SIG-A2' to 'Duplicate the symbols constructed from HE-SIG-A1 and HE-SIG-A2' | Revised –Resolved in CID 9158TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 9158. |
| 9160 | SUNGEUN LEE | 28.3.6.6 | 251.62 | Make it consistent for the definition and usage of HE-SIG-A1/A2/A3/A4, which would represents either data bit field or symbol. | Unify the definition of HE-SIG-A1/A2/A3/A4 over the specification, e.g., replace 'consists of four symbols' to 'consists of four parts', and change 'field is constructed' to 'symbols are constructed' | Revised –Resolved in CID 9158TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 9158. |
| 9166 | SUNGEUN LEE | 28.3.6.6 | 265.32 | HE-SIG-A1 is an information parts of HE-SIG-A field, and the symbol is composed of the information in HE-SIG-A1, therefore 'symbol' is not accurate to describe HE-SIG-A1. Morevoer, the terminology 'part' is already used in Encoding and modulation subclause. | For consistency with other clause and clarification, change the text 'two symbols' to 'two parts' | Rejected – Wrong Page, line |
| 9167 | SUNGEUN LEE | 28.3.6.6 | 265.62 | HE-SIG-A1 is an information parts of HE-SIG-A field, and the symbol is composed of the information in HE-SIG-A1, therefore 'symbol' is not accurate to describe HE-SIG-A1. Morevoer, the terminology 'part' is already used in Encoding and modulation subclause. | For consistency with other clause and clarification, change the text 'four symbols' to 'four parts' | Rejected – Wrong Page, line |
| 10114 | yujin noh | 28.3.6.7 | 252.34 | "User Specific field" needs to be replaced with "User Block field" in this capter. User Block field should be used when describing on the encoding process | As in the comment. | Revised – The first one should be ok. The second “User specific field” is replaced.TGax editor to make the changes shown in 11-17/0232r4 under all headings that include CID 10114. |
| 10395 | Oghenekome Oteri | 28.3.5 | 244.30 | "the pre-HE-STFpreamble, which includes legacy preamble, RL-SIG and HE-SIG-A fields, is sent only on the 20 MHzchannels where the STA’s HE modulated fields are located. How does AP manage the change in power for different bands ?" | Need solution to manage arrival of transmit power over different 20 MHz bands. | Rejected – Since TB PPDU is triggered by AP, AP should be able to handle the power imbalance ( e.g. by Target RSSI ); also AP doesn’t need to decode the pre-HE portion because Pre-HE portion is mainly used for CCA in the OBSS. |

**Propose:** Revised for CID 5297, CID 5298, CID 5299, CID 8848, CID 8852, CID 8853, CID 8854, CID 8856, CID 10114 per editing instructions in 11-17/0232r4.

*To the TGax Editor: modify P.L. 254.24 as following (CID 5297).*

~~o) Phase rotation: Apply the appropriate phase rotations for each 20 MHz subchannel as described in
28.3.9 (Mathematical description of signals) and 21.3.7.5 (Definition of tone rotation).~~

*To the TGax Editor: modify P.L. 255.12 as following (CID 5298).*

~~o) Phase rotation: Apply the appropriate phase rotations for each 20 MHz subchannel as described in
28.3.9 (Mathematical description of signals) and 21.3.7.5 (Definition of tone rotation).~~

*To the TGax Editor: modify P.L. 255.54 as following (CID 5299).*

~~b) Phase rotation: Apply the appropriate phase rotations for each 20 MHz subchannel as described in
28.3.9 (Mathematical description of signals) and 21.3.7.5 (Definition of tone rotation).~~

*To the TGax Editor: modify P.L. 252.49 as following (CID 7513).*

f) Duplicate and phase rotation: Duplicate HE-SIG-B symbols ~~over each 20 MHz of the CH\_BANDWIDTH~~ as described in 28.3.10.8.1 (Encoding and modulation)

*To the TGax Editor: modify P.L. 253.59 as following (CID 8848)*

a) ~~The SERVICE field is~~ Construct the SERVICE field as described in 28.3.11.3 (SERVICE field) and append the PSDU to the SERVICE field.

*To the TGax Editor: modify P.L. 254.29 as following (CID 8852)*

q) Insert GI and apply windowing: Prepend a GI determined by the TXVECTOR parameter GI\_TYPE and apply windowing as described in 28.3.9 (Mathematical description of signals).

*To the TGax Editor: modify P.L. 255.18 as following (CID 8856)*

q) Insert GI and apply windowing: Prepend a GI determined by the TXVECTOR parameter GI\_TYPE and apply windowing as described in 28.3.9 (Mathematical description of signals).

*To the TGax Editor: modify P.L. 254.42 as following (CID 8853)f*

a) ~~The SERVICE field is~~ Construct the SERVICE field as described in 28.3.11.3 (SERVICE field) and append the PSDU to the SERVICE field.

*To the TGax Editor: modify P.L. 254.49 as following (CID 8854)*

d) LDPC encoder: LDPC encode ~~with APEP\_LENGTH in the TXVECTOR~~ as described in 28.3.11.5.2 (LDPC coding).

*To the TGax Editor: modify P.L. 311.22 as following (delete half bracket) CID 8985*

the ~~generation of the~~ HE-LTF sequence per frequency segment is generated by masking the non-zero elements in the common HE-LTF sequence repeatedly ~~by~~ with a distinct orthogonal code as defined by Equation (28-53).

Where HELTFk is the k-th element of the common HE-LTF sequence generated by one of the equations from ~~(~~ Equation (28-38) to Equation (28-56) depending on the bandwidth and the HE-LTF mode (excluding the 1x HE-LTF which shall not be masked).

*To the TGax Editor: modify P.L. 252.39 as following (CID 10114)*

b) BCC encoder: Encode the Common Block field data and each User Block field ~~User Specific field~~ data individually by a convolution encoder as described in 28.3.11.5.1 (Binary convolutional coding and puncturing)

**Propose:**Revised for CID 9158 per discussion and editing instructions in 11-17/0232r4

*Discussions:* HE-SIG-A1/A2/A3/A4 are used both as HE-SIG-A symbol index in 28.3.6.6 and HE-SIG-A part index in 28.3.10.7. Suggest to unify the terminology.

*To the TGax Editor: modify P.L. 251.32 as following:*

For an HE SU PPDU, HE MU PPDU, and HE trigger-based PPDU, the HE-SIG-A field consists of two ~~symbols~~ parts, HE-SIG-A1 and HE-SIG-A2 as defined in 28.3.10.7 (HE-SIG-A) and is constructed as follows:

*In addition, modify P.L. 251.47 as following:*

Duplicate and phase rotation: Duplicate ~~HE-SIG-A1 and HE-SIG-A2~~ the HE-SIG-A symbols over each 20 MHz subchannel of the channel width.

*In addition, modify P.L. 251.62 as following:*

For an HE extended range SU PPDU, the HE-SIG-A field consists of four ~~symbols~~ parts, HE-SIG-A1, HE-SIG-A2, HE-SIG-A3, and HE-SIG-A4.