IEEE P802.11  
Wireless LANs

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| CC28 CR of MAC Miscellaneous | | | | |
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**Abstract**

This submission proposes resolutions of comments received from TGaz CC28.

(The proposed change is based on TGaz Draft 0.6.)

* CIDs: 134, 200, 202, 203, 441, 180, 494, 51, 52, 181, 442 (11 CIDs)

| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 134 | 8.00 | 6.3.58.2.2 | It is not clear which parameters are newly added | Update the subclause per the comment. The same comment also applies to other subclause in clause 6. | Revised-  Agree in principle.  But, after TGaz draft 0.6, the spec is already updated to align the IEEE style.  TGaz editor needs no more changes for this CID. |
| 200 | 16.00 | 8.3.5.14.2 | "preformed" | "performed" | Revised-  Agree in principle.  TGaz editor makes changes as shown in the as specified in 11-19/0093r1. |
| 202 | 16.00 | 8.3.5.19.2 | " make the randomized LTF sequence" -- what does "make" mean here? | Use a clearer verb | Revised-  Agree in principle.  For more clarification, the texts have been updated.  TGaz editor makes changes as shown in the as specified in 11-19/0093r1. |
| 203 | 17.00 | 8.3.5.20.2 | As lines 11 and 12 say, there are no parameters | Copy the wording for other parameter-less primitvies from the baseline | Revised-  Agree in principle.  For more clarification, the texts have been updated.  TGaz editor makes changes as shown in the as specified in 11-19/0093r1. |
| 441 | 17.00 | 8.3.5.20 | PHY-RXLTFSEQUENCE.confirm is not used anywhere so has no value (nothing is on hold until it comes back) | Delete this subclause | Rejected-  One or more PHY-RXLTFSEQUENCE.request primitives can be issued in a secure TB ranging mode.  In such case, the confirm primitive is needed.  Please refer the PHY-DATA.confirm primitive in the baseline. |
| 8.3.5 PHY SAP detailed service specification  8.3.5.14 PHY-RXEND.indicate  ***TGaz Editor: change the subclause 8.3.5.14.2 as follows:***  8.3.5.14.2 Semantics of the service primitive  — *IntegrityCheckError.* This value is used to indicate that during the reception of the ~~secure VHTz sounding NDP PPDU, the secure HEz SU sounding NDP PPDU, or the secure HEz TB sounding NDP PPDU~~ HE Ranging NDP PPDU or HE TB Ranging NDP PPDU, an integrity check was ~~pre~~performed (#200) and failed.  ***TGaz Editor: change the subclause 8.3.5.20 as follows:***  8.3.5.20 PHY-RXLTFSEQUENCE.request  8.3.5.20.1 Function  This primitive is a request by the MAC sublayer to the local PHY entity to provide the LTF sequence generation information parameters for the receipt of the ~~VHTz sounding NDP PPDU and HEz sounding NDP PPDU~~ HE Ranging NDP PPDU and HE TB Ranging NDP PPDU.  8.3.5.20.2 Semantics of the service primitive  This primitive provides the following parameter:  PHY-RXLTFSEQUENCE.request(  LTFVECTOR  )  The LTFVECTOR ~~parameter provides~~ represents a list of parameters with that the PHY ~~with the LTF sequence generation information needed to make the randomized LTF sequence in the VHTz sounding NDP PPDU and HEz sounding NDP PPDU~~ generates the secure LTF symbol as described in 28.3.17c (Generation of Secure LTF Symbol).  8.3.5.20.3 When generated  This primitive is issued by the MAC sublayer to the PHY entity before receiving the ~~VHTz sounding NDP PPDU and HEz sounding NDP PPDU~~ HE Ranging NDP PPDU and HE TB Ranging NDP PPDU.  8.3.5.20.4 Effect of receipt  The effect of receipt of this primitive by the PHY entity is to ~~make the randomized LTF sequence with parameters in LTFVECTOR~~ generate the secure LTF symbol with parameters in LTFVECTOR as described in 28.3.17c (Generation of Secure LTF Symbol) before the ~~VHTz sounding NDP PPDU or HEz sounding NDP PPDU~~ HE Ranging NDP PPDU or HE TB Ranging NDP PPDU arrival. | | | | | |
| 180 | 61.00 | 11.22.6.4.5 | VHTz and Hez SU are pretty similar. One of the mis enough. Since in 2.4GHz band there is no VHT NDP, VHTz (or renamed to non-TB ranging) should use HE NDP. | Fix the issue mentioned in the comment. | Revised-  Agree in principle.  The VHT PPDU is not used any more for the ranging operation.  TGaz editor makes changes as shown in the as specified in 11-19/0093r1. |
| 494 | 61.00 | 11.22.6.4.5 | Format is always HE not VHT | Format should be set to HE | Revised-  Agree in principle.  The VHT PPDU is not used any more for the ranging operation.  TGaz editor makes changes as shown in the as specified in 11-19/0093r1. |
| 51 | 62.00 | 11.22.6.4.5 | Do we need this statement "GROUP\_ID and PARTIAL\_AID are set as described in 10.19 (Group ID and partial AID in VHT" since NDP is HE PPDU}? | As per comment | Revised-  Agree in principle.  The VHT PPDU is not used any more for the ranging operation.  TGaz editor makes changes as shown in the as specified in 11-19/0093r1. |
| 52 | 63.00 | 11.22.6.4.5 | What should be "TXOP\_DURATION" for the UL NDP e.g., UNSPECIFIED? | As per comment | Rejected-  The TXOP\_DURATION parameter for the HE TB Ranging NDP PPDU follows the rules for an HE TB PPDU. |
| 181 | 61.00 | 11.22.6.4.5 | The NDP Tx parameters are not in line with security NDP. | Fix the issue mentioned in the comment. | Revised-  Agree in principle.  TGaz editor makes changes as shown in the as specified in 11-19/0093r1. |
| 442 | 63.00 | 11.22.6.4.4.5 | "provides the LTF sequence 8 generation information associated with the LTF Generation SAC subfield" is a bit vague? What exactly is passed in the LTFVECTOR parameter? The contents of the field? | Clarify | Revised-  Agree in principle.  The normative text about passing the LTFVECTOR parameter has been updated in  11-18/1781 and 11-18/1782.  Remove the related texts from 11.22.6.4.5.  TGaz editor makes changes as shown in the as specified in 11-19/0093r1. |

***TGaz Editor: change the subclause 11.22.6.4.5 as follows:***

11.22.6.4.5 Transmission of a ranging NDP

~~A STA transmitting a VHTz sounding NDP PPDU to a peer STA shall set the TXVECTOR parameter as follows:~~

* ~~FORMAT set to VHT~~
* ~~APEP\_LENGTH set to 0~~
* ~~NUM\_USERS set to 1~~
* ~~NUM\_STS indicates one or more space-time streams~~
* ~~CH\_BANDWIDTH set to the same value as the TXVECTOR parameter CH\_BANDWIDTH in the preceding RANGING NDP Announcement frame~~
* ~~GROUP\_ID and PARTIAL\_AID are set as described in 10.19 (Group ID and partial AID in VHT PPDUs)~~
* ~~LTF\_SEQUENCE contains the the LTF sequence generation information associated with the LTF Generation SAC subfield in the STA Info field in the preceding Ranging NDP Announcement if a secure LTF measurement exchange mode is activated between the STA and the peer STA (See 11.22.6.3 (Fine timing measurement procedure negotiation))~~

A RSTA transmitting an HE~~z SU sounding~~ Ranging NDP PPDU to one or more ~~peer~~ ISTAs shall set the TXVECTOR parameter as follows:

* The FORMAT parameter is set to HE\_SU
* The UPLINK\_FLAG parameter is set to 0
* The APEP\_LENGTH parameter is set to 0
* The NUM\_USER parameter is set to the number of ISTAs that the HE Ranging NDP PPDU is transmitted to.
* The NUM\_STS ~~indicates one or more space-time streams~~ parameter is set as follows:
  + In the non-secure variant of the TB ranging measurement exchange, set to the same value as the DL N\_STS field in the STA Info field in the preceding Ranging NDP Announcment frame.
  + In the secure variant of the TB ranging measurement exchange,
    - The NUM\_STS[*p*] is set to the same value as the DL N\_STS field in the STA Info field addressed to the corresponding STA *p* in the preceding Ranging NDP Announcment frame when the HE Ranging NPD PPDU is transmitted to more than one ISTAs.
    - The NUM\_STS is set to the same value as the DL N\_STS field in the first STA Info field in the preceding Ranging NDP Announcment frame when the HE Ranging NPD PPDU is transmitted to one ISTA.
  + In the non-secure variant and secured variant non-TB ranging measurement exchange, set to the same value as the DL N\_STS field in the STA Info field in the preceding Ranging NDP Announcment frame.
* The LTF\_REP parameter is set as follows:
  + In the non-secure variant of the TB ranging measurement exchange, set to the same value as the DL Rep field in the STA Info field in the preceding Ranging NDP Announcment frame.
  + In the secure variant of the TB ranging measurement exchange,
    - The LTF\_REP[*p*] is set to the same value as the DL Rep field in the STA Info field addressed to the corresponding STA *p* in the preceding Ranging NDP Announcment frame when the HE Ranging NPD PPDU is transmitted to more than one ISTAs
    - The LTF\_REP is set to the same value as the DL Rep field in the first STA Info field in the preceding Ranging NDP Announcment frame when the HE Ranging NPD PPDU is transmitted to one ISTA.
  + In the non-secure variant and secured variant non-TB ranging measurement exchange, set to the same value as the DL Rep subfield in the STA Info field in preceding Ranging NDP Announcment frame.
* The CH\_BANDWIDTH parameter is set as follows:
  + In the non-secure variant and secured variant TB ranging measurement exchange, set to the same value as the TXVECTOR parameter CH\_BANDWIDTH in the preceding ~~Location variant HEz Uplink~~ Ranging Sounding Trigger frame
  + In the non-secure variant and secured variant non-TB ranging measurement exchange, set to the same value as the TXVECTOR parameter CH\_BANDWIDTH in the preceding Ranging NDP Announcment frame
* ~~LTF\_SEQUENCE contains the the LTF sequence generation information associated with the LTF Generation SAC subfield in the Trigger Dependent User Info field in the preceding Location variant HEz Uplink Sounding Trigger frame if a secure LTF measurement exchange mode is activated between the STA and the peer STAs (See 11.22.6.3 (Fine timing measurement procedure negotiation))~~  In the secure variant non-TB and TB ranging measurement exchange, the LTF\_SEQUENCE parameter is set to as defined in 11.22.6.4.6.1 (Secure non-TB Ranging mode) and 11.22.6.4.6.2 (Secure TB Ranging mode). Otherwise, the LTF\_SEQUENCE parameter is not present.
* In the secure variant TB ranging measurement exchange, the LTF\_OFFSET parameter is set to as defined in 11.22.6.4.6.2 (Secure TB Ranging mode). Otherwise, the LTF\_OFFSET parameter is not present.
* The HE\_LTF\_TYPE parameter is set to 2xHE-LTF
* The GI\_TYPE parameter is set to either 0u8s\_GI or 1u6s\_GI
* The SPATIAL\_REUSE parameter is set to SRP\_AND\_NON-SRG\_OBSS-PD\_PROHIBITED
* The BSS\_COLOR parameter is set to the value indicated in the BSS Color subfield of the HE Operation element ~~HEz specific subelement in the Ranging Parameters element in initial Fine Timing Measurement frame received or~~ transmitted by the ~~HE AP~~ RSTA
* The TXOP\_DURATION parameter is set to either 127 or a value defined in Equation (27-2), with replaced *D*HE\_NDPA by *D*Ranging\_NDPA which is the value of the Duration/ID field in the MAC header of the preceding Ranging NDP Announcementframe

An ISTA transmitting an HE Ranging NDP PPDU to a RSTA shall set the TXVECTOR parameter as follows:

* The FORMAT parameter is set to HE\_SU
* The UPLINK\_FLAG parameter is set to 1
* The APEP\_LENGTH parameter is set to 0
* The NUM\_STS parameter is set to the same value as the UL N\_STS subfield in the STA Info field in the preceding Ranging NDP Announcment frame
* The LTF\_REP parameter is set to the same value as the UL Rep subfield in the STA Info field in the preceding Ranging NDP Announcment frame
* The CH\_BANDWIDTH set to the same value as the TXVECTOR parameter CH\_BANDWIDTH in the preceding Ranging NDP Announcment frame
* In the secure variant of the non-TB ranging measurement exchange, the LTF\_SEQUENCE parameter is set to as defined in 11.22.6.4.6.1 (Secure non-TB Ranging mode). Otherwise, the LTF\_SEQUENCE parameter is not present
* The HE\_LTF\_TYPE parameter is set to 2xHE-LTF
* The GI\_TYPE parameter is set to either 0u8s\_GI or 1u6s\_GI
* The SPATIAL\_REUSE parameter is set to SRP\_AND\_NON-SRG\_OBSS-PD\_PROHIBITED
* The BSS\_COLOR parameter is set to the value indicated in the BSS Color subfield of the HE Operation element received from the RSTA
* The TXOP\_DURATION parameter is set to either 127 or a value defined in Equation (27-2), with replaced *D*HE\_NDPA by *D*Ranging\_NDPA which is the value of the Duration/ID field in the MAC header of the preceding Ranging NDP Announcementframe

An ISTA transmitting an HE~~z~~ TB ~~sounding~~ Ranging NDP PPDU to a ~~peer~~ RSTA shall set the TXVECTOR parameter as follows:

* The FORMAT parameter is set to HE\_TB
* The APEP\_LENGTH parameter is set to 0
* The NUM\_STS ~~indicates one or more space-time streams~~ parameter is set to the same value as the Number Of Spatial Streams subfield in the SS Allocation field in the User Info field in the eliciding Ranging Sounding Trigger frame
* The LTF\_REP parameter parameter is set to the same value as the the UL Rep subfield in the User Info field in the eliciding Ranging Sounding Trigger frame
* The CH\_BANDWIDTH parameter is set to the same value as the TXVECTOR parameter CH\_BANDWIDTH in the eliciting ~~Location variant HEz Uplink~~ Ranging Sounding Trigger frame
* In the secure variant of the TB ranging measurement exchange, the LTF\_SEQUENCE parameter is set to as defined in 11.22.6.4.6.2 (Secure TB Ranging mode). Otherwise, the LTF\_SEQUENCE parameter is not present ~~LTF\_SEQUENCE contains the the LTF sequence generation information associated with the LTF Generation SAC subfield in the Trigger Dependent User Info field in the eliciting Location variant HEz Uplink Sounding Trigger frame if a secure LTF measurement exchange mode is activated between the STA and the peer STA (See 11.22.6.3 (Fine timing measurement procedure negotiation))~~
* The HE\_LTF\_TYPE parameter is set to 2xHE-LTF
* The GI\_TYPE parameter is set to 1u6s\_GI
* The SPATIAL\_REUSE parameter is set to SRP\_AND\_NON-SRG\_OBSS-PD\_PROHIBITED
* The BSS\_COLOR parameter is set to the value indicated in the BSS Color subfield of the HE Operation element ~~HEz specific subelement in the Ranging Parameters element in initial Fine Timing Measurement frame~~ received ~~or transmitted by the HE AP~~ from the RSTA
* The TXOP\_DURATION parameter is set as defined in 27.11.5 (TXOP\_DURATION)

~~When a STA that activated a secure LTF measurement exchange mode receives a Ranging NDP Announcement frame addressed to itself, the STA’s MAC sublayer issues a PHY-RXLTFSEQUENCE.request with a LTFVECTOR parameter that provides the LTF sequence generation information associated with the LTF Generation SAC subfield in the STA Info field in the Ranging NDP Announcement.~~

~~When a STA that activated a secure LTF measurement exchange mode transmits a Location variant HEz Uplink Sounding Trigger frame, the STA’s MAC sublayer issues a PHY-TRIGGER.request with a LTFVECTOR parameter that provides the LTF sequence generation information associated with the LTF Generation SAC subfield in the Trigger Dependent User Info field in the Location variant HEz Uplink Sounding Trigger frame.~~

~~When a STA that activated a secure LTF measurement exchange mode receives a Location variant HEz Uplink Sounding Trigger frame, the STA’s MAC sublayer issues a PHY-RXLTFSEQUENCE.request with a LTFVECTOR parameter that provides the LTF sequence generation information associated with the LTF Generation SAC subfield in the Trigger Dependent User Info field in the Location variant HEz Uplink Sounding Trigger frame.~~

***TGaz Editor: change the subclause 28.3.4 as follows:***

28.3.4 HE PPDU formats

Four HE PPDU formats are defined: HE SU PPDU, HE MU PPDU, HE ER SU PPDU and HE TB PPDU. The HE NDP PPDU and the HE~~z SU Sounding~~ Ranging NDP PPDU ~~is~~ are a variants of the HE SU PPDU. ~~and~~ The HE TB NDP feedback PPDU and the HE~~z~~ TB ~~sounding~~ Ranging NDP PPDU ~~is~~ are ~~a~~ variants of the HE TB PPDU. These ~~two~~ four PPDU variants are defined in 28.3.16 (HE sounding NDP PPDU), 28.3.17a (HEz SU Sounding NDP PPDU) ~~and~~, 28.3.17 (HETB NDP feedback PPDU) and 28.3.17b (HEz TB Sounding NDP PPDU).

28.3.17a HE Ranging NDP PPDU

***TGaz Editor: Change the following paragraph at the subclause 28.3.17a:***

The HE Ranging NDP has the following properties:

* Uses the HE SU PPDU format but without the Data field.
* No beamforming steering matrix is applied to the waveform, the Beamformed field in HE-SIG-A of a Ranging NDP is laways set to 0.
* Can use regular HE-LTFs or Secure HE-LTFs with randomized LTF sequence (see Section 28.3.17d).
* Has a Packet Extension (PE) field that is 4 µs in duration; when using Secure HE-LTFs with randomized LTF sequence, the PE will start with a zero-power GI.
* When the TXVECTOR parameter NUM\_USER is more than 1, the TXVECTOR parameter NUM\_STS[1]is used to encode the NSTS And Midamble Periodicity field of the HE-SIG-A1. Otherwise, the TXVECTOR parameter NUM\_STS is used to encode the in the NSTS And Midamble Periodicity field of the HE-SIG-A1.
* The TXVECTOR parameter LTF\_REP that indicates the number of repetitions of the HE-LTF symbols and TXVECTOR parameter LTF\_OFFSET that indicates the number of HE-LTF to skip to receive are not encoded in the HE-SIG-A. For decoding the HEz-LTF fields, a PHY-RXLTFSEQUENCE.request primitive issued from the MAC provides the LTF\_REP parameter and LTF\_OFFSET parameter