IEEE P802.11
Wireless LANs

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| PDT-EHT-Preamble-L-STF,L-LTF, L-SIG, and RL-SIG Update |
| Date: 2021-01-04 |
| Author(s): |
| Name | Company | Address | Phone | email |
| Dongguk Lim | LG Electronics | 19, Yangjae-daero 11gil, Seocho-gu, Seoul 137-130, Korea |  | Dongguk.lim@lge.com |
| Eunsung Park |  | esung.park@lge.com |
| Jinyoung Chun |  | jiny.chun@lge.com |
| Jinsoo Choi |  | js.choi@lge.com |

Abstract

This document contains proposed draft text update for EHT-preamble-L-STF, L-LTF, L-SIG and RL-SIG

* Delete the text related to frequency segment in each equation
* Update for power scaling factor η term and delete the TBD in each equation
* Remove the Editor’s note in each equation.
* Fixed the error by Ron’s comment

R0: Initial version

R1: fixed the error by Edward’s comment.

* L-STF

The time domain representation of the L-STF field, transmitted on ~~frequency segment  and~~ transmit chain  shall be as specified in Equation (36-13). The equation applies to all contiguous signals up to 320 MHz.

*
* ~~Per the author of 20/1329r2,  in Equation (36-13) is TBD.~~

TGbe Editor: change the above equation (36-13) with the below equation

where

 is a power scaling factor with the value .

 is a PPDU format dependent scaling factor for the L-STF field ~~on subcarrier index~~ *~~k~~* with the following value :

 ~~(TBD)~~



 represents the cyclic shift for transmit chain  with a value given in 27.3.11.2.1 (Cyclic shift for pre-HE modulated fields).

 is the value given in Table 36-17 (Number of modulated subcarriers and guard interval duration values for pre-EHT modulated fields).

 is a set of 20 MHz channels where pre-EHT modulated fields are located. The set of 20 MHz channels contains one or more values in the range 0 to  for an EHT TB PPDU or EHT MU PPDU with preamble puncturing, and it contains all values in the range 0 to  for other EHT PPDU formats.



 is defined as  in Equation (19-8).

 is the index of 20 MHz channels, .

* L-LTF

The time domain representation of the L-LTF field, transmitted on ~~frequency segment  and~~ transmit chain , shall be as specified in Equation (36-14). The equation applies to all contiguous signals up to 320 MHz.

*
* ~~Per the author of 20/1329r2,  in Equation (36-14) is TBD.~~

TGbe Editor: change the above equation (36-14) with the below equation

where

 is a PPDU format dependent scaling factor for the L-LTF field ~~on subcarrier index~~ *~~k~~* with the same value as . ~~(TBD)~~

 is a power scaling factor with the value .

 is given in Table 36-9 (Timing-related constants).



 represents the cyclic shift for transmit chain  with a value given in 27.3.11.2.1 (Cyclic shift for pre-HE modulated fields).

 is the value given in Table 36-17 (Number of modulated subcarriers and guard interval duration values for pre-EHT modulated fields).

 is defined as  in Equation (17-8).

* L-SIG

The L-SIG field is used to communicate rate and length information. The structure of the L-SIG field is defined in Figure 17-5 (SIGNAL field bit assignment).

In an EHT PPDU, the RATE field shall be set to the value representing 6 Mb/s in the 20 MHz channel spacing column of Table 17-6 (Contents of the SIGNAL field). In a non-HT duplicate PPDU, the RATE field is defined in 17.3.4.2 (RATE field) using the L\_DATARATE parameter in the TXVECTOR.

The LENGTH field is set to a value satisfying the condition that the remainder is zero when LENGTH is divided by 3. And this remainder is used to differentiate an EHT-PPDU from a HE-PPDU.

For an EHT TB PPDU, the LENGTH field is set to the TXVECTOR parameter L\_LENGTH + 2. For an EHT MU PPDU, the LENGTH field is set to the value given by Equation (36-15).

*

where

 (in microseconds) is defined in 36.4.3 (TXTIME and PSDU\_LENGTH calculation).

 is defined in Table 27-54 (HE PHY characteristics).

In a non-HT duplicate PPDU, the LENGTH field is defined in 17.3.4.3 (PHY LENGTH field) using the L\_LENGTH parameter in the TXVECTOR.

The Reserved (R) field shall be set to 0.

The Parity (P) field has the even parity of bits 0–16.

The SIGNAL TAIL field shall be set to 0.

The L-SIG field shall be encoded, interleaved, and mapped following the steps described in 17.3.5.6 (Convolutional encoder), 17.3.5.7 (Data interleaving), and 17.3.5.8 (Subcarrier modulation mapping). The stream of 48 complex numbers generated by these steps is denoted by and are mapped to subcarriers . In addition, values  are mapped to the extra subcarriers  of the L-SIG field of a 20 MHz EHT PPDU. Subcarriers  are also BPSK modulated. Pilots shall be inserted as described in 17.3.5.9 (Pilot subcarriers).

The time domain waveform of the L-SIG field, transmitted on ~~frequency segment  and~~ transmit chain , shall be as given by Equation (36-16).

*
* ~~Per the author of 20/1329r2,  in Equation (36-16) is TBD.~~

TGbe Editor: change the above equation (36-16) with the below equation

where

 is a PPDU dependent scaling factor for the L-SIG field ~~on the subcarrier~~ *~~k~~* defined as follows:

~~(TBD)~~

 is given in Table 36-9 (Timing-related constants).





 is defined in 17.3.5.10 (OFDM modulation).

 is the first pilot value in the sequence defined in 17.3.5.10 (OFDM modulation)

 is defined in Table 36-17 (Number of modulated subcarriers and guard interval duration values for pre-EHT modulated fields).

 represents the cyclic shift for transmit chain  with a value given in 27.3.11.2.1 (Cyclic shift for pre-HE modulated fields).

NOTE— is a “reserve” function of the function  defined in 17.3.5.10 (OFDM modulation).

* RL-SIG

The RL-SIG field is a repeat of the L-SIG field and is used to differentiate an EHT PPDU from a non-HT PPDU, HT PPDU, and VHT PPDU.

The time domain waveform of the RL-SIG field, transmitted on ~~frequency segment  and~~ transmit chain , shall be as given by Equation (36-17).

*
* ~~Per the author of 20/1329r2,  in Equation (36-17) is TBD.~~

TGbe Editor: change the above equation (36-17) with the below equation

where

 is the second pilot value in the sequence defined in 17.3.5.10 (OFDM modulation).