IEEE P802.11
Wireless LANs

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| Proposed Draft Text: EHT PHY DATA scrambler and descrambler |
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Abstract

This submission shows

* EHT PHY DATA scrambler and descrambler

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Resolve Lin Yang’s comments
* Rev 2: Resolve Xiaoggang’s comments
* Rev 3: Resolve Ron’s comments

**34.3.12.3 SERVICE Field**

The SERVICE field of EHT DATA field is shown in Table 34-xx (SERVICE field).

Table 34-xx SERVICE field

|  |  |  |
| --- | --- | --- |
| **Bits** | **Field** | **Description** |
| B0-B10 | Scrambler Initialization | Set to 0 |
| B11-B15 | Reserved | Set to 0 |

**34.3.12.4 EHT PHY DATA scrambler and descrambler**

The DATA field, composed of SERVICE, PSDU, tail (if BCC is used), and pad parts, shall be scrambled with a length-2047 PPDU-synchronous scrambler. The octets of the PSDU are placed in the transmit serial bit stream, bit 0 first and bit 7 last. The PPDU synchronous scrambler uses the generator polynomial S(x) as follows and is illustrated in Figure 34-x (Data scrambler):

$S\left(x\right)=x^{11}+x^{9}+1$ (34-x)



Figure 34-x. Data scrambler

NOTE—The 2047-bit sequence generated repeatedly by the scrambler is (leftmost used first) 0000000001100000001111000001100110001111111101100000010111000010010110010110011110011111001111000111100110110011111011111000101000110100010111001010010111000110010110111110011010001111100101100011100111011011110101101001000110011010111111100010000011010100011100001011011001001101111011110100101001001100011011111011101000101010010100000110001000111101010110010000011110100011001001011111011001000101111010100100100001101101001110110011101011111010001000100101010101100000000111000000110110000111011100110101011111000001000110001010111101000010010010010110110110011011011111101101000010110010010011110110111001011010111001100010111111010010000100110100101111001100100111111101110000010101100010000111010100110100001111001001100111011111110101000001000010001010010101000110000010111100010010011010110111100011010011011100111101011110010001001110101011101000001010010001000110101010111000000010110000010011100010111011010010101100110000111111100110000011111100011000011011110011101001111010011100100111011101110101010101000000000010000000010100000010001000010101010010000000110100000111001000110111010111010100010100001010001001000101011010100001100001001111001011100111001011110111001001010111011000010101110010000101110100100101001101100011110111011001010101111000000100110000101111100100100011101101011010110001100011101111011010100101100001100111001111110111100001010011001000111111010110000100011100101011011100001101011001110001111101101100010110111010011010100111100001110011001101111111110100000001001000001011010001001100101011111100001000011001010011111000111000110110110111011011010101101100000110111000111010110110100011011001011101111001010100111000001110110001101011101110001010101101000000110010000111110100110001001111101011100010001011010101001100000011111000011000110011110111111001010000111000100110110101111011000100101110101100101000111100010110011010011111100111000011110110011001011111111001000000111010000110100100111001101110111110101010001000000101010000100000100101000101100010100111010001110100101101001100110011111111111, when the all 1s initial state(set by the 11 initialization bits as shown in figure 34-x) is used.

The same scrambler is used to scramble transmit data and to descramble receive data. When transmitting, the initial state of the scrambler shall be set to a pseudorandom nonzero state. During reception by an EHT STA, the initial state can be estimated from the 11 LSB of the service field.

When the MU-RTS is transmitted using an EHT PPDU, the first 7 initialization bits as shown in Figure 34-x, equivalent to the 7 LSB bits of the SERVICE field after scrambling, should not be set to all zeros.