IEEE P802.11
Wireless LANs

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| CID Resolution – Part IX |
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|  |  |  |  |  |

Abstract

This document proposes resolutions for CID 1934, 1569 (2), [1].

**CID 1934**

*Comment:*

There are six "Frequently used parameters" tables in the draft. Many parameters in those tables are the same. It may be better to make one table for the whole spec.

*Proposed change:*

Make one "Frequently used parameters" table for the whole spec

*Resolution:*

Accepted.

The frequently used symbol notations in this subclause are summarized in Table 64.

Table 64—Frequently used parameters

|  |  |
| --- | --- |
| Symbol | Explanation |
|  | Transmit chain number |
|  | Total number of transmit chains |
|  | SC chip rate, equal to 1.76 GHz |
|  | SC chip time duration, equal to 1/*Fc* |
|  | Number of contiguous 2.16 GHz channels used for PPDU transmission, 1 ≤ *NCB* ≤ 4 |
|  | Shaping filter impulse response defined at the *Nup*×1.76 GHz sampling rate. *Nup* defines an up-sampling parameter. |
|  | Up-sampling parameter |

The symbol notations for frequently used parameters in this subclause are summarized in Table 74.

Table 74—Frequently used parameters

|  |  |
| --- | --- |
| Symbol | Explanation |
|  | Space-time stream number |
|  | Total number of space-time streams |
|  | User number |
|  | Total number of users |
|  | Space-time stream number for *iuser*th user |
|  | Total number of space-time streams for *iuser*th user |
|  | Transmit chain number |
|  | Total number of transmit chains |
|  | Number of contiguous 2.16 GHz channels used for the PPDU transmission, 1 ≤ *NCB* ≤ 4 |
| *iPPDU* | PPDU index number aggregated into the A-PPDU, 1 ≤ *iPPDU* ≤ *NPPDU* |
| *NPPDU* | Total number of PPDUs aggregated into a single A-PPDU |

The symbol notations for frequently used parameters in this subclause are summarized in Table 76.

Table 76—Frequently used parameters

|  |  |
| --- | --- |
| Symbol | Explanation |
|  | Spatial stream number |
|  | Total number of spatial streams for *iuser*-th user |
|  | User number |
|  | Total number of users in a multi user transmission |
|  | Space-time stream number for *iuser*-th user |
|  | Total number of space-time streams for *iuser*-th user |
|  | Space-time stream number over all users |
|  | Total number of space-time streams over all users |
|  | PSDU length in octets for *iuser*-th user |
|  | LDPC codeword length in bits, it can be equal to 468, 504, 624, 672, 936, 1008, 1248, and 1344 |
|  | LDPC codeword length in bits for *iuser*th user |
|  | Number of systematic data bits per LDPC codeword |
|  | Number of parity bits per LDPC codeword |
|  | Repetition factor for *iuser*th user; is equal to 2 for MCS 1 and equal to 1 for all other MCSs |
|  | LDPC code rate for *iuser*th user and can be equal to ½, 5/8, 2/3, ¾, 13/16, 5/6, 7/8 |
|  | Total number of LDPC codewords for *iuser*th user |
|  | Number of pad bits for the *iuser*th user to reach an integer number of LDPC codewords |
|  | Total number of SC symbol blocks for the *iuser*th user |
|  | Minimum number of total SC symbol blocks for a PPDU carrying a BRP frame transmission |
|  | Number of pad bits for the *iuser*th user to reach an integer number of SC symbol blocks |
|  | Number of contiguous 2.16 GHz channels used for PPDU transmission |
|  | Number of coded bits per SC symbol block; depends on modulation type and is different for different GI types as defined in Table 77. |
|  | Number of coded bits per symbol (constellation point) for the *iuser*th user and *iSS*th spatial stream |
|  | Number of symbols (constellation points) per SC symbol block; depends on the GI type as defined in Table 78. |
|  | Maximum number of SC symbol blocks over all users |
|  | The number of pad SC symbol blocks for the *iuser*th user that is required to align PPDUs over different users in time |
|  | Number of SC symbol blocks for the last PPDU in an A-PPDU to reach the spoofing A-PPDU duration |

The frequently used symbol notations in this subclause are summarized in Table 79.

Table 79—Frequently used parameters

|  |  |
| --- | --- |
| **Symbol** | **Explanation** |
|  | Space-time stream number |
|  | Total number of space-time streams over all users |
|  | User number |
|  | Total number of users |
|  | Transmit chain number |
|  | Total number of transmit chains |
|  | SC chip rate, equal to 1.76 GHz |
|  | SC chip time duration, equal to 1/*Fc* |
|  | Number of contiguous 2.16 GHz channels used for PPDU transmission, 1 ≤ *NCB* ≤ 4 |
|  | Spatial mapping matrix of size *NTX* by *NSTS* |
|  | Up-sampling parameter |
|  | Total number of PPDUs into EDMG A-PPDU |

The symbol notations for frequently used parameters in this subclause are summarized in Table 1.

Table 90—Frequently used parameters

|  |  |
| --- | --- |
| Symbol | Explanation |
|  | Spatial stream number |
|  | Total number of spatial streams for *iuser*th user |
|  | User number |
|  | Total number of users |
|  | Space-time stream number for *iuser*th user |
|  | Total number of space-time streams for *iuser*th user |
|  | Space-time stream number over all users |
|  | Total number of space-time streams over all users |
|  | PSDU length in octets for *iuser*th user |
|  | LDPC codeword length in bits, it can be equal to 624, 672, 1248, and 1344 |
|  | LDPC codeword length for the *iuser*th user |
|  | Number of systematic data bits per LDPC codeword |
|  | Number of parity bits per LDPC codeword |
|  | LDPC code rate for the *iuser*th user and can be equal to ½, 5/8, ¾, 13/16, 7/8 |
|  | Total number of LDPC codewords for the *iuser*th user |
|  | Number of pad bits for *iuser*th user to get integer number of LDPC codewords |
|  | Total number of OFDM symbols for *iuser*th user |
|  | Minimum number of total OFDM symbols for PPDU carrying a BRP frame transmission |
|  | Number of pad bits for the *iuser*th user to get integer number of OFDM symbols |
|  | Number of coded bits per OFDM symbol |
|  | Number of coded bits per constellation point for the *iuser*th user and *iSS*th spatial stream |
|  | Maximum number of OFDM symbols over all users |
|  | The number of pad OFDM symbols for the *iuser*th user required to align PPDUs over different users in time |
|  | Number of OFDM symbols for the last PPDU in an A-PPDU to reach the spoofing A-PPDU duration |

The symbol notations used in this subclause are summarized in Table 93.

Table 93— Frequently used parameters

|  |  |
| --- | --- |
| Symbol | Explanation |
|  | Space-time stream number |
|  | Total number of space-time streams over all users |
|  | User number |
|  | Total number of users |
|  | Transmit chain number |
|  | Total number of transmit chains |
|  | SC chip rate, equal to 1.76 GHz |
|  | SC chip time duration, equal to 1/*Fc* |
|  | OFDM sampling rate equal to *NCB*×2.64 GHz |
|  | OFDM sample time duration, equal to 1/*Fs* |
|  | Number of contiguous 2.16 GHz channels used for PPDU transmission, 1 ≤ *NCB* ≤ 4 |
|  | Spatial mapping matrix of size *NTX* by *NSTS*, defined for *k*-th subcarrier |
|  | Up-sampling parameter |
|  | Total number of PPDUs into EDMG A-PPDU |

*Editor: delete Table 64, 74, 76, 79, 90, 93 from D1.1, add the common Table below for all modes, add this table in the new subclause of clause 30.3 defining frequently used parameters*

**Table X - Frequently used parameters**

|  |  |
| --- | --- |
| Symbol | Explanation |
|  | Spatial stream number |
|  | Total number of spatial streams |
|  | Total number of spatial streams for *iuser*th user |
|  | Space-time stream number |
|  | Total number of space-time streams |
|  | Total number of space-time streams for *iuser*th user |
|  | Space-time stream number for *iuser*th user |
|  | User number |
|  | Total number of users |
|  | Transmit chain number |
|  | Total number of transmit chains |
|  | Up-sampling parameters |
|  | Number of contiguous 2.16 GHz channels, *NCB* = 1 for 2.16 GHz and 2.16+2.16 GHz, *NCB* = 2 for 4.32 GHz and 4.32+4.32 GHz, *NCB* = 3 for 6.48 GHz, and *NCB* = 4 for 8.64 GHz channel |
|  | PPDU number aggregated into the EDMG A-PPDU |
|  | Total number of PPDUs aggregated into the EDMG A-PPDU |
|  | Shaping filter impulse response defined at the *Nup*×1.76 GHz sampling rate. *Nup* defines an up-sampling parameter |
|  | Spatial mapping matrix of size *NTX* by *NSTS*, independent on *k*-th subcarrier index |
|  | Spatial mapping matrix of size *NTX* by *NSTS*, defined for *k*-th subcarrier |
|  | PSDU length in octets for *iuser*th user |
|  | LDPC codeword length in bits, it can be equal to 468, 504, 624, 672, 936, 1008, 1248, and 1344 |
|  | LDPC codeword length for the *iuser*th user |
|  | Number of systematic data bits per LDPC codeword |
|  | Number of parity bits per LDPC codeword |
|  | LDPC code rate for the *iuser*th user and can be equal to ½, 5/8, 2/3, ¾, 13/16, 5/6, 7/8 |
|  | Repetition factor for *iuser*th user; is equal to 2 for MCS 1 and equal to 1 for all other MCSs, applied for EDMG SC mode only |
|  | Total number of LDPC codewords for the *iuser*th user |
|  | Number of pad bits for *iuser*th user to get integer number of LDPC codewords |
|  | Total number of SC symbol blocks for the *iuser*th user, applied for EDMG SC mode only |
|  | Total number of OFDM symbols for *iuser*th user, applied for EDMG OFDM mode only |
|  | Minimum number of total SC symbol blocks for a PPDU carrying a BRP frame transmission, applied for EDMG SC mode only |
|  | Minimum number of total OFDM symbols for PPDU carrying a BRP frame transmission, applied for EDMG OFDM mode only |
|  | Number of pad bits for the *iuser*th user to reach an integer number of SC symbol blocks, applied for EDMG SC mode only |
|  | Number of pad bits for the *iuser*th user to get integer number of OFDM symbols, applied for EDMG OFDM mode only |
|  | Total number of coded bits per SC symbol block, applied for EDMG SC mode only |
|  | Number of coded bits per symbol (constellation point) for EDMG SC mode and per OFDM symbol for EDMG OFDM mode |
|  | Number of coded bits per symbol (constellation point) for the *iuser*th user and *iSS*th spatial stream, applied for EDMG SC mode only |
|  | Total number of symbols (constellation points) per SC symbol block, applied for EDMG SC mode only |
|  | Number of coded bits per constellation point, applied for EDMG OFDM mode only |
|  | Number of coded bits per constellation point for the *iuser*th user and *iSS*th spatial stream, applied for EDMG OFDM mode only |
|  | Maximum total number of SC symbol blocks over all users, applied for EDMG SC mode only |
|  | Maximum total number of OFDM symbols over all users, applied for EDMG OFDM mode only |
|  | The number of pad SC symbol blocks for the *iuser*th user that is required to align PPDUs over different users in time, applied for EDMG SC mode only |
|  | The number of pad OFDM symbols for the *iuser*th user required to align PPDUs over different users in time, applied for EDMG OFDM mode only |
|  | Number of SC symbol blocks for the last PPDU in an EDMG A-PPDU to reach the spoofing EDMG A-PPDU duration, applied for EDMG SC mode only |
|  | Number of OFDM symbols for the last PPDU in an EDMG A-PPDU to reach the spoofing EDMG A-PPDU duration, applied for EDMG OFDM mode only |

**CID 1569**

*Comment, p 107, line 17:*

For 2.16+2.16GHz and 4.32+4.32 GHz case, the PPDUs which are transmitted by an even number of antennas are not SISO PPDUs according to the SISO definition

*Proposed change:*

please clarify it SISO is for single antenna per channel or move 2.16+2.16GHz and 4.32+4.32 GHz to MIMO case

*Resolution:*

Rejected.

*Discussion:*

SISO assumes that we transmit the PPDU with a single spatial stream NSS = 1, it does not depend on the number of antennas or channels used in the transmission.

**SP:**

Do you agree to accept the proposed resolutions for CIDs 1934, 1569 in (11-18-0640-00-00ay CID Resolution – Part IX)?

**References:**

1. Draft P802.11ay\_D1.1