IEEE P802.11  
Wireless LANs

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| CID Resolution – Part XIII | | | | |
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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Artyom Lomayev | Intel | Turgeneva 30, Nizhny Novgorod 603024, Russia | +7 (831) 2969444 | artyom.lomayev@intel.com |
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Abstract

This document proposes resolutions for CIDs 4083, 4084, 4085, 4086, 4198, 4149, 4152, 4064, 4076, 4077, 4171, 4466, 4154, 4159 (14), [1], [2].

**CID 4083**

*Comment, p 518, line 10:*

F\_{c,EDMG} is already a function of N\_{CB} so we do not need to multiple by N\_{CB} again

*Proposed change:*

Remove multiply by N\_{CB}

*Resolution:*

Accepted.

*Editor: remove NCB multiplier in the equation below*

For a single PPDU transmission, the EDMG modulated field of the EDMG preamble and Data field of an SU PPDU is defined for the *iSTSth* space-time stream at the *Fc EDMG* chip rate and includes the following modulated fields:

**CID 4084**

*Comment, p 520, line 10:*

F\_{c,EDMG} is already a function of N\_{CB} so we do not need to multiple by N\_{CB} again

*Proposed change:*

Remove multiply by N\_{CB}

*Resolution:*

Accepted.

*Editor: remove NCB multiplier in the equation below*

The TRN field, , shall be defined at the SC chip rate equal to *Fc EDMG* per *iTXth* transmit chain as defined in 29.9.2.2.6.

**CID 4085**

*Comment, p 522, line 5:*

F\_{c,EDMG} is already a function of N\_{CB} so we do not need to multiple by N\_{CB} again

*Proposed change:*

Remove multiply by N\_{CB}

*Resolution:*

Accepted.

*Editor: remove NCB multiplier in the equation below*

The EDMG preamble, EDMG-Header-B and Data field of an EDMG MU PPDU is defined for *iSTSth* space-time stream at the *Fc EDMG* chip rate and includes the following modulated fields:

**CID 4086**

*Comment, p 522, line 25:*

F\_{c,EDMG} is already a function of N\_{CB} so we do not need to multiple by N\_{CB} again

*Proposed change:*

Remove multiply by N\_{CB}

*Resolution:*

Accepted.

*Editor: remove NCB multiplier in the equation below*

The TRN field, , shall be defined at the SC chip rate equal to *Fc EDMG* per *iTXth* transmit chain as defined in 29.9.2.2.6.

**CID 4198**

*Comment, p 433, line 25:*

In the explanation of the variables, f\_c seems typo of f\_c\_p, which appears in the equation at P433L26.

*Proposed change:*

replace f\_c with f\_c\_p

*Resolution:*

Revised.

*Editor: replace f\_c with the f\_c\_p as shown below*

In this case, the transmitted signal is as follows:

where:

is the carrier center frequency of the primary channel (primary and secondary channels for a 4.32+4.32GHz PPDU transmission)

is the carrier center frequency of the secondary channel (secondary1 and secondary2 channels for a 4.32+4.32GHz PPDU transmission)

**CID 4149**

*Comment, p 526, line 2:*

"shall be at least 1000., with the constraint that NBLKS shall be at least 20 and that Nf shall be at least 20" The constraint of at least 1000 symbols is ridiculous since each block has at least 384 symbols and the minimum number of blocks is 20.

*Proposed change:*

remove the number of symbols requirements, it is too low anyway.

*Resolution:*

Revised.

*Editor: remove the number of symbols in the requirement as shown below*

The total number of symbols used in the test is equal to with the constraint that *NBLKS* shall be at least 20 and that *Nf* shall be at least 20. Random data shall be used for the symbols and frames.

**CID 4152**

*Comment, p 575, line 18:*

"The PHY shall not issue a PHY-RXSTART.indication primitive in response to a PPDU that does not overlap the primary 2.16 GHz channel.": how does this work with allocation that do not include the primary channel (see 10.40.11.2.1)

*Proposed change:*

either provide exception for the case in which the allocation does not overlap the primary channel, or remove this paragraph

*Resolution:*

Revised.

*Editor: remove the paragraph below*

**CID 4064**

*Comment, p 418, line 8:*

In section 29.3.3.2.4.2 bullet (a) has a duplicate equation for φá╡φ▒üφá╡φ░╡φá╡φ░┐φá╡φ░╛φá╡φ▒å'. The first one looks OK with right reference for TXTIME , however the second looks redundant and since it is different it makes no sense to have two equation for the same.

*Proposed change:*

Remove the second and fix this part (bullet (a))

*Resolution:*

Accepted.

*Editor: remove the redundant equation as below*

29.3.3.2.4.2 Example of spoofing algorithm for EDMG SC PPDUs

The following is an informative algorithm for calculating the value of the Length field (referred to below as *Length*), the Training Length field (referred to below as *Training\_Length*), and the MCS field (referred to below as *Base MCS*) in the L-Header of an EDMG SC mode PPDU.

1. The tentative number of SC symbol blocks, *NBLKS’*, is calculated as , where *TXTIME* is defined in 29.12.3 and *TL-STF*, *TL-CEF* and *TL-Header* are defined in 29.5.10.4.4.2.

**CID 4076, 4077**

*Comment, p 502, line 19, CID 4076:*

This is weirdly presented: there is some hierarchy in this presentation. We must know x to know N\_x, N\_x to know N\_y, and we must know most N\_x and N\_y to apply the idx array generation. They should be presented in this order, or is should be explicitly stated that the steps on page 448, line 23-page 449 line 2 are preparatory steps. This could be done by stating "The array of permutation indexes idx is constructed as follows: FORMULA FOR IDX \*\*where\*\* x = .... , N\_x = .... if x <= ..., N\_y = ...."

*Proposed change, CID 4076:*

N\_y should be defined before it's invoked on line 19. Currently N\_y is defined on line 22 of this page. This was an editorial comment in LB234, because it's really only an observation that you define a value before you invoke it (i.e., just shift up the definition of N\_y to line 19 and done).

*Comment, p 502, line 19, CID 4077:*

How do we find out what N\_x is? The definition of N\_y on line 22 depends on the definition of N\_x. N\_x gives the impression of being dependent on N\_SS by the statement on line 15, where N\_SS is as defined in table 47 on p. 409 (subclause 29.3.1) but this is not actually stated (and it should be). Both N\_x and N\_y should be defined before they are invoked on line 19, because normally you define a value before you use it. The implementer should not have to hunt for the values they need to implement(?).

*Proposed change, CID 4077:*

This was previously posted as an editorial comment, but was rejected because it "needs a submission". Happy to oblige if I'm notified next time. I consider them still editorial, because it just seems to me a problem of the order in which information is presented.

*Resolution to CID 4076, 4077:*

Revised.

*Editor: introduce changes in the text as below*

29.5.9.5.4. Block interleaver

The block interleaver is defined for π/2-64-QAM and π/2-64-NUC modulations. The block interleaver performs modulated complex symbols interleaving inside a SC symbol block and its parameters depend on the *NSPB*, *NCB*, , , and  parameters.

The input to the interleaver for the *ith* spatial stream is a SC symbol block  of length *NSPB* and composed of 64-QAM or 64-NUC symbols (before application of π/2-rotation) , where *q* denotes the SC symbol block number, *q* = 0, 1, …, .

The output of the interleaver for the *i*th spatial stream is a permuted SC symbol block  of length *NSPB* and defined as , where *idx()* defines the array of permutation indexes.

The array of permutation indexes, *idx()*, is constructed as follows. Let . Moreover, for each *x*, let:

* and *Ny* = *NSPB* / *Nx*.
* Then, , where *i* = 0, 1, …, *Nx* – 1 and *j* = 0, 1, …, *Ny* – 1.

The symbols of the output interleaver SC symbol block are then rotated by π/2 as defined in 20.6.3.2.4.5 and 29.5.9.5.5 to produce the π/2-64-QAM and π/2-64-NUC constellation points, respectively.

**CID 4171**

*Comment, p 759, line 4*

Channel numbers no longer match the definitions in Clause 29.3.4

*Proposed change:*

Add appropriate channels from Figure 175 that are not included in each table.

*Resolution:*

Revised.

*Editor: introduce changes in the text as below*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 34 | 180 | 56.16 | 2160 | 1, 2, 3, 4, 5, 6, 7, 8 | - | - |
| 35 | 181 | 56.16 | 4320 | 9,10,11,12,13, 14, 15 | - | - |
| 36 | 182 | 56.16 | 6480 | 17,18,19,20, 21, 22 | - | - |
| 37 | 183 | 56.16 | 8640 | 25,26,27, 28, 29 | - | - |
| ~~35~~38-127 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |

*Change Table E-1 as follows*

**CID 4466**

*Comment, p 505, line 12*

there are several spatial mapping methods specified for SC PPDU transmission. Indication for the receiver on which spatial mapping method is used at the transmitter is missing. The receiver would have such information for combining.

*Proposed change:*

Clarify the transmission of indication on spatial mapping methods.

*Resolution:*

Revised.

*Editor: add clarification for CSD operation, p 506, line 8*

* Spatial expansion, *NSTS* = 1 < *NTX*: the spatial expansion is performed by the application of CSD over different transmit chains. The spatial mapping matrix Q is not applied in that case. The CSD is applied to the fields of PPDU with the exception of the TRN field. This enables duplication of the transmission of PPDU fields over the *NTX* transmit chains and avoids unintentional beamforming that exists with a coherent signal transmission. The spatial expansion technique is not applied to the TRN field, which is transmitted using an orthogonal sequence set.

**CID 4154**

*Comment, p 578, line 7*

"The minimum value for the Length field is equal to 14 octets": this is incorrect for short sector sweep PPDUs where the length field is equal.

*Proposed change:*

provide an exception of SSSW PPDUs or the length of 6.

*Resolution:*

Revised.

*Editor: add clarification for DMG SSW PPDU as below*

For an EDMG STA and EDMG and non-EDMG control mode PPDUs, the RXTIME parameter shall be computed using the Length and Training Length fields defined in the L-Header (see Table 20-11). The minimum value for the Length field is equal to 14 octets with exception for the Short SSW packet, where the minimum value for the Length field is equal to 6 octets, and the Training Length (TRN\_LEN) can be equal to 0. In the latter case, the TRN field is not appended to the PPDU.

**CID 4159**

*Comment, p 526, line 2*

Nf=20 was a good value for 802.11a, where the step size was 3dB for each MCS. With step sizes as small as 1 dB in 802.11ay, we should consider increasing Nf to be at least 160 so as to have confidence in the measurement.

*Proposed change:*

Change "Nf shall be at least 20" to "Nf shall be at least 160".

*Resolution:*

Rejected.

*Discussion:*

In 11a, OFDM PHY defines 48 symbols per OFDM symbol. In 11ay, the normal data block length is equal to N\_SPB = 448 symbols. This is 448/48 ~9 times higher compared to 11a. Commenter says that we need to increase Nf in 8 times, but this is already taken into account in N\_SPB parameter.

Moreover, text says that Nf shall be “at least”, so user can select greater value for Nf, if it is needed.

**SP:**

Do you agree to accept the proposed resolutions for CIDs 4083, 4084, 4085, 4086, 4198, 4149, 4152, 4064, 4076, 4077, 4171, 4466, 4154, 4159 in (11-19-0546-01-00ay CID Resolution - Part XIII)?

**References:**

1. Draft P802.11ay\_D3.0
2. 11-19-0297-03-00ay-comments-on-11ay-d3-0