IEEE P802.11  
Wireless LANs

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| Making a K\_shift for NON\_HT\_DUPLICATE\_OFDM in 2W and 4W modes. LB192 CID 2044 | | | | |
| Date: 2013-03-20 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Jens TINGLEFF | Samsung Electronics | Samsung France Research Center  Les Deux Arcs - Entrée B 1800 Route des Crêtes, Sophia Antipolis 06560 Valbonne France |  | j.tingleff@samsung.com |
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Abstract

We define NON\_HT\_DUP\_OFDM modulation as being a close copy of that in the baseline. There is one difference which we do not presently take into account: the spacing between the duplicates is 64 subcarriers for the two duplicates in TVHT\_W but it is 144 subcarriers for the two pairs in TVHT\_2W and for each of the halves of TVHT\_2W+2W. We construct a new equation for substituting into the clause 23 words.

# Revision history:

* R1: add table in discussion, make more complicated correction
* R2: Add Revised as resolution. Correct – 8 x ... to + 8 x ... in equation. Removed erroneous eqution number from proposed resolution. Formatting in proposed equation. Typos in abstract

# Relevant comment

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 2044 | 243.52 | 23.3.10.12 | For NON\_HT\_DUPLICATE\_OFDM modulation we rely on clause 22 and clause 20 for definition of the actual signal. However, these clauses rely on the spacing between the centre of each duplicate being 2x64 subcarriers whereas we rely on that spacing being 144 (see table 23-6).  We need to add a definition for K\_shift in equation 22-100 . This is in turn equation 22-25 .  We only need to add the definition for K\_shift(i) in equation 22-100 (equivalent to the 80 and 160 MHz case equivalent since we use the equivalent of 40 MHz on our single TVHT\_W transmissions. | Add a reference in page 243 line 52 (after the N\_20MHz substitution) pointing to a substitution for K\_shift(i) given in new equation 23-100a . The contents of equation 23-100a is identical to Equation 22-25 with the trailing 32 replaced by 36 | **Revise.** Make a new equation for *KShift(i)* becoming equation 23-100a, using additional terms to produce 144 spacing where needed. |

# Discussion

In Clause 23 we refer to Clause 22.3.10.12 (from our 23.3.10.12) which in turn refers to equation 22-100 which in turn refers to clause 22.3.8.2.4 in which we find equation 22-25



Followed by unnumbered (in the PDF, number 22-26 in the RTF)



This is clearly incompatible with each of the W having two chunks (spaced by 64) spaced by 144 in the big chunk of 2W or 4W modes. The problem being that the 2i 32 correctly counts if all spacings between duplicated parts are 64, but in our case the spacings are 64, 72, 64 (, 72, 64, ...).

The commenter got it wrong; the problem is not the 32, the problem is alternating between 128 and 144.

What we want is indexes along these lines

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| N20MHz | iBW = 0 | iBW = 1 | iBW = 2 | iBW = 3 | iBW = 4 | iBW = 6 | iBW = 7 | iBW = 8 |
| 2 | -58 .. -6 | 6 .. 58 |  |  |  |  |  |  |
| 4 | -130 .. -78 | -66 .. -14 | 14 .. 66 | 78 .. 130 |  |  |  |  |
| 8 | -274 .. -222 | -210 .. -158 | -130 .. -78 | -66 .. -14 | 14 .. 66 | 78 .. 130 | 158 .. 210 | 222 .. 274 |

# Proposed resolution and remedy

**Revise.** Make a new equation for *KShift(i)* becoming equation 23-100a, using additional terms to produce 144 spacing where needed.

***Instruct the TGaf Editor to edit clause 23.3.10.12 p 243 l 56 adding the following:***

is defined in Table 23-16 (Parameters for Non-HT duplicate transmissions). K\_Shift(i) is replaced by Equation (23-100a).

***Instruct the TGaf Editor to add Equation (23-100a) based on Equation (below 22-25) as follows (using proper math notation, either Floor() or symbols as appropriate, etc):***

KShift(i) = (N20MHz – 1 – 2i)x32 + 8xFloor(N20MHz/4) + 8xFloor(N20MHz/8) – 16xFloor(i/2)

References:

* IEEE P802.11ac/D5.0, January 2013