IEEE P802.11  
Wireless LANs

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| Comment resolutions for WUR HDR and LDR | | | | |
| Date: 2018-1-9 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Minyoung Park | Intel Corporation |  |  | Minyoung.park@intel.com |

Abstract

This submission proposes resolutions for multiple comments related to TGba D1.0 with the following CIDs (13 CIDs):

* 509, 629, 640,

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Added CIDs 220, 243
* Rev 2: The following CIDs have been removed from this document due to lack of consensus: 689, 741, 831, 819, 821, 822, 220, 243, 820, 709

Straw Poll 1

Do you support to make HDR to be optional on the WUR AP side?

* Y/N/A: 4/5/9

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGba Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGba Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGba Editor: Editing instructions preceded by “TGba Editor” are instructions to the TGba editor to modify existing material in the TGba draft. As a result of adopting the changes, the TGba editor will execute the instructions rather than copy them to the TGba Draft.***

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| **CID** | **Commenter** | **Clause Number** | **Page** | **Line** | **Comment** | **Proposed Change** | **Resolution** |
| 509 | Lei Huang | 4.3.15a | 21 | 29 | WUR only supports two data rates: LDR and HDR. The first and second mandatory main features can be merged into one. | change "--Transmit 20 MHz WUR PPDU with Low Data Rate.  --Transmit 20 MHz WUR PPDU with High Data Rate." to "--Transmit 20 MHz WUR PPDU" | Rejected.  Since the WUR non-AP STA does only supports LDR as the mandatory rate, it will be better to have them separate in the WUR AP side as well so that the reader can know the difference clearly. |
| 629 | Michael Fischer | 4.3.15a | 21 | 29 | There is insufficient need to define two, different data rates. WUR should be simple and fully interoperable, and with only a 4X difference in data rate, there is not enough benefit regarding throughput difference to justify the complexity of supporting two data rates (and if there is enough benefit regarding some other PHY characteristic of interest, such is not stated in the draft). If HDR is optional, you cannot rely in its being available, so the analytical bases of all WUR-capable AP design decisions needs to assume LDR. Note that this introductory section does include an expected power consumption of the WURx radio at non-AP stations, but does not include any rationale for why having both LDR and HDR is expected to be beneficial. | Choose one data rate and use it throughout. If you cannot agree on whether it should be 62.5 Kb/s or 250 Kb/s, use 125 Kb/s. Also make the associated changes such as one sync field length, removal of the HDR capability bits, etc. | Rejected.  The LDR is necessary to support the same range as non-HT, HT, VHT PHY range. The HDR provides more efficient WUR operation with less overhead when a STA is close to an AP. |
| 640 | Michael Fischer | 32.1 | 65 | 30 | There should be only one data rate. WUR is supposed to be simple and deployable with very high interoperability. There is no stated reason for having two data rates, which is particularly needed because the two rates are so similar. Furthermore, in this clause several things are stated to be optional, including channels wider than 20MHz and FDMA operation, but there is no statement that HDR is optional, even though such is stated in clause 4. | Choose one data rate and one WUR sync duration. If you cannot agree on whether it should be 62.5 Kb/s or 250 Kb/s, split the difference and use 125 Kb/s (either by using LDR OOK symbols with 2us ON and OFF periods or HDR OOK symbols with 4us ON and OFF periods). My recommendation is to use 250 Kb/s, and 64us sync field, because that requires slightly over 700us to transmit a maximum-length PPDU, whereas at 62.5 Kb/s a maximum-length PPDU requires 2986us. Viewed in isolation, spending 3% of the default beacon interval to send a single WUR PPDU may be acceptable, but in actual networks there are likely to be VHT and/or EHT stations attempting to make use of the very and/or extremely high throughput, and to them using 3% of the beacon interval to wake up one (or a small set of) ultra-low-power station(s) looks more like excessive overhead. | Rejected.  The LDR is necessary to support the same range as non-HT, HT, VHT PHY range. The HDR provides more efficient WUR operation with less overhead when a STA is close to an AP. |
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