

Project	IEEE 802.16 Broadband Wireless Access Working Group < http://ieee802.org/16 >	
Title	Rebuttal of Task Group Reasons for Resolution on Comment 318	
Date Submitted	2002-10-11	
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Re:	Comment 318 in the Sponsor Ballot Comment database IEEE 802.16-02/42r3	
Abstract	This document is my rebuttal of the Task Group's reasons for rejection of my comment 318 in the Sponsor Ballot. I am submitting a revised Comment in the Sponsor Ballot Recirculation to re-address the issue masked by the errors and misunderstandings in the Reasons for Rejection.	
Purpose	This information can be reviewed by the Ballot Resolution Committee following recirculation of the Sponsor Ballot comments	
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Rebuttal of Task Group Reasons for Rejection of Comment 318*David Trinkwon***1. Background**

Comment 318 was generated during Meeting #21 (Cheju) as a result of discussion of Comment 018, where the Task Group felt that it was desirable to extend the principle of Comment / Resolution 018 beyond the License Exempt paragraph addressed by Comment 018. This extension was formulated to address similar situations relating to the Adjacent Carrier Permutation option within the OFDMA PHY mode, and also took the opportunity to improve the wording and completeness of this paragraph within the AAS context.

The TG Editor claimed that the proposed resolution was technically incorrect / inappropriate (which was disputed during the discussion) and the Task Group rejected the Comment.

Comment 018 had been submitted as Technical, Binding (which requires that a valid reason for rejection be documented), but the TG Chair had previously refused my request to treat comment 318 in the same way. Therefore the comment was entered as Technical, non-binding and no Reason for Rejection was documented at the time of the resolution.

The next day the WG Chair singled out (no reason given) this one non-binding comment and asked for a written reason for rejection to be included in the database. The TG Editor just happened to have a lengthy text ready for inclusion which I disputed as being technically incorrect and not relevant to the actual proposed resolution or the actual reason for rejection by the TG. Nonetheless the TG voted to include the Editor's text into the database before release.

I am therefore now documenting the reasons why I regard the Editor's text as technically inaccurate / inappropriate and will be seeking a revised resolution to the Comment during recirculation..

2. Comment 018 and Resolution

Comment (Nico van Waes)

I'm still rather unhappy with the entire lack of interoperability and co-existence between the PHYs in the LE bands. There is still no clarification on what an optional PHY is supposed to be, other than that both need to be resident in the hardware/software, which would be a rather pointless requirement. Suggested text below is the ultimate minimum in co-existence and interoperability that should be specified.

Adopted Resolution

A SS may start up using the optional PHY, but shall switch to the mandatory mode when no BS employing the optional PHY is detected on any of the targeted channels.

3. Comment 318 and Resolution

Comment (Edited by Nico van Waes from Comment 018)

I'm still rather unhappy with the entire lack of interoperability and co-existence between the PHYs. There is still no clarification on what an optional PHY is supposed to be, other than that both need to be resident in the hardware/software, which would be a rather pointless requirement.

Rejected Resolution (existing text in black/plain, additional text in red/underlined)

Change Page 206 Lines 37 - 40 to :

A BS using the AAS option may change from the distributed carrier permutation to the adjacent carrier permutation when changing from non-AAS to AAS-enabled traffic. After this change, the BS shall only transmit/receive AAS-enabled traffic using the selected permutation until the end of the frame, at which point it shall return to the mandatory distributed carrier permutation for the non-AAS traffic.

Where there is only AAS traffic served by the BS then the BS can operate in its selected AAS distributed or adjacent carrier permutation continuously for the AAS traffic.

A SS may start up using the AAS option, but shall switch to the mandatory non-AAS mode if no BS supporting the AAS option is detected. An AAS SS shall be capable of supporting both the distributed and adjacent carrier permutations, as specified by the BS.

4. Reason for Rejection (*black/italic*) and rebuttal (**red/plain**)

The sought changes conflict with requirements elsewhere in the document, do not improve interoperability, since there are no identified interoperability issues with the specified AAS definition, and would result in a regression of interoperability as well as an increase in mandated complexity.

Rebuttal : The sought changes do NOT conflict with any requirements elsewhere and improve interoperability in the same way that Comment 018 improved interoperability for the License Exempt modes / options. There were previously no interoperability issues specifically identified for the Comment 018 / license exempt band either, although improvements were still considered necessary. There is no technical or operational reduction of interoperability as a result of the proposed changes, which are intended to improve the performance of the standard in situations where there are only (optional) AAS SS deployed within the cell. Operators will have a significant interest in the capacity and coverage scenarios / implications of mixed versus non-mixed AAS deployments.

The first proposed sentence

“Where there is only AAS traffic served by the BS then the BS can operate in its selected AAS distributed or adjacent carrier permutation continuously for the AAS traffic.”

is both a typical self-fulfilling prophecy as well as unsupported by the message sets as defined. Once a BS is allowed to simply skip the currently mandatory broadcast part of the frame at its own discretion, it becomes impossible for any non-AAS enabled subscriber to detect the network, synchronize to it, and initiate initial ranging. In addition, as the definition of "being synchronized" to the BS is defined by the capability of decoding the DL broadcast, allowing the absence of the DL broadcast would result in any SS that miraculously managed to establish connections with the BS to loose synchronization, forcing the SS to redo the initial synchronization and initial ranging ad nauseam. The message set as defined allows the BS to establish, both in the DL and UL, subframes by issuing the appropriate AAS information element in the map to indicate the start of this subframe. The end of this subframe is implicitly defined by the end-of-frame boundary, due to the need for a pre-established initial ranging opportunity, as some AAS devices may not have sufficient link-budget to decode the MAPs and learn the varying initial ranging opportunities as provisioned for non-AAS devices. Therefore, there exists no mechanism to allow an AAS-enabled BS to establish an AAS sub-frame that extends over many end-of-frame boundaries as the suggested remedy seeks. Considering the above, the sentence proposed is hence not an improvement in interoperability, but on the contrary, a prescription for disabling interoperability for non-AAS SSs versus an AAS-enabled BS.

Rebuttal : The text mis-understands / mis-states the proposal. An AAS SS ignores the non-AAS part of the frame anyway and in the AAS-only scenario described in the proposal there would be no relevant data in the non-AAS part of the frame and no need to provide distributed carrier preambles to

enable synch, ranging and registration by non-AAS SS. The performance of the AAS transmissions will be improved by not having to carry this unnecessary overhead at the beginning of each frame.

If the operator requires the capability for an “All-AAS” cell to allow the initialization of non-AAS SS then this is no longer an All-AAS scenario and the existing mixed scenario would apply, with the corresponding reduction in performance for the AAS transmissions.

The second sentence suggested

“A SS may start up using the AAS option, but shall switch to the mandatory non-AAS mode if no BS supporting the AAS option is detected “

results in an increase in contention and is also inconsistent with other requirements within the draft amendment. The draft amendment requires that any AAS SS that is capable of decoding the DL broadcast MAPs shall initiate initial ranging in accordance with the procedure for non AAS SSs. The suggested sentence, allowing any SS to start up in AAS mode, and hence perform initial ranging in the manner specified for AAS SSs out of broadcast range, would directly contradict this requirement. The problem that occurs with AAS-enabled SSs out of broadcast range, in contrast to AAS-enabled SSs within broadcast range, is that they may be not be able to detect which of the carrier permutation methods is used by the BS for the AAS subframe. As such, the wrong choice of carrier permutation method results in interference to all sub-channels within the tail portion of the frame. This will not only cause interference in the initial ranging sub-channel (which is manageable due to the required back-off procedures), but also to data bursts being transmitted in all other subchannels. The current required initial ranging (and hence system startup) for AAS-enabled SSs within broadcast range avoids this interference, as the carrier permutation method is indicated in the MAPs. Since the current requirements specify both a initial ranging mechanism for AAS-enabled SSs within broadcast range and a fall-back method for AAS-enabled SSs outside broadcast range, allowing SSs to start up in AAS-mode and hence allows the use the less efficient fall-back method regardless of range hence would not reduce the (perceived, though unmotivated) lack of interoperability.

Rebuttal : There is no REQUIREMENT that AAS SS which can decode the “broadcast” DL-MAPs must do so – it is merely one possibility. They can also decode the private DL-MAPS in the AAS part of the frame, as for AAS outside the broadcast range. In an “All AAS” cell there would not necessarily be ANY broadcast information transmitted. This is an ambiguity in the current document which needs to be clarified. Yes – there will be an “increase in contention” but this is not necessarily prohibitive. The “All AAS” cells that we have in mind will engineered to supporting up to 10,000 or 20,000 SS per BS using (only) the contention mechanism.

It is also not possible for an AAS SS to choose the “wrong” permutation scheme and therefore interfere with other AAS SS within broadcast range, since the choice of carrier permutation is determined by the BS for the whole cell. The proposal means that initial synchronization for an AAS SS would detect which permutation method is being used before the AAS-SS responds

with its ranging sequences. All AAS SS within the cell will therefore be operating with the same carrier permutation during the AAS portion of the frame. All non-AAS SS (when present in a "mixed" cell) will be using the distributed carrier permutation, as specified in the existing document.

The last sentence proposed

"An AAS SS shall be capable of supporting both the distributed and adjacent carrier permutations, as specified by the BS"

does not change interoperability as well. Since a single mandatory carrier permutation is defined, all SSs are by definition capable of using it and hence by definition capable of using it to enter the network (irrespective of whether the SS is AAS-enabled. Making the optional permutation mandatory hence does not result in a reduction of (perceived, though unmotivated) lack of interoperability. It only adds more mandatory implementation complexity, without any benefit.

Rebuttal : The proposed change was not addressing the situation of how the AAS SS enters the network (see above). Since the choice of AAS carrier permutation is decided by the BS and applies across the whole cell then interoperability is assured if every AAS-enabled SS compliant with the standard supports both permutation schemes (it is not possible to transmit both permutation schemes simultaneously during the AAS portion of the frame). Since any SS must already search for the 32 possible indexes of the distributed carrier permutation across the 2k tones, then recognizing a 33rd (adjacent carrier) permutation at the same time has negligible impact on the SS. Rejecting this proposal would require separate (non-compatible) populations of AAS SS in the world, with reduced interoperability. The proposed change does NOT make the adjacent carrier permutation a mandatory feature, since it is an option selected at or by the BS. The proposal recommends that all (optional) AAS SS should support both carrier permutations in order to be interoperable with any AAS BS.

5. Conclusion

The unexplained and singular "need" from the WG Chair to insert a "Reason for Rejection" into the database, having previously ruled that for this Comment was "non-binding" plus the immediate availability of extensive text from the TG Editor to fulfill this "need" suggests a degree of collusion which is inappropriate in an impartial process. The fact that the Editor's text is mostly incorrect / irrelevant merely adds to my concerns about the integrity and fairness of this process.

Reviewing the inaccuracies and misunderstandings in the Editor's text will enable me to propose a less ambiguous and more complete resolution for the recirculation phase of the Sponsor Ballot Comments process.