IEEE P802.11
Wireless LANs

Proposed comment resolution fot outstanding NO-votes

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Abstract

This paper is a proposal for the material that will accompany our 802.11 draft to Sponsor Ballot.

I have added remarks that voters sent me since the closure of the resolution meetings as far as I found the remarks relevant as well as additions to place the timing of the comments in perspective to the recirculation ballots.

Finally, I reworded the response to Mr Bagby's comments as well as made the response shorter by removing the parts that I believ are superfluous for the purpose.

This paper accompanies my YES-Vote to the 802.11b Letter Ballot 18.

No comment from Mr. J. Fischer

Reason for disapproval:

The PBCC (i.e. coded) mode should be required, not optional. This issue is not related to the debate of having "options" in the standard, but to needing the PBCC mode because it is the only way the standard can be generally useful to the industry. The CCK modulation is inherently very weak by today's communications standards. If the PBCC is not used then the only way to make this waveform useful is with a severe measure of equalization. Therefore the only way to make this standard a useful one depends on a companies implementation, not on the standard waveform itself. By making the PBCC a requirement then the standard waveform itself will have inherent utility.

~~The PBCC mode should not be optional. The CCK modulation is inherently very weak by today's communications standards. If the PBCC is not used then the only way to make this waveform useful is with a severe measure of equalization. Therefore the only way to make this standard a useful one depends on a companies implementation, not on the standard waveform itself.~~

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Recommended change:

Make this mode required for a standard implementation.

Reason why 802.11 could not accept recommendation:

Due to market considerations CCK has been adopted as a mandatory modulation. PBCC has been added as an option to allow a potentially higher performance upgrade. Use of the CCK or PBCC modulation allows complete interoperability through the use of the same PLCP header.

NOTE: This comment (reworded)/resolution was generated at resolving comments on :Letter Ballot 16. Two subsequent recirculation ballots did not attrect new no votes.

No comment from Mr. J. Cafarella

Reason for disapproval:

The FH option contained in the draft violates the PAR restriction to a single PHY. Anyone can build a dual- mode transceiver if desired, but specifying how to do this violates our PAR.

Separate from the fact that our PAR restricts the high- rate solution to a single PHY, it is important to realize that the FH PHY is limited by regulatory agencies (at least in the US) to low data rates, while DS signaling can effect much higher rates for reasonable E_B/N_0 values. It makes no sense to constrain any aspect of the future technology.

Reworded comment from Mr. Cafarella after closure of the comment resolution meeting

My "NO" votes on TGb in the last two ballots were based upon my belief that the FH aspect of the high-rate standard should be removed. My opinion has not changed, nor have I heard any convincing argument to the contrary. It remains because parties have "made a deal," not because it really makes sense. I believe that we are violating our PAR restriction to a single PHY, and I also believe that the accommodation of FH will soon be of little practical concern.

Recommended change:

Remove FH material from HR DSSS PHY standard

Reason why 802.11 could not accept recommendation:

The FH option was eliminated in favor of a channel agility capability.

NOTE: This comment/resolution was generated on letter ballot 16, voter did not respond to the 2 subsequent recirculation ballots to adjust his comment. There were no changes in votes ot support Mr Cafarella's position.

No comment from Mr. D. Bagby

Reason for disapproval:

The PHY specification contains options.

802.11 has voted that options shall be minimized and included only when absolutely necessary (see previous meeting minutes). The presence of following options mandate a No vote:

- Short PLCP frame format
- FH PLCP frame format
- DSSS/ PBCC Data Modulation and Modulation rate

Recommended change:

- Delete or make mandatory the short preamble option.
- Make mandatory the FH option.
- Delete the PBCC option

Reason why 802.11 could not accept recommendation:

Partially ~~Rejected~~accepted, the FH PLCP frame format option has been deleted.

IEEE802.11 Task Group B has considered ~~this comment~~the status of the short preamble, deletion and the status of the FH option and the status of the PBCC option at length but respectfully declines the proposed changes.

The group understands and appreciates fully IEEE802.11's agreed position on options within the standard and its charter to produce a single IEEE802.11 high rate PHY. It is our belief that we have not violated either requirement. Our reasoning is based on both logical argument and considering and comparing to prior policy in other task groups under the same committee working to the same agreed guidelines. Several motions were put forth with the exact concerns expressed here and were voted down by the group.

Consideration of this comment started with the question of whether the draft standard as published represents a single PHY. To resolve this question one has to agree on what defines a single PHY. One way to define this is to consider that the specification represents a single PHY if all implementations interoperate successfully. When tested against this criterion the published draft does represent a single PHY. Where there are options, sufficient thought has been given to ensure that these do not sacrifice interoperability.

~~As an example, consider the current published IEEE802.11 standard. The two PHY layers defined at 2.4GHz do not interoperate at all. They are clearly understood to be two separate PHY layers. Consider next the IEEE802.11 MAC. It is common knowledge that IEEE802.11 has one MAC. That was the working group charter. However, this MAC contains at least four options: WEP security, the point coordination function, a strictly ordered service class and multiple outstanding MSDU support. None of these options affect base interoperability. Indeed, experience is now revealing an excellent degree of interoperability between different vendors products. We do not argue that IEEE802.11 has multiple MAC layers just because it has several options. One could argue that the implementation of PBCC, or the short header are very significant options since they affect the basic transfer of information. However, it is permissible for a MAC implementation to mandate WEP usage (using ExcludeUnencrypted) and this is at a similar basic communication level. The MAC group did not mandate the use of WEP just as the TGb is not mandating the use of the short header option.~~

~~The group considered the IEEE802.11 guidelines on options; a position that we understand to have been based on an attempt to achieve the greatest chance of successful interoperability. We reviewed each of the three options within the HR DSSS draft and feel that each offers a given advantage but at a cost. Having such diversity in the standard is not necessarily bad. It allows product differentiation without sacrificing interoperability and allows a spectrum of cost/performance products to come to market. We also note that there is a standard method of dealing with optional items so that their significance is clear to implementers, suppliers, acquirers, users and protocol testers. That mechanism is the PICS. We assume that the MAC task group chose to make the above named functions options to provide this diversity. We know that this has not sacrificed interoperability as has now been proven by extensive UNH testing and field experience.~~

~~We are aware that the inclusion of options can be criticized as the inability to reach a consensus. Indeed the PCF option in the IEEE802.11 MAC is interpreted by many as a political compromise between the CSMA distributed and polled deterministic MAC protocols that competed during the development of the standard. If consensus can be reached by making a function an option without sacrificing interoperability then perhaps this is a successful strategy.~~

~~Based on this reasoning and looking to the example of other task groups in IEEE802.11 we reached our consensus~~