### P802.11b Draft D5.5 Comments

<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>General</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>335</td>
<td>Jack Andresen</td>
<td>17</td>
<td>41</td>
<td>#</td>
<td>&quot;poor english, add &quot;with&quot; after transmission&quot;</td>
<td></td>
</tr>
</tbody>
</table>
| 337 | Rich Seifert | General | Networks & Communic | 41 | "I wish to add my support to outstanding comment 297 from Mr. Bagby. I agree that the changes to the MAC in 802.11b both go beyond the scope of the PAR, and will likely create interoperability problems with existing MAC implementations. Changes to the semantics of MAC-related fields either: (a) require a change to the version number of the MAC/frame format, or (b) must have been specifically anticipated in the earlier version. For example, it is possible to future-proof a protocol somewhat by specifying certain fields or values as "reserved", to be transmitted as zero and ignored on receipt. In this way, future versions can both detect field usage by an earlier version, and the earlier version will ignore the future usage. However, this behavior must have been explicitly stated in the ORIGINAL specification; it cannot be added later on and still ensure interoperability.

**Suggested Remedy:**
Adopt the changes proposed by Mr. Bagby to eliminate the need for any of the changes proposed to the 802.11 MAC specification; and then delete the corresponding MAC changes. |
| #335 |  |  |  |  |  |  |
| #336 |  |  |  |  |  |  |

**Comment Type:** E  
**Comment Status:** X  
**Suggested Remedy:** Add "with" after transmission

<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>General</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
</table>
| 336 | Rich Seifert | 17 | 41 | # | "I add my support for outstanding comment 332 from Mr. Bagby. I agree with him that the inclusion of options that can cause two standards-conformant devices to be unable to interoperate both violates the requirements of the PAR, and is inappropriate for an industry standard document."

**Suggested Remedy:** Remove options which create the possibility that if different combinations of options are implemented by different vendors, it becomes possible for a customer to buy two compliant pieces of equipment which may fail to interoperate. |
| #336 |  |  |  |  |  |  |
|  #337 |  |  |  |  |  |  |

**Comment Type:** TR  
**Comment Status:** X  
**Suggested Remedy:** Add "with" after transmission

**Proposed Response**  
Response Status: O

---

**Type:** TR/technical required  
**Comment Status:** D/dispatched  
**Response Status:** O/open  
**Sort Order:** Clause, Subclause, page, line  
**Vote:** E/ExCom VD/Disapprove VAC/Approve with Comments
### P802.11b Draft D5.0 Remaining Disapprove Comments and Resolutions

**Tuesday, June 22, 1999**

**Proposed Response**

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>TR</th>
<th>Comment Status</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review Comment 1: Technical Required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This reviewer does not accept the responses to previous comments I submitted re the 802.11b PHY draft (during internal 802.11 ballots) prior to the sponsor ballot. The responses were spurious, sometimes factually incorrect. Therefore most prior positions will be reitered for this ballot (for the benefit of the sponsor ballot reviewers).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To keep the review process productive, this reviewer asks that the 802.11 group refrain from analogy arguments about options in other portion of the 802.11 standard as an argument for the permissibility of options in this PHY. (The analogy arguments given bring to mind the typical stories of a mother asking a child whether they would jump off a cliff just because all their friends were doing it.) The context within which any given decision was made for previous portions of the 802.11 standard do not constitute out of context precedent for any later extensions of the standard.

When 802.11 authorized the 802.11b working group it was by a specific motion that required that the group develop a single high-speed PHY for the 2.4GHz band. In this reviewer’s view the intent of the wording of that motion (which I made, so I believe I am qualified to speak to the intent) was to prevent the group from creating multiple (FH and/or DS) high-speed PHYs. The motivation was market driven – the market requirement for wider adoption of 802.11 is for a single high-speed PHY that meets the industry/market psychological need for at least 10Mbps. From a market perspective, the phrase “single PHY” means that no matter what combinations of options are implemented by different vendors, it shall be impossible for a customer to buy two compliant pieces of equipment which, under any circumstances, may fail to interoperate. This is the primary technical requirement that the 802.11b PHY specification must meet in order to acquire my yes vote.

In the opinion of this reviewer, the inclusion of several options within 802.11b D5.0 prevents the specification from meeting either the intended goal or the specific restrictions imposed by the motion chartering the group. The response of the group gives (in this reviewer’s opinion) poorly developed arguments based on analogy and procedural arguments. The problems are not at the core procedural, they are technical – the included options, as specified, create interoperability problems.

**Further comments will address specific problems in more detail.**

**Suggested Remedy**

**Required change:**

Remove options which create the possibility that if different combinations of options are implemented by different vendors, it becomes possible for a customer to buy two compliant pieces of equipment which may fail to interoperate.

**Proposed Response**

**REJECT. Rejected, all association requests must be responded with the same type of header and rate. Therefore, while the association may be denied, the station will be able to know that it has been rejected. All options are required to carry the basic information contained in the comment response.**

**Response Status**

O

**Position of author on Ballot comment #297 response as of 6-16-99: Disapprove**

The committee response appears to have been to ignore the issue raised. I went to some trouble to point out the interaction combinations that needed to be investigated. The response of the committee does not even address the interactions of old/new mac Implementations v. header versions. If the committee refuses to even respond to the concerns expressed, then I have no choice but to hold the vote at disapprove until such time as the committee bothers to write up a response that addresses the technical issue raised. If the committee believes that the interactions I questioned are not a technical problem, then it at least needs to write up its reasoning and submit that as part of the response. If the logic and explanation are sufficient, I will change my position on this issue, but I can not do so based on essentially nil amount of the information contained in the comment response.

**Suggested Remedy**

**Proposed Response**

**Response Status**

O

**Position of author on Ballot comment #297 response as of 6-16-99: Disapprove**

The committee response appears to have been to ignore the issue raised. I went to some trouble to point out the interaction combinations that needed to be investigated. The response of the committee does not even address the interactions of old/new mac Implementations vs. header versions. If the committee refuses to even respond to the concerns expressed, then I have no choice but to hold the vote at disapprove until such time as the committee bothers to write up a response that addresses the technical issue raised. If the committee believes that the interactions I questioned are not a technical problem, then it at least needs to write up its reasoning and submit that as part of the response. If the logic and explanation are sufficient, I will change my position on this issue, but I can not do so based on essentially nil amount of the information contained in the comment response.
<table>
<thead>
<tr>
<th>CI</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td># 299</td>
<td># 299</td>
<td># 299</td>
<td># 340</td>
<td></td>
<td></td>
</tr>
<tr>
<td>David Bagby</td>
<td>3Com Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type**: TR  
**Comment Status**: X  
Position of author on Ballot comment # 299 response as of 6-16-99: Disapprove  
Simply saying “reject” without any supporting text as to why is not much motivation to change my vote in this subject.

**Suggested Remedy**  
**Proposed Response**  
**Response Status**: O

<table>
<thead>
<tr>
<th>CI</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td># 300</td>
<td># 300</td>
<td># 300</td>
<td># 341</td>
<td></td>
<td></td>
</tr>
<tr>
<td>David Bagby</td>
<td>3Com Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type**: TR  
**Comment Status**: X  
Position of author on Ballot comment # 300 response as of 6-16-99: Approve.

**Suggested Remedy**  
**Proposed Response**  
**Response Status**: O

<table>
<thead>
<tr>
<th>CI</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td># 301</td>
<td># 301</td>
<td># 301</td>
<td># 342</td>
<td></td>
<td></td>
</tr>
<tr>
<td>David Bagby</td>
<td>3Com Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type**: TR  
**Comment Status**: X  
Position of author on Ballot comment # 301 response as of 6-16-99: Disapprove  
I am not sure what to make of the committee’s response on this issue. Is channel agility option included in the proposed spec or not? Please clarify for me.

**Suggested Remedy**  
**Proposed Response**  
**Response Status**: O

<table>
<thead>
<tr>
<th>CI</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td># 332</td>
<td># 332</td>
<td># 332</td>
<td># 344</td>
<td></td>
<td></td>
</tr>
<tr>
<td>David Bagby</td>
<td>3Com Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type**: TR  
**Comment Status**: X  
Position of author on Ballot comment # 332 response as of 6-16-99: Dissaprove  
This response is not acceptable as is. The ballot comment raised the question of charter and the technical problems that result from the proposed options in the specification. The response simply says that since the group did not opt to take the suggested remedy that they reject the comment. That is not a sufficient response as it totally ignores, and does not address the charter issues or the technical problems created by the existence of the options. Additionally, the response sent to me appears to be incomplete as it ends with a partial sentence: “All options are required to carry the basic”. This ballot comment therefore must remain “dissaprove” until the committee actually responds to the issues cited.

**Suggested Remedy**  
**Proposed Response**  
**Response Status**: O
<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>183</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mike Trompower</td>
<td>Telxon Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment Type</td>
<td>T</td>
<td>Comment Status</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLME_join should be updated to reflect the station's support for the new options.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SuggestedRemedy**

**Proposed Response**  Response Status  U
REJECT. Rejected. Them MLME_Join.request is not the mechanism for selecting the bits in the CIF. It simply identifies the BSS description of the BSS to join. The mechanism for setting the bits in the CIF is described in 7.3.1.4.

<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>188</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mike Trompower</td>
<td>Telxon Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment Type</td>
<td>TR</td>
<td>Comment Status</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last paragraph of this section.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We are under NO restrictions to make a high rate phy which interoperable with current FH PHY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This statement implies many characteristics which are not defined in the current text.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SuggestedRemedy**

**Proposed Response**  Response Status  U
REJECT. This is an editorial comment. The referenced paragraph does not state that there is a restriction that there is an interoperable FH PHY. It is a statement of the existence of frequency agility, and a pointer to an annex that describes how to do it.

<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>190</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mike Trompower</td>
<td>Telxon Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment Type</td>
<td>TR</td>
<td>Comment Status</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strike the last sentence.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The sentence creates many ambiguities - such as, do Cwmin, Cwmax, slottime, turnaround times, etc. default to those provided in the high rate PHY mib, or should the MAC be made aware of those currently used by the FH PHY.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SuggestedRemedy**

**Proposed Response**  Response Status  C
REJECT. The MAC and MAC management do not use the PHY MIBs. Therefore this editorial comment is rejected. There is no ambiguity because the normative requirements are described elsewhere in clause 18.

<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>192</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mike Trompower</td>
<td>Telxon Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment Type</td>
<td>TR</td>
<td>Comment Status</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This section creates ambiguity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It says that the long preamble is mandatory. Which means that it must always be supported. It then implies that the short preamble is intended for exclusive use; ie. a BSS will use only the short preamble.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In order to have the exclusive case, additional parameters must be added to the MIB and MAC which allow this mode.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If exclusivity is the intent of the PBCC and agility as well, then variables must be added for these as well.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In other words, will the PHY chips be created so that they can recognize on the fly which preamble is being used, or will they operate in one mode (long or short) only in order to demodulate the packet?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the PHY chips be created so that they can recognize on the fly whether or not PBCC is used and correctly demodulate the packet?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likewise with the other combinations !!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SuggestedRemedy**

**Proposed Response**  Response Status  U
REJECT. This is an editorial comment and rejected. The short preamble is properly supported through the changes in clauses 7 and 9.
<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>18.2.3.9</td>
<td>P</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>Mike Trompower</td>
<td>Telxon Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type: TR**

Confusion added as stated in previous comments --

This section says "A receiver not configured to receive the high rate signals will not detect this SFD."

The implication is that the high rate PHY will be able automatically detect (at all times) between long and short preamble usage.

**Suggested Remedy**

Clarify that this statement is correct or that the intended use is one or the other (long or short preamble) per BSS.

**Proposed Response**

ACCEPT. Accepted, clarify that a station not configured to receive the short preamble will not detect this SFD.

<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>18.3.3</td>
<td>P</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>Mike Trompower</td>
<td>Telxon Corporation</td>
<td>Vote</td>
<td>VD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type: TR**

This section also adds to the confusion about intended operation.

Reporting a single value, implies that the intent is to have exclusive operation.

Reported values for Preamble Length, Cwmin and Cwmax should be changed to report all valid values in a "mix and match" environment.

The fact that a mix and match mode MAC will be UNDULY BIASED towards stations using short preamble - better access because of shorter Cwmin, suggests that the intent is to have exclusive operation.

**Suggested Remedy**

I believe the intent is to have "mix and match", therefore, reporting Cwmin and Cwmax consistent with legacy systems is correct.

If the hooks are added to allow for exclusive BSS use of some options, shortening of CWMin andMax would be OK.

This points out that there is a hole in the system, which says that the BSS ought to report the current Cwmin and Cwmax times in the BEACON and PROBE frames.

Also points out that statements ought to be added to the standard which specifies which values a station uses.

Should the station use values reported by its PHY, or should it adopt those values presented in the BEACON and PROBES.

Or remove all doubt, the high rate PHY uses same values as legacyDS PHY, regardless of mode of operation. However, this leaves a bias towards DS vs FH which "combo vendors" will have to address.

**Proposed Response**

ACCEPT. Accepted, the legacy values are to be used and the shorter values removed.
Anil K. Sanwalka  Neesus Datacom  Vote  VD
Comment Type  T  Comment Status  R
I have made this comment before.

There is no way for aPreambleLength to have 1 of 2 possible values. I would suggest leaving this as the value for long preamble. The TXTIME primitive should not use this value leaving it in the structure only to provide compatibility with the TGrev DSSS system.

Suggested Remedy
Change value to 144

Proposed Response  Response Status  U
REJECT. Rejected, its accepted to have a dynamic value for this parameter.

Mike Trompower  Telxon Corporation  Vote  VD
Comment Type  TR  Comment Status  A
Add 'X' to table for PMD_CS.request

Add new section (18.4.5.xx) for PMD_CS.request which states the method for setting the CS_THRESHOLD according to the text

Suggested Remedy

Proposed Response  Response Status  C
ACCEPT. Accepted in principle, Change CS_threshold to correlation threshold which does not have a setting method.

Mike Trompower  Telxon Corporation  Vote  VD
Comment Type  TR  Comment Status  A
The TBD must be resolved.

More accurately, this section ought to specify an exact hop time.
If one system hops in 100usec and begins transmitting, the 224usec station (while compliant) is at a disadvantage or worse the two won't interoperate.

Suggested Remedy
Resolve the TBD

Proposed Response  Response Status  C
ACCEPT. Accepted, the TBD is resolved by removing the specification of settling rate. The hop time statement will be added by editor.

Mike Trompower  Telxon Corporation  Vote  VD
Comment Type  TR  Comment Status  A
The PICS (Annex A4.3) references two temperature types, the text references three.

Suggested Remedy
Change 18.4.6.14 to reflect two temperature ranges.

Proposed Response  Response Status  U
ACCEPT. Current TGrev has two types. Editor will change to these two types.
### P802.11b Draft D5.0 Remaining Diapprove Comments and Resolutions

<table>
<thead>
<tr>
<th>CI</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.4.6.6</td>
<td></td>
<td>45</td>
<td>48</td>
<td></td>
<td>294</td>
</tr>
<tr>
<td>18.4.6.7</td>
<td></td>
<td>48</td>
<td>34-35</td>
<td></td>
<td>316</td>
</tr>
<tr>
<td>18.4.8.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>256</td>
</tr>
</tbody>
</table>

#### Vic Hayes, Chair, Lucent Technologies

#### Remaining Diapprove Comments and Resolutions 802.11b/D5.0

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>TR</th>
<th>Comment Status</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mike Trompower</td>
<td>Telxon Corporation</td>
<td>Vote</td>
<td>VD</td>
</tr>
<tr>
<td>Anil K. Sanwalka</td>
<td>Neesus Datacom</td>
<td>Vote</td>
<td>VD</td>
</tr>
</tbody>
</table>

#### Comment Type

**Proposed Response**

**Response Status**

**U**

**Suggested Remedy**

- Make this mode required for a standard implementation.

- Remove references to FH interoperability from clause 18.

- DefineHop sequences and make them mandatory in clause 18.

- Include Appendix F as an informative annex describing FH interoperability (I think that is what it is now).

- My feeling is that for there to be any kind of interoperability the hop sequences have to be normative.

- Remove references to FH interoperability from clause 18.

- Here it says that the hop sequences shall be as described in Annex F. In other places it says that Annex F is informative. I don't think you can have it both ways.

- The agility option enables a form of tolerance and coexistence, but not interoperability with current FH phy.

- The statement referencing “shall meet requirements of ...” opens a can of inconsistency worms as described above.

- Change text to following:

  The channel agility option gives a high rate phy implementation the flexibility to move about the band. The management (determination of when and where to hop) of this option is outside the scope of this standard. When the channel agility option is enabled, the implementer may make use of both FH and DS parameter sets in BEACON and PROBE frames.

- REJECT. Rejected, the requirements for hopping parameters are to be included in clause 18.4.8.7 by moving them from F1 through F3. The sequence of hopping must be specified in order for all stations to operate on the same channel.

#### Response Status

- **OPEN**
- **WRITTEN**
- **CLOSED**
- **UNSATISFIED**
- **WITHDRAWN**

#### Vote

- **ExCom**
- **VD**
- **Disapprove**

---

**June 1999**

**Tuesday, June 22, 1999 06:17:45**

**TYPE:** TR/technical required  T/technical  E/editorial

**COMMENT STATUS:** D/dispatched  A/accepted  R/rejected  SORT ORDER: Clause, Subclause, page, line

**RESPONSE STATUS:** O/open  W/ written  C/closed  U/unsatisfied  Z/withdrawn  Vote: E/ExCom VD/Disapprove VAC/Approve with Comments

**doc.: IEEE P802.11-99/141**
### Comments and Resolutions

**P802.11b Draft D5.0**

#### 18.4.8.1

<table>
<thead>
<tr>
<th>Cl</th>
<th>XX</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>xx</td>
<td>18</td>
<td>4</td>
<td>8</td>
<td>1</td>
<td>265</td>
</tr>
</tbody>
</table>

- **Comment Type**: TR
- **Comment Status**: R

**Mike Trompower**

**Telxon Corporation**

**Vote**: VD

These sections should specify as to whether this performance is achieved with or without or regardless of the "LOCKED" bit.

If different performance expectations are anticipated, so state.

**Suggested Remedy**

**Proposed Response**

**Response Status**: Z

REJECT. Rejected, the specification apply whether or not the locked bit is set. There is no mention of the Locked bit in any of these sections.

---

**Sten Reible**

**MICRILOR, Inc**

**Vote**: VA

We need to select a transmit modulation approach which can provide better receiver input level sensitivities in fielded equipment.

**Suggested Remedy**

- **Proposed Response**
  - **Response Status**: U

REJECT. Rejected, this is a minimum requirement on implementations and allows low cost.

---

**Mike Trompower**

**Telxon Corporation**

**Vote**: VD

**Comment Type**: TR

**Comment Status**: R

These sections should specify as to whether this performance is achieved with or without or regardless of the "LOCKED" bit.

If different performance expectations are anticipated, so state.

**Suggested Remedy**

**Proposed Response**

**Response Status**: Z

REJECT. Rejected, the specification apply whether or not the locked bit is set. There is no mention of the Locked bit in any of these sections.

---

**Mike Trompower**

**Telxon Corporation**

**Vote**: VD

**Comment Type**: TR

**Comment Status**: R

Remove the reference to a timer in CCA mode 2.

The mode says report busy upon detection of signal by carrier sense, therefore, the timer is not necessary.

I take this to mean that a high rate PHY must recognize and determine carrier sense for BOTH Barker and CCK modulation.

This means that a high rate PHY which does not implement or recognize the

**Suggested Remedy**

Delete reference to timer in mode 2.

**Proposed Response**

**Response Status**: U

REJECT. Rejected, the timer insures coherence by making sure that a long preamble only station can defer enough time on a short preamble transmission and also protects the system when the header is corrupted.

---

**Mike Trompower**

**Telxon Corporation**

**Vote**: VD

**Comment Type**: TR

**Comment Status**: R

If the timer is not removed, then

The algorithms for CCA should have different numbering from those used in section 15.

The MIB should reflect the additional modes as well.

The algorithms using a timer are not the same as those which do not.

**Suggested Remedy**

- **Proposed Response**
  - **Response Status**: U

Mode 2 should become new mode 4

Mode 3 should become new mode 5

Change in 18.4.8.4 and in PICS HRDS11

---

**Proposed Response**

**Response Status**: U

REJECT. Rejected, the specifications for the high rate PHY stand alone. They may be like the low rate PHY, but do not need to be numbered in sequence with the CCA modes of that PHY.
### Comment 271

**Comment Type:** T  
**Comment Status:** R  
**Proposed Response:** REJECT. Rejected, this scheme was to allow low power, limited range cells.

**Suggested Remedy:** Consider a 4-6 dB lowering of the energy detection threshold levels for lower performance equipment.

**Comment 274**

**Comment Type:** T  
**Comment Status:** R  
**Proposed Response:** REJECT. Rejected, this scheme was to allow low power, limited range cells.

**Suggested Remedy:** Consider a 4-6 dB lowering of the energy detection threshold levels for lower performance equipment.

**Comment 276**

**Comment Type:** TR  
**Comment Status:** R  
**Proposed Response:** REJECT. Rejected.

**Suggested Remedy:**
- I believe the intent was to allow mix and match operation. Therefore, no station can be denied access to the BSS based on non-support and these reason codes will never be used and should be deleted.
- IF the intent is to give a vendor the ability to selectively discriminate against stations not supporting a particular optional mode, additional MIB parameters should be defined which allow configuration of the use as mandatory or optional within a BSS. - then the reason codes can be kept, although only recognized by stations compliant to this newer version of the draft.

**Response Status:** U

- Section 18 states that the long preamble is MANDATORY. Section 18.2.3.9 implies that long and short are used together. Section 18.2.5 states that the decision for using long or short is a management decision and implies packet by packet basis. To me this means "mix and match" is the intended operation.

- Section 18 states that these new capabilities are optional. Section 7.3.1.4, when defining these new capabilities, implies that these features may be used (or not) on an individual packet by packet basis.

- If the intent is to define the use of these new options as exclusive use and mandatory to join a BSS when enabled, then the station must know in advance (PHY bits) how to decode the frame and whether to recognize the short preamble.

- The three new reason codes are not supported by stations which are compliant to the current (1997) standard. The existing products, "should" ignore the three new capabilities bit definitions established in 7.3.1.4, however, the 1997 spec says they are defined to be always zero - it does not say what is proper course to take when a 1 bit is received.

- Since the current systems cannot interpret these bits and are not aware of these new reason codes, there is no way for them to determine the reason for denied association.
Comment Type: TR

Comment Status: R

HRDS8 - states that hop sequences are MANDATORY when agility is present.
First, this line item is not given a text reference.
Second, this feature falls outside the scope of 802.11. It must be controlled by an outside management entity, and therefore is outside the bounds of 802.
There are many 'desirable' methods which could be employed to decide when and where to hop. Unless ALL methods are provided for (and defined) this spec should not define a specific method. Besides, it is 'legally' outside the scope of 802.

Suggested Remedy
Delete this check box from the spec.

Proposed Response
REJECT. Rejected, the hop sequences are moved back into the normative part of the text. Therefore the check box is needed.

Comment Type: TR

Comment Status: R

If the timer is not removed, then
The algorithms for CCA should have different numbering from those used in section 15.
The MIB should reflect the additional modes as well.
The algorithms using a timer are not the same as those which do not.

Suggested Remedy
Mode 2 should become new mode 4
Mode 3 should become new mode 5
Change in 18.4.8.4 and in PICS HRDS11

Proposed Response
REJECT. Rejected. This is a new PHY with 4 rates. There is no coupling between the numbering of clause 15 and clause 18.

Comment Type: TR

Comment Status: R

I believe the frequency-agility option violates our single-PHY PAR restriction. It perpetuates the dual-PHY situation into the future. It will work against acceptance of this already complex standard. Uncoordinated users (i.e., SOHO environment) may cause/experience disruption when this option is employed, and they will not understand why.

Suggested Remedy
Remove Annex F, and all related cross-referencing from the main body of the standard.

Proposed Response
REJECT. Rejected by a vote. The content of F.1, F.2, and F.3 will be moved to clause 18. The technical content of F.4 remains in dispute and will remain in the annex. This is not a new PHY, but extended capabilities of one PHY, providing some FH interoperability.
### P802.11b Draft D5.0 Remaining Diapprove Comments and Resolutions

#### CL XX SC Annex F - Frequency H P 60 L 51 # 285

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Suggested Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL</td>
<td>R</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Comment Type:** CL
- **Comment Status:** R
- **Proposed Response:**
  - REJECT. Rejected by a vote. The content of F.1, F.2, and F.3 will be moved to clause 18. The technical content of F.4 remains in dispute and will remain in the annex. This is not a new PHY, but extended capabilities of one PHY, providing some FH interoperability.
- **Suggested Remedy:**
  - Discourage the use of the channel agility option by striking it from the high rate standard.

#### CL XX SC ballot comment # P L # 345

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Suggested Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Comment Type:** TR
- **Comment Status:** X
- **Proposed Response:**
  - Position of author on Ballot comment # 332 response as of 6-16-99: Dissaprove
    - This response is not acceptable as is. The ballot comment raised the question of charter and the technical problems that result from the proposed options in the specification. The response simply says that since the group did not opt to take the suggested remedy that they reject the comment. That is not a sufficient response as it totally ignores, and does not address the charter issues or the technical problems created by the existence of the options. Additionally, the response sent to me appears to be incomplete as it ends with a partial sentence: "All options are required to carry the basic". This ballot comment therefore must remain "diapprove" until the committee actually responds to the issues cited.
- **Suggested Remedy:**
  - Required change: Adopt all the other 802.11b PHY changes requested in my review comments; eliminating the need for any of the changes proposed to the 802.11 MAC specification; and then delete the corresponding MAC changes.

- **Proposed Response:**
  - REJECT. Rejected, we did not adopt all of the other changes needed to adopt this resolution.

---

- **TYPE:** TR/technical required
- **T/technical**
- **E/editorial**
- **COMMENT STATUS:** D/dispatched
- **A/accepted**
- **R/rejected**
- **SORT ORDER:** Clause, Subclause, page, line
- **RESPONSE STATUS:** O/open
- **W/written**
- **C/closed**
- **U/unsatisfied**
- **Z/withdrawn**
- **Vote:** E/ExCom
- **VD/Disapprove**
- **VAC/Approve with Comments**

---

**June 1999**

**Tuesday, June 22, 1999 06:17:46**

**doc.: IEEE P802.11-99/141**

**Remaining Disapprove Comments and Resolutions 802.11b/D5.0**

**Page 11 of 13**

**Vic Hayes, Chair, Lucent Technologies**
Cl  XX  SC  many  P  many  L  #  298
John H. Cafarella  MICRILOR, Inc.  Vote  VD

Comment Type  TR  Comment Status  R
My concern here is the existence of too many options: 1) for the high-rate PHY there are 11- and 5.5-Mbps rates using either CCK or PBCC; 2) the long and short PLCP Headers; and 3) the frequency-agility option. This standard is all on paper, and is a design by committee. Unlike the adoption of 802.3 and the original 802.11, where there was considerable experience before the standards, there is no practical experience with this complex collection of stuff.

Suggested Remedy
1) Keep CCK or PBCC, not both (prefer keep PBCC);
2) Keep long or short header (prefer short);
3) Eliminate frequency agility.

Make the standard simpler to implement and EASIER TO USE.

Proposed Response  Response Status  U
REJECT. 3. Rejected by a vote. Each of the three options mentioned in this comment provide distinct advantages, either in implementation or performance, without threatening interoperability.

Cl  XX  SC  PBCC related text  P  multiple  L  #  299
David Bagby  3Com Corporation  Vote  VD

Comment Type  TR  Comment Status  R
Review Comment 6: Technical Required
Prior to Sponsor ballot I had requested the deletion of the PBCC option. I again make the request as part of my sponsor ballot. The utility provided by the option is insufficient (in this reviewer’s opinion) to merit the complexity involved. In my (informal) sampling of people planning to implement the 802.11b PHY, I did not find anyone that planned to implement the option. The option exists due to political deals made in earlier meetings. It’s time to be pragmatic and clean up the side effects of past politics – delete the option that (I believe) will not be used. If this is done it makes the resolution to the next comment (#7) easier as a positive benefit.

Suggested Remedy
Required change:
Delete PBCC option.

Proposed Response  Response Status  U
REJECT. REJECT.

Cl  XX  SC  PICs CF6  P  55  L  #  300
David Bagby  3Com Corporation  Vote  VD

Comment Type  TR  Comment Status  A
Review Comment 4: Technical Required
Item CF6 in the PICs (page 55) is OFDM PHY for the 5GHz band. Delete this line from the 802.11b PICs. It has no business existing in the 802.11b PHY draft (it should exist in the 802.11a draft instead).

Suggested Remedy
Required change:
Delete item CF6 in the PICs (page 55) for the OFDM PHY for the 5GHz band.

Proposed Response  Response Status  C
ACCEPT. line will be removed.

Cl  XX  SC  PICs HRDS3  P  56  L  #  301
David Bagby  3Com Corporation  Vote  VD

Comment Type  TR  Comment Status  R
Review Comment 5: Technical Required
Prior to the sponsor ballot I had requested during internal 802.11 ballots that the FH interoperability option be made mandatory. The group responded to that request by saying “Partially accepted, the FH PLCP frame format option has been deleted”. Doing exactly the opposite of what was requested is really stretching the meaning of the phrase “partially accepted”…

However, my primary concern was that the option created interoperability issues. The deletion of the option does remedy my concern. I accept the change in draft 5.0. Please complete the deletion by making the following edit:
Delete PICs item HRDS3 page 56 “Channel Agility Option”. Section 18.2 no longer has the option so the PICs can’t reference it.

Suggested Remedy
Required change:
Delete PICs item HRDS3 page 56 “Channel Agility Option”.

Proposed Response  Response Status  U
REJECT. REJECT.Rejected, the channel agility option is in 18.3.2 and is not deleted, so a PICs item is necessary. The reference in the PICs will be corrected from 18.2 to 18.3.2
I had previously requested that the use of the short preamble be either deleted or made mandatory. The 802.11b group prior to sponsor ballot declined the request. The problems caused by the option specifications remain.

Please refer to the PICs in draft 5.0:
Item HRDS3 (page 56) is shown as optional and refers to section 18.2.
Item HRDS6 (page 56 - short preamble process on RX) is shown as optional and refers to section 18.2.6.
Neither the PICs nor the referenced text sections tie the two options together.

From what I've read that the following are possible compliant implementations:
Vender A: Implements Short header on TX and RX (both options).
Vender B: does not implement any short header options (neither Option)
Vender C: Implements short header on TX option, but not the RX option.

Once the use of short headers is turned on at a sending station here are some of the bad cases possible given the current draft:
Case 1: A's equipment always sends short headers, B can never talk to him. Result: non-interoperability.
Case 2: B can’t talk to C. Result: non-interoperability
Case 3: C can’t talk to C! Result: non-interoperability

Suggested Remedy

Required change:
Here is what is required:
1) RX short header processing must be mandatory if the Tx short header option is implemented. That will prevent case 3 above.
2) The purpose of the short header is to provide performance (as the long header limits throughput). The purpose of the long header is antenna to antenna interoperability between 1 and 2 Mbps 802.11 DS PHYs (the FH is now irrelevant due to the removal if the FH compatibility stuff in D5.0) and an 802.11b PHY.
The use of an option is an attempt to have both. The option approach fails because it causes interoperability issues, effectively providing neither benefit.
Either
a) Delete the short header (effectively deciding that old PHY interoperability is more important than performance) or
b) Make the use of the short header mandatory (making performance more important than old PHY compatibility).

I can accept either choice a) or b).
My preference is that the standard take choice b) as there are other ways to achieve data interoperability between 1-2 Mbps DS PHYs and the proposed 802.11b PHY. It can be accomplished by multiple APs and let the interoperability occur in the DS; it is not necessary to have antenna to antenna interoperability between the various PHY specifications (this is how one moves data from a current FH PHY station and a DS PHY station). This gives the 802.11b system both data interoperability (the real user requirement) and performance.

Proposed Response

ACCEPT. Accepted, the use of the short preamble is coupled between RX and TX by changing the HRDS6 dependent on HRDS3.