Tentative Minutes of the IEEE P802.11 Working Group

Plenary meeting
La Jolla, California
March 11-14, 1996

Monday, March 11, 1996, 3:30 PM

Secretary's note: Due to an incredibly unfortunate attack of stupidity on my part, the only copy of the minutes from this meeting was deleted from the only computer on which it existed. When this was discovered, a few days after the meeting, it was too late to just un-delete them. The minutes which follow here are what was painfully collected from the hard drive, sector by sector with a disk editor. Most of the information was recovered. The characters ??? mark places where information was lost. All the motions were recovered - occasionally the movers/seconders were lost, but more importantly, for motions 2, 8, 10 and 30 the vote counts were lost. The results of these motions (which is pass for all of them) is recorded from memory, so please check it.
With sincere apology, Carolyn Heide.

The meeting was called to order at 3:30 PM Vic Hayes, chairman IEEE P802.11[1)], in the chair. Carolyn Heide secretary. Stuart Kerry managing document originals and copying and Ian Gifford managing distribution and pigeon hole organization. Wayne Moyers handling the attendance list. The agenda document for this meeting is 802.11-96/29-R1.

Objectives for this meeting, all groups

- Resolve comments on LB on D3.0 and prepare Draft for sponsor ballot (1)
- Inclusion of FH tables for various other countries (France, Spain, Australia) (2)
- Give a tutorial to 802 in preparation of the sponsor ballot (3)

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- Conformance testing (4)
- 3 Mbit/s informational presentation
- FCC wish list

1. Opening

1.0 Secretary: Carolyn Heide.

1.1 Roll Call: People in the room were invited to introduce themselves.

1.2 Voting rights:

Participation in debates, moving and seconding is only permitted by voting members, in all 802.11 meetings (at all levels). The subgroup chairs may permit observers to participate in debates.

Voting at the working group level is by voting members only. Chair may permit observers to participate in debate. To become a voting member:
- participate in at least 2 out of 4 consecutive plenary meetings. Voting rights start at third meeting
- participation in at least 75% in meetings, in the room
- one interim may be exchanged for a plenary
- Voting members will get a token to be used at votes

Voting rights can be maintained:
- by participation in 2 plenary meetings within 4 consecutive plenary meetings
- one interim may be substituted for a plenary

Voting rights may be lost:
- after failing to pay the conference fee
- after missing two out of three consecutive letter ballots

1.3 Attendance list, Registration: The attendance list was distributed - 75% attendance according to the attendance list is required to qualify for attending the meeting as a whole, so make sure to sign the book. Copies of the attendance list are handed out before the end of each meeting.
- important for administration of voting rights that the attendance book is used properly.
- sign per meeting (morning, afternoon, evening). Do not sign ahead.
- place initials. Do not cross or underline.
- circle the letter corresponding to the meeting you attend when signing (F=full 802.11, P=PHY, M=MAC group).

Check e-mail addresses in the book:
- some addresses have been struck, or have a $-sign added to the right - those received complaints from the reflector
- please strike your e-mail address if you do not use it
- if you do not disagree to receiving very long files, mark bulk e-mail with yes

1.4 Logistics: Document distribution is done using pigeon holes - you will find your copies and messages in the referenced location in the expanding file folders in the slot *in front of* your name.

Document distribution:
- sign in for a slot, remember the letter and number
- pigeon holes are file folders with a letter id on each folder and a number on each slot

- in each folder are numbered slots, each of which is 'owned' by a person
- each person owns slot in front of number

Coffee breaks at 10 AM and 3 PM. Noon to 1:00 PM lunch

1.5 Other announcements

1.5.1 Patent Policy

IEEE standards may include the known use of patent(s) including patent applications, if there is technical justification in the opinion of the standards developing committee and provided the IEEE receives assurance from the patent holder that it will license applicants under reasonable terms and conditions for the purpose of implementing the standard. This assurance shall be provided without coercion and prior to approval of the standard (or reaffirmation when a patent becomes known after the initial approval of the standard).

This assurance shall be a letter that is in the form of either:

A. A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement the proposed IEEE standard against any person or entity using the patent(s) to comply with the standard or

B. A statement that a license will be made available to all participants without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination.

In order to determine whether to use patented material or not, the working group should examine its technical merits only and ensure that they have followed the procedure contained in the IEEE Standards Operations Manual.

Request all participants to indicate if they know patent on which 802.11 may infringe

1.5.2 Copyright of IEEE standards, by Vic Hayes

Assumption:

Those submitting papers and working on the standard would know that the copyrights would be transferred to the IEEE

Earlier understanding of the rules in the PAR:

Copyright of material taken from submissions and added into the standard, is automatically transferred to IEEE based on the PAR

Quote from the PAR

"I hereby acknowledge my appointment as Official Reporter to the _IEEE P802_Committee to write/revise a Standards Publication (entitled or to be entitled) _Wireless Access Method and Physical Layer Specifications_.

In consideration of my appointment and the publication of the Standards Publication identifying me, at my option, as an Official Reporter, I agree to avoid knowingly incorporating in the Standards Publication any copyrighted or proprietary material of another without such other's consent and acknowledge that the Standards Publication shall constitute a "work made for hire" as defined by the Copyright Act, and, that as to any work not so defined, I agree to and do hereby transfer any right or interest I may have in the copyright to said Standards Publication to IEEE.

Signed by myself"

Return to assumption:

Those submitting papers and working on the standard would know that the copyrights would be transferred to the IEEE

Having never seen any input paper with explicit copyright sign, conclude that no copyrighted material is included in draft D3.0. Now is the time to indicate copyrighted material so we can remove it right away.

Hearing no claims before March 31, 1996, I would declare there is no copyrighted material included in draft D3.0,

There is some disagreement in the room, and a feeling that this needs to be legally scrutinized. Vic will check and the issue will be returned to this week.

1.5.3 Help Preparing next mailing, Thursday evening: Carolyn Heide, Stuart Kerry

1.5.4 New Bylaws, Operations Manual, and IEEE Standards Companion available.

1.5.5 Sponsor Ballot invitation is out and registration closes March 15.

1.5.6 Boeing is concerned about the future - 2 Mbps is too slow for the near future; has experienced some problems at 2.4 Ghz; interface with other international standards.

2. Approval of the minutes of the previous meeting

2.1 Montreal meeting, Document IEEE P802.11-95/234: Motion #3, should have stated FAILED. Approved, with this change, by consensus.

2.2 San Diego meeting, Document IEEE P802.11-96/20: approved by consensus

2.3 Matters arising from the minutes: none.

3. Reports

3.1 The Executive Committee, by Vic Hayes

- position on wireless New Work Item in ISO/IEC including comparison of Hiperlan and 802.11
- LMSC Chair vacant in July, including the offices the chair holds
  - information on workload available
  - process will be made by Montague
- document distribution
  - limit the dis to those voters in the group
  - no distrib during plenaires
  - 4 PM Tuesday group addressing it

Discussion:
Group instructs Vic to ask: Will the fact that standards will no longer be available free at meetings, decrease the meeting fees? That only seems fair, as this has been listed as one of the reasons for increasing the fees. The group recommends decreasing meeting fees by the price of books.

- Names in Standards: current write-up for
  - inclusion of all voters from PAR until approval to send to IEEE Standards Board
  - other contributors identified by chair or nominated by a WG member
  - organization nominated by a wg member
  - better proposal requested, will be discussed later

3.2 The Editors: none

3.3 The letter ballot on draft D3.0 results:

- 70 approval
- 42 yes, 18 no, 0 abstain
- 75% required, unanimous preferred

- excomm requires all no votes be addressed and rebutted if not accepted
- full report in 96/47-1 to -7

3.4 San Jose, 1995, meeting finances:

Collections		
Number of attendees:	54	
Amount collected per attendee:		$100.00
Total money collected		$ 5,400.00
Expenses		
Hotel charges:		
Beverages and refreshments		$ 3,172.10
Audiovisual equipment/set-up		1,996.51
Total hotel charges		5,168.61
Photocopying expenses		125.51
Total expenses		$ 5,294.12
Result		
Surplus		$105.88
Surplus form San Jose 1994		$108.32
Total funds for 802.11		$214.20

Motion #1: **To approve the San Jose financial report.**

Moved by: Bob O'Hara
Seconded by: Carolyn Heide

Motion 1 Discussion: none

Approved: 30 Opposed: 1 Abstain: 1 ***Motion #1 passes***

3.5 San Diego, January 1996 meeting finances:

Expenses:			
Audio Visual	$1,904.60		
Office Telephone	$80.00		
Long Distance Charges	$90.81		
Laser Printer	$239.00		
AM/PM Breaks	$3,258.09		
Host Bar		$607.75 (MACom)	
Host Reception/Dinner		$1,735.49 (MACom)	
Xerox		$514.28	
Kinkos Copy Center	$483.85		
Total expenses	$6,570.63		
Result			
40 participants @$100.00 each			
IEEE Shared Cost	($4,000.00)		
Final Cost	$2,570.63	$ 2,343.24 (MACom)	

Motion #2: **To approve the San Diego meeting financial report.**

Moved by: Wayne Movers
Seconded by: Ian Gifford

Motion 2 Discussion: none

Approved: ??? Opposed: ?? Abstain: ??? ***Motion #2 passes***

3.6 IPR letters: received from Proxim 96/5a, Norand 96/50

3.7 Meeting with the FCC: ???

4. Review of contributions: ???

5. Adoption of the Agenda (11-96/29)

Motion #3: **To approve the agenda giving Vic the authority to adjust the Wed PM session as appropriate.**

Moved by: ???
Seconded by: ???

Motion3 Discussion:
With the provision that the subgroup chairs indicate to Vic before 5PM Tuesday if they would have cross group issues, and he will decide Wednesday 8 AM whether there will be a Wednesday plenary meeting.

Approved: (no nays) ***Motion #3 passes***

6. Unfinished Business:

6.1 Re-Election of Officers

Subgroup chairs: Dean Kawaguchi for PHY subgroup, Dave Bagby for MAC subgroup. Approval with no objections.

Editors: Bob O'Hara and Greg Ennis. Approval with no objections.

Vice-chairmen: Stuart Kerry, Chris Zegelin. Approval with no objections.

Vice-Chairman Stuart Kerry takes the chair:
Chairman:

Motion #4: **To reaffirm Vic Hayes as chairman of 802.11.**

Moved by: Chris Zegelin
Seconded by: Anil Sanwalka

Motion 4 Discussion: none

Approved: (no nays) ***Motion #4 passes***

Stuart returns the chair to Vic

6.2 Response to ISO 96/31

Motion #5: **Refer to a group (Stuart Kerry) and (Vic Hayes) for drafting**

Moved by: Carolyn Heide
Seconded by: Wayne Moyers

Motion 5 Discussion: none

Approved: (no nays) ***Motion #5 passes***

7. New Business:

7.1 802.3 PAR, presentation by the Higher Speed Study Group (HSSG)

A presentation of the overview of the task and technical intent of that group was presented so that this group may give guidance to Vic as to how to vote on approval of this PAR at the excom.

Copies of the presentation will be distributed this week.

Note by chair: the files are provided in the April mailing as gigabit5.txt and gigabito.txt. As they are Postscript files, no header or footers are available. No paper copy will be made available via the document order service

7.2 NPRM, 96/8

Has been available at the FTP site. The standing committee will be resurrected to handle this.

Motion #6: **That 802.11 will send a response to the NPRM through the standing committee process**

Moved by: Naftali Chayat
Seconded by: Stuart Kerry

Motion 6 Discussion: none

Approved: 22 Opposed: 0 Abstain: 5 ***Motion #6 passes***

7.3 Names in standard

Proposed Method:
- List as of the time the draft is approved for submission to sponsor ballot and announce that in the title.
- Start list with current 802.11 chair, MAC group chair and PHY group chair followed by names of the two main editors.
- Mark in the list with voters, the subgroup chairs and subgroup editors at the time of submission to sponsor ballot.
- Add people at the groups discretion.

Discussion:
It is not consistent over other standards.
Some people would like to see old contributors added also. Add at the chairman's discretion, or the group's discretion.

Motion #7: **To adopt this rule, as described in 'Proposed Method' above.**

Moved by: Dave Bagby
Seconded by: Anil Sanwalka

Motion 7 Discussion: none

Approved: 26 Opposed: 0 Abstain: 4 ***Motion #7 passes***

7.4 Input from Boeing

Concern about the future and making sure the standard is ready to address things in the near future: faster speeds; interference problems in the 2.4 GHz environment.

Suggestion that there should be a submission made for the committee to consider, if there is a desire to influence the group direction or activity.

7.5 Adoption of 'shall' comments and their affect on the PICS Proforma, by Simon Black

There are a lot of comments about changing 'will' and 'is' to 'shall', and how this may affect items that were and should be put into the PICS Proforma.

db shall/may corrections:
- approximately 125-150 comments all from a pass at shall/may/can/will etc.
- no changes made to sense of paragraphs just official wording correcting

Motion #8:	**To accept all the comments, in all clauses, related to the use of shall/may/can/will, made by Dave Bagby which begin with "w/o the requested change".**
Moved by:	???
Seconded by:	???

Motion 8 Discussion: ???

Approved: ??? Opposed: ??? Abstain: ??? ***Motion #8 passes***

7.6 Interframe spacing definition, by Johnny Zweig

There are a number of comments by Johnny about the accuracy of interfame spaces based on the slot times - should there by a range allowed for jitter? It was decided that these comments would be addressed by the appropriate groups as they were encountered.

8. Adjourn to subgroups: ??? PM

Tuesday AM & PM, 12 March, 1996
MAC & PHY subgroups

Wednesday AM, 13 March, 1996
MAC & PHY subgroups

Wednesday PM, 13 March, 1996
Full Working Group

The meeting was reconvened at 1:00 PM, by chairman Vic Hayes, Carolyn Heide secretary.

9. Opening

9.1 Roll Call: People in the room were invited to introduce themselves.

9.2 Document list update: none

9.3 Agenda adjustments: none

9.4 Announcements: none

10. Cross group Issues

10.1 Multiple rates, 10.2 Patents, 10.3 Broadcast Reliability, by Dave Bagby

At this point Paul Eastman and John Montague (acting chair 802.0) join the group to discuss dealing with issues such as this one, and the effect on making progress toward forwarding the draft to sponsor ballot.

Be careful about trying to get only 75% approval from the working group and carry to that to the executive committee for approval to send to sponsor ballot. That is a very low percentage of approval. If there are large technical issues that as many as 25% members feel are still unsolved, when the excomm will probably send the draft back to the working group. Although the strict rules say 75% working group approval is enough for forwarding, it is difficult to remember when that has ever been done. Worse yet - bring a draft that 25% of the members says has unsolvable technical issues, and it will definitely get sent back. If there are issues where there is a degree of feeling that there is no technical solution, it may be better to try to remove that feature.

Questions from the group to John & Paul:
Q: There are workable solutions to the multirate problem, we just can't agree on what they are.
A: If 75% of the members believe a technical solution is valid and have good reasons, and 25% disagree - if it can be demonstrated that it is a matter of honest disagreement among skilled technical people, then explain that when presenting to the excomm. However, there has been great success obtained in the past by not having things go out of 802 with that level of disagreement. It is easier and quicker to resolve things before sponsor ballot. Zero negative votes is usual when going to sponsor ballot, and almost all 802 standards pass on the first sponsor ballot because of this.
Q: Part of the problem arises from trying to define interoperability concerns, rather than telling people how to implement in detail.
A: If there are many ways to do something and everyone agrees one or more exist, then that is no problem. But if you have people who say there is no way to do it given the current state of the art, then you have a problem. The standard needs to be reasonably implementable within current state of the art. If a feature is specified and the only way to implement it turns out to be a tightly held patent, there is a problem - requiring one or more accepted technical ways to implement something covers that potentiality.
Q: There is a discussion about just how many people voted no due the multirate issues, and why. Apparently about half dozen no votes were based on multirate. Some feel it is a religious issue. Others say no, it is just the age old dilemma of fix it or remove it.
A: The excomm will not attempt to tell you how to solve the problem. It is just a statement of fact that time will be saved by resolving issues before sending the standard to the excomm. Avoid the risk of getting it sent back
Q: There is a lack of understanding of the mechanics of getting the standard to sponsor ballot.
A: Get at least 75% approval in the working group. Change the draft and send it to confirmation ballot within the working group. Members who still agree, don't respond. Those who still have no votes, or have had no votes created by the changes respond with new no votes.
Q: There is confusion as to whether the confirmation ballot is before/after/parallel to excomm approval. Is there not a procedure which allows submitting to the excom and having the

confirmation ballot in parallel, and if no new technical issues are raised by confirmation ballot then it goes forward to sponsor ballot?
A: This known as conditional forwarding. There should be a lot more than 75% approval with the working group to do this, or great justification required. If the group has diligently responded to no votes, then possibly it can get through. But without high confidence in the success of the confirmation ballot, it is not looked on favorably. That would be two strikes and there would be a high wall against approval. The confirmation ballot is for saying the changes to the draft change my vote or not. Votes changed from yes to no, would nullify the conditional forwarding process. On the other hand, if the confirmation ballot comes back and shows the real effort that has been put into resolving the problems, and that the situation is stuck but stable, probability of excomm approval is high.

??? There was then a discussion of handling patented issues which was lost. The basic point made was the IEEE keeps on file the IPR letters received from companies, which state that they will apply non-discriminatory licensing against a fair and reasonable fee. The IEEE itself does nothing with these letters except hold them on file. The sole defining body of 'a fair and reasonable fee' is the courts in the territories of the patent holders.

??? The discussion that took place after the visitors left was lost. Mostly a lot of people said why don't we get some work done on this issue.

It was decided that a group, led by Pablo Brenner, would work in the evening to come to resolution of the multirate issues. No decision was made on what action to take about broadcast reliability.

10.4 Architectural split for FH

Discussion:
??? The beginning of this discussion was lost, but the point is that there was objection to carrying around PHY specific information in fields of MAC frames, as it is a violation of layering principles ...
If there is information which must be distributed amongst PHY management entities, it should be in the PLCP header and passed between PHYs.
These layer violation arguments will come from ISO and have to be fixed then, so we might as well fix them now.
Need also the move the TSF timer to the PHY for this kind of purity to be achieved. There are significant issues with the TSF timer. A truly independent MAC would also not do scanning.
It is imperfect layering, but it is a practical solution to the problem. This is a difference between philosophy and practicality.
Eliminating the exposed MAC/PHY interface got us into this problem. Editorial problems can be avoided by choosing the right terms in the standard.
There is no reason a PHY has to be so stupid as to constantly repeat the same action all the time. It can take intelligent action at the time of its choosing - there are real life examples of this today. It can pass its own control information when it needs to do so.

Motion #9:	**That the 802.11 MAC specification retain the management protocol and messages necessary for FH operation, thereby declining the related letter ballot comment, comment 68 in clause 7.**
Moved by:	Simon Black
Seconded by:	Brad Herrin

Motion 9 Discussion: none

Approved: 24 Opposed: 2 Abstain: 11 ***Motion #9 passes***

10.5 Sleep State of the MAC

In the PHY attributes there are sleep and doze turn on times. Are those supported by the MAC? These are states for the PHY - doze and sleep - yet in the interface there is no way to control those. There is only on and off in the PLME interface.

This may be historical - from the days when the MAC defined different sleep modes, which has been removed.

The group seems to feel that the PHY can removed one of these states, or provide information to the MAC on how to change/use them. The PHY group will discuss this.

10.6 Clause 9 - fixed in MAC group, nothing to discuss

10.7 Structure of PLCP Header

There is a comments which suggests replacing, in the PLCP header, the length in octets with the duration in microseconds (of this frame). This is just another way of encoding the length. The reason given is if in the future there are changes in the encoding rate, this field will still be useable. The FH PHY group liked the idea and would like to adopt it.

This results in 13 bits duration in microseconds, and 3 bits signaling information. This limits the length to about 1000 octets per MPDU maximum.

This changes the rx vector structure because the PHY can tell the MAC - I received something and it will be x microseconds long, but I don't know how many octets are in it. It does not change the tx vector. Another method might be for the PHY to raise CCA indication rather than pass the information as a parameter.

Discussion:
There is objection to limiting the length - that is not long enough to carry a non fragmented maximum length MSDU in one MPDU.
There is currently no length information in the MAC frame because it relies on getting this from the PLCP header information passed up from the PHY.
The issue of handling dribble bits will be introduced now also. It is solvable, but do we really want to do this now.
It is possible that this may be useful in solving multirate things.
Do we meet the hamming distance requirement with this? Can we accurately determine where the CRC is? The rx vector and tx vector will not match and that has large ripple affect also.

Motion #10:	**The resolution of PLCP length vs duration encoding be a topic assigned to be explicitly settled as part of the multirate discussion group and that the approach be uniformly applied to all PHYs.**
Moved by:	Michael Fischer
Seconded by:	Jan Boer

Motion 10 Discussion: ???

Approved: ??? Opposed: ??? Abstain: ??? ***Motion #10 passes***

10.8 Japanese Call sign

Discussion:
??? The beginning of this discussion was lost. The issues is what information needs to be carried where and how often to meet a Japanese regulatory requirement for transportation of the call sign of a unit ...
The MAC cannot do it because of bit stuffing - the PHY will stuff bits that will change the call sign if it is passed down as part of the MPDU.

One regulatory region requirement for one specific PHY should not be forced on the MAC.
Perhaps a PHY option called 'Japanese support' should be defined and that PHY should figure out how to handle it.
There is an understanding that it doesn't matter that it gets bit stuffed - the relevant receiver will do the unstuffing and interpret that answer at a layer high enough for that. There is also an understanding that this information must go out more frequently that only once at start up.
There is a suggestion that we don't have to do anything here, it can come from a higher level, passed down through the LLC interface and through the MAC and PHY. It is an issue for the implementers in Japan that use 802.11 equipment. It's not a standards issue.

Motion #11: **To move to next item on the agenda.**

Moved by: Johnny Zweig
Seconded by: Pablo Brenner

Motion 11 Discussion: none

Approved: 22 Opposed: 0 Abstain: 8 ***Motion #11 passes***

11. PHY resolutions

The FH PHY group has some input it would like to give to the standing regulatory committee.

Is there any plan for the PHY group to make comment resolutions available? Yes, a disk will be circulated today so that it can be looked at before tomorrow. A snapshot of work at this time.

12. MAC resolutions:

The disk has been circulated with comments resolutions and clause changes as of noon today.

13. Conformance Testing:

There is a document started in the DS group.

14. Adjourn for subgroups: 4:40 PM

Thursday AM, 14 March, 1996
MAC & PHY subgroups

Thursday PM, 14 March, 1996
Full Working Group

The meeting was reconvened at 1:00 PM, by chairman Vic Hayes, Carolyn Heide secretary.

15. Opening

15.1 Announcements

15.1.1 Sponsor Ballot: On Wednesday 112 responses to the Sponsor ballot were received. closure is tomorrow. Response forms in the originals file (see Stuart Kerry)

15.1.2 Patent policy: let Vic Hayes know about applicable patents so he can send letters requesting for willingness to license

15.1.3 Feedback on accommodation: no objections to this meeting's accommodations

15.1.4 Files of results: request to submit the files to Stuart Kerry.

15.2 Document list update: updated the list.

15.3 Agenda adjustments: none

16. Reports

16.1 MAC Group, by Dave Bagby

Goals
We had one goal - Process D3 LB comments and forward D3.1 for sponsor ballot.
We didn't make it, but we made a lot of progress.

Misc Subjects
Nov, Jan MAC minutes approved
D3 MAC Clauses LB stats:
Number of comments per clause: C1: 1, C2: 1, C3: 11, C4: 2, C5: 59, C6: 23, C7: 119, C8: 17, C9: 168, C10: 7, C11: 117, General & annex:128

Clause 1
Completed. All comments accepted. All resolutions edited into draft text.
MAC approval vote: 12, 0, 1

Motion #12: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: ???

Motion 12 Discussion: ???

Approved: 23 Opposed:0 Abstain:1 ***Motion #12 passes***

Clause 2
Completed. All comments accepted. All resolutions edited into draft text.
MAC approval vote: 12, 0, 1

Motion #13: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: ???

Motion 13 Discussion: ???

Approved: 24 Opposed: 0 Abstain: 0 ***Motion #13 passes***

Clause 3
Completed .One editorial comment referred to editors for style correction (c# 4 resolution in blue in file). All other resolutions edited into draft text.
MAC approval vote: 12, 0, 2

Motion #14: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: ???

Motion 14 Discussion: ???

Approved: 24 Opposed: 0 Abstain:0 ***Motion #14 passes***

Clause 4

Completed. All comments accepted. All resolutions edited into draft text.
MAC approval vote: 14, 0, 3

Motion #15: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: ???

Motion 15 Discussion: ???

Approved: 25 Opposed: 0 Abstain: 0 ***Motion #15 passes***

Clause 5

C#27 declined re deleting the fractal picture - author not present, ok reaction anticipated.
C#57 declined - requested change based on Data frame assumption re WEP MIB variables.
All other comments either adopted or problem identified resolved with alternative solution requested by other reviewers.
MAC approval vote: 12, 0, 4

Motion #16: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: ???

Motion 16 Discussion: ???

Approved: 24 Opposed: 0 Abstain:1 ***Motion #16 passes***

Clause 6

Completed. All comments accepted. All edited into draft text. For comments not exactly as author requested, author has agreed to delta.
MAC approval vote: 15, 0, 2

Motion #17: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: ???

Motion 17 Discussion: ???

Approved: 24 Opposed: 0 Abstain:1 ***Motion #17 passes***

Clause 7

Approx 112 comments completed
C#64 re cap bits
- Separated overloaded essid field used for both ess-id and ibss-id.
- Handled in Plenary

C#68: Arch comment re FH impact on MAC
- Closed in plenary wed - declined, 24, 2, 11

8 comments declined

- C#23,25: info elements word aligned in mgt frames. rec: leave as is, no pad - wed eve decison. One author accepts resolution, the other was not available at time of recommendation.
- C#48: tolerance on duration field (maf) to compensate for FH bit stuffing. author reaction not known.
- C#78 suggests collapsing assoc and reassoc responses into single frame
- C#75 CFP dur remaining def proposed change - author consents
- C#60, 63, 65 WEP supported bits in CAP field, authors consent

3 open comments
- C#72,74 supported rates - tired to multi rate comments as sub-subject. plenary issue
- C#101: needs work to supply missing Challenge text element, will work on for May.
- C#34 dependent on reference to C11 portion of comment - clause 7 still needs text change if C11 recommendation is adopted.

MAC approval vote: 17, 0, 2

Motion #18: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: Simon Black

Motion 18 Discussion: none

Approved: 26 Opposed: 0 Abstain: 0 ***Motion #18 passes***

Clause 8

All Comments processed
Comments declined:
WEP capability bits comments declined, commentors all accept resolution.
Comments referred:
One request for editorial text referred to commentor and editors.
Bit order picture in WEP PDU diagram, info is uniquely specified, but an additional picture here would be convenient.
All other comments accepted. Clause 8 text edited. MAC approval vote: 17, 0, 2

Motion #19: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: Johnny Zweig

Motion 19 Discussion: none

Approved: 25 Opposed: 0 Abstain: 1 ***Motion #19 passes***

Clause 9

Approx 133 comments processed
Open comments
- About 29 comments not looked at yet.
- C#21: multi-cast reliability from Jan (multiple comments)
- C#37,38 can one process multiple msdu's on xmit at same time
- c# 102, 103: remove PS-Poll/data/ack frame sequence comment.

Deferred comments:
- C#9: multi-rate
  - dependent on evening M-R group outcome.

Accepted:
- C#6 : frag bcasst or not? rec = not to fragment. comment accepted.
- #simultain msdus 6 -> 3

- CFP duration and CF-end - exact changes declined, alternative text used instead
  - Overlapping BSSs CFPs may be coordinated.
- CWMin became dynamic
- moved to adopt dynamic mech per text in edited sec6.doc.
- MAC vote: 12, 5, 3
- assuming this flys in plenary, need text in C11 to match, if not fly need to back out both C9 and C11 text.

Motion #20: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: ???

Motion 20 Discussion:
This discussion was lost. The issue was whether the CWmin value should be dynamically changeable in infrastructure BSSs. In general the arguments went as follows -
In favor: There is no such thing a 'correct' value for this parameter. That is the reason the fixed value has been a subject for argument for literally years in this group. It is dependent on population and error rate. Allowing the PC to select what is best for the current conditions allows operation to be tuned. It does not stop overlapping BSSs from working (such as they do), it just means one may get priority. It is reasonable to assume that most (not all) overlapping BSSs will be in control of the same regulatory domain, so this can be accommodated.
Against: There is a danger that someone will set a value the gives one BSS priority over another. CWmin has a performance impact and the proposed change specifies no algorithm for selecting CWmin. The standard is too complicate already. It is too late in game to be making a change as major as this without more thought and simulation.
Call the question Phil Belanger, second by Johnny Zweig (no nays)

Approved: 13 Opposed: 8 Abstain: 9 ***Motion #20 fails***

In case clause 9 fails...
- motion for if prev motion (mac motion 12) not adopted in plenary, then do this: adopt static value on per phy basis the FH = 15, DS=31, IR=63
- MAc vote: 16, 0, 0

Motion #22: **To adopt static value on per PHY basis the FH = 15, DS=31, IR=63**

Moved by: The MAC Group
Seconded by: Johnny Zweig

Motion 22 Discussion:
These are universal numbers, IBSS and infrastructure BSS.

Approved: 18 Opposed: 3 Abstain: 6 ***Motion #22 passes***

Point of Order: there is not text to report the affect of this motion. Chair rules that the text can be changed afterwards in this case.

Clause 10
All processed, all accepted, draft edited.
MAC approval vote: 18, 0, 1

Motion #23: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: Michael

Motion 23 Discussion: none

Approved: 26 Opposed: 0 Abstain: 0 ***Motion #23 passes***

Clause 11

All comments processed. 90 Accepted
Open comment:
- Clause 7 C#35: when valid to change MIB entries?
- C#15: re bcast reliability & 96/15
- C#17: re randimization of beacons at TBTT
- 3 bcast reliability C# 14,44,59
- 6 re multi-rate 67,92,100,102,98,99
- #43, #42 power save poll behavior

7 Declined:
- C# 111, 115, 120 re rename of attributes
- C#26: delete ACK timeout attrib - expected to be moot by C#138 in clause 9

Deferred:
- C#67, 91, 92: re multi-rate issues

MAC approval vote:7, 0,0

Motion #24: **To accept the recommendation of the MAC group.**

Moved by: The MAC Group
Seconded by: Wim Diepstraten

Motion 24 Discussion: none

Approved: 24 Opposed: 0 Abstain: 4 ***Motion #24 passes***

General & Annex

128 comments. Huge portion handled by Plenary motion 8. Approx 28 other comments.
Patents
- open as 802.11 has not heard from Apple re RTS/CTS.

Multi-rate
- Depends on results of Wed eve M-R group.

Other comments open as not looked at yet.
A few technical comments re PICs
Most editorial in nature that Editors need to look at (comments from IEEE editor etc).
MAC approval vote: N/A

Major anticipated contirbutions for May

Simon Black: PICS updated to match D3.1 (96/1R2)
Michael Fischer: updated annex state machine to match D3.1 (96/2)
MAC group will send out a request for all mac members to tell us if they believe we have made a net gain in satisfaction with the D3.1 work (i.e. an informal confirmation ballot) - this will be done via email (MAC chair to email)

Goals for May 96

Complete processing D3 LB comments.

16.1.1 Handling of Clause 9 Work, by Dave Bagby

Because the whole of the work done on Clause 9 was rejected due to the dynamic Cwmin issues, this motion is made:

Motion #25: **To adopt all the recommendations from the MAC group re clause 9 except for those from C#78 from C9 table (Dynamic CWmin).**

Moved by: ???
Seconded by: ???

Motion 25 Discussion: none

Approved: 27 Opposed: 0 Abstain:1 ***Motion #25 passes***

16.1.2 Multirate Group, by Pablo Brenner

??? The report text is not available at the time of minutes publishing, it may be published under another document number.

Motion #26: **To empower the multirate group to make the text changes as identified and present at or before the next interim meeting.**

Moved by: The Multirate group
Seconded by: Wayne

Motion 26 Discussion:
Congratulations on finally attacking the hard issue.

Approved: 30 Opposed: 0 Abstain: 1 ***Motion #26 passes***

16.2 PHY Group

16.2.1 Full PHY Group Report, by Jan Boer

Dean is apologized for his absents--> his wife gave birth to a daughter Monday night

Agenda
- Minutes (unanimous approved)
- 3 Mb/s FH presentation
- comment resolution
- conformance testing (not addressed)
- FCC wish list (not addressed)

3 Mbps FH
- presentation by Naftati (96/52)
- Motion to form a sub group (within the FH group) with the charter to study rates higher than 2 Mbps
- vote: 7-0-5 motion PASSES
- Naftali will lead this group
- No time is allocated at this meeting for this topic as the main task is to resolve the D3.0 letter ballot comments

Comment processing
- 6 comments to be addressed by full phy
- slottime definition corrected to include MAC_proc_delay
  - PHY vote 13,0,2
- remove 'Air_propagation_time is defined as 1usec'
  - PHY vote 7,0,8
- delete Sleep_state
  - PHY vote 9,1,0
- to recommend to the editors of section 13 to standardize on microseconds
  - PHY vote 9-0-5

Japanese call sign

- Discussions
    - we know not yet exactly what the requirements are
- motion to defer the resolution to the next meeting,
    - vote 10,0,0
- Question: should the Call Sign Implementation be part of the standard?

Discussion on multirate

- To align the solutions in all PHY's the full Phy discusses a proposal the DS to change multirate approach:
    - If the PLCP header is out of the spec (not supported rate) but the header is correct the RX delivers RXvector to the MAC with (error rate out of spec) and resets to CCA state. The CCA assessment after this reset will be based on energy (CCA mode 1).

Motion #27:	**That the plenary accept the changes as proposed by the Full PHY.**
Moved by:	The PHY Group
Seconded by:	Stuart Kerry

Motion 27 Discussion: none

Approved: 20 Opposed: 0 Abstain: 2 ***Motion #27 passes***

On the subject of the Japanese call sign: Vic Hayes says please bring question for the Japanese regulatory agents to him, and he will forward them.

16.2.2 DSSS Group Report by Jan Boer

Agenda

- resolution of comments
- conformance testing

Comment processing

- Processed all 25 comments
- Rejected several NO-vote comment on
    - Japanese Call Sign
    - Length Field

Japanese Call Sign

- motion:
- Due to the severe impact on the current standard, Japanese compliance will be deferred to a subgroup for study at a time after the initial approval of the current draft.
    - DS vote 6-0-0

Length Field

- Motion: that there be no change at this meeting to alter the current definition of the PLCP LENGTH field.
    - DS vote 2-1-4
- As a result of this vote for all comments on changing the Length field definition there was no majority of 75%

'SLOP' on timers

- DS specifies max times for RX-TX, TX-RX and energy detect time (CCA Time)
- We did not see the reason for defining slop on the specified SIFS and Slottime
- What does the MAC want?
    - slop on SIFS is no problem to the DS
    - why slop on Slottime?

Discussion:
Issue is how to measure for compliance, a conformance test issue - it must be x plus or minus y. There must be a jitter, an accuracy. What is specified is the minimum SIFs that works for a DS PHY. The FH PHY has specified something different. They should be specified based on the same criteria - they should have the same meaning (not the same value!).

Technical changes

1. Motion to making the receive state machine requirement to reset upon the receipt of an out of spec PLCP header optional.
   - DS vote 5-1-1
2. Motion on TX spectrum Mask measurement: add to ... the measurements shall be made using 100kHz resolution bandwidth ...and 30 kHz video bandwidth.
   - DS vote 5-0-0

- Ratification
  - Full Phy vote 8,4,1
- ratification on 1st motion full phy 1,4,1
- ratification in motion 2 full phy 6,0,0

Conformance testing

- 2 documents on conformance testing were presented by John F. and discussed
  - doc 96/66 gives an conformance testing (strawman) outline
  - doc 96/67 proposes test bed configurations

Motion #28:	**To accept the recommendations of the DSSS PHY group.**
Moved by:	The DSSS PHY Group
Seconded by:	Wim Diepstraten

Motion 28 Discussion: none

Approved: 13 Opposed: 0 Abstain: 14 ***Motion #28 passes***

16.2.3 IR PHY Group, by Jan Boer

Processed all comments. No technical changes at all. The comment resolutions are in the resulting file which has been circulated.

16.2.4 FHSS PHY Group, by Naftali Chayat

Processed comments

- Johnny "duration" - accepted, then overruled by multirate committee, and rejected
- Japanese regulations - most rejected on grounds of being informational; one informational point corrected in the draft.
- 1 Mb/s definition got closer to the way the 2 Mb/s is defined
- RM CCA wording modification rejected
- Spectral shape testing done with pseudorandom pattern
- Relaxation of spectral mask rejected
- aRx_TxTurnaroundTime change to min/nom/max rejected, as it is reflected in SIFS tolerance

Unsupported rates handling

- Modified Rx procedure and CCA procedure to align with multirate workgroup dispositions: In case of PLCP header with good CRC and unsupported rate,
  - exit to (newly formed) MONITOR_PACKET CCA state, which monitors the channel without antenna switching until it is idle
  - Send to MAC PHY_RXEND.ind(RXERROR=unsupported_rate)
  - is Unsupported_rate error same as Format_Violation ?

Japanese regulation discussion
- Email with questions sent to Japan
  - Caller ID requirements
  - Hopping pattern acceptability
  - transmit poser clarification
- Art Lashbrock from FH will participate in ad hoc PHY group on that subject

FCC wish list/ reaction to NPRM
- FH PHY decided it is appropriate to answer to NPRM 96-8 of FCC
- Decided to support wider channels at frequency hopping.
- Not discussed yet in Full PHY

Issues for next meeting
- Approval of January minutes
- France and Spain hopping tables - to next meeting
- Japanese regulations
- Conformance Testing

Dean Kawaguchi will bring document 96/68 on the hopping tables to the next meeting.

Motion #29:	**To approve all FHSS PHY decisions.**
Moved by:	The FHSS PHY
Seconded by:	Stuart Kerry

Motion 29 Discussion:
They were approved at the full PHY group.

Approved: 16 Opposed: 0 Abstain: 4 ***Motion #29 passes***

16.3 ISO Liaison group 96/70, prepared by Vic Hayes & Stuart Kerry

Based on the 802.11 PAR. Does not address future areas of work?

Motion #30:	**To forward the document, as amended, to excomm.**
Moved by:	Stuart Kerry
Seconded by:	Carolyn Heide

Motion 30 Discussion:
Radio Spectrum refers to heavy usage of the ISM band - doesn't sound very positive. Suggestion to change the tone.
Purpose of this document? Response to their request for guidance as to what action they should take on adopting standards.
There was a small amount of editing done to the text.

Approved: ??? Opposed: ??? Abstain: ??? ***Motion #30 passes***

16.4 Copyright, by Vic Hayes

If the members want to give us a release letter, that's fine, we'll take it, but we do not believe it is required as we believe that our documentation indicates it to be a work made for hire and we hold the copyright.

-- Here's the direct citation from the law:

In the case of a work made for hire, the employer or other person for whom the work was prepared is considered the author for purposes of this title, and, unless the parties have expressly agreed otherwise in a written instrument signed by them, owns all of the rights comprised in the copyright.

Discussion:
Not relevant because our work is not 'made for hire'. Will make some people put copyright notices on all submissions from now on.
A couple of people indicated that they had problem with this. They can directly contact the IEEE IP Manager (or their own attorneys).

17. Unfinished Business

17.0 Miscellaneous

17.1 Recap of Output Documents:

17.2 Recap of document distribution

17.3 Next Meeting Tentative!

Next Meeting: May 6-9, Westin Hotel in Waltham, MA

Motion #31:	**Empower the interim meeting to go for a working group confirmation ballot.**
Moved by:	Dave Bagby
Seconded by:	Chris Zegelin

Motion 31 Discussion:
Confirmation ballot means: only respond with no - if your vote stayed no, or your vote changes from yes to no.
D4 will be published before the confirmation ballot.

Motion #32:	**To amend to say letter ballot.**
Moved by:	Bob O'Hara
Seconded by:	Anil Sanwalka

Motion 32 Discussion:
Against 32: opens up to any comment. Schedule (amount of time must be out for vote) is also different.
The voting group is the group who voted last time. Belief is that even for a confirmation ballot any comments can be made, not just, this is how my vote changed.

Approved: (no nays) ***Motion #32 passes***

Motion 31 Discussion: no more

Approved: (no nays) ***Motion #31 passes***

Objectives for next meeting:
- Complete processing D3 LB comments.
- conformance testing
- FCC wish list
- France and Spain hopping sequence.

Mailing date: March 20, 1996. April 5, 1996

17.4 Future Meetings: see chart. Hoping to not have to have interim meeting after July when the standard goes to sponsor ballot.

17.5 Other Intermediate Meetings: none

18. New Business: none

19. Closure: meeting adjourned at 5 PM.

Tentative Meeting Schedule

Date	Month	Year	Place	Type	Location	Host
13-16	May	1996	Waltham, MA	Inter	Westin Hotel	Raytheon
8-12	July	1996	Netherlands	Plenary	University of Twente	
TBD	Sept	1996	TBD	Inter	TBD	
11-15	Nov	1996	Vancouver, BC	Plenary	Hotel Vancouver	
11-15	March	1997	Irvine, CA	Plenary	Irvine Marriot	
7-11	July	1997	Lahaina, HI	Plenary	Hyatt Regency Maui	
10-14	Nov	1997	Vancouver, BC	Plenary	Hotel Vancouver	
9-13	Mar	1998	Austin, TX	Plenary	Hyatt Regency	
6-10	Jul	1998	La Jolla, CA	Plenary	Hyatt Regenc y	
9-13	Nov	1998	Albuquerque, NM	Plenary	Hyatt Regency	

Appendix 1

Attendence list

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Appendix 1 (continuation)

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Appendix 1 (continuation)

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