

Tentative Minutes of the Direct Sequence PHY Sub Group, March 1995

IEEE 802.11 COMMITTEE

**Minutes of DS-PHY meetings
November 7-11, 1994
Ramada, West Palm Beach, Fl
Minutes by Paul Pirillo**

**Tuesday A.M.
DS PHY subgroup meeting**

Jan Boer
Thomas Krueger
Mike Trompower
Daniel Morelli
Don Sloan
Paul Pirillo

Jan mentions that Paul S. has resigned as chair of the group and will not be actively participating in the group anymore. Jan offers to continue as chair alone, but editor is needed. Paul P. moves to allow Jan to take this role. Tom K. seconds. After discussion of need to work with other PHY groups, this motion approved by consensus.

Accept/Reject/Reason for reject - format recommended by Vic

break while getting hard copy of comment list, looking for Jeff, Al, who generated many of the comments

Larry Ptersen
Jeff Rackowitz
Al Petrick
Jan Haagh

arrive later in the meeting

Comment disposition is entered directly into the 11-95/18-11b document.

Tuesday P.M.

Continue with disposition of comments

Completed the first 10 technical comments in the morning session.

John Faksetelis

Al Petrick

Thomas K.

Jeff R.

Don S.

Jan B., Paul P.

Mike T., Dan M., Larry Petersen

FCC issue, Vic is looking for volunteers with regulatory experience.

MAC and FH do not think they can accomplish enough to go to full working group by Wed p.m. Editors are asked to provide a "D11" draft, not official. Then have a 2 minute plenary Wed at 1 p.m. Then Thursday p.m. plenary for review of comment disposition.

Disposition of rejected comments: Vic says that rejection with a reason is sufficient. But what about when same person votes no again on next ballot. IEEE stds board will be informed which no votes were not resolved and what our rebuttal is. What percent vote needed in sub-group to act on a comment??? Vic investigating.

Tonight there will not be a MAC or FH meeting, but there will be a sub-group meeting addressing Section 8. Regency B-C at 8:00 p.m. Specifically the comments on why we have multiple PHYs.

Tom K. and Don S. will obtain copies of the FCC 15.247 and related rules for the purpose of resolving comment T16. Until then we will skip this issue.

The conference room will be available for us to use tonight, if we wish to continue the DS-PHY meetings.

Tutorials

100MB/UTP tutorial 6:30

ATM Tutorial 8:00

Adjourn meeting at 5:45 p.m. We will NOT meet tonight, so that we can attend the Section 8 meeting.

Wed A.M. DS subgroup meeting

Continue subgroup til lunch.

James Harrer

J. Boer, A. Petrick, J Fakatselis, T. Krueger, M Trompower, D. Morelli, D. Sloan, J. Rackowitz, P. Pirillo, Larry Petersen

On T24 Jan provides a quick tutorial on channel set creation. Forbidden bands hurt us at the edges of 2400-2483.5. Also some international problems. Discussion of merits of changing to a rasterized channelization given the need for manual frequency coordination.

The 5 Mhz plan was eventually approved.

Jeff R. mentions that he is not sure all the changes from R5 to R6 of the DS draft may not have gotten into the draft standard document.

Jan B. gives an overview of the "slot" time definition. 15uS CCA 5uS RX/TX. Discussion of what factors go into slot time and of how collisions occur based on timing differences between stations. Jan B., Tom K., mention that they have developed or investigated systems that meet the slot time requirements at reasonable cost. Pablo B., Wim D. ("The Importance of Transmit and Receive Turnaround Times") have done papers relating slot time to overall performance. Jan opposed to motion to defer this issue.

Comments relating to testability of measurement times: Conformance testing requirements impact how/where we define signals.

Wednesday P.M.

Begin with discussion of whether it is valid to be deferring testability issues. How do we document test procedures and where do we put this information in the standard? One proposal is to include test procedures as an appendix. Another is to include information immediately after the relevant parameter specification in the text of Section 11. The group decides to reexamine the test issues.

Discussion continues on comment T28. Measure at 1. MAC/PHY interface, 2. PLCP/PMD interface, 3. Air Interface ??? If at the MAC/PHY, add a primitive?

Jeff R. moves to delete previous disposition of T28. Passed unanimously.

Jeff R. moves that the TX/RX turnaround time be measured from the air interface instead of from the transition of

Jeff R. motion Comment rejected.

RX/TX turnaround time is measured at the MAC/PHY interface (PHY_DATA.request=start_of_data)

TX/RX turnaround time is measured at the air interface from the trailing edge of the last transmitted symbol to valid CCA. This motion was approved.

Move that on 11.4.6.7 that 1 uS be added for propagation delay. Later discussion indicated that propagation time has been accounted for in slot time definitions.

Discussion of T40 (FER vs BER specification) reveals that FH PHY group is addressing the same issue.

Thursday a.m. session

Larry P., Al P., Jan B., Mike T., Dan M., Don S., Paul P., Jeff R., John F.

Start with comment T43 and J. Boer's explanation of CCA function. Discussion of where in the stack the slot times are understood. The PHY needs to know the slot time and the IFS time to ensure that the PHY transmits in the correct MAC-level slot (Larry P.). Jan is concerned about proper synchronization between transmitter and receiver both during system operation and during the conformance test. Also(Jeff R.) discussed whether antenna selection should occur on slot boundaries. Should the CCA function itself be synchronous with the slot? (Don S.)

Jan B. explains that some implementations require CCA to be synchronous to the slot for proper antenna selection to occur. It is mentioned (Jeff R.) that the PHY does not need to know where the slot boundaries occur in our current implementation of the standard.

Jeff R. moves to amend motion on T43 to defer consideration, but keeping proposed text as a recommendation. Amendment approved 5-1-0.

After a break, Jan B. mentions that the real technical changes we have made to this point are the following:

1. Channelization scheme
2. Minimum transmit power
3. PER to FER change on sensitivity measurement

Jan proposes to put the above changes before the plenary for a vote. The remaining comment dispositions will be brought to the next plenary.

The sections from 11.2.6 to 11.4.6 require the most work for issue resolution. Jan says he can handle making the changes in the rest of the document.

Vic has asked for the next draft by the end of March.

Editorial and Technical changes will be handled between meetings as follows.

Beginning-11.2.5 Jan B.
11.2.6 - 11.4.5: Don Sloan
11.4.6-end: Jan B.

Members of the group will forward any concerns to these parties ASAP.

T1, T43-45 (CCA)
T16
, T26, T37, T43-45 have been deferred so far.

Deferred comments on scrambling: Jan wants to study and understand impact of DC offset inherent in the 11 chip barker code before we commit to a decision on scrambling.

Returned to discussion of CCA issues. Comment T44. Group discusses relationship between ED threshold and CS (code lock) threshold and whether we have spec'ed these correctly. John F. mentions need for spec to include false alarm rates as well as sensitivities.

Larry P. describes limited usefulness of active transmit power control functionality in real systems. Jan B. says the MAC currently is not doing transmit power management. There is only one CCA signal to the MAC. The other PHYs only report CCA when they lock on their own signals. For example, FH currently does not defer to energy.

Discussion of whether RSSI should be optional or if this should be available to the MAC at all times. Larry P. suggests having a latched and a current RSSI value.

Jan B. will report at plenary:

- *discussed T-comments
- *Resolved 80%
- deferred (after discussion)
- Scrambler, CCA, Turnaround times
- MAC?PHY interface issues that need to be discussed with other groups.
- *Resolutions embedded in comment text & minutes
- *3 "main technical changes"

