

**IEEE 802.11
Wireless Access Method and Physical Specification**

Title: **Minutes of the FH PHY Ad Hoc Meeting, May 1996
Waltham, Massachusetts**

Date: May 9, 1996

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Formatted by Dean Kawaguchi

6 May 1996 The Frequency Hopping PHY Met at 3:30. First order of business was to approve the minutes from the March meeting. Three motions were made by Naftali Chayat at the last meeting and according to Robert's rules were out of order. The minutes were read and approved by vote. 5 for 0 opposed 0 abstained.

An agenda was set as follows:

1. Comment resolution
2. France and Spain hop pattern
3. Multi-rate (will be moved to Tuesday morning when Naftali Chayat is present)
4. Other receiver demodulating characteristics
5. 3 Mb/s FH PHY
6. Agenda for next meeting.

Agenda approved.

Comment resolution on document 60626.doc

sequence #1 By Fischer

Action: Draft 3.1 corrects this error by adding the sentence "Station can use less time but not more than 20 usec."

Sequence #2 By J.Z.

Action: Refer to resolution of comment sequence #13

Sequence #3 By C.H. 13.1.4.4

Action: Comment accepted and changed in draft 3.1

Sequence #4 13.1.4.4

Action: Rejected per Plenary direction of 1 usec.

Sequence #5 13.1.4.6

Action: Rejected

Sequence #7 #8 #9 #10 14.3.2.2.1

Action: Refer to resolution of comments Seq. # 13

Sequence #11 KAF

Action: resolved

Sequence # 50 # 51 VZ

Action: Editorial changes

Sequence # 53 kaf

Action: Open until Wednesday

Sequence # 56

Action: Refer to resolution of comment Seq. #14

Sequence # 78

Action: Refer to resolution of comment Seq. #14

Sequence # 86

Action: Editorial changes

Sequence # 88 # 89 # 90 kaf

Action: Agreed.

Discussion on Multi-rate was tabled till Tuesday morning when Naftali Chayat will be in the meeting.

France and Spain Hopping Patterns:

Paper # 9668 was presented by the
hair (Dean Kanaguchi) and he removed

himself from chair position to make a motion. The new acting chair was Steuart Kerry. The motion was made to accept the paper that explains the hop sequence for France and Spain. A vote was taken to accept the paper's recommendation for Hop Patterns and passed unanimously 5-0-0. Some additional comments on the paper will be written by Art Lashbrook and Mack Sullivan.

Meeting concluded at 5:30. Next meeting Tuesday morning at 9:00 AM.

7 May 1996 Tuesday morning Meeting opened at 9:15

Multi-rate (CCA in multi-rate) will be later when Naftali arrives.

France and Spain References - Art had a copy of the Spain position need a translation of the document as it's in Spanish.

Other Draft Comments:

Art had a comment on 1.6.14.4 on out of band power measurement. His comment was to specify the video ranges the suggestion was 30 Khz. The FCC requirement 100 Khz the after discussion a proposal to make it 300 Khz by Art. Motion made and second by Mack Sullivan. vote 3-0-1 changes made to draft.

Art had a comment on 14.7.2 on carrier drift specification. After discussion no changes were made.

Section 14.3.3.1.2 Dean (Chair) introduced a comment on the way that time delay is specified. He suggested a minimum delay of 33 usec. Make a motion for fixed delay time of 33 usec. made by Steuart and second by Art

Recess for 10 AM break. Resume meeting at 10:30

Last motion to change the timing relation between PHY data request and the actual transmission of first bit (LSB) to be fixed time of 33 usec. exclusive of the Tx RF delay and Tx PLCP delay.

Naftali Chayat arrives at 10:50AM.

Discussion on motion.

Move made to table motion by Art and seconded by Naftali. Unanimous vote to table till 3:30 PM.

11:15 AM open discussion on comment seq. #16

Action: Changes made to paragraph 14.3.3.2.1 by changing the time to 22 usec. from 20 usec. and adding the words "synchronous" and "asynchronous" to t

e text. Additionally, add the sentence to paragraph

14.6.15.3 " that starts synchronously with respect to slot times as specified in subclause 14.3.3.2.1" and "In the presence of any 802.11 compliant 1 Mb/s FH PHY signal above -85 dBm that starts asynchronous with respect to slot times as specified in subclause 14.3.3.2.1, the PHY shall signal busy with 70% probability of detection during the preamble within the CCA assessment window."

Recess for lunch at 12:30.

Meeting reopened at 1:45 PM.

*Motion made to accept the text changes by Art Lashbrook and second by Naftali Chayat. Vote on change 3 for 0 opposed 2 abstained. Motion carried.

Recess at 3:15 for afternoon break

Reopen meeting at 3:45

Action: Add the following to support for multi-rate in place of section in paragraph 14.3.3.2.1:

"If the receive procedure encountered an unsupported rate error, the PLCP shall keep the CS/CCA state at BUSY for the duration of the frame by either:

- 1) detecting higher rate signals with equivalent performance to that which is specified in 14.6.15.3 or
- 2) setting the countdown timer to the value corresponding to the TIME REMAINING adjusted by the actual data rate or by the highest known data rate if the rate is beyond the set of known rates. "

Also, delete the "monitor packet" block from Figure 77 and in the Receive State Machine paragraph 14.3.3.3.1 will be modified to read "If the PLCP header was decoded without a CRC error but encountered an unsupported rate , then the PLCP shall immediately complete the receive

procedure with a PHY_EXEND.indicate (EXERROR=unsupported_rate) to the MAC, and return the CS/CCA procedure with TIME REMAINING set to the byte/bit count remaining and the DATA RATE set the value in the PLCP header.

**Motion made by Art to accept and second by Stuart 3 for 0 opposed 1 abstained. Changes passed.

A motion was made to split the two previous questions vote taken and carried unanimous to split. * **

Motion made
y Stuart to retract his motion made in the morning.

Chair yielded to Stuart by Dean.

Motion made to expand the rate field from one bit to two made by Naftali Chayat and second by Art Lashbrook.

Discussion on motion and presentation by Naftali on increasing rate field proposal.

Four possible combinations

00 = 1Mb/s

01 = 2Mb/s

10 = reserved

11 = reserved.

Motion passes 3 for 1 opposed 0 abstained

Motion made to adjourn at 5:00 PM

Meeting will resume at 9:00AM on 7 May 1996

Wednesday 7 May 1996 Meeting opened at 9:15 AM by Dean

Motion made by Naftali to increase the rate field to allow 3 bits for rate and seconded by Stuart.

Comment by Art that reserved rates be assigned rate 1 and rate 2 for the 10 designation and the 11 designation and a negotiation between the two using parties for the rate.

Move to call the question by Art and seconded by Jim Renfro

Vote taken and the motion failed 0 for 1 opposed 5 abstained.

Art reintroduced the idea of having the 10 designation be assigned user defined 1 and the 11 designation assigned the user defined 2 designation.

Carl made a comment about a paper he is to present but needs electronic copy.

Meeting recess at 10 AM till after the plenary meeting at 10:30AM.

9 May 1996 Meeting opened at 8:50 AM . First order of business was to set the agenda. Agenda as follows:

CCA Multi-rate discussion as returned from the plenary yesterday.

Motion move that the frequency Hop PMD use the same header with same field encoding as direct sequence accepted in May 1996.

8 bit signal field, 8 bit service field, 16 bit duration field, and 16 bit CRC field Total 48 bits. The PLCP header shall be scrambled by same synchronous scrambler which will continue to scramble the data afterwards. The accumulated DC offset for initializing the whitener algorithm will be over those 48 bits.

Motion made by Naftali 2nd by Art

Motion to amend that we expand the rate field to three bits representing 1Mb to 4.5 Mb in 0.5 Mb steps. Made by Dean and 2nd by Naftali

Called by Dean and 2nd by Art

Amendment pass 4 for 0 opposed 6 abstained

Back to first motion.

Motion to call by Art and 2nd Dean
Motion failed

Discussion

Motion to call by Art and 2nd
5 for 0 opposed 5 abstained motion passes

Motion to extend the FH meeting to 10:45 AM Passed

The `TIME_REMAINING` may be a non-zero value when returning from the receive procedure if a signal in the process of being received was lost prior to the end as positively indicated in the length field of a valid PLCP header. The countdown timer shall be set to the `TIME_REMAINING` and used to force the CS/CCA indication to remain in the BUSY state until the predicted end of the frame regardless of actual CS/CCA indications.

However, if the CS/CCA procedure indicates the start of a new frame within the countdown timer period, it is possible to transition to the receive procedure prior to the end of the countdown timer period. When a non-zero countdown timer reaches zero, the PLCP shall reset all relevant CS/CCA assessment timers to the state appropriate for the end of a complete received frame and the CS/CCA indication shall reflect the state of the channel.

If the receive procedure encountered an unsupported rate error, the PLCP shall keep the CS/CCA state at BUSY for the duration of the frame by setting the countdown timer to the value corresponding to the calculated time based on the information in the PLCP header and the 33/32 expansion factor.

Jim makes motion to add amend text to section 14.3.3.2.1 and 2nd by Art vote 4-0-2 motion passes to add.

If the PLCP header was decoded without a CRC error but encountered an unsupported rate, then the PLCP shall immediately complete the receive procedure with a `PHY_RXEND.indicate(RXERROR=unsupported_rate)` to the MAC, and return to the CS/CCA procedure with the byte/bit count remaining and the data rate value contained in the PLCP header.

If an error was detected during the reception of the packet `PLCP_PDU`, the PLCP shall immediately complete the receive procedure with a `PHY_RXEND.indicate(RXERROR=carrier_lost)` to the MAC, and return to the CS/CCA procedure with the byte/bit count remaining and the data rate value contained in the PLCP header.

Motion made by Art to adjust text as shown section 14.3.3.2.1 and Figure 77 and 81 as shown and 2nd by Jim

vote passes 7-0-0

New agenda items for meetings

Process comments
Japanese regulatory

Meeting close 10:45