IEEE P802.11
Wireless Access Method and Physical Layer Specifications

Title: **Minutes to IEEE P802.11 FH-PHY Group**
Salt Lake City, Utah, USA

Dates: May 1995

Minutes by: Jerry Loraine
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1. SESSION 1: 8 MAY 1995, PM.

Session chairman, Jim McDonald

1.1. Work For Week

Agenda

Minutes: Jerry Loraine volunteered to record the minutes for the May FH meeting.
Document 95/84 Presented By Larry Zuckerman
RSSI doc 95/75
Whitener
Japan Req.
FH management and Beacons
Regulatory
Continue review and resolution of comments
5.30pm adjournment

Motion: to accept the minutes *Proposed: Ron Mahany* *Seconded: Dean K*
No discussion, moved unanimously.

1.2. RSSI

Paper 95/75, Ron Mahany presenting.

Jerry L, Straw poll: Those who think we should have RSSI in the spec.: Y=8, N=2, Ab=0.

Discussion regarding the use of RSSI. Only use identified was for system management. Ron's paper suggests how it is described in the MIB, however the levels are not related to the received field strength.

Motion:: Text in 95/75 is accepted: *Proposed; Ron Mahany,* *Seconded; Wayne.*
(editors allowed to change names and numbers as appropriate.)
Vote: ***For: 10*** ***Against: 0*** ***Abs: 2*** ***Motion Passed.***

Jim McD suggested the group discussed roaming and handover.
Those present unanimously rejected discussion and adding text to the specification on this topic.

1.3. Japanese Requirements

Presentation by John Sonnenberg on paper 95/85. Paper suggested that 10mW is the Tx power limit. Major disagreement, Jim McD pointed out that this assumed the spread bandwidth is 1MHz, however it is 23MHz as it is frequency hopping. Next major point is the addition of the call sign. Ron Mahany pointed out that the call signs are allocated on a product/manufacturer

basis by the MKK. Discussion as to the call sign being transmitted on a per packet or once every half hour.

Motion:: Table discussion:, adjourn for coffee *Proposed; Jim McD,* *Seconded; Jerry Loraine*
Motion passed unanimously.

Motion:: Table the discussion indefinitely *Proposed; Jerry Loraine* *Seconded; Nathan Silberman*
For = 7, *Against = 4,* *Abstain = 0.* *Procedural, therefore motion passed.*

1.4. Data Whitener

Paper, 95/84 written by Naftali Chayat, presented by Larry Zuckerman. Figure 10.4 in D1 draft did not reflect the algorithm specified in section 10.3.2.3. Dean and Ed Geiger have also looked at this and agree with what is in the paper.

Motion:: To accept figure 10-4 as drawn in 95/84 and the associated text.
Proposed; Dean K *Seconded; Jim Renfro*
Friendly amendment rejected to re draw taking the output off the x^7 rejected.

Motion: to call the question called; *Jim Renfro,* *seconded Nathan Silberman*
Vote on question: For = 7, ***Against = 1,*** ***Abstain 3.*** ***Motion passed.***

Vote on the main motion: To accept figure 10-4 as drawn in 95/84 and the associated text.
For = 7, ***Against = 2,*** ***Abstain = 2.*** ***Motion passed.***

Discussion on data whitener decoding procedure in 95/84.

Motion:: That we remove the bias suppression check from the data whitener decoding as given in figure 10-11a. *Proposed: Jim Renfro* *Seconded: Ed Geiger.*

It was pointed out that it is a useful feature and can still be implemented as an additional check. However as both 1's and 0's are in error, the bias checking is likely to be spoofed.

Motion: to call the question called; *Ed Geiger,* *seconded Dean K:* *Unanimous yes.*
Vote on the main Motion:: That we remove the bias suppression check from the data whitener decoding as given in figure 10-11a.
For = 3, *Against = 3,* *Abstain = 5.* *Motion failed.*
Motion: to reopen the issue; *Dean K,* *seconded Ed Geiger* *Unanimous yes.*
Motion: to call the question called; *Dean,* *seconded Jim R:* *Unanimous yes.*
Vote on the main Motion:: That we remove the bias suppression check from the data whitener decoding as given in figure 10-11a.
For = 4, *Against = 0,* *Abstain = 8.* *Motion Passed*

This covers item 2 and 3 in the paper.

Motion: to table Item 4 until tomorrow: *Proposed Jim McD* *Seconded: Ed Geiger*
Unanimous yes.

1.5. FH Management and Beacons

Jim McDonald, need to handle issues such as power management, FH synchronisation, would benefit from the use of a beacon at a defined timing within a frame, once every N frames.

Currently, there are no state machines in the MAC/PHY to define frequency hopping. Ed Geiger suggests that we provide the state machine to the MAC as they are not working on this.

Straw Poll: Frame synchronous beacons 5, Frame Async beacons 2, Abstain 4.

Time algorithm in latest version of MAC checked. This was acceptable to the group, despite the frequency of the beacons not being defined nor their timing.

Motion: to generate an algorithm for the FH state machine proposed Ed Geiger Seconded Ron Mahany

Vote on Motion: For: 10 Against: 0 Abstain: 1 Passed.

Ed, Jon, Wayne and Nathan are in the ad-hoc group to resolve this on this Tuesday night.

1.6. Regulatory

Paper 95/74 presented by Ron Mahany. Paper modified to reference the European standards 300-328 and 300-339. National Regulatory authority to National regulatory administration.

Motion: to adopt new text for 10.6.1.2 as show in document 95/74 with the above listed modifications.
Proposed: Ron Mahany Seconded: Stuart Kerry.

Discussion on motion. Note 1 given in the section is not part of the test to be adopted. Friendly amendment to add a disclaimer saying:
'Subject to revision, may be superseded', after the sentence 'at the time of the draft'.

Friendly amendment to add: Note national regulations take precedent (Nathan Silberman): rejected.

Friendly amendment to add at the end of the first para.: and such regulations may be changed or superseded from time to time and thus impact the standards (Wayne Moyers): rejected.

Vote on the Motion:: to adopt new text for 10.6.1.2 as show in document 95/74, with the European standards modified to 300-328 and 300-339, 'authority' modified to 'administration' and 'Subject to revision, may be superseded', inserted at the end of the sentence 'at the time of the draft'. Plus the sentence at the end of the paragraph '

Vote on Motion: For: 10 Against: 0 Abstain: 2 Passed.

Motion: to add text , after the first para.: The documents listed below specify the current regulatory requirements for the various geographical areas at the time the standard was developed. They are provided for information only and are subject to change or revision at any time.
Proposed Ed Geiger Seconded Wayne

No discussion.

Vote on Motion: For: 9 Against: 0 Abstain: 2 Passed.

Move on to section 10.6.5.

Motion: to replace current text in section with 'Occupied channel bandwidth shall meet all applicable local geographic regulations for 1MHz channel spacing.'
Proposed: Ron Mahany Seconded: Brad Herrin.

General discussion.

Vote on Motion: For: 9 Against: 1 Abstain: 1 Passed.

Move to section 10.6.6.

Motion: to adopt new text for 10.6.6 as in document 95/74. Proposed: Ron Mahany Seconded: Jim Renfro.

Motion: to adjourn: Ed Geiger Seconded: Nathan Silberman Unanimous yes.

2. SESSION 2: 9 MAY 1995, AM.

Session Chair: Jim McDonald

Session started 8.30am. Continued from yesterday, on section 10.6.6.

Motion:: The PMD entity will hop at a rate governed by the MAC. The minimum hop rate will be governed by the regulatory administrations. Hop rate is a managed object with a maximum dwell time subject to local geographic regulations. proposed: Ron Mahany Seconded: Stuart Kerry.

No discussion.

Vote for above Motion:: For: 6 Against: 0 Abstain: 0.

Changes to 10.6.8 and 10.6.9 given in paper 95/74 were unanimously agreed as editorial.

2.1. Review and responses to the letter ballots

FH Issue 3

PLCP Headers should be unified.

Motion: that the FH group does not believe this is practical. Proposed: Jim McD Seconded: Larry Zuckerman

No discussion

Vote on Motion:: For: 8 Against: 0 Abstain: 0.

FH Issue 4

Scrambler was resolved in session 1 of the meeting.

FH Issue 5, comment 50

Japan issue is tabled pending further input.

FH Issue 6, comment 58

Resolved in previous meeting in West Palm Beach 1995.

FH Issue 7, comment 68, 1, 77

Resolved in previous meeting in West Palm Beach 1995.

FH Issue 8, comment 202

FH Management is to be discussed this evening. A proposal will be made on Wednesday.

FH Issue 9, comment 52

Security missing on the MPDU. This is an issue that was handed to the MAC. Chairman actioned to get this resolved.

Comments on Section 10.6.

Start at the beginning of the comments on 10.6.

Section 10.6.18 Comment 226, Silberman.

This comment was resolved with section 10.6.18 Loraine on a vote of 10-2-0. It is rejected.

Section 10.6.19 Comment 228, 229.

Resolved in March meeting, see section 10.6.29.

Motion: to accept 10.6.29 as in document 95/76. Proposed Wayne Moyers Seconded: Nathan Silberman.

No discussion.

Vote: For: 11 Against: 0 Abstain; 0.

Section 10.6.20 Comment 420, Mahany.

Motion: that there is text inserted in the document that explicitly states: 'The signal leakage when receiving shall not exceed -40dBm in operating frequency range. Proposed: Jerry Loraine Seconded: Ron Mahany.

Discussion regarding the signal level,

Question called: Ed Geiger Seconded: Ron Mahany

Vote: For: 3 Against: 5 Abstain; 0.

Ed Geiger Proposed a Straw poll on this signal level:

-40dBm 3

-45dBm 6

Motion:' That the signal level is defined as -45dBm peak' proposed by Ron Mahany Seconded Jim Renfro.

Discussion regarding the effect of this signal level.

Question called: Ed Geiger Seconded: Wayne Moyers Unanimous yes.

Vote on the modified Motion: that there is text inserted in the document that explicitly states: 'The signal leakage when receiving shall not exceed -45dBm peak in operating frequency range.
For 10 Against: 0 Abstain: 0 Motion: Passed

Section 10.6.21, Comment 421, Loraine

Discussion as to the PER of 10^{-2} resulting from the BER of 10^{-5} being acceptable. Renfro confirmed that the conversion was correct in the comment.

Motion: to move that 'specify sensitivity at PER of 1x10-2 for a packet of 112 bytes'.
Proposed: Jim McDonald Seconded: Jerry Loraine

Calculation explained and understood. It was understood that frame error rates need to be specified. However there was inertia to accepting the numbers proposed.

15 minute time limit agreed, time expired

Question called Ron Mahany Seconded: Jim Renfro

Vote on question: For: 4 Against: 2 Abstain: 5

Vote on Motion:: For: 5 Against: 4 Abstain: 3 50% on a technical issue.

Jim McDonald to write a letter ballot question on this issue.

Section 10.6.10, revisited, Silberman

Revisit allocated 5 minutes. Silberman and Sonnenberg actioned to resolve this issue and return with the words to be added.

Section 10.6.23, number 422, Loraine

Current CCA described by Jim McDonald.

Straw poll to delete data detection from the CCA requirement: Jim Renfro.
Yes delete it = 3 No leave it = 1 Abstain = 8.

Comment tabled by author awaiting further submission from abstaining parties.

Section 10.6.23, number 423, Renfro

-85dBm to be specified in a test document.

Modify CCA threshold for lower power transmitters. Not accepted by group.

Other sections addresses in comment 422.

Section 10.6.23, number 424, Sonnenberg

See 422.

Section 10.6.23, number 425, Boer

Comment rejected. Vote For: 8 Against: 0 Abstain: 3.

Section 10.6.24, number 426, O'Hara

Motion:, delete the current section 10.6.24 and replace with; 'The transmitter shall go from off to within 2dB of the nominal transmit power in 8usec or less.'.
Proposed: Jim Renfro Seconded: Nathan Silberman.

No discussion.

Vote For: 8 Against: 0 Abstaining: 1

Section 10.6.24, number 427, see 426

Section 10.6.24, number 428, see 426

Section 10.6.24, number 429, see 426

Section 10.6.24, number 430, see 426

Session closed.

3. FH SESSION 3: 10 MAY 1995, AM.

Session Chair: Jim McDonald. Start

Section 10.6.25, number 431, O'Hara

Motion:, delete the current section 10.6.25 and replace with; 'The transmitter shall go from within 2dB of the nominal transmit power, at the end of the last symbol of the frame, to off (less than -50dBm) in 8usec or less.'.
Proposed: Jerry Loraine Seconded: Jim Renfro.

No discussion

Question called Jerry Loraine Seconded John Sonnenberg Unanimous yes.

Vote On Motion: For: 10 Against: 0 Abstain: 1.

Discussion, needed to add the transmitter off state and the amplitude flatness across the band.

Motion: add new paragraph 'In the transmitter off state, the on channel transmit power shall be less than -50dBm'. Proposed: Nathan Silberman Seconded: Bob Marshall

Discussion regarding this being in conflict with the receiver specification, unless explicitly 'on channel' and it should be emissions.

Question called Ron Mahany Seconded: Stuart Unanimous

Vote On Motion: For: 6 Against: 6 Abstain:: 0. Motion fails

Unanimous agreement that Ed Geiger can combine the ramp on and ramp off sentences, plus the transmitter off state and amplitude flatness across the band as an editorial change.

Motion: that the sentence in 10.6.20 is modified to 'The emissions when not transmitting shall not exceed -45dBm peak in operating frequency range.' Proposed: Jerry Loraine Seconded: Ron Mahany

General discussion.

Call the question: Jerry Loraine seconded: Jim Renfro unanimous.

Vote on Motion:: For 8 Against: 1 Abstain:: 0 Motion Passed

Motion: to adjourn to take part in security discussion
proposed: Jim McDonald Seconded: Larry Zuckerman

Discussion on the sense in doing this when the FH workload is high.

Vote on Motion:: For 2 Against: 4 Abstain:: Motion Fails.

Motion: to add test 'When in the transmit state, from the start of the first symbol to the end of the last symbol of the frame the transmit power shall be within 2dB of the nominal transmit power for that frame'.
Proposed: Jerry Loraine Seconded: John Sonnenberg

Discussion, need to add definition of nominal transmit power. This is needed sentence.

Vote on Motion:: For: 10 Against: 0 Abstain:: 0 Motion Passes.

Nominal transmit power needs to be defined, 10.6.16 is the obvious section.

Motion: to add the following text at the end of 10.6.16 'The nominal transmit power of a frame is defined as the power averaged between the start of the first symbol to the end of the last symbol of the PLCP header'.
Proposed: Jerry Loraine Seconded: Ron Mahany.

No discussion.

Vote on Motion:: For: 9 Against: 0 Abstain:: 1 Motion Passes.

Move to adjourn for 20 minute: Ed Geiger. Unanimous.

Section 10.6.25, number 432, see 431

Section 10.6.25, number 433, see 431

Section 10.6.25, number 434, see 431

Section 10.6.25, number 435, see 431

Section 10.6.26, number 436, O'Hara

Accepted

Section 10.6.26, number 437,438,439. Change BER to PER

Issue resolve at 50% yesterday.

Section 10.6.27, number 440, Dellacorte, 441 Loraine; 444 Chadwick.

Motion: to accept the Dellacorte Text. Proposed: Jerry Loraine Seconded: Brad Herrin

Discussion. McDonald points out the this makes the spec. harder if you are more sensitive. Loraine states it makes the IMP performance consistent between the products.

Call the question, Loraine Seconded: Mahany

Vote on calling question: unanimous Question called.

Vote on Motion:: For: 7 Against: 1 Abstain:: 2 Motion Passes.

Section 10.6.27, 442 McDonald; 443 Zuckerman; 445 Loraine.

Change BER to PER, issue resolved. Note PER here assumes one frame per packet. This may not be the case.

Motion: to allow editors to change PER to FER, proposed: Loraine, seconded: Zuckerman.

No discussion

Vote on Motion:: For: 8 Against: 0 Abstain: 2 Motion Passed. Issue resolved.

Section 10.6.27, 446 Silberman.

Comment withdrawn.

Section 10.6.28, 447 O'Hara.

Accepted unanimously.

Section 10.6.28, 448 Mahany.

Test methodology needs to define interfering signals to enable this to be measured, or specification needs to be modified as per comment.

Straw poll: change test method: 7 or change specification: 1, abstain: 3.

Motion:: to add text ' that the spectral purity of the interferer shall be sufficient to ensure that the measurement is limited by the receiver performance'.
Proposed: Ron Mahany Seconded: Jerry Loraine.

No discussion/

Vote on Motion: For: 8 Against: 0 Abstain: 1 Motion Passed. Issue resolved.

Section 10.6.28, 449 McDonald, 450 Zuckerman, 452 Loraine.

Change to FER. Issue resolved.

Section 10.6.28, 451 Chadwick.

Proposed: Accept the text to be added, with 902-928MHz added:
Proposed: Jerry Loraine, Seconded: Nathan Silberman.

No discussion.

Vote on Motion: For: 1 Against: 4 Abstain: 4 Motion Rejected

Note this does not effect interoperability.

Section 10.7, Comment 600, McDonald.

Issue deferred, text and changes being generated by McDonald and Loraine.

Section 10.7, Comment 601, Black; Comment 602, Loraine.

Comments withdrawn. The 2Mb/sec requires a very high SNR. Whilst FEC is a good engineering solution, it reduces the throughput. Therefore FEC makes little sense.

Section 10.7.14. comment 603, Renfro

Changed to editorial (removal of operating channel availability).

Chair adjourns meeting for lunch.

4. SESSION 4: 10 MAY 1995, PM.

Section 10.7.21. comment 604, Renfro

Modify to FER

Motion:: To accept Jim's text Proposed: Jim Renfro Seconded: Ron Mahany.

General discussion.

Vote on Motion:: For: 8 Against: 1 Abstain:: 1 Motion Accepted

Section 10.7.23. comment 605, Renfro

Commentator agreed that this was addressed earlier, see 10.6.23.

Section 10.7.27. comment 606, Chadwick; 607, Loraine

Motion: that 'Modify the number for the 2Mb/sec IMP from 30dB to 20dB.'

Proposed: Jerry Loraine Seconded: Ron Mahany

Friendly amendment to change 20dB to 25dB accepted by proposer and seconder.

No further discussion.

Vote on motion:: 'Modify the number for the 2Mb/sec IMP from 30dB to 25dB.
For: 8 Against: 0 Abstain:: 5 Motion Accepted

Section 10.7.28. comment 608, Loraine

Has been addressed as editorial change and the adoption of FER.

Section 10.7.28. comment 609, Chadwick

Motion:: That the changes are accepted (DP's to 20dB and 30dB respectively)
Proposed: Jerry Loraine Seconded: Stuart Kerry.

No discussion

Vote on motion:: For: 9 Against: 0 Abstain:: 4 Motion Accepted

Section 10.8. comment 610, Renfro

Table has been modified, commentor agrees changes are editorial.

Motion:: 'To remove tables from text and place in a annex'.
Proposed Ed Geiger Seconded: Nathan Silberman

Discussion on rational for moving to an annex. Note equations are given, the tables are for information only.

Vote on motion:: accepted by acclamation. Motion Accepted

Section 10.9. comment 611, Bolea; 612 White, 613 Dobyns.

Motion to modify text in 10.9:
Proposed: Ed Geiger Seconded: Jim McDonald:
Accepted by acclamation.

Chair adjourns meeting for a 5 minute break.

Group works on updating the MIB. DS Group joins the FH group. Update table 10.17

The group studied the text describing the managed object, then decided whether it was kept. Editorial change, 'identical for all PHYs' in table 10.17 to 'identical for all FH PHYs'.

Motion: MIB parameter/Managed Object	Proposed	Second	Vote For	Not.	Abs.
To accept: aPHY Type definition as presented	Ed G	Chris Z	13	0	1
To accept: Nbr_Geo_Supported changed to Reg_Domains_Suprt. Then a null terminated list of integers. Each integer is an 8 bit value as defined below: FCC = 10 DOC = 20 ETSIA = 30 (Note European countries may have different requirements) MKK = 40 then delete the objects: Geo_US, Geo_Japan deleted, Geo_Europe deleted. This motion is accepted.	Ed G	Chris Z	15	0	1
aCCA_Method: Motion to delete. This parameter is deleted.	Ed G	Jerry Loraine	16	0	1

Move up the list ad accept:...aSlot_Time = 50usec. The time in usec the MAC will use for defining the PIFS and DIFS periods. The Slot_Time is defined as a function of CCA_Asmnt_Time + RxTx_Turnaround_Time + Air_propagation_Time. The Air_propagation_Time is defined as 1usec. delete the following. CCA_MaxP_Det_Time, CCA_Decay_Time.	Jim Renfro	John Sonnen'	13	0	3
Accept: CCA_Asmnt_Time = minimum 29usec, static, the minimum time in usecs the CCA mechanism has available to assess the media within every slot to determine whether the media is clear or busy.	Ed Geiger	Jerry L	12	0	4
Accept: RxTx_Turnaround_Time, = 20usec (FH) The maximum time in usec the PHY requires to change from receive to transmit the start of the first symbol on the air. The following equation is used to derive the RxTx_Turnaround time. aTx_PLCP_delay + aRxTx_Switch_Time + aTxRamp_On_Time + aTx_RF_Delay'	Ed Geiger	Wayne	11	0	2
Accept: aTx_PLCP_Delay =1usec. The nominal time in usec the PLCP uses to deliver a symbol from the MAC interface to the transmit path of the PMD. RxTx_Switch_Time: 10usec. The nominal time in usec the PMD takes to switch from receive to transmit. aTx_Ramp_On_Time: 8usec. The maximum time in usec for the PMD to turn on the transmitter on. aTx_RF_Delay: 100nsec. The nominal time in nanoseconds the PMD uses to transfer a symbol through the transmit path. (note the text is abbreviation of text entered by editors)	Ed Geiger	Jerry Loraine	10	3	3
SIFS discussion. SIFS was agreed as the Rx delay+ MAC processing delay + RxTx turnaround time. Motion to accept (note only description is given) aSIFS_Time = Time in usec from the MAC and PHY will require to receive the end of the last symbol of a frame at the air interface, process the frame, and respond with the first symbol on the air interface for the earliest possible[1] response. The following equation is used to determine the SIFS_Time: aRx_RF_Delay + aRx_PLCP_Delay + MAC_Prc_Delay+ aRxTx_Turnaround_Time' (1 was added in below motion.)	Ed Geiger	Chris Zegelin	13	0	2
Motion to accept: (note only description is given) aRx_RF_Delay = the nominal time in nanoseconds the PMD uses to deliver a symbol at the antenna to the PLCP. aRx_PLCP_Delay = The nominal time in nanoseconds the PLCP uses to deliver a bit from the PMD receive path to the MAC. aMAC_Prc_Delay = The nominal time in microseconds the MAC uses to process a frame and prepare a response to the frame' (These three numbers are nominal and are used to set the SIFS for a PMD.) Plus add Possible to SIFS definition.	Ed Geiger	Jerry Loraine	14	0	1

Motion to remove: Tx_SIFS, Rx_SIFS, MAC_ACK_Delay, Rx_Clk_Rcry_Delay. Motion passed.	Ed Geiger	Jim McDonald	9	0	0
Motion to accept for the FH group: aRx_RF_Delay = 4 aRx_PLCP_Delay = 2 aMAC_Prc_Delay = 2 so the SIFS is defined as 28usec +2/-3usec. Motion passed.	Jerry Loraine	Jim McDonald	11	0	0
Motion to delete: aTxRx_switch_time.	Jim McD	Jim R	9	2	0

After the motion to modify the SIFS time.

Motion to adjourn joint FH and DS group motion passed.

Motion to adjourn FH group, .3-5-1. Motion failed.

Motion to adjourn to 8.30 tomorrow.

5. SESSION 5: 10 MAY 1995, PM.

Session chair, Jim McDonald. Start 8.30am.

Agenda for Session:

Review 2Mb/sec Motions prepared last night.

Review state machine inputs from ad hoc group.

Complete MIB
Freq Hop Group
As PHY Group

Complete Comment Review

FER to BER without test reference

Geographical regulations.

Review Report To Plenary 11.50

Motion to accept agenda for this session: Proposed: Ed Geiger Seconded: Jim McDonald

Agenda Accepted Unanimously.

Straw Poll, on format and software to be used for file transfer.

Review 2Mb/sec Motions prepared last night.

Motion:: to change 10.7.1 to::

The following section details the specification differences of the optional 2.0 Mb/s operation, from the baseline 1.0Mb/s PMD, as contained in section 10.6.

For the 2.0 Mb/s option, the PHY Header is to be transmitted at 1 Mb/s.

Stations implementing the 2.0 Mb/s option shall be capable of transmitting and receiving MPDUs at 1 and 2 Mb/s.

Proposed: Jim McDonald Seconded: Stuart Kerry.

No discussion

Vote on motion:: For: 10 Against: 1 Abstain:: 0 Motion Accepted

Motion: to change 10.7.10 as shown: 'The data rate shall be 2.0 Mb/s +/- 50 ppm'.

Proposed: Jim McDonald Seconded: Jerry Loraine.

No discussion

Vote on motion:: For: 8 Against: 1 Abstain:: 4 Motion Accepted

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Motion: to delete sections not required: 10.7.2 to 10.7.8 , 10.7.11 to 10.7.20 and 10.7.22 to 10.7.25:
Proposed: Jim McDonald Seconded: Jerry Loraine.

No discussion

Vote on motion:: For: 10 Against: 0 Abstain:: 1 Motion Accepted

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Motion: to change 10.7.21 as shown::

When operating at 2.0 Mb/s, the frame error rate shall not exceeded 10^{-2} for input levels between -75 dBm and -10 dBm for a 112 octet MPDU.

Proposed: Jim McDonald Seconded: Jerry Loraine.

Discussion for clarification.

Vote on motion:: For: 8 Against: 1 Abstain:: 3 Motion Accepted

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Motion: to change 10.7.26 as shown::

Sensitivity is defined as the minimum signal level required to produce a Frame Error Rate of 10^{-2} with a 112 octet MPDU. When operating at 2.0 Mb/s, the sensitivity shall be less than or equal to -75 dBm across the operating frequency range as specified in section 10.6.2.

Proposed: Jim McDonald Seconded: Jerry Loraine.

Discussion for clarification.

Vote on motion:: For: 9 Against: 1 Abstain:: 2 Motion Accepted

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Motion: Change 10.7.27 as follows

Intermodulation protection (IMp) is defined as the ratio to -77 dBm ~~measured sensitivity~~ of the minimum amplitude of one of the two equal level interfering signals at 4 and 8 MHz removed from center frequency, both on the same side of center frequency, that cause the FER of the receiver to be increased to 10^{-2}, when the desired signal is -72 dBm~~3 dB above the specified sensitivity~~. Each interfering signal is modulated with the FH 1Mb/sec PMD modulation uncorrelated in time to each other or the desired signal. The~~A conformant~~ FHSS at the optional 2Mb/sec ~~PMD~~ rate ~~shall have the~~ IMp ~~for the interfering signal at 4 and 8 MHz~~ shall be greater than or equal to ~~30~~ 25dB.

Proposed: Jim McDonald Seconded: Jerry Loraine.

Discussion for clarification.

Vote on motion:: For: 7 Against: 0 Abstain:: 4 Motion Accepted

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Motion to accept the following text for 10.7.28

Desensitization (Dp) is defined as the ratio to measured sensitivity of the minimum amplitude of an interfering signal that causes the ~~BER~~ FER at the output of the receiver to be increased to ~~10-5~~ 10^{-2} when the desired signal is ~~-77~~ -72 dBm ~~(3 dB above sensitivity specified in Section 10.6.26)~~. The interfering signal

shall be modulated with the FHSS PMD modulation uncorrelated in time to the desired signal. The minimum Dp shall be as given in Table 10-14. Note that the spectral purity of the interferer shall be sufficient to ensure that the measurement is limited by the receiver performance.

Interferer Frequency	*DP Minimum*
M=N+/-2	*20dB*
M=N+/-3 or more	*30dB*

Proposed: Jim McDonald Seconded: Jerry Loraine.

No discussion.

Vote on motion:: For: 7 Against: 1 Abstain:: 4 Motion Accepted

Review state machine inputs from ad hoc group.

Review of proposed changes by Ed Geiger. Changes were reviewed and were recorded by Ed Geiger, the editor.

Discussion for clarification. These changes proposed force changes in the frame formats of the Probe response, to include the dwell offset or to randomise the time stamp on start up.

Motion to table the discussion proposed: Ed Geiger Seconded: Jim McDonald.

No discussion Accepted unanimously.

Complete MIB

Motion: MIB parameter/Managed Object	Proposed	Second	Vote For	Not.	Abs.
Tx_Ramp_Off_Time to remain (no vote requried).					
Straw poll on the 1Mb/sec MPDU length: Restrict: 4 not restrict: 5. Motion to table this topic and reject any comments and only open it when new submissions are presented. Question called: Unanimously.	Jerry Loraine	Jim McD	8	2	2
Motion to create a new managed object: aMPDU_Maximum_Length_2M = 800octets. No discussion. Motion passed at <75%. Chairman to write a letter ballot submission.	Ed Geiger	Wayne	4	3	7
A motion to remove from the PHY MIB parameter aMPDU_Current_Max_Length. This is not a parameter managed by the PHY. We reccomend the MAC manages this.	Ed Geiger	Chris Zieglin	12	3	1
The motion is: aNbr_spprt_Rates changed to aSuprt_Data_Rates This is a null terminated list of byte integers. The bit rates supported by the PLCP and PMD. The following list defines the supported bit rates: 1Mb/s = 01, 2Mb/s = 02	Ed Geiger	Jim Renfro	13	0	0
Motion to remove: aCurrent_Bit_Rate aRate_1MHz aRate_2MHz Discussion for clarification.	Ed Geiger	Jerry Loraine	13	0	0

Motion: Delete: aNbr_Supported_Antenna aAntenna_One_Type aAntenna_Two_Type add: **aSuprt_Tx_Antennas** This is a null terminated list of byte integers. The antennas supported by the PMD on transmit. The following list defines the supported antennas: Antenna 1 = 01, Antenna 2 = 02, Antenna 3 = 03, Antenna n = n **aSuprt_Rx_Antennas** This is a null terminated list of byte integers. This defines the antennas supported by the PMD on receive. The following list defines the supported antennas: Antenna 1 = 01, Antenna 2 = 02, Antenna 3 = 03, Antenna n = n **aDiversity_Suprt** Diversity supported or not. Available = 01 Not Available = 00 Control Available = 02 **Diversity_Slct_Rx** An 8 byte list of integers. A parameter that defines the antenna, or the antennas to be used by the receive diversity state machine, if available. The following list defines the antennas to be used: Antenna 1 = 01, Antenna 2 = 02, Antenna 3 = 03, Antenna n = n, where n<=8. No discussion	Jerry Loraine	Jan Boer	12	0	0
Motion: Add four more power levels: Tx_Pwr_lvl_5 Tx_Pwr_lvl_6 Tx_Pwr_lvl_7 Tx_Pwr_lvl_8 Note power level 1 is to be the default level. No discussion.	Larry Z	Jerry Loraine	11	0	1

Chair adjourned meeting until 10.15am, after the vote on the aMPDU_Maximum_Length_2M.

Motion: to combine all PHY attribute definitions for the MIB in section 9.
Proposed: Jan Boer *Seconded: Ron Mahany*

No discussion.

Vote on Motion *For: 11* *Against: 0* *Abstain: 0.* *Motion Passed*

Motion to table discussion until the next meeting, Ed Geiger to produce submission.

Proposed: Jim McD *Seconded: Ed Geiger* *Passed unanimously, discussion tabled.*

Complete Comment Review

Outstanding on the MIB.

Geiger's comments to delete 2Mb/sec. Nothing in the MAC to determine how to control the 1-2Mb/s switch.

FER to BER without test reference

Insufficient time, deferred to next meeting.

Review Report To Plenary 11.50

DS Group, finalised comment replies and working on MIB.

FH Report.

FH open issues:

MIB
10.4
10.5
ppm on data rate

Major Progress:

MIB, Joint editing
Sec. 10.6 and 10.7.

Issues still open

Japan power and call sign
CCA with random data
Beacon issue
MAC does not support multiple rate
FER

Documents

119 for DS update
TBD for FH update.

June Letter ballot

to have updates to PHYs.

50% pass issue

FER to BER conversion (5/4/3)
New managed object, 2Mb/s FH MPDU length = 800 octets (4/3/7)

Geographical regulations.

Motion: Japanese standard description in section 10.6 should be deleted.
Proposed: Akira Miura Seconded:

No second forth coming. Mr Miura said that the there should be Japanese representation from the MKK to ensure that what we write is acceptable to them.

Meeting Adjourned until July 1995.