Tentative Minutes of IEEE 802.11 FULL-PHY Sub-group
(12 Mar 1996)
La Jolla, California

Full PHY meeting convened at 8:30 AM by Jan Boer (Lucent Technologies) acting chairman in the absence of Dean Kawaguchi.

Mike Trompower (Aironet) will be secretary and assume the editorial changes resulting from this meeting.

Naftali will chair the FH group

Agenda for this meeting set:

- approval of past minutes
- 3 Mbps informal presentation by Naftali Chayat
- set schedule for D3.0 letter ballot comment resolution
- conformance testing (discussion to be held on Thursday after the NH Labs testing facility)
- FCC wish list

the above agenda approved by consensus.

MOTION 1:

Minutes of January meeting in San Diego approved by consensus.
moved by Naftali , second by Ian

3 Mbps discussion by Naftali Chayat (BreezeCom)

BreezeCom currently has a 3 Mbps capability in current product which is a direct extension of 2 Mbps rate
same preamble, header, SFD, baseband shaping with BT=.5, scrambler, whitener
use 8 GFSK with three bits per symbol
PLCP preamble and header transmitted at 2 GFSK rate
data is converted to serial stream (LSB first), scrambled, group according to 1, 2, 3 bits per symbol
last symbol is zero filled if needed
groups of 32 symbols used, same whitener algorithm used

deviation factor is h8=0.5h4=0.225h2
suggest that the whitening algorithm weights be doubled so that values for 3 Mbps weights can be assigned (it is noted that the overall algorithm does not change)
theoritcal receiver sensitivity is 6 dB poorer for 8GFSK than 4GFSK
8GFSK is more sensitive to inaccuracies and phase noise so practical value of 8 dB is suggested by Breezecom which claims a -69 dBm typical sensitivity (suggest that receiver sensitivity be set to -67 dBm)

Full slides will be made available which depict the technical parameters of this discussion.

Same performance is claimed when restricted to shorted distance and receiver sensitivity as with 2 Mbps

An equalizer is implemented in BreezeCom equipment which is trained during the preamble period
100 - 150 ns delay spread can be endured with the aid of the equalizer (therefore for a 400 octet packet which takes about 1 ms transmit time at 3 Mbps can still be affected)

Naftali claimed that range is reduced to about 30 feet maybe more
throughput is not proportionally improved because of control frames still being sent at 1 Mbps

an additional bit must be allocated for the rate signalling information

MOTION 2:

Naftali moved to form a sub group (within the FH group) with the charter to study rates higher than 2 Mbps
second by Jonathan Cheah

vote: 7-0-5 motion PASSES

Naftali will lead this group
No time will be allocated at this meeting for this topic as the main task is to resolve the D3.0 letter ballot comments

Begin discussion pertaining to comments addressed to sections 12 and 13
using document C12-16r1.doc to contain the resolutions

comment #2
deferred until Thursday after discussion in separate PHYs

comment #3
MOTION 3:
by Jonathon Cheah to accept this comment, second by Ian. to allow the editors of sections 9.2.10 and 13.1.4.4 to make the changes as outlined in the comment.
13-0-2 Motion Passes
Comment accepted

comment #4
MOTION 4:
by Jonathon Cheah to accept this comment, second by Nathan Silberman to allow the editors of section 13.1.4.4. to remove the text as recommended. Also recommend that the editors of section 9.2.10 make the same change.
7-0-8 Motion Passes
Comment Accepted

comment #5
MOTION 5:
by Jonathan Cheah second Wayne Moyers to recommend to the editors of section 13.1.4.10 to standardize on microseconds
9-0-5 Motion Passes
Comment Accepted

comment #6
deferred until Thursday after discussion in separate PHYs

ADDITIONAL COMMENT WHICH DID NOT MAKE THE C12-16r1.doc
concerning clause 13.1.4.53
comment is just a question, not an issue - will defer discussion until after clarification from Anil
The Doze state is defined in section 11.2.1.1 but Sleep is not defined. We think that an additional definition should be added to section 11.2.1.1 to define the Sleep state. The editor (Mike Trompower) will bring text to the MAC to ask for an additional power savings state or delete the sleep state from the PHY sections

break for separate subgroups to resolve comments pertaining to specific sections

reconvene the full phy at Thursday meeting time at 10:30

Minutes of FULL-PHY (14 Mar 1996)
La Jolla, California

Full PHY meeting conviened at 10:30 AM by Jan Boer (Lucent Technologies) acting chairman in the absence of Dean Kawaguchi.

Mike Trompower (Aironet) will be secretary and assume the editorial changes resulting from this meeting.

Agenda:

1. remaining comment processing
   - polynomials
   - Doze state
   - Length field
   - TX/RX turnaround 'slop'
2. reports, DS,FH,IR
3. Conformance tesing
4. FCC wish list

Polynomials descriptions to standardize on either X or Z.

(Mike Trompower) in the DS group the explanation is not to change because there is a difference in meaning between the delays. The scrambler must occur in a symbol time whereas the CRC can be processed 'off-line' with a time delay and even be interrupted if it is done by software.

decision is to allow both X and Z in the phy descriptions

Doze state is only power saving state currently supported by the MAC.

Motion by Jonathon Cheah, second by Naftali Chayat to merge the SLEEP state in to the Doze state.
discussion (Keith from Pulse) that we should support multiple power save modes
question called
vote: 9-1-0 motion passes

editors will remove the SLEEP state from the PHY sections.

Length field should be uniform among all phys (comment #2)

as a result of the multi-rate discussions, it was agreed that uniformity is not required

Motion:
Wayne, Nathan -- to reject the comment #2 based on the outcome of the multi-rate group and the withdrawing of the comments by Johnny Zweig at that meeting.
10-0-1 motion passes

TX/RX turnaround 'slop' (comment #6)

(Art) because the MAC has other functions on going, there is an inherent uncertainty in the iniation of the turnaround sequence.
(Jan) in the DS group, the decision is that the maximum time was determined to be all that is necessary. The philosphy will be explained at the full group.
(Art) the MAC will say it is a PHY issue
(Jan) IFS and slot time are not only phy variables

Motion:

Wayne/John -- move to reject the comment based on FH feels that they already have the 'slop' incorporated in the SIFS parameter and the DS refers to the comments in the DS group and comments brought forward to the full working group.
8-0-2 motion passes

Discussion of Japanese Call-ID issue and how to handle it in the PLCP layer
DS group informed full phy of its intent to use the MIB variables concerning domains to decide upon when it is necessary to transmit this field. The next coming months before the next meeting will bring ideas.

Naftali/Wayne move to table until May interim meeting and attempt to find out if the Japanese call sign is required to be part of the 802.11 standard in the interim.

10-0-0 motion is tabled

Report from the DS group (refer to minutes of the individual meetings)
all comments were processed
Motion (Jan/Mac) for full PHY to ratify the technical changes as explained by the DS group to be brought forward to the full plenary.

8-4-1 Motion passes

Motion (Stuart/Wayne) to reconsider this vote until after the FH presentation
8-0-2 Motion passes

Report from the IR group
editorial figure change was only issue
all comments were processed
there were no technical issues which need to be ratified

Report from the FH group
(refer to the minutes of the FH group for issues discussion)
not all comments were processed

Motion (Naftali/ Wayne) to accept all FH processed comments to be accepted by the full PHY.
7-0-0

return to motion from the DS group report-
concern is that the mode creates a 'super-user' mode whereby a station sending an out of spec RATE field will always gain access to the medium before other users.

motion - from full phy to recommend that the DS group accept alignment of the CCA algorithms
1-3-2 motion fails

moved (Wayne/Stuart) to reconsider DS vote which ratified the technical changes to consider each item separately
5-0-0

on the motion concerning optional CCA reset upon reset
1-4-1 this item will not be brought forward to the full group

on the motion concerning the video bandwidth issue
6-0-0 this item will be brought forward the the full group

moved (Jan/Stuart) to reconsider earlier motion
6-0-0
move to strike the motion which recommends that the DS phy consider realignment of CCA mechanism
6-0-0 passed