

IEEE P802.11 Wireless LANs

Title: Minutes to IEEE P802.11 WLAN High Data Rate FH-PHY Group
Ad-Hoc Group Meeting

Dates: West Palm Beach
November 8 1993

Minutes by: Jerry Loraine
Symbionics Ltd

SESSION 1
8.30 - 8 November, 1993

1. ROLL CALL AND MEETING LOGISTICS

Introduction of people to meeting.

2. REVIEW MEETING SCOPE AND PURPOSE

A question was posed as to whether this group should wait and ensure MAC's enabled gear shifts or should this group propose a solution to the MAC group. This was highlighted by the DFWMAC proposal from NCR, Xircom and Symbol which needed to be reviewed to see if it enabled a gear shift.

It was agreed that the major shift of the meeting should be the gear shift proposal to the MAC group.

3. UPDATE AGENDA

Question asked to accept minutes of last meeting:

Yes= 10, No= 0, Abstentions=6.

Motion Passed

Minutes of the last meeting were accepted.

Question asked to accept agenda, vote:

Yes= 20, No= 0, Abstentions=1.

Motion Passed

Agenda was accepted

4. INFORMAL PRESENTATIONS

4.1 List of Submissions

-188, Preamble Specification for FH HS Systems, Kato, NTT.

-186, Flexible Higher Data Rate PHY/MAC Standard, Feher.

-210, HS FH Draft Standard, Silberman

4.2 Kato's Presentation, -188.

Review requirements of preamble. A lot of work has been performed for Satellite TDMA systems, this can be used as a basis to proceed.

Unique word needs to have a low false detection probability in noise and data. The calculation of this was reviewed.

It was proposed that '11001100' bit timing recovery preamble should be used with a 16 bit unique word. This will work with GFSK and QPSK systems.

General discussion as to how to analyse false detection, is it fair to use Gaussian noise, how can interference and Rayleigh fading be accounted for. Kato has not found an analysis for 'bursty errors', but the error rate assumed in the analysis can be used to represent the interference and Rayleigh fading.

Jim McD Is BTR preamble GFSK or some new modulation with the higher rate? Is the 11001100 preamble better for GFSK?

Kato BTR Preamble is the same as rest of packet. 11001100 is better for quadrature modulation.

Dean K Is 10011001100 is not best for GFSK as it has fewer transitions than 10101.

Kato Recommend 1001100110011 as it can be used for higher data rates.

David ? How is miss detection calculated with respect to time, is there any prior knowledge of time of arrival? How can we get 10-18 in Gaussian noise if we are listening for say 10msec for a transmission?

Kato Envelope (e.g. RSSI) has to be used to give a timing 'start' to the detection process.

David? This is not usable in an asynchronous system as you do not know when to window the correlator.

Kato I have assumed RSSI envelope detection is used to time the correlator in my calculations.

David? What is the criteria for opening the correlator?

Kato The RSSI envelope detection is used to open correlator.

Jim McD What does the Hamming distance mean relative to the discussion we are having?

Kato It differentiates between the unique word and the BTR preamble.

LVDJ What is the window assumed for correlation of the UW.

Kato The BTR preamble is used to assist correlation of the UW.

General discussion, 1010101 seemed to be best for GFSK to give more clock transitions.

Question, coffee/Bio break? Unanimous yes.

4.3 Flexible Higher Data Rate PHY/MAC Standard, 186.

Presentation by Father and son. Recommending OQPSK the OQAM for higher rates. And allow up and down shifts in data rates.

- Nathan What are the implications on the receiver circuits of choosing these schemes?
- Feher It is more complex.
- Tom OQPSK has significant disadvantages in correlator implementations in DS systems.
- Feher Advantages are in transmitter, I have only addressed the FH system today. I will cover DS in a separate group later today.
- David? System cannot cope with multiple rates, and more analysis is needed on the cost increase of these systems.
- Feher We are here today to look at this.
- WM Can we end here and move onto Nathan's system.

4.4 Nathan Silberman's Presentation, paper-210

Update of 93-83.

Nathan gave a quick overview of issues prior to lunch being taken. Proposing a deadline of Jan for the choice of modulation scheme, for presentation to the plenary.

General discussion as to how to prevent overlap with the PHY main group. Agreement was that only differences were to agreed by this group.

Administration discussion. We will not run in parallel with the 802 plenary. This group cannot run in parallel with the DS group. Another hour is needed. UW issue is to go to the FH group.

SESSION 3

5. DRAFT PROPOSAL FOR BITRATE SWITCHING AND MAC INTERFACE

No work was performed on this issue.

6. DRAFT SPECIFICATION FOR HIGHER RATE FH

No work was performed on this issue.

7. UPDATE ISSUES LIST

Next meeting is at 7pm this evening.

Feher: Move a motion that this committee further studies modulation issues and that the deadline for submissions is January, for the higher data rates. Second Bob Baaus.

Yes = 12, No = 3, Abstentions = 7.

Motion Passed

SESSION 2

19.00hrs - 20.00hrs 8 November 1993

Nathan continues

Items 1,2,3,4 closed currently.

Stuart Kerry However the Spectrum allocation in Europe may need updating.

NS Raise a motion that power control is 3 bits.

Important parameters are 7,8 that are modulation dependant.

Item 9 should follow the PHY group. This is an open issue.

Item 10, alternate channel interference tolerance, this is an open issue.

Item 11 is an FCC issue, it is closed.

Item 12 and 7 are to be merged, they are open as it is modulation dependant.

Item 13a and 13b are merged and open.

Item 14 to 22 are open.

Item 23 is closed.

Items 24, 25 are open.

Item 26 is open and dependant on the MAC.

Item 27 requires input from the channel model and for the Eb/No to be 19dB.

Item 28 to 35 are points of information, mostly from the PAR.

Jim McD Is the preamble all GFSK and the data packet is at what ever data rate required, or is there a handshake during which the data rate to be used is set? This is a new issue that should be added, (seconded Feher).

General discussion agreed that this should become an issue in this group, as item 36.

Paul S Have similar problem in DS. Want lowest spec. receiver to see all 'like' transmissions. Communication starts at lowest rate and negotiate up or down dependant on the channel conditions. That is they sound the channel.

Time for the next meeting was discussed at San Jose National Semiconductor/WiSE.

8. ACTION LIST AND ASSIGNMENTS

None.

9. PLANS AND SCHEDULE FOR FUTURE MEETINGS

San Jose is the next venue, time TBD.

Motion passed to adjourn the meeting.

Future Meetings

- 1) San Jose, next 802.11, times to be arranged.

Key to Names

JL	Jerry Loraine
LDVJ	Larry van der Jagdt
NS	Nathan Silberman
WM	Wayne Moyers

Attendees

Baba, Satoshi
 Buaas, Robert A
 Chadwick, Peter
 Derbyshire, Jim
 Gruber, Thomas L
 Kang, Inchul
 Kato, Shuzo
 Kawaguchi, Dean
 Kerry, Stuart
 Le Maut, François
 Loraine, Jerry
 Maki, Doug
 McDonald, Jim
 McKown, John
 Miura, Akira
 Moyers, Wayne
 Phinney, Tom
 Rackowitz, Jeff
 Ransome, Peter D
 Rapynski, Chandos
 Renfro, James
 Shimizu, Toshio
 Silberman, Nathan
 Smith, Greg
 Socci, Jerry
 Tang, Wen-Tsung
 Zuckerman, Lawrence H

NTT
 The Buaas Corp.
 GEC Plessey Semiconductors
 Symbionics
 Plexus Research Inc.
 Radiance Communications Inc.
 NTT
 Symbol Technologies Inc.
 Symbol Technologies Inc.
 IBM
 Symbionics
 Raytheon
 Motorola
 Motorola
 Panasonic
 WiSE
 Honeywell
 Intermec
 European Telecommunications Standards Institute
 Lace Inc.
 Raytheon
 Japan Radio Co., Ltd.
 Wireless One
 GEC Plessey Semiconductors
 National Semiconductor Inc.
 Fujitsu
 Integrated Circuit Systems, Inc.