Tentative Minutes of the IEEE P802.11
Task Group A Meeting

Utrecht, the Netherlands

4 to 8 May 1998

Meeting 1: Monday, 4 May 1998

Opening

Meeting called to order by Dean Kawaguchi at 14.00, Geert Awater, volunteers to be act as secretary and take the notes for this meeting.

Objectives for this meeting

1. Assess Voting procedure.

2. NEC/Breezecom presentation.

3. Lucent/NTT presentation.

4. RadioLAN presentation.

5. Other presentations, independent of a particular proposal.

6. Comparison matrix.

There is no volunteer for maintenance of the comparison matrix. In the absence of an independent volunteer, Breezecom will maintain the matrix.

As soon as modulation type is selected Dean Kawaguchi will hand off chairmanship to Naftali Chayat.

1.1 Voting procedure

Selection process will eliminate one proponent at a time. There will be 2 voting rounds. Provided TG-A uses the same procedure as TG-B with the exception that there are just 2 rounds, and all voting happens at the same day, on Tuesday afternoon.

Motion 1.1: To accept voting procedure as described by Dean Kawaguchi.
Moved by Naftali Chayat. Seconded by Henry Moelard.
Motion passes 35–0–1

1.2 NEC/Breezecom presentation

1.3 Lucent/NTT presentation

1.4 RadioLAN presentation

1.5 Other presentations

NEC gives presentation on system capacity and the relation to Clear Channel Assessment threshold.

1.6 Comparison Matrix

All above agenda items are completed at 18.00, so the meeting can be adjourned earlier at 19.00. Remaining questions about the presentations moved to panel discussion the next day.

Motion 1.2: To adjourn at 7pm.
Moved by Don Johnson, seconded by Anil Sanwalka.

> **Motion to amend by addition of the sentence "provided the template has been presented and the issues have been discussed."**
> **Moved by Naftali Chayat**

Second unknown
Motion passes by unanimous consent

Motion 1.2 now reads: To adjourn at 7pm, provided the template has been presented and the issues have been discussed.

Motion 1.2 passes by unanimous consent

Naftali Chayat presents the matrix template.

Reza Ahy points out there are 2 points of contention related to the matrix

1. Proposers have different interpretation for delay spread tolerance entry. (Lucent/NTT: delay spread 150ns, RadioLAN: 100 ns, Breezecom/NEC: maximum delay spread for every rate):

2. Power consumption data should be added to the matrix template.

Extended discussion on the interpretation of the power consumption entry. The general agreement is that this table can be derived directly from data already available in the matrix.

Motion 1.3: To add power consumption table to the comparison matrix.
Moved by Reza Ahy
Seconded by Johnny Zweig

Discussion on how the entry should be calculated. However, the question is called as the motion does not specify the contents of the entry.

motion to call the question
Moved by Johnny
Seconded by Anil Sanwalka
No objections: question is called.

Motion 1.3 passes 20–14–10

Chair declares this motion technical

> **Appealed by Bob O'Hare**
> **Seconded by: unknown**
>
> Vic Hayes claims that this motion is procedural.
>
> **Motion to call the question**
> **Moved by Vic Hayes**
> **Seconded by Stuart Kerry.**
> **Motion to appeal the chair passes: 14–10–19**

Motion 1.3 is procedural.

Discussion on what should be put in table.

Motion 1.4: To use backoff for the 20% power amp efficiency at 3 Volts for 17 dBm transmit power in the lower band and 24 dBm for the middle band.
Moved by Reza Ahy
Seconded by Steven Zelubowski

Naftali Chayat objects that this is a particular scenario which would represent existing data in such a way that it emphasizes the advantages of one particular proposal.

Anil Sanwalka: calls the question
Reza Ahy opposed to calling the question.
Vote on calling the question: 29–2–5

The question is called
Motion 1.4 fails 2–26–9

Motion 1.5: To close the issue and let the proposers determine the intention of the group.
Moved by Anil Sanwalka
Seconded by Tom Tsoulogiannis

Johnny Zweig remarks that remaining issues and questions can be addressed in the panel discussion the next day.

Bob: calls the question
Seconded by: unknown.
None opposed
Motion 1.5 passes 34–0–5

Reza Ahy withdraws objection related to the multipath entry in the matrix.

Adjourn

Meeting is adjourned at 20.00.

Meeting 2: Tuesday, 5 May 1998

Opening

Meeting called to order by Dean Kawaguchi at 14.25, Geert Awater is present and ready to take the notes.

Objectives for this meeting

1. Present comparison matrix data.

2. Question and answer to panel of proposing teams.

3. Voting on the three proposals.

4. Presentation of results.

5. Voting on the remaining two proposals.

6. Presentation of results.

Voting proposal 1,2,3 none abstain. Same procedure as for TG-B.

2.1 Present comparison matrix data

Naftali Chayat enters power consumption data in matrix. There was disagreement on what the data represent. It was agreed that every proposer provide what they want for this entry. Take note that the data of the different proposals are not directly comparable.

Discussion on format of matrix presentation. It is agreed that first Naftali Chayat gives a general presentation of the matrix. Then each of the proposers present their data.

2.2 Question and answer to panel of proposing teams

2.2.1. Questions from the meeting to the panel

Q: Why do the 20 Mbit/s and 30 Mbit/s ACK packets have the same duration for the Lucent/NTT proposal?

A: Caused by modulation granularity. ACK is less than an OFDM symbol, hence they have the same length.

Q: Are interleaving effects taken into account for timing data?

A: Yes.

Q: In RadioLAN proposal, how is raised cosine waveform maintained?

A: RF distortion is compensated by pulse shape predistortion.

Q: In RadioLAN proposal: how can presented CCA time be greater than slot time?

A: Is an error CCA time = 1.2 μs, SlotTime = 3 μs.

Q: RadioLAN proposal has equal sensitivity as other proposals. How is that possible, given the larger bandwidth?

A: Insensitivity is lower than Breezecom/NEC by 1 dB.

Q: To each of the proposers: comment on the intellectual property issues. How do implementers judge the cost of the proposals?

A: (Breezecom/NEC) We have no patents.

A: (RadioLAN) We have patents, only on implementation. What has been presented is available and well known. Offers possibility to license our chips.

A: (NTT) We have patents, but only in Japan.

A: (Lucent): Details provided by Bruce Tuch. 5% of the selling price. 5% of ASIC chip, or 5% what it would cost for you to make it. We have two patents, and we will not make royalties on patents. Subjects: Use of fallback rates in OFDM. They do not overlap completely with the proposal at hand.

2.2.2 Proposers' questions to each other.

Breezecom/NEC to RadioLAN

Q: How did you test or simulate, the effect of the PA switching on the pulse shape? We do not believe that product will pass test with such low back-off. If you do not switch, then you have a higher utilization of the PA, and hence much higher power consumption.

A: If the PA is not switched: the question is not applicable. If you do switch, compensate for distortion in the base band. We simulated PA non-linearity.

Lucent/NTT to Breezecom/NEC

Q: In which table of the template is the non-linearity of the PA taken into account?

A: In adjacent channel interference, there you must use it otherwise results are meaningless. All of the back-off related tables (regulatory issues) do take it into account.

Q: Your out-off band is power 10 dB higher than ours. How can your adjacent channel performance better?

A: Channel center is 20MHz from band edge: OFDM spectrum shape is low and wide. Yours is high and then drops sharply sharp. OFDM wins far away, Single carrier wins nearby.

Not what we see in the proposal document. The OFDM spectrum has less out of band power, as can be concluded from the graphs you provided.

Discussion about curves, drawn in channelization scheme.

Q: You updated template twice recently and tolerable delay spread has improved. However, receiver sensitivity did not improve. Explain.

A: Numbers improved by 10%, as we solved to problems in the carrier tracking loop algorithm in multipath environment. Receiver sensitivity is not very sensitive to delay spread. Phase noise tolerance also improved.

RadioLAN to Breezecom

Q: Did you analyze error propagation effects of the equalizer?

A: All number include all decoding and DFE effects.

Q: Have you looked at what has been learned through the course of HiperLAN 1 (a 23 Mbit/s single carrier standard)? They are no products.

A: The process of standardization of HiperLAN happened earlier. Technology was not yet mature. For this proposal, there are no time gaps related to availability of technology. Our preamble structure makes it easier to do better channel estimation.

Q: You cited back-off advantage to Lucent/NTT proposal. Your actual numbers are very similar to those of Lucent/NTT, sometimes worse. Explain.

A: Back-of advantage is watered down in most environments. Table shows that for the medium and low band data, there is no difference because of regulations. For lower power implementations, we do have full advantage.

Breezecom/NEC to NTT/Lucent

Q: Do back-off result include any technique for peak-to-average reduction?

A: No specific technology was assumed.

2.3 Voting on three proposals

The three proposers each give a 5 minute summary of their proposals.

Nobody is requesting a reading of the rules. There are 3 proposals. "None of the above" counts as a vote, abstain does not. If there is one which has more than a 50% vote, then the voting stops.

Votes are cast and processed.

2.4 Presentation of results

Votes cast:	56
non voters leaving the room:	12
ballots:	56
invalid:	0
valid:	56

Breezecom/NEC:	28 (50.0 %)
Lucent/NTT:	23 (41.1 %)
RadioLAN:	4 (7.1 %)
None:	1 (1.8 %)
Abstain:	0 (0.0 %)
Total:	56

The Breezecom/NEC and Lucent/NTT proposals proceed to the next round of voting.

2.5. Voting on two remaining proposals.

2.5.1 Round of questions

Q: Power consumption of OFDM proposal.

A: what really matters for the users is battery life. Assume receive power is 10 times more important than transmit power. Lucent/NTT proposal uses 140mW of power (10% TX, 90% RX) versus 300mW power for 100% TX.

Q: Compare complexity of the proposals.

A: (Lucent/NTT): Equalizer is more complex than FFT based approach. DSP design much more difficult for DFE. Simple receiver is important if you're transmitting only 10% of the time.

A: (Breezecom/NEC): 6 iterations of the Gauss-Seidel algorithm are needed to initialize the equalizer. Each iteration takes about the number of feed forward filter taps, squared. Since you already have a vector multiplier for your FIR, you need about 6 times the number of taps in time units. Time units are less than 4 microsecond (since we have to make up for the extra delay caused by the equalizer initialization). In the case of 8 taps, we need about 30 microseconds to compute equalizer initialization. Then we have to close the time gap by doing equalization faster than real time.

Q: Phase offset ripples through equalizer in he single carrier proposal. Do you take that into account?

A: By the time samples reach equalizer, LO offset is already compensated, using a phase tracking loop. The echoes in the channel have different phase rotations. The FFE compensates for different phase rotations.

2.5.2 Final address

Breezecom/NEC: The single carrier system has an efficient transmitter, OFDM has an efficient receiver. Use of an asymmetric scheme would be ideal, but in the real world we need symmetric modulation scheme. In outdoor we use directional antenna's, so that delay spread comes down to around 150 ns. This is what the equalizer can deal with.

Lucent/NTT: It would be a wrong approach to a choose system with a fixed delay spread. There would be a huge gap between what you can buy today in 2.4 GHz band and what you can buy in the 5.2 GHz band tomorrow. The only advantage of the single carrier system is its power back-off. However, in the restricted band OFDM is actually better than the single carrier proposal. Worst case back-off for the single carrier oposal is also higher than for OFDM. Battery life is determined more by the receiver than by the transmitter, and the equalizer is difficult. Equalizer training is also difficult. Technique presented by Breezecom/NEC to initialize is a novel subject, which is not well understood. OFDM is a mature technique for higher bit rates.

2.5.3 Voting

Votes are cast and processed.

2.6 Presentation of results of the second voting round.

Votes cast:	58	
non voters leaving the room:	15	
ballots:	58	
invalid:	0	
valid:	58	
Breezecom/NEC:	24	(41.4 %)
Lucent/NTT	31	(53.4 %)
None:	2	(3.4 %)
Abstain:	1	(1.7 %)
Total	58	

The Lucent/NTT proposal is selected and will be forwarded to the 802.11 plenary meeting.

Adjourn

Meeting is adjourned at 17.00.

Meeting 3: Thursday, 7 May 1998

Opening

Meeting called to order by Dean Kawaguchi at 15.15, Geert Awater is present and ready to take the notes.

Objectives for this meeting

The original objective was: "To work on detailed text of selected proposal." Since the selected proposal was approved by the plenary with a 65% vote, the objective is changed (see minutes) in:

1. Raise acceptance of Lucent/NTT proposal to 75% vote by plenary meeting.

3.1 Raise acceptance of Lucent/NTT proposal to 75% vote by plenary meeting.

Motion 3.1: To adopt an open comment resolution process on any concerns of anybody with the objection of getting 75% vote. Moved by John Fakatselis. Seconded by Hitoshi Takanashi.

Discussion on whether a 3 hour discussion is sufficient to replace a letter ballot, which is a 30 day process. Discussion on whether the single carrier proposal should be take in consideration for proposing to the plenary meeting.

> **Motion to amend by changing motion 3.1 into "Conduct a Q&A process on the OFDM and OQAM proposal select one by majority and ratify forwarding of it by a 75% vote."**
> **Moved by Reza Ahy.**
> **Motion void, for absence of second.**

John Fakatselis takes over the chair so Dean Kawaguchi can second the motion.

> **Motion to amend by changing motion 3.1 into. "Conduct a Q&A process on the OFDM and OQAM proposal select one by majority and ratify forwarding of it by a 75% vote. "**
> **Moved by Reza Ahy, seconded by Dean Kawaguchi.**
> **Motion to amend fails 8–17–10.**

John Fakatselis hands the chair back to Dean.

Motion 3.1 passes 19–4–13

Discussion on how to conduct the comment resolution process. The chair proposes to have a 10 minute recess, in which everyone can write down their questions on the OFDM proposal.

Straw poll: How many voters are present and when do they intend to leave?

> Voters currently present: 34
> Voters leaving before Friday 8 May, 15.00:   5
> Voters leaving before Friday 8 May, 17.00:   9

Straw poll: Until what time does the assembly want to continue?

- indefinite: 0 votes
- until 23.00:   1 vote
- until 19:00:   23 votes

The chair recommends to adjourn the meeting at 19.00, and decide to continue or stop at that time.

Questions and issues are posed and discussed answered. For an account, see submission IEEE P802.11 98-234. (file name 82347A-Question-answers-NTTLucent.doc).

At 19.00, chair proposes to extend meeting by half an hour. Approved by acclamation due to positive exchange of information and belief that most of technical topics can be covered. IP questions are deferred until the next day.

Adjourn

Meeting is adjourned at 19.30 hours.

Meeting 4: Friday, 8 May 1998

Opening

Meeting called to order by Dean Kawaguchi at 13.15, Geert Awater is present and ready to take the notes.

Objectives for this meeting

1. Cover IP questions related to the Lucent/NTT OFDM proposal.

2. Draft agenda for next meeting.

4.1 Cover IP questions related to the Lucent/NTT OFDM proposal

Motion 4.1: To recommend to the plenary to approve the 98/72r3 as a Draft TG-A standard and forward it to a WG ballot.
Moved by Naftali Chayat, Seconded by Hitoshi Takanashi.
Motion 4.1 fails: 19–19–4

Vic Hayes summarizes IEEE policy and bylaws with respect to patents. Discussion on whether we can discuss patents and Lucent Technologies IP position. The chair remarks that the bylaws mention patents, not IP position, and rules that the meeting can discuss Lucent's IP position, without any mentioning fees.

No appeal.

Questions are asked and answered, as described in submission IEEE P802.11 98–234. (file name 82347A-Question-answers-NTTLucent.doc).

4.2 Draft Agenda for next meeting

The chair proposes an agenda item for next meeting

> 1. Responses to ballot questions.

Motion 4.2: A ballot for agree on a single carrier proposal.
Moved by Jim McDonald, Seconded by Kazuhiro Okanoue, (Keith Amundsen withdraws his initial second because of improper wording of the motion on the screen.)

Motion is reworded by the chair:

Motion 4.2bis: To add an agenda item. A ballot to ask what it would take to agree on a single carrier proposal. Moved by Jim McDonald, Seconded by Kazuhiro Okanoue.

> **Motion to amend: To add and agenda item "Vote on the acceptance of the OFDM proposal before the previous agenda item."**
> **Moved by Anil Sanwalka, seconded by Carl Andren.**
> **Motion is amended 31-0-6**

> **Motion to amend: To rename the agenda in question item to "A discussion to ask what it would take to agree on a single carrier proposal if the vote fails."**
> **Moved by Reza Ahy. Seconded by Anil Sanwalka.**
> **Amendment passes by acclamation.**

Motion 4.2bis now reads: To add an agenda item "A discussion to ask what it would take to agree on a single carrier proposal if the vote fails and Vote on the acceptance of the OFDM proposal before the this agenda item."
Naftali Chayat calls the question. Seconded by Anil Sanwalka
Motion 4.2bis passes 27–11–3

Agenda for July 1998 meeting
- **Responses to Ballot questions**
- **Vote on acceptance of OFDM proposal.**
- **A discussion to ask what would it take to agree on a single carrier proposal if the vote fails**

Closure

Meeting is closed on 15.03

Attendance list

see the minutes of the plenary meeting, 98/223

Future meetings

see the minutes of the plenary meeting, 98/223

IEEE P802.11
Wireless LANs

Tentative Minutes of Task /group B

May 4, 1998

Meeting in Utrecht, the Netherlands

Secretary:

Carl Andren

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Monday, AM

Kent Rollins, temporary secretary, and Carl Andren being secretary the remainder of the week, tentative minutes
edited by John Fakatselis and Vic Hayes.
John Fakatselis, Chair
Stuart Kerry and Vic Hayes will act as parliamentarians.

Review of the agenda.

Presentations on Tuesday, Wednesday evening.
Wednesday matrix overview, panel discussion, voting.
Voting is not elimination in this round, select the best this time.
A total of 1.5 hours are provided to each proposer.
There were some doubts about the timing of the votes and the actual voting process in relation to what falls
off, and when the selection is made.
Table the agenda approval until the selection process is discussed.

Selection process overview.

Reviewed the selection steps.
Discussion of the final proposal selection process: Group that defined the process intended to avoid
multiple rounds by voting for the favourite and the leader wins. The final selection should be at least 50%,
But not defined.
The Chair. recommends for step 14. Vote is for favourite. Eliminate the lowest voters. A least two proposals
must be in the final round.
How are the final two chosen?
Members wondered why TGb would need just 50 % whereas the plenary has to get 75 % for adoption, how
compromises would be considered where we currently only have an entire proposal to vote on and whether
the final round would be at least 2 or just 2 proposals to vote on or whether the process would stop if one

proposal reached the majority. The current selection process (98/54, approved at the plenary meeting in March as motion 10) calls for a majority to bring a selected proposal to the plenary. Compromise proposals in the past were made off-line, none have been brought to this meeting, one possibility could be to move for a recess between votes to prepare a compromise.

After a long discussion, the interpretation of the rules were summarised as multiple voting on the favourite of the available proposals, none and abstain; one tick per ballot form, that abstains are not counted, that the voting would stop if one proposal reached majority, that the lowest one would be removed from the list. Once voting begins, the rounds would follow each other without repetition of presentations or panels. The Chair asked for any objection to voting for the favourite proposal? There were None.

The Chair then reviewed background of the PAR. By asking a member to write down letters A-E on pieces paper with hidden names of the proposals, he defined the order of presentations.

> A Raytheon
> B Micrilor
> C Lucent
> D Harris
> E Alantro

Random selection for the second data presentations.

> A Alantro
> B Harris
> C Raytheon
> D Micrilor
> E Lucent

Motion

> *to add the following clarifications to document 98/54 selection step 14.*

> ■ *Selection of the Final proposal with most votes at the task group level.*

>   *A secret vote will take place to eventually choose the proposal with the most votes.*

>   *There will be multiple more rounds of voting eliminating the proposal with the least votes at each round ,*

>   *until one proposal receives more than 50% of the votes.*

>   *The ballot will ask for the best proposal (only one vote) in addition a none of the above category will be included.*

>   *The first round of balloting will take place after the first round of presentations and the result will be announced.*

>   *The final selection will be presented as the recommendation of the task group to IEEE802.11 for approval.*

Mover/Seconder: Bob O'Hara/ Anil

> **Motion to amend:** *final selection will be voted on by the group before going to plenary. With a 75% vote required.*

Mover/seconder: Chris Heegard/ unknown.

After some discussion, the **Question is called** by Bob O'Hara, second by Johnny Zweig

>   Call for the question: 44/0/0, **question is called**

Result of vote on motion: 7/31/4, **the motion to amend fails**

. The main motion passes.

Back on the adoption of the agenda

Motion: *Tuesday voting to eliminate one proposal. Wednesday voting to get to one proposal*.

Mover/Seconder: Unknown/unknown

Result of vote on motion: 41-0-0. **Motion passes**

John F. Presented final agenda.

IEEE802.11 TASK GROUP B
MAY 4-8 1998 , UTRECHT, the NETHERLANDS
AGENDA

MONDAY

- **CALL TO ORDER**
    - **SECRETARY APPOINTMENT**
- **PROCEDURAL**
    - **PARLIAMENTARIAN APPOINTMENT**
    - **COMPARISSON MATRIX TEAM**
- **APPROVAL OF AGENDA.**
- **APPROVAL OF MARCH 1998 MINUTES.**
- **BACKGROUND**
- **SELECTION PROCESS OVERVIEW.**
- **CALL FOR PAPERS**
    - **PROPOSERS (submissions estimate)**
        - **ALANTRO 3 submissions**
        - **HARRIS 6 submissions**
        - **LUCENT 8 submissions**
        - **MICRILOR 6 submissions**
        - **RAYTHEON 3 submissions**
    - **OTHERS**
        - **Symbol 1 submission**
        - **STI 1 submission/presentation**

- **ORDER OF PRESENTATIONS (BY PROPOSAL)**
- **ADJURN**

TUESDAY

- **PRESENTATIONS BY PROPOSERS**
    - **8:15 - 9:00   A. Raytheon**
    - **9:00 - 9:45   B. Micrilor**
    - **9:45 - 10:30 C. Lucent**

- **10:30 - 10 :45 BREAK**
- **10:45 - 11:30 D. Harris**
- **11:30 - 12:15 E. Alantro**

- **First round of voting**
- **Announcement of voting results**

WEDNSDAY

- **PROPOSAL PRESENTATIONS**
  - **8:15 - 9:00   A**
  - **9:00 - 9:45   B**
  - **9:45 - 10:30 C**
  - **10:30 - 10 :45 BREAK**
  - **10:45 - 11:30 D**
  - **11:30 - 12:15 GENERAL PAPERS PRESENTATIONS**

WEDNSDAY AFTERNOON AND/OR EVENING.

- **MATRIX OVERVIEW**
- **PANEL DISCUSSION**
- **CLOSING ARGUMENTS**
- **FINAL VOTING ROUNDS**
- **ADJURN**

Motion to approve the agenda Roy/ Dean **34-0-6**
Counted the number of submissions:
Alantro 3, Harris 6, Lucent 8, Micrilor 6, Raytheon 3, Symbol 1
There was one general   presentation
Agenda approved.
Meeting adjourned

Tuesday, April 5, 1998, AM

Presentations by all participants

Raytheon,

Wes Brodsky presented document 98/177, highlighting Amplifier back off, AM/PM conversion, Compare offset to non offset, Sidelobe levels for ACI specification

Micrilor,

John Cafarella presented Method of Including Effects in Throughput Modelling 98/207
His second presentation: System Capacity with Channelization 98/208

Lucent

Ad Kamerman presented Impact of delay spread robustness on coverage range. 98/179.
Bruce Tuch presented: Element of a Successful Standard 08/198

Announcement

Bob O'Hara announced the Tgrev is working on comments from ballot LMSC. Meeting in room 225 for 802.11 rev.

Voting procedures reviewed.

The Chair showed the ballot form and responded to questions that this format was changed to make counting more easy and that percentages are only counted from votes on proposals and on none, not on abstentions

Harris

Michael Marsanu, Aironet,. presented doc.: 98/209 FCC grants approval to Aironet
Carl Andren, Harris, presents doc.:98/116r1 Harris Proposal
Mark Webster, Harris, presents doc.: 98/200a, Review equaliser.

Alantro,

Chris Heegard presents Alantro FCC Correspondence as given in doc.: 98/185

voting

Chair will rule on the process for selection. Clarification to the original document 98/58.
Clarified 50% rule for ending rounds. Basically, If any proposal gets over 50%, that ends voting and goes to the whole group. If no proposal gets 50%, the proposal with the least votes is dropped and the voting process continued. Motion needed to adopt choice, abstain vote does not count.

On a question what happens if there would be a tie on the last place, the chair responds that the rules allow only one to be eliminated.
Motion *to adopt one of the following*;
Mover/Seconder: Stuart Kerry/Al Petrick

Vote on the motion **56-0-1. Motion passes**
Group will resume at 1250 vote announced at 1255.

Voters 57 leaving room

non-voters 14 leaving room
ballots 57
invalid 1
total 56

Company	number	%
Harris	25	43
Lucent	14	24
Micrilor	12	21
Raytheon	3	5
Alantro	1	1.7
None	1	1.7
Invalid	1	1.7
Abstain	0	0
total valid	56	

Therefore, at this time, the Alantro Proposal is removed.
The meeting is adjourned at about 13:15 for a late lunch.

Wednesday, May 6, 98, AM

Meeting opened by John Fakatselis
Continue with presentations

Lucent

Jan Boer provides a description of BCPM (doc.: 98/175)
Ad Kammerman gives a presentation of doc.: 98/180.

Raytheon.

Wes Brodsky presents but has no slides.

Micrilor

Mass Mori presents the advantages of code channelization along Doc.: 98/143
John Caferella continues the presentation.

Harris

Mark Webster, makes a summary of Harris' advantages
Carl Andren, describes the short preamble along with IP position versus the other proposals.

General presentations

The next item in the agenda called for presentations of general papers not linked directly to any of the proposals. The chair asked representatives of each proposal to review the general paper submissions and determine if they indeed were general. The review team responded unanimously that 98/214 was a general paper, but there were 2 objections to 98/204.
The paper doc.: 98/204 by Greg Rawlins titled "Comparison for 3 frequency vs. 2 frequency plans" was dropped. This paper was considered to favor directly the 2 channel approaches by the Chair common to Harris and Lucent and it was suggested by the Chair that Harris or Lucent accept it as part of their allocated time for presentation. Paper 98/214 by Jeff Abramowitz qualified for presentation with unanimous consent of the reviewers.

Jeff Abromiwitz, 3-COM

Presented Paper 98/214 giving a prospective of what is important for the 802.11 high rate WLAN market

The Chair reviewed the remaining part of the agenda for the week. Chris H. requested a presentation in the afternoon.

Meeting adjourned.

Wednesday, May 6, 98, 1:20 PM

Full group meeting moved to Thursday morning and TGb moved to here.

Comparison matrix, William Roberts from AMI will not be attending.
Karl Hannestead will take the lead for discussing the matrix.

Karl Hannestad, Netwave

Review of the filled in comparison matrix.

Discussion of the agenda by John Fakatselis.

Panel discussion

Carl Andren
John Cafferella
Bruce Tuch
Wes Brodsky

Closing Statements

Mark Webster, Harris

Semi company, working on high rate for last 2 years. Low complexity, backwards compatability, regulatory compliance, no license, no fee
Non complex, based on textbook techniques.
Working silicon in the lab
responsive to concerns.

Keith Amundsen, Raytheon

QPSK yields a power efficiency advantage, especially over Lucent
3 channels is needed, the Harris proposal is the most likely to consider incorporating our ideas.

Bruce Tuch, Lucent

Lucent is not a chip provider, 10 MBps with low complexity without pulling back in rate, Holistic approach.
In very bad environment will be more robust, we are not in the business, we will supply the SPW code. Lucent will help you to become a successful wireless provider.
Lets make a standard we can be proud of.

John Caferella, Micrilor

The issue of IP is that our requirements are benign.

MasS Mori: we have a chip supplier we have instructed to license the chips to anyone if the standard is made on our product. In Japan the boundary for 2.4 GHz may expand. We learned from Lucent, we needed a channel matched filter.

John, If 3 channels are needed, we have the half rate option. This will give 5 or 9 MBps and 3 channels. If you want the ability to put everybody on the same code, you can do it. When you do not have a sys admin to set up channels, you can do it.

Voting process, ballot 2

Proposal	number	%
Harris	26	44.8
Lucent	15	25.8
Micrilor	15	25.8
Raytheon	1	1.72
None	1	1.72
Abstain	0	0
Total	58	100

58 ballots
Raytheon removed
next round,

Ballot 3 was discarded as the form still contained Raytheon by mistake.

Voting process, ballot 4

Proposal	number	%
Harris	24	41
Lucent	16	28
Micrilor	17	29
None	1	2
Abstain	0	0
Total	58	100

Voting process, ballot 5

Proposal	number	%
Harris	28	48
Micrilor	29	50
None	1	2
Abstain	0	0
Total	58	100

Since no one got >50%, a quandary is on hand. On one hand Harris is eliminated, but Micrilor did not get over 50% of the vote.

Much argument on whether or not Harris was eliminated by this round. General consensus with the chairs agreement is that Harris is eliminated and the next vote would normally be: Micrilor or None.

Motion *to postpone the ballot process to the Friday TGb meeting because it looks like there is no clear direction and ask the interested parties of their willingness to work on a compromise through the start of the Friday TGb meeting.*

Mover/seconder: Keith/Bruce

Chair rules this motion valid.

> **Appeal the chair: the motion is out of order**
> **Appealer/seconder:** by Johnny/Simon
>> **Call for the question** by Chris/Keith. Vote result **51/0/4** The question is called.
> Vote on **appeal** is: **16/30/5** , therefore the **motion is out of order.**

Jeff Abromowitz: **Point of Order**: *I question the validity of the voting due to voting irregularities that would be explained by 'block voting'. In this case, I believe that the 802 voting rules change to one vote per company.*

Vic: there is no proof of block voting, so there is no way to apply that rule.
Keith: What is the actual wording and how does it apply when there was a secret vote

Vote to adjourn until 9PM to let the parliamentarians solve the question about block voting.

After re-convening,, the chair did a review of any Block Voting references that himself and the parliamentarians were able to surface during the recess. The following references were presented to the group.

Standards companion
It is also the chair's responsibility to ensure that the working
group knows they represent only themselves, not their company or another interest.

LMSC Operating rules
ExCom
3.4.1 Voting Guidance
It is expected that LMSC Executive Committee members will vote as both professionals and as individual experts, except under the Directed Position provisions of Procedure 8, and not as a member of any affiliate block (organization, alliance, company, consortium, special interest group, etc.). If substantive evidence is presented to the LMSC Chair that this provision is violated, the LMSC Executive Committee will meet to consider what, if any, action to take on the presented evidence. Such action may include any action up to and including a recommendation for removal from office.

Working group
5.1.4.4 Working Group Chair's Authority
To carry out the responsibilities cited in 0 5.1.4.3 Working Group Chair's Responsibilities, the Working Group Chair has the authority to:
a) Call meetings and issue meeting minutes.
b) Decide which issues are technical and which are procedural.
c) Establish Working Group rules beyond the Working Group rules set down by the Executive Committee. These rules must be written and all Working Group members must be aware of them.
d)Assign/unassign subtasks and task leaders or executors, e.g. secretary, subgroup chair, etc.
e) Determine if the Working Group is dominated by anorganization, and, if so, treat thatorganizations' vote as one (with the approval of the Executive Committee).
f) Make final determination if and how negative letter ballots are to be resolved when a draft standard, recommended practice, or guideline, is to be sent to the Executive Committee for approval for Sponsor Ballot Group voting.
g) **Collect fees to meet Working Group expenses.**

Parliamentarians and chair could find no clear path of how the Task group could resolve even if true. The Chairman asked for a straw poll to determine who in the room "thought that improper voting had transpired". Some members stated that they would be reluctant to state this in the open. The chair asked to have the attendees return their opinion anonymously on a piece of paper indicating Yes (if suspecting impropriety) or No.

      After the count of the straw poll by the chair and the parliamentarians, the chair stated that there is a significant number (12Y, 21N) of members that believe that there was a problem . There were a few votes voided as unreadable and nearly half of the attendees abstained by not returning a vote. Following the

discussion and the straw poll:

> **The chair rules** *to submit to the executive committee the concern of block voting expressed via a "point of order" for resolution and direction.*
> **Appeal** of the chair's ruling by Wes Brodsky/Jeff fisher.
> In the debate on the appeal members repeatedly said there was no evidence of any group dominating the organization and that the group should not cease work. Rather have the ExCom rule on this. The appealing members argued that the matter should remain within the working group rather than being escalated to the ExCom.
> The chair clarified the ruling to add that the work in the task group will continue if the ruling is sustained.
> The next step would be the vote of Micrilor vs. None.
> The chair asked several times if the member that placed the point of order would withdraw his point without success. A big factor was the fact that the term "block voting" is not clearly defined.
> > **Call the question** by Al Petrick, seconder unknown. (**26/5/3**) **the question is called**.
> On the question of **appeal**ing the chair (**19/29/7**)

Motion to adjourn Al Petrick/Naftali Chayat (**23/19/11**) **The meeting is adjourned at about 22:15 h**.
Note from Vic: the point of order was still not solved.

Friday, May 8, 98 AM

There was a talk by Vic on the proper way to do secretarial minutes and notes on patents. This is from the 'IEEE Standards Companion'.
A discussion started on whether the patent holder should disclose what was protected by IP, whether the technical details could be discussed and whether more was needed than the IP statement as given by the holder. No conclusion was reached.

Meeting opened with Voter count

48 voting members, we need 42.5 for a quorum.

Status summary

We are in the middle of discussing the changing the rules to insure that the TG will have a 75% vote in plenary. The floor is opened to combinations of the proposals.

Discussion and clarification of Plenary direction to the group (how do we move on)

The Plenary Directs TGb:
1. To change the voting process of TGb as defined in step 14 of doc 98/54 to change a secret vote to a standard technical vote and to change the requirement from >50% to be 75% or greater than 75 % in order to be brought to the plenary.
2. To halt the current voting process, to discard the results of voting this week, to allow the presentation of merged proposals and to instruct the TGb to find a consensus proposal.

Interpretation by Vic: (5 proposals plus merged ones, based on at least 2. Of course proposer can withdraw.)

Concern was expressed regarding the definition of a merged proposal versus new proposals, whether somebody may make a merger of two proposals, not being either of the base proposers and how far the merged proposal may contain new elements. For instance, the merged proposals should replace the original proposals.
Anil: The interpretation is that we need new proposals from the proposers
This can be synopsised as:
1. can we propose a new proposal
2. who can present a proposal

3. what is a merged proposal
        4. is it two existing ones combined
        5. can they be substantially different
6. can an original be a modified, not merged proposal
,the following motion was made:

Motion:	**Accept the following text**
	Acceptable proposals are the existing 5 proposals, possibly modified (but not to the extent that it makes them new proposals as determined by TGb) by the original proposer; and any proposal which combines substantial elements of two or more of 5 existing proposals, with the addition of any required additional elements to render the merged proposal viable, and are presented willingly and jointly by the original proposers of the proposals being merged.

Mover/seconder: Carl/Anil
Motion Passes with 29/1/7

Schedule for TGb

July 98, Final proposal selection
Sept, 98, Draft complete, submit working group ballot.

Bob O'Hara: since we don't know what proposals are going to be shown, we need to allow more time and not publish a schedule. So don't make any changes to the published schedule.
Jeff Fisher: We have heard estimates of 1 to 3 more meetings needed to come to consensus. Lets leave it up to the chair to change the published schedule.

Next meeting agenda

Bob O'Hara: Make the meetings more productive by having the presentations published 1 week before the meeting by making the presentations dependent on who has met the distribution schedule by putting them on the web site. Agenda time will be granted in preference to those who have delivered their papers. If there is no agenda time for some late papers, they will not be presented.
1. Present papers with priority given to papers available on the web a week prior to the meeting. Proposals need to be available at the beginning of the meeting.
2. Discuss the selection process
3. define activity between meetings

discussion of patent policy

No time for discussion.
Adjourned at 12:05

Attendance list

see the minutes of the plenary meeting, 98/223

Future meetings

see the minutes of the plenary meeting, 98/223

IEEE P802.11
Wireless LANs
Task Group 802.11c Minutes

Date: 05/08/1998

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Abstract

Minutes of 802.11 Task Group C

_____

Task Group 802.11c met on Tuesday 05/05/98 at 08:45 am Utrecht, The Netherlands to finish comment resolution on document 80211c/D5 Bridging Supplement to 802.1D. The session opened with a total of 13 comments to resolve against the document.

Voting members in attendance at the meeting Tuesday 05/05/98: Johnny Zweig, Henri Moelard, Bob O'Hara, Anil Sanwalka, and Victoria Poncini. Darwin Engwer joined the group during the session.

All of the 13 comments were resolved and the meeting adjourned at 10:48am.

On Tuesday 05/05/98 afternoon, TGc received four additional comments on document 80211c/D5 Bridging Supplement to 802.1D. Victor Hayes notified the session that due to machine failure in IEEE office sponsor ballots were still not counted.

TGc met again on Thursday 05/07/98 afternoon at 15:30 immediately following the close of the 802.11 mid-week plenary to finish comment resolution . In attendance at this meeting were 802.11 voting members: Johnny Zweig, Henri Moelard, Bob O'Hara, Simon Black, Darwin Engwer, and Victoria Poncini. All of the four additional comments were resolved. Victoria Poncini asked to change the date on document IEEE P802.11c/D5 March 1998 to July 31, 1998.

Sponsor Ballot results are still unknown at the time of the Plenary session Friday 05/08/98. The document will be submitted to the mailing containing the revision marks until sponsor ballot comes to closure and all comments are known to be resolved. Task Group C will recommend to 802.11 plenary additional work and actions be handled via teleconference or e-mail to resolve additional comments received after closure of sponsor ballot voting period.

IEEE P802.11
Wireless LANs

Task Group 802.11Rev Minutes

Date: 05/08/1998

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Abstract

Task Group 802.11Rev met on Tuesday 05/05/98 at 10:48 am Utrecht, The Netherlands to finish comment resolution on document 80211rev/D4. Task Group 802.11Rev met on Wednesday 05/06/98 and again on Thursday afternoon 05/07/98. The session on Tuesday opened with a total of 69 comments to resolve and one additional comment was received Tuesday afternoon via fax. A total of 70 comments were addressed during the session.

In attendance at the meeting Tuesday 05/05/98 were voting members: Johnny Zweig, Henri Moelard, Bob O'Hara, Anil Sanwalka, Darwin Engwer, and Victoria Poncini. Simon Black joined the group during the session. Victoria Poncini was present at the Tuesday and Thursday sessions.

All of the 70 comments were resolved by Thursday afternoon. The meeting adjourned at around 16:00.

Tentative Minutes of the WPAN SG Meeting

Wireless Personal Area Network Study Group
Interim Meeting

Holiday Inn Utrecht City Center
Utrecht, NL

4-6 May 1998

1.0 The meeting was called to order on May 4-8, 1998 at 10:40am in Room 227 by our cochairman Bob Heile

  1.1 Roll Call: People in the room were invited to introduce themselves.

  1.2 Secretary: The Chair recognized Ian Gifford as the Secretary for the Study Group Meeting.

  1.3 Agenda Approval: Bob Heile presented the following agenda for approval:

Monday May 4, 1998
1. Opening of session
   introductory comments
   roll call
   voting rights
   logistics
   other announcements
2. Approval of minutes from cambridge meeting
3. Review of Contributions
4. Adoption of agenda
5. Old business
6. New business
7. Review objectives of meeting
8. Review functional requirements document
9. Discuss requirements for a standard

Tuesday May 6, 1998
1. Review PAR process/templates
2. Review draft PAR
3. Determine next steps
4. Break into working groups for the PAR

Wednesday May 7, 1998
1. Reports by PAR working groups
2. Create SG report for afternoon plenary
3. Output Documents
4. Next meeting
   +location/logistics
   +objectives
5. New Business
6. Close

Note: The SG agreed to compress Thursday's tasks into the Wednesday Meeting.

   Hearing no objections the motion to accept the Agenda passed by general consent.

2.0   Ian Gifford overviewed the April meeting minutes of the Study Group (SG). The goal of the Cambridge meeting was to assign Principle Investigators to the documents and to prepare them, formally, as IEEE 802.11 WPAN SG Submissions. The SG has created the following documents:

DOC No.	TITLE
-98/58	Wearables Standards Ad-Hoc Committee Presentation to 802.11 Committee (Robert Heile, GTE/BBN, and Ian Gifford, AMP M/A-Com), January 22, 1998
-98/94	"Wearables" Standards, Presentation to IEEE 802, ExCom (Dick Braley, Acting Chairman, "Wearables" ad-hoc Standards Committee) , March 9, 1998
-98/95	"Wearables" Standards, Presentation to IEEE 802, Standards Committee (Dick Braley, Federal Express Corporation), March 9, 1998
-98/96	A brief survey of Wearable application (Steve Case, Via), March 9, 1998
-98/97	Wireless Solutions (Pat Kinney, Intermec), March 9, 1998
-98/98	PAN feasibility: The BodyLAN (TM) Experience (Rick Larowe, GTE), March 9, 1998
-98/135	Summary Report of the IEEE 802.11 WPAN Ad-Hoc Group Meeting held at Irvine, CA, March 9th - 13th, 1998
-98/136	Tentative Minutes of the IEEE 802.11 WPAN Ad-Hoc Group Meeting held at Irvine, CA, March 9th - 13th, 1998
-98/137	Venue for WPAN Ad-Hoc Group Meeting, April 8th - 9th, 1998, Cambridge, MA.
-98/147r1	WPAN Press Release Draft (Ian Gifford, M/A-COM)
-98/159	Tentative Minutes of the WPAN Study Group Meeting (Ian Gifford, MA/COM)
-98/160	WPAN Guidelines (Ian Gifford, M/A-COM)
-98/161	Wireless Personal Area Network (WPAN) Five Criteria and 2.4GHz Coexistence Analysis (Ian Gifford, M/A-COM)
-98/162	First Draft PAR for WPAN (Rich Ditch, Motorola)
-98/163	Venue Hosted by GTE Internetworking (Ian Gifford, M/A-COM)
-98/169	WPAN SG Draft Agenda 5/4-7/98 Utrecht, NL
-98/170	WPAN SG Draft Agenda 5/19-21/98 Irving, TX USA
-98/171	Draft Glossary & Acronym List
-98/199	WPAN SG Call for Proposals for MAC/PHY (Dick Braley, Fedex)
-98/216	WPAN SG Application Summary (Pat Kinney, Intermec)
-98/217	HomeRF Overview Presentation (Stuart J. Kerry, Butterfly Communications)
-98/222	Summary Report of the IEEE 802.11 WPAN Study Group Meeting held at Utrecht, The Netherlands, May 4th - 8th, 1998
-98/228	Tentative Minutes of the IEEE 802.11 WPAN Study Group Meeting held at Utrecht, The Netherlands, May 4th - 8th, 1998
-98/229	WPAN SG Spectrum Availability Matrix (Pat Kinney, Intermec)

Source: Extracted from doctbl98-begin-May.xls, dated May 6, 1998 - Modified

3.0   The latest WPAN Press Release was discussed and distributed to the SG meeting attendees, via Flash Card.

4.0 Bob Heile overviewed up and coming May 19-21, 1998 Interim WPAN Meeting Venue:

Sheraton Grand Hotel (10 minutes from Dallas/Fort Worth Airport)
4440 West Carpenter Freeway
Irving, TX 75063
+1 972-929-8400
+1 800-345-5251
May 19th, 1998 1:00pm to 5:00pm to May 21st, 1998 8:00am to 2:00pm

5.0   Again, Bob Heile led the discussion on potential Liaisons from the WPAN Study Group to:

- Infrared Data Association (IrDA)
- Home Radio Frequency Working Group (HRFWG)
- ETSI Broadband Radio Access Networks (BRAN) Project
- ATM Forum Wireless ATM (WATM) Working Group
- Wireless LAN Alliance (WLANA)
- Internet Engineering Task Force (IETF)

The liaison "communication devices" would be the Draft IEEE WPAN SG Press Release and the Call For Proposal (CFP) i.e., straw MAC & PHY Layer.

The following table describes the overall tasks that the WPAN SG would need to take to achieve a standard within IEEE:

TASKS	START DATE	END DATE	STATUS
Cambridge, MA WPAN SG Meeting	4/8/98	4/9/98	Done
Call For Proposals (CFP)	4/30/98	5/19/98	In Process
Utrecht, NL 802.11 Interim Meeting	5/4/98	5/8/98	In Process
Irving, TX WPAN SG Meeting	5/19/98	5/21/98	
SUBMIT WPAN PAR		6/4/98	
La Jolla, CA 802 Plenary Meeting	7/5/98	7/10/98	
Waltham, MA 802.11 Interim Meeting	9/14/98	9/18/98	
Etc.			
First Unapproved WPAN Draft Specification		March 1999	
Draft Specification approved by 802.11 WG		September 1999	
Draft Specification approved by IEEE SAB		March 2000	

6.0 Bob Heile then progressed the specificity of the WPAN Functional Requirements. This work consumed the group until we adjourned at 6:00pm.

7.0 Dick Braley brought the meeting back to order at 8:05am. Dick provided an overview of the "Wearables" Standards activities the following headlines the discrete areas:

- Wireless Personal Area Networks
- "Wearable Computing" and Interfaces
- "Wearables" System Architectures
- Nomadicity
- Humionics

8. Joe Dvorak inquired into the actual definitions of the above terms and Dick provided a quick summary. The SG discussed the need to provide definition of terms for some of the unique WPAN terminology. **ACTION: Ian Gifford agreed to solicit definitions for a WPAN SG Glossary and Acronyms list.**

9. Joe Dvorak provided a brief overview of the January 15, 1998 draft WPAN PAR that was generated by the "Wearables" Ad Hoc Committee. **ACTION: The SG discussed the Draft PAR at length and we edited the document as well as designated Rich Ditch as the Principle Investigator.**

10. Ian Gifford provided a brief overview of the January 15, 1998 draft 5 Criteria document that was generated by the "Wearables" Ad Hoc Committee. **ACTION: The SG discussed the 5 Criteria and 2.4GHz Coexistence deliverable and we assigned Ian Gifford to be the Principle Investigator.**

11. Next Steps

WHAT	WHO	WHEN
Provide a Glossary & Acronym List for WPAN	I. Gifford	5/8/98
Setup IEEE Majordomo reflector: stds-802-wpan@majordomo.ieee.org	I. Gifford	5/11/98
-98/199 WPAN SG CFP (was –98/164)	D. Braley	5/6/98
-98/216 WPAN SG Application Summaries	P. Kinney	5/6/98
-98/217 WPAN SG Home RF, a pitch was made to the SG to overview the HRFWG and their activities	S. Kerry	5/6/98
-98/222 WPAN SG Utrecht Report Summary	I. Gifford	5/7/98
-98/228 WPAN SG Utrecht Tentative Minutes	I. Gifford	5/7/98
-98/229 WPAN SG Spectrum Availability Matrix	I. Gifford	5/11/98

The meeting was adjourned on April 6th, 1998 at 12:00pm in Room 227 by our co-chairman Bob Heile

The Ad Hoc Group wishes to thank the 802.11 WG for their time and assistance and help. We look forward to participating in the Working Group in La Jolla, CA.

Tentative meeting schedule

Date	Month	Year	Place	Type	Location	Host
19-21	May	1998	Irving, TX	Interim Study Group only	Sheraton Grand Irving	GTE
5-10	Jul	1998	La Jolla, CA	Plenary	Hyatt Regency	
14-18	Sept	1998	Waltham, MA, tent	Interim WG		Raytheon
8-13	Nov	1998	Albuquerque, NM	Plenary	Hyatt Regency	
7-12	March	199	Austin, TX	Plenary	Hyatt Regency, Town Lake	
4-9	July	1999	Montreal, PQ	Plenary	Queen Elisabeth Hotel	
7-12	Nov	1999	Koloa, HI	Plenary	Hyatt Regency Kauai	

IEEE 802.11
Wireless Access Method and Physical Specification

Title: **TGa Report**

Date: May 4-8, 1998

Author: Dean Kawaguchi

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Opening

Introduction - temporary chair

Secretary - Geert Awater

Volunteers to update the matrix and prepare a list of questions - none, remains with proposers

Procedure

I propose that the selection process for TGa follow the well thought out TGb selection procedure as documented in 98/54. John Fakatselis has done a great job in defining it, keeping the TGb process fair and very orderly up to this point. Since there are only 3 remaining modulation proposals in TGa with the merging of 4 proposals into 2, the TGa process will not perform any downselection (elimination) voting prior to the final selection voting.

By TGb rules, the group will vote for their favorite modulation type of the 3 remaining proposals, eliminating the proposal with the least votes, then voting for the favorite of the 2 remaining. The selected modulation will then go the full 802.11 which will require 75% for ratification.

Of course if we do not end up with a 75% supported modulation type, the agenda will be modified as needed.

Agenda
Mon 14:00-14:45 Agenda, docs, presentation and approval of selection process
14:45-15:30 Presentation of proposal 1
15:30-16:15 Presentation of proposal 2
16:15-16:30 Break
16:30-17:15 Presentation of proposal 3
17:15-18:00 Presentation of non-proposers material considered critical for
selection
18:00-19:00 Discussion, resolution of matrix issues

Tue 13:00-14:00 Presentation of Comparison Matrix
14:00-15:00 Q&A to a panel.
15:00-15:15 5 minute summary of each proposal, vote
15:15-15:45 Break, vote count
15:45-16:15 Discussion, vote
16:15-16:45 Break, vote count
16:45-17:00 Results, discussion, adjourn
17:00+ Social event

Thurs At plenary - approval of the selection
10:00 - Discussions, text modifications

Friday Approval of finalized text, preparations for Ballot

Motion:

Adopt TGb selection process with exception that all votes happen at Tuesday afternoon.

Naftali/Roy 35 0 1 Motion passes

Voting Results

Ballot #1

Breezecom/NEC	28	50%
Lucent/NTT	23	41.07%
Radiolan	4	7.14%
None	1	1.79%
Abstain	0	0%
Total	56	

Ballot #2

Breezecom/NEC	24	42.11%
Lucent/NTT	31	54.39% <<<<
None	2	3.51%
Abstain	1	1.75%
Total	58 (57 for %)	

Note: % values shown above were recalculated for 57 non-abstention votes

Lucent/NTT selected by >50% per motion.

Motion to 802.11:

To accept the recommendation of TGa to adopt the OFDM proposal from Lucent and NTT as the basis for the 5 GHz PHY.

TGa/Bruce. 28/15/6……. 65 % Fails

Motion:
to adopt an open comment resolution process on any concerns of anybody with the objective of getting to 75%.

Vote on Main motion: 19-4-13

Written ballots by those voting NO on OFDM proposal.
Discussion of comments.

Motion:
to recommend to the plenary to approve the document 98/72r3 as a Draft TGa standard and forward it to a WG ballot.

Naftali/Hitoshi 19 - 19 - 4

After IP discussion…….

None willing to reopen.

Agenda Item:

Responses to Ballot questions

Motion – to add an agenda item :
A discussion to ask what would it take to agree on a single carrier proposal
Jim/Kazu

Motion to amend
Add an agenda item before the previous:
Vote on acceptance of OFDM proposal.
Anil/Carl 31-0-6

Amended Motion – to add an agenda items :
Vote on acceptance of OFDM proposal.
A discussion to ask what would it take to agree on a single carrier proposal if the vote fails
Jim/Kazuhiro

Reza/Anil amended to add (if vote fails), accepted by acclamation

Naftali/Anil CQ no obj

Main motion – 27-11-3 passes.

Agenda for July 1998 meeting
- **Responses to Ballot questions**
- **Vote on acceptance of OFDM proposal.**
- **A discussion to ask what would it take to agree on a single carrier proposal if the vote fails**

802.11 Plenery Motion:
That if TGa has to re-open their selection process that they be directed to use non-secret voting, and achieve a 75% or greater acceptance before forwarding to 802.11.

Keith/Anil
43/0/4

Submission to:
IEEE P802.11
Wireless LANS

Title: **TGb REPORT FOR MEETING OF 05/04/98 TO 05/08/98 (Utrecht, Netherlands)**

Date: May 1998

Author: John Fakatselis
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IEEE802.11 TASK GROUP B
MAY 4-8 1998 , UTRECHT, the NETHERLANDS
AGENDA

MONDAY

- **CALL TO ORDER**
  - **SECRETARY APPOINTMENT**
- **PROCEDURAL**
  - **PARLIAMENTARIAN APPOINTMENT**
  - **COMPARISSON MATRIX TEAM**
- **APPROVAL OF AGENDA.**
- **APPROVAL OF MARCH 1998 MINUTES.**
- **BACKGROUND**
- **SELECTION PROCESS OVERVIEW.**
- **CALL FOR PAPERS**
  - **PROPOSERS (submissions estimate)**
    - **ALANTRO 3 submissions**

- ■ **HARRIS 6 submissions**
  - ■ **LUCENT 8 submissions**
  - ■ **MICRILOR 6 submissions**
  - ■ **RAYTHEON 3 submissions**
- ■ **OTHERS**
  - ■ **DEAN 1 submission**
  - ■ **GREG 1 submission/presentation**

■ **ORDER OF PRESENTATIONS (BY PROPOSAL)**
■ **ADJURN**

TUESDAY

■ **PRESENTATIONS BY PROPOSERS**
- ■ **8:15 - 9:00   A. Raytheon**
- ■ **9:00 - 9:45   B. Micrilor**
- ■ **9:45 - 10:30   C. Lucent**
- ■ **10:30 - 10 :45 BREAK**
- ■ **10:45 - 11:30 D. Harris**
- ■ **11:30 - 12:15 E. Alantro**

■ **First round of voting**
■ **Announcement of voting results**

WEDNSDAY

■ **PROPOSAL PRESENTATIONS**
- ■ **8:15 - 9:00   A. LUCENT**
- ■ **9:00 - 9:45   B. RAYTHEON**
- ■ **9:45 - 10:30   C. MICRILOR**
- ■ **10:30 - 10 :45 BREAK**
- ■ **10:45 - 11:30 D. HARRIS**
- ■ **11:30 - 12:15 GENERAL PAPERS PRESENTATIONS**
- ■ **A Lucent**
- ■ **B Raytheon**
- ■ **C Micrilor**
- ■ **D Alantro**
- ■ **E Harris**

WEDNSDAY AFTERNOON AND/OR EVENING.

- MATRIX OVERVIEW
- PANEL DISCUSSION   1:50 - 3:15
- BREAK
- CLOSING ARGUMENTS 3:45- 4:05
- FINAL VOTING ROUNDS
- ANNOUNCEMENTS AT EACH
- ADJURN 8:30 AM (Thursday)

FRIDAY

- VOTER MEMBERS COUNT.
- STATUS SUMMARY.
- DISCUSSION AND CLARIFICATION OF PLENARY DIRECTION TO THE TASK GROUP b.
- SCHEDULE FOR TASK GROUP b.
  - Left up to the chairs not discussed.

- NEXT MEETINGS AGENDA/
- present papers (priority to proposals that will be available on the web a week prior to the July meeting, proposals need to be available at the start of the July meeting.)
- Define selection process
- DISCUSSION ON PATENT POLICY (not discussed).
- CLOSING SUMMARY BY CHAIR .
- ADJURN   (12:10)

In accordance to Roberts Rules of Order, the chair can appoint a parliamentarian (p 456). The parliamentarian will advise on the proper rules. Stuart Kerry and Vic Hayes will act as parliamentarians.

DOWN SELECTION BALLOT
TASK GROUP b
05/05/98

Motion to adopt one of the following choices as the <u>BEST</u> option for the 2.4 GHZ high rate PHY. as stated in the selection process document (98/54) step 14.
Stewart/Al , unanimous

VOTING BALLOT:
Indicate your vote by checking the appropriate choice. One check only.

PROPOSAL/ OPTION	YES (BEST OPTION)
ALANTRO	
HARRIS	
LUCENT	
MICRILOR	
RAYTHEON	
NONE	

Company	ROUND 1	%	round 2	round 4	round 5	round 6 not completed
Harris	25		26	24	28	
Lucent	14		15	16		
Micrilor	12		15	17	29	
Raytheon	3		1			
Alantro	1					
None	1		1	1	1	
INVALID	1		0	0	0	
Abstain	0		0	0	0	
total valid	56		58	58	58	

ROUND 3 WAS INVALID

Motion by Keith/Bruce to postpone the ballot process to the Friday TGb meeting because it looks like there is no clear direction and ask the interested parties of their willingness to work on a compromise through the start of the Friday TGb meeting.

Jeff Abramowitz: Point of Order: I question the validity of our voting due to voting irregularities that could be explained by "Block voting". I believe that the 802 rules allow that if block voting is shown, the voting rules change to one vote per company.

The chair and the parliamentarians after a 1.5 hr recess resulted for the chair ruling that:

The matter is forwarded to the executive committee for final direction while we keep moving with task group b business.

THE CHAIR AND THE PARLIAMENTARIANS DECIDED ON THIS RULLING DUE TO THE SENSITIVITY OF THE POINT RAISED AND THE INDICATION THAT MORE

**THAN 1 PERSON BELIEVED THAT THERE WAS SOME KIND OF A "BLOCK" BASED ON THE DEFINITION PRESENTED BELOW. NO CLEAR EVIDENCE THOUGH. THERE ARE NO RULES THAT WE COULD FIND REFERING TO WORKING GROUP ACTION ON A "BLOCK".
THE FOLLOWING REFERENCES WERE USED FOR THE CHAIRS DECISION.**

THE CHAIR WAS APPEALED AND OVERULED.

Standards companion
It is also the chair's responsibility to ensure that the working
group knows they represent only themselves, not their company or another
interest.

LMSC Operating rules
ExCom
3.4.1 Voting Guidance
It is expected that LMSC Executive Committee members will vote as both professionals and as individual experts, except under the Directed Position provisions of Procedure 8, and not as a member of any affiliate block (organization, alliance, company, consortium, special interest group, etc.). If substantive evidence is presented to the LMSC Chair that this provision is violated, the LMSC Executive Committee will meet to consider what, if any, action to take on the presented evidence. Such action may include any action up to and including a recommendation for removal from office.

Working group
5.1.4.4 Working Group Chair's Authority
To carry out the responsibilities cited in 0 5.1.4.3 Working Group Chair's Responsibilities, the Working Group Chair has the authority to:
a) Call meetings and issue meeting minutes.
b) Decide which issues are technical and which are procedural.
c) Establish Working Group rules beyond the Working Group rules set down by the Executive Committee. These rules must be written and all Working Group members must be aware of them.
d) Assign/unassign subtasks and task leaders or executors, e.g. secretary, subgroup chair, etc.e) Determine if the Working Group is dominated by an organization, and, if so, treat that organizations' vote as one (with the approval of the Executive Committee).
f) Make final determination if and how negative letter ballots are to be resolved when a draft standard, recommended practice, or guideline, is to be sent to the Executive Committee for approval for Sponsor Ballot Group voting.
g) Collect fees to meet Working Group expenses.

The following motion passed at the task group , defining the acceptable proposals.

Motion to accept the text below defining what is considered as an acceptable proposal for considerations of task group b.

- **The acceptable proposals are the existing 5 proposals, possibly modified (but not to the extent that makes them new proposals as determined by TGb) by the original proposers, and any proposals which combine substantial elements of two or more of the 5 existing proposals, with the addition of any required additional elements to render the merged proposal viable, and are presented willingly and jointly by the original proposers of the proposals being merged.**

**Carl/Anil
passes 29/1/7.**

802.11c Report

- Met on Tuesday 05/05/98 and Thursday 05/07/98
- Ballot closure deadline on Tuesday 05/05/98 received 4 new comments.
- Received 17 comments: 15 editorial, 1 technical, 1 technical NO vote.
  - 9 comments accepted
  - 3 comments not applicable
  - 3 comments declined
  - 2 comments not accepted
- Ballot status and additional comments unknown

Report of TG-rev

Bob O'Hara

TGrev Report

- Participating:
  - Simon Black
  - Darwin Engwer
  - Henri Moelard
  - Victoria Poncini
  - Anil Sanwalka
  - Johnny Zweig

TGrev Report

- Received 70 comments thus far
  - Technical: 6
  - technical: 15
  - Editorial: 19
  - editorial: 26
  - "Questions":   4
    - Total: 70

TGrev Report

- All comments resolved
  - Accepted: 54
  - Declined: 12
- All questions answered (4)

TGrev Report

- Technical changes were made
  - Registration of notification objects in the MIB were changed to comply with SMIv2
  - New notification objects were added
    - dot11Deauthenticate
    - dot11AuthenticateFail
  - Concatenation of WEP secret key and IV was clarified.
  - Ranges were set on many attributes to minimize storage requirements
  - dot11StationID is now deprecated

WPAN SG Meeting Report

Utrecht, NL
May 4-6, 1998

WPAN Report Contents

- Utrecht, NL Agenda Summary
- Current Press Release
- Irving/Dallas TX Venue May 19-21, 1998
- Technical Guidelines a.k.a. Functional Requirements and Applications
- WPAN Call For Proposal
- WPAN Liaisons

Monday May 4, 1998

- Opening of session
  - introductory comments
  - roll call
  - voting rights
  - logistics
  - other announcements
  -

Monday May 4, 1998

- Approval of minutes from Cambridge meeting
  - Pat, Larry second 4,0,0
- Review of Contributions
  - Stuart Kerry, Butterfly HomeRF Pitch added to Wednesday May 6th, 1998 Agenda
- Adoption of agenda
  - Hearing no objections agenda accepted
- Old business
  - We need a Spectrum Availability and Requirements Matrix
- New business

Monday May 4, 1998

- Review objectives of meeting
  - Solicit WG Proposal (802.11 FH/DS)
  - Progress Draft PAR and 5 Criteria & Coexistence
  - Draft Liaisons w/ Press Release, Call For Proposal, etc.
- Review functional requirements document aka Guidelines
- Discuss requirements for a standard

Submission   Slide 5   Bob Heile, GTE

Tuesday May 5, 1998

- Reviewed
  - PAR process/templates
  - Draft PAR
  - Draft 5 Criteria
  - Draft Guidelines
- Created Application Summaries
- Determined next steps
  - Create Spectrum Availability Matrix
  - Liaisons, Promote CFP

Submission   Slide 6   Bob Heile, GTE

Wednesday May 6, 1998

- HomeRF Pitch from Stuart J. Kerry
- Created SG report for afternoon plenary

WPAN SG Press Release

- IRVINE, CA 12 March 1998 - IEEE P802.11 Working Group announced today the formation of a study group to identify a project for standardization of a LAN for wireless communications for Wearable computing devices. This study will examine the requirements for Wireless Personal Area Networking (WPAN) of PCs, peripherals, and consumer electronic devices to communicate and interoperate with one another.

WPAN SG Interim Meeting

Sheraton Grand Hotel (10 minutes from Dallas/Fort Worth Airport)

4440 West Carpenter Freeway

Irving, TX 75063

+1 972-929-8400, +1 800-345-5251

- May 19th, 1998 1:00pm to 5:00pm to May 21st, 1998 8:00am to 2:00pm
- Reference "GTE IEEE Meeting" Rate
- Irving Venue doc.: IEEE 802.11-98/163
- Irving Agenda doc.: IEEE 802.11-98/169

Current WPAN Prioritized Guidelines

- A
  - Low Cost: i.e., relative to target device
  - Small Size e.g., ~.5 cubic inches
    - excludes antenna & battery
  - Power Management: Very Low current consumption
    - Average 20mW @ 10/90 or less
  - Data
  - Should allow coexistence of multiple Wireless PAN's in the same area (20 within 400 square feet)
  - Should allow coexistence of multiple Wireless Systems i.e. P802.11 in the same area

Current WPAN Prioritized Guidelines

- B
  - Effective Data Rate at the MAC SAP: (19.2 - 100) kbit/s (actual 1 device to 1 device)
  - All devices within a WPAN must be able to communicate with each other
  - Networking support for a minimum of 16 devices
  - Voice
  - Range: 0-10 meters
  - Mobility: 0-10mph (hand-off not required to another PAN)
  - Bridge or Gateway connectivity to other data networks

Current WPAN Prioritized Guidelines

- C
  - No single element of failure
  - Video

WPAN SG Applications Examples

- Mobile Worker
  - Courier: Communications between Printer, Scanner, Computer, Gateway to WAN, etc.
  - Road Warrior: Communications between Laptops, HPCs, Pagers, Cellular Phones, Scanners, Gateway to WAN, etc.
- Physiological Monitoring
  - Patient: Communications between Body Sensors, Personal Data Collection Device, Gateway to WAN, etc.
  - Sports: Communications between Shoe Sensors, Body Sensors, Personal Data Collection Device, Gateway to WAN, etc.

Submission   Slide 13   Bob Heile, GTE

May 1998   doc.: IEEE 802.11-98/222

WPAN SG Call For Proposal for Irving, TX

- The following will describe a Call For Proposal (CFP) for the lower layers i.e., OSI RM MAC & PHY Layers of the Wireless Personal Area Network (WPAN).

- Proposals are solicited from members of the WPAN Study Group, Academia, and Industry to provide a straw model for Medium Access Control and Physical layer solutions that are consistent with the WPAN Functional Requirements.

- CFP doc.: IEEE 802.11-98/169

Submission   Slide 14   Bob Heile, GTE

Proposed WPAN SG Liaisons

- Infrared Data Association (IrDA)
- Home Radio Frequency Working Group (HRFWG)
- ETSI Broadband Radio Access Networks (BRAN) Project
- ATM Forum Wireless ATM (WATM) Working Group
- Wireless LAN Alliance (WLANA)
- Internet Engineering Task Force (IETF)

Submission Slide 15 Bob Heile, GTE

May 1998 doc.: IEEE 802.11-98/222

Conclusion

- The WPAN SG would like to thank the 802.11 Working Group for their assistance with the setup of the Utrecht Meeting.

Submission Slide 16 Bob Heile, GTE