

---

**IEEE P802.11  
Wireless LANs**

---

**Tentative Minutes of the IEEE P802.11 Full Working Group**

**Queen Elizabeth Hotel, Montreal, PQ, Canada**

**5-9 July 1999**

**Monday, 5 July Opening Session IEEE P802.11**

**1 Opening of Session**

Meeting called to order by Vic Hayes in the Chair at 1509 hrs. Agenda of 57<sup>th</sup> session of 802.11 is in doc.:IEEE P802.11-99/139-r1 (archive file 913918W-Tentative-Agenda-July-99.ppt).

**Objectives for this meeting:**

- Resolve reconfirmation ballot results for TGa and TGb
- Work of TGd (Regulatory domains)
- Send letters to liaison groups and to regulatory agencies as needed

**1.0 Secretary, Document Officer, Attendance Book Officer**

David Skellern, Secretary<sup>1)</sup> is present and ready to take the minutes.

Harry Worstel, Document Officer

Peter Murray, Attendance Book Officer

**1.1 Roll Call**

The 38 people in the room introduced themselves.

**1.2 Voting Rights**

Vic Hayes summarised the regulations regarding voting rights.

- (a) Participation in debates, moving and seconding, is only permitted by voting members, in all 802.11 meetings (at all levels of Plenary and Working Group).
  - Chairs may permit observers to participate in debate
- (b) In study groups all attendees have voting rights.
- (c) To become a voting member and to maintain voting member status:

---

<sup>1)</sup>The officers of the Working Group are:

**Mr. VICTOR HAYES**  
Chairman IEEE P802.11  
Lucent Technologies  
Phone: +31 30 609 7528  
Fax: +31 30 609 7556  
E-Mail: v.hayes@ieee.org

**Mr. DAVID SKELLERN**  
Secretary IEEE P802.11  
Radiata Communications.  
Phone: +61 2 9372 4620  
Fax: +61 2 9372 4623  
E-Mail: daves@ieee.org

**Mr. BOB O'HARA**  
Editor IEEE P802.11  
Informed Technologies Inc.  
Phone: +1 408 986 9596  
Fax: +1 408 727 2654  
E-Mail: bob@informed-technology.com

**Mr. STUART KERRY**  
Vice-Chairman IEEE P802.11  
OK-Brit  
Phone: +1 408 267 4680  
Fax: +1 408 267-4680  
E-Mail: stuart@ok-brit.com

**Mr. AL PETRICK**  
Co-Vice-Chairman IEEE802.11  
Harris Semiconductor  
Phone: +1 407 729-4944  
Fax: +1 407 724-7886  
E-Mail: apetrick@harris.com

**Mr. JOHN FAKATSELIS**  
Chair IEEE802.11-TGb  
Harris Semiconductor  
Phone: +1 407 729 4733  
Fax: +1 407 724 7886  
E-Mail: Jfakat01s@harris.com

**Mr. DAVE BAGBY**  
Chair IEEE P802.11-MAC group  
3COM Corporation  
Phone: +1 408 326 3762  
Fax: +1 408 326 8880  
E-Mail: david\_bagby@3com.com

**Mr. DEAN KAWAGUCHI**  
Chair IEEE P802.11-PHY group  
Symbol Technologies Inc.  
Phone: +1 408 369 2629  
Fax: +1 408 369 2740  
E-Mail: deank@psd.symbol.com

**Mr. NAFTALI CHAYAT**  
Chair IEEE802.11-TGA  
BreezeCom, Inc.  
Phone: +972 3 645 6262  
Fax: +972 3 645 6290  
E-Mail: naftalic@breezecom.co.il

- Participate in at least 2 out of 4 consecutive plenary meetings. An initial non-voting member obtains voting rights at the third meeting.
    - One interim may be substituted for a plenary
  - Participation in at least 75% of each meeting, in the room
    - Voting members will get a token to be used at votes
- (d) All members have voting rights at task group meetings
- (e) Voting rights may be lost:
- After failing to pay the conference fee
  - After missing two out of three consecutive letter ballots
- (f) Current member status:
- Voting members 99 at the beginning of this meeting
  - Nearly voting members 17
  - Aspiring voting members 75

### 1.3 Attendance List; Registration

- Attendance List: The attendance list has to be recorded for voting membership registration. It was circulated with Peter Murray supervising.

### 1.4 Logistics

- (a) Breaks: Coffee breaks are listed in the Agenda for 1000 and 1500.
- (b) Document copying, submission and distribution:
- Printing is available through the WLAN server and in the office.
  - Document distribution: Dissemination of documentation is via electronic file distribution. Two mediums only will be used. They are 1) 802.11 network and 2) two flash memory cards.
  - All files must use the IEEE P802.11 templates for Word documents and PowerPoint. Vic Hayes explained how to properly name and enter information into the documents including the document information, headers and footers. For presentations it is necessary to view header and footer, and slide master and update the date, name and document number.
  - Documents must be available before the agenda item is presented.

### 1.5 IEEE Patent Policy

Vic Hayes, 802.11 Chair explained the IEEE Patent Policy as per Clause 5 of the IEEE Standards Board Bylaws and per Clause 6.3 of the IEEE Standards Operations Manual. He specifically asked for notification from members of patents or patent applications applicable to the Published standards or draft standard and for patent holders to submit the requested statement. The Chair will write to the patent holders or submitters asking for their position on use of the patent.

### 1.6 Individual Representation

All attendees are representing themselves as individuals and not companies and/or any special organization.

### 1.7 Anti-Trust Laws

Discussion of price is disallowed in 802.11 sessions due to the threat of price fixing. Price fixing discussions are governed by Anti-Trust Laws and are illegal.

### 1.8 Copyrights

If you know of copyrighted or proprietary material that is in the standard as we have drafts now, please let the group know so the Chair has the opportunity to request release.

Standards Publication shall constitute a "work made for hire" as defined by the Copyright Act. IEEE owns the copyright of the standards publication.

Bob O'Hara questioned the appropriateness of the "work made for hire" classification. Vic Hayes suggested the matter be raised at the evening Intellectual Property Session.

**1.9 Other Announcements**

1.9.1 There were no announcements from the floor.

**2 Approval of the minutes of past meetings****2.1 Austin meeting 11-99/93**

The approval of the minutes of the Austin meeting was deferred to Wednesday.

**2.2 Chiba meeting minutes 11-99/119**

Motion 99/57P01 To approve doc.: 99/119 as the minutes of the Chiba meeting.  
 Moved: John Fakatselis  
 Seconded: Harry Worstel

Discussion: none

**Motion passes 20-0-3**

**2.3 Matters Arising from the Minutes**

There were no matters arising immediately from the minutes.

**3 Reports****3.1 Monday ExCom Meeting**

Vic Hayes reported:

- 802.11 is publication ready but the cover page is missing - this must come from ISO/IEC in Geneva status of responses to date.
- Janet Rutigliano has been appointed as the new P802.11 IEEE Editor.

**3.2 Financial report of the Chiba meeting**

Hitoshi presented the financial report. There were 50 attendees, including IEEE 802.15 attendees. NTT, NEC and Clarion provided support for the meeting. The total budget for which was \$22,825.29

Motion 99/57P02 To approve doc.: 99/152 as the budget report of the Chiba meeting.  
 Moved: Harry Worstel  
 Seconded: Masahiro

Discussion: none

**Motion passes 21-0-1**

Vic Hayes thanked the organisers for a perfectly organised meeting.

**3.3 Sponsor Recirculation Ballot**

- TG<sub>a</sub> The detailed report of the TG<sub>a</sub> reconfirmation ballot is given in doc.: IEEE P802.11-99/144-r1 (archive file "914418W-802.11a-recirc-report.pdf"). Draft D5.5 was approved with a 97% approval ratio and 8% abstention ratio. Jeff Fisher and John Deane need to be contacted regarding their Disapprove votes.
- TG<sub>b</sub> The detailed report of the TG<sub>b</sub> reconfirmation ballot is given in doc.: IEEE P802.11-99/1445r1 (archive file "914518W-802.11b-recirc-report.pdf"). Draft D5.5 was approved with a 92% approval ratio and 6% abstention ratio.

It is necessary now to recirculate the technical changes only.

An option was to ask the ExCom to give conditional approvals subject to the Reconfirmation Ballots. Both Drafts could then considered at the September meeting.

**4 Review of contributions**

- (a) Vic Hayes reviewed the list of document submissions.
- (b) Jim Zyren would make 10 copies of the Fusion response document, as it was available only in paper form.
- (c) The February ETSI-IEEE agreement should be added to the document list (doc.: IEEE P802.11-99/158).

**5 Adoption of the agenda 11-99/139-r1****5.1 Schedule Changes:**

There will be a Full Working Group meeting of 802.11 after the joint meeting of 802.11 and 802.15 on Wednesday afternoon.

TGa meetings for Tuesday morning are cancelled, there being little business remaining on the Agenda.

In place of TGa on Tuesday morning will be TGd: 0830-1000 then TGb: 1030-1200.

|                 |                                       |
|-----------------|---------------------------------------|
| Motion 99/57P03 | To approve the amended Meeting Agenda |
|-----------------|---------------------------------------|

|        |                 |
|--------|-----------------|
| Moved: | John Fakatselis |
|--------|-----------------|

|           |                   |
|-----------|-------------------|
| Seconded: | Hitoshi Takanashi |
|-----------|-------------------|

Discussion: none

**Motion passes: 20-0-0**

The meeting continued with the revised agenda.

**6 Unfinished Business****6.1 TGa**

- (a) Naftali Chayat reviewed the Comment Processing Status. There were seven comments processed. Two were accepted. Two more are probably accept. There were two further comments from BRAN and one from Masahiro on the short training sequence. ETSI BRAN has accepted the 802.11a methods for pilot scrambling and interleaving. It has also adopted Masahiro's proposal for a short training sequence and a revised power scaling for the preamble short symbols.

|                 |   |
|-----------------|---|
| Motion 99/57P04 | To accept the changes based on resolution to comments 88, 89 and 90, as accepted in TGa July 5, 1999 interim meeting. |
|-----------------|---|

|        |                |
|--------|----------------|
| Moved: | Naftali Chayat |
|--------|----------------|

|           |                   |
|-----------|-------------------|
| Seconded: | Hitoshi Takanashi |
|-----------|-------------------|

Discussion: Naftali explained the reason for scaling the power of the short sequence. The vote in the interim meeting was unanimous 12-0-3.

**Motion passes: 22-0-0**

- (b) TGa proposes a liaison letter be sent to ETSI asking that IEEEstd P802.11a be included in the ETSI family of standards. ETSI & IEEE signed an agreement (doc: 99/158) in February relating to collaboration. Advice from the BRAN Chair is that such requests are dealt with at Board level. Vic Hayes suggested that Jim Carlo should escalate this request to a higher level in IEEE.

|                 |  |
|-----------------|--|
| Motion 99/57P05 | That 802.11 asks the 802 ExCom to submit (or ask the appropriate higher level in IEEE to submit) a letter to the ETSI board with a request to incorporate the 802.11 with an 802.11a PHY into the HIPERLAN family of standards. The proposed draft by Thu ExCom. |
|-----------------|--|

|        |                |
|--------|----------------|
| Moved: | Naftali Chayat |
|--------|----------------|

|           |                   |
|-----------|-------------------|
| Seconded: | Hitoshi Takanashi |
|-----------|-------------------|

Discussion: none

**Motion passes: 22-0-3**

- (c) There will not be a joint meeting of BRAN and 802.11 in January 2000 as ETSI doesn't have a January meeting.
- (d) Vic Hayes will assess requirements for the next steps to not delay publication of this standard.

**6.2 TGb**

TGb held an interim meeting on Mon am. An agenda was approved, with the focus on comment resolution. There are still 45 comments to resolve, with one editorial and the rest technical, and most required. The comments come from seven members. A comment resolution team is preparing responses for consideration by TGb.

**6.3 TGd**

No report was presented at this time.

**6.4 Regulation of RF Lighting Devices**

Jim Zyren gave an update on the RF Lighting issue and spoke to doc: IEEE P802.11-99/143. Two proposals to date to Fusion Lighting have been rejected. This document outlines a new proposal. Fusion has claimed that the Part 15 rules group are violating the constitutional rights of the Part 18 group. Jim wishes to bring the matter to vote this week. An Ad Hoc Task Group was convened to consider the issue and report to the full WG. Jim Zyren will chair the group.

**7 New Business****7.1 NPRM on change of Rules on Spread Spectrum**

Jim Zyren reported on the allowance of 3 MHz and 5 MHz channels and revised definition of processing gain rules provided in FCC NPRM Docket 99-231 (doc.: IEEE P802.11-99/149). Jim spoke to slides in doc.: IEEE P802.15-037.

|                 |  |
|-----------------|--|
| Motion 99/57P06 | Form an 802.11 wideband FH study group with a liaison to 802.15 to analyze interference impacts on 802.11 and 802.11b systems. Report initial findings/recommendations by Wed 7 July and suggest further actions by Thu.8 Jul. |
|-----------------|--|

Moved: Al Petrick

Seconded: Don Sloan

Discussion: Jim Zyren will chair the group. The final response needs to be approved by 802.11 and 802.15, the ExCom and the IEEE USA Activities Board.

**Motion passes: 28-0-1**

|                 |   |
|-----------------|---|
| Motion 99/57P07 | Form an 802.11 processing gain study group with a liaison to 802.15 to fully understand rule changes and define Gaussian noise sources. Report initial findings/recommendations by Wed 7 July and suggest further actions by Thu.8 Jul. |
|-----------------|---|

Moved: Al Petrick

Seconded: Jim Zyren

Discussion: Jim Zyren will chair the group. The final response needs to be approved by 802.11 and 802.15, the ExCom and the IEEE USA Activities Board.

**Motion passes: 25-0-1**

After reviewing overlap in potential participants, it was decided that the Ad Hoc Task Group on RF Lighting and the two study groups on the NPRM would meet together and deal with these matters sequentially.

**8 Adjourn for subgroups**

The Plenary meeting adjourned at 1750 hrs.

**Wednesday, 7 July 1999 Joint Meeting of IEEE P802.11 and P802.15**

Scheduled: 1:00pm – 3:00pm

**9 Opening**

Meeting called to order by Vic Hayes at 1:05 PM and David Skellern, Secretary 802.11 was ready to take the meeting notes. The meeting proceeded according to the 802.11 Agenda, which included items for the Joint Meeting with 802.15, with 802.11-only business, deferred until adjournment of the Joint Meeting.

**9.1 Roll Call**

All present at the start of the meeting introduced themselves. 88 people were present during the session.

**9.2 Document List Update**

No report.

**9.3 Agenda Update**

The new business agenda proposed for the Joint 802.11/802.15 meeting was

- 11.1. IEEE 802.15 WG for WPANs Overview, 5min, Heile
- 11.2. Review 802.15 Gameplan/Timeline, 15min, Heile
- 11.3. Review 802.15 Call for Proposals/Participation submissions, 20min, Gifford
- 11.4. Review Joint Regulatory activities  
Viz, ET Docket 99-149 NPRM Amendment of Part 15 rules, 10min,  
Zyren/Petrick RF Lighting, 10 min, Zyren
- 11.5. Discuss Joint Interim Meeting May 2000; P802.15-hosted; Venue (Boston, Dallas, Seattle), 10 min, Heile

Vic Hayes explained that votes on issues other than the agenda, if they arose, would need to be counted separately for each group.

|                 |                                    |
|-----------------|------------------------------------|
| Motion 99/57P08 | To approve the agenda as modified. |
|-----------------|------------------------------------|

Discussion: none

**Adopted by Acclamation.**

**9.4 Announcements**

9.4.1 Using parts of (draft) standards and copyright.

Vic Hayes explained the process for acknowledging copyright.

9.4.2 Rules for Inter-meeting Committee 96/142-r1

Vic Hayes has issued copies of previous rules adopted by 802.11 in these circumstances in 1996. The separate committees must each approve motions. They must then go to ExCom and finally to the US Activities Board.

**10 Old Business**

Deferred

**11 New Business (Joint 802.11/802.15 Part)****11.1 IEEE 802.15 WG for WPANs Overview**

Bob Heile gave a positioning of the 802.15 WG and related it to other 802 groups - doc.:IEEE P802.15 99/031-r3 He also described the Task and Study Group structure of 802.15, speaking to doc.: IEEE P802.15-99/036r0.

**11.2 Review 802.15 Gameplan/Timeline**

Bob Heile explained that the timeline calls for a draft initial standard in September 1999, with Bluetooth being a possible complete proposal. The aim is to achieve IEEE Standards Board approval by December 2000.

The issue of basis of comparison of different submissions was raised. There was currently no criteria document. However, the matter is being addressed. There were several relevant documents arising from the various activities (described in P802.15-99/029-r0) that have evolved to become IEEE P802.15. Furthermore, a call for Applications and Requirements was drawn up this morning.

**11.3 Review 802.15 Call for Proposals/Participation submissions**

Ian Gifford presented material from the following documents:

- P802.15-99/029-r0 Liaison report #2 - describes the evolution of activity leading to the formation of 802.15 and issue on June 14 of a call for proposals on the web (the second version of this is doc 99/024)
- P802.15-99/024-r1 Second Call for Proposals.
- P802.15-99/030-r0 Second Call for Proposals Summary. A review of companies who had responded to the calls.
- P802.15-99/028-r0 Bluetooth 2CFP Letter of Intent to submit.

The ability to change the Bluetooth Specification was questioned. The Bluetooth Consortium is aware that changes may be suggested but has not entirely embraced the possibility. IP will be handled using standard 802 mechanisms.

The matter of access by each WG to the other's documents was discussed. There was general agreement that the best approach to make web access to each site open to both WGs, rather than duplicate documents.

#### 11.4 Review Joint Regulatory activities

- ET Docket 99-149 NPRM Amendment of Part 15 rules  
This NPRM addresses both wide bandwidth channels and revisions to the definition of processing gain.
  - Jim Zyren explained the rationale for doc.:P802.11-99/162, a draft prepared this week by the Ad Hoc Task Group as a response to the FCC on the question of wide band FH channels. The recommendation is to not support the NPRM.
  - Al Petrick spoke on the matter of Direct Sequence processing gain specified in the NPRM (see doc.:P802.11-99/163). A response to this aspect of the NPRM would be developed using email over the coming 30 days.
- RF Lighting  
Jim Zyren reported on the conclusions of the Ad Hoc Task Group's work on a third proposal to the FCC and Fusion Lighting regarding emission levels. (See doc.: IEEE P802.11-99/164).

The meeting was reminded that the LMSC Resolution establishing 802.15 requires the two WGs to collaborate on submissions (ie produce single submissions) to regulatory agencies. Jim Zyren will establish a process to see that this happens for the NPRM and RF Lighting issues.

#### 11.5 Discuss Joint Interim Meeting May 2000

P802.15 would host the May 2000 interim meeting for both 802.15 and 802.11. Venue choices were Boston, Dallas, and Seattle. Voting was equal between Boston and Seattle. Bob Heile would take further input and choose one of these locations.

#### Adjournment

There being no other business, the Joint Meeting adjourned at 1423 hrs.

## Wednesday, 7 July 1999 IEEE 802.11 Full WG

Scheduled: 10min after Adjournment Joint Meeting – 5:30pm

### Opening

Meeting called to order by Vic Hayes at 2:35 PM and David Skellern, Secretary was ready to take the meeting notes. The meeting proceeded according to the 802.11 Agenda.

### 2.1 Approval of Minutes of Austin meeting 11-99/93

Motion 99/57P09 To approve docs: 99/93 & 93a as the minutes and roll call vote of the Austin meeting

Moved: Hitoshi Takanashi

Seconded: Stuart Kerry

Discussion: none

**Motion passes 21-0-1**

### 10.1 TGa

Naftali Chayat reported that John Deane has lodged an Approve vote on comment #74. Jeff Fisher remains unsatisfied. BRAN has allocated a low priority to its comment. We must issue the recirculation ballot immediately to make the September meeting, as it must be available before August 6.

### 10.2 TGb

John Fakatselis reported that the remaining 45 comments on the table have been resolved as far as the task group is concerned. Teleconferences with some remaining Disapprove voters have been arranged to explain the new responses. The comment resolution task group process worked very well. Two motions passed at the last TGb session will be held over for the Thursday Plenary.

### 10.3 TGd

Bob O'Hara reported the main outcomes of the second TGd meeting, as detailed in the TGd minutes doc.:IEEE P802.11-99/160. TGd was now a full Technical Group. Naftali Chayat and Dean Kawaguchi had made presentations.

The focus of TGd at the next meeting was to determine methods to begin to converge to a standard for defining new regulatory domains. TGd will produce only one standard; this is all the PAR allows. The PAR deadline for the TGd submission to RevCom is July 2000.

### 10.4 Ad-hoc TG Regulations RF lighting

Jim Zyren read a draft letter text to the FCC and Fusion Lighting (doc.: IEEE P802.11-99/164) on in-band emission levels.

Motion99/57P10 Submit a revised letter (doc.: IEEE P802.11-99/164) to the FCC and Fusion Lighting on in-band emission levels, for approval by ExCom

Moved: Jim Zyren

Seconded: Harry Worstel

Discussion: none

**Motion passes: 29-0-0**

### 10.5 Ad-hoc TG Regulations NPRM

#### Wide Band FH Channels

Jim Zyren read a draft text for a letter to the FCC regarding the adoption of wideband channels in the 2.4 GHz ISM band.

Motion 99/57P11 (id#89) To approve the submission of the draft text in doc.: 99/162 to ExCom for a ratification and submission to the FCC. To include clause (d) as made by Jim Zyren. Phil Belanger/Chris Zegelin call the question.

Moved: Jim Zyren

Seconded: Phil Belanger

Discussion: Discussion led to the addition of clause d.

**Motion passes: 21-1-5**

|                        |   |
|------------------------|---|
| Motion99/57P12 (id#93) | To amend Motion 99/57P11 to include clause (d) as made by Jim Zyren |
| Moved:                 | Phil Belanger   |
| Seconded:              | John Kowalski   |

Discussion: several attempts at wordings were explored before accepting Jim Zyren's draft.

**Motion passes: 26-0-3**

|                        |  |
|------------------------|--|
| Motion99/57P13 (id#92) | To amend motion 99/57P11 by adding a sentence that doc.:99/162 will be modified by deleting part c of the argument. John Fakatselis/Bob O'Hara called the question: 24/0/1 |
| Moved:                 | Naftali Chayat   |
| Seconded:              | Don Sloane   |

Discussion: It was argued that clause c was erroneous because similar restrictions that led to typical power levels of 100 mW in 802.11 systems would apply to other systems. However, several members gave counter arguments, among them that 60-100mW radios typically won't be sufficient for all in-home needs. However, unlike many 802.11 systems, many home products are typically wall-powered, so it will be practical for increased power to be used. 500 mW, for example, provides for in-home needs such as streaming video.

**Motion fails: 1-18-8**

#### Definition of Processing Gain Rules

Al Petrick reported on doc.: IEEE P02.11-99/165 outlining issues and steps over the coming month culminating in a teleconference to produce a response to the NPRM in regard to processing gain.

|                     |   |
|---------------------|---|
| Motion99/57P14 (93) | 802.11 Plenary adopts the recommendation as stated in the summary on slide 7 doc.: 99/165 as presented. |
| Moved:              | Al Petrick  |
| Seconded:           | Jim Zyren   |

Discussion: The text will be made available on the reflector continuously until the teleconference in 30 days.

**Motion passes: 19-0-0**

#### **Adoption of Agenda**

The Agenda, as amended for the Wednesday PM Joint Meeting of 802.11 and 802.15 followed by an 802.11 Full WG, was further amended as follows:

TGa: Thu 8 July 8:30-10:00AM  
 TGb: Thu 8 July 10:30-12:00AM  
 Full WG: Thu 8 July 1:00-3:00PM

|                 |                                       |
|-----------------|---------------------------------------|
| Motion 99/57P15 | To approve the amended Meeting Agenda |
| Moved:          | Naftali Chayat                        |
| Seconded:       | John Kowalski                         |

Discussion: none

**Motion passes: 21-0-1**

## **11 New Business**

### **11.6 Call for Interest**

Al Petrick spoke to doc.: IEEE 802.11- 99/166, Enhancements to the 802.11 MAC Layer, on the need for quality of service and security additions to the 802.11 MAC. There was an extended discussion. It was noted that there is no exposed mechanism to allow service quality transfer across the MAC interface. It was argued that the 802.11 PCF provides significant inherent service quality, although there is a marketing problem explaining this. However, the PCF does need some attention and service mapping is an issue. Extensions to the PCF could provide additional QOS capability. Collaboration with other groups, such as IETF, was suggested, although meeting clashes were a problem. It was important to determine which layer should be responsible for QOS, which meant different things to different interest groups.

Al Petrick will ask Jim Carlo regarding IETF interaction.

Motion 99/57P16 To establish an 802.11 Study Group to investigate the implementation of QOS and other additions on top of 802.11 or by enhancements to 802.11. To establish the appropriate liaisons and to draft a PAR for implementation of these recommendations.

Moved: Naftali Chayat

Seconded: Hitoshi Takanashi

Discussion: The lifetime of a Study Group is from one plenary to another.

**Motion passes: 20-0-0**

The choice of Chair of the study group will be added to the Thursday Full WG Agenda.

**11.7 Liaison Officers for 802.11 to 802.15 and 802.16**

- Peter Ecclesine and Vic Hayes will contact Jeff Thompson about mechanisms and procedures.
- Bruce Kraemer accepted nomination as 802.15 liaison
- John Kowalski, Naftali Chayat and Al Petrick volunteered for liaison to 802.16.
- Formal appointment would be considered at the Thursday closing session of the Full WG

**11.8 Monday Schedule for WG**

Vic Hayes advised the meeting that Jim Carlo has put in place a new timetable format for Monday meetings to allow more working group activity. This will come into effect at the next 802 meeting.

**12 There is no item 12**

This item is an error in the Agenda.

**13 Adjourn to Subgroups**

The meeting adjourned at 1652hrs.

**Thursday, 8 July 1999 Full WG Closing Plenary of IEEE 802.11**

**Scheduled: 1:00 PM - 3:00 PM**

**14 Opening**

The closing plenary was opened by Vic Hayes at 1:06 PM and David Skellern, Secretary was ready to take notes.

**14.1 Announcements**

14.1.1 802.15 results on Comments to FCC

The 802.15 voted to maintain a neutral position on the NPRM in relation to the wideband FH matter. 802.15 is too new to be in a position to form a position and would need more time, which is not available. The RF Lighting issue was approved. A summary of the amended proposal is in doc.:99/167.

14.1.2 Motion on 802.15 establishment:

- To submit the WPAN PAR (REV 9) to NesCom and require the 2 WGs collaborate (single submissions) to regulatory agencies.
- Approval of this motion establishes a new working group, 802.15
- Vote on Hayes/Rigsbee motion 11/1/0 Passes 9:51 pm 12 SEC members, Vic Hayes in dissent.

This process has been carried out and the FCC response will go forward. Naftali Chayat advised that he would present a minority opinion on the wide band FH matter, as presented in doc.: IEEE 802.11-99/168.

14.1.3 Conference Announcements

- Rawcon 99, Denver 1-4 August
- Mobile Multimedia Conference, November '99, around time of 802 meeting

14.1.4 Return of Nortel WLAN cards

- Please return any Nortel loaned card to Stuart Kerry

14.1.5 New MAC Study Group

Vic Hayes asked for input on alternative descriptions for the Study Group formed by Motion 99/57P16 that avoid the use of the term QOS.

**14.2 Document List Update**

The document list was reviewed. Note that some duplicate numbers had been allocated. A new accurate document list will be loaded onto the server on Monday. Submitters were asked to not leave spaces in document names.

**14.3 Agenda Adjustments**

A revised agenda was reviewed by Vic Hayes.

|                 |                                       |
|-----------------|---------------------------------------|
| Motion 99/57P17 | To approve the amended Meeting Agenda |
| Moved:          | Bruce Kraemer                         |
| Seconded:       | Jim Zyren                             |

Discussion: none

**Motion passes: 25-0-0**

**15 Reports from Subgroups**

**15.1 TGb**

John Fakatselis reported on TGb. The detailed report is doc. 99/172.

- All remaining 45 comments were resolved by the TG.
- Three of the seven originators of the comments were contacted and many comments were closed. John reviewed the results of these contacts in detail.
- The following motion, which passed unanimously in the TG, was submitted.

|                 |   |
|-----------------|---|
| Motion 99/57P17 | To instruct the editor to modify the draft based on the resolutions in doc. 99/155r2 and to submit draft.last for sponsor ballot recirculation, as well as for conditional approval to submit to RevCom if no new technical comments or new NO votes result from the recirculation. |
| Moved:          | John Fakatselis   |
| Seconded:       | Chris Zegelin   |

Discussion: none

**Motion passes: 29-0-0**

Vic Hayes outlined the next steps. ExCom tonight will be given a report of the resolution and outstanding comments with a request to approve on the condition specified within our rules to be put in the RevCom agenda in September.

### 15.2 TGa

Naftali Chayat gave an update on results since the TGa Wednesday report.

- ❑ The BRAN input on alignment of bit patterns was considered low priority by both BRAN and the TG and it was rejected. The reason would be included in the next BRAN liaison letter.
- ❑ The Jeff Fisher comment on PA backoff remained unresolved.

Motion 99/57P18 To forward the Draft 802.11a-D6.0, after incorporation of the July meeting decisions, to second recirculation ballot, and dependent on its positive outcome, to the September meeting of the Standards Board for approval.

Moved: Naftali Chayat

Seconded: Hitoshi Takanashi

Discussion: a positive outcome means no new NO votes and no new technical comments with >75% approval.

**Motion passes: 27-0-0**

Naftali Chayat read a liaison letter to BRAN and MMAC reporting the acceptance of the BRAN preamble sequence and short preamble symbol scaling, and explaining the reason for rejecting the BRAN proposal on bit-rate specification bits. The letter further suggests other minor alignments, which BRAN may consider at its next meeting.

Motion 99/57P19 To issue doc. 99/171 as a liaison statement to BRAN and MMAC.

Moved: Naftali Chayat

Seconded: John Kowalski

Discussion: none

**Motion passes: 26-0-2**

A recess was called at 2:25 PM while Jim Carlo was consulted regarding a timetable for maximising the opportunity for getting 802.11a before the next RevCom.

Meeting was reconvened at 3:00pm with John Kowalski acting as Secretary, taking minutes; the following schedule for 802.11a was presented:

Jul 13 Draft on web  
 Jul 14 Start Recirculation Ballot  
 July 26 Close  
 Jul 29 report on web  
 Aug 2 Teleconference and report to ExCom reflector  
 Aug 4 start ExCom e-mail ballot  
 Aug 4 draft on web and send submitted package  
 Aug 6 Start recirculation  
 Aug 12 Close ExCom ballot  
 Aug 18 close of ballot  
 Aug 19 report recirculation result to ExCom and RevCom.

Motion 99/57P20 To approve the TGa schedule for recirculation and to empower the teleconference members to resolve the comments, and submit the submittal package to RevCom. If needed, this group is empowered to start a new recirculation ballot and to ask the ExCom to approve by e-mail ballot the said submittal. As per the schedule in doc:99/139r6.

Moved: Naftali Chayat

Seconded: Hitoshi Takanashi

Discussion: none

**Motion passes 21-0-2.**

Motion 99/57P21 To empower TGA and 802.11 Chairs to draft a letter to the ETSI board for submission by the IEEE-SA to request the inclusion of 802.11 with 802.11a PHY in the HIPERLAN family of standards

Moved: Naftali Chayat

Seconded: John Kowalski

Discussion: Naftali reported on discussions with representatives from ETSI regarding procedure. Incorporation of 802.11a into the HIPERLAN family of standards will allow IEEE802.11 networks to operate in ETSI regulated regions. The proposed letter will be doc.:99/173.

**Motion passes 19-0-2.**

### 15.3 Study Group WPAN

No report.

## 16 Unfinished Business

### 16.1 Output Documents

- Comments on NPRM Docket No. 231
- Letter to FCC re RF Lighting
- Liaison letter to ETSI-BRAN, MMAC
- 802.11a recirculation ballot
- 802.11b recirculation ballot
- Request to set-up study group for enhanced 802.11
- Letter from IEEE to ETSI

### 16.2 Next Meeting

- Objectives for next meeting
  - to respond to recirculation ballots if needed
  - to work on TGd, regulatory domains
  - to start the work of the study group 802.11 enhancement
- Mailing dates as soon as possible, weekly uploads, as the need arises in diskette format for those that asked.

Motion 99/57P22 To empower the September meeting to resolve sponsor ballot comments on 802.11a and/or 802.11b and to start new recirculation ballots

Moved: Naftali Chayat

Seconded: Hitoshi Takanashi

Discussion: none

**Motion passes 22-0-0.**

### 16.3 Other Interim Meetings Required

None identified at this time.

## 17 New Business

### 17.1 Liaison with 802.15, .16

Motion 99/57P23 To temporarily adopt a mutual liaison between 802.11 and 802.15/16 where three 802.11 members are appointed for each group. 802.11 will accept up to three 802.15 and up to three 802.16 liaisons from those groups giving them voting rights and requesting the same from 802.11 liaisons into 802.15 and 802.16

Moved: Naftali Chayat

Seconded: John Kowalski

Discussion: none

**Motion passes 24-0-1**

Motion 99/57P24 To appoint Bruce Kraemer, Stuart Kerry and Peter Murray as 802.11 liaisons to 802.15, and to appoint Naftali Chayat, John Kowalski and Al Petrick as 802.11 liaison members to 802.16.

Moved: Harry Worstel  
Seconded: John Fakatselis

Discussion: none

**Motion passes 28-0-0**

Motion 99/57P25 To forward the recommendation to hold the meeting in July 2003 in the University of Twente, in Enschede Netherlands.

Moved: John Fakatselis  
Seconded: Naftali Chayat

Discussion: none

**Motion passes 24-3-1**

Motion 99/57P19 To appoint John Fakatselis as chair of Study group for 802.11 enhancements

Moved: Al Petrick  
Seconded: John Kowalski

**Approved by acclamation.**

Meeting adjourned at 15:45.

## **Annex 1 Tentative Meeting Schedule**

### **1999**

**Sept 13-17 - Hilton, Santa Rosa, CA, Interim (Alantro)**

**November 8-12 - Hyatt Regency, Kauai, Koloa, HI, Plenary**

### **2000**

**January 10-14 - Tel Aviv, Israel, Interim (Breezecom)**

**March 6-10 - Hyatt Regency, Albuquerque, NM, Plenary**

**July 10-14 - Hyatt Regency La Jolla, San Diego, CA, Plenary**

**November 6-10 - Hyatt Regency, Tampa, FL**

### **2001**

**March 12-16 – Hyatt Regency, Hilton Head, SC ???**

**July 9-13 - Portland Marriott, Portland, OR**

**November 12-16 – Hyatt Regency Town Lake, Austin, TX**

### **2002**

**March 11-15 - to be determined**

**July 8-12 - Hyatt Regency, Vancouver, BC Canada**

**November 11-15 - to be determined**

## *Attendance list for the meeting held at* **Queen Elizabeth, Montreal, Canada**

| <i>Full name</i>         | <i>statu</i> | <i>att.</i> | <i>phone</i>     | <i>company</i>                              | <i>e_mail</i>                        |
|--------------------------|--------------|-------------|------------------|---|--------------------------------------|
| Mr. Matthew Alspaugh     | aspirant     | 100         | +1 303 440 5330  | Spectralink                                 | matta@spectralink.com                |
| Mr. Carl F. Andren       | voter        | 100         | +1 407 724 7535  | HARRIS Corporation                          | candren@harris.com                   |
| Mr. Don Arnstein         | nonvoter     | 11          | +1 301 428 7156  | Hughes Network Systems                      | darnstein@hns.com                    |
| Mr. Kevin M. Barry       | voter        | 100         | +1 516 244 4345  | SITA  | kbarry@sitaaps.org                   |
| Mr. Phil Belanger        | voter        | 99          | +1 330 664 7953  | Aironet Wireless<br>Communications Inc.     | pbela@aironet.com                    |
| Mr. Alan Bien            | nonvoter     | 11          | +1 408 731 2700  | Proxim Inc.                                 | abien@proxim.com                     |
| Mr. Jan Boer             | voter        | 100         | +31 30 609 7483  | Lucent Technologies Nederland               | janboer@lucent.com                   |
| Mr. Naftali Chayat       | voter        | 100         | +972 3 645 6262  | BreezeCom                                   | naftalic@breezecom.co.il             |
| Mr. Wen-Chiang Chen      | voter        | 100         | +886 3 5917157   | Industrial Technology Research<br>institute | 810739@ccloa1.ccl.itri.org.<br>tw    |
| Mr. Harshal Chhaya       | aspirant     | 15          | +1 972 917 2592  | Texas Instrument Inc.                       | hchhaya@ti.com                       |
| Mr. Jangjin Choi         | nonvoter     | 11          | +82 331 200 3327 | Samsung Electronics Co, LTD                 | choispsw@secns.sec.sams<br>ung.co.kr |
| Mr. William Cruz         | nonvoter     | 15          | +1 732 817 2777  | Lucent technologies                         | wcruz@lucent.com                     |
| Mr. Mickael Deboille     | nonvoter     | 100         | +358 9 43761     | Nokia Research Center                       | mickael.deboille@nokia.co<br>m       |
| Mr. Peter Ecclesine      | voter        | 100         | +1 408 527 0815  | Cisco Systems Inc.                          | petere@aimnet.com                    |
| Mr. Richard Eckard       | voter        | 100         | +1 781 466 2780  | GTE Laboratories Inc.                       | reckard@gte.com                      |
| Mr. Greg Ennis           | voter        | 45          | +1 408 358 5544  |   | gennis@mindspring.com                |
| Mr. John Fakatselis      | voter        | 100         | +1 407 729 4733  | HARRIS Corporation                          | jfakat01@harris.com                  |
| Dr. David D. Falconer    | nonvoter     | 11          | +1 613 520 5722  | Carleton University                         | ddf@sce.carleton.ca                  |
| Mr. Kurt Fischer         | nonvoter     | 15          | +1 510 252 1700  | Cetecom                                     | kurt.fischer@cetecomusa.c<br>om      |
| Mr. Motohiro Gochi       | voter        | 100         | +1 781 245 7001  | Clarion Corporation of America              | mgochi@ibm.net                       |
| Mr. Richard Graham       | nonvoter     | 15          | +1 978 684 1610  | Cabletron Systems Inc.                      | graham@ctron.com                     |
| Dr. Steven D. Gray       | voter        | 100         | +1 972 894 4422  | Nokia Research Center                       | steven.gray@nokia.com                |
| Mr. David Halasz         | aspirant     | 100         | +1 330 664 7389  | Aironet Wireless<br>Communications Inc.     | dhala@aironet.com                    |
| Dr. Baya Hatim           | nonvoter     | 11          | +1 619 450 7365  | WFI   | bayahatim@aol.com                    |
| Mr. Victor Hayes         | voter        | 100         | +31 30 609 7528  | Lucent Technologies Nederland               | vichayes@lucent.com                  |
| Mr. Allen Heberling      | voter        | 30          | +1 716-588-1939  | Eastman Kodak, Co                           | heberlin@kodak.com                   |
| Dr. Chris Heegard        | voter        | 100         | +1 707 521 3062  | Alantro Communications                      | heegard@alantro.com                  |
| Mr. Robert Heile         | voter        | 15          | +1 781 466 2057  | GTE Internetworking<br>Technologies         | bheile@bbn.com                       |
| Mr. Juha Heiskala        | voter        | 99          | +1 972 894 5516  | Nokia Research Center                       | juha.heiskala@nmp.nokia.c<br>om      |
| Mr. Maarten Hoeben       | voter        | 100         | +31 30 228 0910  | No Wires Needed B.V.                        | maarten.hoeben@nwn.nl                |
| Mr. John Paul Jones      | aspirant     | 15          | +1 972 917 3259  | Texas Instrument Inc.                       | jpjones@ti.com                       |
| Mr. Kevin Karcz          | voter        | 75          | +1 603 862 1008  | University of New Hampshire                 | kjk@unh.edu                          |
| Mr. Dean M.<br>Kawaguchi | voter        | 99          | +1 408 369 2629  | Symbol Technologies Inc.                    | deank@psd.symbol.com                 |
| Mr. Stuart J. Kerry      | voter        | 100         | +1 408 267 4680  | OK-Brit                                     | stuart@ok-brit.com                   |
| Dr. Dae Young Kim        | nonvoter     | 11          | +82 42 821 6862  | Chungnam National University                | dykim@ccl.chungnam.ac.kr             |
| Mr. Eric J. King         | nonvoter     | 45          | +1 336 931 7043  | RF Micro Devices Inc.                       |                                      |
| Mr. Patrick Kinney       | voter        | 15          | +1 319 369 3593  | Intermec Technologies Corp.<br>(Norand)     | kinneypw@norand.com                  |
| Mr. Tom Kolze            | nonvoter     | 15          | +1 602 460 2894  | ComSTAR Communications                      | tkolze@getnet.com                    |
| Dr. John M. Kowalski     | voter        | 100         | +1 360 817 7520  | Sharp Laboratories of America<br>Inc.       | kowalskj@sharplabs.com               |

| <i>Full name</i>           | <i>statu</i>    | <i>att.</i> | <i>phone</i>             | <i>company</i>                                | <i>e_mail</i>                    |
|----------------------------|-----------------|-------------|--------------------------|---|----------------------------------|
| Mr. Bruce P. Kraemer       | voter           | 99          | +1 407 729 5683          | HARRIS Corporation                            | bkraemer@harris.com              |
| Mr. Changoo Lee            | voter           | 100         | +82 42 860 6168          | Electronics & Telecoms<br>Research Inst       | cglee@etri.re.kr                 |
| Mr. André Martin           | nonvoter        | 100         | +1 514 441 2020          | Bombardier Transportation                     | amartin@transport.bombardier.com |
| Mr. John McCorkle          | nonvoter        | 30          | +1 301 614 1325          | XtremeSpectrum                                | john@xtremespectrum.com          |
| Mr. Michael D. McInnis     | voter           | 20          | +1 425 865 2840          | The Boeing Company                            | michael.d.mcinnis@boeing.com     |
| Mr. Reiner Mim             | nonvoter        | 99          | +1 408 731 2768          | Proxim Inc.                                   | rmim@proxim.com                  |
| Dr. Masahiro Morikura      | voter           | 99          | +81 468 59 3132          | NTT Access Network Service<br>Systems Labs.   | morikura@ansl.ntt.co.jp          |
| Mr. Peter Murray           | aspirant        | 100         | +1 908 232 9054          | No Wires Needed                               | pmurray@pipeline.com             |
| Dr. Richard van Nee        | voter           | 75          | +31 30 609 7412          | Lucent Technologies Nederland                 | vannee@lucent.com                |
| Mr. Erwin R. Noble         | voter           | 75          | +1 281 719 1955          | Telxon Corporation                            | enobl@telxon.com                 |
| Mr. Bob O'Hara             | voter           | 99          | +1 408 986 9596          | Informed Technology Inc.                      | bob@informed-technology.com      |
| Dr. Tomoki Ohsawa          | voter           | 99          | +81 471 85 6732          | NEC Corporation                               | ohsawa@ptl.abk.nec.co.jp         |
| Mr. Mike Paczonay          | nonvoter        | 15          | +1 510 252 1700<br>X339  | Cetecom                                       | mike.paczonay@cetecom.com        |
| Mr. Al Petrick             | voter           | 100         | +1 407 729 4944          | HARRIS Corporation                            | apetrick@harris.com              |
| Mr. Yves Pierrisnard       | nonvoter        | 45          | +1 770 303 3540          | SITA  | yvesp@ed.atl.sita.int            |
| Mr. Bob Pierson            | nonvoter        | 100         | +1 407 724 7274          | HARRIS Corporation                            | rpearson@harris.com              |
| Mr. Ron Porat              | nonvoter        | 60          | +1 619 535 8787          | National Semiconductor                        | Ron.Porat@nsc.com                |
| Mr. Mike Press             | nonvoter        | 35          | +1 336 931 7338          | RF Micro Devices Inc.                         | mpress@rfmd.com                  |
| Mr. Ivan Reede             | nearly<br>voter | 15          | +1 514 620 8522          | AmeriSys Inc.                                 | i_reede@amerisys.com             |
| Dr. Stanley A. Reible      | voter           | 99          | +1 781 246 0103<br>X105  | Micrilor Inc.                                 | reible@compuserve.com            |
| Mr. Carlos A. Rios         | nearly<br>voter | 75          | +1 408 326 2844          | 3Com Corporation                              | carlos_rios@3com.com             |
| Dr. Martin Rofheart        | nonvoter        | 30          | +1 301 614 1324          | XtremeSpectrum                                | martin@xtremespectrum.com        |
| Dr. Clemens C.W. Ruppel    | voter           | 30          | +49 89 636 5 33 25       | Siemens AG                                    | c.c.ruppel@ieee.org              |
| Dr. Stephen J. Shellhammer | voter           | 15          | +1 516 738 4302          | Symbol Technologies Inc.                      | shell@symbol.com                 |
| Mr. David Skellern         | aspirant        | 100         | +61 2 9372 4620          | radiata communications pty ltd                | daves@radiata.com                |
| Mr. Donald I. Sloan        | voter           | 99          | +1 330 664 7917          | Aironet Wireless<br>Communications Inc.       | dons@aironet.com                 |
| Mr. Hitoshi Takanashi      | voter           | 100         | +1 650 833 3634          | NTT Multimedia<br>Communications Laboratories | takanashi@nttmcl.com             |
| Mr. Satoru Toguchi         | voter           | 100         | +81 462 78 1871          | JVC   | toguchi@krhm.jvc-victor.co.jp    |
| Mr. Steve Torp             | nonvoter        | 15          | +1 847 413 2571          | Motorola Inc.                                 | rvcs50@email.sps.mot.com         |
| Dr. Chih C. Tsien          | voter           | 45          | +1 619 642 2720          | Solectek Corporation                          | ctsien@solectek.com              |
| Dr. Robert M. Ward Jr.     | voter           | 75          | +1 619 513 4326          | SciCom  | bmward@home.com                  |
| Mr. John Wiss              | nonvoter        | 75          | +1 858 450 1220<br>X3011 | Solectek Corporation                          | hwiss@solectek.com               |
| Mr. Harry Worstell         | voter           | 100         | +1 973 236 6915          | AT&T Labs                                     | hworstell@att.com                |
| Mr. Chris Zegelin          | voter           | 90          | +1 408 369 2667          | Symbol Technologies Inc.                      | chrisz@psd.symbol.com            |
| Mr. Jim Zyren              | voter           | 100         | +1 407 729 4177          | HARRIS Corporation                            | jzyren@harris.com                |