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**IEEE P802.11  
Wireless LANs**

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

**Sonoma Hilton Hotel, Santa Rosa, California**

**13-17 September 1999**

**Monday, 13 September, Opening Meeting IEEE 802.11**

**1 Opening of Session**

Meeting called to order by Vic Hayes in the Chair at 0835 hrs. Agenda of 58<sup>th</sup> session of 802.11 is in doc.:IEEE P802.11-99/180-r2 (archive file 918028W-Tent-Agenda-Sep-99.ppt). The Chair thanked Alan Tro for organising the meeting.

**Objectives for this meeting:**

- (To resolve comments from Sponsor Ballot for TGa and TGb, if any) No business available
- Respond to NPRM/liaise with Home-RF
- Work on TGd matters (Regulatory domains)
- Work on the 802.11 Enhancement Study Group (PAR-5 Criteria)
- Liaise with 802.15 regarding co-existence

**1.1 Secretary, Document Officer, Attendance Book Officer**

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

Tim Godfrey, Document Officer

Kevin Marquess/Maarten Hoeven, Attendance Book Officers

**1.2 Roll Call**

The 33 people in the room introduced themselves.

**1.3 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).

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- 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:
  - 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 97 at the beginning of this meeting
  - Nearly voting members 19
  - Aspiring voting members 68

#### 1.4 Attendance List; Registration

- (a) Attendance List: The attendance list has to be recorded for voting membership registration. It was circulated with Kevin supervising.
- (b) Rules for Signing
  - Discontinued practice: the requirement to circle the letter corresponding to the meeting you attended when signing (F=full 802.11, P=PHY group, M=MAC group) was discontinued.
  - Mon am & pm, Tue am & pm, Wed am & pm, Thu am & pm, Fri am each count 11%
- (c) Vic Hayes asked members to check e-mail addresses
- (d) Copies of the attendance list are handed out before the end of each meeting.
- (e) Registration:
  - The meeting fee (\$US265) has to be paid through the registration desk.
  - Failure to pay causes loss of credit for voting rights and letters to be sent.

#### 1.5 Logistics

- (a) Continental breakfast available for attendees; badge also gives entry to lunch.
- (b) Breaks: Coffee breaks are listed in the Agenda for 1000 and 1500. Lunch is 1200-1300.
- (c) Document copying, submission, distribution and rules:
  - Printing is available through the WLAN network.
  - Document distribution: Dissemination of documentation is via electronic file distribution. Two mediums only will be used. They are: 1) 802.11 network and 2) 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 one session before the agenda item is presented.

#### 1.6 IEEE Patent Policy

Vic Hayes, 802.11 Chair explained the IEEE Patent Policy as per Clause 5 of the IEEE SA Standards Board Bylaws and per Clause 6.3 of the IEEE SA Standards Operations Manual. IEEE Standards may include known use of patents provided the holder will licence under reasonable terms and conditions without discrimination prior to approval of the standard. He specifically asked for notification to the Working Group 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.

#### 1.7 Individual Representation

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

#### 1.8 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.

## 1.9 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.

## 1.10 Press Relations

There was a claim that IEEE802 specifies that statements to the press about an 802.11 committee must go through the Chair of that committee. Vic Hayes will verify.

## 1.11 Other Announcements

1.11.1 ISO/IES8802-11:1999 and ANSI/IEEE802.11 is available. It will be on the CD ROM in November 1999.

1.11.2 WECA - Jim Zyren reported that the Wireless Ethernet Compatibility Alliance formed in August to promote high rate products. Founding sponsors are 3COM, Aironet, Intersil, Lucent, Nokia and Symbol. See [www.wirelessethernet.org](http://www.wirelessethernet.org). There is a press event in Atlanta on Wednesday 15 September 1999.

1.11.3 Vic Hayes reported that he had introduced 802.11a and 802.11b to ISO who agreed that it could enter the fast track procedure. This is a 6 month letter ballot process. If the document is released to ISO in November it could be approved at the ISO June meeting. A particular benefit of going through this process is the possibility, particularly for 802.11a, of becoming a true world-wide standard.

1.11.4 Richard noted he would be proposing new work on the inter access point protocol.

## 2 Approval of the minutes of past meetings

Deferred due to lack of quorum.

## 3 Reports

### 3.1 Report of Sponsor Ballot

The detailed report of the TGa and TGb sponsor ballots are given in doc.: P802.11-99/180-r2 (archive file 918028W-Tent-Agenda-Sep-99.ppt). Both projects met conditional approval requirements and are this week in Rev Com and the Standards Board.

- ❑ TGa Draft D6.2 was approved with 98% approval ratio and 7% abstention ratio.
- ❑ TGb Draft D6.1 was approved with 93% approval ratio and 7% abstention ratio.

The 802.11 Vice-Chair acted as Chair during the recirculation period and submission time. The Chair thanked Stuart Kerry for a job well done. Both editors were thanked for their good job in getting the drafts through. We expect galley proofs of 802.11b this week.

### 3.2 Thursday 8 July 99 ExCom Meeting

Vic Hayes reported that there were 7 points on the agenda for approval and 2 for information.

- ❑ To approve submission of letter to FCC regarding RF lighting subject to approval by the US Activity board. Approved 11-0-2
- ❑ To approve submission of comments on the Wideband FH proposal in FCC Docket 99-321, subject to approval by the US Activity board. Approved 9-1-2. The one Do-Not-Approve vote was based on procedure.
- ❑ To forward draft standards 802.11a and 802.11b to RevCom subject to compliance with the Conditional Approval Procedure. Both approved 13-0-0.
- ❑ To request the LMSC Chair to ensure that the proposed letter to the ETSI Board will be approved by the IEEE SA. Approved 11-1-1. The Do-Not-Approve vote was procedural.
- ❑ To approve the Working Group Study Group initiated by 802.11 for 802.11 enhancements with the charter to Investigate QoS and CoS metrics, and Enhanced Security mechanisms for supporting long keys, key negotiation & distribution and investigate enhancements to the authentication process with the aim to submit the related PAR(s) and 5 criteria. The goal is to approve the PAR at the March 2000 meeting. For information, the chair is John Fakatselis. Initiation of Study Group. Approved 12-0-0.
- ❑ The information items were (a) Liaison letter to Board of ETSI and (b) Support to hold meeting in Twente

**3.3 Report of the Comment Resolution Meeting**

- Final contentious issues with 802.11b were discussed; some NO votes could not be converted.
- There were no issues with 802.11a. One editorial matter was resolved.

**4 Review of contributions**

(a) Vic Hayes reviewed the list of document submissions.

- 191 TGd Universal Channelization for DSSS and HRDS Phys (Bob O'Hara)
  - 192 SG 5.9 GHz DSRC Band Utilization Conceptual Proposals (Broady Cash, DSRC)
  - 193 WG Call for experts to identify need for globally harmonized spectrum in the 5 GHz area (UK RA)
  - 194 WG Presentation to European Common Position Group regarding globally harmonised spectrum at 5 MHz (ETSI/BRAN, Jan Kruys)
  - 195 TGd Algorithmically derived Hop Sequences (Darwin Engwer)
  - 196 SG Multimedia transport over wireless LANs (Amar)
  - 197 SG Enhancing 802.11 with QOS and introductory discussion (Maarten Hoeben)
  - 198 SG Requirements for an IAPP (Richard Paine)
  - 199 ah reg 802.11b Response to NPRM (John Fakatselis) (subsequently VOIDED)
  - 200 ah reg Response to NPRM (Vic Hayes) (subsequently VOIDED)
- transport service group to see if DSRC can use 802.11 MAC for their application.

**5 Adoption of the agenda 802.11-99/180-r2**

**5.1 Schedule Changes:**

- HomeRF presentation on FCC WBFH scheduled 1030-1200 Monday.
- Presentation and discussion with DSRC transport service group representatives scheduled for 1300-1500 Thursday - many DSRC requirements are met by the 802.11 MAC. DSRC will explain their needs and explore whether the 802.11 MAC is suitable for their application.
- Add item 7.4 IAPP (Inter Access Point Protocol)
- Note that the bus for the Wednesday evening function can be boarded from 1630 and must leave at 1700 sharp.

Motion 99/58P01 To approve the Meeting Agenda as amended.  
 Moved: John Fakatselis  
 Seconded: Darwin Engwer

Discussion: none

**Motion passes: 16-0-0**

The meeting continued with the revised agenda.

**6 Unfinished Business**

**6.1 TGd**

None

**6.2 Study Group Enhanced 802.11**

To start work this meeting.

**6.3 NPRM for Spreading Rule Changes**

Carl Andren Chairs this ad hoc group. A presentation will be given after this session on the HomeRF group's views on these changes.

**7 New Business**

**7.1 Petition for Membership Extension – Amundsen & Poncini**

(a) Keith Amundsen

- Hosted 802.11 meetings twice
  - had to fight his management to continue commitment to host the September 98 meeting

- still recovers cost hotel is overcharging
- went through a period of sickness and personal problems
- can continue working for 802.11 starting November meeting
- participated in 12 meetings
  - March 98, May 98, (July 98 missed), Sept 98
  - Needs substitute participation March 99 and July 99

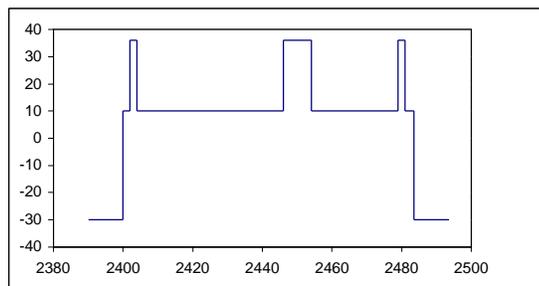
The Chair called for any objections to giving Keith Amundsen substitute participation in the past two meetings. There were no objections.

- (b) Victoria Poncini
- Active member
    - Took 802.11c Chair's position
    - Propagated importance of 802.11 into IATA and Boeing
    - Could not attend 802.11 due to conflicting meetings in AEEC (Aeronautical Electrical Engineering Committee)
    - went through a period of health problems
  - Participated in 6 conferences
    - May 98, Nov 98
    - Needs a substitute participation July 99

The Chair called for any objections to giving Victoria Poncini substitute participation in the last meeting. There were no objections.

## 7.2 RFID

Vic Hayes reported on activity in CEPT PT SE24S (Project Team Spectrum Engineering 24 Short Range Devices) where there is a claim for use of RFID devices with 5W EIRP in the 2.45 GHz band. Kevin Berry from IATA, Edgard Vangeel of Telxon and Vic Hayes and a colleague from Lucent Technologies are fighting this. Smaller bands are being considered for FH. A compatibility study is planned. The current idea is to make the following spectrum mask (dBm vs MHz) is:



802.11 is in this band on a non-protected and non-interference basis, and so can do little directly to defend itself. However, there are Primary and Secondary users, and there is planning for measurements between primary and secondary users in October 11-15 (by ENG/OB or Electronic News Gathering/Outside Broadcast users).

The RFID community claims that 802.11 devices can stand 4 watts. However, we would like to ask the industry to limit its transmissions to the same mask as in Europe.

Should there be a liaison statement to ISO? There is a standardisation group in ISO.

There were no resolutions. All questions were left open.

## 7.3 ITU-R representation

Vic Hayes reported on the need for 802.11 WG involvement in 5 GHz spectrum standardisation activities in ITU-R. Unlicensed 5 GHz allocations are not proposed for the WRC 2000 Agenda. Known unlicensed spectrum is:

- Europe 5.15-5.35 GHz with 5.470-5.725 GHz also likely .

- ❑ Japan 5.15-5.35 GHz
- ❑ USA 5.15-5.35 GHz and 5.725-5.825 GHz
- ❑ Doc.:802.11-99/194 is a presentation for development of a Common European Position for WRC 2000 - 2002
- ❑ Doc.:802.11-99/193 is a Call for Experts from the UK Regulatory Agency
- ❑ Draft ERC decision 99 NN
  - provides a framework for extended regulation in the 5 GHz band
  - the decision calls for functionality like power control and dynamic frequency selection
  - is not addressed at all in the IEEE work.

Vic asked for 802.11 delegates to ITU-R

- ❑ Richard Paine advised he would bring the point to ITU-R through Boeing
- ❑ Peter Ecclesine advised he would consider becoming involved.

#### **7.4 IAPP**

It was agreed to refer this matter to the Study Group on enhancements to 802.11.

#### **8 Adjourn for subgroups.**

Vic Hayes recognised the unusual circumstance of the hurricane threatening many members' properties. He asked that members move cell phones to mute or vibrator mode during sessions if possible.

Vic Hayes advised that there will be photos taken for the web site. There were no objections to photos being taken and placed on the web site.

The session was adjourned at 1007 hrs.

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

Scheduled: 1:00pm – 3:00pm

**1. Opening**

Meeting called to order 1:05 PM

The meeting closed at 1453.

For the complete minutes please refer to doc.: 11/99-218.

**Wednesday, 7 July 1999 IEEE 802.11 Full WG**

Scheduled: 3:30 – 4:30pm

**9 Opening**

Meeting called to order by Vic Hayes at 3:35 PM and David Skellern, Secretary was ready to take the meeting notes. The meeting proceeded according to the 802.11 Agenda.

**9.1 Roll call**

Skipped as already done in Joint meeting.

**9.2 Document list update**

Documents 802.11-99/201-231 have been added since Monday.

Suffix R will be used for the ah-reg documents.

**9.3 Agenda update**

- TGd has finished its business for the meeting. The ah-reg group will take the remaining TGd slot on Thursday morning. The ah-reg slot on Thursday evening is cancelled.
- The end-time for this session is changed to 1630.

Motion 99/58P03	To approve agenda as amended.
Moved:	Stuart Kerry
Seconded:	Richard Paine

Discussion: none**Motion passes 15-0-0****9.4 Announcements**

None

**10 Old Business****10.1 Regulations**

All those present had heard Carl Andren's report on this topic in the Joint 802.11/802.15 Session held immediately prior to this session. See item 2.3.1 of the minutes of that session.

Motion 99/58P04	To request IEEE's EMC committee to review NPRM interference impact papers and publish a report.
Moved:	Carl Andren (for ad hoc regulatory group)
Seconded:	Stuart Kerry

Discussion: The question of whether the documents to be reviewed should include all the IEEE documents as well as other documents submitted to the FCC in response to OET docket 99/231 was raised. The wording of the motion does not limit the scope of papers and will make the 802.11 documents available to the EMC committee.

The motion is procedural.

**Motion fails 6-8-2****10.2 Study Group Enhanced 802.11**

John Fakatselis noted that the written report is doc.:802.11-99/216. The verbal report is the same as for the Joint 802.11/802.15 Session, item 3.1.

**10.3 TGd**

Bob O'Hara reported on TGd work as summarised in doc.:802.11-99/212. Two papers were presented and the group had proposed a universal method of describing channel allocations in any band.

Bob asked implementors to consider the proposed Channel Allocation Element. He called for feedback on any aspect including:

- overall structure,
- units of measure for frequency, power
- Could there be a human readable encoding implementation?
- Error handling

A safe default mode of operation at 1mW was proposed.

There is a strong desire to have 5 GHz bands allocated for world wide use.

Motion 99/58P05 To have 802.11 send a letter to the US delegation of the appropriate SGs of ITU and/or WRC supporting the global allocation of the 5 GHz band for unlicensed use.  
 Moved: Bob O'Hara for TGd  
 Seconded: Harry Worstel

Discussion: The meaning of the words 'and/or' was to not limit the regulatory group from making a considered decision about the most appropriate recipients for the letter.

Harry Worstel called the question.

Seconded by Stuart Kerry.

No objections.

**Motion passes: 16-0-0**

**11 New Business**

**11.1 Polls for Tools/Formats**

25% of people in room are now using Office 2000 (5 members out of 20 present).

We will take another poll in November.

**12 There is no Item 12**

**13 Adjourn for Social**

The meeting adjourned at 1628 hrs.

## Friday, 17 September 1999 Full WG Closing Plenary of IEEE 802.11

Scheduled: 8:30 AM - 11:00 AM

### 14 Opening

The closing plenary was opened by Vic Hayes at 8:42 AM and David Skellern, Secretary was ready to take notes.

#### 14.1 Announcements

Flash cards are missing.

#### 14.2 Document list update

Documents 802.11-99/231-236 have been added since Wednesday.

#### 14.3 Agenda adjustments

- The order of presentations will change: SG-enhanced swaps with Regulations (ie items 15.2 & 15.3 swap)
- Tel Aviv item added to interim meetings

Motion 99/58P06	To approve the amended Meeting Agenda
Moved:	Tom Siep
Seconded:	Jan Boer

Discussion: none

**Motion passes: 18-0-0**

### 15 Reports from subgroups

#### 15.1 TGd

No business since Wednesday report.

#### 15.2 Regulations

Carl Andren reported. A motion in the group approved a letter on the DS processing gain issue (doc.:802.11-99/210r2).

Motion 99/58P07(ID113)	To send letter doc.:802.11-99/210r2 to FCC.
Moved:	Carl Andren (for group)

Discussion: None.

**Motion passes: 18-0-0**

A motion to send the paper prepared for the group to the FCC also passed.

Motion 99/58P08(ID114)	To send paper 99-209r2 to FCC.
Moved:	Carl Andren (for group)

Discussion: The 802.15 WG has voted to authorize the chair of 802.15 to support the 802.11 position on this matter.

**Motion passes: 18-0-0**

It was agreed that the 802.15 support for this group would be indicated by adding WG15's chair as a signatory.

#### 15.3 Study Group enhanced 802.11

John Fakatselis reported. The results of brainstorming on potential candidate projects to become part of the PAR is presented in doc.:802.11-99/216. These will be reviewed next meeting.

One suggested project - *to enhance the existing state diagrams in the document* - was considered to not fall within the scope of the SG. This project is referred back to the full WG. It will be considered there as new business.

### 16 Unfinished Business

#### 16.1 Output documents

- Doc.:802.11-99/209r2 Proposal for a second letter for filing in the proceedings of FCC OET docket number 99-231 (Jim Zyren, Jan Boer, Donald C Johnson)

- Doc.:802.11-99/210r2 Proposal for a third letter for filing in the proceedings of FCC OET docket number 99-231 (John Fakatselis, Jan Boer)

**16.2 Next meeting**

The Objectives for the next 802.11 meeting are:

- Draft text for 802.11d
- Draft PAR and 5 Criteria for SG MAC Enhancements
- Send letters to liaison groups and to regulatory agencies as needed

Vic Hayes reviewed the tentative agenda for the 59<sup>th</sup> meeting. There is a new agenda order for the 802 meeting. As a result, we will start the 802.11 Full WG at 1pm on Monday.

**16.3 Other interim meetings required**

Tel Aviv - please register directly with BreezeCom. The invitation is doc.:802.11-99/236. Vic Hayes will send the Invite to 802.15.

**17 New Business**

**17.1 Liaison with 802.15 and 802.16**

The liaison officers from .15 to .11 are:

- Alan Heberling
- Mike McInnes

These will have full voting rights in .11.

The .11 Liaisons have been accepted and have full .15 voting rights.

**17.2 State Diagram Update**

The current state diagrams can be displayed using, for example, Telogic software, but after that nothing more can be done with them. The interest is to make available a working version of the state diagrams. The Telogic analyser has errors that relate to internal states. It was claimed, in essence, that the diagrams are a subset of what is required for a complete 802.11.

The copyright issue was discussed. Any changes to allow simulation, for example, would be a delta to the IEEE copyrighted material. The changed document would normally constitute a draft and be distributed internally. But IEEE sells drafts.

The description on the floppy disk is the normative description of the 802.11 MAC. A WG plenary must go through changes to approve the technical quality.

It seems then that this work needs a new PAR. We are looking here at an enhancement to the documentation. The issue was complex. It was agreed that these complex issues would be discussed in a small group outside the meeting.

**17.3 Other business**

Motion 99/58P09(ID115)            To purchase TWO replacement FLASH (85MB) cards with any surplus funds from the 802.11 Interim Meeting accounts.  
 Moved:            Stuart Kerry  
 Second:            Harry Worstel

Discussion: Procedural

**Motion passes: 16-0-0**

Motion 99/58P10(ID116)            To form a new ad hoc regulatory group chaired by Richard Paine, to address the world-wide allocation of the 5 GHz band at WRC.  
 Moved:            Bob O'Hara  
 Second:            Peter Ecclesine

Discussion: Procedural

**Motion passes: 17-0-0**

Motion 99/58P11(ID117)            To permit 802.11 Chairman to submit NPRM reply comments and to write a letter to the FCC for permission to reply on or before November 16<sup>th</sup> 1999.

Moved:	Peter Ecclesine
Second:	Matt Shoemake

Discussion: The current deadline is 4 November, before the end of the next 802 meeting.

**Motion passes: 17-0-0**

- The group reviewed action items from this meeting.
- Due to the lack of a quorum at this meeting, all motions need to be confirmed by email ballot.
- Alantro was again thanked for excellent facilities, especially for ISDN link.

#### **18 Closure**

- The meeting was adjourned at 0949.

**Tentative future meeting plan**

**1999**

**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**

**May 8-12 - Renaissance Madison Hotel, Seattle, WA (Boeing)**

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

**?Sept 18-22 - Memphis, TN (FedEx)?**

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

*Attendance list for the meeting held at*  
**Hilton Sonoma County, Santa Rosa, CA**

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